*City of Biddeford*
**Planning Board**
**June 02, 2021 6:00 PM Zoom: Jun 2, 2021 06:00 PM Eastern Time (US and Canada)**
**Topic: Planning Board**

**Please click the link below to join the webinar:**
**https://biddeford.zoom.us/j/96759331312?pwd=L3d3U0JSN1VYeXRXUjJ6SFltQkw5dz09**
**Passcode: 400397**
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**US: +16465588656,,96759331312#,,,,*400397# or +13017158592,,96759331312#,,,,*400397#**
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**International numbers available: https://biddeford.zoom.us/u/acFIqSvUf4**

1. **DECLARATION OF QUORUM/VOTING MEMBERS**
2. **ADJUSTMENTS TO THE AGENDA**
3. **PLANNER'S BUSINESS**
4. **CONSENT AGENDA**
   4.A. Approve Meeting Minutes of May 5, 2021
   PB Minutes 050521-DRAFT.pdf
5. **UNFINISHED BUSINESS**
6. **NEW BUSINESS**
   6.A. 2021.04 Final Site Plan/Subdivision/Shoreland Zoning Approval-Tom Watson & Co., LLC for the redevelopment at 1 Gooch Street & 59 Elm Street (Tax Map 40, Lot 56) in the MSRD 3 & General District Shoreland Overlay Zone.
   2021.04 Draft FOF for 1 Gooch Street.pdf
   Board Report (Jun 2 Mtg)- Gooch St Final Site Sub SZ Plan.pdf
   Gooch Comment Response Letter.pdf
   4. Stormwater Management Report.pdf
   Lighting Cut Sheets.pdf
   Modular Wetland System Information.pdf
   Turning Template (15' RADII).pdf
   Elm Street Sewer RD.pdf
   Civil Plans 5-14-21.pdf
   L-1&2 Landscape Plans_05-10-21.pdf
   Photometric Plan 5-11-21.pdf

6.B. 2021.04 Authorization of a 3rd Party Independent Wildlife Analysis for E & R Development Corp. related to an 18-Lot residential development proposal to extend Winding Creek Lane (Tax Map 8, Lot 3-1 & Portion of Lot 3) in the R-1-A Zone.

bri scope of work-eon.pdf
Final_Biddeford_Clifford_Park_Scope_ 05.24.21_submitted.pdf

6.C. 2020.15 Approval Extension for The Mills at Pepperell, LLC and Mill 11, LLC, to convert Building #11 of the Pepperell Mill complex into 71 housing units located off Laconia Street (Tax Map 71, Lot 10) in the MSRD-3 zone.
2020.15 Pepperell Mill Bldg 11 Extension SR 060221-signed.pdf
2020.15 Peperrell Mill Bldg 11 NOD-signed.pdf
Extension Request .pdf

6.D. PEP AC Discussion

**7. OTHER BUSINESS**

**8. ADJOURN**

**The Board reserves the right to halt official business at 9:30 p.m. Items not heard at tonight's meeting shall be rescheduled to the next meeting of the Board. All materials pertaining to items on the agenda are available for public review at the Biddeford Planning Department, second floor, Biddeford City Hall during normal business hours.**

# CITY OF BIDDEFORD

## Planning and Development Department

Greg Tansley, A.I.C.P.
City Planner
205 Main Street
P.O. Box 586
Biddeford, ME 04005
(207) 282-7119 or (207) 284-9115
Greg.Tansley@biddefordmaine.org

**Planning Board**
**Meeting Minutes**
**(DRAFT)**

**Date:** **May 5, 2021**
**Time:** **6:00 PM**
**Location:** **REMOTE ACCESS MEETING (1MRSA § 403-A permits public proceedings through remote access during the declaration of state of emergency due to COVID-19).**

1. **Declaration of Quorum/Voting Members**
   **Quorum Present: Sean Tarpey, Bruce Benway, Spiros Droggitis, Roch Angers (Vice Chair), Michael Cantara.**
   **Vice Chair Angers opened the meeting at 6:00 PM**
2. **Adjustments to the Agenda**
3. **Planner's Business**
   - **City Planner Greg Tansley explained the correction to the Meeting Minutes of April 21, 2021.**
4. **Consent Agenda**
   **4.A. Approval of Planning Board Meeting Minutes from March 24, 2021**
   **4.B. Approval of Planning Board Meeting Minutes from March 31, 2021**
   **4.C. Approval of Planning Board Meeting Minutes from April 7, 2021**
   **4.D. Approval of Planning Board Meeting Minutes from April 21, 2021**

   **MOTIONS: 6:03 PM**
   **Benway-<u>Motion</u>- Motion to approve the Consent Agenda for May 5, 2021.**
   **Cantara-<u>Second</u>**
   **Vice Chair Angers-Roll Call for Vote-Motion Passed, Unanimous Approval 4-0 (Benway, Droggitis,Tarpey & Cantara)**
5. **Unfinished Business**
   **5.A. 2020.42 Conditional Use Permit for Biddeford Christian Ministries to reoccupy space as a place of worship at 12 St. Mary's Street (Tax Map 38, Lot 28) in the MSRD 2 Zone.**
   - **Consulting Planner Chris DiMatteo introduced the project**
   - **Patrick Booth from Caleb Johnson Architects represented the applicants and spoke on the project.**
   - **The applicants, Mr. & Mrs. Gerry LaChance answered questions from the Board and public.**
   - **Eric Gardner commented from the public.**

- **The Board and Mr. Gardner talked about the upkeep of the property and the property manager arrangements the congregation have made.**

  **MOTIONS: 6:13 PM**
  **Benway: Motion- Motion to approve the Conditional Use Permit for Biddeford Christian Ministries at 12 St. Mary's Street, Tax Map 38, Lot 28, for the re-use of the former St. Mary's church for faith-based services and approve the Findings of Fact and Conclusions of Law based on the conditions recommended by Staff in the Planning Board DRAFT Findings of Fact and Conclusions of Law dated May 5, 2021.**
  **Cantara: Second**
  **Vice Chair Angers-Roll Call for Vote-Motion Passed, Unanimous Approval 4-0 (Benway, Droggitis,Tarpey & Cantara).**

6. **New Business**
   **6.A. 2021.20 Public Hearing take comments and make recommendations to the City Council regarding proposed amendments to the Zoning Ordinance that would (1) Encourage both additional and affordable residential units in the R-1A, R-1-B, R-2, R-3, MSRD-2 and OR Zones; (2) Allow duplex/two-family uses as permitted in the R-1-A and R-1-B zone where they are currently prohibited; (3) Clarify the dimensional requirements in the Office Residential (OR) Zone; (4) Allow Accessory Dwelling Units (ADU's) in the Coastal Residential (CR) zone along Route 9 (Pool Road); and (5) Change duplex/two-family uses from Conditional Uses ('C') to Permitted Uses ('P') in the RF and SR-1 Zones.**
   - **Planner Greg Tansley and Director of Planning Mathew Eddy presented the proposed changes.**
   - **Public comments were given by**
     **Councilor Marc Lessard**
     **Resident Mike Eon**
     **Resident Meaghan Daly**
     **Resident Al Shinkel**
     **Resident Richard Rhames**
   - **Planner Tansley addressed some of the public comments**
   - **Proposed changes to the ordinance were discussed by the Board.**

     **MOTIONS: 7:06 PM**
     **Benway: Motion-Motion to recommend zoning amendment 2021.20 be forwarded to the City Council with a recommendation that it ought to pass for the following reasons: (1) Encourage both additional and affordable residential units in the R-1A, R-1-B, R-2, R-3, MSRD-2 and OR Zones; (2) Allow duplex/two-family uses as permitted in the R-1-A and R-1-B zone where they are currently prohibited; (3) Clarify the dimensional requirements in the Office Residential (OR) Zone; (4) Allow Accessory Dwelling Units (ADU's) in the Coastal Residential (CR) zone along Route 9 (Pool Road); and (5) Change duplex/two-family uses from Conditional Uses ('C') to Permitted Uses ('P') in the RF and SR-1 Zones.**
     **Cantara-Second**

     **Tarpey: Motion-Amend previous motion to exclude proposal #5**

**Droggitis-Second**
**Vice Chair Angers-Roll Call for Vote on Amendment to original motion, Motion passed 3-1 (Cantara, Droggitis, Tarpey in favor, Benway against)**
**Vice Chair Angers-Roll Call for original motion, Motion passed 3-1 (Cantara, Benway, Tarpey in favor, Droggitis against)**

**6.B. 2021.24 3 Lot Subdivision for Pine Point Heights, LLC at 253-255 Hill Street (Tax Map 29, Lot 73) in the R-2 Zone.**

- **Consulting Planner DiMatteo introduced the project.**
- **Matthew Chamberlain represented the applicant.**
- **There were no public comments**
- **The Board and applicant discussed the project including the landscape of the site.**

**MOTIONS: 7:30PM**
**Benway: Motion-Motion to determine the proposed project is a minor subdivision.**
**Cantara: Second**
**Vice Chair Angers-Roll Call for Vote-Motion Passed, Unanimous Approval 4-0 (Benway, Droggitis, Tarpey & Cantara)**

**6.C. 2021.17 Site Plan & Subdivision for Southern Maine Affordable Housing at 69 Adams Street (Tax Map 38, Lot 296) in the MSRD 2 Zone.**

- **Consulting Planner DiMatteo Introduced the project.**
- **The applicant was represented by the following:**
  **Guy Gagnon-Southern Maine Affordable Homes**
  **Jacques Gagnon-Oak Point Associates**
  **Shane Dunn-Architect**
  **Jordan Stickles-Architect**
  **Brooks More-South Portland Housing Authority**
- **Jacques Gagnon presented the plans**
- **The Board and applicant team discussed the project including the topography, honoring the history of the site and landscaping.**

**MOTIONS: 8:34 PM**
**Benway: Motion-Motion to determine the proposed project is a major subdivision.**
**Cantara: Second**
**Vice Chair Angers-Roll Call for Vote-Motion Passed, Unanimous Approval 4-0 (Benway, Droggitis, Tarpey & Cantara)**

7. **Other Business**
8. **Adjourn**

**MOTIONS: 8:36 PM**

- **Benway-Motion-to adjourn**
- **Cantara-Second**

**Vice Chair Angers-Roll Call for Vote-Motion Passed, Unanimous Approval 4-0 (Benway, Droggitis, Tarpey & Cantara)Meeting adjourned at 8:37 PM**

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**Planning Board Chair/Vice Chair** **Date**

**These minutes are summary and are not intended to be verbatim. Archived meetings are viewable on the City's website: www.biddefordmaine.org.**

# CITY OF BIDDEFORD

Planning and Development Department

## FINDINGS OF FACT AND CONCLUSIONS OF LAW

**SITE PLAN, SUBDIVISION PLAN AND SHORELAND ZONING**
**FOR THE REDEVELOPMENT OF**
**1 GOOCH STREET**

Pursuant to the provisions of the City of Biddeford Land Development Regulations (Site Plan Review and Shoreland Zoning) and Chapter 66 Subdivision, the Biddeford Planning Board has considered the application of **Tom Watson & Co., LLC.**, including supportive data, public hearing testimony and related materials contained in the record. Based on Public Comment and Staff's review and recommendation, the Planning Board makes the following Findings of Fact and Conclusions of Law:

## Findings of Fact:

| | | |
|---|---|---|
| 1. | Applicant and Owner | Tom Watson & Co., LLC<br>82 Hanover Street, Portland ME 04101 |
| 3. | Agent: | Acorn Engineering, Inc<br>65 Hanover Street, Portland ME 04101 |
| 4. | Surveyor: | Owen Haskell<br>390 US Route 1, Unit #10,<br>Falmouth, ME 04105 |
| 4. | Project Location: | 1 Gooch Steet (A<br>Biddeford, ME 04005 |
| 5. | Project Tax Map #/Lot #: | Tax Map 40, Lot 56 |
| 6. | Lot Size: | 2.56 AC +/- |
| 7. | Existing Zoning: | MSRD 3 |
| 8. | Overlay Zoning: | GD-1 Shoreland Overlay Zone |
| 10. | Existing Use: | Vacant building/commercial |
| 11. | Proposed Use: | Mixed use; residential<br>apartments/commercial self-storage |
| 12. | Floodplain Status: | Flood Zone AB and Flood Zone B |
| 13. | Approvals Required: | Site Plan, Subdivision, Shoreland Zoning |
| 14. | Uses in the Vicinity: | Mixed use |
| 15. | Dimensional Requirements: | |
| | Min. Setback from R.O.W: 0 FT | Minimum Rear Setback: 0 FT |
| | Minimum Side Setback: 0 FT | Minimum Height: 2 stories / 26 FT |
| | | |

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| 16. | Waivers Needed: | |
| | a. Article XI Site Plan Review; Sec. 5.B.4 Structural layout and design; j. Open space: The applicant is seeking to waive the ratio of 1,000 SF of open space per dwelling for new residential developments.<br>b. Article VI Performance Standards; Sec. 49.A.11.(a) Parking…be so arranged that it is not necessary for vehicles to back into the street. The applicant is seeking to provide parking spaces that are directly accessed from Gooch Street. Staff recommends this condition is allowed as on a temporary basis and be evaluated and possibly removed with subsequent development project on Gooch Street.<br>c. Sec. 62-126 Table A; Street intersection minimum radius. The applicant is seeking to reduce the 30-foot minimum radius at the northerly side of Gooch Street and Elm Street to 15 feet. | |
| 17. | Waivers Granted: | All items above |
| 18. | Variances Needed for Approval: | None. |
| 19. | Other Approvals Required: | Building Permit from the Biddeford Code Enforcement Office. Biddeford Historic Preservation Commission |
| 20. | Other Permits Obtained: | None. |
| 21. | Other Non-City Permits Required: | None |
| 22. | LDR Attachment A: Fess Paid: | Yes |
| 23. | Application Materials Submitted:<br>1. Application form dated 4/5/2021.<br>2. Cover letter dated 4/7/2021 and application submittal book 'Preliminary/Final Subdivision & Site Plan Application', prepared by Acorn Engineering, Inc., with final plan application information including, property deeds, Joint Development Agreement (with the City), letters sent to the utilities, city departments and public safety, lighting information, response to conditional use standards, etc..<br>3. Stormwater Management Report. Prepared for Tom Watson & Co…Prepared by Acorn Engineering, Inc. April 2021, Rev. May 2021.<br>4. Engineering Plan set entitled: 1 Gooch Street Redevelopment, Tom Watson & Co., Biddeford, Maine. Issue Date: 5/14/2021. Prepared by Acorn Engineering, Inc.<br>5. Landscape Architectural Plans entitled: 1 Gooch Street Redevelopment, Tom Watson & Co., Biddeford, Maine. Issue Date: 5/10/2021. Prepared by Mitchell & Associates.<br>6. Comment response letter dated 5/14/2021, prepared by Acorn Engineering, Inc.<br>7. Turning template assessing maneuvering when leaving the site and heading north.<br>8. Correspondence and technical details regarding Modular Wetland System Design, dated 4/1/2021. | |

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| | |
|---|---|
| 24. | Planning Board Review History:<br>Sketch Plan Review: March 3, 2021<br>Final Plan Review: June 2, 2021 |

## Conclusions of Law:

The Planning Board concludes based on the application information submitted, peer-review and staff reports prepared and testimony provided at their meetings, the application conforms to the following provisions:

1. The proposed use meets specific requirements set forth in this ordinance and would be in compliance with applicable state or federal laws;

2. The proposed use would not create fire safety hazards by providing adequate access to the site, or to the buildings on the site, for emergency vehicles and would not create hazards through the storage of chemicals and wastes;

3. The proposed exterior lighting, where allowed, would not create hazards to motorists traveling on adjacent public streets or is adequate for the safety of occupants or users of the site or would not damage the value and diminish the usability of adjacent properties;

4. The provisions for buffers and on-site landscaping provide adequate protection to neighboring properties from detrimental or unsightly features of the development;

5. The proposed use would not have a significant, detrimental effect on the use and peaceful enjoyment of abutting property as the result of noise, vibrations, fumes, odor, dust, glare, hours of operation, or other causes;

6. The provisions for vehicular loading and unloading and parking and for vehicular and pedestrian circulation on the site and onto adjacent public streets would not create hazards to public safety or traffic congestion;

7. The proposed use would generate a volume of traffic that can reasonably be accommodated by the existing road network, or would not create unreasonable traffic hazards or would not exacerbate an existing traffic hazard, or would not create unreasonable traffic congestion;

8. The proposed use would not have a significant, detrimental effect on the value of adjacent properties, which could be avoided by reasonable modification of the proposal;

9. The proposed use would not have an adverse impact on the privacy of the residents of the immediate area (within 500 feet) which could be avoided by reasonable modification of the proposal.

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10. The proposed use would be in compliance with Biddeford's comprehensive plan;

11. The proposed use would not have an adverse impact on the immediate neighborhood or the community relative to architectural design, scale, bulk and building height, identity and historical character, or visual integrity, which could be avoided by reasonable modification of the proposal;

12. The design of the site would not result in significant flood hazards or flood damage or would be in conformance with applicable flood hazard protection requirements;

13. Adequate provision has been made for disposal of wastewater or solid waste or for the prevention of ground or surface water contamination;

14. Adequate provision has been made to control erosion or sedimentation;

15. Adequate provision has been made to handle stormwater runoff or other drainage problems on the site; and the proposed development will not unduly burden off-site surface water systems;

16. The proposed water supply would meet the demands of the proposed project (and for fire protection purposes, if applicable.)

17. Adequate provision has been made for the transportation, storage, and disposal of hazardous substances and materials as defined by state law;

18. The proposed use would not have an adverse impact on scenic vistas, historic sites, archeological resources, or on significant wildlife habitat or wetland areas and water bodies, which could be avoided by reasonable modification of the proposal;

19. When located in the Shoreland Zone, the proposed use would meet the purposes of Shoreland Zoning as identified in Article XIV, Section 1 (Purposes) of this ordinance and further the proposed use:

    a. Will maintain safe and healthful conditions;
    b. Will not result in water pollution, erosion, or sedimentation to surface waters;
    c. Will adequately provide for the disposal of all wastewater;
    d. Will not have an adverse impact on spawning grounds, fish, aquatic life, bird or other wildlife habitat;
    e. Will conserve shore cover and visual, as well as actual, points of access to inland and coastal waters;
    f. Will protect archaeological and historic resources as designated in the comprehensive plan;

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g. Will not adversely affect existing commercial fishing or maritime activities in a commercial fisheries/maritime activities district;
h. Will avoid problems associated with floodplain development and use; and
i. Is in conformance with the provisions of section 15, Land Use Standards.

## Determination:

Based on the evidence available and the conclusions above, the Biddeford Planning Board approves the application with the following conditions:

**Conditions of Approval:**

1. **Prior to any ground disturbance or issuance of any permits:**
   a. **All outstanding review comments shall be addressed to the satisfaction of the City Planner.**
   b. **The applicant must submit a recorded copy of the subdivision/site plan to the Planning Department.**
   c. **A pre-construction meeting with the contractor needs to be held with the Engineering Department to discuss inspection requirements.**
   d. **A Unit Cost Estimate on City form shall be submitted to the City Planner for review.**
   e. **An Erosion and Sedimentation Control Performance Guarantee (acceptable to the Planning Department) in an amount to be determined by the City based on Condition of Approval 4) shall be submitted to the Planning Department.**
   f. **Stabilized Construction Access shall be constructed to the satisfaction of the Engineering Department.**
   g. **A sewer permit is required prior to any permit issuance. Sewer impact fee will be assessed once final flow numbers are provided to the Director.**
2. **Prior to the issuance of any occupancy permits:**
   a. **The Planning Department shall conduct a compliance inspection and shall determine that all required site improvements related to the public's health, safety, and welfare have been completed, and that the City holds a Performance Guarantee sufficient to cover any remaining site improvements and/or deficiencies.**
   b. **A performance guarantee (acceptable to the Engineering Department) in the amount of 150% of any remaining site improvements shall be submitted to the Planning Department. Amount to be determined based on City inspections and the recommendation of the City Engineer.**
   c. **A sewer permit is required prior to any permit issuance. Sewer impact fee will be assessed once final flow numbers are provided to the Director.**
3. **Best management practices shall be adhered to during all ground disturbance operations. All Catch Basin's in the vicinity of earthwork operations shall have silt sacks installed & maintained for the duration of the work.**
4. **If requested by the Planning Department, copies of maintenance logs for the catch basins shall be provided to the City.**

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5. **No trash is permitted to be placed at the curb for City pickup. Trash pickup and disposal, for all units associated with this approval or previous approvals, is the responsibility of the applicant.**
6. **Angled parking along Gooch Street is considered temporary and the Board may require it be removed with approval of subsequent development. With removal of the temporary parking a curbed street edge shall be provided and the space shall be repurposed with appropriate vegetation and landscaping after review by the Planning Board.**
7. **The applicant shall obtain all other pertinent local, state and federal permits, licenses, and insurance such as blasting, building, electrical, plumbing, etc prior to commencing business, unless authority issuing said permit allows for such actions.**
8. **Upon completion of the work the project engineer shall certify that the project has been completed as per the approved plans or shall note any deviations from the approval.**
9. **As-built plans are required at the completion of the project.**
10. **Standard Conditions of Approval apply.**

_____
Planning Board Chairman

_____
Date

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# CITY OF BIDDEFORD

Planning and Development Department

## Standard Conditions of Approval

**Owner/Applicant:** Tom Watson & Co., LLC
82 Hanover Street, Portland ME 04101

**Project Description:** 1 Gooch Street Redevelopment

**Project Location:** Gooch Street

**Tax Map / Lot Number:** Tax Map 40, Lot 56

**Project ID:** 2021.04

1. The material provided for the proposed project has been reviewed only for general conformance to the City technical requirements. The applicant(s) and/or their technical consultant shall be responsible for the actual design details and completeness of their work. It is incumbent upon the applicant(s) to ensure that the project is in conformance and complies with all City Codes, ordinances and regulations as well as with all state regulations, including, but not limited to, space and bulk standards, performance standards, use standards and other zoning type requirements.

2. All work shall be in conformance with the approved plans and submission documents. No deviations from the approved plans are permitted without prior approval from the Planning Board for major changes, and from the City Planner and City Engineer for minor changes. The City Planner shall make the determination of major or minor.

3. Contact the Department of Public Works for driveway location permits, curb cut permits and/or street opening permits prior to the start of construction.

4. If Site Development is required as part of the project, an as-built plan must be provided to the City of Biddeford Engineering Office at the end of the project on mylar and on a disk, in a format, which can be read by the City of Biddeford's Geographic Information System software. If a disk copy cannot be provided, a charge for staff time to enter the plan into the City system will be assessed to the applicant.

5. The applicant shall incorporate appropriate erosion control measures into this project to reduce erosion affects from the work. All disturbed areas must be re-vegetated and/or otherwise stabilized at the appropriate stage of the work per Maine DEP standards in the Best Management Practice (BMP) manual.

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6. That the Article VI Performance Standards requirements regarding Dust, Fumes, Vapors & Gases (sect 25), Explosive Materials (sect 28), Glare (sect 37), Noise (sect 48) be followed.

7. The applicant is required to comply with all applicable requirements of Chapter 70 (Utilities) and Chapter 71 (Utilities/Industrial Pretreatment Program).

8. If Site Development is required as part of the project, at the completion of the project the owner/applicant shall request a final inspection. This request shall be directed to the Planning Office. Performance Guarantees and remaining escrow accounts shall not be released until the Planning Office certifies that the project has been completed and is in compliance with the approval and all applicable City Ordinances.

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# PLANNING BOARD REPORT

May 26, 2021

Biddeford Planning Board
Greg Tansley, City Planner
City of Biddeford
205 Main Street
Biddeford, Maine 04005

Application: 1 Gooch Street Redevelopment – Tom Watson & Co., LLC
(Tax Map 40 Lot 56)
**Site Plan/Subdivision and Shoreland Zoning Final Plan Review**
Review Status: Sketch Plan review completed.

Board members and Mr. Tansley,

The following application information has been provided for review:

1. Application form dated 4/5/2021.
2. Cover letter dated 4/7/2021 and application submittal book 'Preliminary/Final Subdivision & Site Plan Application', prepared by Acorn Engineering, Inc., with final plan application information including, property deeds, Joint Development Agreement (with the City), letters sent to the utilities, city departments and public safety, lighting information, response to conditional use standards, etc..
3. Stormwater Management Report. Prepared for Tom Watson & Co…Prepared by Acorn Engineering, Inc. April 2021, Rev. May 2021.
4. Engineering Plan set entitled: *1 Gooch Street Redevelopment, Tom Watson & Co., Biddeford, Maine.* Issue Date: 5/14/2021. Prepared by Acorn Engineering, Inc.
5. Landscape Architectural Plans entitled: *1 Gooch Street Redevelopment, Tom Watson & Co., Biddeford, Maine.* Issue Date: 5/10/2021. Prepared by Mitchell & Associates.
6. Comment response letter dated 5/14/2021, prepared by Acorn Engineering, Inc.
7. Turning template assessing maneuvering when leaving the site and heading north.
8. Correspondence and technical details regarding Modular Wetland System Design, dated 4/1/2021.

With review of the above information and the Land Development Regulations, I offer the following comments on compliance with the City's ordinances.

## PROJECT DESCRIPTION

The project site, located in the MSRD-3 Zone and the General District Shoreland Overlay Zone, is an existing six story brick building that is currently vacant and overlooks the Saco River in the vicinity of Route 1 (Elm Street) and Springs Island. The proposal includes building renovations that aim to maintain its historic character and accommodate 320 self-storage units (first two floors) and 96 dwelling units (top four floors). Site improvements include parking and walkway to Elm Street.

## COMPLETENESS REVIEW

The application is before the Planning Board as required by Article XI (Site Plan Review) of the Land Development Regulations and Chapter 66 (Subdivisions) subject to Site Plan and Subdivision review and approval. During Sketch Plan it was determined that the application would be reviewed under the Site Plan Review (Art. XI) process. The application appears to be complete. The application before the board has undergone a review with City Staff and the peer-review engineer where the majority of comments and issues have been addressed (see attached for remaining and new engineering related comments).

## COMPLIANCE WITH THE CITY'S ORDINANCES

The application before the board has undergone a review with City Staff and the peer-review engineer where the majority of comments and issues have been addressed. The applicant has included written responses to the comments at the Sketch Plan review and to the comments related to the April submittal. The following are comments on items that remain outstanding or are new issues.

1. Proposed angled parking along Gooch Street: Discussions with staff and the applicant resulted in a compromise for the Board's consideration regarding to allow parking to back directly on to a street rather than a parking lot aisle. The angled parking shown would be considered temporary and would be evaluated upon review of the further development proposals off Gooch Street and shall be removed upon future review by the Board. A note on the plan should be added that states:

   > 'Angled parking along Gooch Street is considered temporary and the Planning Board may require it be removed with approval of subsequent development. With removal of the temporary parking a curbed street edge shall be provided, and the space shall be repurposed with appropriate vegetation and landscaping after review by the Planning Board'.

A suggest condition of approval is provided for the Board's consideration as part of the draft Findings of Fact.

2. Pedestrian Connectivity: The crosswalk across Gooch Street may be confusing until the north side sidewalk is constructed since it abruptly terminates. It should be noted on the plan that the crosswalk wil be installed when pedestrian facilities such as the sidewalk or RiverWalk on the north side of Gooch Street is installed.

3. Handicap Accessibility: The applicant should identify on the plans where the accessible route is located. It appears the grades will allow adequate access to either walkway adjacent to the proposed accessible parking, however, only one of the two (that located to the east) includes a typical sidewalk ramp. The applicant should clarify and revise drawing accordingly.

4. Fire Lane Access: This area, located at the east side of the building between handicap parking and perpendicular parking is depicted on the plan with cross hatching and noted on the as 'Fire Lane No Parking'. This prohibition should take the form of a sign or two and if the intent is to strip the pavement, that should be clarified on the plan.

5. The Plan includes a couple of areas noted as 'Potential Signage Location'. Prior to review and approval by the Code Enforcement Office, the City's Historic Preservation Commission is required to review and approve any exterior alterations to the building and any signage proposed for the building and site.

6. The proposed sidewalk located within the proposed access easement to the City (located at the north end of the parking lot) is proposed as bituminous to be replaced later by concrete and granite curb. The applicant should elaborate on the reasoning behind the inability to provide the final concrete/granite curbed sidewalk as part of this project.

7. Performance Guarantee: The applicant needs to complete a City Unit Cost Estimate Form that will be used to base the required performance guarantee on. There is a suggested conditional of approval to address this as part of the draft Findings of Fact.

8. Architectural/Building Plans: The List of Drawings (page 5/5) in the application submittal books references elevations and floor plans. The applicant should clarify if these drawings are the same plans that were submitted at Sketch Plan Review. No architectural plans were submitted as part of the Final Plan submittal.

9. Private Way/No City Services: Sec.66-20 requires a plan note that indicates that no City services shall be provided to lots on such road.

10. Subdivision. With the creation of 96 dwelling units, the development is subject to subdivision and plans (related to subdivision) need to be recorded at the York County Registry of Deeds. The applicant should determine if they plan to record Sheet C-10 or prepare a simpler plan with the waivers granted shown on the plan. In either case, 'Subdivision Plan' needs to be reflected on the recorded sheet with recording block.

11. Peer-review Engineer's Final Plan Comments: Tom Saucier, P.E., Site Design Associates, review comments are attached in an email dated May 24, 2021. The applicant will need t address prior to or as part of Final Approval.

## WAIVER REQUESTS

The applicant has requested waivers from the following development standards.
The Board should review the rationale for each request and ask for elaboration by the applicant if it needs more information for consideration.

1. Article XI Site Plan Review; Sec. 5.B.4 Structural layout and design; j. Open space: The applicant is seeking to waive the ratio of 1,000 SF of open space per dwelling for new residential developments.
2. Article VI Performance Standards; Sec. 49.A.11.(a) Parking…be so arranged that it is not necessary for vehicles to back into the street. The applicant is seeking to provide parking spaces that are directly accessed from Gooch Street. Staff recommends this condition is allowed as on a temporary basis and is removed with subsequent development project on Gooch Street.
3. Sec. 62-126 Table A; Street intersection minimum radius. The applicant is seeking to reduce the 30-foot minimum radius at the northerly side of Gooch Street and Elm Street to 15 feet.

## CONCLUSION

The submitted final application appears to be substantially complete for the Planning Board to review and receive public testimony. Based on comments from the public and the Board members, the Planning Board may want to consider granting final approval with conditions. Suggested conditions of approval can be found in the draft Findings of Fact.

Feel free to contact me with questions.

Best regards,

Christopher Di Matteo
City of Biddeford Contract Planner.
cdimatteo@longmeadowpla.com
207.604.4245

**Subject:** Re: 1 Gooch St.
**Date:** Wednesday, May 26, 2021 at 11:03:50 AM Eastern Daylight Time
**From:** cdimatteo@longmeadowpla.com
**To:** Tom Saucier

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**From:** Tom Saucier <tsaucier@sitedesignassociates.biz>
**Date:** Monday, May 24, 2021 at 6:14 PM
**To:** Christopher Di Matteo <cdimatteo@longmeadowpla.com>, Greg Tansley <Greg.Tansley@Biddefordmaine.org>
**Subject:** 1 Gooch St.

Good evening,

We have undertaken a review of the plans and documentation revised in response to our comments and offer the following, numbered per our original letter where possible.

A.1. The response ended without listing the waivers required to vary from the code standards for a private way.

B.2.a. For clarification, it should be confirmed that all proposed curb will be MDOT Type 1 granite in all areas except on the north side of Gooch Street where the granite is noted to transition to bituminous cape cod style curb. A transition detail should be shown.

B.2.b. It appears a waiver of the minimum curb radii at an intersection is required, and a waiver has been requested. In order to support the request, should justification for the waiver be included?

B.2.c. The response refers to fire truck turning templates but we were unable to find any in the submission.

B.2.f. The intent of the proposed paving remains unclear. The "pavement profile" detail on drawing C-40 lists subgrade compaction requirements and depths of materials, but note 3 refers to milling existing pavement and installing new pavement. We assume the full depth typical section is intended for trench and utility removal areas, while the remainder of the pavement will be milled. Is this what is proposed? Is there adequate thickness to remove 3 ¼ inches of existing pavement and install new pavement per the detail as suggested?

B.2.f. The response refers to sidewalk details. We were unable to locate a bituminous sidewalk detail.

New:
1. Is the slipform concrete curb detail on drawing C-40 applicable?

2. Why is a temporary bituminous sidewalk being installed northerly of the parking area for 1 Gooch Street, only to be replaced later with concrete? What curb material is proposed?

Other than the comments related to waivers, these items clearly could be resolved as a condition of approval if the board is so inclined.
If you or the applicant has any questions, please feel free to contact us.

Thanks
Tom

Tom Saucier, P.E.
Site Design Associates
23 Whitney Way
Topsham, Maine 04086
207-449-4275

ACORN ENGINEERING, INC.

Greg Tansley – City Planner
Planning & Development, City of Biddeford
205 Main Street
Biddeford, ME 04005

May 14, 2021

Subject: Comment Response Letter
1 Gooch Street Redevelopment – Biddeford, Maine

On behalf of Tom Watson & Co., we are pleased to respond to the comments from the City of Biddeford for the recently submitted combined Preliminary & Final Site Plan and Subdivision application for the 1 Gooch Street redevelopment project. Please find responses to the comments received thus far below.

**Site Design Associates**

**General**

**Comment** – *Based on the narrative provided it appears that Gooch Street will remain a private street. Does chapter 51, Private Ways and Roads then apply? If so, there may be waivers that would need to be requested, with the understanding that it is an existing street and there would need to be some flexibility in applying the standards.*

**Response** – Gooch Street will remain a private street. The applicant requests waiver for the minimum ROW width of 50 feet per Article VI Performance Standards, Section 51 Private ways and roads as Gooch Street is an existing 30 foot wide private way. The project proposing to formalize the travel way and associated street improvements. A temporary turn around area is provided on the 20 Gooch Street parcel, with a note that the turnaround may not be removed until a permanent turn around is designed/permitted/constructed at the end of Gooch Street with the future development of 30 Gooch Street. Waivers requested include:

**Comment** – *The plans reflect the improvement of Gooch Street, along with new water and sewer systems, extending to the property boundary. We assume that there are or will be plans showing the remainder of these facilities.*

**Response** – The new water and sewer systems are proposed to service the existing buildings down Gooch Street (20 & 30 Gooch Street). Final plans for the utility and street improvements past the end of the parking lot (City owned property) will be provided upon future submission of the 20 & 30 Gooch Street development projects.

**Drawing C-03**

**Comment** – *The notes on the drawings call for removals of various stormdrain system drainage structures and hydrants, but only a portion of the existing piping is noted as to be removed. Is it the intent to remove all existing piping? If so, a note should be added to the plan. If it is the intent to abandon some piping in place, a note should be added to the drawing that requires inspection of the materials and conditions of the pipe prior to abandonment, and provide details for abandonment, including sealing the pipes.*

**Response** – Note 10 has been added to Sheet C-03 that all existing storm drains are to be removed.

**Drawing C-10**

**Comment** – *The extent of new curbing materials and locations should be clarified. Why is a tipdown called for on the north side of Gooch Street?*

**Response** – The proposed curbing line type as shown on C-01 is proposed to the extent shown on C-10. A tipdown is no longer proposed at that location due to the possible future sidewalk on the north side of Gooch Street. Temporary cape cod bituminous curbing is proposed along portions of the roadway that will be developed as part of future development projects, but provides a formal delineation of Gooch Street in the interim and closes off larger curb cuts to the river lot parking area.

**Comment** – *The curb radii northerly of the intersection of Gooch and Elm should be larger, given the nature of the use of the site as a self storage facility and the angle of street intersection, assuming trailers and single unit vans and moving vehicles will access the site. The ordinance requires a 30 ft radii at street intersections of this nature.*

**Response** – The radii located on the northerly section of the Gooch and Elm Intersection has been increased to 15' from the original 10' radii shown. A waiver is requested to allow for a reduction of the 30 foot radii standard. Please refer to the attached turning templates showing vehicles turning north onto Elm at this intersection.

**Comment** – *It appears there will be access to the east end of the building in the proposed 15 space parking lot at that location. Access, and particularly backing and turning may be difficult for some vehicles that typically access storage units.*

**Response** – Please refer to the fire truck turning templates showing access and maneuverability to the east end of the building. Typical moving vehicles smaller than the fire truck shown are anticipated to be able to make these turning movements as well. As requested by City Planning Staff, pavement markings "Fire Lane, No Parking" has also been added to this area to prevent potential unloading in this area that could restrict fire access or vehicles pulling out of the parking spaces.

**Comment** – *There are several proposed sidewalk ramps shown. The various configurations should be detailed.*

**Response** – Proposed sidewalk ramps are now shown within the plan set. Please refer to Sheet C-10 and C-30 for additional information.

**Comment** – *Why is the proposed cross walk across Elm Street running in a diagonal alignment? Generally, crosswalks should run at 90 degrees where possible and be located at street intersections. It seems there is an opportunity to accomplish both. Also, the existing curb on the other side of the west side of Elm is granite and an ADA landing will be required.*

**Response** –The plans have been updated to show crosswalks running 90 degrees at corner of Elm Street and Gooch Street. Per request of the City of Biddeford we have added a note that the crosswalk located at the start of Gooch Street shall be implemented during the construction of the northerly sidewalk adjacent to Gooch Street.

**Comment** – *Do all shaded paved areas represent full depth construction?*

**Response** – The project proposes to mill existing pavement and install new bituminous pavement upon completion of utility installation. Please refer to Note 3 on the Pavement profile detail, Sheet C-40.

**Comment** – *Why does the Gooch Street reconstruction move way from the northerly sideline of Gooch Street about 280 ft into the site instead of consistently following it?*

**Response** – The alignment of Gooch Street is shown to allow for the future sidewalk construction along the northern side of the Street, while maintaining potential buildable envelopes for future development on the northern parcels, accounting for various shoreland setbacks. The plans have been revised to show this future sidewalk.

**Comment** – *Sidewalk materials should be noted and more dimensions for the various walks provided.*

**Response** –Additional call outs for the sidewalk materials and dimensions have been added to the site plan and provided in the details.

**Comment** – *Is there an existing turnaround at the end of Gooch Street? No turnaround is proposed in the vicinity of the project.*

**Response** – A temporary turnaround is now shown on the 20 Gooch Street parcel, with notes that the turnaround cannot be removed until a turnaround has been designed/permitted/constructed at the end of Gooch Street as part of future development of 20 & 30 Gooch Street parcels..

**Comment** – *Accessible parking signage should be shown.*

**Response** – Barrier free parking signs have been added to the ADA parking spaces. See Sheet C-10 and C-40 for the sign details.

**Comment** – *Are precast curb stops shown in the southerly row of the 60 degree parking?*

**Response** –Precast curb stops have been removed from the plan set.

**Comment** – *What is the purpose of the 6 bollards?*

**Response** – The purpose of the six bollards is to provide a barrier between the parking spaces and the proposed pole mounted lighting fixtures.

**Comment** – *A sawcut and butt joint should be called out at Elm Street.*

**Response** – A callout has been added to the Site Plan to sawcut and butt joint at Elm Street.

**Drawing C-20**

**Comment** – *Sawcuts at the utility trenches should be noted and a detail referenced.*

**Response** –Sawcut locations within Elm Street are shown with a note referencing trench details on the Utility Plan (C-20). Utility trenches within Gooch Street are not shown, with the existing bituminous pavement within Gooch Street to be milled and new pavement installed. Please refer to the Pavement Profile and Utility Trench details for specific information.

**Comment** – *It is the engineer's and Maine Water's call, but if the water main were moved slightly to the north, 12-45 degree bends could be eliminated which would be a cost savings.*

**Response** – The watermain is shown with bends to meet the various utility separation requirements as feasible and avoid CB conflicts.

**Drawing C-30**

**Comment** – *The grades shown in the 15 space parking lot at the east end of the building will not result in effective drainage in that area. The engineer may want to provide more slope.*

**Response** – We have increased the slopes in this location to provide steeper drainage in this location. Please refer to the revised spot grades on C-30.

**Comment** – *The existing sewer and stormdrain manholes in Elm Street should be shown. Based on the elevations shown on the Owen Haskell drawing there may be a conflict between the proposed stormdrain and existing sanitary sewer in Elm Street.*

**Response** – Upon review of the conflict analysis and reviewing the Owen Haskell survey, as well as Wright-Pierce Elm Street Sewer Separation Record Drawings (attached) provided by the City, it appears the Owen Haskell survey had incorrectly mapped the drain line as a SD instead of a sanitary sewer (SS) as shown in the Wright-Pierce Record Drawings. We also evaluated connecting into the Elm Street SD per the Wright-Pierce Plans, however this would raise the inverts of the storm drain over a foot and leave insufficient cover on top of the proposed storm drain within Gooch Street. As a result, the plans have been revised to show all flow within Gooch Street to continue to utilize the existing outfall from Gooch Street into the Saco River.

**Comment** – *The construction management plan shows that the existing DMH in the location of the proposed 5 ft diameter catch basin is to remain. This should be clarified.*

**Response** – The construction management plan has been updated to clarify that the existing DMH is to be removed with a new proposed 5' diameter CB to be installed as shown on C-30.

**Comment** – *The spot grades in the accessible parking spaces reflect grades which exceed the ADA maximum of 2%. This should be reviewed and we suggest spot grades at the 4 corners of this area would ensure proper grading.*

**Response** – The ADA parking area has been relocated and proposed slopes will not exceed ADA maximum of 2%. See the Grading Plan for additional information (C-30).

**Details**

**Comment** – *The pavement sawcut detail should show milling and a shiplap joint.*

**Response** – The pavement sawcut detail has been revised to mill the existing surface course and provide a shiplap joint at the sawcut along Elm Street.

**Comment** – *A note should be added to the detectible warning detail that the panels are to be approved by the city prior to installation.*

**Response** – A note has been added to the detectible warning detail that the panels shall be approved by the city prior to installation.

**Comment** – *The pavement profile detail could be revised to match the typical section required for a major residential street which is a bit thinner, and a note should be added that the major residential street detail is a minimum and if greater depths are observed in the field, those depths should be matched in the public right of way.*

**Response** – The pavement profile has been updated to reflect the City of Biddeford Minimum Roadway Construction Standards Table A for Major Residential Streets. See Sheet Site Details – 1 for additional information (C-40).

**Comment** – *The reinforced concrete sidewalk detail should include a note that where this is proposed in a public right of way, the detail must be approved by the public works department prior to the installation of the walk.*

**Response** –The reinforced concrete sidewalk detail has been updated with the language above. Refer to the Site Details for additional information (C-41).

**Stormwater Management**

**Comment** – *Has a stormwater permit application been submitted to DEP for this project? Typically, the DEP would require that an executed 5 year maintenance contract for the system be provided. This could be a condition of approval.*

**Response** – The Stormwater Management Law application was submitted to the DEP on 3/30/21. The applicant can provide the maintenance contract for the Modular Wetland System as a condition of approval.

**Comment** – *The narrative suggests that because the project is not a Site Location project the flooding standard of chapter 500 does not apply. However, the city standards require a pre-development and post development analysis, which has not been provided. The narrative suggests that additional stormwater is being routed to the Elm Street system. We believe that in light of this, a pre and post development comparison of stormwater runoff rates to the various outfalls and the Elm Street drainage system is warranted.*

**Response** – Upon review of the conflict analysis and reviewing the Owen Haskell survey, as well as Wright-Pierce Elm Street Sewer Separation Record Drawings (attached) provided by the City, it appears the Owen Haskell survey had incorrectly mapped the drain line as a SD instead of a sanitary sewer (SS) as shown in the Wright-Pierce Record Drawings. We also evaluated connecting into the Elm Street SD per the Wright-Pierce Plans, however this would raise the inverts of the storm drain over a foot and leave insufficient cover on top of the proposed storm drain within Gooch Street. As a result, the plans have been revised to show all flow within Gooch Street to continue to utilize the existing outfall from Gooch Street into the Saco River. Please refer to the attached HydroCAD calculations for the pre- & post-development conditions for the 24-hour, 2, 10, and 25-year storm events which shows a reduction in flows in the post-development condition from the existing/pre-development conditions.

**Comment** – *No design calculations or documentation of the treated areas in the form of a treatment plan for the proprietary treatment system were provided.*

**Response** – Please refer to the attached email correspondence with the BioClean Modular Wetland System designers on the sizing of the MWS associated with the subcatchment flows directed towards the system. Also attached is the DEP approval letter for the proprietary treatment system, which includes additional information of volume and flow-based sizing of the systems.

**Comment** – *The treatment calculations indicate that the "Gooch Street Maintenance" is not included in the pollutant ranking calculations. However, it is included in the redevelopment area total. Further explanation is required.*

**Response** – Per the DEP Chapter 500 standards, "Maintenance" is not included in redevelopment areas or subject to the redevelopment standards. The maintenance area was provided to show the areas where Gooch Street will be improved from existing conditions of the street, while maintaining the hydraulic capacity and maintains the original surface flows. The attached stormwater report has been revised to remove the maintenance area from the redevelopment total area to avoid confusion.

**<u>Greg Tansley (City Planner)</u>**

**Comment** – *Multiple 9'x9' Transformers and limited screening.*

**Response** – Additional screening has been provided around the transformers. One transformer has been removed from the previously submitted plans.

**Comment** – *Screening of the parking lot.*

**Response** – Additional screening of the parking area has been provided as shown on the updated landscaping plans.

**Comment** – *Fire access around the parking lot. This is a new design with angled parking we were not aware of and have concerns.*

**Response** – A meeting was held on 5/5/2021 with Paul Labrecque of the Fire Dept. and the proposed project provides three points of access and internal turnaround space within the off site parking area for Biddeford's largest firetruck. The Fire Dept. has no issues with the proposed design.

**Comment** – *What is this "proposed double riser utility pole"? If located there it may preclude any future improvements in that area. This doesn't work long term. Also, presumably you need to get an easement from Maine DOT for this (provide easement), then at the same time an easement should be acquired for a sidewalk along Gooch Street to Route 1. If it can't be continued through to Route 1, then it needs to cross back to the south side of Gooch Street an acceptable distance back from Route 1. It should be designed, however, as if it were connected to Route 1. Hence, the utility pole risers may not work, nor will the intersection design as presented I suspect.*

**Response** – The double riser pole has been relocated on 10 Gooch Street to allow for the potential future sidewalk along Gooch Street, Route 1 and connection to the future river walk.

**Comment** – *Lack of pedestrian facilities on the north side of Gooch Street. Both sides of Gooch street should have a sidewalk, and both sides should connect to Route 1. Gooch Street needs a crosswalk on it at Route connecting the Gooch Street Sidewalks.*

**Response** – A potential future sidewalk has been added to the north of Gooch Street along with a sidewalk at the Route 1 intersection connecting the two Gooch Street sidewalks. Future sidewalk to the north of Gooch Street is dependent on future development of 10 Gooch Street.

**Comment** – *The angled crosswalk across Route 1 in unacceptable.*

**Response** – The crosswalk across Route 1 from Gooch Street has been updated to be perpendicular to Elm Street. ADA ramps and Pedestrian crossing signs are proposed to provide safety to all pedestrians crossing Route 1 from the proposed Redevelopment.

**Comment** – *Multiple manhole (stormwater) covers in the sidewalk should be avoided. Also, what happens with settlement where that chamber is?*

**Response** – The manholes on the Modular Wetland System (MWS) have been removed and the MWS has been shifted underneath the landscaped area.

**Comment** – *You present a 10' radii from Gooch Street turning right onto Route 1 from Gooch Street which is already at an angle coming into Route 1. This does not appear to be acceptable for cars, let alone trucks or other larger vehicles.*

**Response** – The radius has been updated to a 15' radii. Please see the turning templates attached that show a typical box truck turning right out of Gooch Street.

**Comment** – *Landscaping in general is questionable, particularly with so much lawn. If you look around, lawns don't fare well in that area. You do not provide any indication of irrigation either. I would like your landscaping design to be completed and stamped by an L.A. which I did not see.*

**Response** – Irrigation has been added to the site, refer to sheet C-20. The attached landscaping plans have been revised per Staff comments and stamped by a licensed Landscaped Architect.

**Chris Di Matteo**

**Comment** – *Does the private street count towards impervious cover in shoreland zone?*

**Response** – Yes, as noted in the Table labeled Space and Bulk Standards located on the Site Plan (C-10).

**Comment** – *Alternate parking sketch for fire turn around*

**Response** – See comment above referring to Fire Dept. review, subsequent meeting and no issues with current designs.

**Comment** – *What is the percent coverage in the shoreland zone? 96%?*

**Response** – The existing impervious coverage within the shoreland zone is 96.3%. The project proposes to remove portions of the existing impervious coverage and is proposing 85.2% impervious coverage.

**Comment** – *The easement for the river walk along with the actual proposed walkway, i.e. Concrete pathway along the river as shown on exhibit a of the twc/city agreement*

**Response** – Potential future river walk walkway has been added to the plans. Refer to sheet C-10 for additional information.

**Comment** – *Sidewalk on both sides of Gooch Street should provided.*

**Response** – A future sidewalk is shown on north side of Gooch Street.

**Comment** – *On tables if it is not meant to have a value please have a dash or n/a, don't leave it blank*

**Response** – Dashes have been added on tables.

**Comment** – *Does the city have standard plan notes/requirements that are to be placed on final plans?*

**Response** –Standard plan notes have been added to the plan set in accordance with the City of Biddeford.

**Comment** – *No signature blocks*

**Response** – Signature blocks have been added to the plan set in accordance with the City of Biddeford.

**Comment** – *Recording block: will the site plan be recorded as a subdivision plan?*

**Response** – A recording block has been added to the site plan and can be recorded upon approval and City signatures.

**Comment** – *Planting: screening around transformer. Suggest something that is more vertical/taller than inkberry. Usually there is a side that has a panel which should be clear. Suggest using all the space between parking and transformer to provide adequate clearance from the transformer (i.e. No lawn). Why use river stone? Bike rack is located here as well. Pretty busy. Suggest determining if there is a side of the transformer that needs access and see if that can be faced away from the street and screen the other three sides and find another location for bikes.*

**Response** – Per the meeting the staff, the landscape plans have been revised to show more vertical/taller vegetation around the transformers. The transformer between the parking area and Gooch Street has been removed. River stone is used in portions of the landscaped islands where there is a narrow width that would support vegetative growth, while also being utilized to stabilize the grades. Bike rack location near the entrance has been shifted to the opposite side of the sidewalk.

**Comment** – *Bike rack doesn't seem ideal so close to the entrance. Perhaps the other side of the walkway.*

**Response** – The bicycle rack has been moved across the walkway to provide additional space by entrance.

**Comment** – *Other transformer is not screened*

**Response** – The transformer in the planting area between the parking lot and Gooch Street has been removed. The revised landscaping plans provide additional screening for the off-street parking lot and transformers.

**Comment** – *Should consider there won't be any settlement issues with bioretention structure under accessible route.*

**Response** – The Modular Wetland System has been moved out from underneath the sidewalk and into the landscaped area.

**Comment** – *Landscape design does not provide enough planting to adequately screen the parking (i.e. Too much lawn) and in areas where there are plantings they are of insufficient height.*

**Response** – The landscaping plans have been updated to provide adequate screening of the off-street parking and address City's review comments.

**Comment** – *Lawn and irrigation*

**Response** – Irrigation has been added. Refer to Sheet C-20.

Please let us know if you have any additional questions or comments. We look

Sincerely,

Peter Heil, P.E.
Project Manager
Acorn Engineering, Inc.

William H. Savage, P.E.
Principal
Acorn Engineering, Inc.

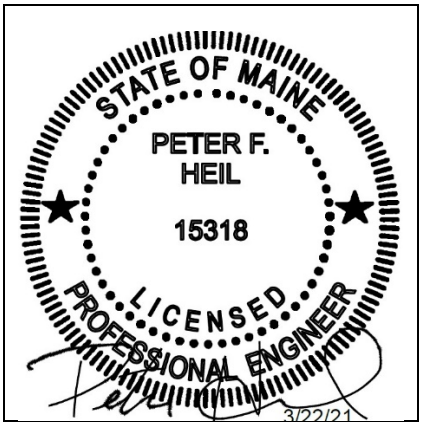
# STORMWATER MANAGEMENT REPORT

**Prepared For:**

## Tom Watson & Co.
## Portland, ME 04101

**Prepared By:**


## Acorn Engineering, Inc.
## 65 Hanover Street
## Portland, Maine 04101


**April 2021**
**Rev. May 2021**

## INTRODUCTION

Acorn Engineering, Inc. has been retained by Tom Watson & Co. to provide civil engineering services for the proposed redevelopment of 1 Gooch Street. The proposed project includes redevelopment an existing abandoned building into 320 self-storage units and 96 residential dwelling units, as well as improvements/maintenance to Gooch Street, repurposing parking areas and utility upgrades. A small one-story addition (29' x 6') is proposed for a new entry into the building along Gooch Street.

## EXISTING CONDITIONS

The proposed project site is located at the corner of Elm Street and Gooch Street adjacent to the Saco River. An ALTA / NSPS Land Title Survey has been prepared by Owen Haskell Inc. Falmouth; Maine dated December 18, 2020.

The site has an existing 5-story structure located in the southwest corner of the lot. Gooch Street is a private ROW providing access to the eastern properties towards the river. The site is mostly impervious area currently being utilized as parking lots and foundation remnants of previously demolished structures. The existing grades on site are relatively flat.

The project team is not aware of the presence of any existing significant natural features located on the site. Furthermore, the project is not within an urban impaired stream. The existing watershed is approximately two and a half acres which flows to a storm drain system that outlets into the Saco River.

## PROPOSED DEVELOPMENT

As part of the Gooch Street maintenance improvements, significant existing pavement area will be removed along the building frontage with grassed and landscaping proposed to be installed, reducing the total impervious coverage on the lot by 12,214 sf. Gooch Street will be restriped and shimmed with pavement where necessary to generally maintain the historical drainage patterns and ADA access into the building. Utility improvements within Gooch Street and the proposed parking lot including installation of a new water quality treatment structure, catch basins and storm drains that will tie into a new catch basin (replacing an existing drain manhole) that ultimately discharges into the Saco River utilizing the existing storm drain outfall. Gooch Street is proposed to be constructed to formalize the travel lanes, where existing conditions is a large impervious surface, with no delineation of travel lanes or parking areas. Stormwater and Erosion Control Best Management Practices will be implemented during construction.

Impervious area: 2.18 ac.

Disturbed area: 1.60 ac.

Maintenance area: 0.96 ac.

Redeveloped area: 1.60 ac.

## BASIC STANDARDS – EROSION & SEDIMENT CONTROL

The project proposes measures to meet the basic standards requirements as outlined in Chapter 500. Please refer to Section 5: Erosion and Sedimentation Control Report

**GENERAL STANDARDS - WATER QUALITY**

Given the site's existing developed area, the redevelopment standards were applied to this project. The existing land uses and pollutant rankings are as follows:

| Table 1 – Land Use and Pollutant Summary Table: Existing Conditions | | | |
|---|---|---|---|
| **Land use** | **Pollutant Ranking** | **Existing Area** | **Weighted Ave. Ranking** |
| **Roads where idling may occur; high use parking lots** | 5 | 0 | 0 |
| **Other roads; medium use parking lots** | 4 | 0.44 ac. | 1.1 |
| **Other parking lots and driveways; flat roof asphalt rooftops** | 3 | 0.00 ac. | 0.00 |
| **Other rooftops; grassed areas mowed > twice per year; walkways / foot-traffic-only pavement** | 2 | 1.16 ac. | 1.45 |
| **Non-grass landscaped areas; Stormwater treatment / storage systems** | 1 | 0.00 ac. | 0.00 |
| **TOTAL** | | 1.60 ac. | 2.55 |

Furthermore, the proposed land use rankings are as follows:

| Table 2 – Land Use and Pollutant Summary Table: Proposed Conditions | | | |
|---|---|---|---|
| **Land use** | **Pollutant Ranking** | **Existing Area** | **Weighted Ave. Ranking** |
| **Roads where idling may occur; high use parking lots** | 5 | 0 | 0 |
| **Other roads; medium use parking lots** | 4 | 0.21 ac. | 0.53 |
| **Other parking lots and driveways; flat roof asphalt rooftops** | 3 | 0.90 ac. | 1.69 |
| **Other rooftops; grassed areas mowed > twice per year; walkways / foot-traffic-only pavement** | 2 | 0.49 ac. | 0.61 |
| **Non-grass landscaped areas; Stormwater treatment / storage systems** | 1 | 0.00 ac. | 0.00 |
| **TOTAL** | | 1.60 ac. | 2.83 |

Corresponding pre- and post-development redevelopment maps can be viewed in Attachments 1 and 2 of this report.

From Tables 1 & 2 above, the resulting pollutant ranking for the proposed redevelopment is 0.16 (Chapter 500, Table 2). The development shall provide water quality treatment in accordance with the DEP Chapter 500 General Standards for no less than 60% (Chapter 500, Table 3) of the developed area. Water quality treatment will be provided through the use of

a proprietary modular wetland system, which is an approved system per Appendix B of the Maine Stormwater BMP Manual. Filtration BMPs have been shown to be very effective at removing a wide range of pollutants from stormwater runoff. See below Developed Area Treatment Table:

| **Table 3 – Developed Area Treatment Table:** | | | |
|---|---|---|---|
| Total Redeveloped Area (SF): | Total Proposed Impervious Area Treated (SF): | Total Proposed Landscaped Area Treated (SF): | Overall Area Treated: |
| 70,033 | 39,447 | 6,094 | 65.5% |

As shown above, the project anticipates meeting and exceeding the required treatment for the redeveloped impervious surfaces as ample stormwater treatment is being provided. The corresponding Post Subcatchment Plan can be viewed in Attachment 3 of this report.

**SOILS**

Onsite soil information includes the following:

- Soil Conservation Service Medium Intensity Soil Survey for York County

The area within and surrounding the project includes soil types listed in the table below. The susceptibility of soils to erosion is indicated on a relative "K" scale of values over a range of 0.02 to 0.69. Higher "K" values indicate more erodible soils.

| **Table 4 - "K" Value** | | |
|---|---|---|
| **Soils Type** | **Subsurface** | **Substratum** |
| Urban Land (Ur) | 0.27 | 0.27 |

The soil "K" values for the soils, listed above, show a low to moderate susceptibility to erosion. The site's susceptibility to erosion is from the Soil Conservation Service Medium Intensity Soil Survey for Cumberland County. Although soil "K" values for the soils show a low susceptibility to erosion, implementation of the proposed Erosion & Sedimentation Measures by the contractor will be of the utmost importance given the proximity of the site to the Saco River.

**PHOSPHOROUS STANDARD**

As the project is not located in a watershed of a lake most-at-risk, or a proposing development of any other lake watershed, the Phosphorous Standard does not apply to this project.

**URBAN IMPAIRED STREAM STANDARD**

As the project is not located in an urban impaired stream watershed, the Urban Impaired Stream Standard does not apply to this project.

**FLOODING STANDARD**

As the project does not propose three acres or more of impervious coverage, or 20 acre or more of developed area, the Flooding Standard does not apply to this project, per DEP Chapter 500. Furthermore, the project stormwater runoff discharges directly to a major river segment (Saco River) and would be eligible for a waiver from the Flooding Standard. The proposed redevelopment of the site and Gooch Street includes reducing the impervious coverage by approximately 12,260 sf. With the reduction of impervious coverage and installation of landscaped areas, total peak flow rates from the site are expected to decrease as well. Furthermore, the modular wetland treatment system provides some attenuation of peak flows from subcatchment #2 to control treatment of the runoff through the system. Please refer to the attached HydroCAD calculations for the pre- & post-development conditions for the 24-hour, 2, 10, & 25-year storm events for the Points of Interest in accordance with the City's Land Development Regulations, Article IV: Performance Standards, Section 61: Stormwater Management.

The proposed project was modeled using HydroCAD to verify that the post-development conditions do not exceed the pre-development conditions. A 24-hour SCS Type III storm distribution for the 2, 10, and 25-year storm events were used. The corresponding rainfall amounts for these storms are 3.30", 4.90", and 6.20" respectively. Rainfall amounts are from Maine DEP Chapter 500, Appendix H and the Northeast Regional Climate Center website (http://precip.eas.cornell.edu), Extreme Precipitation Tables.

Due to the numerous variables, and inherent inaccuracies with the modeling program used to calculate stormwater runoff it is custom at Acorn Engineering, Inc. to round to the nearest whole number or to the nearest tenth for urban infill project. Due to the small size of the project the stormwater runoff shall be rounded to the nearest tenth of a cubic foot per second (cfs).

*Time of Concentration ($T_c$)*

Time of concentration values were derived by calculating a combined Tc from the flow segments within each subcatchment in the pre-condition. Associated with these flow segments is the classification of stormwater flow and the corresponding surface. Refer to the attached HydroCAD calculations for a break-down of the Tc calculations.

*Pre-development Calculations*

The pre-development condition was modeled as a single subcatchment to determine the net impact of the development.

- Subcatchment 1 – This tributary includes the entire site, including existing building, Gooch Street, parking lots and gravel surfaces which discharges into the Saco River from a drainage manhole within Gooch Street via a 12" storm drain.

A Pre-Development Watershed Map developed for this project can be viewed in Attachment 1, and a copy of the HydroCAD calculations is included within Attachment D, or this report.

*Post-development Calculations:*

The project proposes to reduce impervious coverage on site and install utility improvements within Gooch Street and the proposed parking lot including installation of a new Modular Wetland System water quality treatment structure, catch basins and storm drains that will tie into a new catch basin (replacing an existing drain manhole) that ultimately discharges into the Saco River utilizing the existing storm drain outfall. A post-development Watershed Map developed for this project can be viewed in Attachment 2 of this report.

The post development calculations include changes to the land use and compensation provided by the stormwater BMPs. The following table represents comparison of pre-development and post-development condition peak runoff rates for the proposed development and tributary area.

| Table 5 – Comparison of Peak Flows | | | | | | |
|---|---|---|---|---|---|---|
| **Drainage Area** | **2 – Year Storm Event (cfs)** | | **10 – Year Storm Event (cfs)** | | **25 – Year Storm Event (cfs)** | |
| | **Pre** | **Post** | **Pre** | **Post** | **Pre** | **Post** |
| **POI – Saco River** | 8.0 | 5.1 | 12.3 | 11.8 | 15.8 | 15.0 |

**CONCLUSION**

The project does not anticipate creating erosion, drainage, or runoff problems for the development, the City, or abutting properties. With the use of the proprietary modular wetland systems, water quality treatment is being met in conformance with the General Redevelopment Standards and with the reduction of impervious coverage, peak runoff rates from the site will be decreased. Please let us know if you have any questions or comments.

Sincerely,

William H. Savage, P.E.
Principal
Acorn Engineering, Inc.

Peter Heil, P.E.
Project Manager
Acorn Engineering, Inc.

**ATTACHMENTS**

Attachment 1: Pre-Development Redevelopment Exhibit
Attachment 2: Post Development Redevelopment Exhibit
Attachment 3: Pre-Watershed Map
Attachment 4: Post Watershed Map
Attachment 5: HydroCAD calculations
Attachment 6: Soils Map
Attachment 7: Stormwater Inspection & Maintenance Plan
Attachment 8: Housekeeping Plan

| LAND USE AND POLLUTANT SUMMARY TABLE | | | | |
|---|---|---|---|---|
| LAND USE | COLOR | POLLUTANT RANKING | EXISTING AREA | WEIGHTED AVE. RANKING |
| ROADS WHERE IDLING MAY OCCUR PERIODICALLY DUE TO TRAFFIC AND INTERSECTIONS; HIGH USE PARKING LOTS | | 5 | 0 | 0 |
| OTHER ROADS; MEDIUM USE PARKING LOTS | | 4 | 0.44 AC | 0.69 |
| OTHER PARKING LOTS AND DRIVEWAYS; FLAT ASPHALT ROOFTOPS; ROOFS ON AN INDUSTRIAL FACILITY | | 3 | 0.00 AC | 0 |
| OTHER ROOFTOPS; BIKEWAYS; GRASSED AREAS MOWED MORE THAN TWICE PER YEAR; WALKWAYS / FOOT TRAFFIC–ONLY PAVEMENT | | 2 | 1.16 AC | 0.91 |
| NON–GRASS LANDSCAPED AREAS; STORMWATER TREATMENT / STORAGE SYSTEMS (EXCEPT BUFFERS) | | 1 | 0.00 AC | 0.00 |
| GOOCH STREET "MAINTENANCE" – NOT INCLUDED IN POLLUTANT RANKING CALCULATION | | N/A | 0.96 AC | N/A |
| TOTAL | | | 2.56 AC | 1.60 |

| ISSUED FOR | BY | DATE |
|---|---|---|

DRAWING NAME: PRE CONSTRUCTION REDEVELOPMENT EXHIBIT

PROJECT NAME/ ADDRESS: 1 GOOCH STREET REDEVELOPMENT

CLIENT/OWNER OF RECORD: TOM WATSON & CO. 188 STATE STREET, 3RD FLOOR, PORTLAND ME 04101

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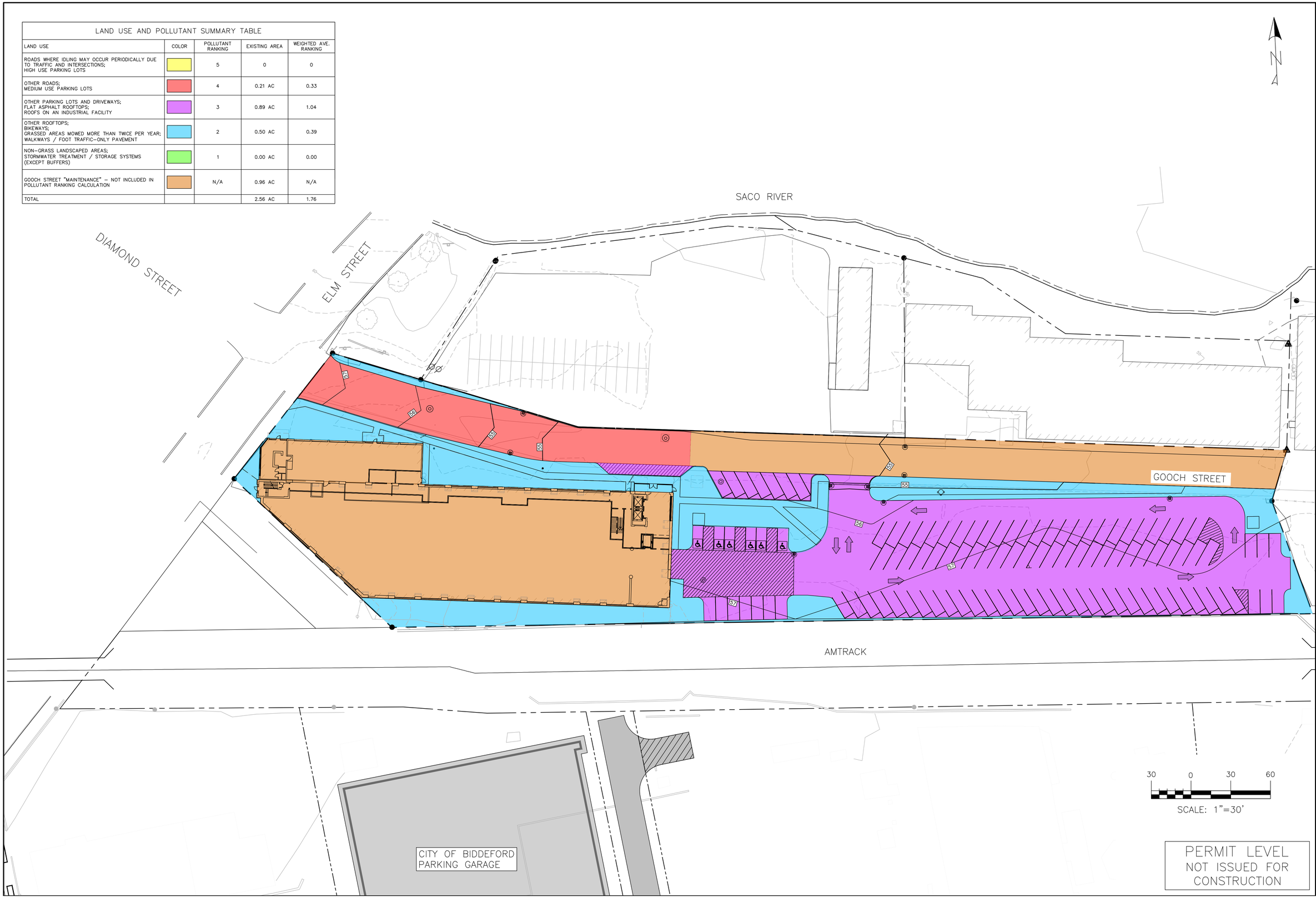
| | |
|---|---|
| FILE: | 1093.10_CIVIL |
| JN: | 1093.10 |
| SCALE: | AS NOTED |
| DESIGNED BY: | PFH |
| DRAWN BY: | ZMS |
| CHECKED BY: | WHS |

DRAWING NO.

EX-1

| LAND USE AND POLLUTANT SUMMARY TABLE | | | | |
|---|---|---|---|---|
| LAND USE | COLOR | POLLUTANT RANKING | EXISTING AREA | WEIGHTED AVE. RANKING |
| ROADS WHERE IDLING MAY OCCUR PERIODICALLY DUE TO TRAFFIC AND INTERSECTIONS; HIGH USE PARKING LOTS | | 5 | 0 | 0 |
| OTHER ROADS; MEDIUM USE PARKING LOTS | | 4 | 0.21 AC | 0.33 |
| OTHER PARKING LOTS AND DRIVEWAYS; FLAT ASPHALT ROOFTOPS; ROOFS ON AN INDUSTRIAL FACILITY | | 3 | 0.89 AC | 1.04 |
| OTHER ROOFTOPS; BIKEWAYS; GRASSED AREAS MOWED MORE THAN TWICE PER YEAR; WALKWAYS / FOOT TRAFFIC–ONLY PAVEMENT | | 2 | 0.50 AC | 0.39 |
| NON–GRASS LANDSCAPED AREAS; STORMWATER TREATMENT / STORAGE SYSTEMS (EXCEPT BUFFERS) | | 1 | 0.00 AC | 0.00 |
| GOOCH STREET "MAINTENANCE" – NOT INCLUDED IN POLLUTANT RANKING CALCULATION | | N/A | 0.96 AC | N/A |
| TOTAL | | | 2.56 AC | 1.76 |




ISSUED FOR | BY | DATE

DRAWING NAME: POST CONSTRUCTION REDEVELOPMENT EXHIBIT

PROJECT NAME/ ADDRESS: 1 GOOCH STREET REDEVELOPMENT

CLIENT/OWNER OF RECORD: TOM WATSON & CO. 188 STATE STREET, 3RD FLOOR, PORTLAND ME 04101

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|---|---|
| FILE: | 1093.10_CIVIL |
| JN: | 1093.10 |
| SCALE: | AS NOTED |
| DESIGNED BY: | PFH |
| DRAWN BY: | ZMS |
| CHECKED BY: | WHS |

DRAWING NO.

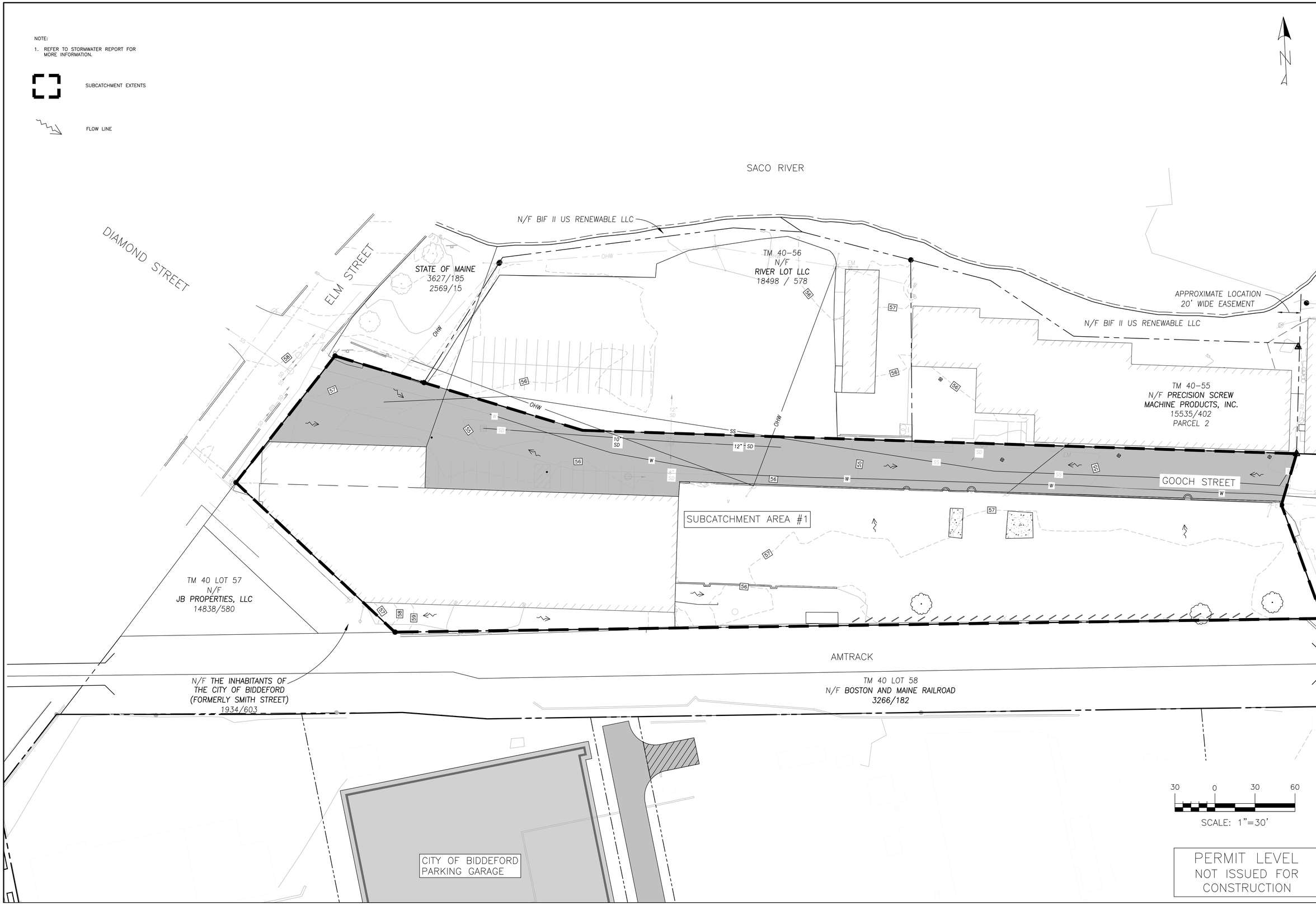
EX-2

NOTE:

1. REFER TO STORMWATER REPORT FOR MORE INFORMATION.

SUBCATCHMENT EXTENTS

FLOW LINE




PERMIT LEVEL
NOT ISSUED FOR
CONSTRUCTION

| ISSUED FOR | BY | DATE |
|---|---|---|
| | | |

DRAWING NAME: PRE WATERSHED MAP

PROJECT NAME/ ADDRESS: 1 GOOCH STREET REDEVELOPMENT

CLIENT/OWNER OF RECORD: TOM WATSON & CO.
188 STATE STREET, 3RD FLOOR, PORTLAND ME 04101

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| JN: | 1093.10 |
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| DESIGNED BY: | PFH |
| DRAWN BY: | ZMS |
| CHECKED BY: | WHS |

DRAWING NO.

EX-3

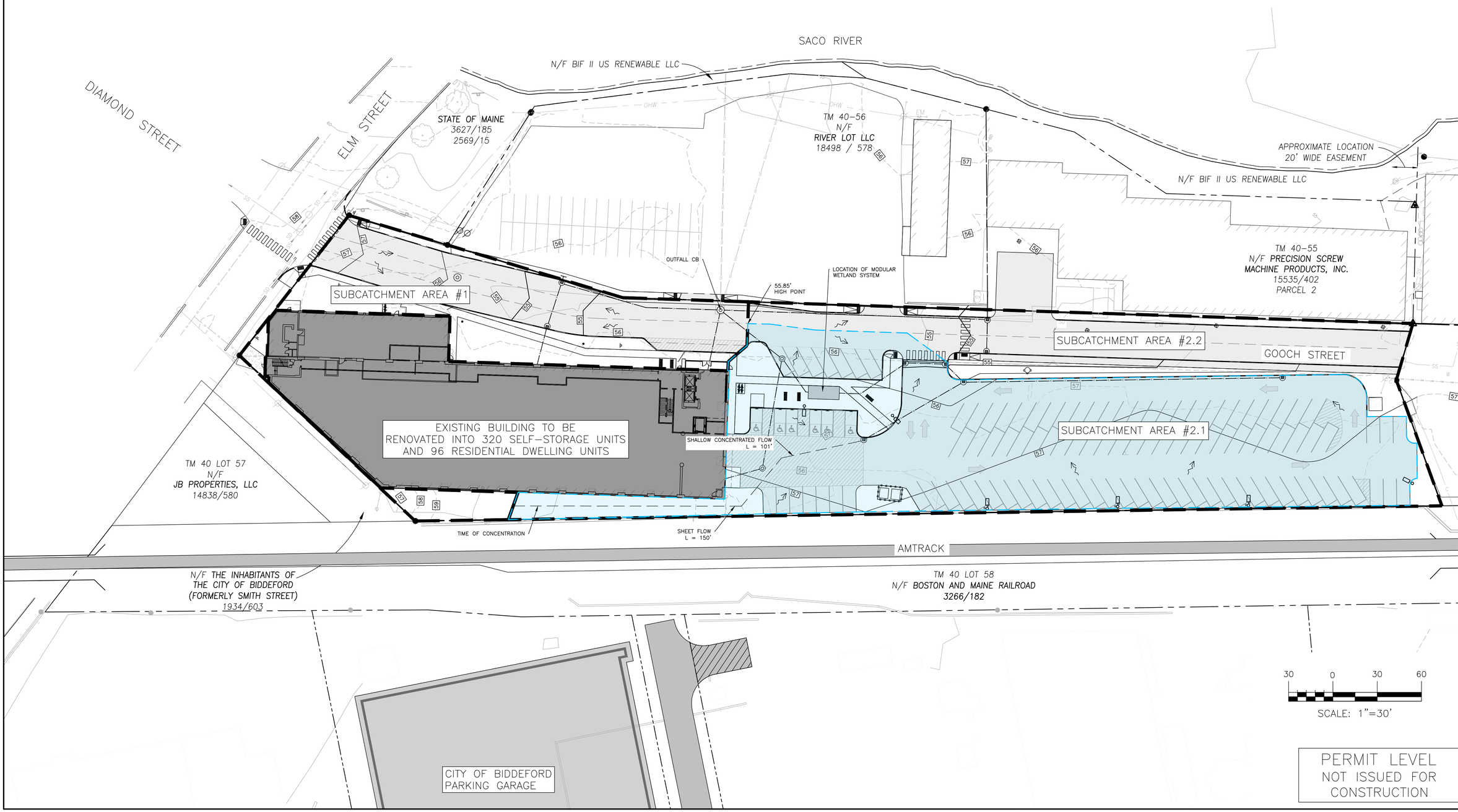
NOTE:

1. REFER TO STORMWATER REPORT AND SHEET C-30 FOR MORE INFORMATION.

SUBCATCHMENT EXTENTS

FLOW LINE

SUBCATCHMENT WITH TREATMENT EXTENTS




PERMIT LEVEL
NOT ISSUED FOR
CONSTRUCTION

| ISSUED FOR | BY | DATE |
|---|---|---|
| | | |

DRAWING NAME: POST WATERSHED MAP

PROJECT NAME/ ADDRESS: 1 GOOCH STREET REDEVELOPMENT

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| JN: | 1093.10 |
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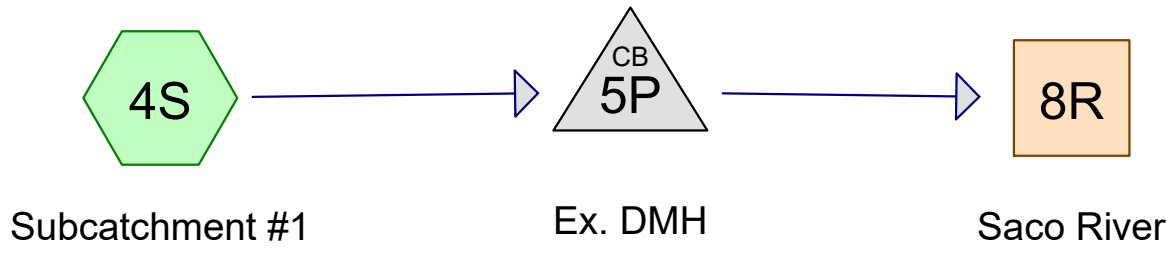
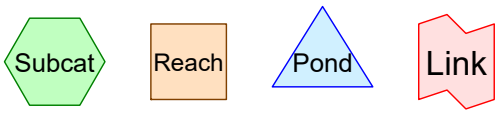
| DESIGNED BY: | PFH |
| DRAWN BY: | ZMS |
| CHECKED BY: | WHS |

DRAWING NO.

EX-4




**Routing Diagram for PRE 5-13-21**
Prepared by HP Inc., Printed 5/13/2021
HydroCAD® 10.00-26 s/n 00620 © 2020 HydroCAD Software Solutions LLC

## Area Listing (all nodes)

| Area (acres) | CN | Description (subcatchment-numbers) |
|---|---|---|
| 0.095 | 39 | >75% Grass cover, Good, HSG A (4S) |
| 1.061 | 96 | Gravel surface, HSG A (4S) |
| 0.754 | 98 | Paved roads w/curbs & sewers, HSG A (4S) |
| 0.648 | 98 | Roof (4S) |
| **2.558** | **95** | **TOTAL AREA** |

## Soil Listing (all nodes)

| Area (acres) | Soil Group | Subcatchment Numbers |
|---|---|---|
| 1.910 | HSG A | 4S |
| 0.000 | HSG B | |
| 0.000 | HSG C | |
| 0.000 | HSG D | |
| 0.648 | Other | 4S |
| **2.558** | | **TOTAL AREA** |

## Ground Covers (all nodes)

| HSG-A (acres) | HSG-B (acres) | HSG-C (acres) | HSG-D (acres) | Other (acres) | Total (acres) | Ground Cover | Subcatchment Numbers |
|---|---|---|---|---|---|---|---|
| 0.095 | 0.000 | 0.000 | 0.000 | 0.000 | 0.095 | >75% Grass cover, Good | 4S |
| 1.061 | 0.000 | 0.000 | 0.000 | 0.000 | 1.061 | Gravel surface | 4S |
| 0.754 | 0.000 | 0.000 | 0.000 | 0.000 | 0.754 | Paved roads w/curbs & sewers | 4S |
| 0.000 | 0.000 | 0.000 | 0.000 | 0.648 | 0.648 | Roof | 4S |
| **1.910** | **0.000** | **0.000** | **0.000** | **0.648** | **2.558** | **TOTAL AREA** | |

Time span=1.00-36.00 hrs, dt=0.01 hrs, 3501 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

**Subcatchment4S: Subcatchment#1** Runoff Area=111,442 sf 54.80% Impervious Runoff Depth=2.74"
Tc=5.0 min CN=95 Runoff=8.04 cfs 0.585 af

**Reach 8R: Saco River** Inflow=8.04 cfs 0.585 af
Outflow=8.04 cfs 0.585 af

**Pond 5P: Ex. DMH** Peak Elev=52.42' Inflow=8.04 cfs 0.585 af
Outflow=8.04 cfs 0.585 af

**Total Runoff Area = 2.558 ac Runoff Volume = 0.585 af Average Runoff Depth = 2.74"**
**45.20% Pervious = 1.156 ac 54.80% Impervious = 1.402 ac**

## Summary for Subcatchment 4S: Subcatchment #1

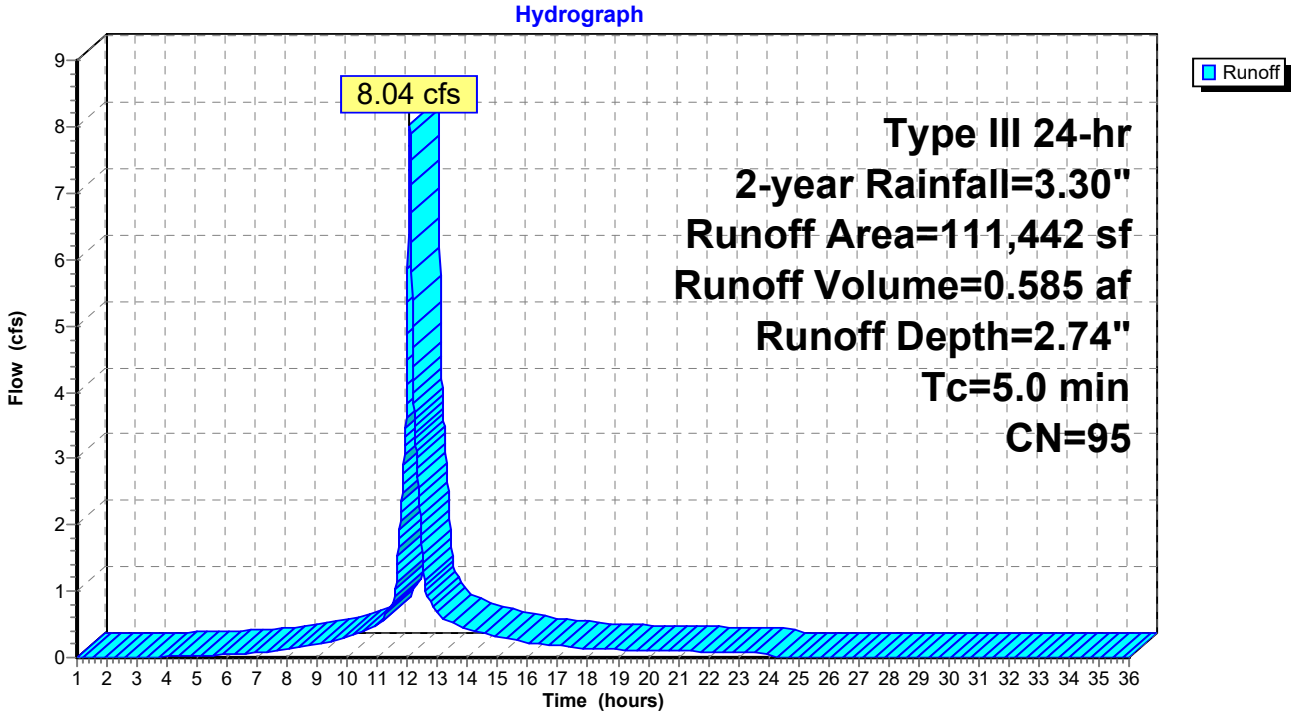
Runoff = 8.04 cfs @ 12.07 hrs, Volume= 0.585 af, Depth= 2.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.30"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 46,230 | 96 | Gravel surface, HSG A |
| | 32,836 | 98 | Paved roads w/curbs & sewers, HSG A |
| | 4,147 | 39 | >75% Grass cover, Good, HSG A |
| * | 28,229 | 98 | Roof |
| | 111,442 | 95 | Weighted Average |
| | 50,377 | | 45.20% Pervious Area |
| | 61,065 | | 54.80% Impervious Area |

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

### Subcatchment 4S: Subcatchment #1

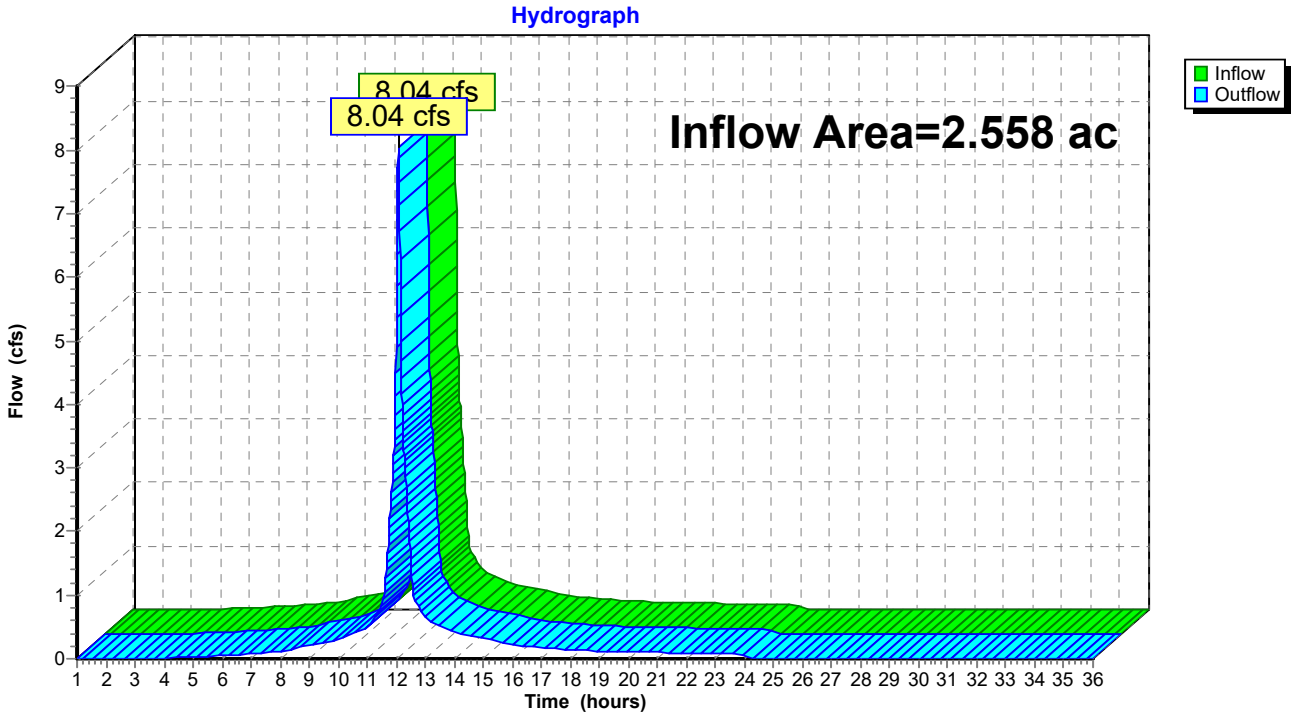


## Summary for Reach 8R: Saco River

Inflow Area = 2.558 ac, 54.80% Impervious, Inflow Depth = 2.74" for 2-year event
Inflow = 8.04 cfs @ 12.07 hrs, Volume= 0.585 af
Outflow = 8.04 cfs @ 12.07 hrs, Volume= 0.585 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

### Reach 8R: Saco River



## Summary for Pond 5P: Ex. DMH

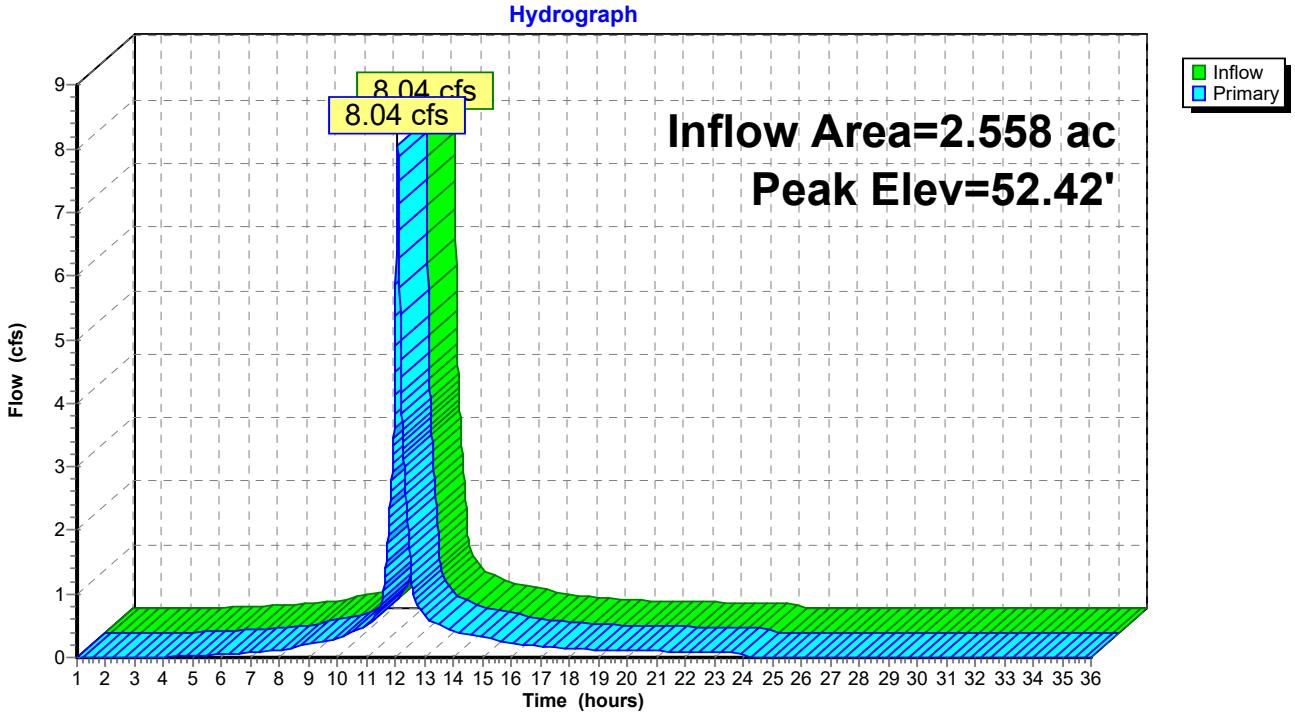
Inflow Area = 2.558 ac, 54.80% Impervious, Inflow Depth = 2.74" for 2-year event
Inflow = 8.04 cfs @ 12.07 hrs, Volume= 0.585 af
Outflow = 8.04 cfs @ 12.07 hrs, Volume= 0.585 af, Atten= 0%, Lag= 0.0 min
Primary = 8.04 cfs @ 12.07 hrs, Volume= 0.585 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 52.42' @ 12.07 hrs
Flood Elev= 55.50'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 47.40' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=8.04 cfs @ 12.07 hrs HW=52.42' TW=0.00' (Dynamic Tailwater)
└**1=Orifice/Grate** (Orifice Controls 8.04 cfs @ 10.23 fps)

### Pond 5P: Ex. DMH



## Summary for Subcatchment 4S: Subcatchment #1

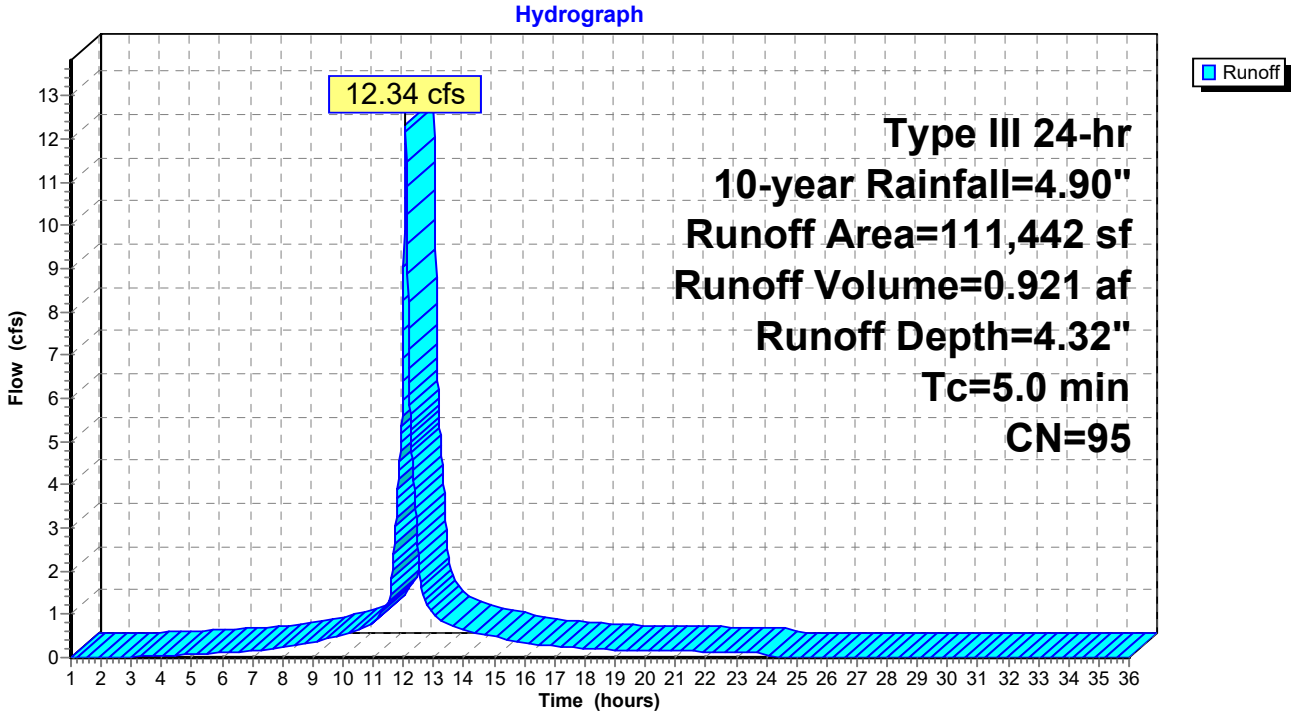
Runoff = 12.34 cfs @ 12.07 hrs, Volume= 0.921 af, Depth= 4.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.90"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 46,230 | 96 | Gravel surface, HSG A |
| | 32,836 | 98 | Paved roads w/curbs & sewers, HSG A |
| | 4,147 | 39 | >75% Grass cover, Good, HSG A |
| * | 28,229 | 98 | Roof |
| | 111,442 | 95 | Weighted Average |
| | 50,377 | | 45.20% Pervious Area |
| | 61,065 | | 54.80% Impervious Area |

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

### Subcatchment 4S: Subcatchment #1

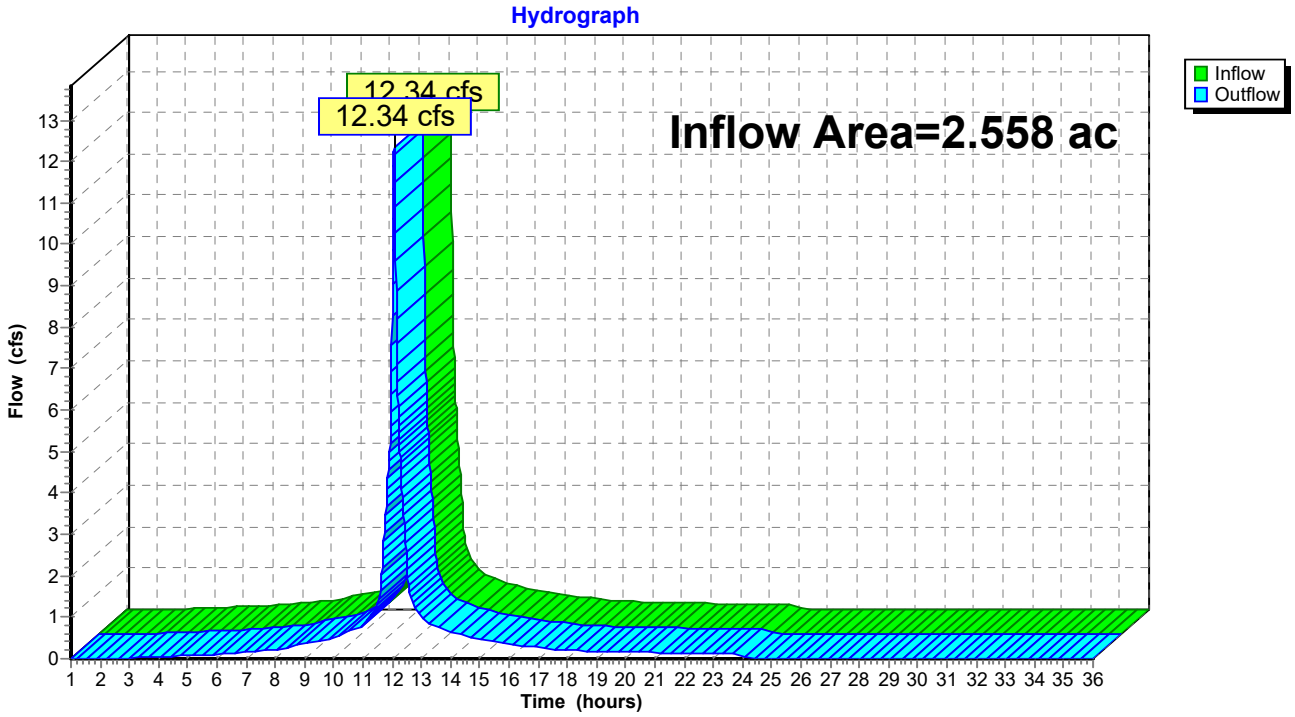


## Summary for Reach 8R: Saco River

Inflow Area = 2.558 ac, 54.80% Impervious, Inflow Depth = 4.32" for 10-year event
Inflow = 12.34 cfs @ 12.07 hrs, Volume= 0.921 af
Outflow = 12.34 cfs @ 12.07 hrs, Volume= 0.921 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

### Reach 8R: Saco River



## Summary for Pond 5P: Ex. DMH

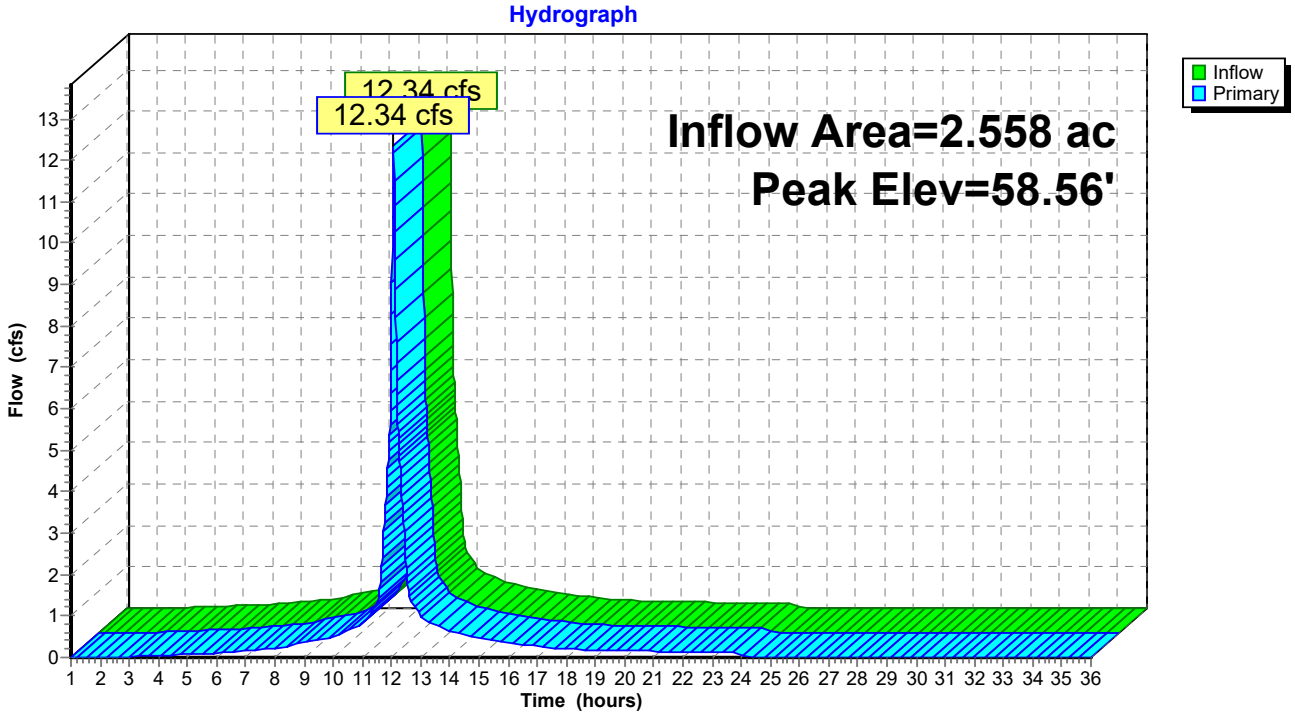
Inflow Area = 2.558 ac, 54.80% Impervious, Inflow Depth = 4.32" for 10-year event
Inflow = 12.34 cfs @ 12.07 hrs, Volume= 0.921 af
Outflow = 12.34 cfs @ 12.07 hrs, Volume= 0.921 af, Atten= 0%, Lag= 0.0 min
Primary = 12.34 cfs @ 12.07 hrs, Volume= 0.921 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 58.56' @ 12.07 hrs
Flood Elev= 55.50'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 47.40' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=12.34 cfs @ 12.07 hrs HW=58.55' TW=0.00' (Dynamic Tailwater)
└**1=Orifice/Grate** (Orifice Controls 12.34 cfs @ 15.71 fps)

### Pond 5P: Ex. DMH



## Summary for Subcatchment 4S: Subcatchment #1

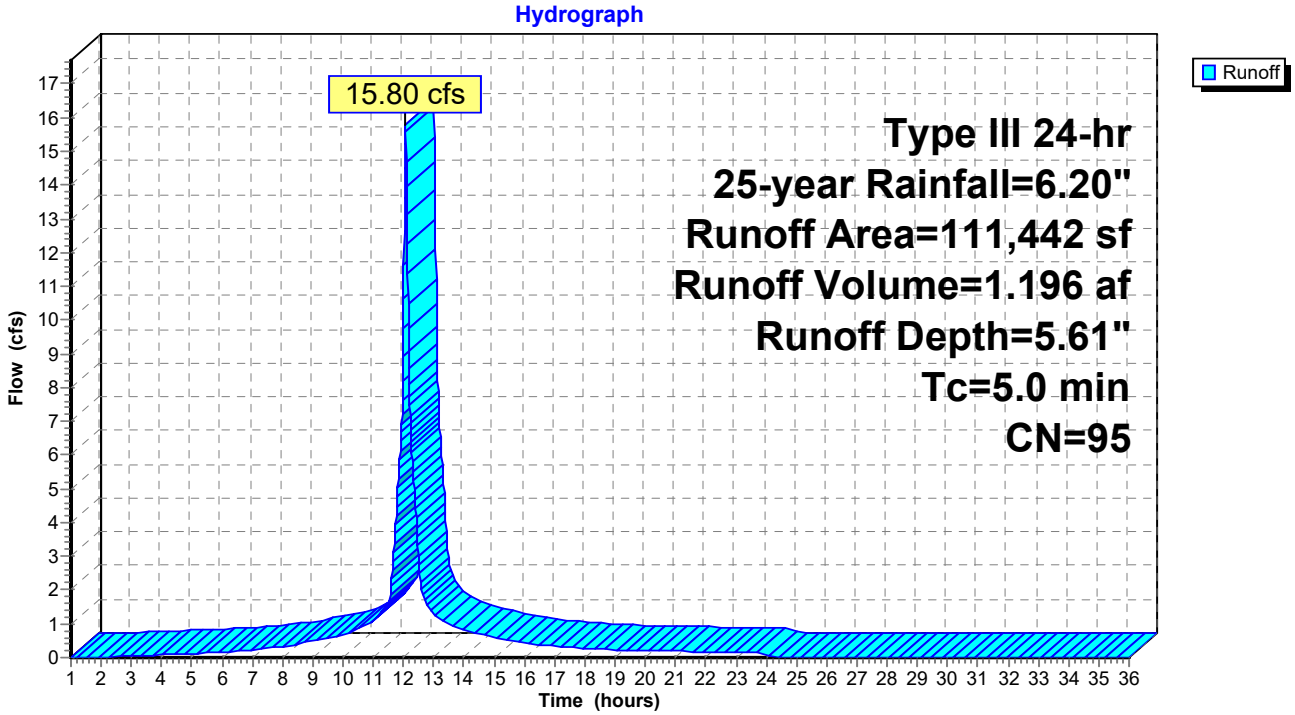
Runoff = 15.80 cfs @ 12.07 hrs, Volume= 1.196 af, Depth= 5.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 46,230 | 96 | Gravel surface, HSG A |
| | 32,836 | 98 | Paved roads w/curbs & sewers, HSG A |
| | 4,147 | 39 | >75% Grass cover, Good, HSG A |
| * | 28,229 | 98 | Roof |
| | 111,442 | 95 | Weighted Average |
| | 50,377 | | 45.20% Pervious Area |
| | 61,065 | | 54.80% Impervious Area |

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

### Subcatchment 4S: Subcatchment #1

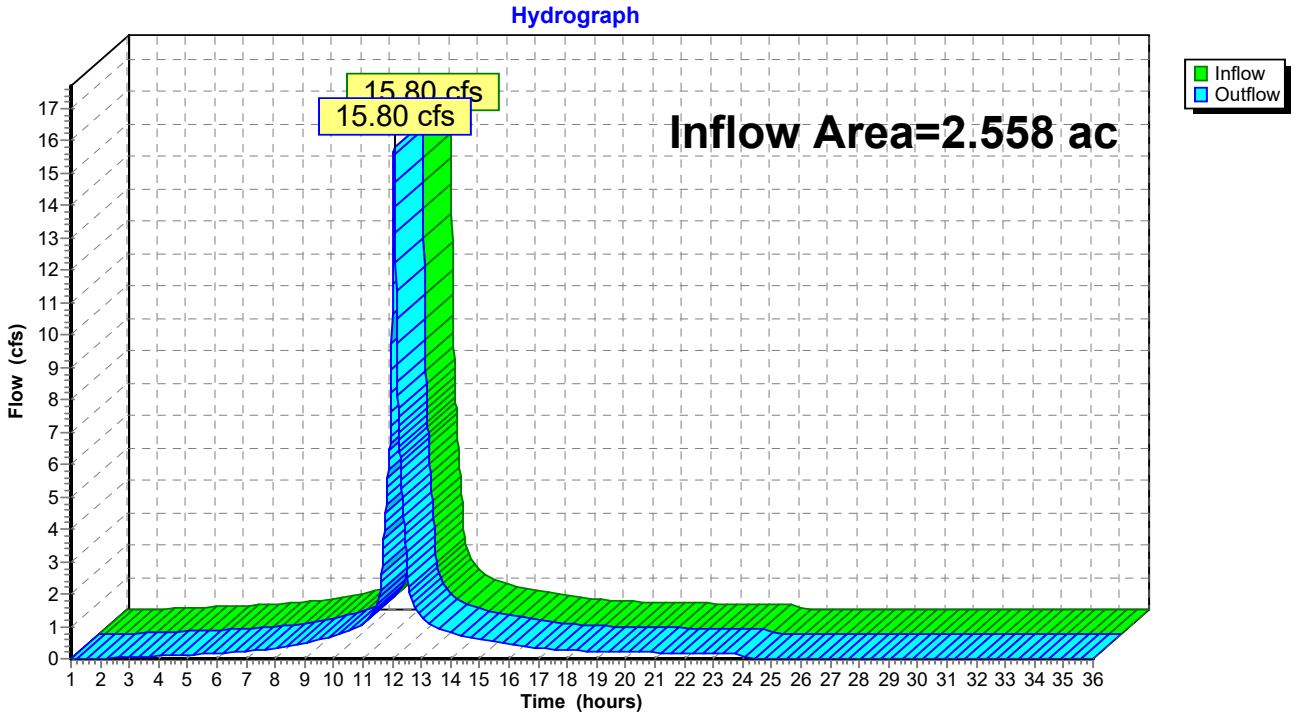


## Summary for Reach 8R: Saco River

Inflow Area = 2.558 ac, 54.80% Impervious, Inflow Depth = 5.61" for 25-year event
Inflow = 15.80 cfs @ 12.07 hrs, Volume= 1.196 af
Outflow = 15.80 cfs @ 12.07 hrs, Volume= 1.196 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

### Reach 8R: Saco River



## Summary for Pond 5P: Ex. DMH

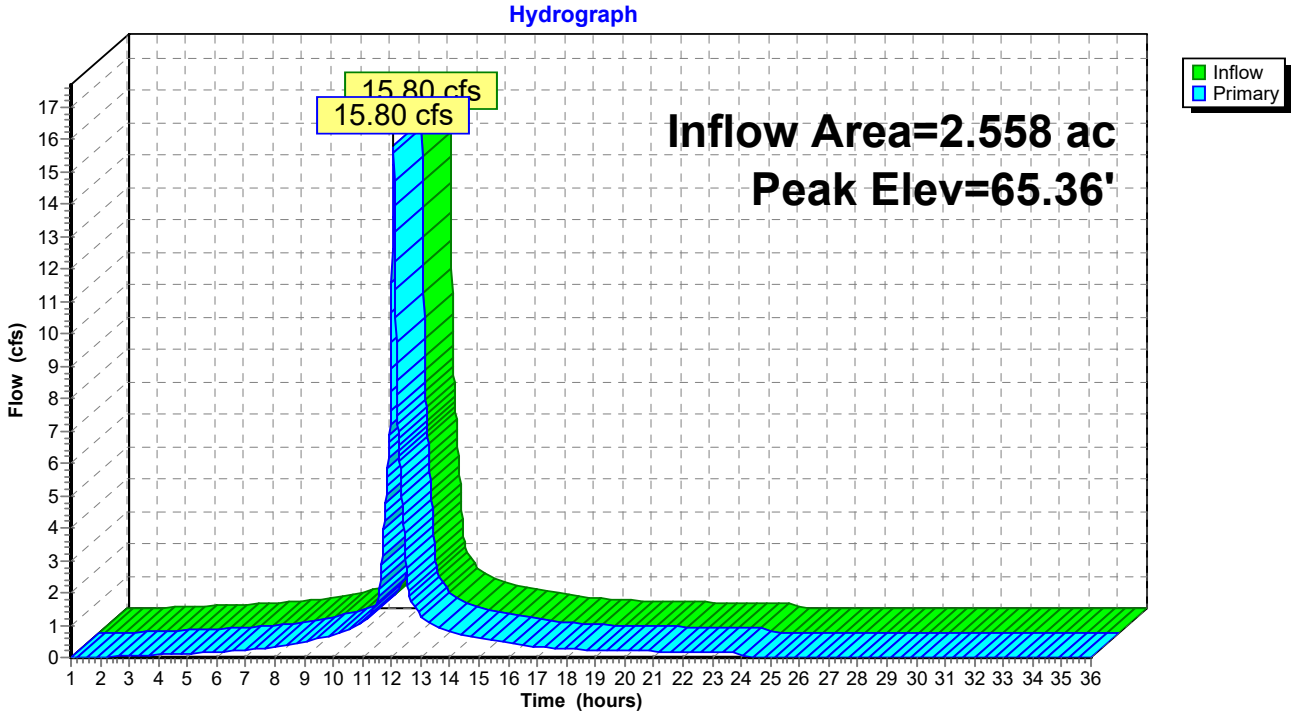
Inflow Area = 2.558 ac, 54.80% Impervious, Inflow Depth = 5.61" for 25-year event
Inflow = 15.80 cfs @ 12.07 hrs, Volume= 1.196 af
Outflow = 15.80 cfs @ 12.07 hrs, Volume= 1.196 af, Atten= 0%, Lag= 0.0 min
Primary = 15.80 cfs @ 12.07 hrs, Volume= 1.196 af

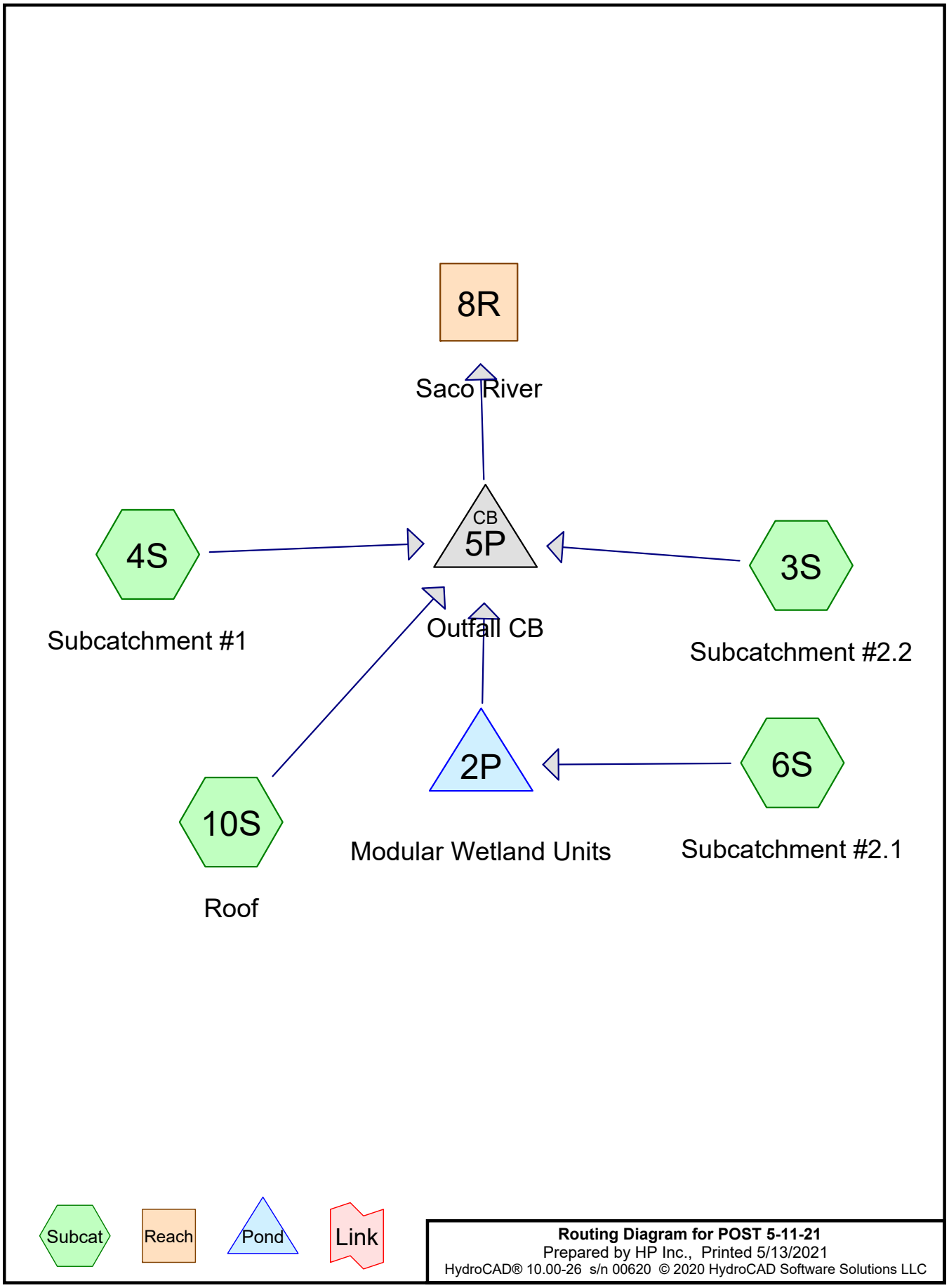
Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 65.36' @ 12.07 hrs
Flood Elev= 55.50'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 47.40' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=15.80 cfs @ 12.07 hrs HW=65.36' TW=0.00' (Dynamic Tailwater)
└**1=Orifice/Grate** (Orifice Controls 15.80 cfs @ 20.12 fps)

### Pond 5P: Ex. DMH




8R
Saco River
CB
5P
Outfall CB
4S
Subcatchment #1
3S
Subcatchment #2.2
2P
Modular Wetland Units
6S
Subcatchment #2.1
10S
Roof
Subcat
Reach
Pond
Link
Routing Diagram for POST 5-11-21
Prepared by HP Inc., Printed 5/13/2021
HydroCAD® 10.00-26 s/n 00620 © 2020 HydroCAD Software Solutions LLC

## Area Listing (all nodes)

| Area (acres) | CN | Description (subcatchment-numbers) |
|---|---|---|
| 0.385 | 39 | >75% Grass cover, Good, HSG A (3S, 4S, 6S) |
| 0.220 | 98 | Paved parking, HSG A (4S) |
| 1.236 | 98 | Paved parking, Sidewalks, HSG A (3S, 6S) |
| 0.648 | 98 | Roof (10S) |
| 0.004 | 98 | Roof Addition (4S) |
| 0.065 | 98 | concrete sidewalk (4S) |
| **2.558** | **89** | **TOTAL AREA** |

## Soil Listing (all nodes)

| Area (acres) | Soil Group | Subcatchment Numbers |
|---|---|---|
| 1.841 | HSG A | 3S, 4S, 6S |
| 0.000 | HSG B | |
| 0.000 | HSG C | |
| 0.000 | HSG D | |
| 0.717 | Other | 4S, 10S |
| **2.558** | | **TOTAL AREA** |

## Ground Covers (all nodes)

| HSG-A (acres) | HSG-B (acres) | HSG-C (acres) | HSG-D (acres) | Other (acres) | Total (acres) | Ground Cover | Subcatchment Numbers |
|---|---|---|---|---|---|---|---|
| 0.385 | 0.000 | 0.000 | 0.000 | 0.000 | 0.385 | >75% Grass cover, Good | 3S, 4S, 6S |
| 0.220 | 0.000 | 0.000 | 0.000 | 0.000 | 0.220 | Paved parking | 4S |
| 1.236 | 0.000 | 0.000 | 0.000 | 0.000 | 1.236 | Paved parking, Sidewalks | 3S, 6S |
| 0.000 | 0.000 | 0.000 | 0.000 | 0.648 | 0.648 | Roof | 10S |
| 0.000 | 0.000 | 0.000 | 0.000 | 0.004 | 0.004 | Roof Addition | 4S |
| 0.000 | 0.000 | 0.000 | 0.000 | 0.065 | 0.065 | concrete sidewalk | 4S |
| **1.841** | **0.000** | **0.000** | **0.000** | **0.717** | **2.558** | **TOTAL AREA** | |

Time span=1.00-36.00 hrs, dt=0.01 hrs, 3501 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 3S: Subcatchment #2.2** Runoff Area=17,427 sf 72.59% Impervious Runoff Depth=1.62"
Tc=5.0 min CN=82 Runoff=0.79 cfs 0.054 af

**Subcatchment 4S: Subcatchment #1** Runoff Area=18,752 sf 67.27% Impervious Runoff Depth=1.41"
Tc=5.0 min CN=79 Runoff=0.73 cfs 0.051 af

**Subcatchment 6S: Subcatchment #2.1** Runoff Area=47,034 sf 87.55% Impervious Runoff Depth=2.35"
Flow Length=251' Tc=15.2 min CN=91 Runoff=2.21 cfs 0.212 af

**Subcatchment 10S: Roof** Runoff Area=28,229 sf 100.00% Impervious Runoff Depth=3.07"
Tc=5.0 min CN=98 Runoff=2.15 cfs 0.166 af

**Reach 8R: Saco River** Inflow=5.11 cfs 0.480 af
Outflow=5.11 cfs 0.480 af

**Pond 2P: Modular Wetland Units** Peak Elev=52.29' Storage=692 cf Inflow=2.21 cfs 0.212 af
Outflow=2.21 cfs 0.210 af

**Pond 5P: Outfall CB** Peak Elev=49.73' Inflow=5.11 cfs 0.480 af
Outflow=5.11 cfs 0.480 af

**Total Runoff Area = 2.558 ac Runoff Volume = 0.482 af Average Runoff Depth = 2.26"**
**15.05% Pervious = 0.385 ac 84.95% Impervious = 2.173 ac**

## Summary for Subcatchment 3S: Subcatchment #2.2

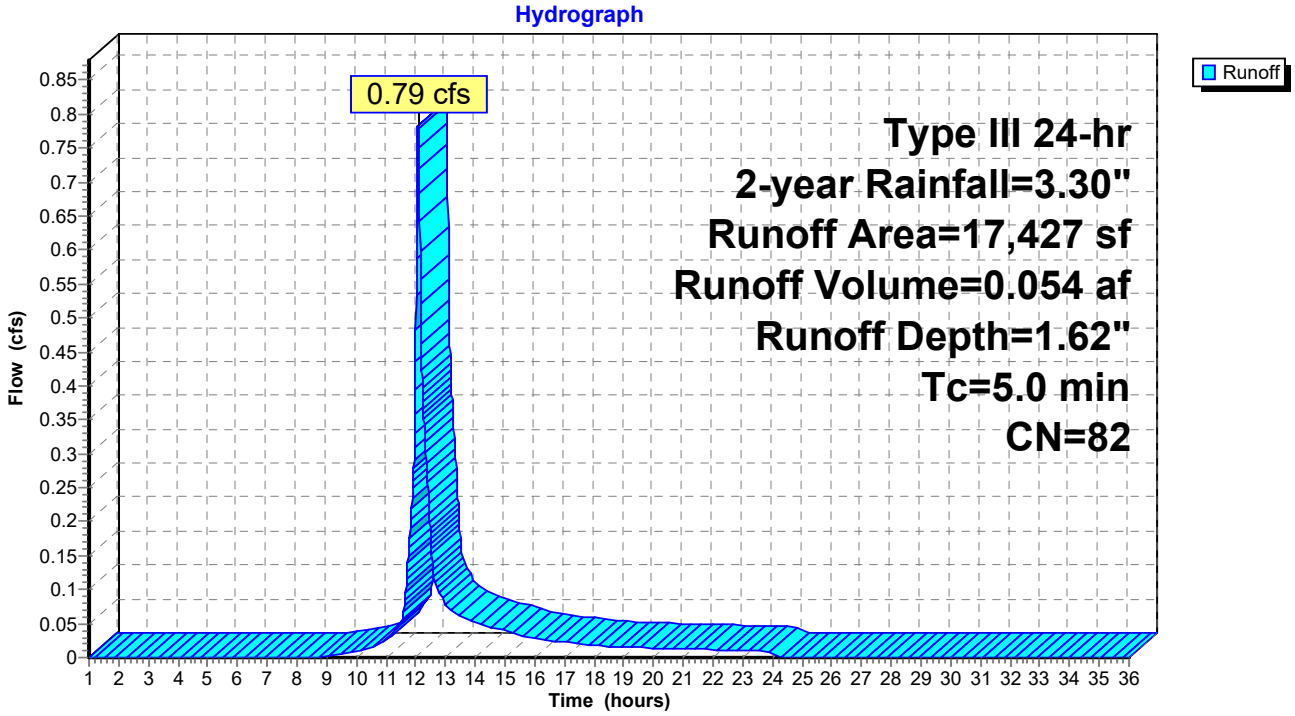
Runoff = 0.79 cfs @ 12.08 hrs, Volume= 0.054 af, Depth= 1.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.30"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 12,651 | 98 | Paved parking, Sidewalks, HSG A |
| | 4,776 | 39 | >75% Grass cover, Good, HSG A |
| | 17,427 | 82 | Weighted Average |
| | 4,776 | | 27.41% Pervious Area |
| | 12,651 | | 72.59% Impervious Area |

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

## Subcatchment 3S: Subcatchment #2.2



## Summary for Subcatchment 4S: Subcatchment #1

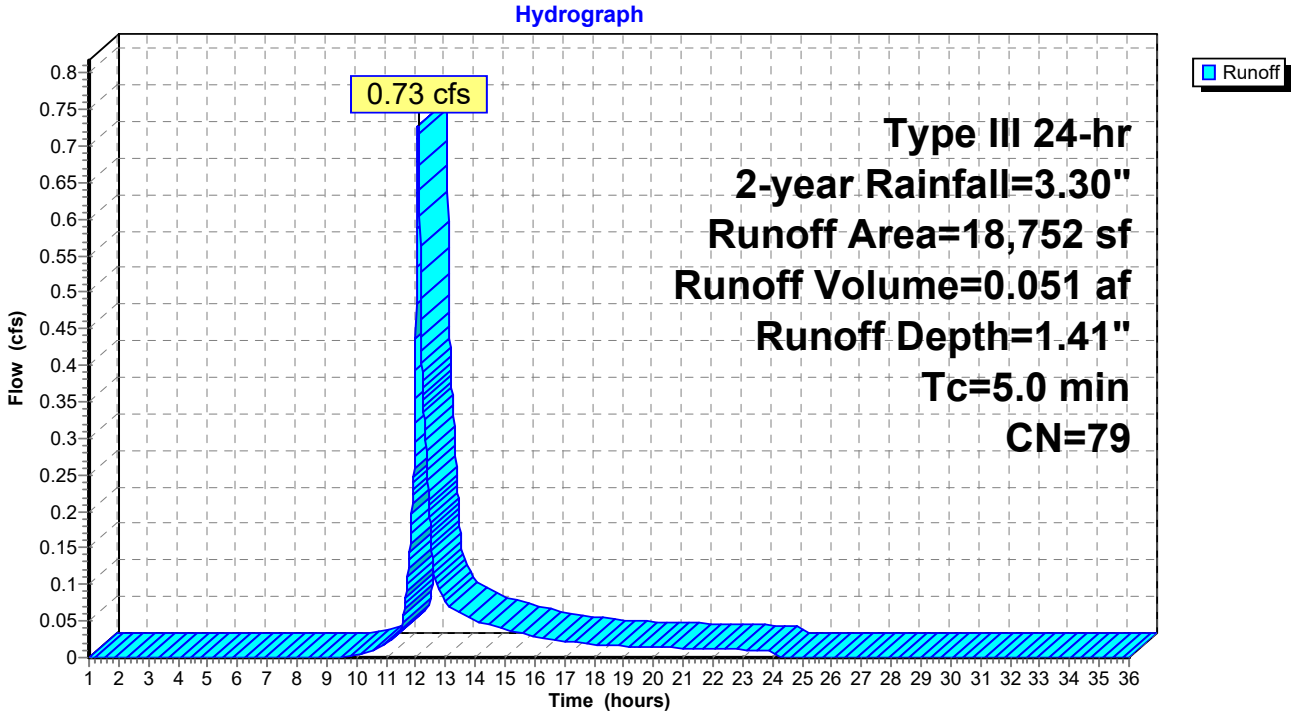
Runoff = 0.73 cfs @ 12.08 hrs, Volume= 0.051 af, Depth= 1.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.30"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 2,840 | 98 | concrete sidewalk |
| | 9,601 | 98 | Paved parking, HSG A |
| | 6,137 | 39 | >75% Grass cover, Good, HSG A |
| * | 174 | 98 | Roof Addition |
| | 18,752 | 79 | Weighted Average |
| | 6,137 | | 32.73% Pervious Area |
| | 12,615 | | 67.27% Impervious Area |

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

### Subcatchment 4S: Subcatchment #1



## Summary for Subcatchment 6S: Subcatchment #2.1

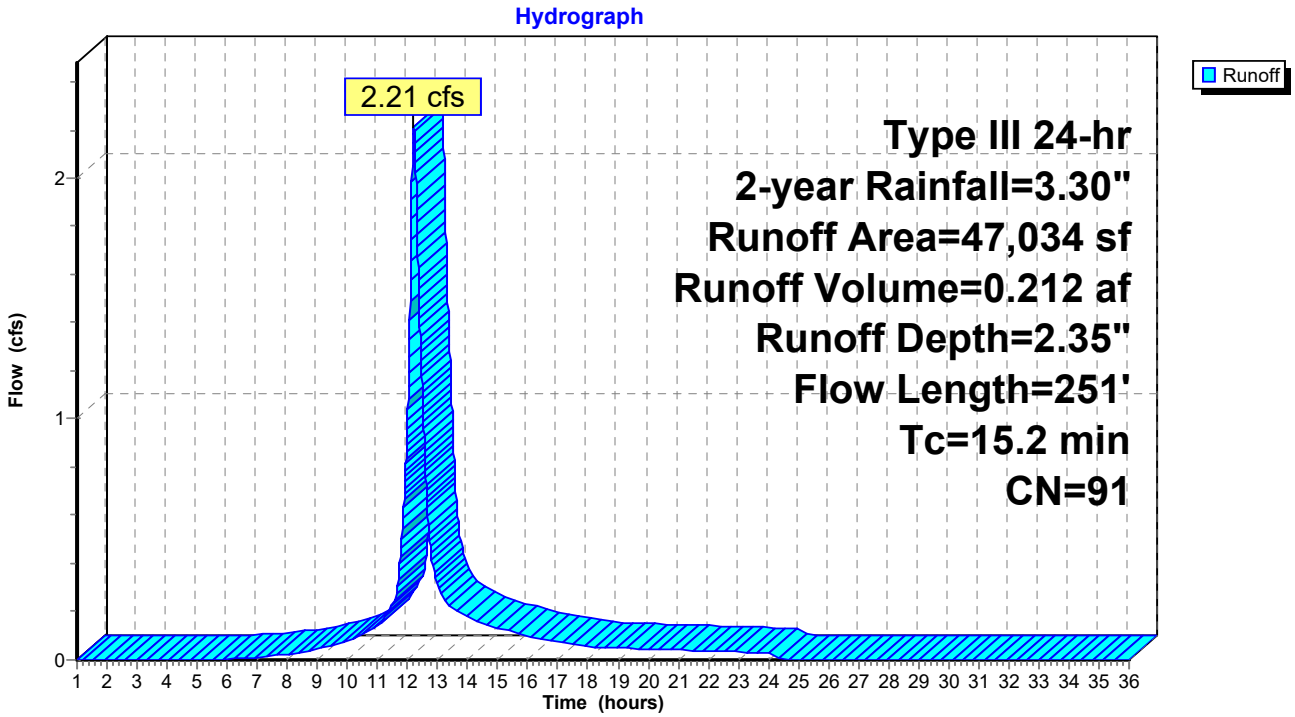
Runoff = 2.21 cfs @ 12.21 hrs, Volume= 0.212 af, Depth= 2.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.30"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 41,178 | 98 | Paved parking, Sidewalks, HSG A |
| | 5,856 | 39 | >75% Grass cover, Good, HSG A |
| | 47,034 | 91 | Weighted Average |
| | 5,856 | | 12.45% Pervious Area |
| | 41,178 | | 87.55% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 14.1 | 150 | 0.0176 | 0.18 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.27" |
| 0.4 | 20 | 0.0176 | 0.93 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 0.7 | 81 | 0.0100 | 2.03 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 15.2 | 251 | Total | | | |

### Subcatchment 6S: Subcatchment #2.1



## Summary for Subcatchment 10S: Roof

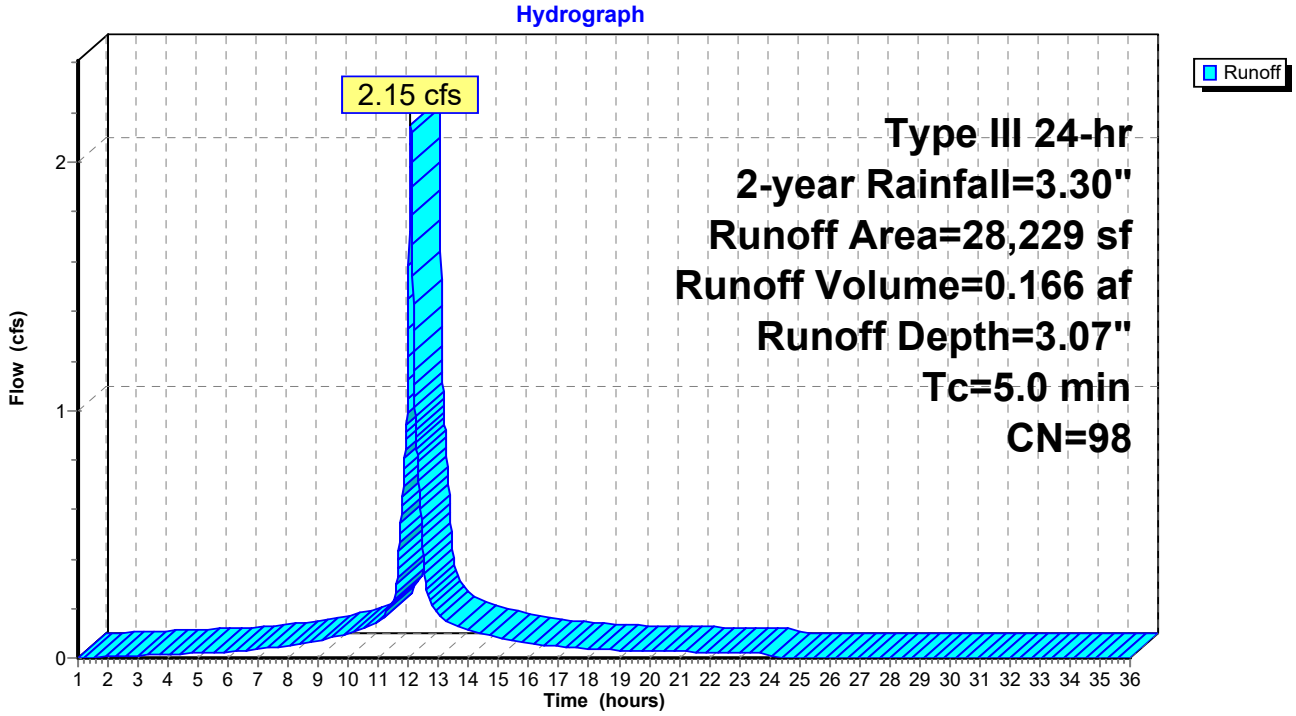
Runoff = 2.15 cfs @ 12.07 hrs, Volume= 0.166 af, Depth= 3.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.30"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 28,229 | 98 | Roof |
| | 28,229 | | 100.00% Impervious Area |

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

### Subcatchment 10S: Roof

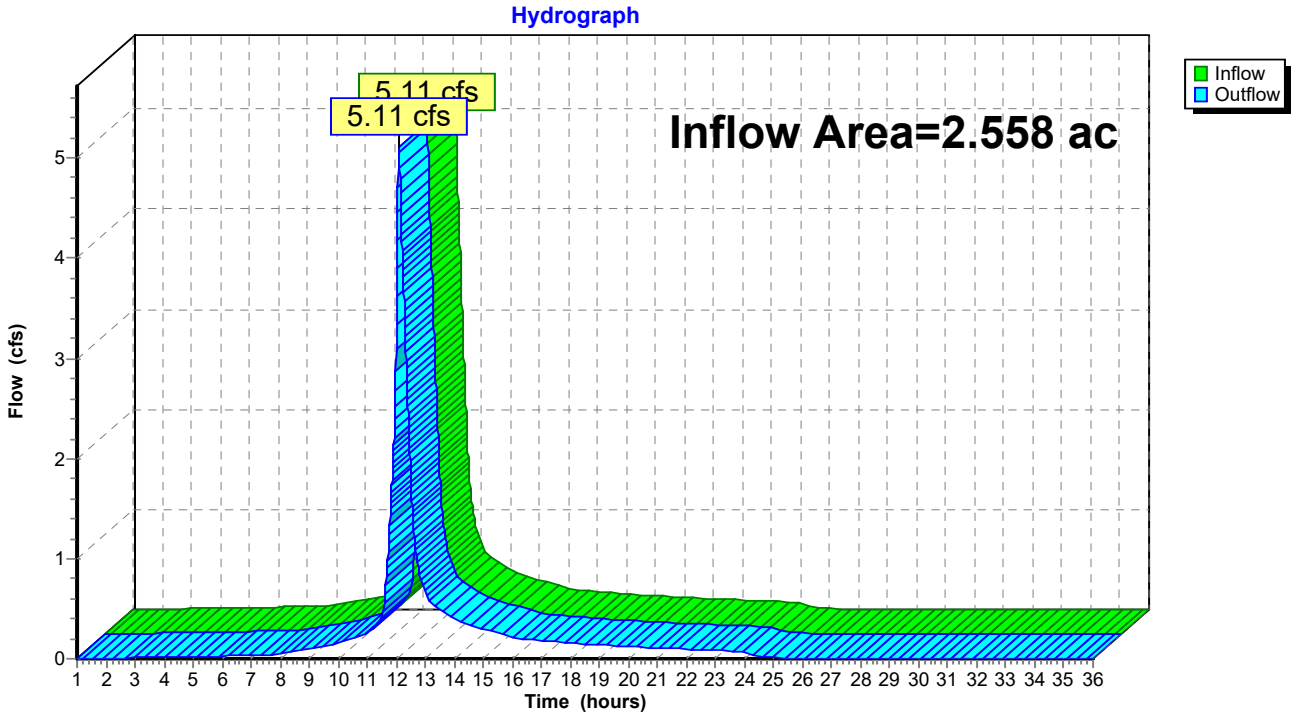


## Summary for Reach 8R: Saco River

Inflow Area = 2.558 ac, 84.95% Impervious, Inflow Depth = 2.25" for 2-year event
Inflow = 5.11 cfs @ 12.09 hrs, Volume= 0.480 af
Outflow = 5.11 cfs @ 12.09 hrs, Volume= 0.480 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

### Reach 8R: Saco River



## Summary for Pond 2P: Modular Wetland Units

Inflow Area = 1.080 ac, 87.55% Impervious, Inflow Depth = 2.35" for 2-year event
Inflow = 2.21 cfs @ 12.21 hrs, Volume= 0.212 af
Outflow = 2.21 cfs @ 12.21 hrs, Volume= 0.210 af, Atten= 0%, Lag= 0.1 min
Primary = 2.21 cfs @ 12.21 hrs, Volume= 0.210 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 52.29' @ 12.21 hrs Surf.Area= 384 sf Storage= 692 cf

Plug-Flow detention time= 43.6 min calculated for 0.210 af (99% of inflow)
Center-of-Mass det. time= 38.5 min ( 848.3 - 809.9 )

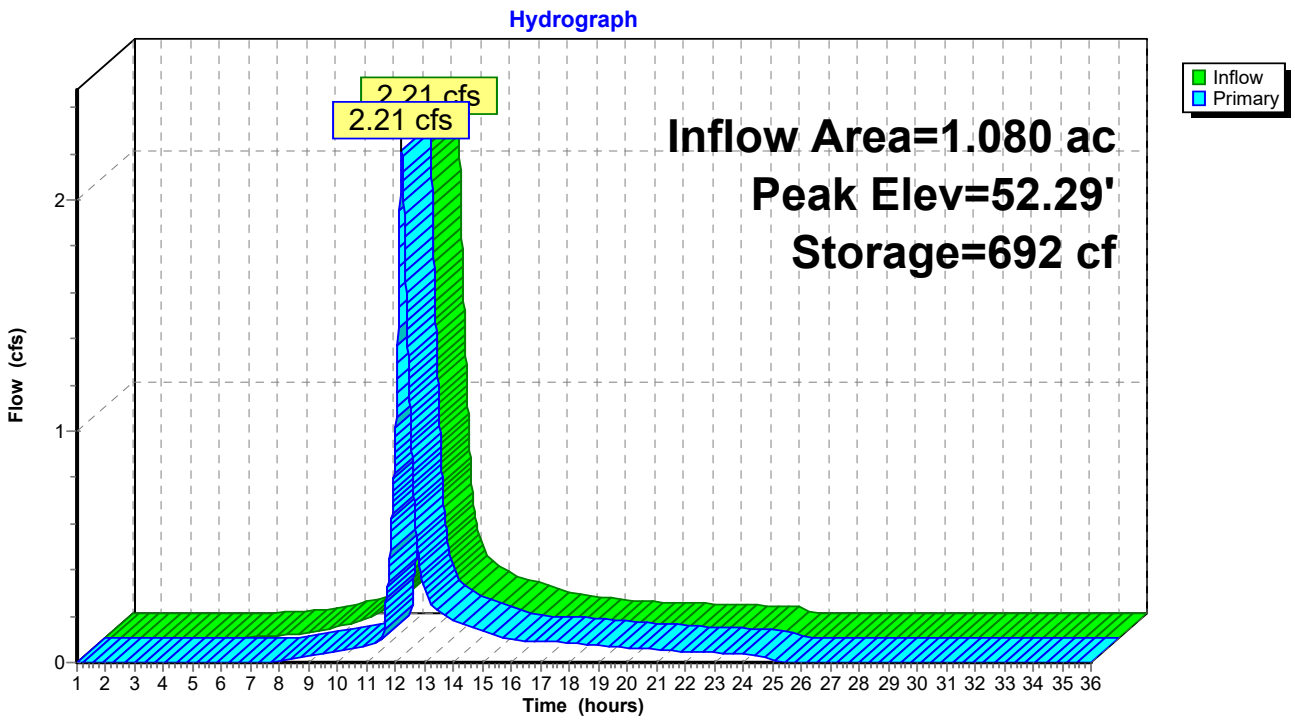
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 47.78' | 611 cf | **Modular Wetland Units w/ CB inlet (Prismatic)** Listed below (Recalc)<br>1,527 cf Overall x 40.0% Voids |
| | | 611 cf | x 2.00 = 1,221 cf Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 47.78 | 192 | 0 | 0 |
| 48.00 | 192 | 42 | 42 |
| 49.00 | 192 | 192 | 234 |
| 50.00 | 192 | 192 | 426 |
| 51.00 | 192 | 192 | 618 |
| 52.00 | 192 | 192 | 810 |
| 53.00 | 192 | 192 | 1,002 |
| 54.00 | 192 | 192 | 1,194 |
| 55.00 | 192 | 192 | 1,386 |
| 55.40 | 192 | 77 | 1,463 |
| 56.00 | 20 | 64 | 1,527 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 47.75' | **12.0" Vert. 12" Outlet** C= 0.600 |
| #2 | Device 1 | 48.28' | **1.4" Vert. Orifice** C= 0.600 |
| #3 | Device 1 | 52.08' | **42.0" W x 45.6" H Vert. Weir** C= 0.600 |
| #4 | Primary | 51.75' | **12.0" Vert. CB Emergency Overflow Pipe** C= 0.600 |

**Primary OutFlow** Max=2.21 cfs @ 12.21 hrs HW=52.29' TW=49.04' (Dynamic Tailwater)
- **1=12" Outlet** (Passes 1.14 cfs of 6.82 cfs potential flow)
  - **2=Orifice** (Orifice Controls 0.09 cfs @ 8.68 fps)
  - **3=Weir** (Orifice Controls 1.05 cfs @ 1.46 fps)
- **4=CB Emergency Overflow Pipe** (Orifice Controls 1.07 cfs @ 2.49 fps)

## Pond 2P: Modular Wetland Units



## Summary for Pond 5P: Outfall CB

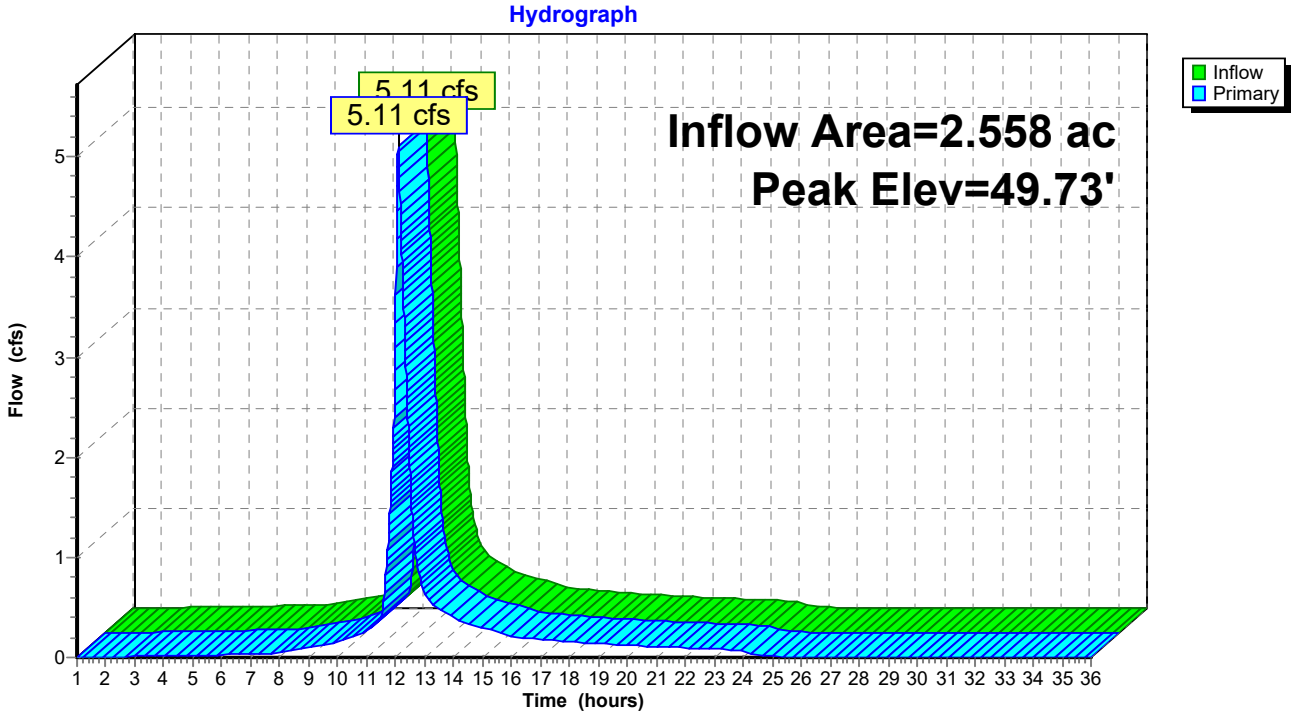
Inflow Area = 2.558 ac, 84.95% Impervious, Inflow Depth = 2.25" for 2-year event
Inflow = 5.11 cfs @ 12.09 hrs, Volume= 0.480 af
Outflow = 5.11 cfs @ 12.09 hrs, Volume= 0.480 af, Atten= 0%, Lag= 0.0 min
Primary = 5.11 cfs @ 12.09 hrs, Volume= 0.480 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 49.73' @ 12.09 hrs
Flood Elev= 55.50'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 47.40' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=5.11 cfs @ 12.09 hrs HW=49.72' TW=0.00' (Dynamic Tailwater)
└**1=Orifice/Grate** (Orifice Controls 5.11 cfs @ 6.50 fps)

### Pond 5P: Outfall CB



## Summary for Subcatchment 3S: Subcatchment #2.2

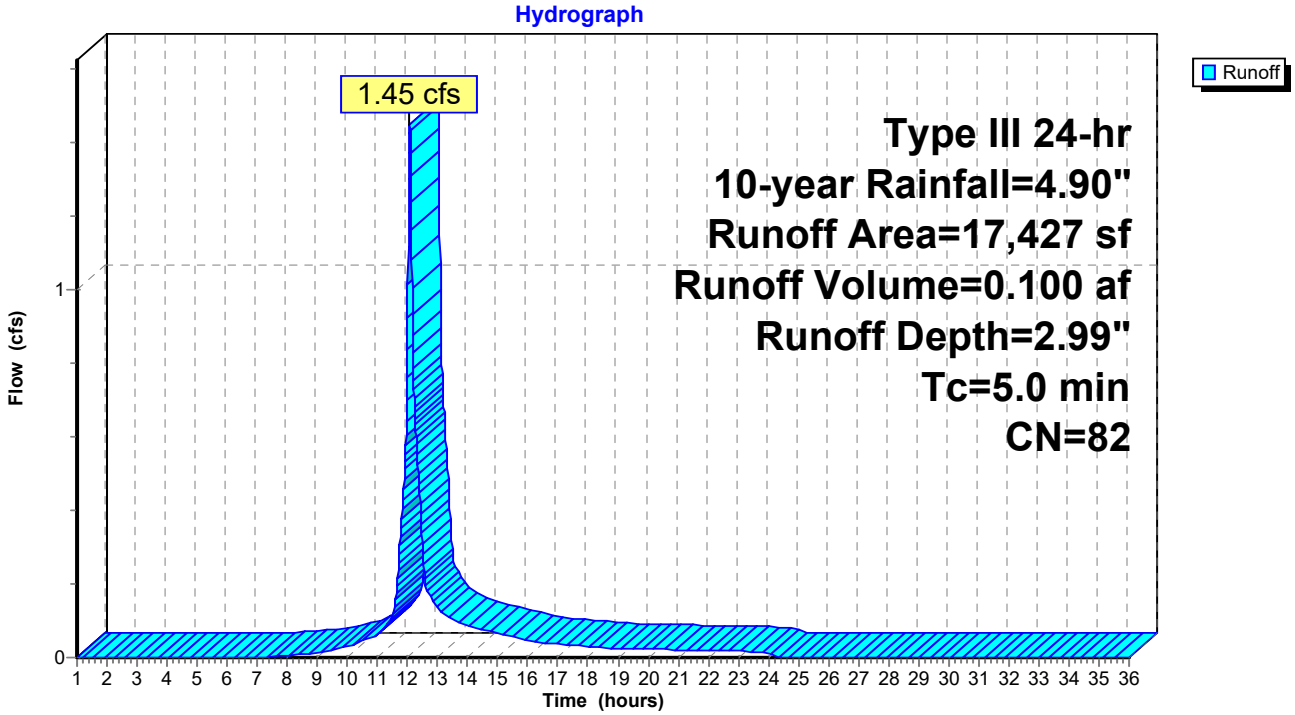
Runoff = 1.45 cfs @ 12.07 hrs, Volume= 0.100 af, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.90"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 12,651 | 98 | Paved parking, Sidewalks, HSG A |
| | 4,776 | 39 | >75% Grass cover, Good, HSG A |
| | 17,427 | 82 | Weighted Average |
| | 4,776 | | 27.41% Pervious Area |
| | 12,651 | | 72.59% Impervious Area |

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

## Subcatchment 3S: Subcatchment #2.2



## Summary for Subcatchment 4S: Subcatchment #1

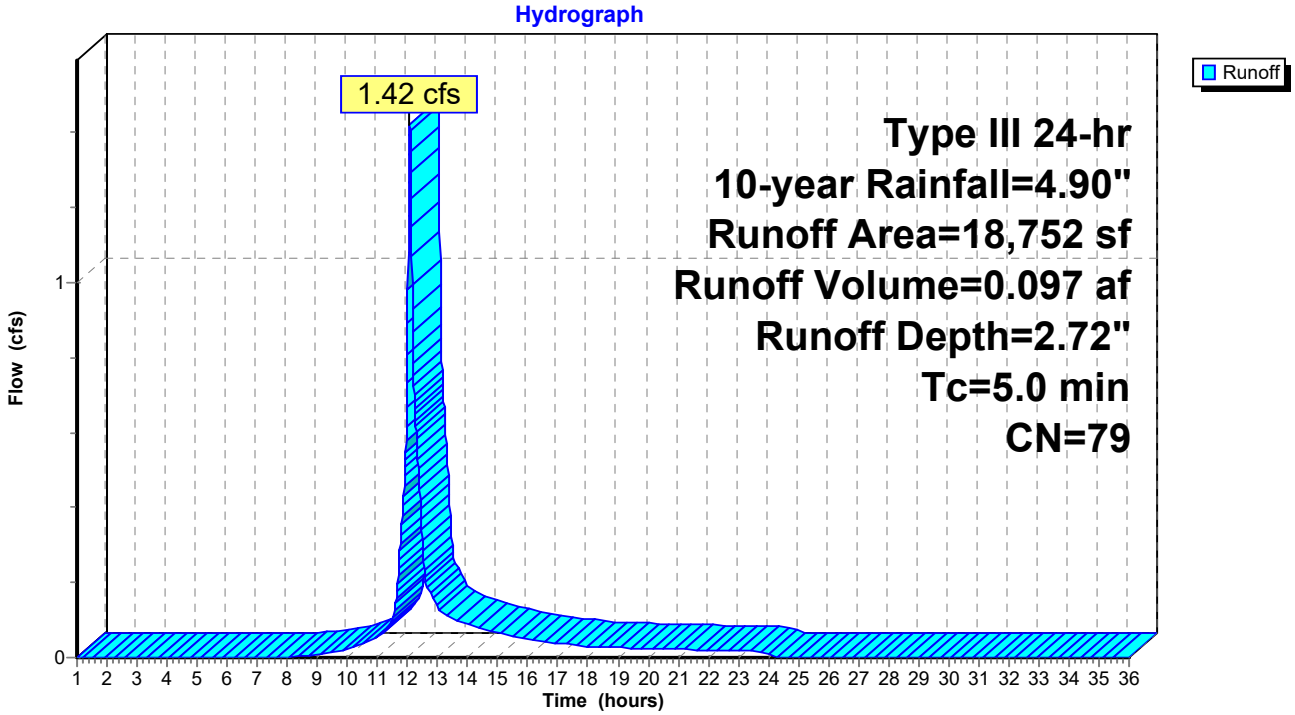
Runoff = 1.42 cfs @ 12.07 hrs, Volume= 0.097 af, Depth= 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.90"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 2,840 | 98 | concrete sidewalk |
| | 9,601 | 98 | Paved parking, HSG A |
| | 6,137 | 39 | >75% Grass cover, Good, HSG A |
| * | 174 | 98 | Roof Addition |
| | 18,752 | 79 | Weighted Average |
| | 6,137 | | 32.73% Pervious Area |
| | 12,615 | | 67.27% Impervious Area |

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

### Subcatchment 4S: Subcatchment #1



## Summary for Subcatchment 6S: Subcatchment #2.1

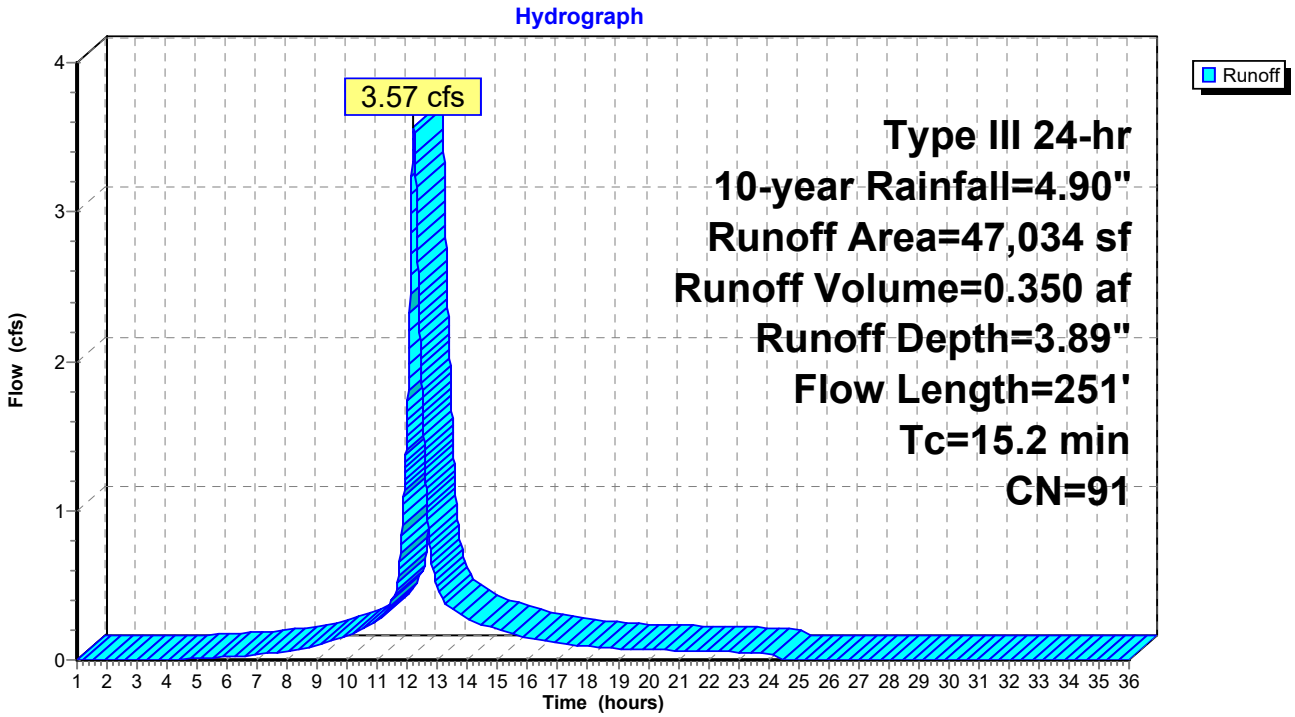
Runoff = 3.57 cfs @ 12.20 hrs, Volume= 0.350 af, Depth= 3.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.90"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 41,178 | 98 | Paved parking, Sidewalks, HSG A |
| | 5,856 | 39 | >75% Grass cover, Good, HSG A |
| | 47,034 | 91 | Weighted Average |
| | 5,856 | | 12.45% Pervious Area |
| | 41,178 | | 87.55% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 14.1 | 150 | 0.0176 | 0.18 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.27" |
| 0.4 | 20 | 0.0176 | 0.93 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 0.7 | 81 | 0.0100 | 2.03 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 15.2 | 251 | Total | | | |

### Subcatchment 6S: Subcatchment #2.1



## Summary for Subcatchment 10S: Roof

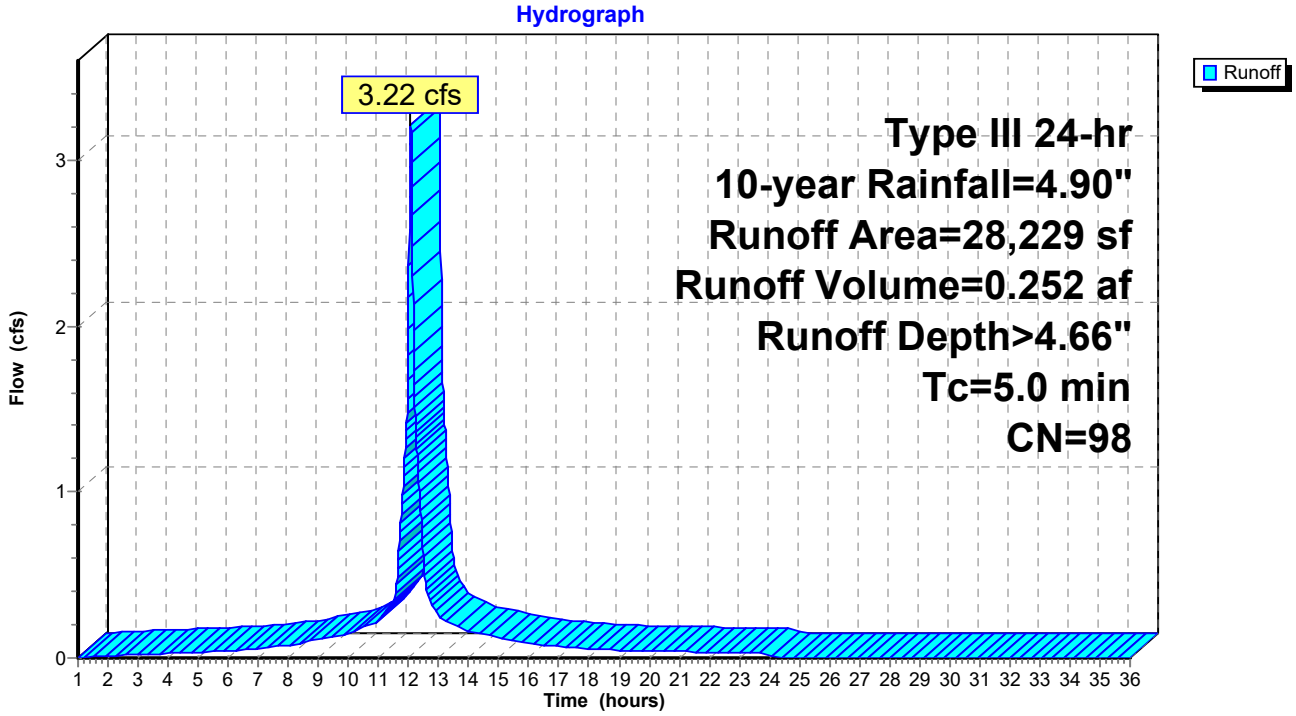
Runoff = 3.22 cfs @ 12.07 hrs, Volume= 0.252 af, Depth> 4.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.90"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 28,229 | 98 | Roof |
| | 28,229 | | 100.00% Impervious Area |

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

### Subcatchment 10S: Roof

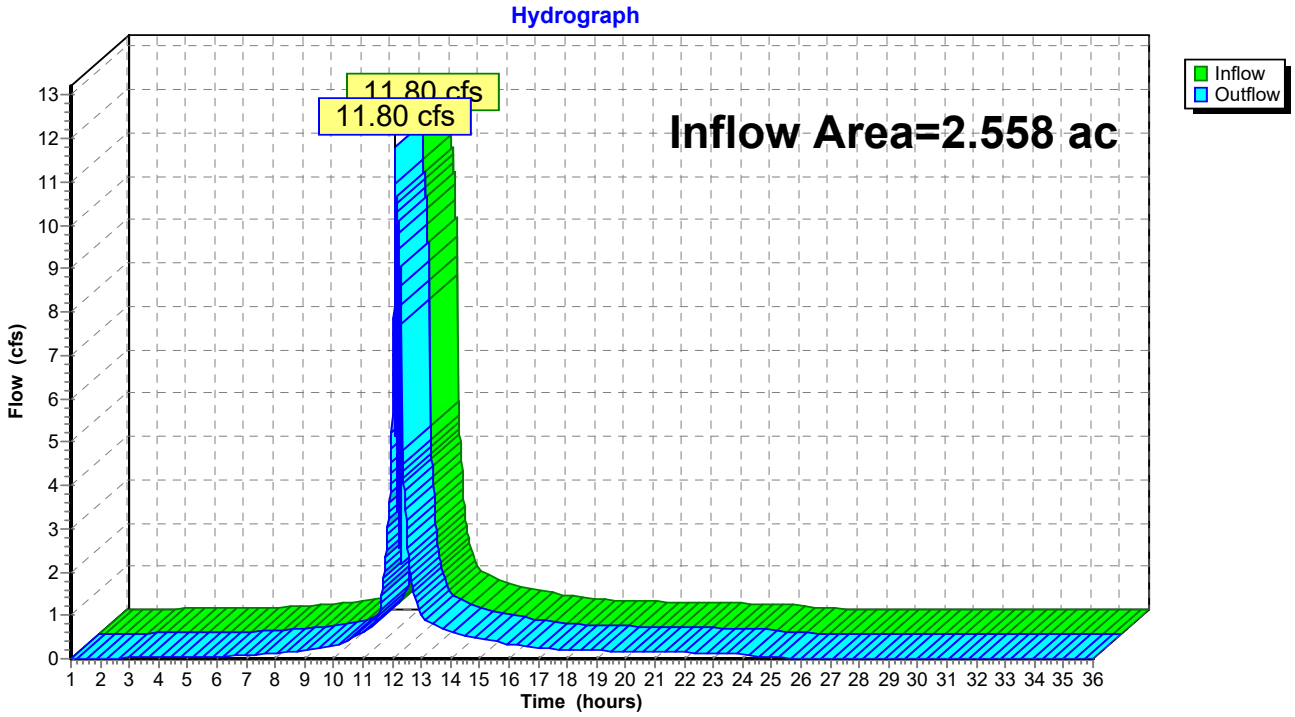


## Summary for Reach 8R: Saco River

Inflow Area = 2.558 ac, 84.95% Impervious, Inflow Depth > 3.74" for 10-year event
Inflow = 11.80 cfs @ 12.09 hrs, Volume= 0.797 af
Outflow = 11.80 cfs @ 12.09 hrs, Volume= 0.797 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

### Reach 8R: Saco River



## Summary for Pond 2P: Modular Wetland Units

Inflow Area = 1.080 ac, 87.55% Impervious, Inflow Depth = 3.89" for 10-year event
Inflow = 3.57 cfs @ 12.20 hrs, Volume= 0.350 af
Outflow = 7.15 cfs @ 12.21 hrs, Volume= 0.348 af, Atten= 0%, Lag= 0.3 min
Primary = 7.15 cfs @ 12.21 hrs, Volume= 0.348 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 52.67' @ 12.08 hrs Surf.Area= 384 sf Storage= 751 cf

Plug-Flow detention time= 35.2 min calculated for 0.348 af (99% of inflow)
Center-of-Mass det. time= 31.8 min ( 827.9 - 796.0 )

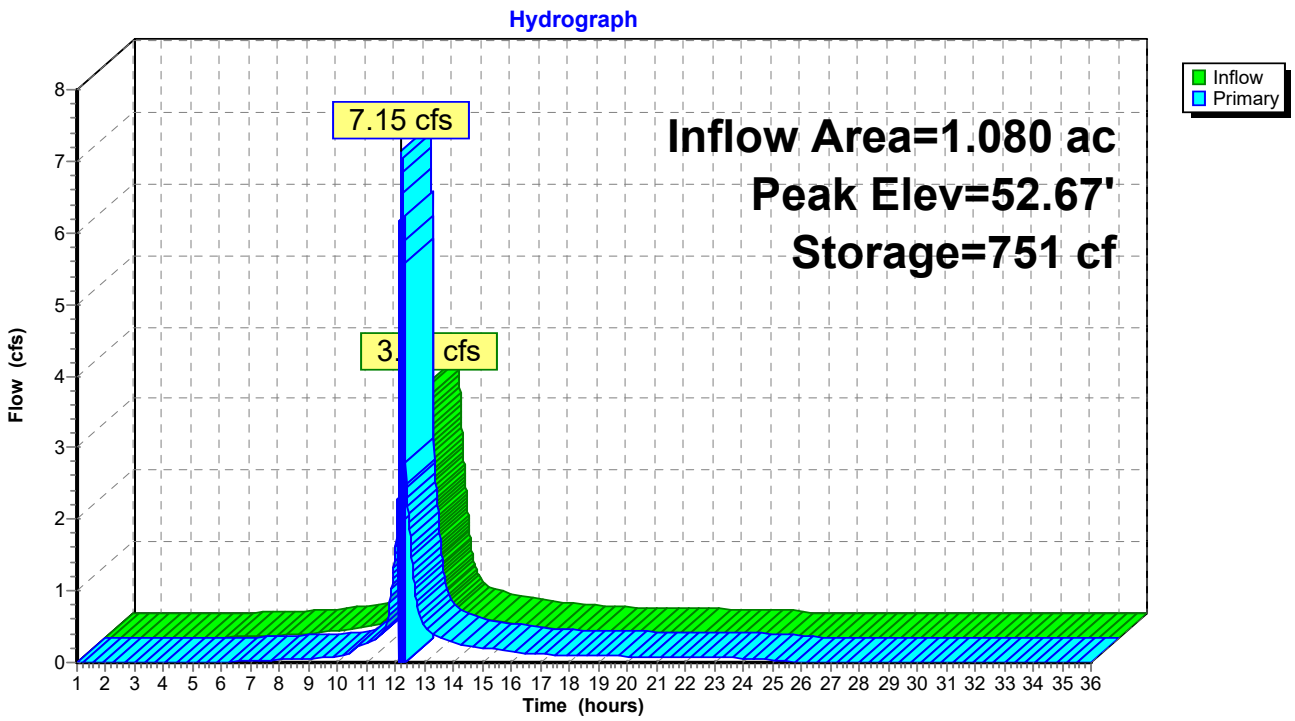
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 47.78' | 611 cf | **Modular Wetland Units w/ CB inlet (Prismatic)** Listed below (Recalc)<br>1,527 cf Overall x 40.0% Voids |
| | | 611 cf | x 2.00 = 1,221 cf Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 47.78 | 192 | 0 | 0 |
| 48.00 | 192 | 42 | 42 |
| 49.00 | 192 | 192 | 234 |
| 50.00 | 192 | 192 | 426 |
| 51.00 | 192 | 192 | 618 |
| 52.00 | 192 | 192 | 810 |
| 53.00 | 192 | 192 | 1,002 |
| 54.00 | 192 | 192 | 1,194 |
| 55.00 | 192 | 192 | 1,386 |
| 55.40 | 192 | 77 | 1,463 |
| 56.00 | 20 | 64 | 1,527 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 47.75' | **12.0" Vert. 12" Outlet** C= 0.600 |
| #2 | Device 1 | 48.28' | **1.4" Vert. Orifice** C= 0.600 |
| #3 | Device 1 | 52.08' | **42.0" W x 45.6" H Vert. Weir** C= 0.600 |
| #4 | Primary | 51.75' | **12.0" Vert. CB Emergency Overflow Pipe** C= 0.600 |

**Primary OutFlow** Max=0.00 cfs @ 12.21 hrs HW=52.64' TW=55.05' (Dynamic Tailwater)
- **1=12" Outlet** ( Controls 0.00 cfs)
  - **2=Orifice** ( Controls 0.00 cfs)
  - **3=Weir** ( Controls 0.00 cfs)
- **4=CB Emergency Overflow Pipe** ( Controls 0.00 cfs)

## Pond 2P: Modular Wetland Units



## Summary for Pond 5P: Outfall CB

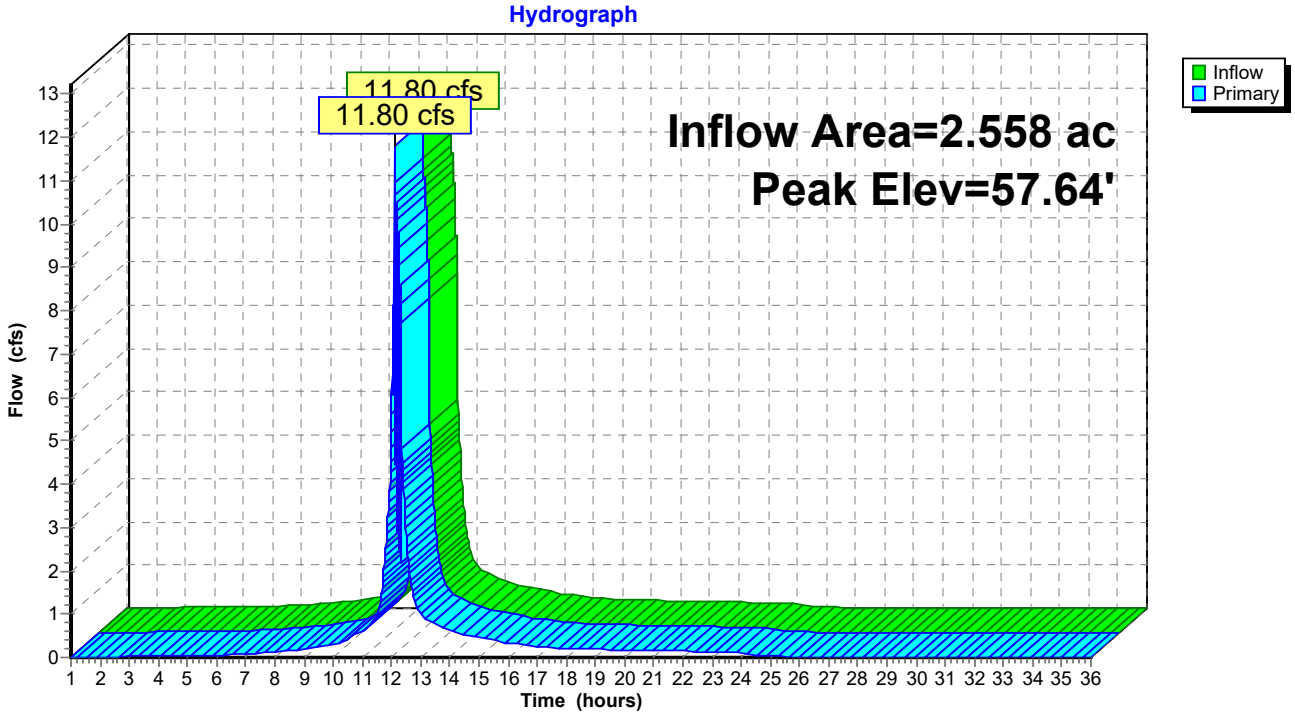
Inflow Area = 2.558 ac, 84.95% Impervious, Inflow Depth > 3.74" for 10-year event
Inflow = 11.80 cfs @ 12.09 hrs, Volume= 0.797 af
Outflow = 11.80 cfs @ 12.09 hrs, Volume= 0.797 af, Atten= 0%, Lag= 0.0 min
Primary = 11.80 cfs @ 12.09 hrs, Volume= 0.797 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 57.64' @ 12.09 hrs
Flood Elev= 55.50'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 47.40' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=11.74 cfs @ 12.09 hrs HW=57.54' TW=0.00' (Dynamic Tailwater)
└**1=Orifice/Grate** (Orifice Controls 11.74 cfs @ 14.95 fps)

### Pond 5P: Outfall CB



## Summary for Subcatchment 3S: Subcatchment #2.2

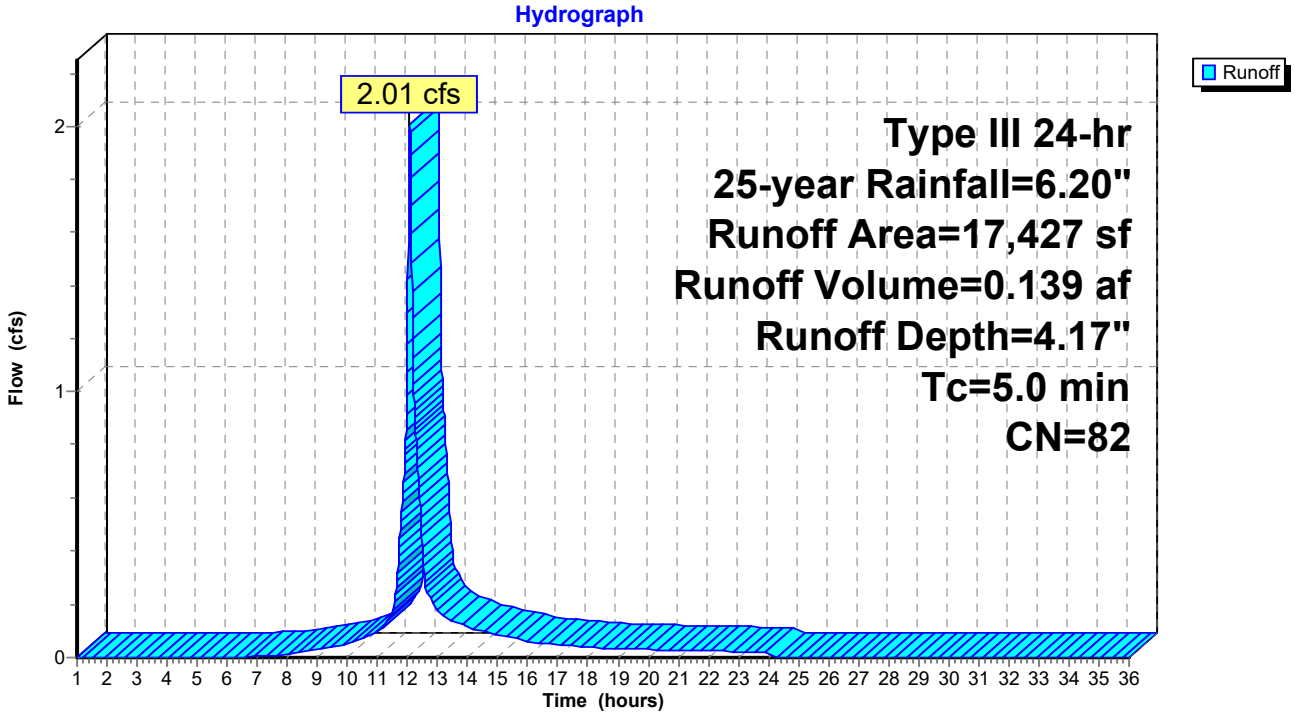
Runoff = 2.01 cfs @ 12.07 hrs, Volume= 0.139 af, Depth= 4.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 12,651 | 98 | Paved parking, Sidewalks, HSG A |
| | 4,776 | 39 | >75% Grass cover, Good, HSG A |
| | 17,427 | 82 | Weighted Average |
| | 4,776 | | 27.41% Pervious Area |
| | 12,651 | | 72.59% Impervious Area |

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

### Subcatchment 3S: Subcatchment #2.2



## Summary for Subcatchment 4S: Subcatchment #1

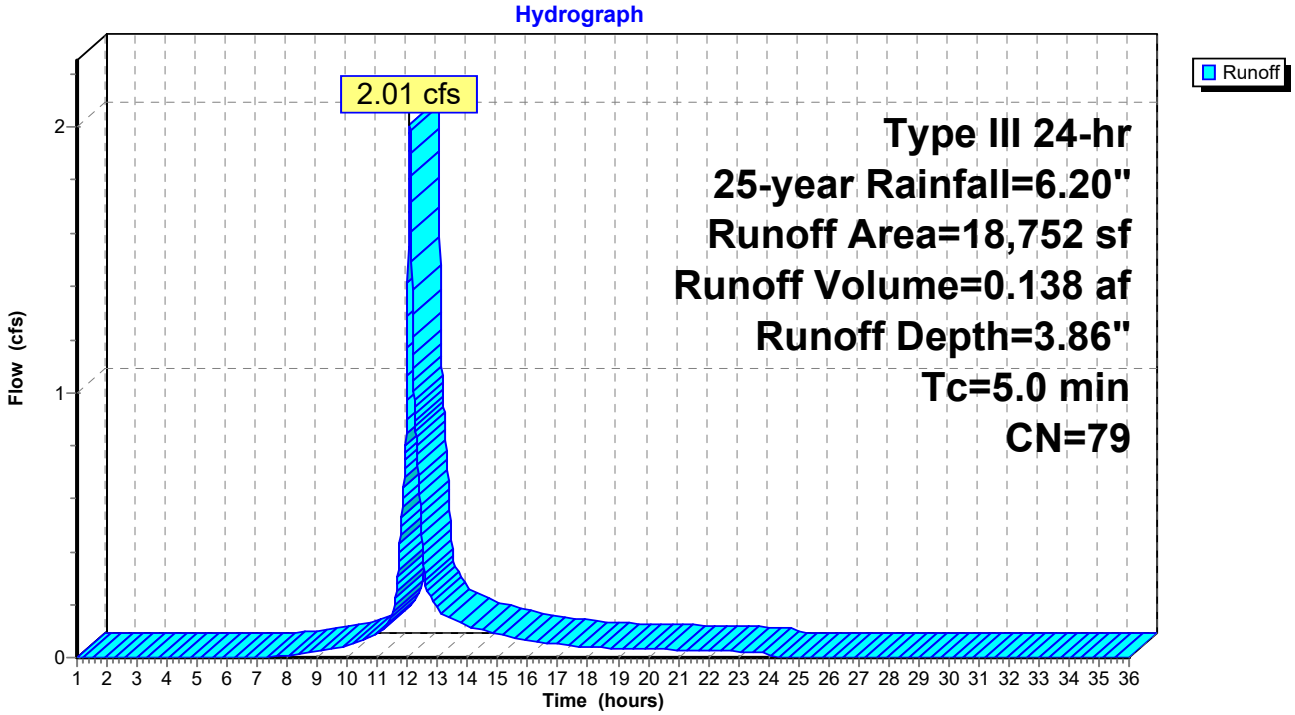
Runoff = 2.01 cfs @ 12.07 hrs, Volume= 0.138 af, Depth= 3.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 2,840 | 98 | concrete sidewalk |
| | 9,601 | 98 | Paved parking, HSG A |
| | 6,137 | 39 | >75% Grass cover, Good, HSG A |
| * | 174 | 98 | Roof Addition |
| | 18,752 | 79 | Weighted Average |
| | 6,137 | | 32.73% Pervious Area |
| | 12,615 | | 67.27% Impervious Area |

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

### Subcatchment 4S: Subcatchment #1



## Summary for Subcatchment 6S: Subcatchment #2.1

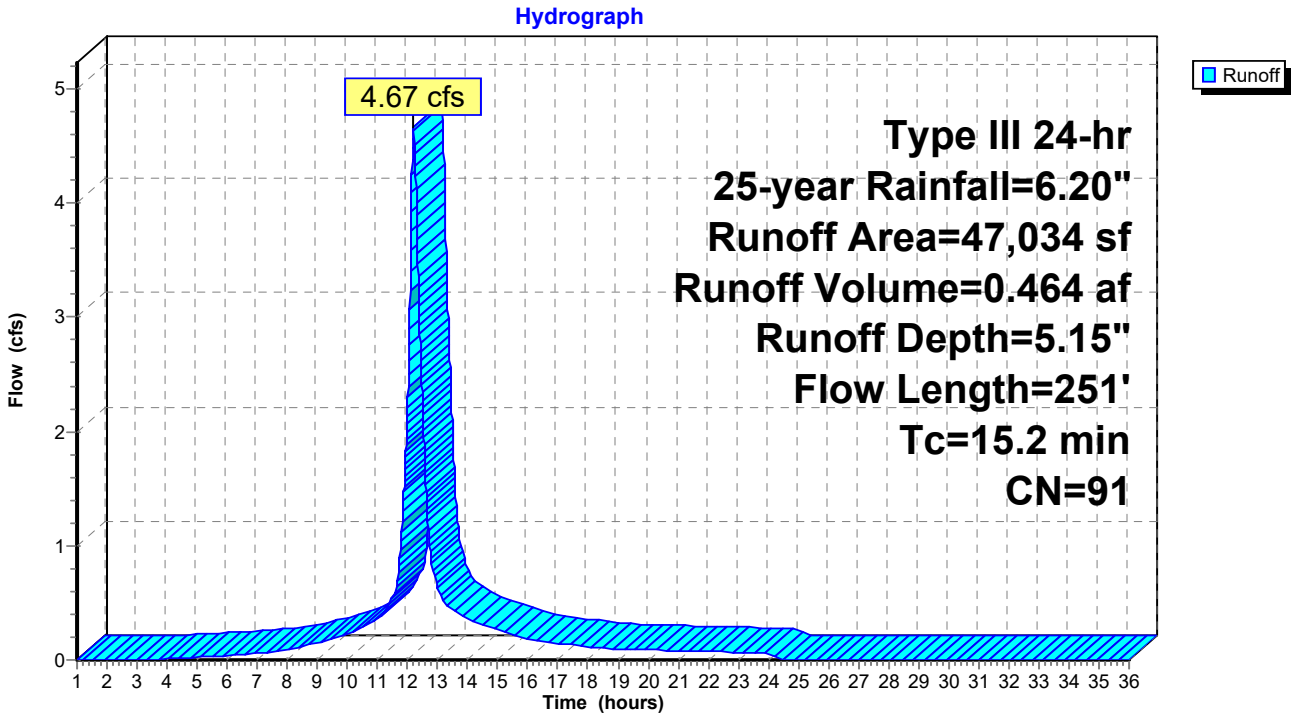
Runoff = 4.67 cfs @ 12.20 hrs, Volume= 0.464 af, Depth= 5.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 41,178 | 98 | Paved parking, Sidewalks, HSG A |
| | 5,856 | 39 | >75% Grass cover, Good, HSG A |
| | 47,034 | 91 | Weighted Average |
| | 5,856 | | 12.45% Pervious Area |
| | 41,178 | | 87.55% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 14.1 | 150 | 0.0176 | 0.18 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.27" |
| 0.4 | 20 | 0.0176 | 0.93 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 0.7 | 81 | 0.0100 | 2.03 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 15.2 | 251 | Total | | | |

### Subcatchment 6S: Subcatchment #2.1



## Summary for Subcatchment 10S: Roof

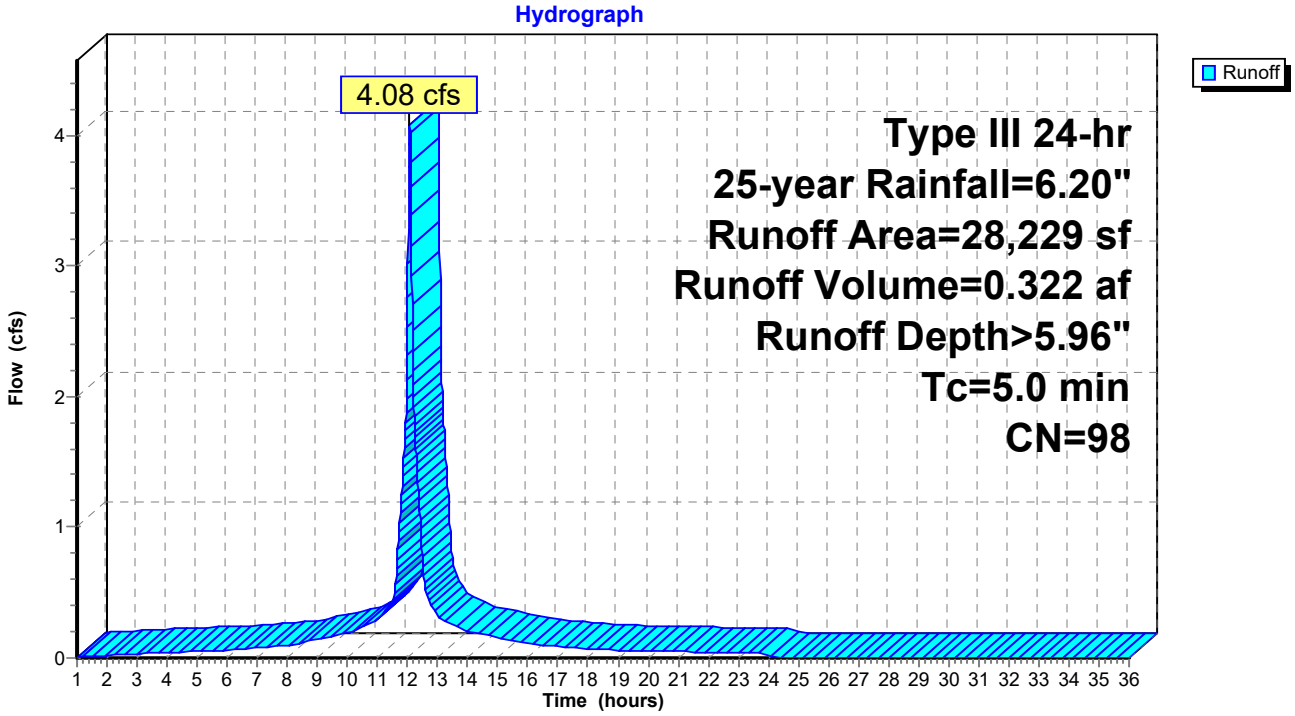
Runoff = 4.08 cfs @ 12.07 hrs, Volume= 0.322 af, Depth> 5.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=6.20"

| | Area (sf) | CN | Description |
|---|---|---|---|
| * | 28,229 | 98 | Roof |
| | 28,229 | | 100.00% Impervious Area |

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

### Subcatchment 10S: Roof

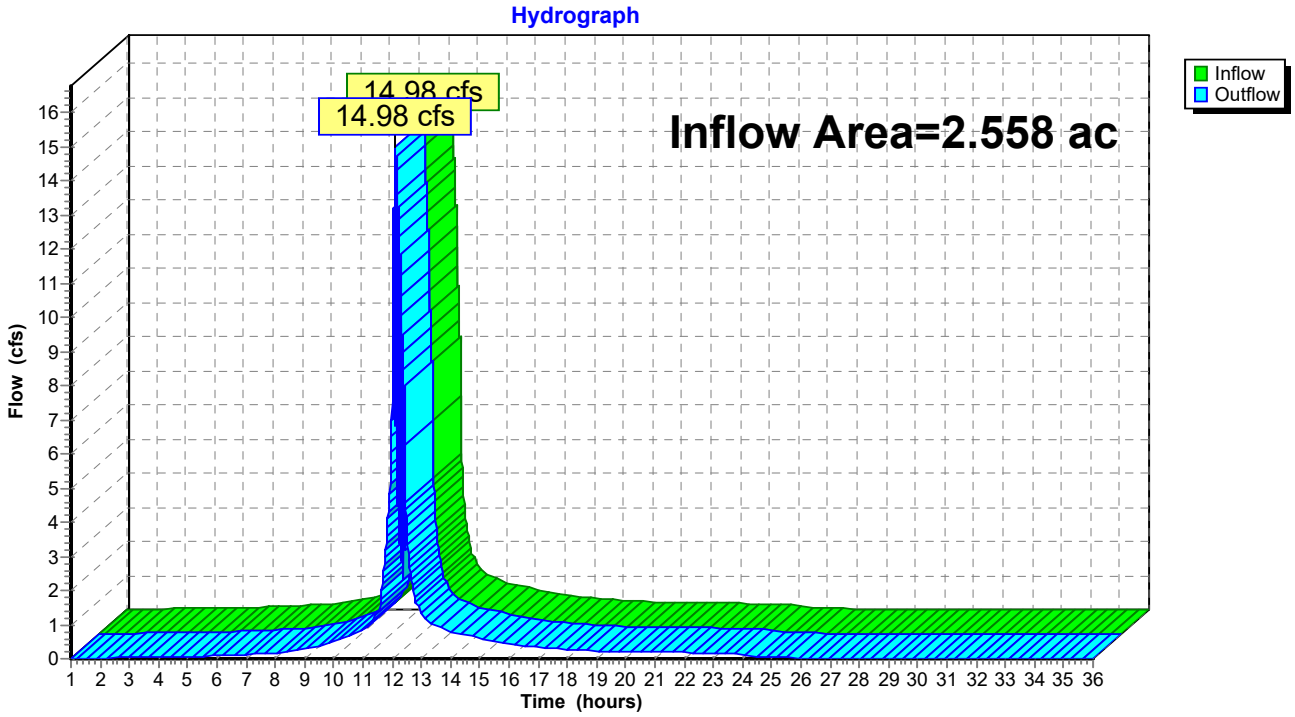


## Summary for Reach 8R: Saco River

Inflow Area = 2.558 ac, 84.95% Impervious, Inflow Depth > 4.98" for 25-year event
Inflow = 14.98 cfs @ 12.13 hrs, Volume= 1.061 af
Outflow = 14.98 cfs @ 12.13 hrs, Volume= 1.061 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

### Reach 8R: Saco River



## Summary for Pond 2P: Modular Wetland Units

Inflow Area = 1.080 ac, 87.55% Impervious, Inflow Depth = 5.15" for 25-year event
Inflow = 4.67 cfs @ 12.20 hrs, Volume= 0.464 af
Outflow = 9.57 cfs @ 12.17 hrs, Volume= 0.462 af, Atten= 0%, Lag= 0.0 min
Primary = 9.57 cfs @ 12.17 hrs, Volume= 0.462 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 53.17' @ 12.10 hrs Surf.Area= 384 sf Storage= 827 cf

Plug-Flow detention time= 30.7 min calculated for 0.462 af (100% of inflow)
Center-of-Mass det. time= 28.1 min ( 816.7 - 788.6 )

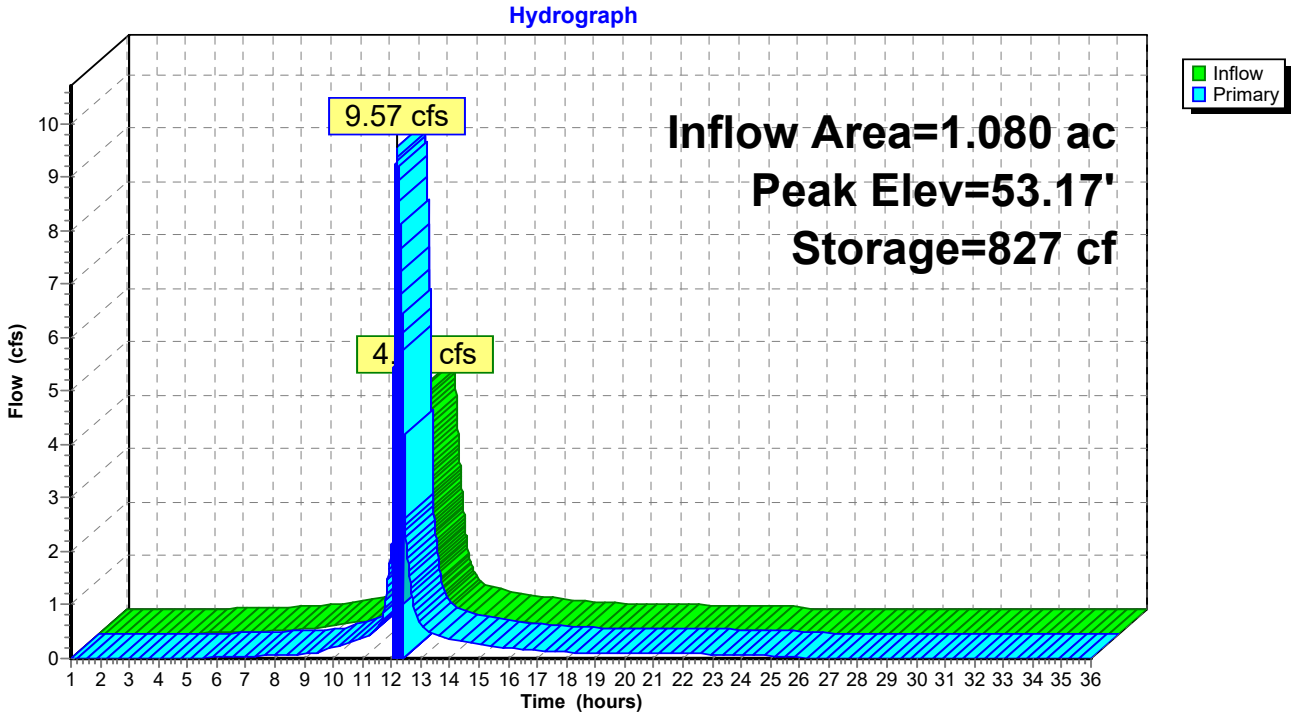
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 47.78' | 611 cf | **Modular Wetland Units w/ CB inlet (Prismatic)** Listed below (Recalc)<br>1,527 cf Overall x 40.0% Voids |
| | | 611 cf | x 2.00 = 1,221 cf Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 47.78 | 192 | 0 | 0 |
| 48.00 | 192 | 42 | 42 |
| 49.00 | 192 | 192 | 234 |
| 50.00 | 192 | 192 | 426 |
| 51.00 | 192 | 192 | 618 |
| 52.00 | 192 | 192 | 810 |
| 53.00 | 192 | 192 | 1,002 |
| 54.00 | 192 | 192 | 1,194 |
| 55.00 | 192 | 192 | 1,386 |
| 55.40 | 192 | 77 | 1,463 |
| 56.00 | 20 | 64 | 1,527 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 47.75' | **12.0" Vert. 12" Outlet** C= 0.600 |
| #2 | Device 1 | 48.28' | **1.4" Vert. Orifice** C= 0.600 |
| #3 | Device 1 | 52.08' | **42.0" W x 45.6" H Vert. Weir** C= 0.600 |
| #4 | Primary | 51.75' | **12.0" Vert. CB Emergency Overflow Pipe** C= 0.600 |

**Primary OutFlow** Max=0.00 cfs @ 12.17 hrs HW=52.83' TW=62.24' (Dynamic Tailwater)
- **1=12" Outlet** ( Controls 0.00 cfs)
  - **2=Orifice** ( Controls 0.00 cfs)
  - **3=Weir** ( Controls 0.00 cfs)
- **4=CB Emergency Overflow Pipe** ( Controls 0.00 cfs)

## Pond 2P: Modular Wetland Units



## Summary for Pond 5P: Outfall CB

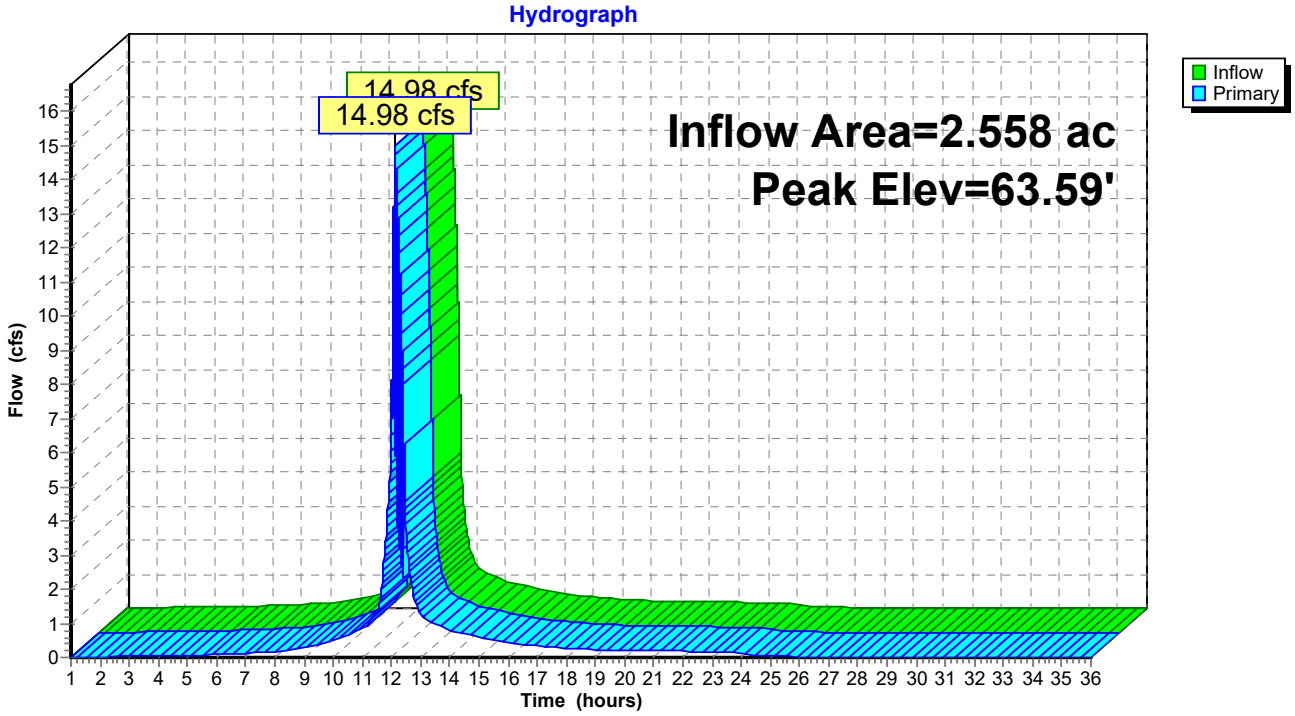
Inflow Area = 2.558 ac, 84.95% Impervious, Inflow Depth > 4.98" for 25-year event
Inflow = 14.98 cfs @ 12.13 hrs, Volume= 1.061 af
Outflow = 14.98 cfs @ 12.13 hrs, Volume= 1.061 af, Atten= 0%, Lag= 0.0 min
Primary = 14.98 cfs @ 12.13 hrs, Volume= 1.061 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 63.59' @ 12.13 hrs
Flood Elev= 55.50'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 47.40' | **12.0" Vert. Orifice/Grate** C= 0.600 |

**Primary OutFlow** Max=14.82 cfs @ 12.13 hrs HW=63.26' TW=0.00' (Dynamic Tailwater)
└**1=Orifice/Grate** (Orifice Controls 14.82 cfs @ 18.87 fps)

### Pond 5P: Outfall CB

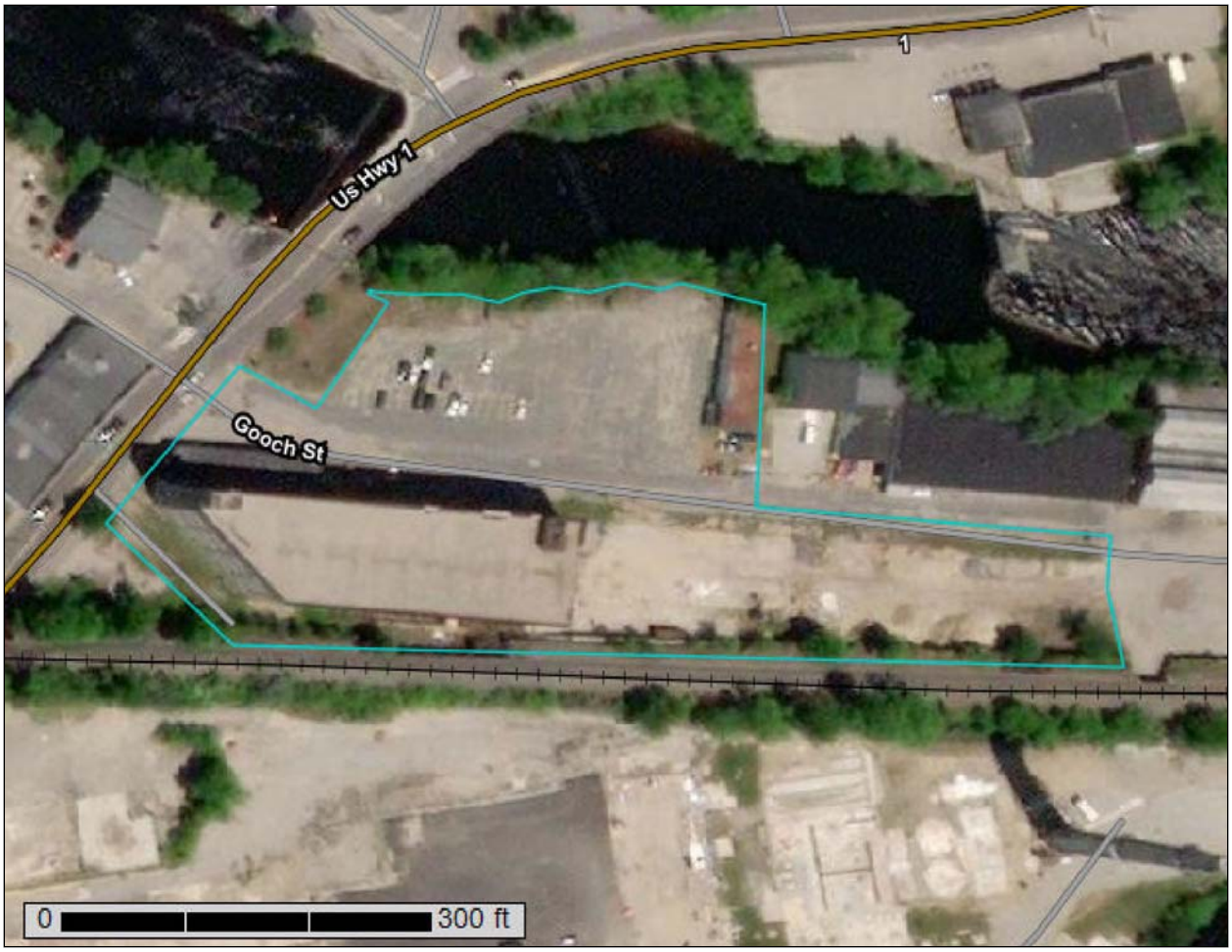


United States Department of Agriculture

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

# Custom Soil Resource Report for York County, Maine



# Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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# How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

# Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

# Custom Soil Resource Report
## Soil Map

Map Scale: 1:1,380 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

## MAP LEGEND

**Area of Interest (AOI)**

- Area of Interest (AOI)

**Soils**

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

**Special Point Features**

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

**Water Features**

- Streams and Canals

**Transportation**

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

**Background**

- Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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: York County, Maine
Survey Area Data: Version 19, May 29, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 31, 2009—Sep 9, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

# Map Unit Legend

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|---|---|---|---|
| Ur | Urban land | 3.7 | 100.0% |
| **Totals for Area of Interest** | | **3.7** | **100.0%** |

# Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

# York County, Maine

## Ur—Urban land

### Map Unit Setting

*National map unit symbol:* 9k6x
*Elevation:* 10 to 2,200 feet
*Mean annual precipitation:* 30 to 50 inches
*Mean annual air temperature:* 37 to 46 degrees F
*Frost-free period:* 70 to 160 days
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Urban land:* 90 percent
*Minor components:* 10 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Urban Land

#### Setting

*Landform position (two-dimensional):* Footslope, toeslope
*Landform position (three-dimensional):* Base slope, tread
*Down-slope shape:* Linear
*Across-slope shape:* Linear

#### Typical profile

*H1 - 0 to 6 inches:* variable

#### Properties and qualities

*Slope:* 0 to 8 percent
*Drainage class:* Moderately well drained
*Depth to water table:* About 24 to 72 inches
*Available water capacity:* Very low (about 0.0 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 8s
*Hydric soil rating:* No

### Minor Components

#### Scantic

*Percent of map unit:* 2 percent
*Landform:* Coastal plains
*Landform position (two-dimensional):* Toeslope
*Landform position (three-dimensional):* Dip
*Down-slope shape:* Concave
*Across-slope shape:* Concave
*Hydric soil rating:* Yes

#### Sulfihemists

*Percent of map unit:* 2 percent
*Landform:* Salt marshes
*Landform position (two-dimensional):* Toeslope
*Landform position (three-dimensional):* Talf
*Down-slope shape:* Linear

*Across-slope shape:* Linear
*Hydric soil rating:* Yes

**Adams**

*Percent of map unit:* 2 percent
*Landform:* Outwash plains
*Landform position (two-dimensional):* Footslope
*Landform position (three-dimensional):* Tread
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Hydric soil rating:* No

**Buxton**

*Percent of map unit:* 2 percent
*Landform:* Coastal plains
*Landform position (two-dimensional):* Footslope
*Landform position (three-dimensional):* Tread
*Down-slope shape:* Concave
*Across-slope shape:* Linear
*Hydric soil rating:* No

**Croghan**

*Percent of map unit:* 2 percent
*Landform:* Outwash plains
*Landform position (two-dimensional):* Toeslope
*Landform position (three-dimensional):* Tread
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Hydric soil rating:* No

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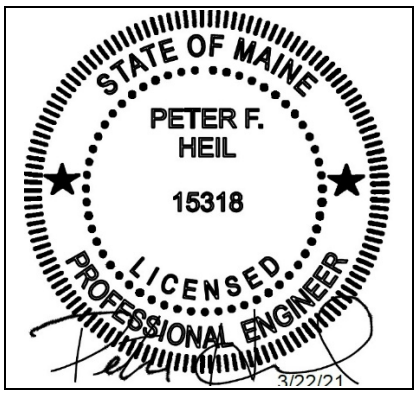
# POST CONSTRUCTION - STORMWATER INSPECTION & MAINTENANCE PLAN

**Prepared For:**

**Tom Watson & Co.**
**Portland, ME 04101**

**Prepared By:**

**Acorn Engineering, Inc.**
**65 Hanover Street**
**Portland, Maine 04101**




**April 2021**

**RESPONSIBLE PARTY**

The owner, Tom Watson & Co., and/or their successor shall be responsible for contracting with a qualified stormwater professional to implement the Inspection and Maintenance Plan. The qualified stormwater professional shall maintain a stormwater log (report) summarizing inspections, maintenance, and corrective action taken. The Qualified Stormwater Professional shall annually submit the Stormwater Log to the Department of Public Services prior to June 30th.

The following is an example of a qualified stormwater professional that the owner may contract through.

Organization: Acorn Engineering, Inc.
Attn: Peter F. Heil, PE, CPESC
Portland, Maine

Phone: (207) 775-2655

Qualifications:

- Maine Professional Engineering License #15318
- Certified Professional in Erosion and Sediment Control (CPESC) Cert. #7071
- Maine DEP – Certified Third-Party Inspector
- Maine DEP – Certification in Inspection and Maintenance of Stormwater BMPs

The inspection and maintenance criteria are based upon the Maine DEP - Stormwater Management for Maine, Volume III: BMPs Technical Design Manual. Refer to the Grading and Drainage Plan for the location of the BMPs

**PURPOSE**

This Inspection and Maintenance Plan has been individually tailored to this parcel's stormwater infrastructure, site characteristics, and their respective opportunities and limitations related to reducing the pollutant load on the receiving watershed. The maintenance of a parcel's impervious surfaces and stormwater infrastructure is critical to extending the long-term performance and effectiveness of Best Management Practices (BMPs). The Inspection and Maintenance Plan represents the parcel's minimum activities to meet the permit requirements. The parcel shall still be subject to any applicable Civil Site Plans, Permit Applications, Erosion and Sedimentation Control Plans Reports, Stormwater Management Plans, Inspection and Maintenance Manuals, and all Municipal, State, and Federal rules.

The applicant shall be responsible for retaining post construction and maintenance documents for at least 5 years. The Department of Environmental Protection's 5-year recertification will apply to this permit.

## OPERATION AND MAINTENANCE ACTIVITY

Sweeping:

Annual sweeping of the driveways and parking areas following the snow melt for accumulated winter sand, if necessary. Appropriately dispose of all collected material.

Catch Basins:

Catch basins shall be inspected to confirm that the structure is operating properly.

- Inspect the presence of accumulated sediment or debris any sediment shall be removed. The equipment shall meet the following minimum specifications; power jet and water source for washing down the storm drain, vacuum attachment for catch basin cleaning, and a liquid handling method to dewater the material.
- Sediment shall be removed when accumulation is within 6 inches of the outfall pipe invert. Legally dispose of accumulated sediment and debris from the bottom of the basin, inlet grates, and inflow channels to the basin.
- If the basin outlet is designed with a hood to trap floatable materials (e.g. Snout), check to ensure watertight seal is working.
- Appropriately dispose of all collected material.

Landscaped and Vegetated Areas:

Inspect all landscaped and or vegetated slopes and embankments on an annual basis. Vegetated areas with bare areas or sparse growth (<90% coverage) shall be revegetated. Mulch shall be applied to landscaped areas, as necessary. Dead or decaying landscaping (ground cover, shrubs, trees etc.) shall be replanted in accordance with the contract documents.

Modular Wetland System:

Inspect Modular Wetland System on an annual basis. Any accumulated sediment, debris, or trash must be removed from the system at any time.

## INSPECTION AND MAINTENANCE TABLE

| **Inspection and Maintenance Frequency** | Spring or Yearly | Summer | Fall | As Necessary |
|---|---|---|---|---|
| Sweeping | X | | | X |
| Catch Basins | | | X | X |
| Landscaped/Vegetated Areas | | X | | |
| Modular Wetland System | X | | | X |

**ATTACHED**

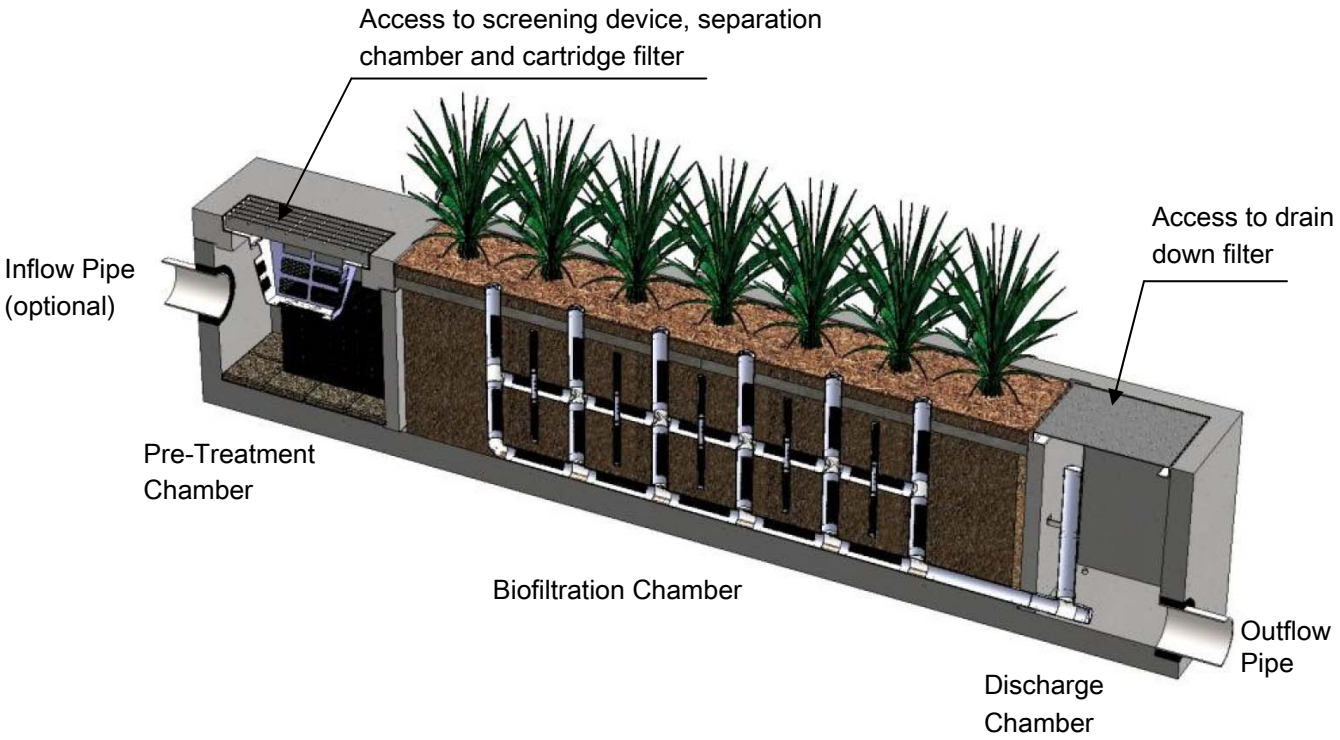
1. Modular Wetland System Operation & Maintenance Manual

# Maintenance Guidelines for Modular Wetland System - Linear

## Maintenance Summary

- Remove Trash from Screening Device – average maintenance interval is 6 to 12 months.
  - (*5 minute average service time*).
- Remove Sediment from Separation Chamber – average maintenance interval is 12 to 24 months.
  - (*10 minute average service time*).
- Replace Cartridge Filter Media – average maintenance interval 12 to 24 months.
  - (*10-15 minute per cartridge average service time*).
- Replace Drain Down Filter Media – average maintenance interval is 12 to 24 months.
  - (*5 minute average service time*).
- Trim Vegetation – average maintenance interval is 6 to 12 months.
  - (*Service time varies*).

## System Diagram



# Maintenance Procedures

## Screening Device

1. Remove grate or manhole cover to gain access to the screening device in the Pre-Treatment Chamber. Vault type units do not have screening device. Maintenance can be performed without entry.
2. Remove all pollutants collected by the screening device. Removal can be done manually or with the use of a vacuum truck. The hose of the vacuum truck will not damage the screening device.
3. Screening device can easily be removed from the Pre-Treatment Chamber to gain access to separation chamber and media filters below. Replace grate or manhole cover when completed.

## Separation Chamber

1. Perform maintenance procedures of screening device listed above before maintaining the separation chamber.
2. With a pressure washer spray down pollutants accumulated on walls and cartridge filters.
3. Vacuum out Separation Chamber and remove all accumulated pollutants. Replace screening device, grate or manhole cover when completed.

## Cartridge Filters

1. Perform maintenance procedures on screening device and separation chamber before maintaining cartridge filters.
2. Enter separation chamber.
3. Unscrew the two bolts holding the lid on each cartridge filter and remove lid.
4. Remove each of 4 to 8 media cages holding the media in place.
5. Spray down the cartridge filter to remove any accumulated pollutants.
6. Vacuum out old media and accumulated pollutants.
7. Reinstall media cages and fill with new media from manufacturer or outside supplier. Manufacturer will provide specification of media and sources to purchase.
8. Replace the lid and tighten down bolts. Replace screening device, grate or manhole cover when completed.

## Drain Down Filter

1. Remove hatch or manhole cover over discharge chamber and enter chamber.
2. Unlock and lift drain down filter housing and remove old media block. Replace with new media block. Lower drain down filter housing and lock into place.
3. Exit chamber and replace hatch or manhole cover.

# Maintenance Notes

1. Following maintenance and/or inspection, it is recommended the maintenance operator prepare a maintenance/inspection record. The record should include any maintenance activities performed, amount and description of debris collected, and condition of the system and its various filter mechanisms.

2. The owner should keep maintenance/inspection record(s) for a minimum of five years from the date of maintenance. These records should be made available to the governing municipality for inspection upon request at any time.

3. Transport all debris, trash, organics and sediments to approved facility for disposal in accordance with local and state requirements.

4. Entry into chambers may require confined space training based on state and local regulations.

5. No fertilizer shall be used in the Biofiltration Chamber.

6. Irrigation should be provided as recommended by manufacturer and/or landscape architect. Amount of irrigation required is dependent on plant species. Some plants may require irrigation.

# Maintenance Procedure Illustration

**Screening Device**

The screening device is located directly under the manhole or grate over the Pre-Treatment Chamber. It's mounted directly underneath for easy access and cleaning. Device can be cleaned by hand or with a vacuum truck.

**Separation Chamber**

The separation chamber is located directly beneath the screening device. It can be quickly cleaned using a vacuum truck or by hand. A pressure washer is useful to assist in the cleaning process.

## Cartridge Filters

The cartridge filters are located in the Pre-Treatment chamber connected to the wall adjacent to the biofiltration chamber. The cartridges have removable tops to access the individual media filters. Once the cartridge is open media can be easily removed and replaced by hand or a vacuum truck.

## Drain Down Filter

The drain down filter is located in the Discharge Chamber. The drain filter unlocks from the wall mount and hinges up. Remove filter block and replace with new block.

## Trim Vegetation

Vegetation should be maintained in the same manner as surrounding vegetation and trimmed as needed. No fertilizer shall be used on the plants. Irrigation per the recommendation of the manufacturer and or landscape architect. Different types of vegetation requires different amounts of irrigation.

# Inspection Form

Modular Wetland System, Inc.
P. 760.433-7640
F. 760-433-3176
E. Info@modularwetlands.com

www.modularwetlands.com

# Inspection Report
# Modular Wetlands System

| For Office Use Only |
|---|
| (Reviewed By) |
| (Date) Office personnel to complete section to the left. |

Project Name _____

Project Address _____ (city) (Zip Code)

Owner / Management Company _____

Contact _____ Phone ( ) –

Inspector Name _____ Date ____/____/____ Time _____ AM / PM

Type of Inspection ☐ Routine ☐ Follow Up ☐ Complaint ☐ Storm Storm Event in Last 72-hours? ☐ No ☐ Yes

Weather Condition _____ Additional Notes _____

## Inspection Checklist

Modular Wetland System Type (Curb, Grate or UG Vault): _____ Size (22', 14' or etc.): _____

| **Structural Integrity:** | **Yes** | **No** | **Comments** |
|---|---|---|---|
| Damage to pre-treatment access cover (manhole cover/grate) or cannot be opened using normal lifting pressure? | | | |
| Damage to discharge chamber access cover (manhole cover/grate) or cannot be opened using normal lifting pressure? | | | |
| Does the MWS unit show signs of structural deterioration (cracks in the wall, damage to frame)? | | | |
| Is the inlet/outlet pipe or drain down pipe damaged or otherwise not functioning properly? | | | |
| **Working Condition:** | | | |
| Is there evidence of illicit discharge or excessive oil, grease, or other automobile fluids entering and clogging the unit? | | | |
| Is there standing water in inappropriate areas after a dry period? | | | |
| Is the filter insert (if applicable) at capacity and/or is there an accumulation of debris/trash on the shelf system? | | | |
| Does the depth of sediment/trash/debris suggest a blockage of the inflow pipe, bypass or cartridge filter? If yes, specify which one in the comments section. Note depth of accumulation in in pre-treatment chamber. | | | Depth: |
| Does the cartridge filter media need replacement in pre-treatment chamber and/or discharge chamber? | | | Chamber: |
| Any signs of improper functioning in the discharge chamber? Note issues in comments section. | | | |
| **Other Inspection Items:** | | | |
| Is there an accumulation of sediment/trash/debris in the wetland media (if applicable)? | | | |
| Is it evident that the plants are alive and healthy (if applicable)? Please note Plant Information below. | | | |
| Is there a septic or foul odor coming from inside the system? | | | |

| **Waste:** | **Yes** | **No** |
|---|---|---|
| Sediment / Silt / Clay | | |
| Trash / Bags / Bottles | | |
| Green Waste / Leaves / Foliage | | |

| **Recommended Maintenance** | |
|---|---|
| No Cleaning Needed | |
| Schedule Maintenance as Planned | |
| Needs Immediate Maintenance | |

| **Plant Information** | |
|---|---|
| Damage to Plants | |
| Plant Replacement | |
| Plant Trimming | |

Additional Notes:



2972 San Luis Rey Road, Oceanside, CA 92058 P (760) 433-7640 F (760) 433-3176

# Maintenance Report

Modular Wetland System, Inc.
P. 760.433-7640
F. 760-433-3176
E. Info@modularwetlands.com

www.modularwetlands.com

# Cleaning and Maintenance Report
# Modular Wetlands System

Project Name _____

Project Address _____
(city) (Zip Code)

Owner / Management Company _____

Contact _____ Phone ( ) –

| For Office Use Only |
|---|
| (Reviewed By) |
| (Date) |
| Office personnel to complete section to the left. |

Inspector Name _____ Date ____/____/_____ Time _____ AM / PM

Type of Inspection ☐ Routine ☐ Follow Up ☐ Complaint ☐ Storm Storm Event in Last 72-hours? ☐ No ☐ Yes

Weather Condition _____ Additional Notes _____

| Site Map # | GPS Coordinates of Insert | Manufacturer / Description / Sizing | Trash Accumulation | Foliage Accumulation | Sediment Accumulation | Total Debris Accumulation | Condition of Media 25/50/75/100 (will be changed @ 75%) | Operational Per Manufactures' Specifications (If not, why?) |
|---|---|---|---|---|---|---|---|---|
| | Lat:<br>Long: | MWS Catch Basins | | | | | | |
| | | MWS Sedimentation Basin | | | | | | |
| | | Media Filter Condition | | | | | | |
| | | Plant Condition | | | | | | |
| | | Drain Down Media Condition | | | | | | |
| | | Discharge Chamber Condition | | | | | | |
| | | Drain Down Pipe Condition | | | | | | |
| | | Inlet and Outlet Pipe Condition | | | | | | |

Comments:

2972 San Luis Rey Road, Oceanside, CA 92058 P. 760.433.7640 F. 760.433.3176

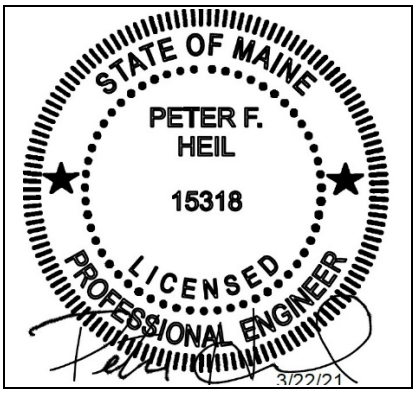
# HOUSEKEEPING PLAN

**Prepared For:**

**Tom Watson & Co.**
**Portland, ME 04101**

**Prepared By:**

**Acorn Engineering, Inc.**
**65 Hanover Street**
**Portland, Maine 04101**




**April 2021**

## HOUSEKEEPING

These performance standards shall apply to the project.

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/emergspillresp/

2. **Groundwater protection.** During construction, liquid petroleum products and other hazardous materials with the potential to contaminate groundwater may not be stored or handled in areas of the site draining to an infiltration area. An "infiltration area" is any area of the site that by design or as a result of soils, topography and other relevant factors accumulates runoff that infiltrates into the soil. Dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater may be used to isolate portions of the site for the purposes of storage and handling of these materials. Any project proposing infiltration of stormwater must provide adequate pre-treatment of stormwater prior to discharge of stormwater to the infiltration area, or provide for treatment within the infiltration area, in order to prevent the accumulation of fines, reduction in infiltration rate, and consequent flooding and destabilization.

   See Maine DEP Chapter 500, Appendix D for license by rule standards for infiltration of stormwater.

   **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 swept immediately and no less than once a week and prior to significant storm events. Operations during dry months, that experience fugitive dust problems, should wet down unpaved access roads once a week or more frequently as needed with a water additive to suppress fugitive sediment and dust.

   **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 provision of rules related to solid, 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 de-watering.** Excavation de-watering is the removal of water from trenches, foundations, coffer dams, ponds, and other areas within the construction area that retain water after excavation. In most cases the collected water is heavily silted and hinders correct and safe construction practices. The collected water removed from the ponded area, either through gravity or pumping, must be spread through natural wooded buffers or removed to areas that are specifically designed to collect the maximum amount of sediment possible, like a cofferdam sedimentation basin. Avoid allowing the water to flow over disturbed areas of the site. Equivalent measures may be taken if approved by the Department.

**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:

(a) Discharges from firefighting activity;

(b) Fire hydrant flushings;

(c) Vehicle washwater if detergents are not used and washing is limited to the exterior of vehicles (engine, undercarriage and transmission washing is prohibited);

(d) Dust control runoff in accordance with permit conditions and Appendix (C)(3);

(e) Routine external building washdown, not including surface paint removal, that does not involve detergents;

(f) 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;

(g) Uncontaminated air conditioning or compressor condensate;

(h) Uncontaminated groundwater or spring water;

(i) Foundation or footer drain-water where flows are not contaminated;

(j) Uncontaminated excavation dewatering (see requirements in Appendix C(5));

(k) Potable water sources including waterline flushings; and

(l) 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:

(a) Wastewater from the washout or cleanout of concrete, stucco, paint, form release oils, curing compounds or other construction materials;

(b) Fuels, oils or other pollutants used in vehicle and equipment operation and maintenance;

(c) Soaps, solvents, or detergents used in vehicle and equipment washing; and

(d) Toxic or hazardous substances from a spill or other release.

**Date: Apr 29, 2021**

Swaney Lighting
PO Box 1597
Scarborough ME 04070
Phone: (207) 883-7100
Fax: (207) 885-9606

Job Name
**59 ELM ST APARTMENTS - site only**
SLA21-48517
Biddeford me

Bid Date
Apr 29, 2021

Submittal Date
Apr 29, 2021

# Transmittal

Swaney Lighting
PO Box 1597
Scarborough ME 04070
Phone: (207) 883-7100
**From: Therese "TC" Freeman X-103**

**Project** **59 ELM ST APARTMENTS - site only**
**Quote#** SLA21-48517
**Location** Biddeford me
Contact:

ATTACHED WE ARE SENDING YOU 1 COPY OF THE FOLLOWING ITEM:

- ☐ Drawings
- ☐ Prints
- ☐ Plans
- ☐ Specifications
- ☐ Information
- ☒ Submittals

Other:

THESE ARE TRANSMITTED FOR:

- ☐ Prior Approval
- ☒ Approval
- ☐ Approval as Submitted
- ☐ Approval as Noted
- ☐ Resubmittal for Approval
- ☐ Corrections
- ☐ Your Use
- ☐ Review and Comment
- ☐ Record

Bids due on:
Other:

| Type | MFG | Part |
|---|---|---|
| SA | BEACON PRODUCTS | VP-S/36L-80/3K7/4W/UNV/A/BLT |
| SB | BEACON PRODUCTS | VP-S/36L-80/3K7/4F/UNV/A/BLT |
| P20 | BEACON PRODUCTS | SSSB20-40A-1-B3-BLT-VM2 |
| SC | BEACON PRODUCTS | SRT1-20-3K7-5QW-UNV-BLT |
| | **Item Note:** EXTERIOR CANOPY | |
| W1 | Hubbell Outdoor | RWL1-48L-25-3K7-3-277-BLT-PC |
| | **Item Note:** WALL PACK | |
| WG1 | KIM | KFL2/11L-35/RGBW/NS/UNV/K/BLT |
| | **Item Note:** CONFIRM MOUNTING | |

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# VIPER S

SMALL VIPER LUMINAIRE

| | |
|---|---|
| DATE: | LOCATION: |
| TYPE: | PROJECT: |
| CATALOG #: | |

OPTICS
STRIKE

## FEATURES

- Small size companion to Viper Large
- Wide choice of different LED wattage configurations
- Nine optical distributions
- Designed to replace HID lighting up to 400W MH or HPS
- Suitable for wet locations

C US

*3000K and warmer CCTs only

See Certification Specifications

**RELATED PRODUCTS**

Viper Large

## CONTROL TECHNOLOGY

NX DISTRIBUTED INTELLIGENCE · wiSCAPE · energeni · SiteSync LIGHTING CONTROL

## SPECIFICATIONS

### CONSTRUCTION

- Manufactured with die cast aluminum
- Coated with a polyester finish that meets ASTM B117 corrosion test requirements and ASTM D522 cracking and loss of adhesion test requirements
- IFS polyester powder-coat electrostatically applied and thermocured. IFS finish consists of a five stage pretreatment regimen with a polymer primer sealer and top coated with a thermoset super TGIC polyester powder coat finish
- The finish meets the AAMA 2604 performance specification which includes passing a 3,000-hour salt spray test for corrosion resistance and resists cracking or loss of adhesion per ASTM D522 and resists surface impacts of up to 160 inch-pounds
- External hardware is corrosion resistant

### OPTICS

- Cartridge is held together with internal brass standoffs soldered to the board so that it can be field replaced as a one-piece optical system
- One-piece silicone gasket ensures a weatherproof seal around each individual optic
- One-piece optical cartridge system consisting of an LED engine, optics, gasket and stainless steel bezel

### INSTALLATION

- Mounting options for horizontal arm, vertical tenon or traditional arm mounting available. Mounting hardware included

### ELECTRICAL

- Luminaire accepts 100V through 277V, 347V or 480V input 50 Hz to 60 Hz (UNV)

### ELECTRICAL (CONTINUED)

- Power factor is ≥ .90 at full load
- Dimming drivers are standard, but CD must be selected in options to obtain external wiring leads for dimming controls
- Component-to-component wiring within the luminaire may carry no more than 80% of rated load and is certified by UL for use at 600VAC at 90°C or higher
- Plug disconnects are certified by UL for use at 600 VAC, 13A or higher. 13A rating applies to primary (AC) side only
- Fixture electrical compartment contains all LED driver components
- Optional 7-pin ANSI C136.41-2013 Twist-Lock® photo control receptacle available. Compatible with ANSI C136.41 external wireless control devices
- Ambient operating temperature -40°C to 25°C
- Surge protection: 20kA
- Lifeshield™ Circuit (see Electrical Data)

### CONTROLS

- Available with an optional passive infrared (PIR) motion sensor capable of detecting motion 360° around the luminaire. When no motion is detected for the specified time, the motion response system reduces the wattage to factory preset level, reducing the light level accordingly. When motion is detected by the PIR sensor, the luminaire returns to full wattage and full light output. Please contact Beacon Products if project requirements vary from standard configuration
- Available with Energeni for optional set dimming, timed dimming with simple delay, or timed dimming based on time of night

### CONTROLS (CONTINUED)

- In addition, Viper can be specified with SiteSync™ wireless control system for reduction in energy and maintenance costs while optimizing light quality 24/7

### CERTIFICATIONS

- DLC® (DesignLights Consortium) Qualified. Please refer to the DLC website for specific product qualifications at www.designlights.org
- Certified to UL 1598 and UL 8750
- 3G rated for ANSI C136.31 high vibration applications with MAF mounting
- IDA approved
- This product qualifies as a "designated country construction material" per FAR 52.225-11 Buy American-Construction Materials under Trade Agreements effective 04/23/2020. See Buy American Solutions.

### WARRANTY

- 5 year warranty
- See HLI Commercial and Industrial Outdoor Lighting Warranty for additional information

| KEY DATA | |
|---|---|
| Lumen Range | 4,045–16,216 |
| Wattage Range | 39–136 |
| Efficacy Range (LPW) | 100–124 |
| Reported Life (Hours) | L70>60,000 |
| Input Current Range (Amps) | 0.1–1.1 |



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# VIPER S

SMALL VIPER LUMINAIRE

DATE: LOCATION:

TYPE: PROJECT:

CATALOG #:

## ORDERING GUIDE

**Example:** VPS–24L–55–4K7–4W–UNV–A–DBT–TL–GENI–04–BC

CATALOG #

VPS –

| Series | |
|---|---|
| **VPS** | Viper Small |

| LED Engine | |
|---|---|
| **24L-39** | 39W, LED array |
| **24L-55** | 55W, LED array |
| **36L-65** | 65W, LED array |
| **36L-80** | 80W, LED array |
| **48L-110** | 110W, LED array |
| **60L-136** | 136W, LED array |

| CCT/CRI [7] | |
|---|---|
| **3K7** | 3000K, 70 CRI |
| **4K7** | 4000K, 70 CRI |
| **5K7** | 5000K, 70 CRI |

| Distribution | |
|---|---|
| **FR** | Type 1/Front Row |
| **2** | Type 2 |
| **3** | Type 3 |
| **4F (formerly 4)** | Type 4 |
| **4W** | Type 4 Wide |
| **5QM** | Type 5QM |
| **5R** | Type 5R (rectangular) |
| **5W** | Type 5W (round wide) |
| **TC** | Tennis Court |
| **CR** | Corner Right |
| **CL** | Corner Left |

| Rotation | |
|---|---|
| **Blank** | No rotation |
| **L** | Optic rotation left [5] |
| **R** | Optic rotation right [5] |

| Voltage | |
|---|---|
| **UNV** | 120–277V |
| **347** | 347V |
| **480** | 480V |

| Mounting | |
|---|---|
| **A** | Rectangular Arm (formerly RA) for square or round pole |
| **MAF** | Mast Arm Fitter (formerly SF2) for 2⅜" OD horizontal arm |
| **K** | Knuckle (formerly PK2) limit to 30° tilt or 2⅜" OD horizontal arm or vertical tenon |
| **WB** | Wall Bracket |
| **AD** | Universal Arm for square pole |
| **AD3** | Adapter for 2.4"–4.1" round pole |
| **AD4** | Adapter for 4.2"–5.3" round pole |
| **AD5** | Adapter for 5.5"–5.9" round pole |
| **AD6** | Adapter for 6.0"–6.5" round pole |

| Color | |
|---|---|
| **BLT** | Black Matte Textured |
| **BLS** | Black Gloss Smooth |
| **DBT** | Dark Bronze Matte Textured |
| **DBS** | Dark Bronze Gloss Smooth |
| **GTT** | Graphite Matte Textured |
| **LGS** | Light Grey Gloss Smooth |
| **PSS** | Platinum Silver Smooth |
| **WHT** | White Matte Textured |
| **WHS** | White Gloss Smooth |
| **VGT** | Verde Green Textured |
| **Color Option** | |
| **CC** | Custom Color |

| Control Options | |
|---|---|
| **NXWE** | NX Wireless Enabled (module + radio) |
| **NXSPW_F** | Nx Wireless, PIR Occ. Sensor, Daylight Havesting [7] |
| **NXSP_F** | NX, PIR Occ. Sensor, Daylight Harvesting [7] |
| **WIR** | Wireless Controls, wiSCAPE |
| **Control Options** | |
| **7PR** | 7-Pin Receptacle only (shorting cap, photo control, or wireless control provided by others) |
| **7PR-SC** | 7-Pin Receptacle w/Shorting Cap |
| **7PR-TL** | 7-Pin Receptacle w/Twist-Lock® photo control |
| **SCP/_F** | Programmable Occupancy Sensor w/ daylight control [1,2,6] |
| **GENI-XX** | ENERGENI [3] |
| **SWP** | SiteSync Pre-Commission [1,4] |
| **SWPM_F** | SiteSync Pre-Commission w/ Sensor [1,2,4] |

| Options | |
|---|---|
| **BC** | Backshield (available for FR, 2, 3, 4, 4W Optics) |
| **CD** | Continuous Dimming |
| **F** | Fusing |
| **TB** | Terminal Block |

### House Side Shield Accessories

- ☐ **HSS/VP-S/90-FB/XXX** 90° shield front or back
- ☐ **HSS/VP-S/90-LR/XXX** 90° shield left or right
- ☐ **HSS/VP-S/270-FB/XXX** 270° shield front or back
- ☐ **HSS/VP-S/270-LR/XXX** 270° shield left or right
- ☐ **HSS/VP-S/360/XXX** Full shield

Replace XXX with notation for desired finish color. Refer to page 8 for shield images.

### Mounting Accessories

- ☐ **VPL-AD-RPA3** 2.4"–4.1" Round Pole Adapter for AD arm
- ☐ **VPL-AD-RPA4** 4.2"–5.3" Round Pole Adapter for AD arm
- ☐ **VPL-AD-RPA5** 5.5"–5.9" Round Pole Adapter for AD arm
- ☐ **VPL-AD-RPA6** 6.0"–6.5" Round Pole Adapter for AD arm

Notes:

1. Not available with other wireless control or sensor options
2. Specify mounting height; 8 = 8' or less, 40 = 14' to 30'
3. Specify routine setting code (example GENI-04). See ENERGENI brochure and instructions for setting table and options. Not available with sensor or SiteSync options
4. Specify group and zone at time of order. See www.hubbelllighting.com/sitesync for further details. Order at least one SiteSync interface accessory SWUSB or SWTAB. Each option contains SiteSync License, GUI, and Bridge Node
5. Only available with FR, 2, 3, 4, 4W and 5R distributions
6. Specify mounting height; 8=8', 30=30

### Accessories and Services (Ordered Separately)

- ☐ **SCP-REMOTE** Remote Control for SCP/_F option. Order at least one per project to program and control the occupancy sensor
- ☐ **SWUSB*** SiteSync interface software loaded on USB flash drive for use with owner supplied PC (Windows based only). Includes SiteSync license, software and USB radio bridge node
- ☐ **SWTAB*** Windows tablet and SiteSync interface software. Includes tablet with preloaded software, SiteSync license and USB radio bridge node
- ☐ **SWBRG** SiteSync USB radio bridge node only. Order if a replacement is required or if an extra bridge node is requested
- ☐ **SW7PR+** SiteSync 7-Pin on fixture module On/Off/Dim, Daylight Sensor 120–480VAC
- ☐ **BIRD-SPIKE-3** Bird Spikes

* When ordering SiteSync at least one of these two interface options must be ordered per project.
\+ Available as a SiteSync retrofit solution for fixtures with an existing 7-pin receptacle.

### Hubbell Control Solutions — Accessories (Sold Separately)

**NX Distributed Intelligence™**

- ☐ **NXOFM-1R1D-UNV** On-fixture Module (7-pin), On / Off / Dim, Daylight Sensor with HubbNET Radio and Bluetooth® Radio, 120–480VAC

**wiSCAPE® Lighting Control**

- ☐ **WIR-RME-L** On-fixture Module (7-pin or 5-pin), On / Off / Dim, Daylight Sensor with wiSCAPE Radio, 110–480VAC

For additional information related to these accessories please visit www.hubbellcontrolsolutions.com. Options provided for use with integrated sensor, please view specification sheet ordering information table for details.



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# VIPER S

SMALL VIPER LUMINAIRE

## CONTROLS

**SiteSync — Precommissioned Ordering Information:**
When ordering a fixture with the SiteSync lighting control option, additional information will be required to complete the order. The SiteSync Commissioning Form or alternate schedule information must be completed. This form includes Project location, Group information, and Operating schedules. For more detailed information please visit the SiteSync family page on our website or contact Hubbell Lighting tech support at 864-678-1000.

SiteSync fixtures with Motion control (SWPM) require the mounting height of the fixture for selection of the lens.

Examples: VP-L/80L-235/4K7/3/UNV/A/DB/SWP/ SiteSync only
VP-L/80L-235/4K7/3/UNV/A/DB/SWPM-40F/ SiteSync with Motion Control

**SiteSync 7-Pin Module:**
- SiteSync features in a new form
- Available as an accessory for new construction or retrofit applications (with existing 7-Pin receptacle)
- Does not interface with occupancy sensors

SW7PR

**NX Distributed Intelligence™ Lighting Controls:**
Supports both indoor and outdoor applications in a variety of deployment options: wired, wireless and hybrid.
Integrates with and enables a wide array of luminaires including those with SpectraSync Color Tuning Technology.

| NX Integrated Controls Reference | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| NX Option | Sensor | Networkable | Scheduling | Occupancy | Daylight Harvesting | 0–10V Dimming | On/off Control | Bluetooth® App Programming |
| NX Networked – Wireless | | | | | | | | |
| NXOFM-1R1D-UNV | SCLNX | Yes | Yes | Yes | Yes | Yes | Yes | Yes, Bluetooth App |

**wiSCAPE™:**
Supports remote management, monitoring and metering of outdoor wireless lighting applications such as smart campuses, smart cities, parking lots, parking lots and roadways.

| wiSCAPE Reference | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| wiSCAPE Option | Sensor | Networkable | Scheduling | Occupancy | Daylight Harvesting | 0–10V Dimming | On/off Control | Bluetooth® App Programming |
| Networked – Wireless | | | | | | | | |
| WIR-RME-L | WIR-RME-L | Yes | Yes | No | Yes | Yes | Yes | wiSCAPE Gateway |



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# VIPER S

SMALL VIPER LUMINAIRE

## DELIVERED LUMENS

| | | | | 5K (5000K nominal, 70 CRI) | | | | | 4K (4000K nominal, 70 CRI) | | | | | 3K (3000K nominal, 70 CRI) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # of LEDs | DRIVE CURRENT (mA) | SYSTEM WATTS | DISTRIBUTION TYPE | LUMENS | LPW | B | U | G | LUMENS | LPW | B | U | G | LUMENS | LPW | B | U | G |
| 24 | 500mA | 39W | FR | 4689 | 120 | 1 | 0 | 0 | 4665 | 120 | 1 | 0 | 0 | 4432 | 114 | 1 | 0 | 0 |
| | | | 2 | 4523 | 116 | 1 | 0 | 1 | 4500 | 115 | 1 | 0 | 1 | 4275 | 110 | 1 | 0 | 1 |
| | | | 3 | 4436 | 114 | 1 | 0 | 1 | 4414 | 113 | 1 | 0 | 1 | 4194 | 108 | 1 | 0 | 1 |
| | | | 4F | 4362 | 112 | 1 | 0 | 2 | 4340 | 111 | 1 | 0 | 2 | 4123 | 106 | 0 | 0 | 2 |
| | | | 4W | 4280 | 110 | 1 | 0 | 2 | 4258 | 109 | 1 | 0 | 2 | 4045 | 104 | 1 | 0 | 2 |
| | | | 5QM | 4442 | 114 | 2 | 0 | 1 | 4420 | 113 | 2 | 0 | 1 | 4199 | 108 | 2 | 0 | 0 |
| | | | 5R | 4472 | 115 | 2 | 0 | 2 | 4450 | 114 | 2 | 0 | 2 | 4227 | 108 | 2 | 0 | 2 |
| | | | 5W | 4335 | 112 | 3 | 0 | 1 | 4336 | 111 | 3 | 0 | 1 | 4114 | 105 | 3 | 0 | 1 |
| | | | TC | 4561 | 117 | 1 | 0 | 1 | 4538 | 116 | 1 | 0 | 1 | 4311 | 111 | 1 | 0 | 1 |
| | | | CL | 4758 | 122 | 1 | 0 | 2 | 4758 | 122 | 1 | 0 | 2 | 4329 | 111 | 1 | 0 | 1 |
| | | | CR | 4773 | 122 | 1 | 0 | 2 | 4773 | 122 | 1 | 0 | 2 | 4361 | 112 | 1 | 0 | 1 |
| 24 | 700 mA | 55W | FR | 6357 | 118 | 1 | 0 | 1 | 6486 | 120 | 1 | 0 | 1 | 5804 | 107 | 1 | 0 | 1 |
| | | | 2 | 6132 | 114 | 1 | 0 | 1 | 6257 | 116 | 1 | 0 | 2 | 5599 | 104 | 1 | 0 | 1 |
| | | | 3 | 6015 | 111 | 1 | 0 | 2 | 6137 | 114 | 1 | 0 | 2 | 5492 | 102 | 1 | 0 | 2 |
| | | | 4F | 5921 | 110 | 1 | 0 | 2 | 6034 | 112 | 1 | 0 | 2 | 5400 | 100 | 1 | 0 | 2 |
| | | | 4W | 5793 | 108 | 1 | 0 | 2 | 5909 | 110 | 1 | 0 | 2 | 5272 | 98 | 1 | 0 | 2 |
| | | | 5QM | 6022 | 112 | 2 | 0 | 1 | 6145 | 114 | 2 | 0 | 1 | 5499 | 102 | 2 | 0 | 1 |
| | | | 5R | 6063 | 112 | 3 | 0 | 3 | 6187 | 115 | 3 | 0 | 3 | 5536 | 103 | 3 | 0 | 3 |
| | | | 5W | 5908 | 109 | 3 | 0 | 1 | 6028 | 112 | 3 | 0 | 1 | 5908 | 102 | 3 | 0 | 1 |
| | | | TC | 6183 | 113 | 1 | 0 | 1 | 6309 | 118 | 1 | 0 | 1 | 5645 | 105 | 1 | 0 | 1 |
| | | | CL | 6707 | 122 | 1 | 0 | 2 | 6707 | 122 | 1 | 0 | 2 | 6117 | 111 | 1 | 0 | 2 |
| | | | CR | 6729 | 122 | 1 | 0 | 2 | 6729 | 122 | 1 | 0 | 2 | 6143 | 112 | 1 | 0 | 2 |
| 36 | 560 mA | 65W | FR | 7864 | 121 | 1 | 0 | 1 | 8041 | 124 | 1 | 0 | 1 | 7189 | 111 | 1 | 0 | 1 |
| | | | 2 | 7586 | 117 | 1 | 0 | 2 | 7757 | 119 | 1 | 0 | 2 | 6934 | 107 | 1 | 0 | 2 |
| | | | 3 | 7441 | 114 | 1 | 0 | 2 | 7609 | 117 | 1 | 0 | 2 | 6802 | 105 | 1 | 0 | 2 |
| | | | 4F | 7317 | 110 | 1 | 0 | 2 | 7482 | 112 | 1 | 0 | 2 | 6688 | 100 | 1 | 0 | 2 |
| | | | 4W | 8690 | 108 | 1 | 0 | 2 | 8864 | 110 | 1 | 0 | 2 | 7908 | 98 | 1 | 0 | 2 |
| | | | 5QM | 7450 | 115 | 3 | 0 | 1 | 7618 | 117 | 3 | 0 | 1 | 6810 | 105 | 3 | 0 | 1 |
| | | | 5R | 7501 | 115 | 3 | 0 | 3 | 7670 | 118 | 3 | 0 | 3 | 6857 | 105 | 3 | 0 | 3 |
| | | | 5W | 7309 | 112 | 3 | 0 | 2 | 7473 | 115 | 3 | 0 | 2 | 6681 | 103 | 3 | 0 | 1 |
| | | | TC | 7540 | 116 | 1 | 0 | 1 | 7694 | 118 | 1 | 0 | 1 | 7694 | 122 | 1 | 0 | 2 |
| | | | CL | 8179 | 126 | 2 | 0 | 2 | 8179 | 126 | 2 | 0 | 2 | 7467 | 115 | 1 | 0 | 2 |
| | | | CR | 8205 | 126 | 2 | 0 | 2 | 8205 | 126 | 2 | 0 | 2 | 7492 | 115 | 1 | 0 | 2 |
| 36 | 700 mA | 80W | FR | 9535 | 118 | 1 | 0 | 1 | 9730 | 120 | 1 | 0 | 1 | 8706 | 107 | 1 | 0 | 1 |
| | | | 2 | 9197 | 114 | 1 | 0 | 2 | 9385 | 116 | 1 | 0 | 2 | 8398 | 104 | 1 | 0 | 2 |
| | | | 3 | 9022 | 111 | 1 | 0 | 2 | 9206 | 114 | 1 | 0 | 2 | 8238 | 102 | 1 | 0 | 2 |
| | | | 4F | 8871 | 110 | 1 | 0 | 2 | 9052 | 112 | 1 | 0 | 2 | 8100 | 100 | 1 | 0 | 2 |
| | | | 4W | 11587 | 108 | 1 | 0 | 3 | 11819 | 110 | 1 | 0 | 3 | 10544 | 98 | 1 | 0 | 3 |
| | | | 5QM | 9033 | 112 | 3 | 0 | 1 | 9217 | 114 | 3 | 0 | 1 | 8248 | 102 | 3 | 0 | 1 |
| | | | 5R | 9095 | 112 | 3 | 0 | 3 | 9280 | 115 | 3 | 0 | 3 | 8304 | 103 | 3 | 0 | 3 |
| | | | 5W | 8861 | 109 | 3 | 0 | 2 | 9043 | 112 | 3 | 0 | 2 | 8092 | 100 | 3 | 0 | 2 |
| | | | TC | 9275 | 115 | 1 | 0 | 1 | 9464 | 118 | 1 | 0 | 1 | 8468 | 105 | 1 | 0 | 1 |
| | | | CL | 10060 | 126 | 2 | 0 | 2 | 10060 | 126 | 2 | 0 | 2 | 9184 | 115 | 2 | 0 | 2 |
| | | | CR | 10093 | 126 | 2 | 0 | 2 | 10093 | 126 | 2 | 0 | 2 | 9215 | 115 | 2 | 0 | 2 |
| 48 | 700 mA | 110W | FR | 12713 | 118 | 1 | 0 | 1 | 12973 | 120 | 2 | 0 | 1 | 11608 | 107 | 1 | 0 | 1 |
| | | | 2 | 12263 | 114 | 2 | 0 | 2 | 12513 | 116 | 2 | 0 | 2 | 11197 | 104 | 2 | 0 | 2 |
| | | | 3 | 12029 | 111 | 2 | 0 | 2 | 12275 | 114 | 2 | 0 | 2 | 10984 | 102 | 1 | 0 | 2 |
| | | | 4F | 11828 | 110 | 1 | 0 | 3 | 12069 | 112 | 1 | 0 | 3 | 10800 | 100 | 1 | 0 | 2 |
| | | | 4W | 11609 | 108 | 1 | 0 | 3 | 11841 | 110 | 1 | 0 | 3 | 10564 | 98 | 1 | 0 | 3 |
| | | | 5QM | 12044 | 112 | 3 | 0 | 2 | 12290 | 114 | 3 | 0 | 2 | 10997 | 102 | 3 | 0 | 1 |
| | | | 5R | 12126 | 112 | 3 | 0 | 3 | 12374 | 115 | 3 | 0 | 3 | 11072 | 103 | 3 | 0 | 3 |
| | | | 5W | 12126 | 109 | 4 | 0 | 2 | 12057 | 112 | 4 | 0 | 2 | 10789 | 100 | 4 | 0 | 2 |
| | | | RC | 12366 | 115 | 1 | 0 | 2 | 12619 | 118 | 1 | 0 | 1 | 11290 | 105 | 1 | 0 | 2 |
| | | | CL | 13414 | 122 | 2 | 0 | 3 | 13414 | 122 | 2 | 0 | 3 | 12246 | 111 | 2 | 0 | 2 |
| | | | CR | 13458 | 122 | 2 | 0 | 3 | 13458 | 122 | 2 | 0 | 3 | 12287 | 112 | 2 | 0 | 2 |
| 60 | 700 mA | 136W | FR | 15891 | 117 | 2 | 0 | 2 | 16216 | 120 | 2 | 0 | 2 | 14511 | 107 | 2 | 0 | 1 |
| | | | 2 | 15329 | 113 | 2 | 0 | 2 | 15642 | 116 | 2 | 0 | 2 | 13997 | 103 | 2 | 0 | 2 |
| | | | 3 | 15037 | 111 | 2 | 0 | 3 | 15344 | 113 | 2 | 0 | 3 | 13730 | 101 | 2 | 0 | 3 |
| | | | 4F | 14784 | 109 | 1 | 0 | 3 | 15086 | 111 | 1 | 0 | 3 | 13500 | 100 | 1 | 0 | 3 |
| | | | 4W | 14802 | 109 | 2 | 0 | 3 | 15104 | 112 | 2 | 0 | 3 | 13515 | 100 | 2 | 0 | 3 |
| | | | 5QM | 15055 | 111 | 3 | 0 | 2 | 15362 | 114 | 3 | 0 | 2 | 13747 | 102 | 3 | 0 | 2 |
| | | | 5R | 15158 | 112 | 4 | 0 | 4 | 15469 | 114 | 4 | 0 | 4 | 13841 | 102 | 4 | 0 | 4 |
| | | | 5W | 14781 | 109 | 4 | 0 | 2 | 15083 | 111 | 4 | 0 | 2 | 13495 | 100 | 4 | 0 | 2 |
| | | | TC | 15458 | 115 | 1 | 0 | 2 | 15834 | 118 | 1 | 0 | 2 | 14113 | 105 | 1 | 0 | 2 |
| | | | CL | 16768 | 123 | 3 | 0 | 3 | 16768 | 123 | 3 | 0 | 3 | 15309 | 113 | 2 | 0 | 3 |
| | | | CR | 16823 | 124 | 3 | 0 | 3 | 16823 | 124 | 3 | 0 | 3 | 15359 | 113 | 2 | 0 | 3 |



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HUBBELL Lighting

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design : performance : technology

| | |
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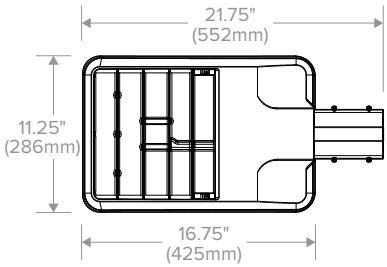
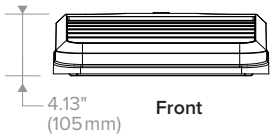
# VIPER S

SMALL VIPER LUMINAIRE

## DIMENSIONS

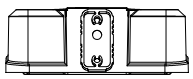



| | |
|---|---|
| Weight | 15.0 lbs (6.8 kg) |
| EPA | .67 ft² |

**A Arm (formerly RA)**

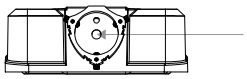
Side View



Back View

**MAF (formerly SF2)**

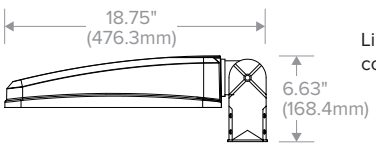
Side View



Back View

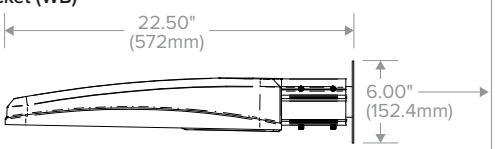
Accepts 2⅜" OD tenon, min 5" long.

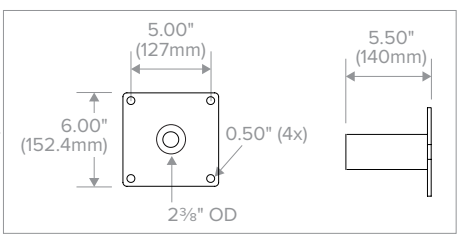
**2⅜" Adjustable Knuckle (K) (formerly PK2)**



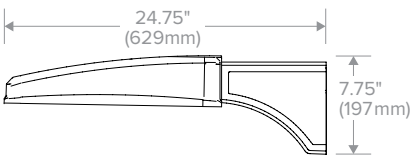

Limit to 30° tilt. Sensor, photocell and wireless controls should not be tilted above horizontal.

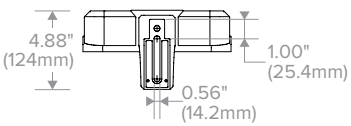
**Wall Bracket (WB)**




**AD Decorative Arm**




See page 9 for mounting details.



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# VIPER S

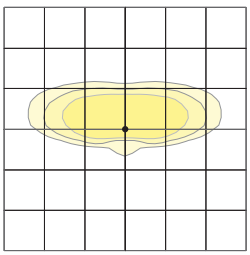
SMALL VIPER LUMINAIRE

| | |
|---|---|
| DATE: | LOCATION: |
| TYPE: | PROJECT: |
| CATALOG #: | |

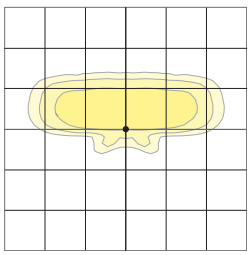
## PHOTOMETRY

The following diagrams represent the general distribution options offered for this product. For detailed information on specific product configurations, see website photometric test reports.

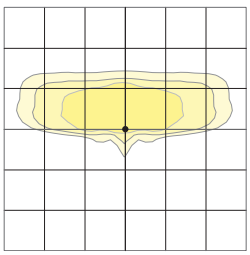
**Type FR – Front Row/Auto Optic**



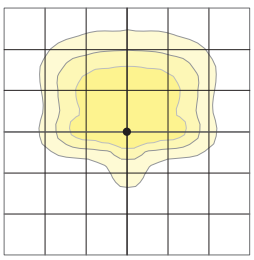
**Type 2**



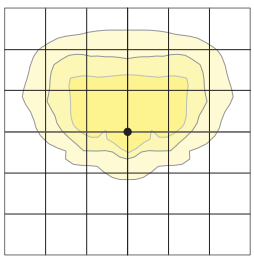
**Type 3**



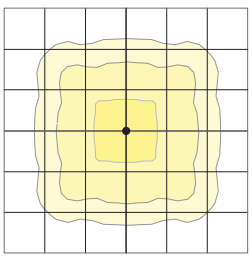
**Type 4**



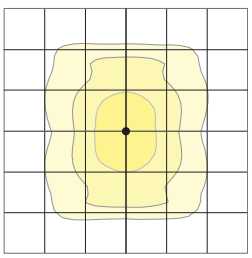
**Type 4 Wide**



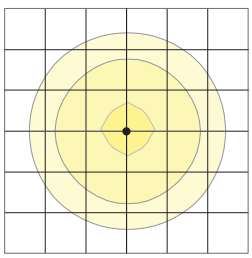
**Type 5QM**



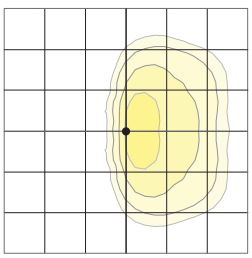
**Type 5R (rectangular)**



**Type 5W (round wide)**



**Type TC**





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# VIPER S

SMALL VIPER LUMINAIRE

## ELECTRICAL DATA

| # OF LEDS | NUMBER OF DRIVERS | DRIVE CURRENT (mA) | INPUT VOLTAGE (V) | SYSTEM POWER (w) | CURRENT (Amps) |
|---|---|---|---|---|---|
| 24 | 1 | 500 mA | 120 | 39 | 0.33 |
| | | | 277 | | 0.14 |
| | | | 347 | | 0.11 |
| | | | 480 | | 0.08 |
| 24 | 1 | 700 mA | 120 | 55 | 0.5 |
| | | | 277 | | 0.2 |
| | | | 347 | | 0.2 |
| | | | 480 | | 0.1 |
| 36 | 1 | 525 mA | 120 | 65 | 0.65 |
| | | | 277 | | 0.28 |
| | | | 347 | | 0.22 |
| | | | 480 | | 0.16 |
| | | 700 mA | 120 | 80 | 0.7 |
| | | | 277 | | 0.3 |
| | | | 347 | | 0.2 |
| | | | 480 | | 0.2 |
| 48 | 1 | 700 mA | 120 | 110 | 0.9 |
| | | | 277 | | 0.4 |
| | | | 347 | | 0.3 |
| | | | 480 | | 0.2 |
| 60 | 1 | 700 mA | 120 | 136 | 1.1 |
| | | | 277 | | 0.5 |
| | | | 347 | | 0.4 |
| | | | 480 | | 0.3 |

| PROJECTED LUMEN MAINTENANCE | | | | | | |
|---|---|---|---|---|---|---|
| Ambient Temp. | 0 | 25,000 | 50,000 | TM-21-11 60,000[1] | 100,000 | Calculated L70 (HOURS) |
| 25°C / 77°C | 1 | 0.97 | 0.95 | 0.95 | 0.92 | >377,000 |

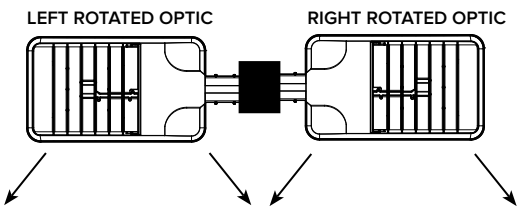
1 Projected per IESNA TM-21-11.
Data references the extrapolated performance projections for the 60 LED base model in a 25°C ambient, based on 10,000 hours of LED testing per IESNA LM-80-08.

### LIFESHIELD™ CIRCUIT

Protects luminaire from excessive temperature. The device activates at a specific, factory-preset temperature and progressively reduces power over a finite temperature range. Operation is smooth and undetectable to the eye. Thermal circuit is designed to "fail on", allowing the luminaire to revert to full power in the event of an interruption of its power supply or faulty wiring connection to the drivers. The device can co-exist with other 0–10V control devices (occupancy sensors, external dimmers, etc.)

## ADDITIONAL INFORMATION

### ROTATION OPTIONS



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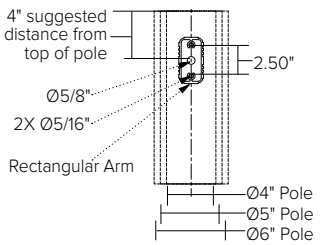
## ADDITIONAL INFORMATION (CONTINUED)

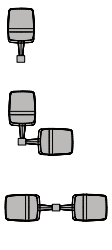
### DRILL PATTERN

**RECTANGULAR ARM (A)**
Compatible with Pole drill pattern B3

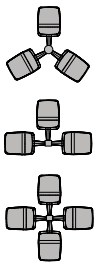



### EPA

| Config. | EPA |
|---|---|
| 1 | .67 |
| 2 @ 90˚ | 1.06 |
| 2 @ 180˚ | 1.34 |



| Config. | EPA |
|---|---|
| 3 @ 120˚ | 1.68 |
| 3 @ 90˚ | 1.73 |
| 4 @ 90˚ | 2.12 |

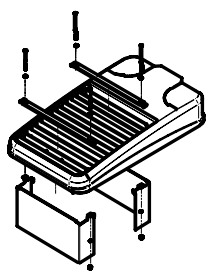


### TENON TOP POLE BRACKET ACCESSORIES (ORDER SEPARATELY)

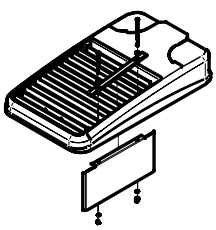
(2 3/8" OD tenon)

| TENON TOP POLE BRACKET ACCESSORIES (Order Separately) | |
|---|---|
| ☐ **SETAVP-XX** | Square tenon adapter (4 at 90°) for A - Rectangular Arm mounting option only |
| ☐ **RETAVP-XX** | Round tenon adapter (4 at 90°) for A - Rectangular Arm mounting option only |
| ☐ **SETA2XX** | Square tenon adapter (4 at 90°) for AD - Universal Arm mounting option only |
| ☐ **RETA2XX** | Round tenon adapter (4 at 90°) for AD3 - Universal Arm mounting option only |

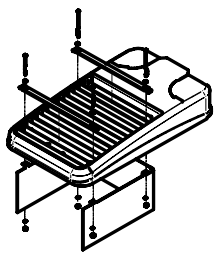
### HOUSE SIDE SHIELD FIELD INSTALL ACCESSORIES



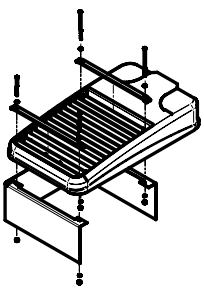
**HSS/VP-S/90-FB/XXX**
90° shield front or back
(2 shields shown)



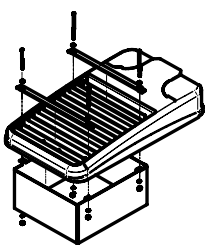
**HSS/VP-S/90-LR/XXX**
90° shield left or right
(1 shield shown in left orientation)



**HSS/VP-S/270-FB/XXX**
270° shield front or back
(1 shield shown in back orientation)



**HSS/VP-S/270-LR/XXX**
270° shield left or right
(1 shield shown in right orientation)



**HSS/VP-S/360/XXX**
Full shield
(1 shield shown)



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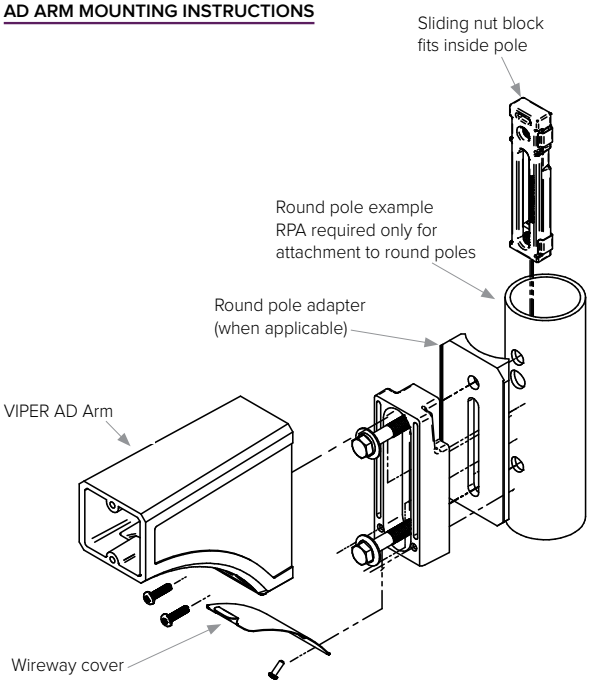
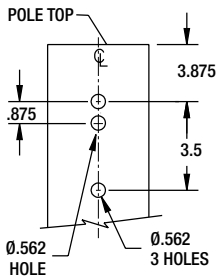
| CATALOG #: | |

## ADDITIONAL INFORMATION (CONTINUED)

### AD ARM MOUNTING INSTRUCTIONS




**DECORATIVE ARM (AD)**
Compatible with pole drill pattern S2

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OPTICS STRIKE

## FEATURES

- Small size companion to Viper Large
- Wide choice of different LED wattage configurations
- Nine optical distributions
- Designed to replace HID lighting up to 400W MH or HPS
- Suitable for wet locations

*3000K and warmer CCTs only

See Certification Specifications

**RELATED PRODUCTS**

Viper Large

## CONTROL TECHNOLOGY

NX DISTRIBUTED INTELLIGENCE · wiSCAPE · energeni · SiteSync LIGHTING CONTROL

## SPECIFICATIONS

### CONSTRUCTION

- Manufactured with die cast aluminum
- Coated with a polyester finish that meets ASTM B117 corrosion test requirements and ASTM D522 cracking and loss of adhesion test requirements
- IFS polyester powder-coat electrostatically applied and thermocured. IFS finish consists of a five stage pretreatment regimen with a polymer primer sealer and top coated with a thermoset super TGIC polyester powder coat finish
- The finish meets the AAMA 2604 performance specification which includes passing a 3,000-hour salt spray test for corrosion resistance and resists cracking or loss of adhesion per ASTM D522 and resists surface impacts of up to 160 inch-pounds
- External hardware is corrosion resistant

### OPTICS

- Cartridge is held together with internal brass standoffs soldered to the board so that it can be field replaced as a one-piece optical system
- One-piece silicone gasket ensures a weatherproof seal around each individual optic
- One-piece optical cartridge system consisting of an LED engine, optics, gasket and stainless steel bezel

### INSTALLATION

- Mounting options for horizontal arm, vertical tenon or traditional arm mounting available. Mounting hardware included

### ELECTRICAL

- Luminaire accepts 100V through 277V, 347V or 480V input 50 Hz to 60 Hz (UNV)

### ELECTRICAL (CONTINUED)

- Power factor is ≥ .90 at full load
- Dimming drivers are standard, but CD must be selected in options to obtain external wiring leads for dimming controls
- Component-to-component wiring within the luminaire may carry no more than 80% of rated load and is certified by UL for use at 600VAC at 90°C or higher
- Plug disconnects are certified by UL for use at 600 VAC, 13A or higher. 13A rating applies to primary (AC) side only
- Fixture electrical compartment contains all LED driver components
- Optional 7-pin ANSI C136.41-2013 Twist-Lock® photo control receptacle available. Compatible with ANSI C136.41 external wireless control devices
- Ambient operating temperature -40°C to 25°C
- Surge protection: 20kA
- Lifeshield™ Circuit (see Electrical Data)

### CONTROLS

- Available with an optional passive infrared (PIR) motion sensor capable of detecting motion 360° around the luminaire. When no motion is detected for the specified time, the motion response system reduces the wattage to factory preset level, reducing the light level accordingly. When motion is detected by the PIR sensor, the luminaire returns to full wattage and full light output. Please contact Beacon Products if project requirements vary from standard configuration
- Available with Energeni for optional set dimming, timed dimming with simple delay, or timed dimming based on time of night

### CONTROLS (CONTINUED)

- In addition, Viper can be specified with SiteSync™ wireless control system for reduction in energy and maintenance costs while optimizing light quality 24/7

### CERTIFICATIONS

- DLC® (DesignLights Consortium) Qualified. Please refer to the DLC website for specific product qualifications at www.designlights.org
- Certified to UL 1598 and UL 8750
- 3G rated for ANSI C136.31 high vibration applications with MAF mounting
- IDA approved
- This product qualifies as a "designated country construction material" per FAR 52.225-11 Buy American-Construction Materials under Trade Agreements effective 04/23/2020. See Buy American Solutions.

### WARRANTY

- 5 year warranty
- See HLI Commercial and Industrial Outdoor Lighting Warranty for additional information

| KEY DATA | |
|---|---|
| Lumen Range | 4,045–16,216 |
| Wattage Range | 39–136 |
| Efficacy Range (LPW) | 100–124 |
| Reported Life (Hours) | L70>60,000 |
| Input Current Range (Amps) | 0.1–1.1 |



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# VIPER S

SMALL VIPER LUMINAIRE

## ORDERING GUIDE

**Example:** VPS–24L–55–4K7–4W–UNV–A–DBT–TL–GENI–04–BC

CATALOG #

VPS –

| Series | |
|---|---|
| **VPS** | Viper Small |

| LED Engine | |
|---|---|
| **24L-39** | 39W, LED array |
| **24L-55** | 55W, LED array |
| **36L-65** | 65W, LED array |
| **36L-80** | 80W, LED array |
| **48L-110** | 110W, LED array |
| **60L-136** | 136W, LED array |

| CCT/CRI [7] | |
|---|---|
| **3K7** | 3000K, 70 CRI |
| **4K7** | 4000K, 70 CRI |
| **5K7** | 5000K, 70 CRI |

| Distribution | |
|---|---|
| **FR** | Type 1/Front Row |
| **2** | Type 2 |
| **3** | Type 3 |
| **4F (formerly 4)** | Type 4 |
| **4W** | Type 4 Wide |
| **5QM** | Type 5QM |
| **5R** | Type 5R (rectangular) |
| **5W** | Type 5W (round wide) |
| **TC** | Tennis Court |
| **CR** | Corner Right |
| **CL** | Corner Left |

| Rotation | |
|---|---|
| **Blank** | No rotation |
| **L** | Optic rotation left [5] |
| **R** | Optic rotation right [5] |

| Voltage | |
|---|---|
| **UNV** | 120–277V |
| **347** | 347V |
| **480** | 480V |

| Mounting | |
|---|---|
| **A** | Rectangular Arm (formerly RA) for square or round pole |
| **MAF** | Mast Arm Fitter (formerly SF2) for 2⅜" OD horizontal arm |
| **K** | Knuckle (formerly PK2) limit to 30° tilt or 2⅜" OD horizontal arm or vertical tenon |
| **WB** | Wall Bracket |
| **AD** | Universal Arm for square pole |
| **AD3** | Adapter for 2.4"–4.1" round pole |
| **AD4** | Adapter for 4.2"–5.3" round pole |
| **AD5** | Adapter for 5.5"–5.9" round pole |
| **AD6** | Adapter for 6.0"–6.5" round pole |

| Color | |
|---|---|
| **BLT** | Black Matte Textured |
| **BLS** | Black Gloss Smooth |
| **DBT** | Dark Bronze Matte Textured |
| **DBS** | Dark Bronze Gloss Smooth |
| **GTT** | Graphite Matte Textured |
| **LGS** | Light Grey Gloss Smooth |
| **PSS** | Platinum Silver Smooth |
| **WHT** | White Matte Textured |
| **WHS** | White Gloss Smooth |
| **VGT** | Verde Green Textured |
| **Color Option** | |
| **CC** | Custom Color |

| Control Options | |
|---|---|
| **NXWE** | NX Wireless Enabled (module + radio) |
| **NXSPW_F** | Nx Wireless, PIR Occ. Sensor, Daylight Havesting [7] |
| **NXSP_F** | NX, PIR Occ. Sensor, Daylight Harvesting [7] |
| **WIR** | Wireless Controls, wiSCAPE |
| **Control Options** | |
| **7PR** | 7-Pin Receptacle only (shorting cap, photo control, or wireless control provided by others) |
| **7PR-SC** | 7-Pin Receptacle w/Shorting Cap |
| **7PR-TL** | 7-Pin Receptacle w/Twist-Lock® photo control |
| **SCP/_F** | Programmable Occupancy Sensor w/ daylight control [1,2,6] |
| **GENI-XX** | ENERGENI [3] |
| **SWP** | SiteSync Pre-Commission [1,4] |
| **SWPM_F** | SiteSync Pre-Commission w/ Sensor [1,2,4] |

| Options | |
|---|---|
| **BC** | Backshield (available for FR, 2, 3, 4, 4W Optics) |
| **CD** | Continuous Dimming |
| **F** | Fusing |
| **TB** | Terminal Block |

### House Side Shield Accessories

- ☐ **HSS/VP-S/90-FB/XXX** 90° shield front or back
- ☐ **HSS/VP-S/90-LR/XXX** 90° shield left or right
- ☐ **HSS/VP-S/270-FB/XXX** 270° shield front or back
- ☐ **HSS/VP-S/270-LR/XXX** 270° shield left or right
- ☐ **HSS/VP-S/360/XXX** Full shield

Replace XXX with notation for desired finish color. Refer to page 8 for shield images.

### Mounting Accessories

- ☐ **VPL-AD-RPA3** 2.4"–4.1" Round Pole Adapter for AD arm
- ☐ **VPL-AD-RPA4** 4.2"–5.3" Round Pole Adapter for AD arm
- ☐ **VPL-AD-RPA5** 5.5"–5.9" Round Pole Adapter for AD arm
- ☐ **VPL-AD-RPA6** 6.0"–6.5" Round Pole Adapter for AD arm

Notes:

1. Not available with other wireless control or sensor options
2. Specify mounting height; 8 = 8' or less, 40 = 14' to 30'
3. Specify routine setting code (example GENI-04). See ENERGENI brochure and instructions for setting table and options. Not available with sensor or SiteSync options
4. Specify group and zone at time of order. See www.hubbelllighting.com/sitesync for further details. Order at least one SiteSync interface accessory SWUSB or SWTAB. Each option contains SiteSync License, GUI, and Bridge Node
5. Only available with FR, 2, 3, 4, 4W and 5R distributions
6. Specify mounting height; 8=8', 30=30

### Accessories and Services (Ordered Separately)

- ☐ **SCP-REMOTE** Remote Control for SCP/_F option. Order at least one per project to program and control the occupancy sensor
- ☐ **SWUSB*** SiteSync interface software loaded on USB flash drive for use with owner supplied PC (Windows based only). Includes SiteSync license, software and USB radio bridge node
- ☐ **SWTAB*** Windows tablet and SiteSync interface software. Includes tablet with preloaded software, SiteSync license and USB radio bridge node
- ☐ **SWBRG** SiteSync USB radio bridge node only. Order if a replacement is required or if an extra bridge node is requested
- ☐ **SW7PR+** SiteSync 7-Pin on fixture module On/Off/Dim, Daylight Sensor 120–480VAC
- ☐ **BIRD-SPIKE-3** Bird Spikes

* When ordering SiteSync at least one of these two interface options must be ordered per project.
\+ Available as a SiteSync retrofit solution for fixtures with an existing 7-pin receptacle.

### Hubbell Control Solutions — Accessories (Sold Separately)

**NX Distributed Intelligence™**

- ☐ **NXOFM-1R1D-UNV** On-fixture Module (7-pin), On / Off / Dim, Daylight Sensor with HubbNET Radio and Bluetooth® Radio, 120–480VAC

**wiSCAPE® Lighting Control**

- ☐ **WIR-RME-L** On-fixture Module (7-pin or 5-pin), On / Off / Dim, Daylight Sensor with wiSCAPE Radio, 110–480VAC

For additional information related to these accessories please visit www.hubbellcontrolsolutions.com. Options provided for use with integrated sensor, please view specification sheet ordering information table for details.



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# VIPER S

SMALL VIPER LUMINAIRE

## CONTROLS

**SiteSync — Precommissioned Ordering Information:**
When ordering a fixture with the SiteSync lighting control option, additional information will be required to complete the order. The SiteSync Commissioning Form or alternate schedule information must be completed. This form includes Project location, Group information, and Operating schedules. For more detailed information please visit the SiteSync family page on our website or contact Hubbell Lighting tech support at 864-678-1000.

SiteSync fixtures with Motion control (SWPM) require the mounting height of the fixture for selection of the lens.

Examples: VP-L/80L-235/4K7/3/UNV/A/DB/SWP/ SiteSync only
VP-L/80L-235/4K7/3/UNV/A/DB/SWPM-40F/ SiteSync with Motion Control

**SiteSync 7-Pin Module:**
- SiteSync features in a new form
- Available as an accessory for new construction or retrofit applications (with existing 7-Pin receptacle)
- Does not interface with occupancy sensors

SW7PR

**NX Distributed Intelligence™ Lighting Controls:**
Supports both indoor and outdoor applications in a variety of deployment options: wired, wireless and hybrid.
Integrates with and enables a wide array of luminaires including those with SpectraSync Color Tuning Technology.

| NX Integrated Controls Reference | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| NX Option | Sensor | Networkable | Scheduling | Occupancy | Daylight Harvesting | 0–10V Dimming | On/off Control | Bluetooth® App Programming |
| NX Networked – Wireless | | | | | | | | |
| NXOFM-1R1D-UNV | SCLNX | Yes | Yes | Yes | Yes | Yes | Yes | Yes, Bluetooth App |

**wiSCAPE™:**
Supports remote management, monitoring and metering of outdoor wireless lighting applications such as smart campuses, smart cities, parking lots, parking lots and roadways.

| wiSCAPE Reference | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| wiSCAPE Option | Sensor | Networkable | Scheduling | Occupancy | Daylight Harvesting | 0–10V Dimming | On/off Control | Bluetooth® App Programming |
| Networked – Wireless | | | | | | | | |
| WIR-RME-L | WIR-RME-L | Yes | Yes | No | Yes | Yes | Yes | wiSCAPE Gateway |



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# VIPER S

SMALL VIPER LUMINAIRE

## DELIVERED LUMENS

| | | | | 5K (5000K nominal, 70 CRI) | | | | | 4K (4000K nominal, 70 CRI) | | | | | 3K (3000K nominal, 70 CRI) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # of LEDs | DRIVE CURRENT (mA) | SYSTEM WATTS | DISTRIBUTION TYPE | LUMENS | LPW | B | U | G | LUMENS | LPW | B | U | G | LUMENS | LPW | B | U | G |
| 24 | 500mA | 39W | FR | 4689 | 120 | 1 | 0 | 0 | 4665 | 120 | 1 | 0 | 0 | 4432 | 114 | 1 | 0 | 0 |
| | | | 2 | 4523 | 116 | 1 | 0 | 1 | 4500 | 115 | 1 | 0 | 1 | 4275 | 110 | 1 | 0 | 1 |
| | | | 3 | 4436 | 114 | 1 | 0 | 1 | 4414 | 113 | 1 | 0 | 1 | 4194 | 108 | 1 | 0 | 1 |
| | | | 4F | 4362 | 112 | 1 | 0 | 2 | 4340 | 111 | 1 | 0 | 2 | 4123 | 106 | 0 | 0 | 2 |
| | | | 4W | 4280 | 110 | 1 | 0 | 2 | 4258 | 109 | 1 | 0 | 2 | 4045 | 104 | 1 | 0 | 2 |
| | | | 5QM | 4442 | 114 | 2 | 0 | 1 | 4420 | 113 | 2 | 0 | 1 | 4199 | 108 | 2 | 0 | 0 |
| | | | 5R | 4472 | 115 | 2 | 0 | 2 | 4450 | 114 | 2 | 0 | 2 | 4227 | 108 | 2 | 0 | 2 |
| | | | 5W | 4335 | 112 | 3 | 0 | 1 | 4336 | 111 | 3 | 0 | 1 | 4114 | 105 | 3 | 0 | 1 |
| | | | TC | 4561 | 117 | 1 | 0 | 1 | 4538 | 116 | 1 | 0 | 1 | 4311 | 111 | 1 | 0 | 1 |
| | | | CL | 4758 | 122 | 1 | 0 | 2 | 4758 | 122 | 1 | 0 | 2 | 4329 | 111 | 1 | 0 | 1 |
| | | | CR | 4773 | 122 | 1 | 0 | 2 | 4773 | 122 | 1 | 0 | 2 | 4361 | 112 | 1 | 0 | 1 |
| 24 | 700 mA | 55W | FR | 6357 | 118 | 1 | 0 | 1 | 6486 | 120 | 1 | 0 | 1 | 5804 | 107 | 1 | 0 | 1 |
| | | | 2 | 6132 | 114 | 1 | 0 | 1 | 6257 | 116 | 1 | 0 | 2 | 5599 | 104 | 1 | 0 | 1 |
| | | | 3 | 6015 | 111 | 1 | 0 | 2 | 6137 | 114 | 1 | 0 | 2 | 5492 | 102 | 1 | 0 | 2 |
| | | | 4F | 5921 | 110 | 1 | 0 | 2 | 6034 | 112 | 1 | 0 | 2 | 5400 | 100 | 1 | 0 | 2 |
| | | | 4W | 5793 | 108 | 1 | 0 | 2 | 5909 | 110 | 1 | 0 | 2 | 5272 | 98 | 1 | 0 | 2 |
| | | | 5QM | 6022 | 112 | 2 | 0 | 1 | 6145 | 114 | 2 | 0 | 1 | 5499 | 102 | 2 | 0 | 1 |
| | | | 5R | 6063 | 112 | 3 | 0 | 3 | 6187 | 115 | 3 | 0 | 3 | 5536 | 103 | 3 | 0 | 3 |
| | | | 5W | 5908 | 109 | 3 | 0 | 1 | 6028 | 112 | 3 | 0 | 1 | 5908 | 102 | 3 | 0 | 1 |
| | | | TC | 6183 | 113 | 1 | 0 | 1 | 6309 | 118 | 1 | 0 | 1 | 5645 | 105 | 1 | 0 | 1 |
| | | | CL | 6707 | 122 | 1 | 0 | 2 | 6707 | 122 | 1 | 0 | 2 | 6117 | 111 | 1 | 0 | 2 |
| | | | CR | 6729 | 122 | 1 | 0 | 2 | 6729 | 122 | 1 | 0 | 2 | 6143 | 112 | 1 | 0 | 2 |
| 36 | 560 mA | 65W | FR | 7864 | 121 | 1 | 0 | 1 | 8041 | 124 | 1 | 0 | 1 | 7189 | 111 | 1 | 0 | 1 |
| | | | 2 | 7586 | 117 | 1 | 0 | 2 | 7757 | 119 | 1 | 0 | 2 | 6934 | 107 | 1 | 0 | 2 |
| | | | 3 | 7441 | 114 | 1 | 0 | 2 | 7609 | 117 | 1 | 0 | 2 | 6802 | 105 | 1 | 0 | 2 |
| | | | 4F | 7317 | 110 | 1 | 0 | 2 | 7482 | 112 | 1 | 0 | 2 | 6688 | 100 | 1 | 0 | 2 |
| | | | 4W | 8690 | 108 | 1 | 0 | 2 | 8864 | 110 | 1 | 0 | 2 | 7908 | 98 | 1 | 0 | 2 |
| | | | 5QM | 7450 | 115 | 3 | 0 | 1 | 7618 | 117 | 3 | 0 | 1 | 6810 | 105 | 3 | 0 | 1 |
| | | | 5R | 7501 | 115 | 3 | 0 | 3 | 7670 | 118 | 3 | 0 | 3 | 6857 | 105 | 3 | 0 | 3 |
| | | | 5W | 7309 | 112 | 3 | 0 | 2 | 7473 | 115 | 3 | 0 | 2 | 6681 | 103 | 3 | 0 | 1 |
| | | | TC | 7540 | 116 | 1 | 0 | 1 | 7694 | 118 | 1 | 0 | 1 | 7694 | 122 | 1 | 0 | 2 |
| | | | CL | 8179 | 126 | 2 | 0 | 2 | 8179 | 126 | 2 | 0 | 2 | 7467 | 115 | 1 | 0 | 2 |
| | | | CR | 8205 | 126 | 2 | 0 | 2 | 8205 | 126 | 2 | 0 | 2 | 7492 | 115 | 1 | 0 | 2 |
| 36 | 700 mA | 80W | FR | 9535 | 118 | 1 | 0 | 1 | 9730 | 120 | 1 | 0 | 1 | 8706 | 107 | 1 | 0 | 1 |
| | | | 2 | 9197 | 114 | 1 | 0 | 2 | 9385 | 116 | 1 | 0 | 2 | 8398 | 104 | 1 | 0 | 2 |
| | | | 3 | 9022 | 111 | 1 | 0 | 2 | 9206 | 114 | 1 | 0 | 2 | 8238 | 102 | 1 | 0 | 2 |
| | | | 4F | 8871 | 110 | 1 | 0 | 2 | 9052 | 112 | 1 | 0 | 2 | 8100 | 100 | 1 | 0 | 2 |
| | | | 4W | 11587 | 108 | 1 | 0 | 3 | 11819 | 110 | 1 | 0 | 3 | 10544 | 98 | 1 | 0 | 3 |
| | | | 5QM | 9033 | 112 | 3 | 0 | 1 | 9217 | 114 | 3 | 0 | 1 | 8248 | 102 | 3 | 0 | 1 |
| | | | 5R | 9095 | 112 | 3 | 0 | 3 | 9280 | 115 | 3 | 0 | 3 | 8304 | 103 | 3 | 0 | 3 |
| | | | 5W | 8861 | 109 | 3 | 0 | 2 | 9043 | 112 | 3 | 0 | 2 | 8092 | 100 | 3 | 0 | 2 |
| | | | TC | 9275 | 115 | 1 | 0 | 1 | 9464 | 118 | 1 | 0 | 1 | 8468 | 105 | 1 | 0 | 1 |
| | | | CL | 10060 | 126 | 2 | 0 | 2 | 10060 | 126 | 2 | 0 | 2 | 9184 | 115 | 2 | 0 | 2 |
| | | | CR | 10093 | 126 | 2 | 0 | 2 | 10093 | 126 | 2 | 0 | 2 | 9215 | 115 | 2 | 0 | 2 |
| 48 | 700 mA | 110W | FR | 12713 | 118 | 1 | 0 | 1 | 12973 | 120 | 2 | 0 | 1 | 11608 | 107 | 1 | 0 | 1 |
| | | | 2 | 12263 | 114 | 2 | 0 | 2 | 12513 | 116 | 2 | 0 | 2 | 11197 | 104 | 2 | 0 | 2 |
| | | | 3 | 12029 | 111 | 2 | 0 | 2 | 12275 | 114 | 2 | 0 | 2 | 10984 | 102 | 1 | 0 | 2 |
| | | | 4F | 11828 | 110 | 1 | 0 | 3 | 12069 | 112 | 1 | 0 | 3 | 10800 | 100 | 1 | 0 | 2 |
| | | | 4W | 11609 | 108 | 1 | 0 | 3 | 11841 | 110 | 1 | 0 | 3 | 10564 | 98 | 1 | 0 | 3 |
| | | | 5QM | 12044 | 112 | 3 | 0 | 2 | 12290 | 114 | 3 | 0 | 2 | 10997 | 102 | 3 | 0 | 1 |
| | | | 5R | 12126 | 112 | 3 | 0 | 3 | 12374 | 115 | 3 | 0 | 3 | 11072 | 103 | 3 | 0 | 3 |
| | | | 5W | 12126 | 109 | 4 | 0 | 2 | 12057 | 112 | 4 | 0 | 2 | 10789 | 100 | 4 | 0 | 2 |
| | | | RC | 12366 | 115 | 1 | 0 | 2 | 12619 | 118 | 1 | 0 | 1 | 11290 | 105 | 1 | 0 | 2 |
| | | | CL | 13414 | 122 | 2 | 0 | 3 | 13414 | 122 | 2 | 0 | 3 | 12246 | 111 | 2 | 0 | 2 |
| | | | CR | 13458 | 122 | 2 | 0 | 3 | 13458 | 122 | 2 | 0 | 3 | 12287 | 112 | 2 | 0 | 2 |
| 60 | 700 mA | 136W | FR | 15891 | 117 | 2 | 0 | 2 | 16216 | 120 | 2 | 0 | 2 | 14511 | 107 | 2 | 0 | 1 |
| | | | 2 | 15329 | 113 | 2 | 0 | 2 | 15642 | 116 | 2 | 0 | 2 | 13997 | 103 | 2 | 0 | 2 |
| | | | 3 | 15037 | 111 | 2 | 0 | 3 | 15344 | 113 | 2 | 0 | 3 | 13730 | 101 | 2 | 0 | 3 |
| | | | 4F | 14784 | 109 | 1 | 0 | 3 | 15086 | 111 | 1 | 0 | 3 | 13500 | 100 | 1 | 0 | 3 |
| | | | 4W | 14802 | 109 | 2 | 0 | 3 | 15104 | 112 | 2 | 0 | 3 | 13515 | 100 | 2 | 0 | 3 |
| | | | 5QM | 15055 | 111 | 3 | 0 | 2 | 15362 | 114 | 3 | 0 | 2 | 13747 | 102 | 3 | 0 | 2 |
| | | | 5R | 15158 | 112 | 4 | 0 | 4 | 15469 | 114 | 4 | 0 | 4 | 13841 | 102 | 4 | 0 | 4 |
| | | | 5W | 14781 | 109 | 4 | 0 | 2 | 15083 | 111 | 4 | 0 | 2 | 13495 | 100 | 4 | 0 | 2 |
| | | | TC | 15458 | 115 | 1 | 0 | 2 | 15834 | 118 | 1 | 0 | 2 | 14113 | 105 | 1 | 0 | 2 |
| | | | CL | 16768 | 123 | 3 | 0 | 3 | 16768 | 123 | 3 | 0 | 3 | 15309 | 113 | 2 | 0 | 3 |
| | | | CR | 16823 | 124 | 3 | 0 | 3 | 16823 | 124 | 3 | 0 | 3 | 15359 | 113 | 2 | 0 | 3 |



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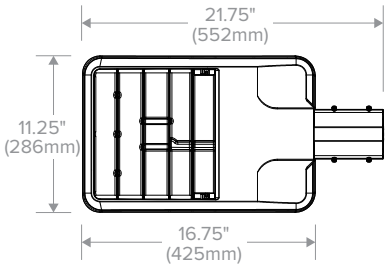
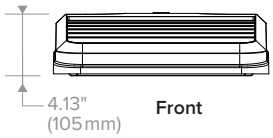
| TYPE: | PROJECT: |
| CATALOG #: | |

# VIPER S

SMALL VIPER LUMINAIRE

## DIMENSIONS

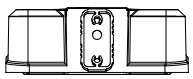



| | |
|---|---|
| Weight | 15.0 lbs (6.8 kg) |
| EPA | .67 ft² |

**A Arm (formerly RA)**

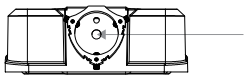
Side View



Back View

**MAF (formerly SF2)**

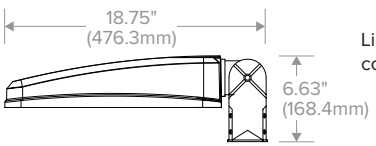
Side View



Back View

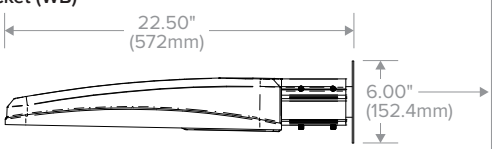
Accepts 2⅜" OD tenon, min 5" long.

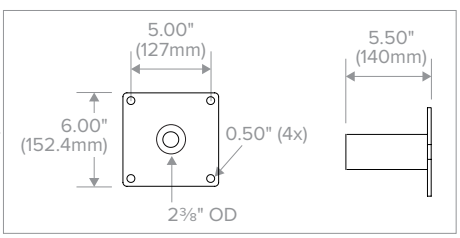
**2⅜" Adjustable Knuckle (K) (formerly PK2)**



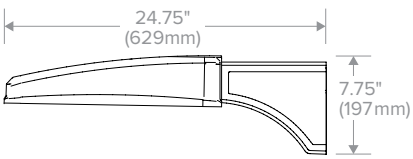

Limit to 30° tilt. Sensor, photocell and wireless controls should not be tilted above horizontal.

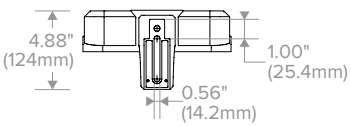
**Wall Bracket (WB)**




**AD Decorative Arm**




See page 9 for mounting details.



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# VIPER S

SMALL VIPER LUMINAIRE

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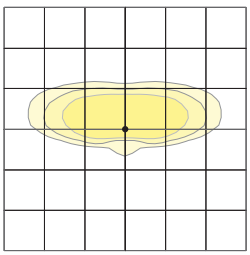
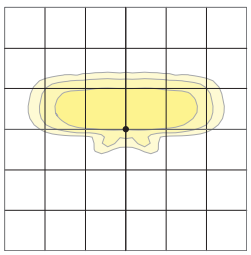
## PHOTOMETRY

The following diagrams represent the general distribution options offered for this product. For detailed information on specific product configurations, see website photometric test reports.

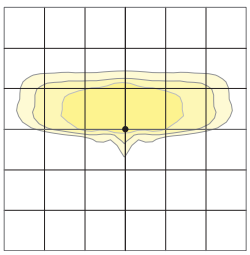
**Type FR – Front Row/Auto Optic**



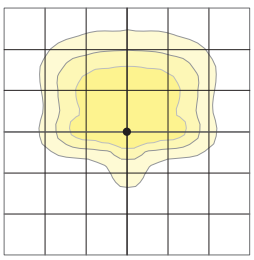
**Type 2**



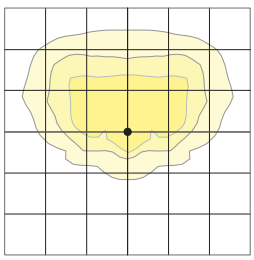
**Type 3**



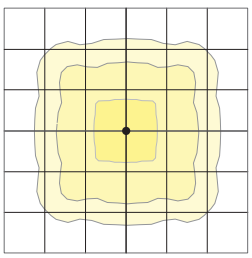
**Type 4**



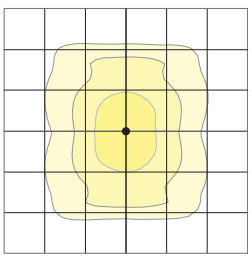
**Type 4 Wide**



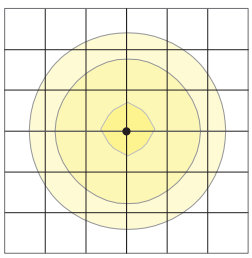
**Type 5QM**



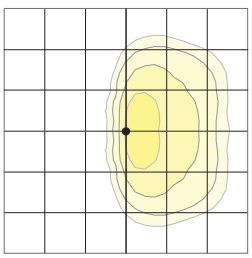
**Type 5R (rectangular)**



**Type 5W (round wide)**



**Type TC**





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# VIPER S

SMALL VIPER LUMINAIRE

## ELECTRICAL DATA

| # OF LEDS | NUMBER OF DRIVERS | DRIVE CURRENT (mA) | INPUT VOLTAGE (V) | SYSTEM POWER (w) | CURRENT (Amps) |
|---|---|---|---|---|---|
| 24 | 1 | 500 mA | 120 | 39 | 0.33 |
| | | | 277 | | 0.14 |
| | | | 347 | | 0.11 |
| | | | 480 | | 0.08 |
| 24 | 1 | 700 mA | 120 | 55 | 0.5 |
| | | | 277 | | 0.2 |
| | | | 347 | | 0.2 |
| | | | 480 | | 0.1 |
| 36 | 1 | 525 mA | 120 | 65 | 0.65 |
| | | | 277 | | 0.28 |
| | | | 347 | | 0.22 |
| | | | 480 | | 0.16 |
| | | 700 mA | 120 | 80 | 0.7 |
| | | | 277 | | 0.3 |
| | | | 347 | | 0.2 |
| | | | 480 | | 0.2 |
| 48 | 1 | 700 mA | 120 | 110 | 0.9 |
| | | | 277 | | 0.4 |
| | | | 347 | | 0.3 |
| | | | 480 | | 0.2 |
| 60 | 1 | 700 mA | 120 | 136 | 1.1 |
| | | | 277 | | 0.5 |
| | | | 347 | | 0.4 |
| | | | 480 | | 0.3 |

| PROJECTED LUMEN MAINTENANCE | | | | | | |
|---|---|---|---|---|---|---|
| Ambient Temp. | 0 | 25,000 | 50,000 | TM-21-11 60,000[1] | 100,000 | Calculated L70 (HOURS) |
| 25°C / 77°C | 1 | 0.97 | 0.95 | 0.95 | 0.92 | >377,000 |

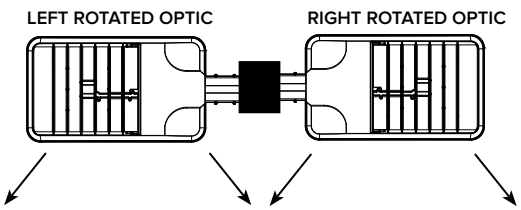
1 Projected per IESNA TM-21-11.
Data references the extrapolated performance projections for the 60 LED base model in a 25°C ambient, based on 10,000 hours of LED testing per IESNA LM-80-08.

### LIFESHIELD™ CIRCUIT

Protects luminaire from excessive temperature. The device activates at a specific, factory-preset temperature and progressively reduces power over a finite temperature range. Operation is smooth and undetectable to the eye. Thermal circuit is designed to "fail on", allowing the luminaire to revert to full power in the event of an interruption of its power supply or faulty wiring connection to the drivers. The device can co-exist with other 0–10V control devices (occupancy sensors, external dimmers, etc.)

## ADDITIONAL INFORMATION

### ROTATION OPTIONS



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design : performance : technology

# VIPER S

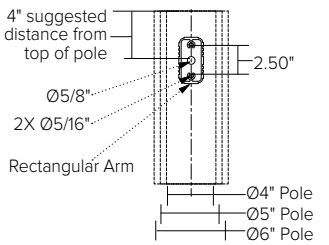
SMALL VIPER LUMINAIRE

| | |
|---|---|
| DATE: | LOCATION: |
| TYPE: | PROJECT: |
| CATALOG #: | |

## ADDITIONAL INFORMATION (CONTINUED)

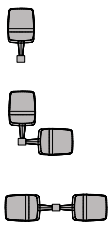
### DRILL PATTERN

**RECTANGULAR ARM (A)**
Compatible with Pole drill pattern B3

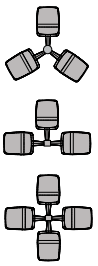



### EPA

| Config. | EPA |
|---|---|
| 1 | .67 |
| 2 @ 90˚ | 1.06 |
| 2 @ 180˚ | 1.34 |



| Config. | EPA |
|---|---|
| 3 @ 120˚ | 1.68 |
| 3 @ 90˚ | 1.73 |
| 4 @ 90˚ | 2.12 |

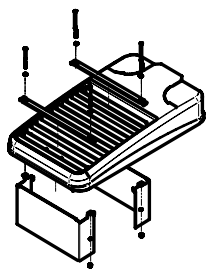


### TENON TOP POLE BRACKET ACCESSORIES (ORDER SEPARATELY)

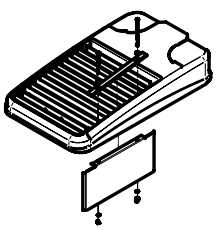
(2 3/8" OD tenon)

| TENON TOP POLE BRACKET ACCESSORIES (Order Separately) | |
|---|---|
| ☐ **SETAVP-XX** | Square tenon adapter (4 at 90°) for A - Rectangular Arm mounting option only |
| ☐ **RETAVP-XX** | Round tenon adapter (4 at 90°) for A - Rectangular Arm mounting option only |
| ☐ **SETA2XX** | Square tenon adapter (4 at 90°) for AD - Universal Arm mounting option only |
| ☐ **RETA2XX** | Round tenon adapter (4 at 90°) for AD3 - Universal Arm mounting option only |

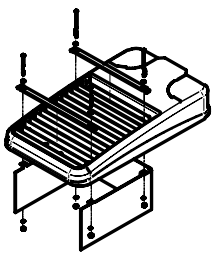
### HOUSE SIDE SHIELD FIELD INSTALL ACCESSORIES



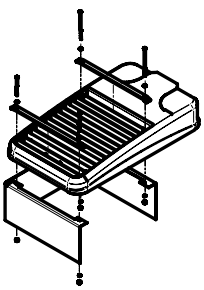
**HSS/VP-S/90-FB/XXX**
90° shield front or back
(2 shields shown)



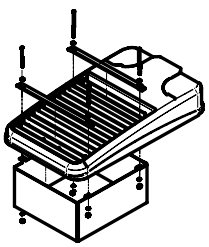
**HSS/VP-S/90-LR/XXX**
90° shield left or right
(1 shield shown in left orientation)



**HSS/VP-S/270-FB/XXX**
270° shield front or back
(1 shield shown in back orientation)



**HSS/VP-S/270-LR/XXX**
270° shield left or right
(1 shield shown in right orientation)



**HSS/VP-S/360/XXX**
Full shield
(1 shield shown)



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HUBBELL Lighting

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design : performance : technology

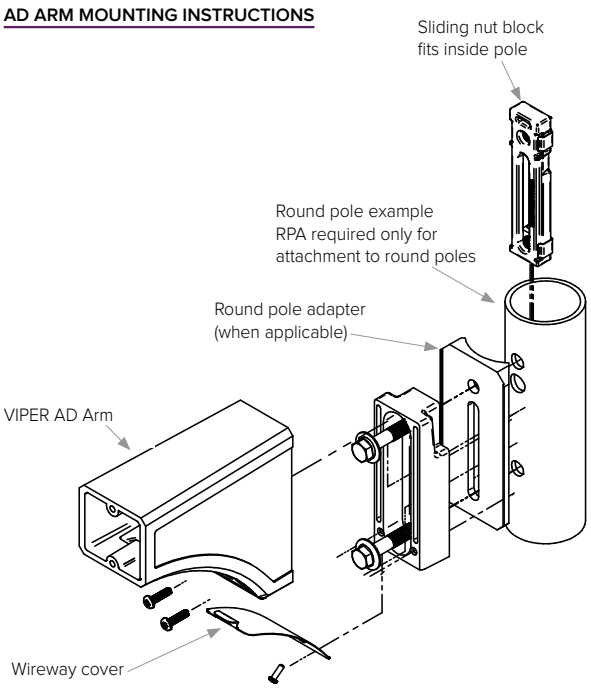
# VIPER S

SMALL VIPER LUMINAIRE

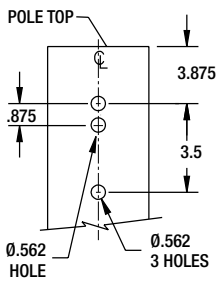
| | |
|---|---|
| DATE: | LOCATION: |
| TYPE: | PROJECT: |
| CATALOG #: | |

## ADDITIONAL INFORMATION (CONTINUED)

### AD ARM MOUNTING INSTRUCTIONS




**DECORATIVE ARM (AD)**
Compatible with pole drill pattern S2

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# SSS-B SERIES POLES

SQUARE STRAIGHT STEEL

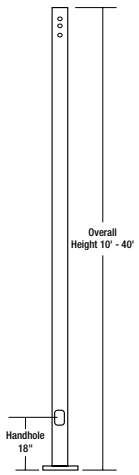
Cat.#

Job

Type

BEACON design . performance . technology

Approvals




## APPLICATIONS

- Lighting installations for side and top mounting of luminaires with effective projected area (EPA) not exceeding maximum allowable loading of the specified pole in its installed geographic location

## CONSTRUCTION

- SHAFT: One-piece straight steel with square cross section, flat sides and minimum 0.23" radius on all corners; Minimum yield of 46,000 psi (ASTM-A500, Grade B); Longitudinal weld seam to appear flush with shaft side wall; Steel base plate with axial bolt circle slots welded flush to pole shaft having minimum yield of 36,000 psi (ASTM A36)
- BASE COVER: Two-piece square aluminum base cover included standard
- POLE CAP: Pole shaft supplied with removable cover when applicable; Tenon and post-top configurations also available
- HAND HOLE: Rectangular 3x5 steel hand hole frame (2.38" x 4.38" opening); Mounting provisions for grounding lug located behind gasketed cover
- ANCHOR BOLTS: Four galvanized anchor bolts provided per pole with minimum yield of 55,000 psi (ASTM F1554). Galvanized hardware with two washers and two nuts per bolt for leveling

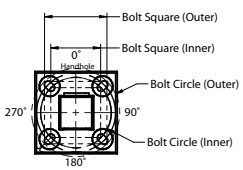
  Anchor bolt part numbers: 3/4 x 30 x 3 — TAB-30-M38
  1 x 36 x 4 — TAB-36-M38

## FINISH

- Durable thermoset polyester powder coat paint finish with nominal 3.0 mil thickness
- Powder paint prime applied over "white metal" steel substrate cleaned via mechanical shot blast method
- Decorative finish coat available in multiple standard colors; Custom colors available; RAL number preferable

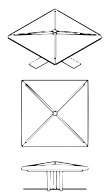
## WAREHOUSE 'STOCKED' POLES:

- SSSH20-40A-4-HV-DB-RDC, SSSH25-40A-4-HV-DB-RDC and SSSH30-50B-4-HV-DB-RDC
- The HV designation in the above catalog numbers is a combination drill pattern of the Hubbell Outdoor S2 pattern and the Beacon B3/B4 Viper pattern (rectangular arm mounting)

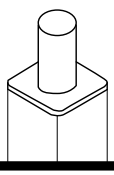



TOP VIEW

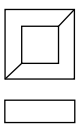
**POLE CAP**



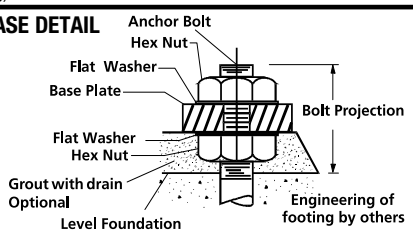
**TENON**



**BASE COVER**



**BASE DETAIL**




## ORDERING INFORMATION

ORDERING EXAMPLE:

Reference page 2 for available configurations

**SSS - B - 25 - 40 - A/B/C - 2L - B3 - BLT - UL**

| SERIES | HEIGHT | SHAFT | THICKNESS |
|---|---|---|---|
| **SSS-B** Square Straight Steel Pole Beacon | Reference page 2 Ordering matrix **20** | Reference page 2 Ordering matrix **40** | Reference page 2 Ordering matrix **A** |

**MOUNTING**

| | |
|---|---|
| **1** | Single arm mount |
| **2** | Two fixtures at 180° |
| **2L** | Two fixtures at 90° |
| **3T** | Three fixtures at 90° |
| **4** | Four fixtures at 90° |
| **TA** | Tenon (2.38" OD x 4" Tall) |
| **TB** | Tenon (2.88" OD x 4" Tall) |
| **TC** | Tenon (3.5" OD x 6" Tall) |
| **TR**[1] | Removable Tenon (2.375 x 4.25) |
| **OT** | Open Top (includes pole cap) |

**FINISH**

| | |
|---|---|
| **BLT** | Black Matte Textured |
| **BLS** | Black Gloss Smooth |
| **DBT** | Dark Bronze Matte Textured |
| **DBS** | Dark Bronze Gloss Smooth |
| **GTT** | Graphite Matte Textured |
| **LGS** | Light Grey Gloss Smooth |
| **PSS** | Platinum Silver Smooth |
| **WHT** | White Matte Textured |
| **WHS** | White Gloss Smooth |
| **VGT** | Verde Green Textured |

**Color Option**

| | |
|---|---|
| **CC** | Custom Color |

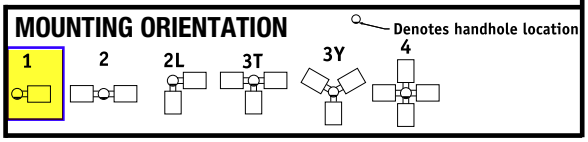
**OPTIONS**

| | |
|---|---|
| **GFI**[2] | 20 Amp GFCI Receptacle and Cover |
| **EHH**[2] | Extra Handhole |
| **C05**[2] | .5" Coupling |
| **C07**[2] | .75" Coupling |
| **C20**[2] | 2" Coupling |
| **MPB**[2] | Mid-pole Luminaire Bracket |
| **VM2** | 2nd mode vibration damper |
| **LAB** | Less Anchor Bolts |
| **UL** | UL Certified |

**DRILL PATTERN**

| | |
|---|---|
| **B1** | Cruzer, "AM" arm |
| **B3** | 2 bolt (2-½" spacing), Viper "A" arm |
| **S2** | 2 bolt (3-½" spacing), Viper "AD" arm |

## MOUNTING ORIENTATION




1 Removable tenon used in conjunction with side arm mounting. First specify desired arm configuration followed by the **"TR"** notation. Example: **SSS-B-25-40-A-1-B1-TR-BBT**
2 Specify option location using logic found on page 2 **(Option Orientation)**
3 VM1 recommended on poles 20' and taller with EPA of less than 1.

## ACCESSORIES - Order Separately

| Catalog Number | Description |
|---|---|
| **VM1**[3] | 1st mode vibration damper |
| **VM2SXX** | 2nd mode vibration damper |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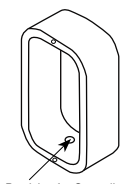
## ORDERING INFORMATION Cont.

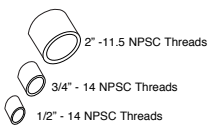
| Catalog Number | Height | | Nominal Shaft Dimensions | Wall Thickness | Bolt Circle (suggested) | Bolt Circle (range) | Bolt Square (range) | Base Plate Square | Anchor bolt size | Bolt Projection | Pole weight |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Feet | Meters | | | | | | | | | |
| SSS-B-10-40-A-XX-XX | 10 | 3.0 | 4" square | 0.125" | 9" | 8" - 10" | 5.66" - 7.07" | 9" | 3/4" x 30" x 3" | 3.5 | 77 |
| SSS-B-12-40-A-XX-XX | 12 | 3.7 | 4" square | 0.125" | 9" | 8" - 10" | 5.66" - 7.07" | 9" | 3/4" x 30" x 3" | 3.5 | 90 |
| SSS-B-14-40-A-XX-XX | 14 | 4.3 | 4" square | 0.125" | 9" | 8" - 10" | 5.66" - 7.07" | 9" | 3/4" x 30" x 3" | 3.5 | 103 |
| SSS-B-16-40-A-XX-XX | 16 | 4.9 | 4" square | 0.125" | 9" | 8" - 10" | 5.66" - 7.07" | 9" | 3/4" x 30" x 3" | 3.5 | 116 |
| SSS-B-18-40-A-XX-XX | 18 | 5.5 | 4" square | 0.125" | 9" | 8" - 10" | 5.66" - 7.07" | 9" | 3/4" x 30" x 3" | 3.5 | 129 |
| SSS-B-20-40-A-XX-XX | 20 | 6.1 | 4" square | 0.125" | 9" | 8" - 10" | 5.66" - 7.07" | 9" | 3/4" x 30" x 3" | 3.5 | 142 |
| SSS-B-25-40-A-XX-XX | 25 | 7.6 | 4" square | 0.125" | 9" | 8" - 10" | 5.66" - 7.07" | 9" | 3/4" x 30" x 3" | 3.5 | 175 |
| | | | | | | | | | | | |
| SSS-B-14-40-B-XX-XX | 14 | 4.3 | 4" square | .188" | 11" | 10" - 12" | 7.07" - 8.48" | 10.50" | 3/4" x 30" x 3" | 3.5 | 152 |
| SSS-B-16-40-B-XX-XX | 16 | 4.9 | 4" square | .188" | 11" | 10" - 12" | 7.07" - 8.48" | 10.50" | 3/4" x 30" x 3" | 3.5 | 171 |
| SSS-B-18-40-B-XX-XX | 18 | 5.5 | 4" square | .188" | 11" | 10" - 12" | 7.07" - 8.48" | 10.50" | 3/4" x 30" x 3" | 3.5 | 190 |
| SSS-B-20-40-B-XX-XX | 20 | 6.1 | 4" square | .188" | 11" | 10" - 12" | 7.07" - 8.48" | 10.50" | 3/4" x 30" x 3" | 3.5 | 209 |
| SSS-B-25-40-B-XX-XX | 25 | 7.6 | 4" square | .188" | 11" | 10" - 12" | 7.07" - 8.48" | 10.50" | 3/4" x 30" x 3" | 3.5 | 257 |
| SSS-B-30-40-B-XX-XX | 30 | 9.1 | 4" square | .188" | 11" | 10" - 12" | 7.07" - 8.48" | 10.50" | 3/4" x 30" x 3" | 3.5 | 304 |
| | | | | | | | | | | | |
| SSS-B-16-50-B-XX-XX | 16 | 4.9 | 5" square | .188" | 11" | 10.25" - 13.25" | 7.25" - 9.37" | 11.50" | 1" x 36" x 4" | 4.5 | 219 |
| SSS-B-18-50-B-XX-XX | 18 | 5.5 | 5" square | .188" | 11" | 10.25" - 13.25" | 7.25" - 9.37" | 11.50" | 1" x 36" x 4" | 4.5 | 243 |
| SSS-B-20-50-B-XX-XX | 20 | 6.1 | 5" square | .188" | 11" | 10.25" - 13.25" | 7.25" - 9.37" | 11.50" | 1" x 36" x 4" | 4.5 | 267 |
| SSS-B-25-50-B-XX-XX | 25 | 7.6 | 5" square | .188" | 11" | 10.25" - 13.25" | 7.25" - 9.37" | 11.50" | 1" x 36" x 4" | 4.5 | 327 |
| SSS-B-30-50-B-XX-XX | 30 | 9.1 | 5" square | .188" | 11" | 10.25" - 13.25" | 7.25" - 9.37" | 11.50" | 1" x 36" x 4" | 4.5 | 387 |
| | | | | | | | | | | | |
| SSS-B-25-50-C-XX-XX | 25 | 7.6 | 5" square | .25" | 11" | 10.25" - 13.25" | 7.25" - 9.37" | 11.50" | 1" x 36" x 4" | 4.5 | 427 |
| SSS-B-30-50-C-XX-XX | 30 | 9.1 | 5" square | .25" | 11" | 10.25" - 13.25" | 7.25" - 9.37" | 11.50" | 1" x 36" x 4" | 4.5 | 507 |
| | | | | | | | | | | | |
| SSS-B-20-60-B-XX-XX | 20 | 6.1 | 6" square | .188" | 12" | 11.00" - 13.25" | 7.81" - 9.37" | 12.25" | 1" x 36" x 6" | 4.5 | 329 |
| SSS-B-25-60-B-XX-XX | 25 | 7.6 | 6" square | .188" | 12" | 11.00" - 13.25" | 7.81" - 9.37" | 12.25" | 1" x 36" x 6" | 4.5 | 404 |
| SSS-B-30-60-B-XX-XX | 30 | 9.1 | 6" square | .188" | 12" | 11.00" - 13.25" | 7.81" - 9.37" | 12.25" | 1" x 36" x 6" | 4.5 | 479 |
| SSS-B-35-60-B-XX-XX | 35 | 10.7 | 6" square | .188" | 12" | 11.00" - 13.25" | 7.81" - 9.37" | 12.25" | 1" x 36" x 6" | 4.5 | 554 |
| SSS-B-40-60-B-XX-XX | 40 | 12.2 | 6" square | .188" | 12" | 11.00" - 13.25" | 7.81" - 9.37" | 12.25" | 1" x 36" x 6" | 4.5 | 629 |

NOTE Factory supplied template must be used when setting anchor bolts. Beacon Products will deny any claim for incorrect anchorage placement resulting from failure to use factory supplied template and anchor bolts.

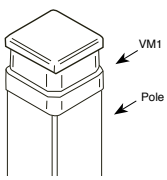
### EHH - EXTRA HANDHOLE




### C05 - C07 - C20 - COUPLING




### VM1 - VIBRATION DAMPER 1ST MODE




Field Installed Pole Top damper designed to reduce pole top deflection or sway. VM1 is recommended for pole systems 25' and taller with a total EPA of 1.0 or less.

### VM2 - VIBRATION DAMPER 2ND MODE

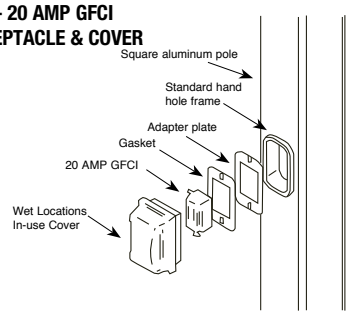
Factory installed, internal damper designed to alter pole resonance to reduce movement and material fatigue caused by 2nd mode vibration.

### VM2SXX - VIBRATION DAMPER 2ND MODE

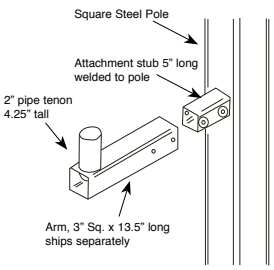
**VM2S08 – 8'**
**VM2S12 – 12'**
**VM2S16 – 16'**
**VM2S20 – 20'**
**VM2S24 – 24'**

Field installed, internal damper designed to alter pole resonance to reduce movement and material fatigue caused by 2nd mode vibration.

### GFI – 20 AMP GFCI RECEPTACLE & COVER

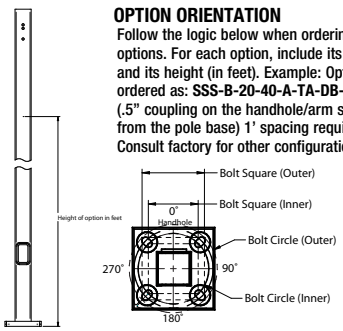



### MPB - MID POLE BRACKET




### OPTION ORIENTATION

Follow the logic below when ordering location specific options. For each option, include its orientation (in degrees) and its height (in feet). Example: Option C07 should be ordered as: **SSS-B-20-40-A-TA-DB-C05-0-15**
(.5" coupling on the handhole/arm side of pole, 15 feet up from the pole base) 1' spacing required between option.
Consult factory for other configurations.




For more information about pole vibration and vibration dampers, please consult https://hubbellcdn.com/ohwassets/HLI/outdoor/resources/literature/files/Pole_Wind_Induced_Flyer_HLOI0022.pdf
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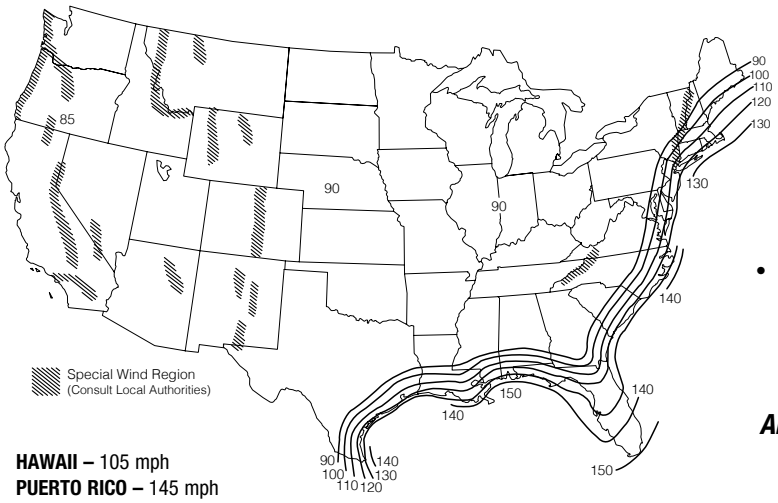
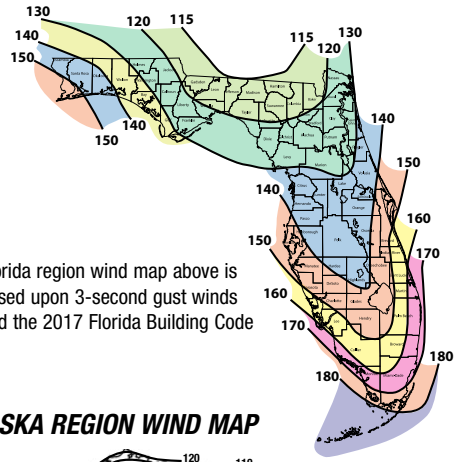
## ASCE7-05 WIND MAP



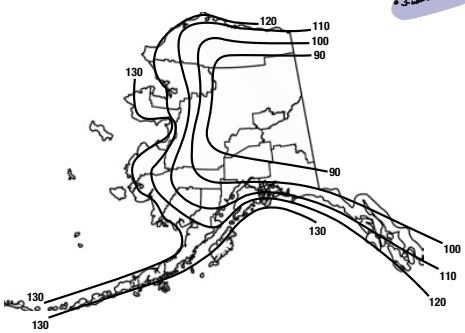

**HAWAII –** 105 mph
**PUERTO RICO –** 145 mph

## FLORIDA REGION WIND *MAP*




- Florida region wind map above is based upon 3-second gust winds and the 2017 Florida Building Code

## *ALASKA REGION WIND MAP*




| ASCE 7-05 wind map EPA Load Rating - 3 second gust wind speeds (Use for all locations except Florida) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Catalog Number** | **85** | **90** | **100** | **105** | **110** | **120** | **130** | **140** | **145** | **150** |
| **SSS-B-10-40-A** | 25.0 | 25.0 | 25.0 | 22.8 | 20.6 | 17.0 | 14.2 | 11.9 | 11.0 | 10.1 |
| **SSS-B-12-40-A** | 25.0 | 25.0 | 20.0 | 18.0 | 16.1 | 13.2 | 10.8 | 8.9 | 8.1 | 7.4 |
| **SSS-B-14-40-A** | 23.1 | 20.4 | 16.1 | 14.3 | 12.8 | 10.2 | 8.2 | 6.6 | 5.9 | 5.3 |
| **SSS-B-16-40-A** | 19.0 | 16.7 | 13.0 | 11.5 | 10.1 | 7.9 | 6.2 | 4.7 | 4.1 | 3.6 |
| **SSS-B-18-40-A** | 15.6 | 13.6 | 10.0 | 9.0 | 7.8 | 5.9 | 4.4 | 3.1 | 2.6 | 2.1 |
| **SSS-B-20-40-A** | 12.7 | 10.9 | 7.9 | 6.9 | 5.9 | 4.2 | 2.8 | 1.7 | 1.3 | 0.9 |
| **SSS-B-25-40-A** | 7.3 | 5.9 | 3.8 | 2.9 | 2.1 | 0.8 | NR | NR | NR | NR |
| | | | | | | | | | | |
| **SSS-B-14-40-B** | 25.0 | 25.0 | 23.3 | 20.8 | 18.6 | 15.1 | 12.3 | 10.2 | 9.2 | 8.4 |
| **SSS-B-16-40-B** | 25.0 | 24.9 | 19.4 | 17.3 | 15.4 | 12.3 | 9.9 | 8.0 | 7.2 | 6.4 |
| **SSS-B-18-40-B** | 24.0 | 20.8 | 16.1 | 14.2 | 12.5 | 9.8 | 7.7 | 6.1 | 5.3 | 4.7 |
| **SSS-B-20-40-B** | 20.2 | 17.5 | 13.2 | 11.6 | 10.1 | 7.7 | 5.9 | 4.4 | 3.8 | 3.2 |
| **SSS-B-25-40-B** | 12.8 | 11.0 | 7.9 | 6.7 | 5.5 | 3.7 | 2.3 | 1.2 | 0.7 | NR |
| **SSS-B-30-40-B** | 8.0 | 6.6 | 4.1 | 3.1 | 2.2 | 0.8 | NR | NR | NR | NR |
| | | | | | | | | | | |
| **SSS-B-16-50-B** | 25.0 | 25.0 | 25.0 | 25.0 | 24.8 | 20.1 | 16.5 | 13.6 | 12.3 | 11.2 |
| **SSS-B-18-50-B** | 25.0 | 25.0 | 25.0 | 22.9 | 20.4 | 16.4 | 13.2 | 10.7 | 9.6 | 8.6 |
| **SSS-B-20-50-B** | 25.0 | 25.0 | 21.3 | 18.9 | 16.7 | 13.2 | 10.4 | 8.1 | 7.2 | 6.3 |
| **SSS-B-25-50-B** | 20.7 | 17.8 | 13.3 | 11.5 | 9.8 | 7.2 | 5.0 | 3.3 | 2.6 | 1.9 |
| **SSS-B-30-50-B** | 13.5 | 11.3 | 7.7 | 6.2 | 4.9 | 2.8 | 1.1 | NR | NR | NR |
| | | | | | | | | | | |
| **SSS-B-25-50-C** | 25.0 | 25.0 | 19.4 | 17.1 | 15.1 | 11.7 | 9.0 | 6.9 | 6.0 | 5.1 |
| **SSS-B-30-50-C** | 20.1 | 17.3 | 12.7 | 10.9 | 9.3 | 6.6 | 4.5 | 2.8 | 2.1 | 1.4 |
| | | | | | | | | | | |
| **SSS-B-20-60-B** | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 20.2 | 16.1 | 12.9 | 11.5 | 10.3 |
| **SSS-B-25-60-B** | 25.0 | 25.0 | 20.6 | 18.0 | 15.6 | 11.8 | 8.7 | 6.2 | 5.2 | 4.2 |
| **SSS-B-30-60-B** | 21.4 | 18.1 | 12.9 | 10.7 | 8.8 | 5.7 | 3.3 | 1.3 | NR | NR |
| **SSS-B-35-60-B** | 14.0 | 11.3 | 6.9 | 5.2 | 3.6 | 1.0 | NR | NR | NR | NR |
| **SSS-B-40-60-B** | 8.1 | 5.8 | 2.2 | nr | NR | NR | NR | NR | NR | NR |

| Florida Building Code 2017 EPA Load Rating - 3 second gust wind speeds (Use for Florida only) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Catalog Number** | **115** | **120** | **130** | **140** | **150** | **160** | **170** | **180** |
| **SSS-B-10-40-A** | 25.0 | 25.0 | 25.0 | 25.0 | 21.4 | 18.4 | 15.9 | 13.9 |
| **SSS-B-12-40-A** | 25.0 | 25.0 | 23.6 | 19.8 | 16.7 | 14.2 | 12.1 | 10.4 |
| **SSS-B-14-40-A** | 25.0 | 23.1 | 19.0 | 15.7 | 13.1 | 10.9 | 9.1 | 7.6 |
| **SSS-B-16-40-A** | 20.8 | 18.7 | 15.2 | 12.3 | 10.1 | 8.2 | 6.7 | 5.4 |
| **SSS-B-18-40-A** | 16.8 | 15.0 | 11.9 | 9.4 | 7.5 | 5.9 | 4.5 | 3.4 |
| **SSS-B-20-40-A** | 13.6 | 11.9 | 9.2 | 7.1 | 5.3 | 3.9 | 2.7 | 1.7 |
| **SSS-B-25-40-A** | 7.4 | 6.2 | 4.1 | 2.5 | 1.1 | NR | NR | NR |
| | | | | | | | | |
| **SSS-B-14-40-B** | 25.0 | 23.6 | 19.4 | 16.1 | 13.4 | 11.2 | 9.4 | 7.8 |
| **SSS-B-16-40-B** | 21.4 | 19.2 | 15.6 | 12.7 | 10.4 | 8.5 | 6.9 | 5.6 |
| **SSS-B-18-40-B** | 17.2 | 15.4 | 12.2 | 9.7 | 7.7 | 6.1 | 4.7 | 3.6 |
| **SSS-B-20-40-B** | 13.9 | 12.3 | 9.5 | 7.3 | 5.5 | 4.1 | 2.9 | 1.9 |
| **SSS-B-25-40-B** | 7.7 | 6.4 | 4.3 | 2.6 | 1.3 | NR | NR | NR |
| **SSS-B-30-40-B** | 3.2 | 2.1 | NR | NR | NR | NR | NR | NR |
| | | | | | | | | |
| **SSS-B-16-50-B** | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 21.4 | 18.2 | 15.5 |
| **SSS-B-18-50-B** | 25.0 | 25.0 | 25.0 | 24.4 | 20.4 | 17.0 | 14.2 | 11.9 |
| **SSS-B-20-50-B** | 25.0 | 25.0 | 24.4 | 19.9 | 1 6.3 | 13.4 | 11.0 | 8.9 |
| **SSS-B-25-50-B** | 21.8 | 19.3 | 15.0 | 11.5 | 8.8 | 6.5 | 4.7 | 3.1 |
| **SSS-B-30-50-B** | 13.7 | 11.7 | 8.2 | 5.5 | 3.3 | 1.5 | NR | NR |
| **SSS-B-25-50-C** | 21.8 | 19.3 | 15.0 | 11.5 | 8.8 | 6.5 | 4.7 | 3.1 |
| **SSS-B-30-50-C** | 13.7 | 11.7 | 8.2 | 5.5 | 3.3 | 1.5 | NR | NR |
| | | | | | | | | |
| **SSS-B-20-60-B** | 25.0 | 25.0 | 25.0 | 21.9 | 17.8 | 14.5 | 11.7 | 9.4 |
| **SSS-B-25-60-B** | 23.8 | 20.9 | 16.1 | 12.3 | 9.2 | 6.6 | 4.5 | 2.8 |
| **SSS-B-30-60-B** | 14.6 | 12.3 | 8.4 | 5.3 | 2.8 | 0.8 | NR | NR |
| **SSS-B-35-60-B** | 7.5 | 5.6 | 2.4 | NR | NR | NR | NR | NR |
| **SSS-B-40-60-B** | 1.8 | NR | NR | NR | NR | NR | NR | NR |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## *NOTES*

**Wind-speed Website disclaimer:**
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**NOTES**

- Allowable EPA, to determine max pole loading weight, multiply allowable EPA by 30 lbs.
- The tables for allowable pole EPA are based on the ASCE 7-05 Wind Map or the Florida Region Wind Map for the 2010 Florida Building Code. The Wind Maps are intended only as a general guide and cannot be used in conjunction with other maps. Always consult local authorities to determine maximum wind velocities, gusting and unique wind conditions for each specific application
- Allowable pole EPA for jobsite wind conditions must be equal to or greater than the total EPA for fixtures, arms, and accessories to be assembled to the pole. Responsibility lies with the specifier for correct pole selection. Installation of poles without luminaires or attachment of any unauthorized accessories to poles is discouraged and shall void the manufacturer's warranty
- Wind speeds and listed EPAs are for ground mounted installations. Poles mounted on structures (such as bridges and buildings) must consider vibration and coefficient of height factors beyond this general guide; Consult local and federal standards
- Wind Induced Vibration brought on by steady, unidirectional winds and other unpredictable aerodynamic forces are not included in wind velocity ratings. Consult Hubbell Lighting's Pole Vibration Application Guide for environmental risk factors and design considerations. https://hubbellcdn.com/ohwassets/HLI/outdoor/resources/literature/files/Pole_Wind_Induced_Flyer_HLOI0022.pdf
- Extreme Wind Events like, Hurricanes, Typhoons, Cyclones, or Tornadoes may expose poles to flying debris, wind shear or other detrimental effects not included in wind velocity ratings

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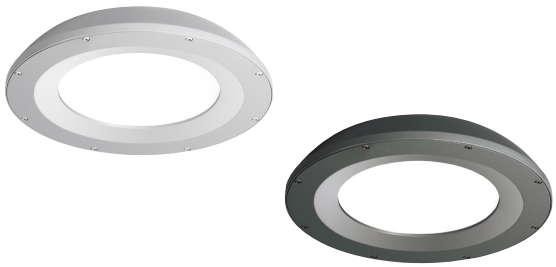
design . performance . technology

| DATE: | LOCATION: |
|---|---|
| TYPE: | PROJECT: |
| CATALOG #: | |

# SRT1 EDGE-LIT

CEILING/SURFACE/GARAGE

DRIVE EDGE-LIT



## FEATURES

- For ceiling mount and parking garage applications from an 8–15 foot mounting height
- Edge-lit flat lens for optimal visual comfort and uniformity across the lens
- Two optical distributions specifically design for parking garage and canopy applications are available making the Beacon Edge-Lit luminaire both versatile and functional
- UL/cUL listed for wet locations, IP65 and 3G vibration rated
- Occupancy sensor available for complete on/off and dimming operation

**RELATED PRODUCTS**

Drive Edge-Lit SRT2 | Orbeon | Viper Small

## SPECIFICATIONS

### HOUSING
- Die-cast aluminum housing ensures long electrical component life and luminaire performance
- Corrosion resistant powder coat finish both protects and provides architectural appearance
- One piece molded silicone gasket ensures weather proof seal
- Thermally isolated driver mounted to dedicated bracket reduces operating temperatures and increases driver life and reliability

### OPTICS
- Edge-lit acrylic light guide provides blended non-pixelated light for unprecedented visual comfort
- Choice of multiple light outputs with lumen range of 2000–6000
- Two distribution types: Type 5 Square Wide, Type 5 Concentrated
- Wide variety of CCT's and CRI's offered: 3000K (70CRI), 3000K (80CRI), 3500K (80CRI), 4000K (70CRI), 4000K (80CRI) or 5000K (70 CRI) CCT

### ELECTRICAL
- 120V–277V 50/60Hz available
- 0–10V dimming drivers are RoHS compliant

### INSTALLATION
- Standard quick mount plate over standard 4" junction box or octagonal junction box and allows for simplified fixture installation
- Standard luminaire accepts a rigid or 3/4" NPT stem for pendant mounting via wet location j-box (by others)
- Optional bird deterrent shroud available for field installation

### OPTIONS/CONTROLS
- Standalone occupancy sensor available for on/off or dimming operation
- Uplight option provides approximately 800 lumens and consumes only 8 additional watts
- Vandal resistant wire guard available as an option for factory installation or as an accessory for field installation.

### CERTIFICATIONS
- Listed to UL1598 for use in wet location, listed for -40°C to 40°C applications
- IDA approved with zero uplight for 3000K and warmer CCTs
- DLC® (DesignLights Consortium) Qualified. Please refer to the DLC website for specific product qualifications at www.designlights.org
- IP65

### WARRANTY
- 5 year warranty
- See HLI Standard Warranty for additional information

| KEY DATA | |
|---|---|
| Lumen Range | 2000–6800 |
| Wattage Range | 15–55W |
| Efficacy Range (LPW) | 99–118 |
| Reported Life (Hours) | 50K |
| Weight lbs. (kg) | 8 (3.6) |



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HUBBELL Lighting

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design : performance : technology

DATE: LOCATION:

TYPE: PROJECT:

CATALOG #:

# SRT1 EDGE-LIT

CEILING/SURFACE/GARAGE

## ORDERING GUIDE

**Example:** SRT1-35-3K7-5QW-UNV-BLT-WG

CATALOG #

| Series | Engine | CCT | Distribution | Voltage | Color/Finish | Options |
|---|---|---|---|---|---|---|
| **SRT1** Edge-Lit Parking Garage Size 1 | **15** 15W Nominal 2000 lm | **3K7** 3000K, 70 CRI | **5QW** Type 5 Square Wide | **UNV** 120V-277V | **BLT** Black Matte Textured | **CD** Continuous Dimming[4] |
| | **20** 20W Nominal 2500 lm | **3K8** 3000K, 80 CRI | **5C** Type 5 Concentrated | **120** 120V | **BLS** Black Gloss Smooth | **WG** Wire Guard |
| | **35** 35W Nominal 4000 lm | **35K8** 3500K, 80 CRI | | **208** 208V | **DBT** Dark Bronze Matte | **UD** Uplight Module[3] |
| | **55** 55W Nominal 6000 lm | **4K7** 4000K, 70 CRI | | **240** 240V | **DBS** Dark Bronze Gloss Smooth | **F** Single Fuse (120, 277)[1] |
| | | **4K8** 4000K, 80 CRI | | **277** 277V | **GTT** Graphite Matte Textured | **LD3** 36" Lead Length[2] |
| | | **5K7** 5000K, 70 CRI | | | **LGS** Light Grey Gloss Smooth | **LD6** 72" Lead Length[2] |
| | | | | | **PSS** Platinum Silver Smooth | **LD9** 108" Lead Length[2] |
| | | | | | **WHT** White Matte Textured | **SP10K** 10kA Surge Protection[3] |
| | | | | | **WHS** White Gloss Smooth | **LMB** Less Mounting Bracket |
| | | | | | **VGT** Verde Green Textured | |
| | | | | | **Color Option** | |
| | | | | | **CC** Custom Colors | |

| Control Options | |
|---|---|
| **NX Standalone** | |
| **NXOS12F** | NX Distributed Intelligence™, PIR Occ. Sensor, Dimming Daylight Harvesting, up to 12' MH |
| **Sensor Controls** | |
| **SCP-8F** | Remote control programmable line voltage sensor (8-12' recommended mounting height)[5] |
| **SCP-20F** | Remote control programmable line voltage sensor (12-20' recommended mounting height) [5] |

| Accessories (Order Separately) | | |
|---|---|---|
| ☐ | **SRT1-WG** | Wire Guard |
| ☐ | **SRT-MB** | Mounting bracket for pre-installation |
| ☐ | **SRT1-BS-XXX** | Bird deterrent shroud for SRT1 version, not available with uplight |
| ☐ | **SCP-REMOTE** | Remote control for SCP option; order at least on per project to program and control |

Notes:
1 Must specify voltage
2 Standard wire lead length 24"
3 SP10K or NXOS12F not available with uplight (UD)
4 Specify when using external 0-10V dimming system
5 120V or 277V only

## PERFORMANCE DATA

| Nominal Watts | Nominal Lumens | Distribution | 5K (5000K NOMINAL 70 CRI) | | | | | 4K (4000K NOMINAL 70 CRI) | | | | | 3K (3000K NOMINAL 70 CRI) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lumens | LPW | B | U | G | Lumens | LPW | B | U | G | Lumens | LPW | B | U | G |
| 15 | 2000 | 5C | 2470 | 146.61 | 1 | 0 | 1 | 2459 | 145.91 | 1 | 0 | 1 | 2364 | 140.30 | 1 | 0 | 1 |
| | | 5QW | 2378 | 141.15 | 1 | 0 | 1 | 2367 | 140.48 | 1 | 0 | 1 | 2276 | 135.07 | 1 | 0 | 1 |
| 20 | 3000 | 5C | 3093 | 136.86 | 1 | 0 | 1 | 3078 | 136.21 | 1 | 0 | 1 | 2960 | 130.97 | 1 | 0 | 1 |
| | | 5QW | 2974 | 131.60 | 1 | 0 | 1 | 2960 | 130.97 | 1 | 0 | 1 | 2846 | 125.93 | 1 | 0 | 1 |
| 35 | 4500 | 5C | 4757 | 131.05 | 2 | 0 | 1 | 4734 | 130.42 | 2 | 0 | 1 | 4552 | 125.41 | 2 | 0 | 1 |
| | | 5QW | 4574 | 126.01 | 2 | 0 | 1 | 4552 | 125.41 | 2 | 0 | 1 | 4377 | 120.58 | 2 | 0 | 1 |
| 55 | 6500 | 5C | 6814 | 127.13 | 2 | 0 | 1 | 6782 | 126.52 | 2 | 0 | 1 | 6521 | 121.66 | 2 | 0 | 1 |
| | | 5QW | 6552 | 122.24 | 3 | 0 | 1 | 6521 | 121.66 | 3 | 0 | 1 | 6270 | 116.98 | 3 | 0 | 1 |

## ELECTRICAL DATA

| Nominal Watts | System Watts | Line Voltage | | AMPS AC | | | | Dimming Range | Absolute Voltage Range on 0-10V (+) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | VAC | HZ | 120 | 208 | 240 | 277 | | VAC | HZ |
| 15 | 16.9 | 120-277 | 50/60 | 0.14 | 0.08 | 0.07 | 0.06 | 10% to 100% | 0V | 10V |
| 20 | 21.6 | 120-277 | 50/60 | 0.18 | 0.10 | 0.09 | 0.08 | 10% to 100% | 0V | 10V |
| 35 | 34.6 | 120-277 | 50/61 | 0.29 | 0.17 | 0.14 | 0.12 | 10% to 100% | 0V | 10V |
| 55 | 54.9 | 120-277 | 50/62 | 0.46 | 0.26 | 0.23 | 0.20 | 10% to 100% | 0V | 10V |



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# SRT1 EDGE-LIT

CEILING/SURFACE/GARAGE

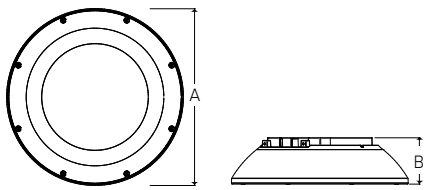
## PROJECTED LUMEN MAINTENANCE

| Ambient Temp. | 0 | 25,000 | *TM-21-11 36,000 | 50,000 | 100,000 | Calculated $L_{70}$ (Hours) |
|---|---|---|---|---|---|---|
| 25°C / 77°F | 1.00 | 0.98 | 0.96 | 0.95 | 0.89 | 278,000 |
| 40°C / 104°F | 0.99 | 0.98 | 0.96 | 0.94 | 0.88 | 264,000 |

## LUMINAIRE AMBIENT TEMPERATURE FACTOR (LATF)

| Ambient Temperature | | Lumen Multiplier |
|---|---|---|
| 0°C | 32°F | 1.03 |
| 10°C | 50°F | 1.01 |
| 20°C | 68°F | 1.00 |
| 25°C | 77°F | 1.00 |
| 30°C | 86°F | 0.99 |
| 40°C | 104°F | 0.98 |
| 50°C | 122°F | 0.97 |

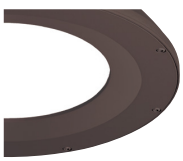
## DIMENSIONS




| A | B | Weight |
|---|---|---|
| 12" (304mm) | 3.1" (78mm) | 8lbs (3.6kg) |

## ADDITIONAL INFORMATION

### FINISH OPTIONS



**DB** Dark Bronze Textured

**BL** Black Textured

**PS** Platinum Silver Smooth

**GYS** Gray Smooth

**WH** White Textured

**GT** Graphite Textured

Wire Guard

An optional wire guard can be specified at the factory or as an accessory for field installation.

Bird Deterrent

An optional bird shroud deterrent can be specified at the factory or as an accessory for field installation.



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# SRT1 EDGE-LIT

CEILING/SURFACE/GARAGE

## ADDITIONAL INFORMATION (CONT'D)

### MOUNTING

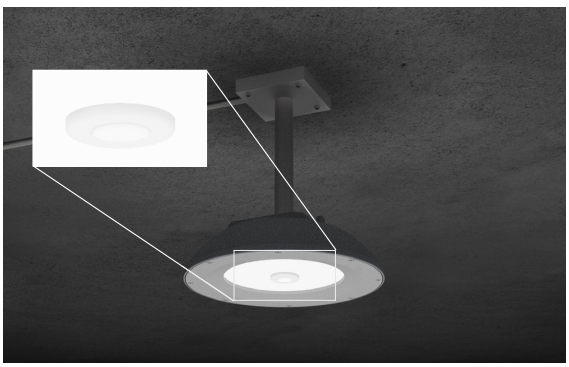
Surface Mount

Mounting plate with "quick mount" hanger for one person simple installation.

Pendant Mount

Standard 3/4" threaded entry for pendant applications.

### CONTROLS

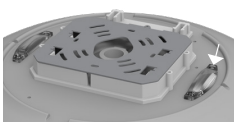


Standalone Controls

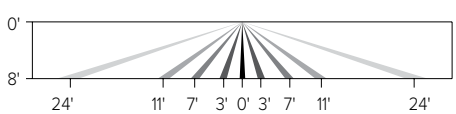
Optional passive infrared sensors are available for basic occupancy and daylight sensing. Programmable via remote or Bluetooth® phone app.

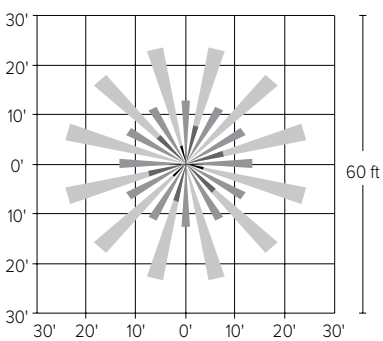
Uplight

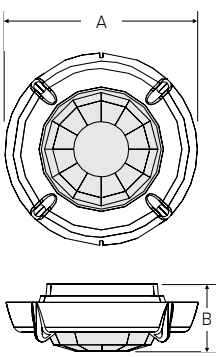
Optional uplight module provides 800 lumens of indirect illumination for improved visual quality while eliminating cave effect.



**SCP-8F**




| A | B |
|---|---|
| 2.3" (59mm) | .8" (20mm) |



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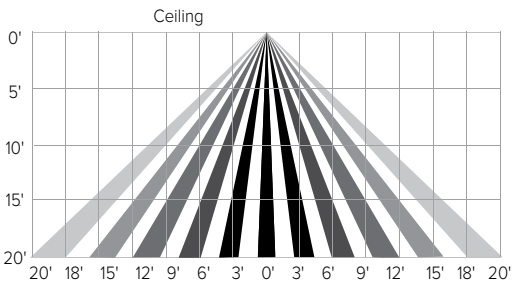
# SRT1 EDGE-LIT

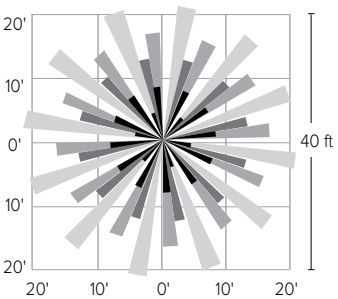
CEILING/SURFACE/GARAGE

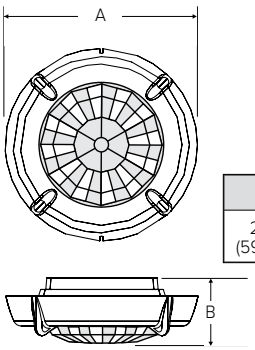
## ADDITIONAL INFORMATION (CONT'D)

### CONTROLS (CONT'D)

**SCP-20F**

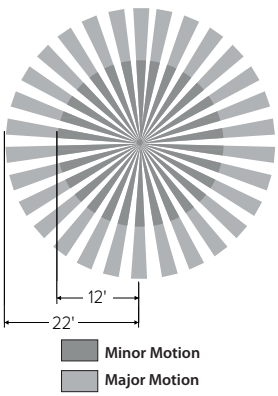


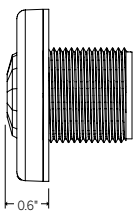



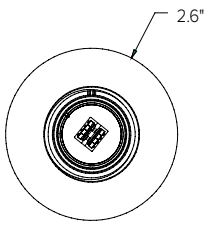

| A | B |
|---|---|
| 2.3" (59mm) | .8" (20mm) |

**NXOS12F**




**NXSMP-OMNI Range**

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HUBBELL Outdoor Lighting

DATE: | LOCATION:

TYPE: | PROJECT:

CATALOG #:

# RATIO Wall

RWL1/RWL2 LED WALLPACK

## FEATURES

- Low profile LED wall luminaire with a variety of IES distributions for lighting applications such as retail, commercial and industrial building mount
- Featuring Micro Strike Optics which maximizes target zone illumination with minimal losses at the house-side, reducing light trespass issues
- Visual comfort standard
- Control options including photo control, occupancy sensing, NX Distributed Intelligence™, Wiscape and 7-Pin with networked controls
- Battery Backup options available for emergency code compliance
- Quick-mount adapter allows easy installation/maintenance
- 347V and 480V versions for industrial applications and Canada
- Stock versions available in 3500lm and 5500lm configurations at 4000K

C US

BUY AMERICAN SOLUTIONS
See Certification Specifications

**RELATED PRODUCTS**

Ratio Family | Ratio Area | Ratio Flood

## CONTROL TECHNOLOGY

SiteSync Lighting Control | NX DISTRIBUTED™ INTELLIGENCE | wiSCAPE™

## SPECIFICATIONS

### CONSTRUCTION
- Die-cast housing with hidden vertical heat fins that are optimal for heat dissipation while keeping a clean smooth outer surface
- Corrosion resistant, die-cast aluminum housing with powder coat paint finish
- Powder paint finish provides durability in outdoor environments. Tested to meet 1000 hour salt spray rating.

### OPTICS
- Entire optical aperture illuminates to create a larger luminous surface area resulting in a low glare appearance without sacrificing optical performance
- 48 or 160 midpower LEDs
- 3000K, 4000K or 5000K (70 CRI/80 CRI) CCT
- Zero uplight distributions
- LED optics provide IES type II, III and IV distributions. Type II only available in RWL2 configurations.

### INSTALLATION
- Quick-mount adapter provides easy installation to wall or to recessed junction boxes (4" square junction box)
- Designed for direct j-box mount.
- Integral back box contains 1/2" conduit hubs
- Integral back box standard with Dual Driver, Dual Power Feed, NX, Wiscape and battery versions (battery versions for RWL1 only)

### ELECTRICAL
- 120V-277V universal voltage 50/60Hz 0-10V dimming drivers
- 347V and 480V dimmable driver option for all wattages above 35W.

### ELECTRICAL (CONTINUED)
- Ambient operating temperature -40˚C to 40˚C
- Drivers have greater than .90 power factor and less than 20% Total Harmonic Distortion
- Driver RoHS and IP66
- Field replaceable surge protection device provides 20kA protection meeting ANSI/IEEE C62.41.2 Category C High and Surge Location Category C3; Automatically takes fixture off-line for protection when device is compromised
- Dimming drivers are standard and dimming leads are extended out of the luminaire unless control options require connection to the dimming leads. Must specify if wiring leads are to be greater than 6" standard.

### CONTROLS
- Photo control, occupancy sensor and wireless available for complete on/off and dimming control
- Button photocontrol is suitable for 120-277V operation
- 7-pin ANSI C136.41-2013 photocontrol receptacle option available for twist lock photocontrols or wireless control modules (control accessories sold separately)
- NX Distributed Intelligence™ available with in fixture wireless control module, features dimming and occupancy sensor wiSCAPE® available with in fixture wireless control module, features dimming and occupancy sensor
- Integral Battery Backup provides emergency lighting for the required 90 minute path of egress
- Battery Backup suitable for operating temperatures -25˚C to 40˚C

### CONTROLS (CONTINUED)
- Dual Driver and Dual Power Feed options creates product configuration with 2 internal drivers for code compliance
- Please consult brand or sales representative when combining control and electrical options as some combinations may not operate as anticipated depending on your application.

### CERTIFICATIONS
- Listed to UL1598 and CSAC22.2#250.0-24 for wet locations
- IP65 rated housing
- This product qualifies as a "designated country construction material" per FAR 52.225-11 Buy American-Construction Materials under Trade Agreements effective 04/23/2020. See Buy American Solutions

### WARRANTY
- 5 year limited warranty
- See HLI Standard Warranty for additional information

| KEY DATA | |
|---|---|
| Lumen Range | 1,000–19,500 |
| Wattage Range | 10–155 |
| Efficacy Range (LPW) | 118–148 |
| Fixture Projected Life (Hours) | L70>60K |
| Weights lbs. (kg) | 6.5/16.5 (2.9/7.5) |



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DATE: LOCATION:

TYPE: PROJECT:

CATALOG #:

# RATIO WALL

RWL1/RWL2 LED WALLPACK

## ORDERING GUIDE

**Example:** RWL1–48L-10–3K7–2–UNV–BLS–E

CATALOG #

### ORDERING INFORMATION

| Series | | # LEDs - Wattage | | CCT/CRI | | Distribution | | Voltage | | Color | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **RWL1** | Ratio Wall 1 | **48L-10** | 1,000 Lumens[4] | **3K7** | 3000K, 70 CRI | **2** | IES TYPE II[1] | **UNV** | 120-277V | **BLT** | Black Matte Textured |
| | | **48L-15** | 2,000 Lumens[4] | **4K7** | 4000K, 70 CRI | **3** | IES TYPE III | **120** | 120V | **BLS** | Black Gloss Smooth |
| | | **48L-20** | 2,500 Lumens[4] | **5K7** | 5000K, 70 CRI | **4W** | IES TYPE IV | **208** | 208V | **DBT** | Dark Bronze Matte Textured |
| | | **48L-25** | 3,500 Lumens[4] | | | | | **240** | 240V | **DBS** | Dark Bronze Gloss Smooth |
| | | **48L-35** | 4,500 Lumens | | | | | **277** | 277V | **GTT** | Graphite Matte Textured |
| | | **48L-45** | 5,500 Lumens[4] | | | | | **347** | 347V | **LGS** | Light Grey Gloss Smooth |
| **RWL2** | Ratio Wall 2 | **160L-45** | 6,500 Lumens | | | | | **480** | 480V | **LGT** | Light Grey Matte Textured |
| | | **160L-50** | 7,500 Lumens | | | | | | | **PSS** | Platinum Silver Smooth |
| | | **160L-65** | 9,500 Lumens | | | | | | | **WHT** | White Matte Textured |
| | | **160L-80** | 11,000 Lumens | | | | | | | **WHS** | White Gloss Smooth |
| | | **160L-95** | 13,000 Lumens | | | | | | | **VGT** | Verde Green Textured |
| | | **160L-115** | 15,000 Lumens | | | | | | | **Color Option** | |
| | | **160L-135** | 17,500 Lumens | | | | | | | **CC** | Custom Color |
| | | **160L-155** | 19,500 Lumens | | | | | | | | |

| Control Options Network | |
|---|---|
| **NXWE** | NX Wireless Enabled (module + radio)[4,7] |
| **NXSPW_F** | NX Wireless, PIR Occ. Sensor, Daylight Harvesting[4,5,7] |
| **NXSP_F** | NX, PIR Occ. Sensor, Daylight Harvesting[4,5,7] |
| **WIR** | Wireless Controls, wiSCAPE™[2,6] |
| **Stand Alone Sensors** | |
| **SCP-8F** | Remote control programmable line voltage sensor[3,4] |
| **SCP-20F** | Remote control programmable line voltage sensor[3,4] |
| **Control Options** | |
| **7PR_** | 7-Pin Receptacle[6] |

| Options | |
|---|---|
| **F** | Fusing (must specify voltage) |
| **E** | Emergency Battery Backup[7,8,9] |
| **EH** | Emergency Battery w/ Heater Option[7,8,9] |
| **2DR** | Dual Driver[4,6] |
| **2PF** | Dual Power Feed[4,6] |
| **PC** | Button Photocontrol[8] |

Notes:
1 Only available with RWL2
2 wiSCAPE Gateway required for system programming
3 Specific voltage selection is required
4 Not available with 480V
5 Replace "_" with "14" for up to 14' mounting height, "40" for up to 40' mounting height
6 This item is located in the integral backbox which will be automatically added onto the fixture if chosen.
7 This item is located in the integral backbox for RWL1 configurations only.
8 Option only available at 120 or 277V
9 Only available with RWL1

### STOCK ORDERING INFORMATION

| Catalog Number | Lumens | Wattage | LED Count | CCT/CRI | Voltage | Distribution | Finish |
|---|---|---|---|---|---|---|---|
| **RWL1-48L-25-4K-3** | 3500lm | 25 | 48L | 4000K/70CRI | 120-277V | Type III | Dark Bronze Textured |
| **RWL1-48L-25-4K-4W** | 3500lm | 25 | 48L | 4000K/70CRI | 120-277V | Type IV Wide | Dark Bronze Textured |
| **RWL1-48L-45-4K-3** | 5500lm | 45 | 48L | 4000K/70CRI | 120-277V | Type III | Dark Bronze Textured |
| **RWL1-48L-45-4K-4W** | 5500lm | 45 | 48L | 4000K/70CRI | 120-277V | Type IV Wide | Dark Bronze Textured |

## CONTROLS

**Control Options**

Standalone

**SCPREMOTE** Order at least one per project location to program and control

## ACCESSORIES AND REPLACEMENT PARTS - MADE TO ORDER

| | Catalog Number | Description |
|---|---|---|
| ☐ | **WP-BB-XXX** | Accessory for conduit entry[1.] |

Notes:
1 replace "xxx" with color option



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DATE: LOCATION:

TYPE: PROJECT:

CATALOG #:

# RATIO WALL

RWL1/RWL2 LED WALLPACK

## PERFORMANCE DATA

| Description | Nominal Wattage | System Watts | Dist. Type | 5K (5000K NOMINAL 70 CRI) | | | | | 4K (4000K NOMINAL 70 CRI) | | | | | 3K (3000K NOMINAL 70 CRI) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Lumens | LPW | B | U | G | Lumens | LPW | B | U | G | Lumens | LPW | B | U | G |
| RWL1 | 10 | 10.1 | 3 | 1362 | 135 | 0 | 0 | 1 | 1355 | 134 | 0 | 0 | 1 | 1303 | 129 | 0 | 0 | 1 |
| | | | 4W | 1343 | 133 | 0 | 0 | 1 | 1336 | 132 | 0 | 0 | 1 | 1285 | 127 | 0 | 0 | 1 |
| | 15 | 14.5 | 3 | 1972 | 136 | 1 | 0 | 1 | 1962 | 135 | 1 | 0 | 1 | 1887 | 130 | 1 | 0 | 1 |
| | | | 4W | 1945 | 134 | 0 | 0 | 1 | 1935 | 133 | 0 | 0 | 1 | 1861 | 128 | 0 | 0 | 1 |
| | 20 | 19.9 | 3 | 2722 | 137 | 1 | 0 | 1 | 2709 | 136 | 1 | 0 | 1 | 2605 | 131 | 1 | 0 | 1 |
| | | | 4W | 2685 | 135 | 1 | 0 | 1 | 2672 | 134 | 1 | 0 | 1 | 2569 | 129 | 1 | 0 | 1 |
| | 25 | 28.0 | 3 | 3749 | 134 | 1 | 0 | 1 | 3732 | 133 | 1 | 0 | 1 | 3588 | 128 | 1 | 0 | 1 |
| | | | 4W | 3698 | 132 | 1 | 0 | 1 | 3680 | 131 | 1 | 0 | 1 | 3538 | 126 | 1 | 0 | 1 |
| | 35 | 36.9 | 3 | 4751 | 129 | 1 | 0 | 2 | 4728 | 128 | 1 | 0 | 2 | 4546 | 123 | 1 | 0 | 1 |
| | | | 4W | 4685 | 127 | 1 | 0 | 2 | 4663 | 126 | 1 | 0 | 2 | 4483 | 121 | 1 | 0 | 2 |
| | 45 | 46.5 | 3 | 5812 | 125 | 1 | 0 | 2 | 5784 | 124 | 1 | 0 | 2 | 5562 | 120 | 1 | 0 | 2 |
| | | | 4W | 5731 | 123 | 1 | 0 | 2 | 5704 | 123 | 1 | 0 | 2 | 5485 | 118 | 1 | 0 | 2 |
| RWL2 | 45 | 46.1 | 2 | 6701 | 145 | 1 | 0 | 2 | 6668 | 145 | 1 | 0 | 2 | 6412 | 139 | 1 | 0 | 2 |
| | | | 3 | 6812 | 148 | 1 | 0 | 2 | 6780 | 147 | 1 | 0 | 2 | 6519 | 141 | 1 | 0 | 2 |
| | | | 4W | 6678 | 145 | 1 | 0 | 2 | 6646 | 144 | 1 | 0 | 2 | 6390 | 139 | 1 | 0 | 2 |
| | 50 | 54.0 | 2 | 7747 | 143 | 1 | 0 | 2 | 7710 | 143 | 1 | 0 | 2 | 7413 | 137 | 1 | 0 | 2 |
| | | | 3 | 7876 | 146 | 1 | 0 | 2 | 7838 | 145 | 1 | 0 | 2 | 7537 | 140 | 1 | 0 | 2 |
| | | | 4W | 7720 | 143 | 1 | 0 | 2 | 7683 | 142 | 1 | 0 | 2 | 7388 | 137 | 1 | 0 | 2 |
| | 65 | 67.2 | 2 | 9539 | 142 | 1 | 0 | 2 | 9494 | 141 | 1 | 0 | 2 | 9129 | 136 | 1 | 0 | 2 |
| | | | 3 | 9699 | 144 | 2 | 0 | 2 | 9652 | 144 | 2 | 0 | 2 | 9281 | 138 | 2 | 0 | 2 |
| | | | 4W | 9507 | 141 | 2 | 0 | 2 | 9461 | 141 | 2 | 0 | 2 | 9097 | 135 | 2 | 0 | 2 |
| | 80 | 80.8 | 2 | 11228 | 139 | 2 | 0 | 2 | 11174 | 138 | 2 | 0 | 2 | 10745 | 133 | 2 | 0 | 2 |
| | | | 3 | 11416 | 141 | 2 | 0 | 2 | 11361 | 141 | 2 | 0 | 2 | 10924 | 135 | 2 | 0 | 2 |
| | | | 4W | 11190 | 138 | 2 | 0 | 2 | 11136 | 138 | 2 | 0 | 2 | 10708 | 133 | 2 | 0 | 2 |
| | 95 | 93.2 | 2 | 13148 | 141 | 2 | 0 | 2 | 13085 | 140 | 2 | 0 | 2 | 12582 | 135 | 2 | 0 | 2 |
| | | | 3 | 13368 | 143 | 2 | 0 | 2 | 13304 | 143 | 2 | 0 | 2 | 12792 | 137 | 2 | 0 | 2 |
| | | | 4W | 13103 | 141 | 2 | 0 | 2 | 13040 | 140 | 2 | 0 | 2 | 12539 | 135 | 2 | 0 | 2 |
| | 115 | 109.8 | 2 | 15102 | 138 | 2 | 0 | 3 | 15030 | 137 | 2 | 0 | 3 | 14452 | 132 | 2 | 0 | 3 |
| | | | 3 | 15354 | 140 | 2 | 0 | 3 | 15281 | 139 | 2 | 0 | 3 | 14693 | 134 | 2 | 0 | 3 |
| | | | 4W | 15050 | 137 | 2 | 0 | 3 | 14978 | 136 | 2 | 0 | 3 | 14402 | 131 | 2 | 0 | 3 |
| | 135 | 137.1 | 2 | 17533 | 128 | 2 | 0 | 3 | 17449 | 127 | 2 | 0 | 3 | 16778 | 122 | 2 | 0 | 3 |
| | | | 3 | 17826 | 130 | 2 | 0 | 3 | 17740 | 129 | 2 | 0 | 3 | 17058 | 124 | 2 | 0 | 3 |
| | | | 4W | 17473 | 127 | 2 | 0 | 3 | 17389 | 127 | 2 | 0 | 3 | 16720 | 122 | 2 | 0 | 3 |
| | 155 | 156.8 | 2 | 19495 | 124 | 2 | 0 | 3 | 19402 | 124 | 2 | 0 | 3 | 18656 | 119 | 2 | 0 | 3 |
| | | | 3 | 19821 | 126 | 2 | 0 | 3 | 19726 | 126 | 2 | 0 | 3 | 18967 | 121 | 2 | 0 | 3 |
| | | | 4W | 19542 | 125 | 2 | 0 | 3 | 19448 | 124 | 2 | 0 | 3 | 18700 | 119 | 2 | 0 | 3 |



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DATE: LOCATION:

TYPE: PROJECT:

CATALOG #:

# RATIO WALL

RWL1/RWL2 LED WALLPACK

## LUMINAIRE AMBIENT TEMPERATURE FACTOR (LATF)

| Ambient Temperature | | Lumen Multiplier |
|---|---|---|
| 0°C | 32°F | 1.03 |
| 10°C | 50°F | 1.01 |
| 20°C | 68°F | 1.00 |
| 25°C | 77°F | 1.00 |
| 30°C | 86°F | 0.99 |
| 40°C | 104°F | 0.98 |
| 50°C | 122°F | 0.97 |

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

## PROJECTED LUMEN MAINTENANCE

| Ambient Temperature | OPERATING HOURS | | | | | |
|---|---|---|---|---|---|---|
| | 0 | 25,000 | TM-21-11 L90 36,000 | 50,000 | 100,000 | L70 (Hours) |
| **25°C / 77°F** | 1.00 | 0.97 | 0.96 | 0.95 | 0.91 | 408,000 |
| **40°C / 104°F** | 0.99 | 0.96 | 0.95 | 0.94 | 0.89 | 356,000 |

## ELECTRICAL DATA

| # OF LEDS | Nominal Wattage | Input Voltage | Oper. Current (Amps) | System Power (Watts) |
|---|---|---|---|---|
| RWL1 | 10 | 120 | 0.08 | 10.1 |
| | | 208 | 0.05 | |
| | | 240 | 0.04 | |
| | | 277 | 0.04 | |
| | | 347 | 0.03 | |
| | | 480 | 0.02 | |
| | 15 | 120 | 0.12 | 14.5 |
| | | 208 | 0.07 | |
| | | 240 | 0.06 | |
| | | 277 | 0.05 | |
| | | 347 | 0.04 | |
| | | 480 | 0.03 | |
| | 20 | 120 | 0.17 | 19.9 |
| | | 208 | 0.10 | |
| | | 240 | 0.08 | |
| | | 277 | 0.07 | |
| | | 347 | 0.06 | |
| | | 480 | 0.04 | |
| | 25 | 120 | 0.23 | 28.0 |
| | | 208 | 0.13 | |
| | | 240 | 0.12 | |
| | | 277 | 0.10 | |
| | | 347 | 0.08 | |
| | | 480 | 0.06 | |
| | 35 | 120 | 0.31 | 36.9 |
| | | 208 | 0.18 | |
| | | 240 | 0.15 | |
| | | 277 | 0.13 | |
| | | 347 | 0.11 | |
| | | 480 | 0.08 | |
| | 45 | 120 | 0.39 | 46.5 |
| | | 208 | 0.22 | |
| | | 240 | 0.19 | |
| | | 277 | 0.17 | |
| | | 347 | 0.13 | |
| | | 480 | 0.10 | |

| # OF LEDS | Nominal Wattage | Input Voltage | Oper. Current (Amps) | System Power (Watts) |
|---|---|---|---|---|
| RWL2 | 45 | 120 | 0.38 | 46.1 |
| | | 208 | 0.22 | |
| | | 240 | 0.19 | |
| | | 277 | 0.17 | |
| | | 347 | 0.13 | |
| | | 480 | 0.10 | |
| | 50 | 120 | 0.45 | 54.0 |
| | | 208 | 0.26 | |
| | | 240 | 0.23 | |
| | | 277 | 0.19 | |
| | | 347 | 0.16 | |
| | | 480 | 0.11 | |
| | 65 | 120 | 0.56 | 67.2 |
| | | 208 | 0.32 | |
| | | 240 | 0.28 | |
| | | 277 | 0.24 | |
| | | 347 | 0.19 | |
| | | 480 | 0.14 | |
| | 80 | 120 | 0.67 | 80.8 |
| | | 208 | 0.39 | |
| | | 240 | 0.34 | |
| | | 277 | 0.29 | |
| | | 347 | 0.23 | |
| | | 480 | 0.17 | |
| | 95 | 120 | 0.78 | 93.2 |
| | | 208 | 0.45 | |
| | | 240 | 0.39 | |
| | | 277 | 0.34 | |
| | | 347 | 0.27 | |
| | | 480 | 0.19 | |
| | 115 | 120 | 0.92 | 109.8 |
| | | 208 | 0.53 | |
| | | 240 | 0.46 | |
| | | 277 | 0.40 | |
| | | 347 | 0.32 | |
| | | 480 | 0.23 | |
| | 135 | 120 | 1.14 | 137.1 |
| | | 208 | 0.66 | |
| | | 240 | 0.57 | |
| | | 277 | 0.49 | |
| | | 347 | 0.40 | |
| | | 480 | 0.29 | |
| | 155 | 120 | 1.31 | 156.8 |
| | | 208 | 0.75 | |
| | | 240 | 0.65 | |
| | | 277 | 0.57 | |
| | | 347 | 0.45 | |
| | | 480 | 0.33 | |



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HUBBELL Lighting

HUBBELL Outdoor Lighting

DATE: | LOCATION:

TYPE: | PROJECT:

CATALOG #:

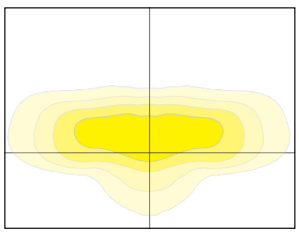
# RATIO WALL

RWL1/RWL2 LED WALLPACK

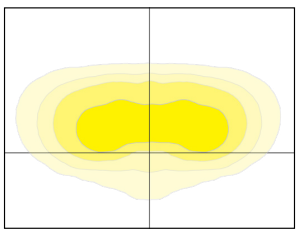
## PHOTOMETRY

**Mounting Height: 30ft**

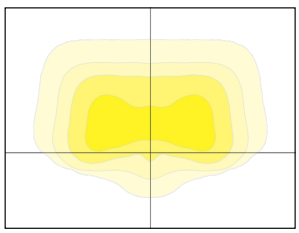
**Type II**



**Type III**

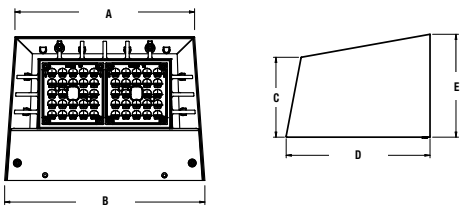


**Type VI**



## DIMENSIONS

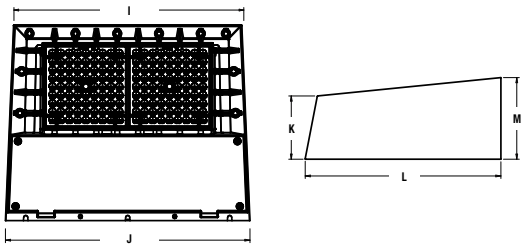
**RWL1**




| A | B | C | D | E |
|---|---|---|---|---|
| 8.7" | 9.7" | 3.9" | 7.0" | 5.0" |
| 221mm | 246mm | 99mm | 178mm | 127mm |

| Weight |
|---|
| 6.5 lbs (2.95 kgs) |

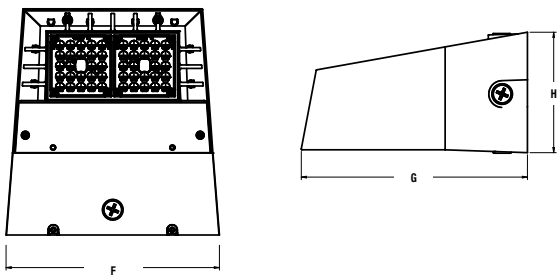
**RWL2**




| I | J | K | L | M |
|---|---|---|---|---|
| 14.0" | 15.0" | 3.9" | 12.0" | 5.0" |
| 356mm | 381mm | 99mm | 305mm | 127mm |

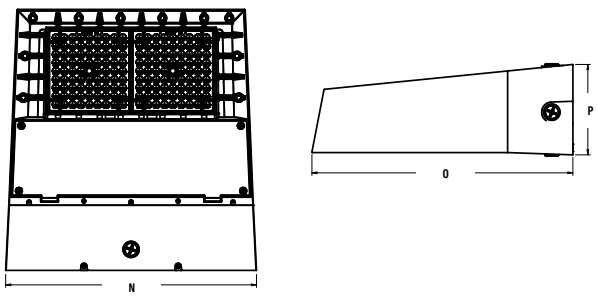
| Weight |
|---|
| 16.5 lbs (7.48 kgs) |

**RWL1 with Integral Back Box**




| F | G | H |
|---|---|---|
| 10.4" | 11.0" | 5.9" |
| 264mm | 279mm | 150mm |

**RWL2 with Integral Back Box**




| N | O | P |
|---|---|---|
| 15.4" | 16.0" | 5.5" |
| 391mm | 406mm | 140mm |



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DATE: | LOCATION:

TYPE: | PROJECT:

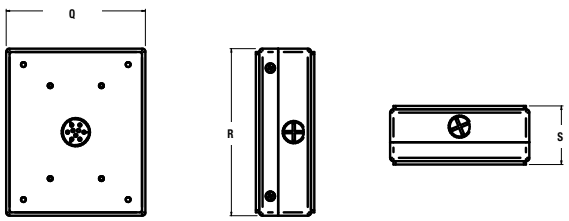
CATALOG #:

# RATIO WALL

RWL1/RWL2 LED WALLPACK

## DIMENSIONS (CONTINUED)

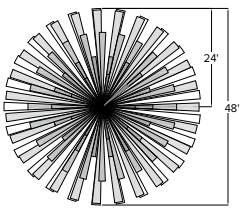
### Back Box Accessory

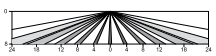



| Q | R | S |
|---|---|---|
| 4.9" | 5.9" | 2.1" |
| 124mm | 150mm | 53mm |

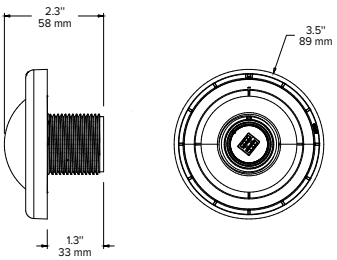
## ADDITIONAL INFORMATION

### NXSP-14F

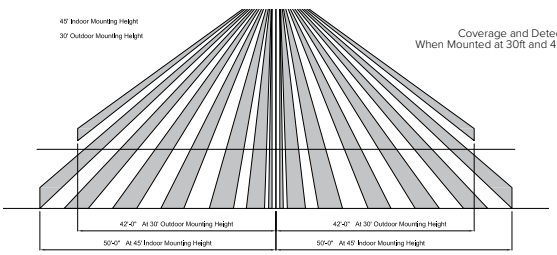


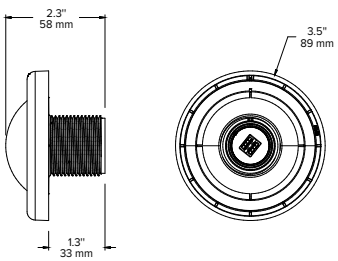
Sensor Lens Coverage and Detection Patterns
When Mounted at 8ft with Low Mount Lens



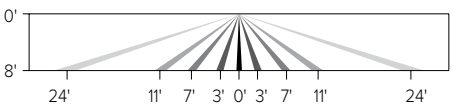

### NXSP-40F

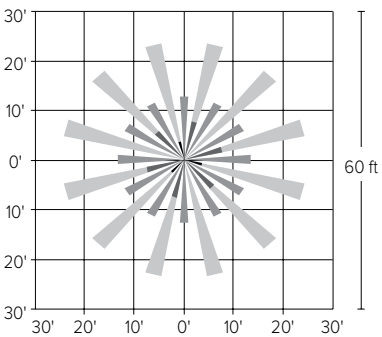


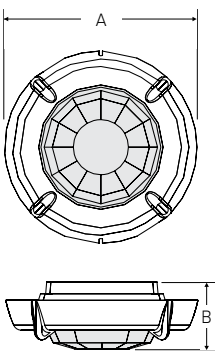

Coverage and Detection Patterns
When Mounted at 30ft and 45ft with Standard Lens



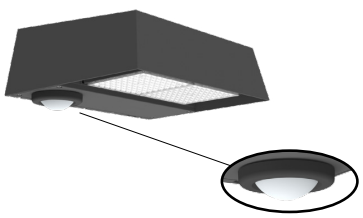

### SCP-8F




| A | B |
|---|---|
| 2.3" (59mm) | .8" (20mm) |





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HUBBELL Lighting

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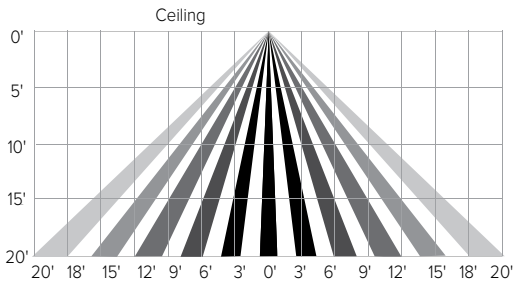
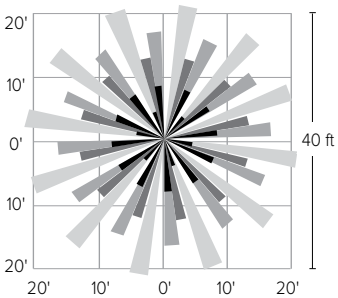
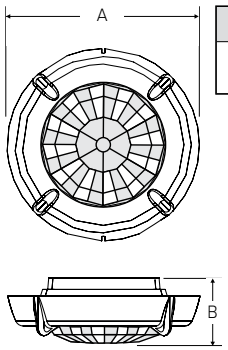
# RATIO WALL

RWL1/RWL2 LED WALLPACK

## SCP-20F

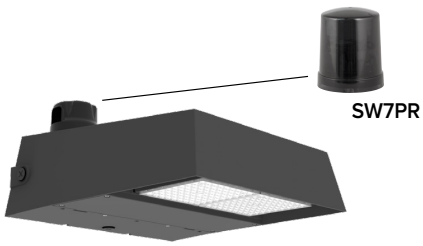



| A | B |
|---|---|
| 2.3" (59mm) | .8" (20mm) |

## SITESYNC 7-PIN MODULE




SiteSync LIGHTING CONTROL

- SiteSync features in a new form
- Available as an accessory for new construction or retrofit applications (with existing 7-Pin receptacle)



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| Submitted by Swaney Lighting | | | |
|---|---|---|---|
| | **Job Name:** 59 ELM ST APARTMENTS - site only | **Catalog Number:** KFL2/11L-35/RGBW/NS/UNV/K/BLT<br>Notes: CONFIRM MOUNTING | **Type:** **WG1**<br>SLA21-48517 |

KIM LIGHTING®

# KFL2RGBW

ARCHITECTURAL RGBW FLOOD

| | |
|---|---|
| DATE: | LOCATION: |
| TYPE: | PROJECT: |
| CATALOG #: | |

Architectural
FLOODLIGHT COLLECTION

## FEATURES

- Color Temperatures: Red, Green, Blue, White (5700K) and Red, Green, Blue, Warm White (2700K)
- Yoke and Threaded Knuckle mounting options
- 7 beam distributions for applications including Narrow Spot 7°x7°, Spot 10°x10°, Narrow 24°x24°, Medium 39°x38°, Medium Flood 51°x44°, Horizontal 39°x8°, and Vertical 8°x39°
- HUBBELL LIGHTING RGBW app (available on IOS and Android)

c UL us LISTED

IP66

## CONTROL TECHNOLOGY

Bluetooth® DMX 512

RELATED PRODUCTS

Ouro Pavilion Intent

## SPECIFICATIONS

### CONSTRUCTION

- One piece die-cast, low copper (<0.6% Cu) Aluminum Alloy 360 with vents and .100" minimum wall thickness
- Finish: fade and abrasion resistant, electrostatically applied, thermally cured, triglycidal isocyanurate (TGIC) polyester powdercoat
- Lens is impact resistant 1/8" tempered glass with anti-reflective coating
- Lens has a one-piece extruded vulcanized silicone gasket, while the lens frame has a one-piece O-ring extruded vulcanized silicone gasket
- Mid-frame one piece die-cast, low copper (<0.6% Cu) Aluminum Alloy 360 and .100" minimum wall thickness
- Mid-frame secures to Lens Frame and housing by stainless steel recessed Allen-head screws
- Silicone gaskets throughout and all external fasteners are stainless steel

### OPTICS

- LEDs mount to a metal printed circuit board assembly (MCPCB)
- Optical lenses are clear injection molded PMMA acrylic

### INSTALLATION

- Fixtures must be grounded in accordance with national, state and/or local electrical codes. Failure to do so may result in serious personal injury

### ELECTRICAL

- Universal voltage, 120 through 277V with a ±5% tolerance. Class II power unit
- High voltage, 347/480. Class II power unit. Output adjustable via potentiometer
- HV drivers shall have greater than a 0.9 power factor, less than 20% harmonic distortion, and be suitable for operation in -40°C to 40°C ambient environments
- Working ambient temperature: -40°C to 40°C
- Dimming range from 10% to 100% through the use of standard 0-10V interface on the programmable driver
- Modular wiring harness in the service area provides user access to the dimming circuitry
- Optional factory programmed dimming profile
- Surge protection: 10,000k in parallel, 20,000k in series
- SF for 120, 277, 347 Line volts
  DF for 208, 240, 480 Line volts
- Wiring: No. 18AWM rated 105°C, wet rating.

### CONTROL

- Each fixture comes equipment with a dual control driver that supports Bluetooth operation of individual fixtures or DMX control of an entire system of fixtures.

**Bluetooth®:**

- Free Bluetooth Apps are available for Apple iOS and Google Android mobile devices and are downloadable via the internet at Apple App Store or Google Play.
- Modular wiring harness in the service area provides user access to the dimming circuitry via DMX.

Bluetooth®

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ANDROID APP ON Google play

Available on the App Store

| KEY DATA | |
|---|---|
| Wattage Range | 15–35 |
| Efficacy Range (LPW) | 45.2–67 |
| Reported Life (Hours) | L70/60,000 |
| Weight | 12 lbs 5.44 kg |
| EPA Front View / Side View | .75 / .31 |

PHOTOMETRY
BROCHURE
DELIVERED LUMENS
DIMENSIONAL DRAWINGS
MOUNTING



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KIM LIGHTING®

DATE: LOCATION:

TYPE: PROJECT:

CATALOG #:

# KFL2RGBW

ARCHITECTURAL RGBW FLOOD

## ORDERING GUIDE

**Example:** KFL2RGBW-11L-15-RGBW-SP-UNV-K-GT-DMX

CATALOG #

### HOUSING

KFL2

| Housing | | LED Engine | | CCT/CRI | | Beam Spread | | Voltage | | Mounting | | Color | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **KFL2RGBW** | Architectural RGBW Floodlight | **11L-15** | 15W | **RGBW** | Red, Green, Blue, White (5700K) | **NS** | Narrow Spot | **UNV** | 120–240V | **Y** | Architectural Yoke | **BL** | Black |
| | | **11L-35** | 35W | **RGBWW** | Red, Green, Blue, White (2700K) | **SP** | Spot | **277** | 277V | **K** | Threaded Knuckle | **DB** | Dark Bronze |
| | | | | | | **N** | Narrow | **347** | 347V | | | **GT** | Graphite |
| | | | | | | **M** | Medium | **480** | 480V | | | **LG** | Light Grey |
| | | | | | | **MF** | Medium Flood | | | | | **PS** | Platinum Silver |
| | | | | | | **HF** | Horizontal Flood | | | | | **TT** | Titanium |
| | | | | | | **VF** | Vertical Flood | | | | | **WH** | White |
| | | | | | | | | | | | | **CC** | Custom Color [1] |

| Options | | Optical Options | |
|---|---|---|---|
| **SF** | Single Fuse 120, 277, 347 Line Volts | **BD** | Barn Doors |
| **DF** | Double Fuse 208, 240, 480 Line Volts | **HS** | Half Glare Shield |

### Mounting Accessories

| Mounting Accessories | | Accessories Color | |
|---|---|---|---|
| ☐ **JBR** | Brass In-Grade Architectural Junction Box | **BL** | Black |
| ☐ **JBR30** | Composite In-Grade Architectural Junction Box | **DB** | Dark Bronze |
| ☐ **JBR32** | Brass In-Grade Staked Junction Box | **GT** | Graphite |
| ☐ **J-27N** | Surface Mount | **LG** | Light Grey |
| ☐ **SM18** | Stanchion Mount | **PS** | Platinum Silver |
| ☐ **SPM** | Side Pole Mount | **TT** | Titanium |
| ☐ **JB1** | Architectural Junction Box | **WH** | White |
| ☐ **WM** | Wall or Ceiling Mount | **CC** | Custom Color[1] |
| ☐ **WM1** | Wall Mount | | |
| ☐ **TM2** | Twin Mount | | |
| ☐ **PT** | Post Top Mount | | |
| ☐ **PT2** | Twin Post Top Mount | | |

Notes:
1 Consult factory for custom color, marine and corrosive finish options



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KIM LIGHTING®

DATE: | LOCATION:

TYPE: | PROJECT:

CATALOG #:

# KFL2RGBW

ARCHITECTURAL RGBW FLOOD

## SPECIFICATIONS CONT'D

### CONTROLS (CON'T)

**DMX:**

- Fully DMX/RDM Compatible
- Utilizes 4 DMX Channels per fixture

**DMX Map**

- Start Address – Red
- Start Address +1 – Green
- Start Address +2 – Blue
- Start Address +3 – White

**DMX Addressing** is performed by using a compatible RDM handheld unit or via the Bluetooth App.

- Performed by using a compatible RDM handheld unit or via the Bluetooth App

**DMX Wiring Color Code**

- Red Wire – DMX +
- Brown Wire – DMX-
- Yellow Wire – Shield/Ground
- DMX termination must be achieved by adding a DMX terminator to the last fixture in a Daisy-Chain. Fixture does not auto terminate.
- Kim Lighting is proud to offer the Pharos Architectural Controls DMX Controllers and Touch screens. See Pharos Spec Sheet for more details.
  See the Pharos® Spec Sheet for more details.

**Mobile App:**

- Mobile App specification in additional information section.
- Mobile App. dimming range from 0% to 100% through the use of HUBBELL LIGHTING RGBW app (available on IOS and Android).
- Color selection and adjustment.
- Camera function for color matching.
- Intensity slider for dimming/ramping up.
- Save and rename up to 10 presets.
- Group and rename fixtures.
- Fixture is password protected, refer to instructions to set unique password.

**CERTIFICATIONS AND LISTINGS**.

- Listed to UL1598 and CSA C22.2#250.0-24 for wet locations and 40˚C ambient temperatures.
- IP66 certified.
- 3G rated for ANSI C136.31 high vibration applications
- RoHS compliant.

**WARRANTY**

- 5 year warranty
- See HLI Standard Warranty for additional information

## DELIVERED LUMENS

| LED # | Nominal Wattage | Distribution | Beam Angles | RGBW White (5700K) | | | RGBWW Warm White (2700K) | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Lumen | Center Beam Candlepower | lm/w | Lumen | Center Beam Candlepower | lm/w |
| 11L | 15 | SP | 8° x 8° | 960 | 26045 | 63.7 | 809 | 21899 | 53.7 |
| | | NS | 7° x 7° | 971 | 26551 | 64.4 | 818 | 22340 | 54.3 |
| | | N | 24° x 24° | 1010 | 4717 | 67.0 | 851 | 3972 | 56.5 |
| | | M | 39° x 38° | 979 | 2186 | 65.2 | 825 | 1841 | 54.7 |
| | | MF | 51° x 44° | 833 | 986 | 55.2 | 702 | 830 | 46.6 |
| | | HF | 39° x 8° | 989 | 7490 | 65.6 | 833 | 6301 | 55.3 |
| | | VF | 8° x 39° | 994 | 7487 | 66.0 | 837 | 6296 | 55.6 |
| 11L | 35 | SP | 10° x 10° | 2184 | 47017 | 61.9 | 1840 | 39589 | 52.1 |
| | | NS | 7° x 7° | 2209 | 60403 | 62.6 | 1861 | 50888 | 52.7 |
| | | N | 24° x 24° | 2298 | 10726 | 65.1 | 1935 | 9032 | 54.8 |
| | | M | 39° x 38° | 2227 | 4973 | 63.1 | 1876 | 4187 | 53.1 |
| | | MF | 51° x 44° | 1895 | 2243 | 53.7 | 1596 | 1888 | 45.2 |
| | | HF | 39° x 8° | 2250 | 17040 | 63.7 | 1895 | 14352 | 53.7 |
| | | VF | 8° x 39° | 2263 | 17044 | 64.1 | 1906 | 14355 | 54.0 |



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DATE: LOCATION:

TYPE: PROJECT:

CATALOG #:

# KFL2RGBW

ARCHITECTURAL RGBW FLOOD

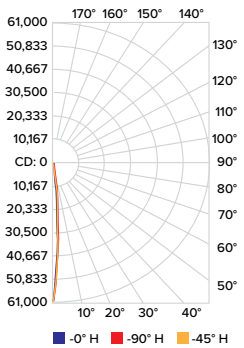
## PHOTOMETRY

### KFL2-11L-35-RGBW-NS

#### LUMINAIRE DATA

| | |
|---|---|
| Description | **5700K** |
| Delivered Lumens | **2208** |
| Watts | **35.3** |
| Efficacy | **62.5** |
| Beam Angles (H x V) | **7.7° x 7.3°** |
| Center Beam Candlepower | **60403** |

#### POLAR CANDELA DISTRIBUTION




#### ILLUMINANCE AT A DISTANCE

| | Center Beam fc | Beam Width | |
|---|---|---|---|
| 8.3 ft | 877.00 fc | 1.1 ft | 1.1 ft |
| 16.7 ft | 217.00 fc | 2.1 ft | 2.2 ft |
| 25.0 ft | 96.60 fc | 3.2 ft | 3.4 ft |
| 33.3 ft | 54.50 fc | 4.3 ft | 4.5 ft |
| 41.7 ft | 34.70 fc | 5.3 ft | 5.6 ft |
| 50.0 ft | 24.20 fc | 6.4 ft | 6.7 ft |

Vertical Spread: 7.3° Horizontal Spread: 7.7°

#### LUMENS PER ZONE

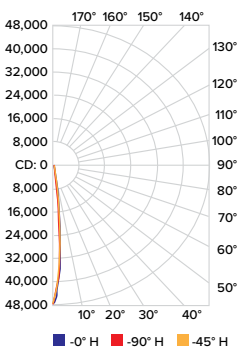
| Zone | Lumens | % Total |
|---|---|---|
| 0-10 | 1,472.50 | 65.70% |
| 10-20 | 398.70 | 17.80% |
| 20-30 | 229.7 | 10.20% |
| 30-40 | 100.9 | 4.50% |
| 40-50 | 26.3 | 1.20% |
| 50-60 | 7.7 | 0.30% |
| 60-70 | 4.4 | 0.20% |
| 70-80 | 2 | 0.10% |
| 80-90 | 0.2 | 0.00% |

### KFL2-11L-35-RGBW-SP

#### LUMINAIRE DATA

| | |
|---|---|
| Description | **5700K** |
| Delivered Lumens | **2184** |
| Watts | **35.3** |
| Efficacy | **61.9** |
| Beam Angles (H x V) | **10° x 9.9°** |
| Center Beam Candlepower | **47017** |

#### POLAR CANDELA DISTRIBUTION




#### ILLUMINANCE AT A DISTANCE

| | Center Beam fc | Beam Width | |
|---|---|---|---|
| 8.3 ft | 681.0 fc | 1.4 ft | 1.5 ft |
| 16.7 ft | 168.0 fc | 2.9 ft | 2.9 ft |
| 25.0 ft | 75.1 fc | 4.3 ft | 4.4 ft |
| 33.3 ft | 42.3 fc | 5.8 ft | 5.8 ft |
| 41.7 ft | 27.0 fc | 7.2 ft | 7.3 ft |
| 50.0 ft | 18.8 fc | 8.6 ft | 8.8 ft |

Vertical Spread: 9.9° Horizontal Spread: 10.0°

#### LUMENS PER ZONE

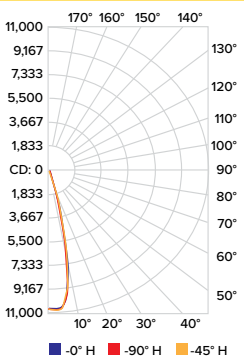
| Zone | Lumens | % Total |
|---|---|---|
| 0-10 | 1,581.70 | 71.30% |
| 10-20 | 312.40 | 14.10% |
| 20-30 | 183.2 | 8.30% |
| 30-40 | 98.1 | 4.40% |
| 40-50 | 30.6 | 1.40% |
| 50-60 | 6.8 | 0.30% |
| 60-70 | 3.6 | 0.20% |
| 70-80 | 2.2 | 0.10% |
| 80-90 | 1 | 0.00% |

### KFL2-11L-35-RGBW-N

#### LUMINAIRE DATA

| | |
|---|---|
| Description | **5700K** |
| Delivered Lumens | **2297** |
| Watts | **35.3** |
| Efficacy | **65.1** |
| Beam Angles (H x V) | **24.9° x 24.4°** |
| Center Beam Candlepower | **10726** |

#### POLAR CANDELA DISTRIBUTION




#### ILLUMINANCE AT A DISTANCE

| | Center Beam fc | Beam Width | |
|---|---|---|---|
| 8.3 ft | 154.00 fc | 3.6 ft | 3.7 ft |
| 16.7 ft | 38.00 fc | 7.2 ft | 7.4 ft |
| 25.0 ft | 17.00 fc | 10.8 ft | 11.0 ft |
| 33.3 ft | 9.56 fc | 14.4 ft | 14.7 ft |
| 41.7 ft | 6.10 fc | 18.0 ft | 18.4 ft |
| 5.0 ft | 4.24 fc | 21.6 ft | 22.1 ft |

Vertical Spread: 24.4° Horizontal Spread: 24.9°

#### LUMENS PER ZONE

| Zone | Lumens | % Total |
|---|---|---|
| 0-10 | 920.4 | 40.00% |
| 10-20 | 939.3 | 40.80% |
| 20-30 | 248.20 | 10.80% |
| 30-40 | 118.8 | 5.20% |
| 40-50 | 48.3 | 2.10% |
| 50-60 | 16.8 | 0.70% |
| 60-70 | 6.8 | 0.30% |
| 70-80 | 2.8 | 0.10% |
| 80-90 | 0.4 | 0.00% |



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# KFL2RGBW

ARCHITECTURAL RGBW FLOOD

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|---|---|
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| TYPE: | PROJECT: |
| CATALOG #: | |

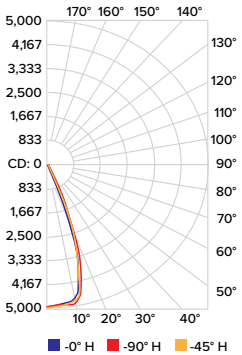
## PHOTOMETRY CONTINUED

### KFL2-11L-35-RGBW-M

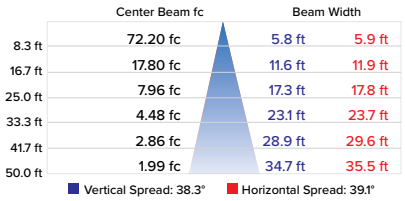
#### LUMINAIRE DATA

| | |
|---|---|
| Description | **5700K** |
| Delivered Lumens | **2227** |
| Watts | **35.3** |
| Efficacy | **63.1** |
| Beam Angles (H x V) | **39.1° x 38.3°** |
| Center Beam Candlepower | **4973** |

#### POLAR CANDELA DISTRIBUTION




#### ILLUMINANCE AT A DISTANCE




#### LUMENS PER ZONE

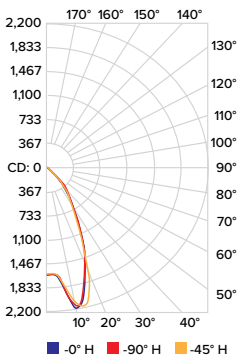
| Zone | Lumens | % Total |
|---|---|---|
| 0-10 | 467.8 | 21.00% |
| 10-20 | 1,056.10 | 47.40% |
| 20-30 | 480.80 | 21.60% |
| 30-40 | 140.80 | 6.30% |
| 40-50 | 54.1 | 2.40% |
| 50-60 | 19 | 0.90% |
| 60-70 | 7.9 | 0.40% |
| 70-80 | 2.9 | 0.10% |
| 80-90 | 0.4 | 0.00% |

### KFL2-11L-35-RGBW-MF

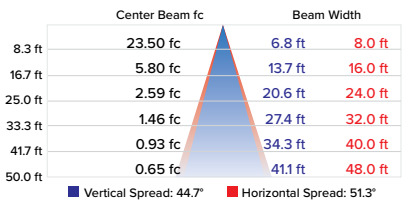
#### LUMINAIRE DATA

| | |
|---|---|
| Description | **5700K** |
| Delivered Lumens | **1895** |
| Watts | **35.3** |
| Efficacy | **53.7** |
| Beam Angles (H x V) | **51.3° x 44.7°** |
| Center Beam Candlepower | **2243** |

#### POLAR CANDELA DISTRIBUTION




#### ILLUMINANCE AT A DISTANCE




#### LUMENS PER ZONE

| Zone | Lumens | % Total |
|---|---|---|
| 0-10 | 173.1 | 9.10% |
| 10-20 | 553 | 29.20% |
| 20-30 | 520.9 | 27.50% |
| 30-40 | 350.1 | 18.50% |
| 40-50 | 196 | 10.30% |
| 50-60 | 72.6 | 3.80% |
| 60-70 | 20.1 | 1.10% |
| 70-80 | 7.8 | 0.40% |
| 80-90 | 3.1 | 0.20% |



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# KFL2RGBW

ARCHITECTURAL RGBW FLOOD

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| TYPE: | PROJECT: |
| CATALOG #: | |

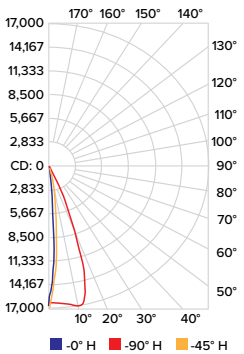
## PHOTOMETRY CONTINUED

### KFL2-11L-35-RGBW-HF

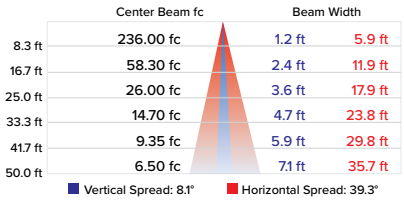
#### LUMINAIRE DATA

| | |
|---|---|
| Description | **5700K** |
| Delivered Lumens | **2250** |
| Watts | **35.3** |
| Efficacy | **63.7** |
| Beam Angles (H x V) | **39° x 9°** |
| Center Beam Candlepower | **17040** |

#### POLAR CANDELA DISTRIBUTION




#### ILLUMINANCE AT A DISTANCE




#### LUMENS PER ZONE

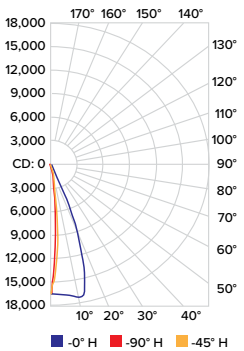
| Zone | Lumens | % Total |
|---|---|---|
| 0-10 | 787.2 | 34.80% |
| 10-20 | 942.4 | 41.70% |
| 20-30 | 359.6 | 15.90% |
| 30-40 | 110.1 | 4.90% |
| 40-50 | 39.8 | 1.80% |
| 50-60 | 13.8 | 0.60% |
| 60-70 | 5.8 | 0.30% |
| 70-80 | 2.4 | 0.10% |
| 80-90 | 0.4 | 0.00% |

### KFL2-11L-35-RGBW-VF

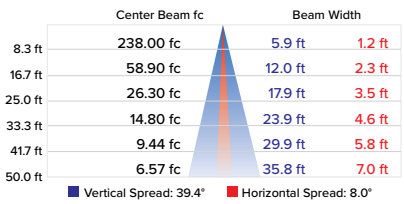
#### LUMINAIRE DATA

| | |
|---|---|
| Description | **5700K** |
| Delivered Lumens | **2263** |
| Watts | **35.3** |
| Efficacy | **64.1** |
| Beam Angles (H x V) | **8° x 39.4°** |
| Center Beam Candlepower | **17044** |

#### POLAR CANDELA DISTRIBUTION




#### ILLUMINANCE AT A DISTANCE




#### LUMENS PER ZONE

| Zone | Lumens | % Total |
|---|---|---|
| 0-10 | 781.6 | 34.40% |
| 10-20 | 951.9 | 41.80% |
| 20-30 | 367.1 | 16.10% |
| 30-40 | 111.7 | 4.90% |
| 40-50 | 40.4 | 1.80% |
| 50-60 | 13.9 | 0.60% |
| 60-70 | 5.8 | 0.30% |
| 70-80 | 2.4 | 0.10% |
| 80-90 | 0.4 | 0.00% |



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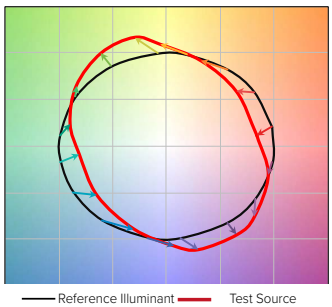
# KFL2RGBW

ARCHITECTURAL RGBW FLOOD

## TM-30 DATA

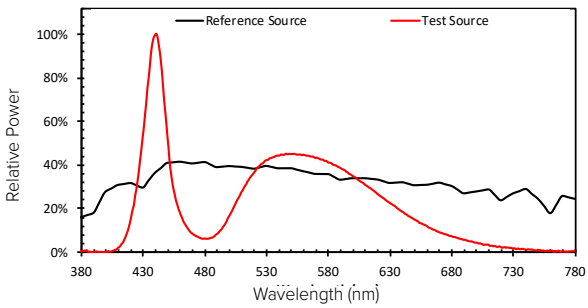
### COLOR VECTOR GRAPHIC




### TEST SOURCE

| | |
|---|---|
| $R_f$ | 64 |
| $R_g$ | 98 |
| CCT(K) | 6127 |
| $D_{UV}$ | -0.0005 |
| x | 0.3198 |
| y | 0.3286 |
| CIE $R_a$ | 69 |

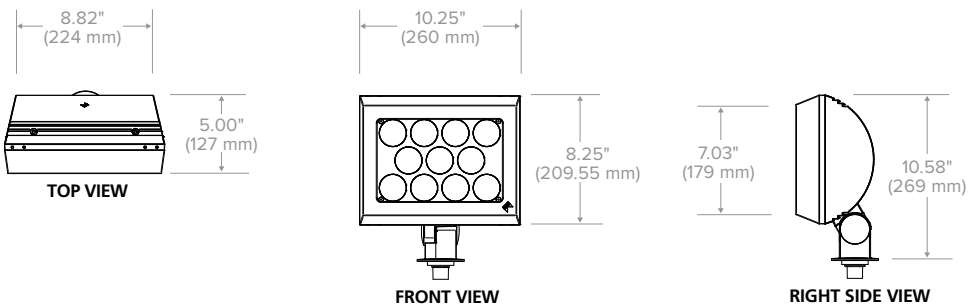
### SPECTRAL POWER DISTRIBUTION COMPARISON




## ELECTRICAL DATA

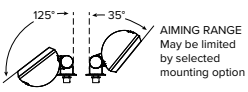
| Electrical | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Light Engine | System Watts | Drive Current | Line Voltage | | Amps AC | | | | | |
| | | | VAC | Hz | 120 | 208 | 240 | 277 | 347 | 480 |
| 11L | 15 | 350 mA | 120-480 | 50/60 | 0.22 | 0.12 | 0.11 | 0.09 | 0.07 | 0.05 |
| | 35 | 700 mA | 120-480 | 50/60 | 0.50 | 0.29 | 0.25 | 0.22 | 0.17 | 0.13 |

## DIMENSIONS

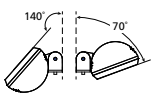



## AIMING RANGE

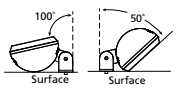
### THREADED KNUCKLE




### YOKE AIMING RANGE




### YOKE AIMING RANGE WITH GROUND RESTRICTIONS



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# KFL2RGBW

ARCHITECTURAL RGBW FLOOD

## PRODUCT EXCEPTIONS & DETAILS

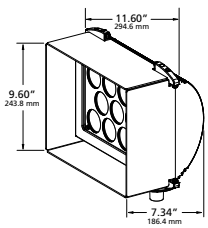
### OPTICAL OPTIONS

**BARN DOORS (BD)**

- Formed 3/32" thick aluminum. Each door is hinged to a cast, low copper (<0.6% Cu) aluminum frame, and locks by set screws. Doors are individually removable. Barn Door assembly mounts to predrilled door frame holes. Assembly will be painted to match fixture housing.

**CAUTION:**

- Not recommended for ground mounted fixtures in vandal prone areas.

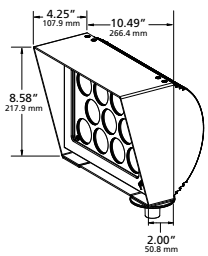



**HALF GLARE SHIELD (HS)**

- Formed 3/32" thick aluminum. Mounts to predrilled door frame holes. Can be mounted along the top or bottom of the fixture to shield the lamp and lens from view. Assembly will be painted to match fixture housing.

**CAUTION:**

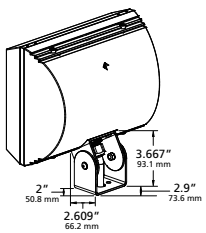
- Not recommended for ground mounted fixtures in vandal prone areas.




### MOUNTING OPTIONS

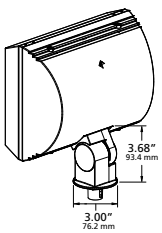
**ARCHITECTURAL YOKE (Y)**

- Architectural Yoke Mount used for surface mounting applications. Secured to surface using two 1/4" bolts.
- Yoke is stainless steel material with powder coating finish.




**THREADED KNUCKLE (K)**

- Threaded Knuckle is die-cast aluminum with integral locking teeth providing 5° adjustment intervals. Stainless steel allen-head screw with spring locking washer and 1/2" NPSM. Clear anodized prior to chromate conversion coating for added corrosion resistance.
- Threaded Knuckle mounting used in conjunction with mounting accessories listed on page 1.



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# KFL2RGBW

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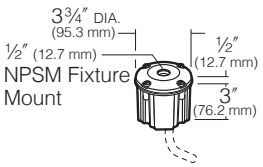
| TYPE: | PROJECT: |
| CATALOG #: | |

## PRODUCT EXCEPTIONS & DETAILS CONTINUED

### MOUNTING ACCESSORIES

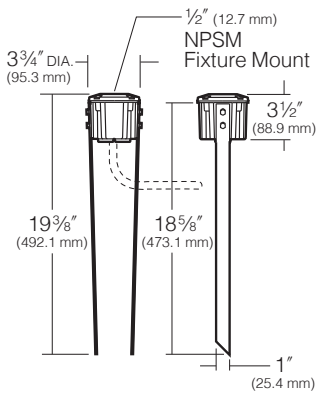
**BRASS IN-GRADE ARCHITECTURAL JUNCTION BOX (THREADED KNUCKLE MOUNT ONLY)**

- JBR-2 (2) 1/2" NPT in bottom
  JBR-3 (2) 3/4" NPT in bottom
  JBR-21 (2) 1/2" NPT in sides,
  (2) 1/2" NPT in bottom
  JBR-24 (4) 1/2" NPT in sides,
  (4) 1/2" NPT in bottom
- Die-cast brass with 1/2" NPSM fixture mount and die-cast cover. Internal set screw provided for locking position. 21 cu in. internal volume. NOTE: All side taps provided with plugs. Creates a flush-mounted appearance. May be cast in concrete for increased stability. CAUTION: Fixture stem and swivel must not contact soil or standing water. Provide drainage away from junction box.



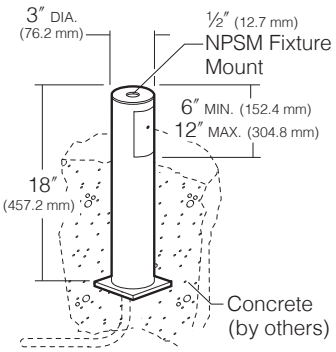

**BRASS IN-GRADE STAKED JUNCTION BOX (THREADED KNUCKLE MOUNT ONLY)**

- JBR-30, JBR-32 (2) 1/2" NPT in bottom, (2) 19" long stakes
- Die-cast brass with 1/2" NPSM fixture mount and die-cast cover. Internal set screw provided for locking position. 21 cu in. internal volume. Creates a flush-mounted appearance. May be cast in concrete for increased stability. CAUTION: To assure a rigid installation, Staked Junction Box must be set in concrete (by others). Fixture stem and swivel must not contact soil or standing water. Provide drainage away from junction box.



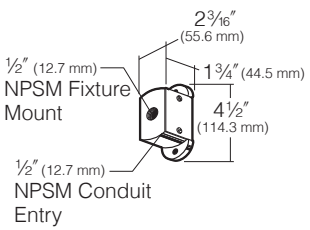

**STANCHION MOUNT (SM18) (THREADED KNUCKLE MOUNT ONLY)**

- 3" O.D. by .188" wall cast low copper (<0.6% Cu) aluminum with 1/2" NPSM fixture mount and hand hole with flush cover. Internal set screw fixture lock accessible through hand hole. Internal ground lug supplied with installed lead. CAUTION: To assure a rigid installation, stanchion must be set in concrete (by others).



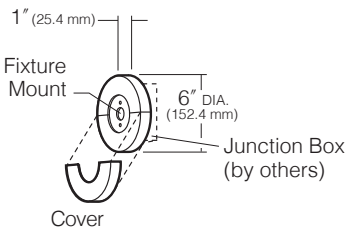

**SURFACE MOUNT (J-27N) (THREADED KNUCKLE MOUNT ONLY)**

- Cast low copper (<0.6% Cu) aluminum with mounting ears for wood screw attachment to tree or wood structure. 5.5 cu in. splice compartment with gasketed cover. 1/2" NPSM fixture mount and 1/2" NPSM conduit or cord seal entry.lead. NOTE: Surface mount can be connected to conduit or outdoor cord with a waterproof cord seal (by others).



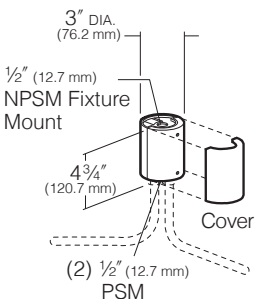

**WALL OR CEILING MOUNT (WM) (THREADED KNUCKLE MOUNT ONLY)**

- Electro zinc steel mounting plate adapts to standard 4" square or octagonal Junction Boxes. Fixture mounts to cast low copper (<0.6% Cu) aluminum upper cover which attaches to mounting plate. Lower cover half provides splice access. Dielectric sealing compound provided for wall interface.




**ARCHITECTURAL JUNCTION BOX (JB1) (THREADED KNUCKLE MOUNT ONLY)**

- Die-cast, low copper (<0.6% Cu) anodized aluminum with 1/2" NPSM fixture mount. Internal set screw provided for locking position. Two 1/2" NPSM in bottom, 17 cu in. internal volume. CAUTION: Junction Box must be installed high enough to avoid contact with soil or standing water.



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KIM LIGHTING®

# KFL2RGBW

ARCHITECTURAL RGBW FLOOD

DATE: LOCATION:

TYPE: PROJECT:

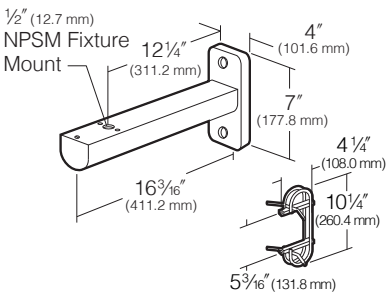
CATALOG #:

## PRODUCT EXCEPTIONS & DETAILS CONTINUED

### MOUNTING ACCESSORIES

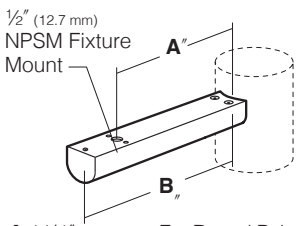
**WALL MOUNT (WM1)**
**(THREADED KNUCKLE MOUNT ONLY)**

- Extruded aluminum arm with a removable end cap for wiring access. Arm is welded to a cast aluminum plate with two 1/2" dia. mounting holes. Optional Wall Embedment Bracket (WEB) provides 3/8-16 bolt receptacles welded in a galvanized re-bar cage for casting into poured-in-place concrete walls. Bolt receptacles receive fixture attachment bolts. Component EPA: 0.3.




**SIDE POLE MOUNT (SPM-X)**
**(THREADED KNUCKLE MOUNT ONLY)**

- Available for Round and Square Poles. Extruded aluminum arm. Internal set screw fixture lock. Removable end cap for wiring access. For use with other Kim Site/Roadway Luminaires as an additional mid-pole floodlight. X in Side Pole Mount Cat. No. indicates 3", 3-1/2", 4", 5" or 6" pole dia. Example: SPM-4/BL is for 4" round pole with Black finish. For square poles, omit -X. NOTE: Field drilling of Poles is required. Component EPA: 0.3.

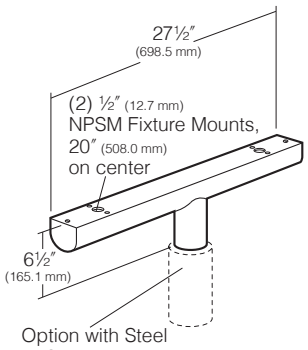



**A** 11½″ (292.1 mm) For Round Poles
12″ (304.8 mm) For Square Poles

**B** 15⅜″ (390.5 mm) For Round Poles
15⅞″ (403.2 mm) For Square Poles

**TWIN MOUNT (TM2)**
**(THREADED KNUCKLE MOUNT ONLY)**

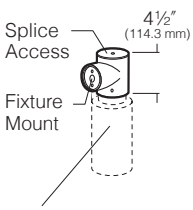
- Extruded aluminum arm. Internal set screw fixture locks. Can be mounted on a SM2, SMT, or Steel Kim Pole with steel 2" pipe-size tenon (2-3/8" O.D. x 3-1/2" min. length). Removable end caps for wiring access. CAUTION: Approved for mounting to poles with steel tenons only. Component EPA: 0.6.




Option with Steel 2″ Pipe-Size Tenon (50.8 mm)
**(SM2, SMT,** or **KIM Pole)**

**POST TOP MOUNT (PT)**
**(YOKE MOUNT ONLY)**

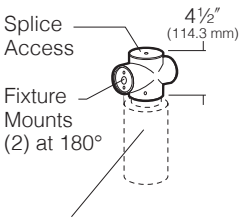
- Cast aluminum mount for pole or other mounting option with 2" pipe-size tenon (2-3/8" O.D. x 3-1/2" minimum length). Fixture attaches with concealed internal studs, mounting is with 1/4-20 allen set screws. Top cap provides splice access. Component EPA: 0.7.




Option with 2″ Pipe-Size Tenon (50.8 mm)
**(WM2, SMT, SM2, M2B, M3E,** or **KIM Pole)**

**TWIN POST TOP MOUNT (PT2)**
**(YOKE MOUNT ONLY)**

- Cast aluminum mount for pole or other mounting option with 2" pipe-size tenon (2-3/8" O.D. x 3-1/2" minimum length). Fixture attaches with concealed internal studs, mounting is with 1/4-20 allen set screws. Top cap provides splice access. NOTE: Not for use with SMT, SPT, WM2, M2B, or M3E options. Component EPA: 0.1.




Option with 2″ Pipe-Size Tenon (50.8 mm)
**(SM2** or **KIM Pole)**



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HUBBELL Lighting

## Pete Heil

**From:** Pete Heil
**Sent:** Thursday, April 1, 2021 2:13 PM
**To:** Mike Sheehan
**Cc:** William Savage; Zach Stevens; Shane Murphy; Jason Harlow; Quentin Scott
**Subject:** RE: 1 Gooch Street, Biddeford, ME - modular wetland system design

Mike,

Looks good. We'll incorporate this into our civil details. Thanks again for your help with this project.

Shane, please let me know if you need anything from us to prepare the maintenance agreement. Thanks,

**Peter F. Heil, PE, CPESC**

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B. 207.775.2655
C. 802.238.7409

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---

**From:** Mike Sheehan <Mike.Sheehan@forterrabp.com>
**Sent:** Thursday, April 1, 2021 12:27 PM
**To:** Pete Heil <pheil@acorn-engineering.com>
**Cc:** William Savage <wsavage@acorn-engineering.com>; Zach Stevens <zstevens@acorn-engineering.com>; Shane Murphy <Shane.Murphy@forterrabp.com>; Jason Harlow <Jason.Harlow@forterrabp.com>; Quentin Scott <Quentin.Scott@forterrabp.com>
**Subject:** RE: 1 Gooch Street, Biddeford, ME - modular wetland system design

Pete,

Attached is a site-specific detail. Can you review and let us know if you see any changes you might need?

Thanks,

**Mike Sheehan, PE, MSE**
Stormwater Engineer III
Telephone: 763.694.3264
Cell: 612.812.0049
Mike.Sheehan@forterrabp.com

---

**From:** Pete Heil <pheil@acorn-engineering.com>
**Sent:** Wednesday, March 31, 2021 11:59 AM
**To:** Mike Sheehan <Mike.Sheehan@forterrabp.com>
**Cc:** William Savage <wsavage@acorn-engineering.com>; Zach Stevens <zstevens@acorn-engineering.com>; Shane Murphy <Shane.Murphy@forterrabp.com>; Jason Harlow <Jason.Harlow@forterrabp.com>; Quentin Scott <Quentin.Scott@forterrabp.com>
**Subject:** RE: 1 Gooch Street, Biddeford, ME - modular wetland system design

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Thanks

**Peter F. Heil, PE, CPESC**

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**From:** Mike Sheehan <Mike.Sheehan@forterrabp.com>
**Sent:** Wednesday, March 31, 2021 12:56 PM
**To:** Pete Heil <pheil@acorn-engineering.com>
**Cc:** William Savage <wsavage@acorn-engineering.com>; Zach Stevens <zstevens@acorn-engineering.com>; Shane Murphy <Shane.Murphy@forterrabp.com>; Jason Harlow <Jason.Harlow@forterrabp.com>; Quentin Scott <Quentin.Scott@forterrabp.com>
**Subject:** RE: 1 Gooch Street, Biddeford, ME - modular wetland system design

Pete,

That's right. Attached is our standard cut sheet for the MWS-8-24 which you can use to picture it better. We'll send one that is site-specific once we get it done.

Thanks,

**Mike Sheehan, PE, MSE**
Stormwater Engineer III
Telephone: 763.694.3264
Cell: 612.812.0049
Mike.Sheehan@forterrabp.com

---

**From:** Pete Heil <pheil@acorn-engineering.com>
**Sent:** Wednesday, March 31, 2021 11:35 AM
**To:** Mike Sheehan <Mike.Sheehan@forterrabp.com>
**Cc:** William Savage <wsavage@acorn-engineering.com>; Zach Stevens <zstevens@acorn-engineering.com>; Shane Murphy <Shane.Murphy@forterrabp.com>; Jason Harlow <Jason.Harlow@forterrabp.com>; Quentin Scott <Quentin.Scott@forterrabp.com>
**Subject:** RE: 1 Gooch Street, Biddeford, ME - modular wetland system design

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Sweet! Thanks Mike. We'll also update the structure to show the planters in the landscaped area instead of the hatches and show the MH covers in the sidewalk, correct?

**Peter F. Heil, PE, CPESC**

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**From:** Mike Sheehan <Mike.Sheehan@forterrabp.com>
**Sent:** Wednesday, March 31, 2021 12:31 PM
**To:** Pete Heil <pheil@acorn-engineering.com>
**Cc:** William Savage <wsavage@acorn-engineering.com>; Zach Stevens <zstevens@acorn-engineering.com>; Shane Murphy <Shane.Murphy@forterrabp.com>; Jason Harlow <Jason.Harlow@forterrabp.com>; Quentin Scott <Quentin.Scott@forterrabp.com>
**Subject:** RE: 1 Gooch Street, Biddeford, ME - modular wetland system design

Pete,

This looks perfect! We'll get working on the detail now!

Thank you,

**Mike Sheehan, PE, MSE**
Stormwater Engineer III
Telephone: 763.694.3264
Cell: 612.812.0049
Mike.Sheehan@forterrabp.com

---

**From:** Pete Heil <pheil@acorn-engineering.com>
**Sent:** Wednesday, March 31, 2021 11:27 AM
**To:** Mike Sheehan <Mike.Sheehan@forterrabp.com>
**Cc:** William Savage <wsavage@acorn-engineering.com>; Zach Stevens <zstevens@acorn-engineering.com>; Shane Murphy <Shane.Murphy@forterrabp.com>; Jason Harlow <Jason.Harlow@forterrabp.com>; Quentin Scott <Quentin.Scott@forterrabp.com>
**Subject:** RE: 1 Gooch Street, Biddeford, ME - modular wetland system design

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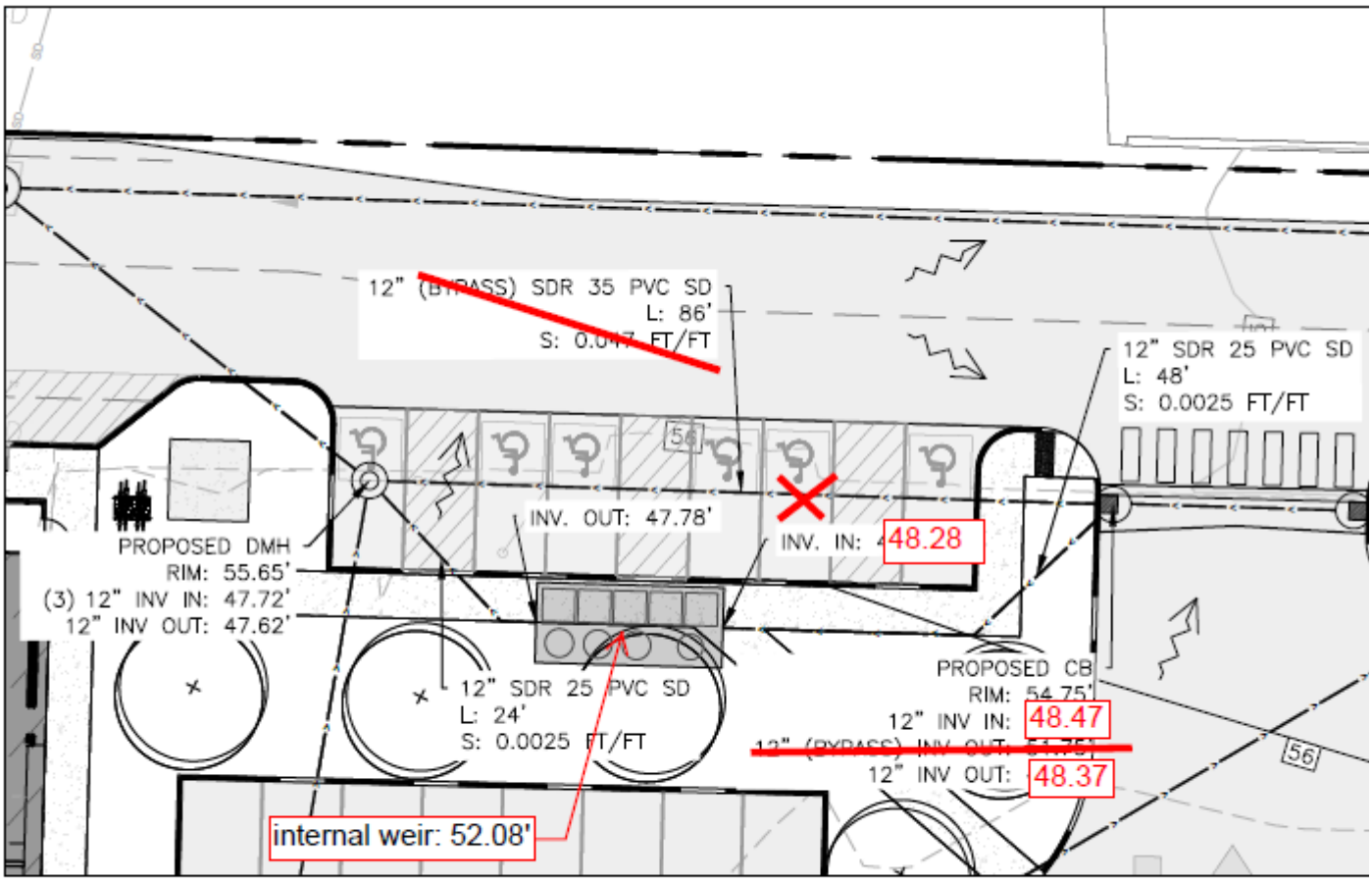
Is this what you mean? If so, this works on our end




MODULAR WETLAND INSET
SCALE: 1"=20'

**Peter F. Heil, PE, CPESC**

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**From:** Mike Sheehan <Mike.Sheehan@forterrabp.com>
**Sent:** Wednesday, March 31, 2021 12:14 PM
**To:** Pete Heil <pheil@acorn-engineering.com>
**Cc:** William Savage <wsavage@acorn-engineering.com>; Zach Stevens <zstevens@acorn-engineering.com>; Shane Murphy <Shane.Murphy@forterrabp.com>; Jason Harlow <Jason.Harlow@forterrabp.com>; Quentin Scott <Quentin.Scott@forterrabp.com>
**Subject:** RE: 1 Gooch Street, Biddeford, ME - modular wetland system design

Peter,

I think are close, and I understand not being able to upsize that line.

Is there any way we can get a little bit more fall between the inlet and the outlet? Even 6" between the inlet and outlet elevations would be a lot better, just to prevent clogging at the inlet.

Thanks,

**Mike Sheehan, PE, MSE**
Stormwater Engineer III
Telephone: 763.694.3264
Cell: 612.812.0049
Mike.Sheehan@forterrabp.com

---

**From:** Pete Heil <pheil@acorn-engineering.com>
**Sent:** Wednesday, March 31, 2021 10:27 AM
**To:** Mike Sheehan <Mike.Sheehan@forterrabp.com>
**Cc:** William Savage <wsavage@acorn-engineering.com>; Zach Stevens <zstevens@acorn-engineering.com>; Shane Murphy <Shane.Murphy@forterrabp.com>; Jason Harlow <Jason.Harlow@forterrabp.com>; Quentin Scott <Quentin.Scott@forterrabp.com>
**Subject:** RE: 1 Gooch Street, Biddeford, ME - modular wetland system design

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Hi Mike,

For the internal bypass, do you mean setting the internal weir wall at 52.08'? If so, that works for us.

We can't upsize the pipe, as the existing outfall SD is 12" and cannot upgrade this line, as it is off the subject property and would result in additional easements, permitting, etc.

Would it be easier to set up a call to finalize this?

**Peter F. Heil, PE, CPESC**

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C. 802.238.7409

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---

**From:** Mike Sheehan <Mike.Sheehan@forterrabp.com>
**Sent:** Wednesday, March 31, 2021 11:11 AM
**To:** Pete Heil <pheil@acorn-engineering.com>
**Cc:** William Savage <wsavage@acorn-engineering.com>; Zach Stevens <zstevens@acorn-engineering.com>; Shane Murphy <Shane.Murphy@forterrabp.com>; Jason Harlow <Jason.Harlow@forterrabp.com>; Quentin Scott <Quentin.Scott@forterrabp.com>
**Subject:** RE: 1 Gooch Street, Biddeford, ME - modular wetland system design

Pete,

It looks like we can make these elevations work if we utilize the modular wetland's internal bypass. We need the bypass elevation to be 52.08' at a minimum to treat 0.86 cfs.

We understand the pipe can't be raised in the catch basin for construction reasons, but if we have pipe entering the MWS stay where it is (at approx. 47.88) and upsize the inlet/outlet pipes to 15" (in order to prevent clogging in the inlet chamber, same size as the pipes on the west end) then the 7 cfs can bypass internally with no problem.

Do you think we can upsize that pipe to make this happen? We can get going with a concept drawing and pricing asap if we think this can fit.

Our regional sales manager Shane Murphy (copied here) is going to reach out about your maintenance agreement question.

Thanks,

**Mike Sheehan, PE, MSE**
Stormwater Engineer III
Telephone: 763.694.3264
Cell: 612.812.0049
Mike.Sheehan@forterrabp.com

---

**From:** Pete Heil <pheil@acorn-engineering.com>
**Sent:** Wednesday, March 31, 2021 9:05 AM
**To:** Quentin Scott <Quentin.Scott@forterrabp.com>
**Cc:** Scott Sertich <Scott.Sertich@forterrabp.com>; William Savage <wsavage@acorn-engineering.com>; Zach Stevens <zstevens@acorn-engineering.com>; Shane Murphy <Shane.Murphy@forterrabp.com>; Jason Harlow <Jason.Harlow@forterrabp.com>; Mike Sheehan <Mike.Sheehan@forterrabp.com>
**Subject:** RE: 1 Gooch Street, Biddeford, ME - modular wetland system design

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Hi Scott,

Following up, can you please provide us with some additional information on why the MWS is preferred in the landscape area? It would be our preferred location to have it remain in the ADA parking spaces to limit the hatch and covers to the parking where cars would be parked over and provides a cleaner shot through the network? Thanks,

**Peter F. Heil, PE, CPESC**

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---

**From:** Pete Heil
**Sent:** Wednesday, March 31, 2021 9:58 AM
**To:** Quentin Scott <Quentin.Scott@forterrabp.com>
**Cc:** Scott Sertich <Scott.Sertich@forterrabp.com>; William Savage <wsavage@acorn-engineering.com>; Zach Stevens <zstevens@acorn-engineering.com>; Shane Murphy <Shane.Murphy@forterrabp.com>; Jason Harlow <Jason.Harlow@forterrabp.com>; Mike Sheehan <Mike.Sheehan@forterrabp.com>
**Subject:** RE: 1 Gooch Street, Biddeford, ME - modular wetland system design

Hi Scott,

We've updated the location of the MWS to be in the landscaped area per the attached revised plan.

Understood about the HGL. With the relatively flat surface grades (0.7%) and the relatively high tie in point, we can't have an invert higher than 51.75' to be able to actually construct the CB. Per my attached mark ups, I've lowered the pipe inverts from the outfall DMH to the CB before the MWS and raised the bypass pipe to try and provide as much separation between the inv heading towards the MWS and the bypass. This shows a greater difference in elevation (3.75') than what you had shown (1.96') for the inverts out of the CB. Will this would to achieve the 4.2' HGL inside the unit?

The 100-year peak flow for the subcatchment area is 6.53 cfs.

Can you also please provide a maintenance agreement to be included with the State DEP Stormwater application? Let me know if you have any questions. Happy to jump on a call if it's easier to work through this as well. Thanks,

**Peter F. Heil, PE, CPESC**

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C. 802.238.7409

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---

**From:** Quentin Scott <Quentin.Scott@forterrabp.com>
**Sent:** Tuesday, March 30, 2021 5:41 PM
**To:** Pete Heil <pheil@acorn-engineering.com>
**Cc:** Scott Sertich <Scott.Sertich@forterrabp.com>; William Savage <wsavage@acorn-engineering.com>; Zach Stevens <zstevens@acorn-engineering.com>; Shane Murphy <Shane.Murphy@forterrabp.com>; Jason Harlow <Jason.Harlow@forterrabp.com>; Mike Sheehan <Mike.Sheehan@forterrabp.com>
**Subject:** RE: 1 Gooch Street, Biddeford, ME - modular wetland system design

Hello Pete,

We have reviewed the updated plans you had sent over and it looks like our MWS-8-24-V unit can fit the current flow requirements for the site. We do have a couple of questions to run past you.

We typically prefer to have our modular wetland systems in grass/planting areas if possible. I have attached a marked up version of the grading plan you sent with the locations that we would prefer, but we can keep it underground if needed. Do you think we can make this location work?

The next note is that since the modular wetland uses horizontal instead of vertical flow to treat the stormwater, the treatment HGL is a very important factor. To treat 0.86 cfs we will need to achieve a treatment HGL of 4.2' inside of the MWS unit.

For the sub catchment area to achieve the necessary HGL, the bypass elevation will need to be raised to 52.30'. We can do this either by raising the bypass pipe in the upstream CB, or by utilizing internal bypass within the MWS. Which do would you prefer to see?

Last thing, can you please send over the 100 year peak flows for the sub catchment areas?

Let us know if you have any questions or need any further clarification.

Thanks,

**Quentin Scott, EIT**
Stormwater Engineer

6655 Wedgwood Road, Suite 130
Maple Grove, MN 55311
**Cell** 712.363.2552 **Desk** 763.694.3259
quentin.scott@forterrabp.com
biocleanenvironmental.com

---

**From:** Pete Heil <pheil@acorn-engineering.com>
**Sent:** Tuesday, March 30, 2021 1:06 PM
**To:** Mike Sheehan <Mike.Sheehan@forterrabp.com>
**Cc:** Quentin Scott <Quentin.Scott@forterrabp.com>; Scott Sertich <Scott.Sertich@forterrabp.com>; William Savage <wsavage@acorn-engineering.com>; Zach Stevens <zstevens@acorn-engineering.com>; Shane Murphy <Shane.Murphy@forterrabp.com>; Jason Harlow <Jason.Harlow@forterrabp.com>
**Subject:** RE: 1 Gooch Street, Biddeford, ME - modular wetland system design

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Hi Mike,

As a follow up to the below, we have further revised the plans to meet the State DEP stormwater requirements, and have revised the subcatchment areas to show a single treatment area that meets their redevelopment criteria per the attached post-development watershed map. The subcatchment area has been sized to meet a 24-hr water quality storm event of 1.80", which corresponds to a flow of 0.86 cfs and a runoff volume of 0.084 af. I've attached an updated grading & drainage plan showing the updated info for your reference as well. Please let me know if you have any questions.
Thanks,

**Peter F. Heil, PE, CPESC**

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---

**From:** Pete Heil
**Sent:** Friday, March 26, 2021 2:11 PM
**To:** Mike Sheehan <Mike.Sheehan@forterrabp.com>
**Cc:** Quentin Scott <Quentin.Scott@forterrabp.com>; Scott Sertich <Scott.Sertich@forterrabp.com>; William Savage <wsavage@acorn-engineering.com>; Zach Stevens <zstevens@acorn-engineering.com>; Shane Murphy <Shane.Murphy@forterrabp.com>; Jason Harlow <Jason.Harlow@forterrabp.com>
**Subject:** RE: 1 Gooch Street, Biddeford, ME - modular wetland system design

Hi Mike,

Please find the attached updated plans, with the separated subcatchments as described below. We have preliminary dropped in the MWS system and provided inverts as place holders for your designs.

Restating in this thread from my previous email this morning, for the DEP application for this project, we'll also need to include a maintenance agreement/contract. Can you also prepare this for the applicants review.

Let me know if you have any questions. Thanks,

**Peter F. Heil, PE, CPESC**

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C. 802.238.7409

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---

**From:** Pete Heil
**Sent:** Thursday, March 25, 2021 3:39 PM
**To:** Mike Sheehan <Mike.Sheehan@forterrabp.com>
**Cc:** Quentin Scott <Quentin.Scott@forterrabp.com>; Scott Sertich <Scott.Sertich@forterrabp.com>; William Savage <wsavage@acorn-engineering.com>; Zach Stevens <zstevens@acorn-engineering.com>
**Subject:** RE: 1 Gooch Street, Biddeford, ME - modular wetland system design

We're updating the utility layouts and grading & drainage plans, including rim & inv elevations now and will forward along when available.

For subcatchment 1, the CB just before the MWS, shows a rim to inv delta at 2.75' (with insulation over the outlet pipe).
For subcatchment 2, the CB just before the MWS, shows a rim to inv delta at 5.35'

Thanks,

**Peter F. Heil, PE, CPESC**

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---

**From:** Mike Sheehan <Mike.Sheehan@forterrabp.com>
**Sent:** Thursday, March 25, 2021 3:28 PM
**To:** Pete Heil <pheil@acorn-engineering.com>
**Cc:** Quentin Scott <Quentin.Scott@forterrabp.com>; Scott Sertich <Scott.Sertich@forterrabp.com>; William Savage <wsavage@acorn-engineering.com>; Zach Stevens <zstevens@acorn-engineering.com>
**Subject:** RE: 1 Gooch Street, Biddeford, ME - modular wetland system design

Pete,

Do you have a plan of those two subcatchments? That will help us estimate the rim-to-outlet height we have available and what size MWS units to use.

But in general those numbers seem very manageable for modular wetlands.

Thanks,

**Mike Sheehan, PE, MSE**
Stormwater Engineer III
Telephone: 763.694.3264
Cell: 612.812.0049
Mike.Sheehan@forterrabp.com

---

**From:** Pete Heil <pheil@acorn-engineering.com>
**Sent:** Thursday, March 25, 2021 2:23 PM
**To:** Mike Sheehan <Mike.Sheehan@forterrabp.com>
**Cc:** Quentin Scott <Quentin.Scott@forterrabp.com>; Scott Sertich <Scott.Sertich@forterrabp.com>; William Savage <wsavage@acorn-engineering.com>; Zach Stevens <zstevens@acorn-engineering.com>
**Subject:** RE: 1 Gooch Street, Biddeford, ME - modular wetland system design

**WARNING:** This email originated from **outside of the organization.** Please use **CAUTION** when opening attachments or clicking links.

Hi Mike,

As a follow up to our call yesterday regarding the Gooch Street project in Biddeford, ME, we took a look at the subcatchment flows for the site and are now proposing (2) separate systems to handle water quality flows from 2 separate subcatchment areas.

Subcatchment 1
- WQv 24-hour storm event: 2.4”
  - 0.37 CFS
  - Runoff Volume 0.026 AF

Subcatchment 2
- WQv 24-hour storm event: 1.6”
  - 0.74 CFS
  - Runoff Volume 0.070 AF

Per our discussion, I believe we’d be able to handle each subcatchment area with (1) MWS tank in each subcatchment. Can you please review and size the systems appropriately. Please let me know if you have any questions or need anything else. Thanks,

**Peter F. Heil, PE, CPESC**

Acorn Engineering, Inc
B. 207.775.2655
C. 802.238.7409

Please note Acorn Engineering employees may be working remotely. All employees have laptops and full access to project files using Sharepoint. To do our part and reduce unnecessary exposure all meetings will be held remotely using video conferencing software such as Teams or Zoom. If an in-person meeting is necessary then the meeting will be held outside.

---

**From:** Pete Heil
**Sent:** Tuesday, March 23, 2021 6:07 PM

**To:** Scott Sertich <Scott.Sertich@forterrabp.com>
**Cc:** Mike Sheehan <Mike.Sheehan@forterrabp.com>; Quentin Scott <Quentin.Scott@forterrabp.com>
**Subject:** RE: 1 Gooch Street, Biddeford, ME - modular wetland system design

Sounds good, looking forward to it. Thanks,

**Peter F. Heil, PE, CPESC**

Acorn Engineering, Inc
B. 207.775.2655
C. 802.238.7409

Please note Acorn Engineering employees may be working remotely. All employees have laptops and full access to project files using Sharepoint. To do our part and reduce unnecessary exposure all meetings will be held remotely using video conferencing software such as Teams or Zoom. If an in-person meeting is necessary then the meeting will be held outside.

---

**From:** Scott Sertich <Scott.Sertich@forterrabp.com>
**Sent:** Tuesday, March 23, 2021 5:10 PM
**To:** Pete Heil <pheil@acorn-engineering.com>
**Cc:** Mike Sheehan <Mike.Sheehan@forterrabp.com>; Quentin Scott <Quentin.Scott@forterrabp.com>
**Subject:** RE: 1 Gooch Street, Biddeford, ME - modular wetland system design

Pete,
Thanks for the additional opportunity! My east coast engineers plan on calling you tomorrow 3/24 about the Mercy Hospital job, so we can hopefully address both of these quickly.

Thanks,

**Scott Sertich, PE, ASCE, CFM, CPSWQ**
Director of Engineering

5796 Armada Drive, Suite 250
Carlsbad, CA 92008
**Cell** 303.594.2698 **Desk** 720.476.4108
scott.sertich@forterrabp.com
biocleanenvironmental.com

---

**From:** Pete Heil <pheil@acorn-engineering.com>
**Sent:** Friday, March 19, 2021 2:44 PM
**To:** Scott Sertich <Scott.Sertich@forterrabp.com>
**Cc:** William Savage <wsavage@acorn-engineering.com>; Zach Stevens <zstevens@acorn-engineering.com>; John Laliberte <john@bushwatson.com>; Mike Triglione <mtriglione@acorn-engineering.com>; Mike Sheehan <Mike.Sheehan@forterrabp.com>
**Subject:** 1 Gooch Street, Biddeford, ME - modular wetland system design

**WARNING:** This email originated from **outside of the organization.** Please use **CAUTION** when opening attachments or clicking links.

Hi Scott,

We're working on project at 1 Gooch Street in Biddeford, ME and was hoping to work with you on designing another modular wetland system to provide water quality treatment for the redevelopment of the private street and the site. The subcatchment area is approx. 92,419 sf, with 83,521 sf of impervious and 8,898 sf of landscaped area. The water

quality storm results in a flow of 4.49 cfs and a runoff volume of 0.432 acre-feet. We'll be providing a separate bypass pipe adjacent to the system with a CB diverter upstream of the system to redirect and convey any larger storm events. I have attached the latest grading plan for your reference, showing an approx. location and configuration of the system. Please let me know if you have any questions, or want to set up a quick call to review the project together. Thanks, have a great weekend!

**Peter F. Heil, PE, CPESC**
**Project Manager**

Licensed in Maine, Vermont & New Hampshire

Acorn Engineering, Inc
PO Box 3372
Portland, Maine 04104

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B. 207.775.2655
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STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PAUL R. LEPAGE
GOVERNOR

PAUL MERCER
COMMISSIONER

November 10, 2016

Modular Wetland Systems, Inc. Corporate Office
398 Via El Centro
Oceanside, CA 92058
Attn: Zach Kent

Dear Mr. Kent:

The Modular Wetland System Linear (MWS-Linear) has been reviewed and accepted as an approved alternative to the General Standards (Section 4.C) of the Stormwater Management Rules (Chapter 500). Modular Wetlands Systems Inc. has provided the Department with (1) testing data showing that the system provides pollutant removal equivalent to the Chapter 500 General Standard Best Management Practices, and (2) extensive information demonstrating how MWS-Linear units may be sized to provide full treatment of 90% of an average annual runoff volume. Therefore, the Department will review and approve, on a case-by-case basis, the use of the MWS-Linear to meet the pollutant removal requirements of the General Standards (Chapter 500, Section 4 (C)(2)) when the system is sized, installed and maintained in accordance with the provisions that follow. This approval does not address the additional requirements for the channel protection or any control of peak flow events.

1. The structure must be installed, operated and maintained in accordance with the manufacturer's specifications. This approval is for water quality treatment with high flow rates.
2. The MWS-Linear must be sized in accordance with the manufacturer's published white paper "Technical Basis for MWS Linear® Sizing Approach: Attachment B: Maine," prepared by Geosyntec Consultants dated February 2016. The approach outlined in Attachment B provides design treatment intensities for three regions of the state that treat 90% of the annual runoff volume. Using this information, applicants can find the appropriate model unit sizing by assessing the contributing watershed's and model unit's time of concentration (Tc) and applying the Rational Equation. The calculated flow rate is then compared with the following MWS-Linear model chart to determine the appropriate model.

AUGUSTA
17 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0017
(207) 287-7688 FAX: (207) 287-7826

BANGOR
106 HOGAN ROAD, SUITE 6
BANGOR, MAINE 04401
(207) 941-4570 FAX: (207) 941-4584

PORTLAND
312 CANCO ROAD
PORTLAND, MAINE 04103
(207) 822-6300 FAX: (207) 822-6303

PRESQUE ISLE
1235 CENTRAL DRIVE, SKYWAY PARK
PRESQUE ISLE, MAINE 04769
(207) 764-0477 FAX: (207) 760-3143

website: www.maine.gov/dep

| Model # | Dimensions | WetlandMEDIA Surface Area | Treatment Flow Rate (cfs) | Detention Time Adjustment to Tc (min) |
|---|---|---|---|---|
| MWS-L-4-4 | 4' x 4' | 23 sq. ft. | 0.052 | 6 |
| MWS-L-4-6 | 4' x 6' | 32 sq. ft. | 0.073 | 4 |
| MWS-L-4-8 | 4' x 8' | 50 sq. ft. | 0.115 | 4 |
| MWS-L-4-13 | 4' x 13' | 63 sq. ft. | 0.144 | 6 |
| MWS-L-4-15 | 4' x 15' | 76 sq. ft. | 0.175 | 5 |
| MWS-L-4-17 | 4' x 17' | 90 sq. ft. | 0.206 | 4 |
| MWS-L-4-19 | 4' x 19' | 103 sq. ft. | 0.237 | 3 |
| MWS-L-4-21 | 4' x 21' | 117 sq. ft. | 0.268 | 3 |
| MWS-L-8-8 | 8' x 8' | 100 sq. ft. | 0.23 | 5 |
| MWS-L-8-12 | 8' x 12' | 151 sq. ft. | 0.346 | 5 |
| MWS-L-8-16 | 8' x 16' | 201 sq. ft. | 0.462 | 6 |
| MWS-L-8-20 | 8' x 20' | 252 sq. ft. | 0.577 | 4 |
| MWS-L-8-24 | 8' x 24' | 302 sq. ft. | 0.693 | 4 |

3. As an alternative to flow based sizing the MWS-Linear can be configured in a volume based design. Upstream storage must be provided for the water quality/channel protection volume (WQv) consisting of the first 1.0 inch of runoff from impervious surfaces and 0.4 inch of runoff from lawn and landscaped areas. The WQv should be hydraulically isolated from any additional storage provided onsite by weirs or other means so that only the WQv is routed through the MWS-Linear. If channel protection storage is required, the WQv must be detained for a minimum of 24 hours and a maximum of 48 hours (emptying time). Storage can typically be provided in an underground facility such as corrugated metal pipe, polypropylene chambers, concrete vaults or similar. All storage systems must include sufficient maintenance access for the removal of accumulated sediment and debris. It is desirable that a pretreatment structure be located upstream of the WQv storage to facilitate capture of coarse solids and trash. In volume based designs the MWS-Linear must be sized in accordance with the tested hydraulic loading rate of no greater than 1 gpm per square foot of WetlandMedia surface area.
4. The MWS-Linear must incorporate a method to bypass runoff flows that are greater than the design flows. The manufacturer has described many ways to configure this bypass. The applicant must demonstrate that the proposed design meets all the manufacturer's specifications prior to submission for Department approval. Review and approval of the proposed design by the manufacturer will be sufficient to demonstrate conformance with the manufacturer's specifications.
5. If channel protection is required, the treated flow as well as the bypassed flow must be directed to a detention system/structure that will store the channel protection volume (CPv) consisting of the first 1.0 inch of runoff from impervious surfaces and 0.4 inch of runoff from lawns and landscaped areas. An external outlet control structure must control the flow out of the system such that the time of drawdown of the CPv must be no less than 24 hours and no greater than 48 hours.

6. The MWS-Linear must be delivered to the site with the internal components/plumbing fully installed. WetlandMedia will either be pre-installed or delivered in super sacks and installed after the concrete box is set in place. The MWS-Linear must be sealed to prevent debris and sediment from entering the system during construction. The activation of the MWS-Linear including opening of the protective mesh cover and installation of plant(s) can be performed only by the supplier (Modular Wetlands System, Inc. or its authorized dealer). The activation process must not commence until the project site is fully stabilized and cleaned (i.e., full landscaping, grass cover, final paving and street sweeping completed), minimizing the risk of construction materials contaminating the MWS-Linear device.
7. Prior to construction, a five-year binding inspection and maintenance contract must be provided for review and approval by the Department, and must be renewed before contract expiration. The contract will be with a professional with knowledge of erosion and stormwater control, including a detailed working knowledge of the proposed system. The first year's maintenance must be provided by the manufacturer to ensure that the system is operating according to the established specifications.
8. The overall stormwater management design must meet all Department criteria and sizing specifications and shall be reviewed and approved by the Department prior to use.
9. Each project must be reviewed and approved by the manufacturer for proposed use, layout and sizing of the system and for conformance with their design specifications. The system must be installed under the manufacturer's representative supervision.
10. This approval is conditional to on-the-ground experience confirming that the MWS-Linear's pollutant removal efficiency and sizing are appropriate. The "permit shield" provision (Section 14) of the Chapter 500 rules will apply, and the Department will not require the replacement of the system if, with proper maintenance, pollutant removals do not satisfy the General Standard Best Management Practices.

We look forward to working with you as these stormwater management structures are installed on new projects. Questions concerning this decision should be directed to Jeff Dennis at (207) 215-6376.

Sincerely,

Mark R Bergeron

Mark Bergeron, P.E.
Director, Bureau of Land Resources

C: Don Witherill, Maine DEP

White Paper

# Technical Basis for MWS Linear® Sizing Approach

Prepared for:

**Modular Wetlands Systems, Inc.**
Oceanside, California
www.ModularWetlands.com

Prepared by:

Aaron Poresky, Kelly Havens, and Lucas Nguyen
**Geosyntec Consultants, Inc.**
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February 2016

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## EXECUTIVE SUMMARY

The Modular Wetland System (MWS) Linear® is a multiple-stage treatment system that is designed to treat stormwater runoff at a given flow rate at the time the runoff occurs (i.e., "flow-based" sizing). This sizing basis is different from typical best management practices (BMPs), which are often sized to hold a given volume of stormwater runoff and treat it during and after a storm event (e.g., "volume-based" sizing). In cases when applicable BMP sizing requirements are based on a given design storm volume (e.g., capture the runoff from a 1-inch storm) or a long term capture efficiency (e.g., capture and treat 90 percent of long term runoff), a method is needed to determine the required design flow rate of a MWS Linear® system to provide equivalent long term capture efficiency of stormwater runoff volumes.

This white paper describes the technical basis for an MWS Linear® sizing approach that is formulated to provide treatment for an equivalent amount of long term runoff volume in comparison to traditional volume-based BMP sizing standards. Additionally, this white paper provides associated resources to assist designers with applying this sizing approach to projects.

The methodology described in this white paper is based on the results of long term continuous modeling, which was conducted to compare the long term capture efficiency of flow-based MWS Linear® systems to the long term capture efficiency of traditional volume-based BMPs or a capture efficiency-based regulatory standard. Analyses were conducted for ranges of precipitation patterns and site conditions that may apply to a project. The results of these analyses were then summarized in design tables and graphs so that they can be applied by project designers as part of a simplified approach without requiring project-specific continuous simulation analyses. This method allows the designer to calculate a design treatment flow rate and select an associated MWS Linear® model (i.e., size) that provides equivalent long term capture efficiency compared to the applicable volume-based or capture efficiency-based standard.

The sizing approach described in this white paper accounts for and/or allows the user to define: (1) project location (state and/or region); (2) applicable volume-based or capture efficiency-based BMP sizing standard that applies to this location; (3) drainage area; (4) drainage area percent imperviousness or runoff coefficient; and (5) time of concentration associated with drainage area. Notably, this sizing approach is based on the results of continuous simulation modeling using high resolution precipitation data (5-minute intervals). This resolution is necessary to account for the effects of short-duration, high-intensity precipitation in small urban catchments. These effects can be masked if analyses are conducted using hourly precipitation data.

Details regarding the modeling analyses supporting the sizing approach are provided in Attachment A. Detailed instructions and resources for sizing the MWS Linear® system in a specific state are provided in Attachment B.

## 1. INTRODUCTION AND PURPOSE

The Modular Wetland System (MWS) Linear® is designed to treat a given flow rate of stormwater runoff at the time the runoff occurs (i.e., "flow-based" sizing). This sizing basis is different from typical best management practices (BMPs), which are often sized to hold a given volume of stormwater runoff and treat it during and after a storm event (e.g., "volume-based" sizing). In cases when applicable BMP sizing criteria are based on a given design storm volume or a long term capture efficiency, a method is needed to determine the required design flow rate of a MWS Linear® to provide equivalent performance.

This white paper describes the technical basis for an MWS Linear® sizing approach that is formulated to provide treatment for an equivalent amount of long term runoff volume in comparison to traditional BMP sizing standards that are based on a specified design storm depth or long term capture efficiency. Additionally, this white paper provides associated resources for designers to apply this method to projects.

This white paper is organized into the following sections:

- Section 2 provides an overview of the MWS Linear® treatment system;
- Section 3 describes the methodology used to develop the long-term capture efficiency-based sizing approach for MWS Linear® systems;
- Section 4 summarizes the MWS Linear® sizing approach and associated resources available to designers; and
- Section 5 provides a summary and conclusions, including discussion of limitations and reliability.

Additionally, the following attachments support this white paper:

- Attachment A provides a detailed description of the modeling methodology used to support the sizing approach, including model inputs and assumptions.
- Attachment B provides state-specific sizing resources, including a stepwise sizing approach, design tables and worksheets.

State-specific versions of Attachment B have been produced for all states that are supported by this methodology. It is expected that additional or modified versions of Attachment B may be added in the future.

Attachment B can be used as a standalone document for project design. The remainder of this white paper and Attachment A provides the technical basis for the sizing approach.

## 2. OVERVIEW OF MODULAR WETLAND SYSTEM LINEAR

The MWS Linear® consists of multiple treatment components packaged within a two-part treatment chamber. The first chamber includes pre-treatment using gravity separation (settling) and media filter cartridges filled with BioMediaGREEN™. The second chamber includes horizontal flow through biofiltration media (WetlandMEDIA™) and vegetation. The outlet from the second chamber includes flow control to provide the appropriate residence time within the system. MWS Linear® systems are sized to provide complete treatment up to a specified treatment flow rate, which varies based on system size. Any flows larger than the treatment flow rate are bypassed and remain untreated.

MWS Linear® design flow rates can be found in MWS Linear® reference material on the MWS Linear® website, and are provided in Table 1 below.

**Table 2-1: MWS Linear® Treatment System Models**

| Model Number | Dimensions | WetlandMEDIA Surface Area | Treatment Flow Rate (cfs) |
|---|---|---|---|
| MWS-L-4-4 | 4′ x 4′ | 23 sq. ft. | 0.052 |
| MWS-L-4-6 | 4′ x 6′ | 32 sq. ft. | 0.073 |
| MWS-L-4-8 | 4′ x 8′ | 50 sq. ft. | 0.115 |
| MWS-L-4-13 | 4′ x 13′ | 63 sq. ft. | 0.144 |
| MWS-L-4-15 | 4′ x 15′ | 76 sq. ft. | 0.175 |
| MWS-L-4-17 | 4′ x 17′ | 90 sq. ft. | 0.206 |
| MWS-L-4-19 | 4′ x 19′ | 103 sq. ft. | 0.237 |
| MWS-L-4-21 | 4′ x 21′ | 117 sq. ft. | 0.268 |
| MWS-L-8-8 | 8′ x 8′ | 100 sq. ft. | 0.23 |
| MWS-L-8-12 | 8′ x 12′ | 151 sq. ft. | 0.346 |
| MWS-L-8-16 | 8′ x 16′ | 201 sq. ft. | 0.462 |
| MWS-L-8-20 | 8′ x 20′ | 252 sq. ft. | 0.577 |
| MWS-L-8-24 | 8′ x 24′ | 302 sq. ft. | 0.693 |

Prior testing of MWS Linear® for water quality treatment performance, and associated product certifications, has been conducted based on the design loading rates described in Table 1. The purpose of this white paper is to present the method for determining the treatment flow rate and associated model number needed to treat a given project drainage area.

# 3. METHODOLOGY FOR DEVELOPING MWS LINEAR® SIZING CRITERIA

## 3.1 Overview of Methodology

The sizing approach described in this white paper was formulated to provide treatment for an equivalent amount of long term runoff volume in comparison to traditional BMP sizing standards. Long term capture efficiency is the underlying metric used in this methodology. The methodology used to develop the MWS Linear® sizing approach consisted of four primary steps:

1. **Determine applicable sizing criteria for stormwater quality BMPs**. Regulatory sizing criteria in a given location are typically expressed as either a design storm volume (e.g., capture and treat the runoff from a 1-inch storm event), or a long term capture efficiency approach (e.g., capture and treat the 90 percent of long term runoff volume). In some cases, both options are available.
2. **Establish target long term capture efficiency for MWS Linear® sizing.** If long term capture efficiency was expressed in the applicable regulations, then this was set as the target long term capture efficiency. If only a design storm-based sizing criterion was provided, then continuous simulation was conducted for a representative BMP that was sized based on the design storm criterion to determine the level of long term capture efficiency provided by that BMP. See Section 3.2 for additional information.
3. **Determine MWS Linear® sizing required to achieve target capture efficiency.** Continuous simulation modeling was conducted for a range of MWS Linear® design flow rates, in various project locations (i.e., rainfall and evapotranspiration records), for a range of drainage area time of concentration (Tc) values to determine the required MWS Linear® design flow rates needed to achieve the target capture efficiency in each combination of conditions. See Section 3.3 for additional information.
4. **Develop sizing worksheets and supporting tables.** The results of step 3 were normalized by drainage area and runoff coefficients, so that these results can be applied to the drainage area characteristics that are most appropriate for each project. This was facilitated by converting each required size from step 3 to an equivalent required "treatment intensity." This required treatment intensity can then be applied to a given drainage area using the Rational Method to calculate the required treatment flow rate. To enable users to account for the equalization and detention within the forebay of the MWS Linear® facility in sizing analyses, the "detention time" was also calculated for each model and is intended to be added to the Tc value for the watershed. See Section 4 for additional information.

The methodology is summarized in the sections following and is described in detail in Attachment A.

## 3.2 Development of Target Long Term Capture Efficiency

Where the required long term capture efficiency of stormwater treatment BMPs is established as part of state regulations or guidance, this value was used as the target long term capture efficiency for MWS Linear® sizing. No additional analyses were conducted.

For states where long term capture efficiency was not included in regulatory BMP sizing requirements, continuous simulation modeling was conducted to estimate the long term capture efficiency that would result from the applicable volume-based sizing criterion. For each location, the applicable design storm event sizing criterion (e.g., 1 inch storm) and applicable BMP drawdown time (e.g., drain within 48 hours) were applied to a hypothetical one acre, 100 percent impervious catchment to determine the storage volume and discharge rates associated with the traditional volume-based BMP design. The USEPA Stormwater Management Model (SWMM) version 5.1.010 was used to model each scenario, including runoff generation and routing, to estimate the long term capture efficiency provided by the BMP. A long term rainfall record at 5-minute temporal resolution served as the primary meteorological input, supplemented with temperature-based estimates of evapotranspiration.

Volume-based BMPs are not sensitive to time of concentration within the range typically found in urban catchments (5 to 30 minutes) because they include substantial equalization storage volume typically greater than runoff volume that occurs in 30 minutes. A single representative Tc value of 10 minutes was selected for the purpose of modeling volume-based BMPs. In contrast, multiple catchment configurations represent different Tc values were analyzed for the flow-based MWS Linear® systems, as described below.

The gages used for each state analyzed are identified in the state-specific sizing package provided in Attachment B. Additionally, Attachment B contains a summary of applicable regulatory requirements and the resulting target long term capture efficiencies developed using this approach.

## 3.3 MWS Linear® Sizing Analysis to Achieve Target Long Term Capture Efficiency

To determine the MWS Linear® design flow rate needed to achieve the target long term capture efficiency for each region, a range of treatment flow rates were modeled for each combination of precipitation gage and drainage area Tc. A one acre, 100 percent impervious catchment was used as the standard drainage area for consistency with the approach described in Section 3.2 and to allow for normalization of the treatment flow rate to treatment precipitation intensity. Continuous simulation was used to model seven different drainage area Tc values draining to MWS Linear® with a range of treatment flow rates. MWS Linear® was assumed to capture all runoff flows up to the identified treatment flow rate. Flows in excess of the identified treatment flow rate were bypassed.

The flow rates modeled in each simulation were converted to an equivalent "treatment intensity" using an inverse form of the Rational Method, where the design treatment intensity corresponding to a given model run was calculated as:

$$I_{treatment} = Q / (A * R_v)$$

Where,

| | |
|---|---|
| $I_{treatment}$ = | design treatment intensity, inches per hour (ranged from approximately 0.1 to 1 inches per hour) |
| Q = | modeled flow rate, cfs (ranged from approximately 0.09 to 0.95 cfs) |
| A = | tributary area, ac (set to 1) |
| $R_v$ = | runoff coefficient of a 100 percent catchment (set to 0.95 for modeling purposes based on model estimates and regulatory references) |

An example summary result of these continuous simulations is provided in Figure 1. Each symbol on this plot represents a different continuous simulation model run (10 to 15 years of rainfall-runoff-routing simulation in each run). As can be seen in this figure, the required treatment intensity to achieve a given capture efficiency (dashed line) is a function of the drainage area Tc. A longer Tc tends to result in more attenuation of the hydrograph on the catchment surface and a lower required treatment flow rate, and vice versa.

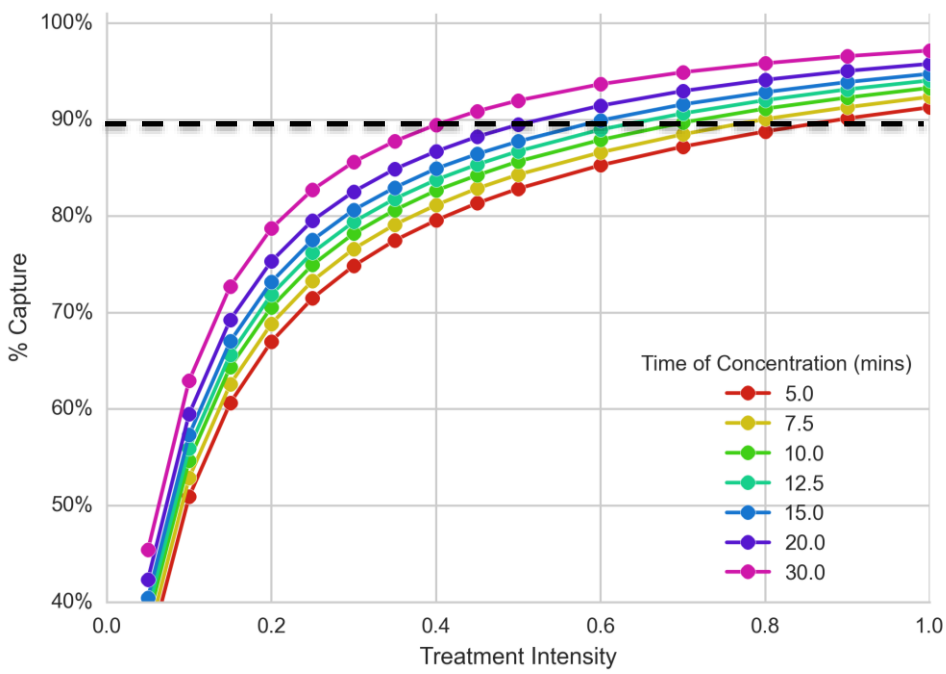



**Figure 3-1: Example Nomograph of Capture Efficiencies for Various Treatment Intensities**

*For Example Purposes Only – Not Applicable for Sizing*

Using the results from the batch continuous simulation modeling described in this section, coupled with the target long term capture efficiency calculated in Section 3.2, the required treatment intensities were summarized for each precipitation gage and Tc (See Table 2 in the next section). These results are provided in Attachment B as a key part of the MWS Linear® sizing worksheets. Details regarding the modeling of MWS Linear® systems are provided in Attachment A.

### 3.4 MWS Linear® System Detention Time

The detention storage provided in the pre-treatment chamber of the MWS Linear® has the effect of equalizing short-duration peak intensities and effectively lengthening the time of concentration. This detention time can be added to the catchment Tc to adjust the Tc used to estimate the required treatment intensity. The detention time for each MWS Linear® model was estimated based on the volume in the pre-treatment chamber divided by the design flowrate. These values are provided in Attachment B; they vary somewhat by MWS Linear® model.

## 4. SUMMARY OF MWS LINEAR® SIZING APPROACH

The results of the analyses described in Section 3 were distilled into a simple sizing approach to determine the required size of MWS Linear® systems to achieve the target long term capture efficiency. This sizing approach is supported by state-specific worksheets and sizing tables in Attachment B.

### 4.1 Overview of Sizing Approach

The sizing approach includes four primary steps, as described below.

**Step 1: Determine applicable requirements**

A. Determine project location.

B. Select the most representative rainfall gage from the gages included in Attachment B.

C. Look up the design treatment intensities associated with the selected gage in Attachment B.

**Step 2: Determine drainage area properties**

A. Determine the drainage area to the MWS Linear® Treatment System (in acres).

B. Estimate the runoff coefficient for the drainage area under the range of design treatment intensity that applies to the project location; utilize methods that are locally acceptable and represent site conditions.

C. Estimate the Tc of the drainage area under the range of design treatment intensity that applies to the project location. Utilize methods that are locally acceptable and represent site conditions. Alternatively, time of concentration can be estimated or interpolated using the drainage area flow path length and slope based on the table provided in Attachment B.

**Optional Step 2a: Determine time of concentration adjustment for pre-filter detention storage provided in MWS Linear®**

A. Using the table provided in Attachment B, identify the detention time associated with the MWS Linear® model number anticipated to be used for your drainage area. This step may require some iteration. If uncertain about the model number that will be required, select an initial assumption of three minutes for a 4 foot wide model and five minutes for an 8 foot wide model.

B. Add the identified detention time adjustment to the estimated Tc to obtain the adjusted Tc for use in MWS Linear® flow-based sizing.

**Step 3: Conduct rational method calculations to determine required design flowrate**

A. Based on the original or adjusted Tc, determine the required treatment intensity from the table provided in Attachment B. If the estimated Tc value is in between Tc values provided, linear interpolation between increments is acceptable.

B. Calculate the required treatment flow rate using the following equation (no unit conversion is needed):

$$Q_{treatment} = I_{treatment} * R_v * A$$

Where:

$Q_{treatment}$ = Required MWS Linear® treatment flow rate (cfs)
$I_{treatment}$ = MWS Linear® treatment intensity (inches per hour)
$R_v$ = Drainage area runoff coefficient (unitless)
A = Drainage area (acres)

**Step 4: Select MWS Linear® model number to provide required treatment flowrate**

A. Select a MWS Linear® model with a treatment flow rate that is equal to or greater than the required treatment flow rate (see table in Attachment B).

B. If the required treatment flow rate is greater than that provided by any MWS Linear® treatment system model, split your drainage area into two or more sub-areas and go back to step 2.

C. Confirm that the detention time adjustment to Tc used in Step 2A is met or exceeded by the selected MWS Linear® model.

### 4.2 Supporting Sizing Resources

MWS Linear® sizing tables are provided for each region in Attachment B. Table 2 shows an example of how these tables are organized. This table is for example purposes above, based on the example model results presented in Figure 1. Actual tables are provided in Attachment B.

**Table 4-1: Example MWS Linear® Sizing Table**

| Time of Concentration (minutes) | Required Treatment Intensity (inches per hour) |
|---|---|
| **5** | *0.85 (example)* |
| **7.5** | *0.76 (example)* |
| **10** | *0.67 (example)* |
| **12.5** | *0.61 (example)* |
| **15** | *0.56 (example* |
| **20** | *0.48 (example)* |
| **30** | *0.38 (example)* |

*For Example Purposes Only – Not Applicable for Sizing in Any Specific Jurisdiction*

Attachment B also provides a template submittal form and instructions for conducting the calculations described in Section 4.1.

## 5. SUMMARY AND LIMITATIONS

The sizing approach described in this white paper has been formulated to provide treatment of an equivalent level of long term runoff volume compared to the traditional sizing criteria and methods that apply in a given location. The use of long term capture efficiency as an equivalency metric is appropriate and robust, as this metric has a direct relationship to control of pollutant loads.

The reliability and limitations of this sizing approach are discussed in the following bullets.

- Performance estimates were based on models which were not calibrated. This introduces some uncertainty. This uncertainty was mitigated by applying identical input parameters and modeling approaches for conventional BMPs and MWS Linear® systems, as appropriate. This has the effect of offsetting the majority of the uncertainty in model estimates. Additionally, modeling estimates

of developed urban catchments have fewer sources of potential uncertainty and less need for calibration.

- The sizing approach requires the designer to estimate the runoff coefficient and Tc for the drainage area. Instead of prescribing a method, this approach leverages the well-established methods that are typically in place in local jurisdiction guidance for calculating and reviewing these parameters. An approach that engages the designer and reviewer to utilize professional judgement to select the values most appropriate for the site is believed to be more appropriate than a one-size-fits-all approach to prescribing these parameters.

- The analyses and criteria presented in this report are based on the assumption that the BMPs will be effectively designed and constructed consistent with a typical standard of care. It is inherent that design of non-proprietary BMPs provides a greater degree of freedom and associated professional judgment as part of preparing design calculations, design drawings, and specifications. This introduces a wider potential range of resulting designs and associated actual levels of performance. In comparison, there is likely to be substantially less variability in the design and construction of MWS Linear® systems, and therefore performance, compared to traditional non-proprietary BMPs. Therefore, MWS Linear® systems sized per this method are expected to provide more consistent performance than non-proprietary BMPs on a typical basis.

- Proprietary and non-proprietary systems are susceptible to decline in performance over time. This sizing approach is based on the rated design flow rates of MWS Systems. Ongoing operations and maintenance are required to sustain this performance.

Overall, the analyses are believed to result in a reliable design process for determining the size of MWS Linear® systems to achieve equivalent long term capture efficiency.

White Paper

Technical Basis for MWS Linear® Sizing Approach

# Attachment B: Maine

Sizing Method and Worksheet for MWS Linear® Systems

# MAINE

## B.1 SUMMARY OF STATE REQUIREMENTS

Stormwater BMPs in the state of Maine are required to be sized to achieve water quality control by sizing the facility for the water quality volume. The water quality volume is the storage needed to capture and treat the runoff from **90 percent of the average annual rainfall**. This is the applicable target long term capture efficiency for MWS Linear® sizing. Maine specifies four types of BMPs which may be used to meet water quality objectives including filtration BMPs. Proprietary BMPs must demonstrate equivalent pollutant removal, cooling, and channel protection to be used independently of a treatment train.

**References**

Maine Department of Environmental Protection. Maine Stormwater Best Management Practices Manual. http://www.maine.gov/dep/land/stormwater/stormwaterbmps/ . Accessed December 2015.

## B.2 MWS MODEL RESULTS AND DESIGN TREATMENT INTENSITIES

Table B.2-1 summarizes the precipitation inputs for Maine locations that were modeled to support the sizing approach. These are also provided in the attached Figure 1.

**Table B.2-1. Precipitation Inputs for Maine Locations**

| Location | ASOS Station ID (5 minute gage network) | Period of Simulation | Target Long Term Capture Efficiency (%) |
|---|---|---|---|
| **Bangor** | KBGR | 2005-2015 | 90% |
| **Millinocket** | KMLT | 2005-2015 | 90% |
| **Portland** | KPWM | 2000-2015 | 90% |

Figures B.2-1 thru B.2-3 provide the results of the continuous simulations of MWS Linear® capture efficiency for the Maine locations.

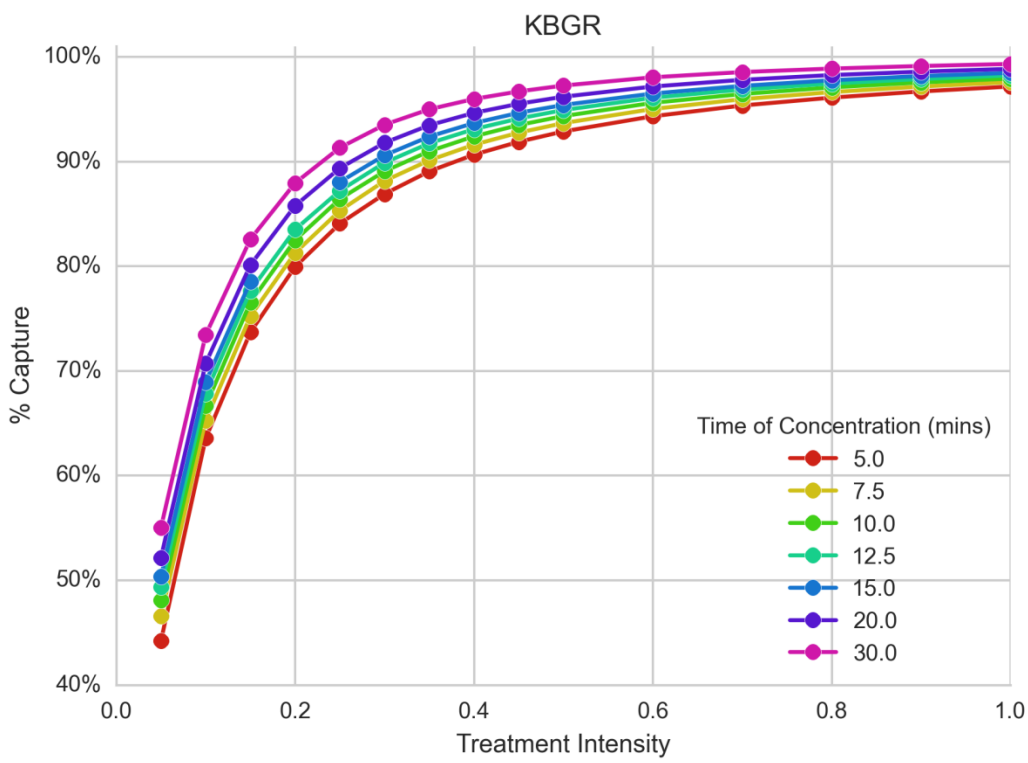



**Figure B.2-1. Model Results for Bangor**

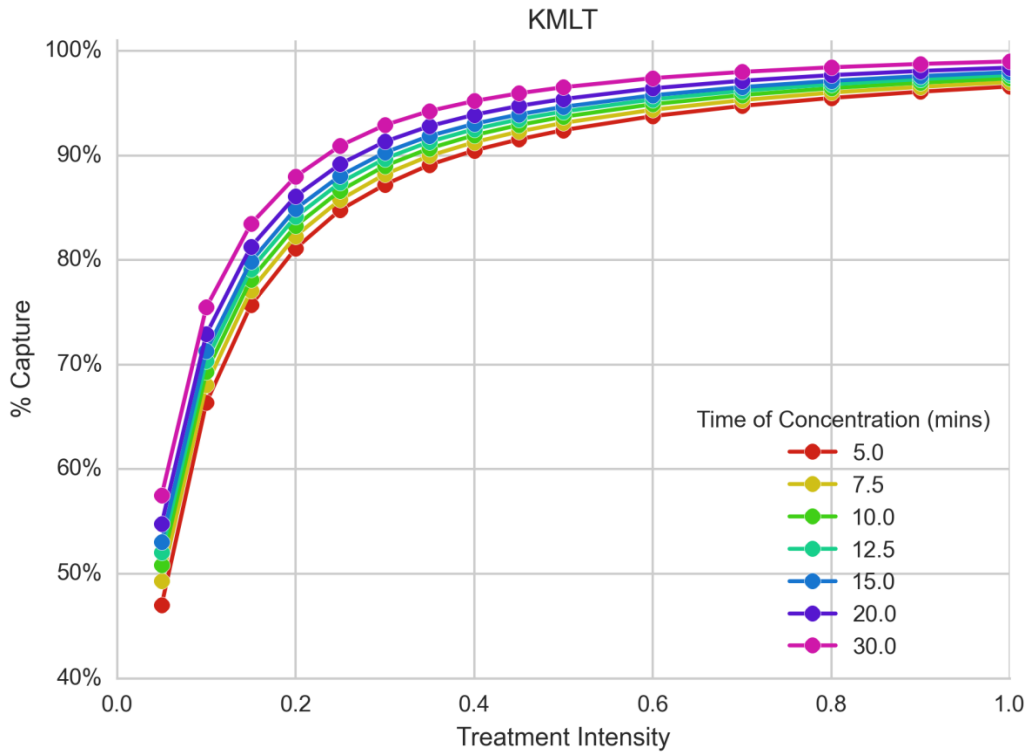



**Figure B.2-2. Model Results for Millinocket**

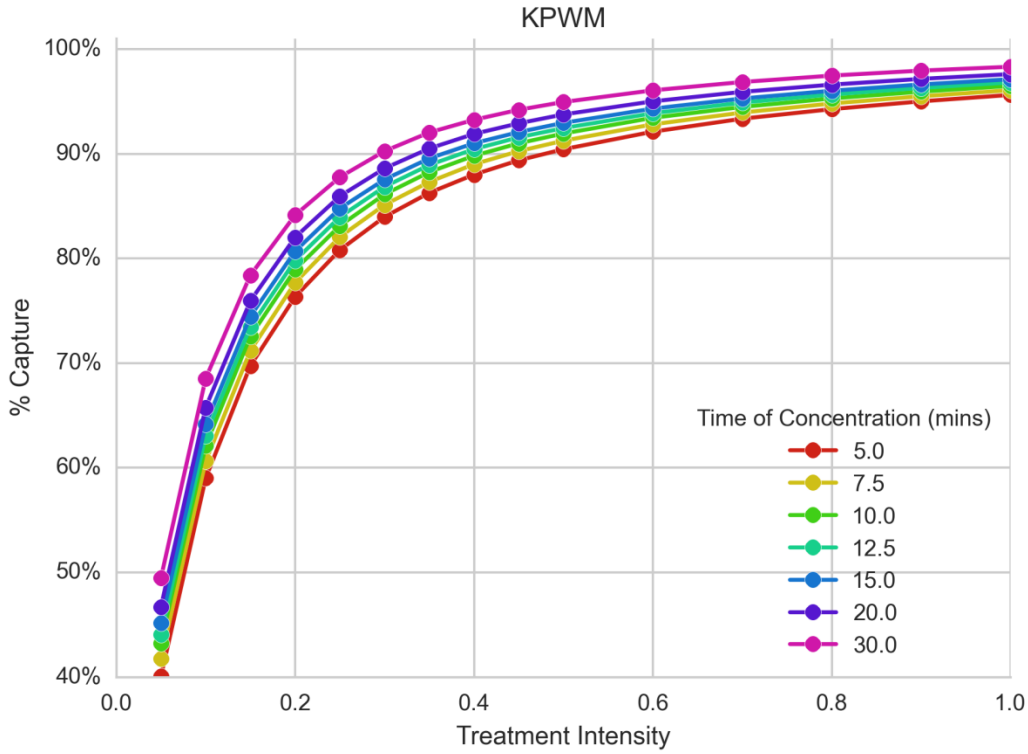



**Figure B.2-3. Model Results for Portland**

Table B.2-2 summarizes the required treatment intensities to achieve the target long term capture efficiency for each location.

**Table B.2-2. Sizing Table for Maine Regions**

| Time of Concentration (minutes) | Design Treatment Intensity (inches per hour) | | |
|---|---|---|---|
| | **Bangor** | **Millinocket** | **Portland** |
| **5** | 0.38 | 0.38 | 0.48 |
| **7.5** | 0.35 | 0.35 | 0.44 |
| **10** | 0.32 | 0.33 | 0.41 |
| **12.5** | 0.30 | 0.31 | 0.39 |
| **15** | 0.29 | 0.29 | 0.37 |
| **20** | 0.26 | 0.27 | 0.34 |
| **30** | 0.23 | 0.23 | 0.29 |

## B.3 SIZING INSTRUCTIONS FOR MWS LINEAR®

**Step 1: Determine applicable requirements**

A. Determine project location.

B. Select the most representative rainfall gage from the gages included in Table B.2-1 and Figure B.2-4 (attached).

C. Look up the design treatment intensities associated with the gage in Table B.2-2.

**Step 2: Determine drainage area properties**

A. Determine the drainage area to the MWS Linear® Treatment System (in acres).

B. Estimate the runoff coefficient for the drainage area under the range of design treatment intensity that applies to the project location; utilize methods that are locally acceptable and represent site conditions.

C. Estimate the Tc of the drainage area under the range of design treatment intensity that applies to the project location. Utilize methods that are locally acceptable and represent site conditions. Alternatively, time of concentration can be estimated using the drainage area flow path length and slope based on Table B.3-1, below. Interpolation from this table is acceptable.

D. Enter results in the Sizing Worksheet (attached).

**Table B.3-1. Time of Concentration Corresponding to Flow Path and Slope**

| Flow Path Length (ft) | Slope (ft/ft) | | | | |
|---|---|---|---|---|---|
| | 0.01 | 0.02 | 0.03 | 0.04 | 0.05 |
| | Time of Concentration (min) | | | | |
| **50** | 5 | 4 | 3 | 3 | 3 |
| **100** | 7 | 6 | 5 | 5 | 5 |
| **150** | 9 | 8 | 7 | 6 | 6 |
| **200** | 11 | 9 | 8 | 7 | 7 |
| **250** | 13 | 10 | 9 | 8 | 8 |
| **300** | 14 | 11 | 10 | 9 | 9 |
| **400** | 17 | 14 | 12 | 11 | 10 |
| **500** | 19 | 16 | 14 | 13 | 12 |
| **750** | 24 | 20 | 18 | 16 | 15 |
| **1000** | 29 | 24 | 21 | 19 | 18 |

**Optional Step 2a: Determine time of concentration adjustment for pre-filter detention storage provided in MWS Linear®**

*The detention storage provided in the pre-treatment chamber of the MWS Linear® has the effect of equalizing short-duration peak intensities and effectively lengthening the time of concentration.*

A. Using Table B.3-2, identify the detention time associated with the MWS Linear® model number anticipated to be used for the drainage area. This step may require some iteration. If uncertain about the model number that will be required, select an initial assumption of three minutes Tc adjustment for a 4 foot wide model and five minutes Tc adjustment for an 8 foot wide model.

B. Add the identified detention time adjustment to the estimated Tc to obtain the adjusted Tc for use in MWS Linear® flow-based sizing.

C. Enter results in the Sizing Worksheet (attached).

**Step 3: Conduct rational method calculations to determine required design flowrate**

A. Based on the original or adjusted Tc, determine the required treatment intensity from Table B.2-2. If the estimated Tc value is in between Tc values provided, linear interpolation between increments is acceptable.

B. Calculate the required treatment flow rate using the following equation (no unit conversion is needed):

$$Q_{treatment} = I_{treatment} * R_v * A$$

Where:

| | | |
|---|---|---|
| $Q_{treatment}$ | = | Required MWS Linear® treatment flow rate (cfs) |
| $I_{treatment}$ | = | MWS Linear® treatment intensity (inches per hour) |
| $R_v$ | = | Drainage area runoff coefficient (unitless) |
| A | = | Drainage area (acres) |

C. Enter results in the Sizing Worksheet (attached).

**Step 4: Select MWS Linear® model number to provide required treatment flowrate**

A. Select a MWS Linear® model with a treatment flow rate that is equal to or greater than the required treatment flow rate (see Table B.3-1).

B. If the required treatment flow rate is greater than that provided by any MWS Linear® treatment system model, split the drainage area into two or more sub-areas and go back to step 2.

C. Confirm that the detention time adjustment to Tc used in Step 2A is met or exceeded by the selected MWS Linear® model.

D. Summarize results in the Sizing Worksheet (attached).

**Table B.3-2. MWS Linear® Models**

| Model # | Dimensions | WetlandMEDIA Surface Area | Treatment Flow Rate (cfs) | Detention Time Adjustment to Tc (min) |
|---|---|---|---|---|
| MWS-L-4-4 | 4′ x 4′ | 23 sq. ft. | 0.052 | 6 |
| MWS-L-4-6 | 4′ x 6′ | 32 sq. ft. | 0.073 | 4 |
| MWS-L-4-8 | 4′ x 8′ | 50 sq. ft. | 0.115 | 4 |
| MWS-L-4-13 | 4′ x 13′ | 63 sq. ft. | 0.144 | 6 |
| MWS-L-4-15 | 4′ x 15′ | 76 sq. ft. | 0.175 | 5 |
| MWS-L-4-17 | 4′ x 17′ | 90 sq. ft. | 0.206 | 4 |
| MWS-L-4-19 | 4′ x 19′ | 103 sq. ft. | 0.237 | 3 |
| MWS-L-4-21 | 4′ x 21′ | 117 sq. ft. | 0.268 | 3 |
| MWS-L-8-8 | 8′ x 8′ | 100 sq. ft. | 0.23 | 5 |
| MWS-L-8-12 | 8′ x 12′ | 151 sq. ft. | 0.346 | 5 |
| MWS-L-8-16 | 8′ x 16′ | 201 sq. ft. | 0.462 | 6 |
| MWS-L-8-20 | 8′ x 20′ | 252 sq. ft. | 0.577 | 4 |
| MWS-L-8-24 | 8′ x 24′ | 302 sq. ft. | 0.693 | 4 |

## SIZING WORKSHEET _____

Project Name: _____

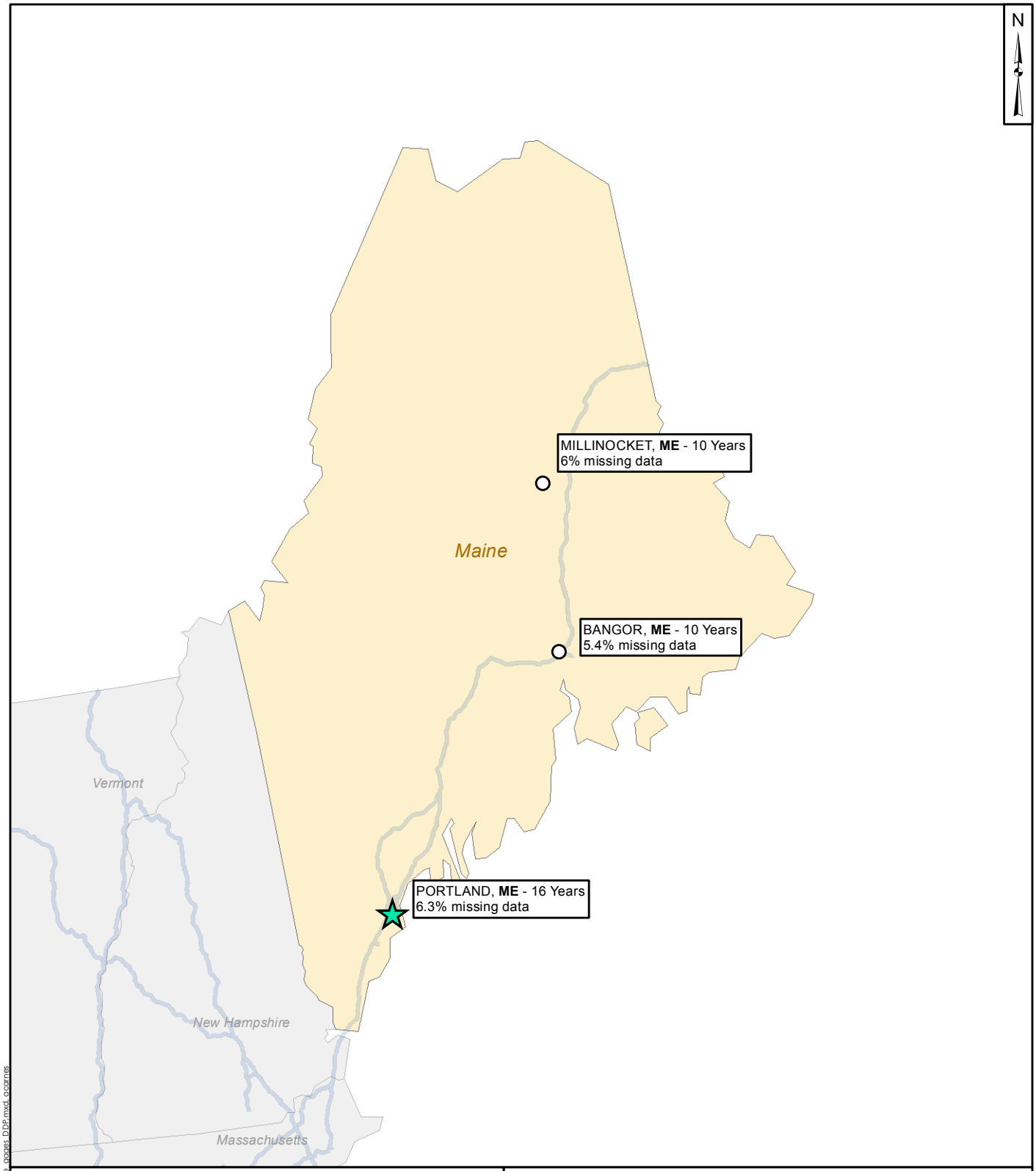
Project Location: _____

Precipitation Gage: _____

Drainage Area ID: _____

### Drainage Area Properties and Calculations

| Line # | Drainage Area Results | Value | Instructions |
|---|---|---|---|
| 1 | Acreage (A), ac | | • Tabulate the acreage draining to the MWS Linear® system |
| 2 | Runoff Coefficient ($R_v$), unitless | | • Estimate the composite runoff coefficient for the drainage area.<br>• Utilize locally-accepted methods.<br>• Provide supplemental calculations as an attachment to this worksheet. |
| 3 | Time of Concentration (Tc), minutes | | • Estimate the Tc under the MWS Linear® system design intensity.<br>• Utilize locally-accepted methods or Table B.3-1;<br>• Provide supplemental calculations, if needed, as an attachment to this worksheet. |
| 3a (optional) | MWS Linear® Model Detention Time, minutes | | • Identify the detention time from Table B.3-2 corresponding to the expected MWS Linear® model. |
| 3b (optional) | Adjusted Tc, minutes | | • Adjusted Tc = (Line 3) + (Line 3a) |
| 4 | MWS Linear® Treatment Intensity (I), in/hr | | • Look up required treatment intensity from Table B.2-1 using Tc or adjusted Tc; interpolate as needed. |
| 5 | Required MWS Linear® Treatment Flow Rate, ($Q_{treatment}$), cfs | | • $Q_{treatment} = R_v * I_{treatment} * A$<br>• (Line 2)(Line 4)(Line 1) |
| 6 | MWS Linear® System Model | | • Select appropriate model from Table B.3-2. |
| 7 | Provided MWS Linear® Flowrate, cfs | | • Lookup treatment flowrate from Table B.3-2. |
| 8 | Is MWS Linear® System Model sufficient? | **Y/N** | • Line 7 must be equal or greater than Line 5. |
| 9 | Detention Time Provided by Selected Unit, minutes | | • Lookup from Table B.3-2. |
| 10 | Does MWS Linear® provide assumed detention time? | **Y/N** | • Line 9 must be equal or greater than Line 3a; if not, adjust initial assumption in Line 3a. |




**Legend**

- ○ State Gages with Period of Record = 10 years
- ★ State Gages with Period of Record = 15 years

1 inch = 50 miles

**Maine Gages**

**MWS Linear® Sizing Resources**

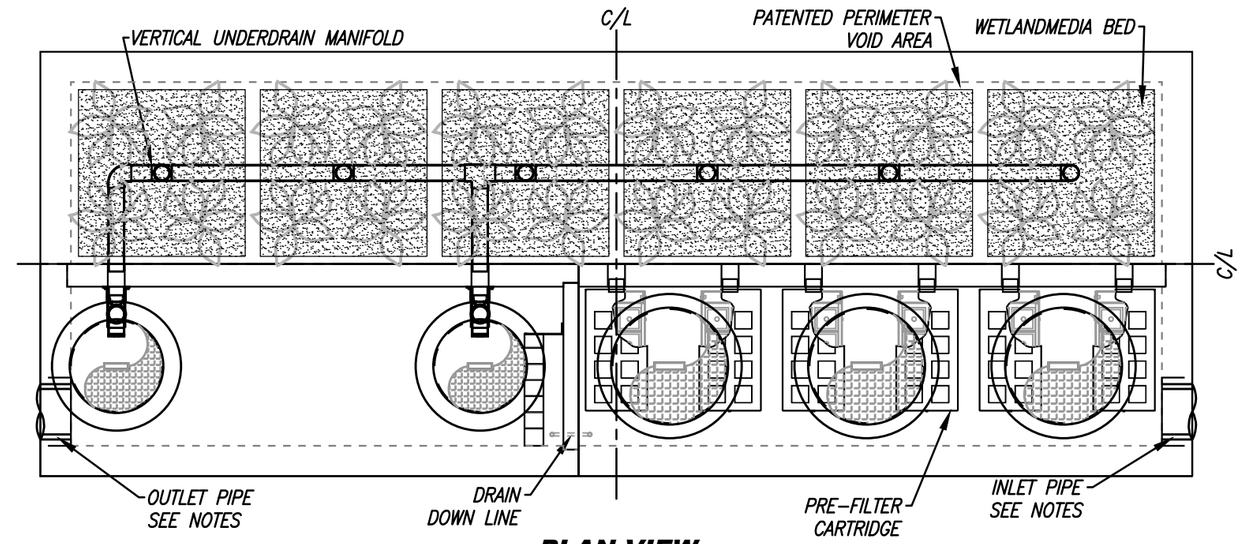
Geosyntec consultants

FEBRUARY 2016

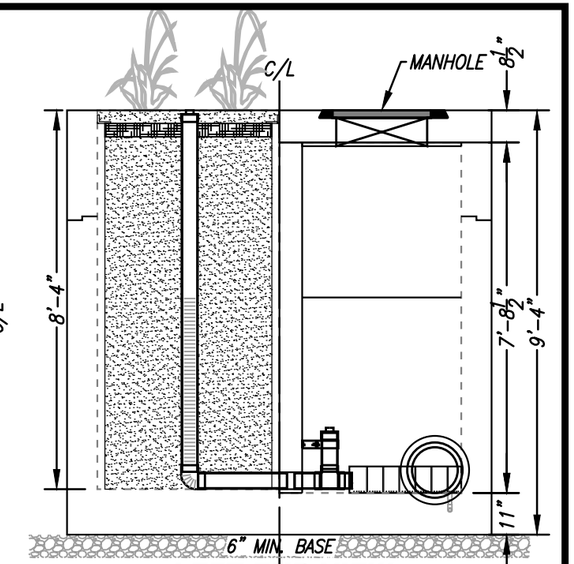
Figure **1**

Document Path: Q:\GISProjects\PNW0258_BioClean\MXD\State_gages_DDP.mxd, ocornes

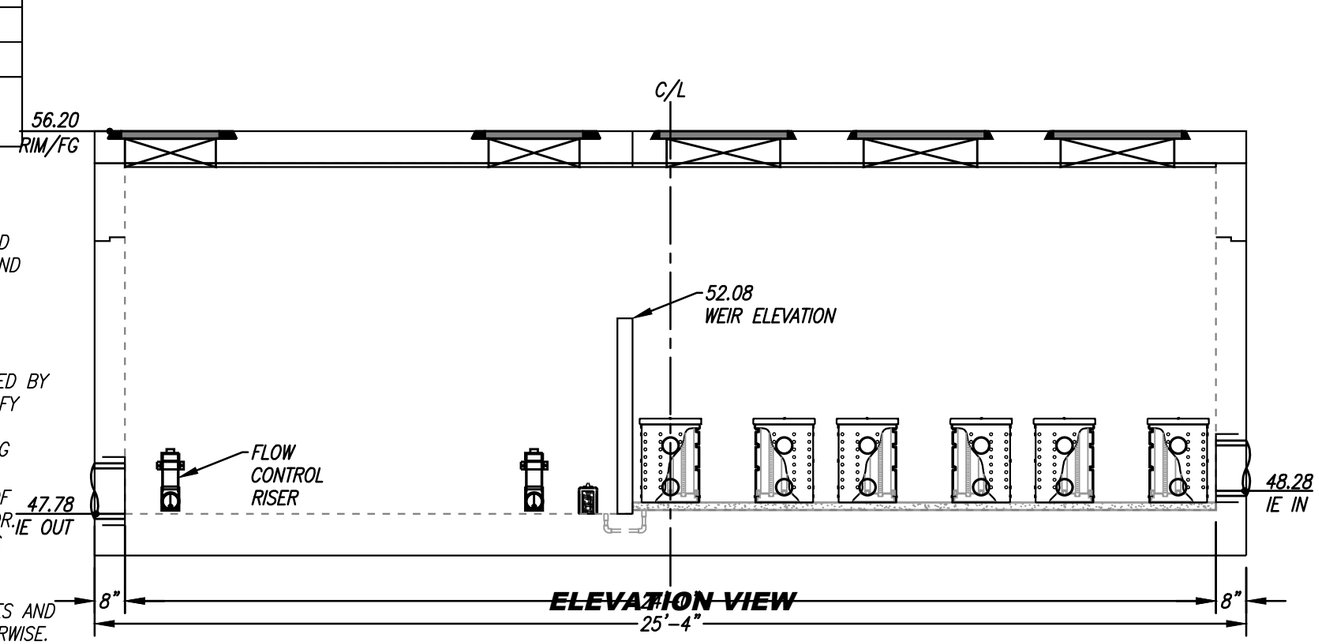
| SITE SPECIFIC DATA | | | |
|---|---|---|---|
| PROJECT NUMBER | | 12779 | |
| PROJECT NAME | | 1 GOOCH STREET | |
| PROJECT LOCATION | | BIDDEFORD, ME | |
| STRUCTURE ID | | MODULAR WETLAND | |
| TREATMENT REQUIRED | | | |
| VOLUME BASED (CF) | | FLOW BASED (CFS) | |
| N/A | | 0.86 | |
| TREATMENT HGL AVAILABLE (FT) | | | 4.2 |
| PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE | | | 6.53 |
| PIPE DATA | I.E. | MATERIAL | DIAMETER |
| INLET PIPE 1 | 48.28 | PVC | 12" |
| INLET PIPE 2 | N/A | N/A | N/A |
| OUTLET PIPE | 47.78 | PVC | 12" |
| | PRETREATMENT | BIOFILTRATION | DISCHARGE |
| RIM ELEVATION | 56.20 | 56.20 | 56.20 |
| SURFACE LOAD | PEDESTRIAN | OPEN PLANTER | PEDESTRIAN |
| FRAME & COVER | 3EA ø30" | OPEN PLANTER | 2EA ø24" |
| WETLANDMEDIA VOLUME (CY) | | | 25.36 |
| ORIFICE SIZE (DIA. INCHES) | | | ø1.41" EA |
| NOTES: PRELIMINARY NOT FOR CONSTRUCTION. | | | |



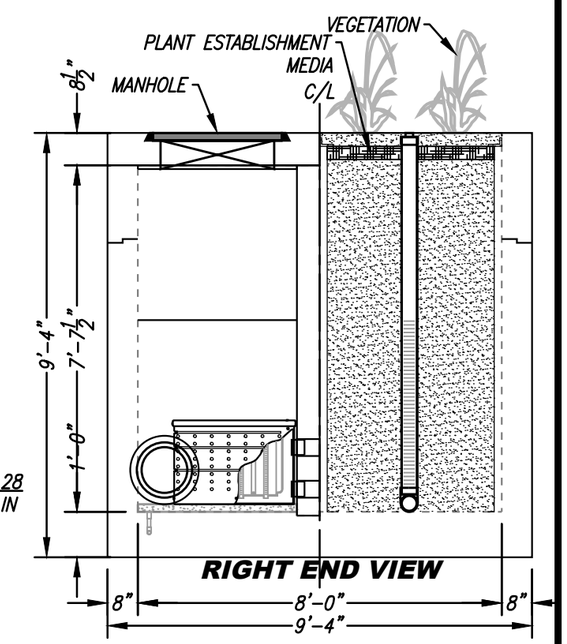

**PLAN VIEW**




**LEFT END VIEW**




**ELEVATION VIEW**




**RIGHT END VIEW**

## INSTALLATION NOTES

1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL PIPES SHALL BE SEALED WATER TIGHT PER MANUFACTURERS STANDARD CONNECTION DETAIL.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. VEGETATION SUPPLIED AND INSTALLED BY OTHERS. ALL UNITS WITH VEGETATION MUST HAVE DRIP OR SPRAY IRRIGATION SUPPLIED AND INSTALLED BY OTHERS.
7. CONTRACTOR RESPONSIBLE FOR CONTACTING BIO CLEAN FOR ACTIVATION OF UNIT. MANUFACTURERS WARRANTY IS VOID WITH OUT PROPER ACTIVATION BY A BIO CLEAN REPRESENTATIVE.

## GENERAL NOTES

1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT BIO CLEAN.

| | |
|---|---|
| TREATMENT FLOW (CFS) | 0.86 |
| OPERATING HEAD (FT) | 4.2 |
| PRETREATMENT LOADING RATE (GPM/SF) | 3.0 |
| WETLAND MEDIA LOADING RATE (GPM/SF) | 1.0 |

MODULAR WETLANDS

THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING US PATENTS: 7,425,262; 7,470,362; 7,674,378; 8,303,816; RELATED FOREIGN PATENTS OR OTHER PATENTS PENDING

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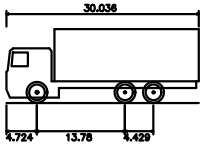
Bio Clean
A Forterra Company

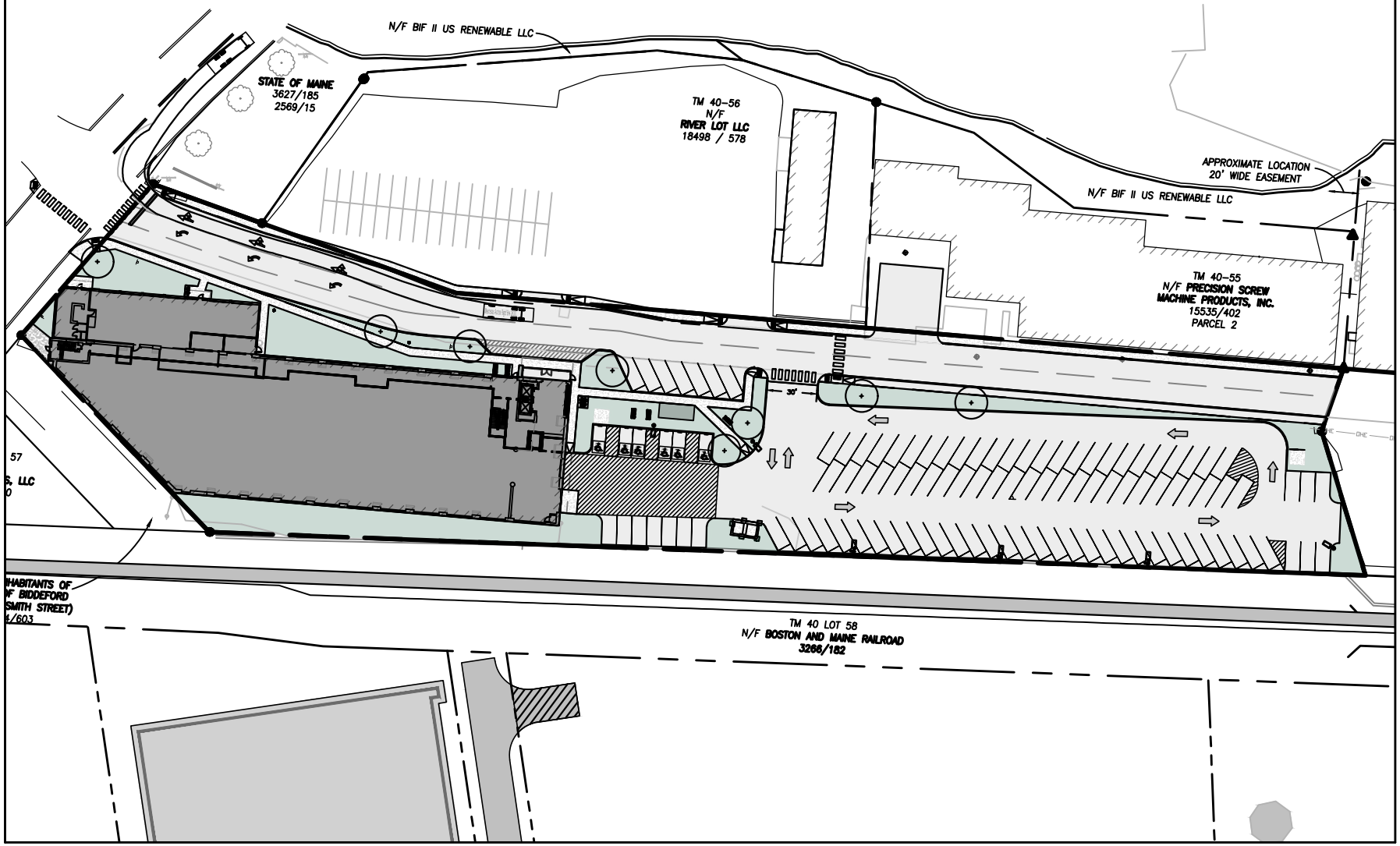
# MWS-L-8-24-8'-4"-V
## STORMWATER BIOFILTRATION SYSTEM STANDARD DETAIL

4/1/21 MSHEEHAN




Mercedes Actros Rigid 6x4 2632L

| | |
|---|---|
| Overall Length | 30.036ft |
| Overall Width | 8.182ft |
| Overall Body Height | 11.522ft |
| Min Body Ground Clearance | 0.843ft |
| Track Width | 8.182ft |
| Lock-to-lock time | 5.00s |
| Wall to Wall Turning Radius | 30.840ft |




| ISSUED FOR | BY / DATE |
|---|---|
| CITY REVIEW | PFH 2/10/21 |
| FINAL APP | PFH 4/7/21 |
| COMMENT RESPONSE | PFH 5/11/21 |
| | REV. DATE |

DRAWING NAME: VEHICLE TRACKING TEMPLATE

PROJECT NAME: 1 GOOCH STREET REDEVELOPMENT

CLIENT: TOM WATSON & CO.

ACORN ENGINEERING, INC.
ACORN ENGINEERING, INC. P.O. BOX 3372
PORTLAND, MAINE 04104 (207) 775-2655

| | |
|---|---|
| FILE: | 1093.10_CIVIL |
| DATE: | 5/11/2021 |
| JN: | 1093.10 |
| SCALE: | 1":90' |
| DESIGN BY: | PFH |
| DRAWN BY: | ZMS |
| CHECKED BY: | PFH |

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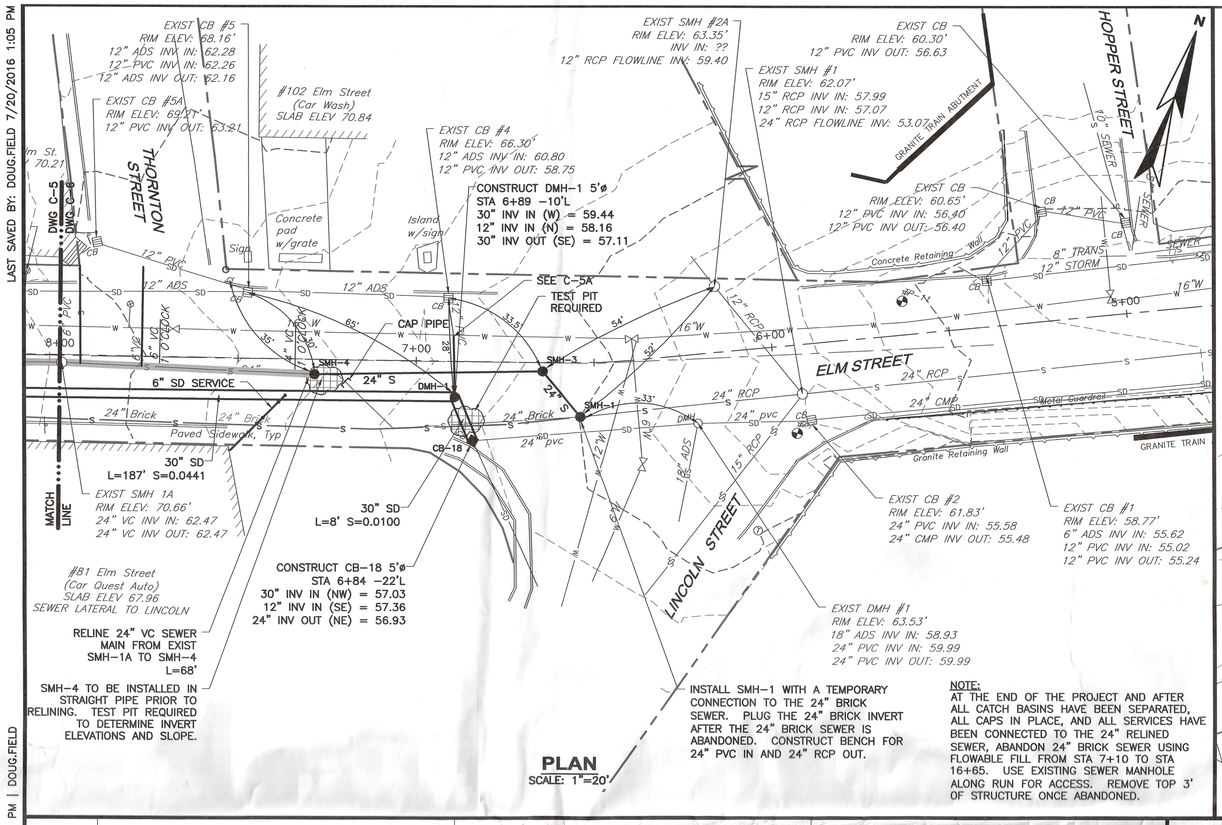
DRAWING NO.

VTT

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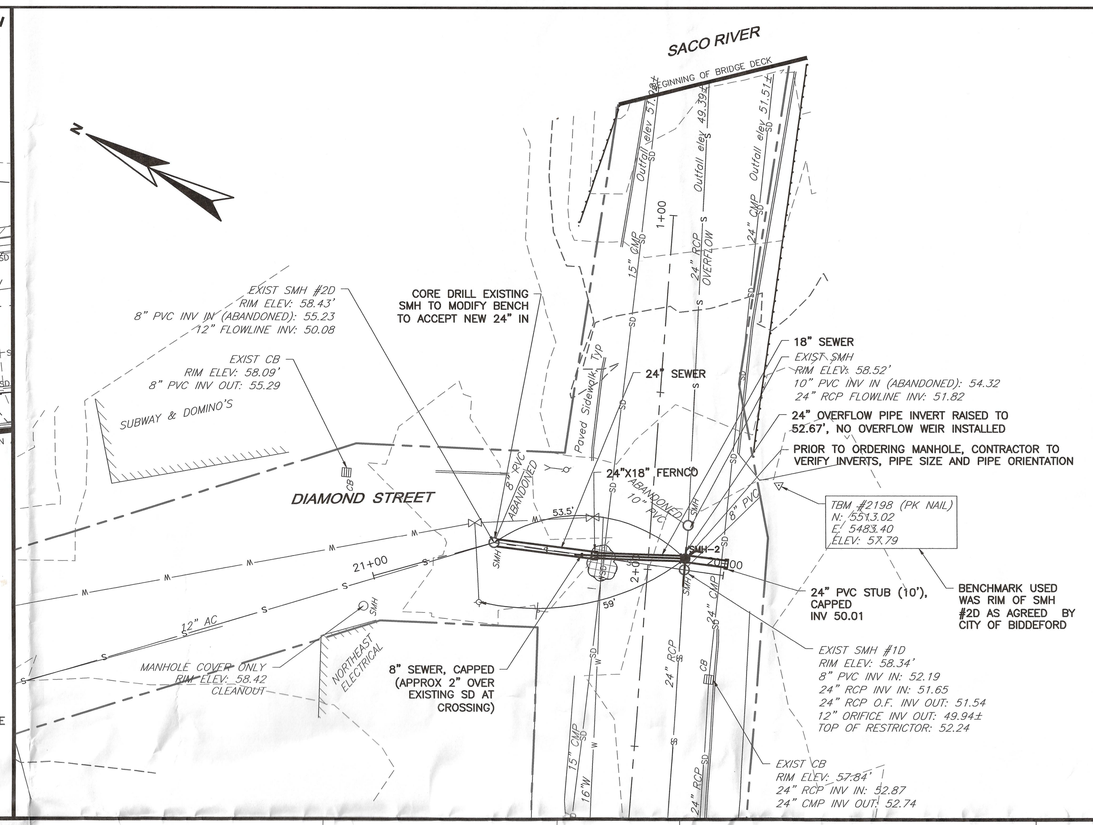


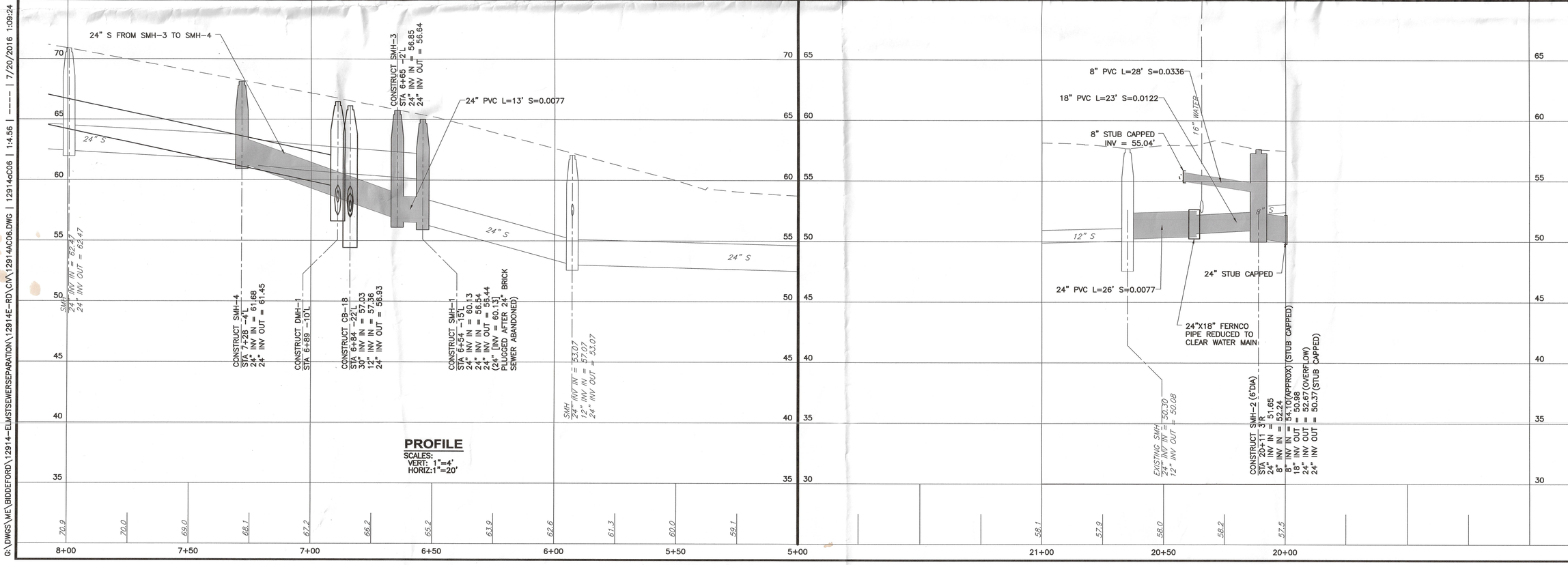


## PROFILE
SCALES:
VERT: 1"=4'
HORIZ: 1"=20'

| NO | SUBMISSIONS/REVISIONS | APP'D | DATE |
|---|---|---|---|
| | RECORD DRAWING | RTW | 7-16 |

DESIGNED BY: CTR
CAD DOCRD: JJM
CAD: JJM
CHECKED BY: KRO/RTW
DATE: 5/8/14
REVIEWED BY: RTW
APPROVED BY: RTW
DATE: 5/9/14
PROJECT NO: 12914A

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CITY OF BIDDEFORD, ME
ELM STREET SEWER SEPARATION PROJECT

PLAN AND PROFILE
ELM STREET: STA 8+00 TO STA 5+00
DIAMOND STREET: STA 21+00 TO STA 20+00

DRAWING
C-6

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# 1 GOOCH STREET REDEVELOPMENT

## TOM WATSON & CO.
## BIDDEFORD, MAINE

## LEGEND

| EXISTING | | PROPOSED |
|---|---|---|
| | UNDERDRAIN | |
| | GREEN SPACE | |
| | UTILITY PAVEMENT CUTS | |
| | STRIPING | |
| | EROSION CONTROL BERM / SOCK | ECB |
| | EDGE OF EX. PAVEMENT | |
| | CURB | |
| | SIGN | |
| | LAMP OR LIGHT POLE | |
| | UTILITY POLE | |
| | GUY WIRE | |
| | WATER VALVE | |
| | FIRE HYDRANT | |
| | SEWER MANHOLE | |
| | CATCH BASIN | |
| | DRAIN MANHOLE | |
| UE — UE | UNDERGROUND ELECTRIC LINE | UGE — UGE |
| W — W | UNDERGROUND WATER LINE | 2"W |
| 64 | MINOR CONTOURS (1 FT) | 64 |
| 65 | MAJOR CONTOURS (5 FT) | 65 |
| | GAS LINE | GAS |
| SD — SD | STORM DRAIN LINE | > — > |
| SS — SS | SEWER LINE | S — S |
| | SEWER FORCE MAIN | FM |
| | EXISTING/PROPOSED BUILDING | |
| OHW | OVERHEAD ELECTRICAL/TELEPHONE/CABLE | |
| | PROPERTY LINE | |
| | SETBACKS | |

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## UTILITIES

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BIDDEFORD, MAINE 04005
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93 INDUSTRIAL PARK ROAD
SACO, MAINE 04072
CONTACT: MARCUS KNIPP
(207) 282–1543

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PORTLAND, MAINE 04103
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### TELEPHONE:

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(207) 745–9363

### CABLE:

SPECTRUM CABLE
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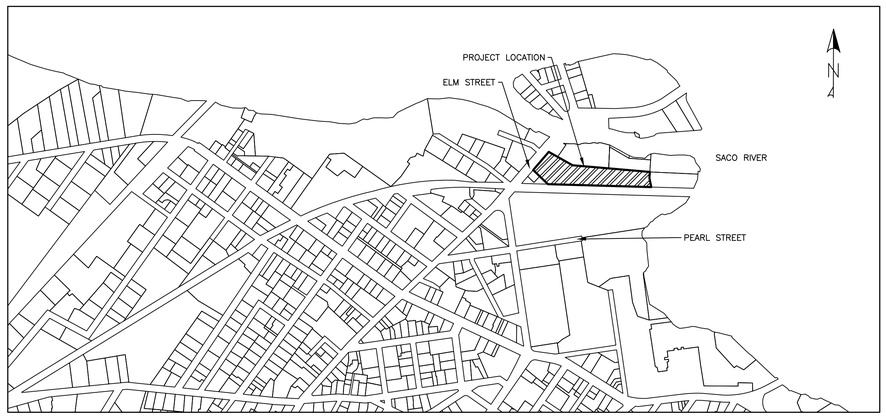
PORTLAND, MAINE, 04102
CONTACT: DAN MINCHEV
(207) 253–2334

### NATURAL GAS:

UNITIL SERVICE CORP.
376 RIVERSIDE INDUSTRIAL PARKWAY
PORTLAND, MAINE 04103
CONTACT: BRIDGET MATHERS
(207) 541–2505




VICINITY MAP
SCALE: 1" = 500'

## PROJECT TEAM

### DEVELOPER:

TOM WATSON & CO.
PORTLAND, MAINE
CONTACT: JOHN LALIBERTE
(207) 590–2029

### ARCHITECT:

RYAN SENATORE ARCHITECTURE
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CONTACT: RYAN SENATORE, R.A.
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### SURVEYOR:

OWEN HASKELL, INC.
FALMOUTH, MAINE
CONTACT: RANDY LOUBIER, PLS
(207) 774–0424

NORTHEAST CIVIL SOLUTIONS, INC.
SCARBOROUGH, MAINE
CONTACT: TROY F MCDONALD
(207) 883–1000

### CIVIL ENGINEER:

ACORN ENGINEERING, INC.
PORTLAND, MAINE
CONTACT: PETER F HEIL, P.E.
(207) 775–2655

### LANDSCAPE ARCHITECT:

MITCHELL & ASSOCIATES
PORTLAND, MAINE
CONTACT: BRADEN DRYPOLCHER
(207) 774–4427

## ABBREVIATIONS

PARTIAL LIST OF ABBREVIATIONS AND THEIR CORRESPONDING MEANING. PLEASE CONTACT THE ENGINEER FOR ANY CLARIFICATION

| | |
|---|---|
| APPROX. | APPROXIMATE |
| BC | BOTTOM OF CURB |
| BMP | BEST MANAGEMENT PRACTICE |
| BOT. | BOTTOM |
| CB | CATCH BASIN |
| CF | CUBIC FOOT |
| CIP | CAST IN PLACE |
| CL | CENTERLINE |
| CM | CONSTRUCTION MANAGER |
| CMP | CENTRAL MAINE POWER |
| CONC. | CONCRETE |
| CPP | CORRUGATED PLASTIC PIPE |
| CY | CUBIC YARD |
| DIP | DUCTILE IRON PIPE |
| DIA. | DIAMETER |
| DIM. | DIMENSION |
| EA. | EACH |
| ELEC. | ELECTRICAL |
| ELEV. | ELEVATION |
| EQUIV. | EQUIVALENT |
| EST. | ESTIMATE |
| EX. | EXISTING |
| FFE | FINISH FLOOR ELEVATION |
| FT. | FEET |
| GAL. | GALVANIZED |
| ID | INNER DIAMETER |
| IN. | INCH |
| INV. | INVERT |
| L | LENGTH |
| MAX. | MAXIMUM |
| MDOT | MAINE DEPARTMENT OF TRANSPORTATION |
| M.E.P | MECHANICAL, ELECTRICAL, PLUMBING DESIGNER |
| MFG. | MANUFACTURED |
| MH | MANHOLE |
| MIN. | MINIMUM |
| O.C. | ON CENTER |
| OD | OUTSIDE DIAMETER |
| OHE/T/C | OVERHEAD ELECTRIC/TELEPHONE/CABLE |
| PC | PRECAST |
| PE | PROFESSIONAL ENGINEER |
| PL | PROPERTY LINE |
| PLS | PROFESSIONAL LAND SURVEYOR |
| PROP. | PROPOSED |
| PSI | POUNDS PER SQUARE INCH |
| PVC | POLYVINYL CHLORIDE |
| PWD | PORTLAND WATER DISTRICT |
| R | RADIUS |
| RD | ROOF DRAIN |
| RET. | RETAINING |
| ROW | RIGHT OF WAY |
| S | SLOPE |
| SD | STORM DRAIN |
| SDR | STANDARD DIMENSION RATIO |
| SF | SQUARE FEET |
| SMH | SEWER MANHOLE |
| SPEC. | SPECIFICATION |
| TC | TOP OF CURB |
| TW | TOP OF WALL |
| TYP. | TYPICAL |
| UD | UNDERDRAIN |
| UGE | UNDERGROUND ELECTRIC |
| VIF | VERIFY IN FIELD |

PERMIT LEVEL
NOT ISSUED FOR
CONSTRUCTION

| ISSUED FOR | BY | DATE |
|---|---|---|
| SRCC | PFH | 1/28/2021 |
| CITY REVIEW | PFH | 2/5/2021 |
| DEP SW APP | PFH | 3/30/2021 |
| FINAL APP | PFH | 4/7/2021 |
| COMMENT RESPONSE | PFH | 5/14/2021 |

DRAWING NAME: COVER SHEET & LEGEND
PROJECT NAME/ADDRESS: 1 GOOCH STREET REDEVELOPMENT
CLIENT/OWNER OF RECORD: TOM WATSON & CO. 188 STATE STREET, 3RD FLOOR, PORTLAND ME 04101


ACORN ENGINEERING, INC.
PO BOX 7557 PORTLAND, MAINE 04101
(207) 775–2655



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| | |
|---|---|
| FILE: | 1093.10_CIVIL |
| JN: | 1093.10 |
| SCALE: | AS NOTED |
| DESIGNED BY: | PFH |
| DRAWN BY: | ZMS |
| CHECKED BY: | WHS |

STATE OF MAINE
PETER F. HEIL
15318
LICENSED PROFESSIONAL ENGINEER

DRAWING NO.
C-01

# GENERAL NOTES:

1. THE CONTRACTOR SHALL CALL THE APPROPRIATE UTILITY COMPANIES AND DIG SAFE AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION FOR UTILITIES. OTHERWISE IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF UNDERGROUND UTILITIES AND LOCATE ANY POTENTIAL CONFLICTS WITH THE APPROVED PLANS PRIOR TO CONSTRUCTION.

2. THE CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE OF ALL EROSION CONTROL MEASURES SHOWN ON THE PLAN. IF DEEMED NECESSARY BY THE OWNER OR OWNER'S REPRESENTATIVE (IF APPLICABLE), ADDITIONAL EROSION CONTROL MEASURES SHALL BE INSTALLED AT NO ADDITIONAL COST TO THE OWNER.

3. THE CONTRACTOR SHALL PREPARE THEIR OWN MATERIAL SCHEDULE BASED ON THE PLANS AND FIELD VERIFICATION BY THE CONTRACTOR. ALL MATERIAL SCHEDULES SHOWN WITHIN THE PLAN SET ARE FOR GENERAL INFORMATION ONLY.

4. ALL CONSTRUCTION METHODS, TESTING AND MATERIALS SHALL CONFORM TO THE MAINE DEPARTMENT OF TRANSPORTATION SPECIFICATIONS, THE CITY OF PORTLAND AND SERVICING UTILITY REQUIREMENTS, IF ANY. IN CASES WHERE THESE CONFLICT THE MOST STRINGENT SPECIFICATION SHALL APPLY AT NO ADDITIONAL COST TO THE OWNER.

5. THE SITE CONTRACTOR SHALL MAINTAIN A SET OF PAPER AND CAD DRAWINGS WHICH SHALL RECORD THE ACTUAL LOCATION, DIMENSIONS, ELEVATIONS, MATERIALS OF THEIR WORK, INDICATING THEREON ALL VARIATIONS FROM THE CONTRACT DRAWINGS. THE CONTRACTOR SHALL PROVIDE THE OWNER WITH ONE COMPLETE SET OF REPRODUCIBLE RECORD DRAWINGS, IN .DWG FORMAT AND PAPER, STAMPED ''AS-BUILT''. IF AUTOCAD CAPABILITY IS NOT AVAILABLE, EXCLUDE FROM BID IN WRITING.

6. THE CONTRACTOR WILL REMAIN SOLELY AND COMPLETELY RESPONSIBLE FOR ENFORCEMENT OF AND COMPLIANCE WITH 1) ALL CONTRACT PLANS AND SPECIFICATIONS, 2) APPLICABLE INTERNATIONAL BUILDING CODE REQUIREMENTS, AND 3) ALL SITE WORKING CONDITIONS AND SAFETY REQUIREMENTS, DAY AND NIGHT, FOR BOTH PERSONS AND PROPERTY, IN EACH CASE BOTH BY THE CONTRACTOR AND ITS SUBCONTRACTORS. THESE INCLUDE ALL OSHA, NIOSH, U.S. EPA AND ANY OTHER APPLICABLE GOVERNMENTAL REGULATIONS.

7. EXISTING CONDITIONS, BOUNDARY SURVEY, AND TOPOGRAPHY FROM THE PLAN TITLED ATLA / NSPS LAND TITLE SURVEY PREPARED BY OWEN HASKELL, INC., DATED 12/18/2020 & PLAN TITLED ATLA / NSPS LAND TITLE SURVEY PREPARED BY NORTHEAST CIVIL SOLUTIONS, DATED 10/28/2020

8. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ACCESS TO THE SITE AT ALL TIMES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY MARKINGS, SIGNAGE AND INCIDENTALS TO MAINTAIN A SAFE VEHICLE AND PEDESTRIAN ACCESS THOUGH THE LIFE OF THE PROJECT. THE CONTRACTOR SHALL NOTIFY THE BIDDEFORD PUBLIC SAFETY DIVISION ROUTINELY REGARDING TEMPORARY IMPACTS OR CHANGES TO SITE ACCESS CONDITIONS.

9. CONSTRUCTION MANAGEMENT PLAN BY ACORN ENGINEERING INC. SHALL BE REFERRED TO FOR ANTICIPATED PROJECT SCHEDULE AND CLOSURES. TRAFFIC CONTROL SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

10. CONTRACTOR TO DETERMINE SOIL CLASSIFICATION INDEPENDENTLY FOR TRENCH, SHORING, AND OTHER SIMILAR CONSTRUCTION MEANS AND METHODS APPLICATIONS.

11. NO HOLES, TRENCHES, OR STRUCTURES SHALL BE LEFT OPEN OR UNATTENDED OVERNIGHT IN ANY AREA ACCESSIBLE TO THE PUBLIC OR WITHIN THE PUBLIC RIGHT-OF-WAY.

12. THE CONTRACTOR SHALL CONDUCT A PRE-CONSTRUCTION SURVEY OF INTERIOR SUBGRADE AND ABOVE GRADE ACCESSIBLE WALLS, CEILINGS, FLOORS, ROOF AND VISIBLE EXTERIOR AS VIEWED FROM THE GRADE LEVEL. THIS SHALL BE COMPLETED AT A MINIMUM FOR ADJACENT STRUCTURES AND STRONGLY RECOMMENDED FOR STRUCTURES DIRECTLY ACROSS THE SITE ALONG ELM STREET AND GOOCH STREET. A COPY OF THE SURVEY SHOULD BE PROVIDED TO THE OWNER. DOCUMENT WITH PICTURES AT A MINIMUM.

13. THE CONTRACTOR SHALL PROVIDE A GPS MODEL OF THE PROPERTY TO ACORN ENGINEERING.

14. THE CONTRACTOR SHALL SURVEY ROCK SURFACE PRIOR TO EXCAVATION AND DEVELOP VOLUME CALCULATIONS TO SHARE WITH THE ENGINEER, ACORN ENGINEERING INC. (ACORN), IF ANY.

15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PRESERVATION OF ALL TREES AND SHRUBS ON THE PROJECT WHICH ARE NOT TO BE REMOVED.

16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY TRENCH PAVEMENT THAT HAS EXPERIENCED EXCESSIVE SETTLEMENT, CRACKING, OR OPENING OF JOINTS. REPAIRS MAY INCLUDE OVERLAY. REMOVAL OF WORK MAY BE NECESSARY AFTER THE FINAL ACCEPTANCE OF WORK OR PRIOR TO THE END OF THE WARRANTY PERIOD. THIS WORK SHALL BE DONE AT THE CONTRACTOR'S EXPENSE.

# CIVIL SITE NOTES:

1. THE CONTRACTOR SHALL SUBMIT IN WRITING ANY REQUESTS TO ACORN TO MODIFY THE CONTRACT DOCUMENTS.

2. ALL SHOP, ERECTION, AND CONSTRUCTION DRAWINGS SHALL BE CHECKED AND STAMPED BY THE CONTRACTOR PRIOR TO SUBMISSION FOR ACORN'S REVIEW. ANY UNCHECKED OR NON-STAMPED SUBMITTALS WILL BE RETURNED WITHOUT REVIEW.

3. CONTRACTOR SHALL THOROUGHLY INSPECT AND SURVEY EXISTING STRUCTURES AND SITE TO VERIFY CONDITIONS THAT AFFECT THE WORK SHOWN ON THE DRAWINGS. CONTRACTOR TO NOTIFY ACORN OF ANY DISCREPANCIES PRIOR TO PROCEEDING.

4. DETAILS SHOWN APPLY TO ALL SIMILAR CONDITIONS UNLESS OTHERWISE INDICATED.

5. ALTHOUGH ALL DUE DILIGENCE HAS BEEN APPLIED TO MAKE THE DRAWINGS AS COMPLETE AS POSSIBLE, NOT ALL DETAILS ARE ILLUSTRATED, NOR IS EVERY EXCEPTION CONDITION ADDRESSED WITHIN THE CONTRACT DOCUMENTS.

6. ALL PROPRIETARY CONNECTIONS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

7. THE CONTRACTOR IS RESPONSIBLE FOR THE COORDINATION OF ALL WORK, INCLUDING DIMENSION AND LAYOUT VERIFICATION, MATERIALS COORDINATION, SHOP DRAWING REVIEW, AND THE WORK OF ANY SUBCONTRACTORS.

8. UNLESS OTHERWISE SPECIFICALLY INDICATED, THE DRAWINGS DO NOT DESCRIBE OR DIRECT MEANS OR METHODS OF CONSTRUCTION.

9. THE CONTRACTOR, IN THE PROPER SEQUENCE, SHALL PERFORM OR SUPERVISE ALL WORK NECESSARY TO ACHIEVE THE FINAL COMPLETED STRUCTURE, AND TO PROTECT THE STRUCTURE, WORKMEN, AND OTHERS DURING THE CONSTRUCTION. SUCH WORK SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, SHORING FOR CONSTRUCTION EQUIPMENT, SHORING FOR EXCAVATION, FORMWORK, SCAFFOLDING, SAFETY DEVICES AND PROGRAMS OF ALL KINDS, SUPPORT AND BRACING FOR CRANES AND OTHER ERECTION EQUIPMENT.

10. DO NOT BACKFILL AGAINST RETAINING WALLS UNTIL SUPPORTING SLABS AND FLOOR FRAMING ARE IN PLACE AND SECURELY ANCHORED, UNLESS ADEQUATE BRACING IS PROVIDED. PRIOR TO BACKFILL, PROVIDE CURING OF CONCRETE FOR 28 DAYS OR AS DIRECTED BY MATERIALS TESTING ENGINEER.

11. TEMPORARY BRACING SHALL REMAIN IN PLACE UNTIL ALL FLOORS, WALLS, ROOFS AND OTHER SUPPORTING ELEMENTS ARE IN PLACE, IF APPLICABLE.

12. ALL PAVEMENT JOINTS SHALL BE SAWCUT AND APPLIED WITH TACK COAT PRIOR TO PAVING TO PROVIDE A DURABLE AND UNIFORM JOINT.

13. ACORN BEARS NO RESPONSIBILITY FOR THE ABOVE ITEMS, AND SITE OBSERVATION VISITS DO NOT IN ANY WAY INCLUDE INSPECTION OF THEM.

14. EXCAVATIONS ACCOMPLISHED AS PART OF THIS PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH SUBPART P OF 29 CRF PART 1926.650-.652 (CONSTRUCTION STANDARD FOR EXCAVATIONS).

15. ALL TRENCH PAVEMENT REPAIR SHALL BE COMPLETED WITH THE USE OF A STREET PAVER WITH A SCREED WIDTH CAPABLE OF SPANNING THE FULL WIDTH OF THE TRENCH UNLESS OTHERWISE AUTHORIZED BY THE ENGINEER.

# SPECIAL INSPECTION NOTES

1. ALL SITE SOILS-RELATED WORK AND FOOTING EXCAVATIONS PRIOR TO PLACING FORMS SHALL BE REVIEWED BY THE PROJECT GEOTECHNICAL ENGINEER.

2. ALL SITE DRAINAGE-RELATED WORK SHALL BE REVIEWED BY ACORN ENGINEERING.

3. NORMAL REVIEWS BY LOCAL BUILDING DEPARTMENT. NOTIFY 48 HOURS PRIOR TO REQUIRED REVIEW.

4. REQUIRED SPECIAL INSPECTIONS PER I.B.C. SECTION 1705.6 BY AN APPROVED SPECIAL INSPECTOR RETAINED BY OWNER. CONTRACTOR TO COORDINATE SPECIAL INSPECTIONS.

5. SPECIAL INSPECTOR SHALL BE A QUALIFIED PERSON WHO SHALL DEMONSTRATE COMPETENCE, TO THE SATISFACTION OF THE BUILDING OFFICIAL, FOR INSPECTION OF THE PARTICULAR TYPE OF CONSTRUCTION OR OPERATION REQUIRING SPECIAL INSPECTION.

5.1. DUTIES AND RESPONSIBILITIES OF THE SPECIAL INSPECTOR SHALL BE TO OBSERVE AND/OR TEST THE WORK ASSIGNED AND OUTLINE ABOVE FOR CONFORMANCE WITH THE CONTRACT DOCUMENTS, ALL DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION.

5.2. THE SPECIAL INSPECTOR SHALL FURNISH REGULAR REPORTS TO THE BUILDING OFFICIAL, THE ARCHITECT AND ENGINEER OF RECORD, AND OTHER DESIGNATED PERSONS. PROGRESS REPORTS FOR CONTINUOUS INSPECTION SHALL BE FURNISHED WEEKLY. INDIVIDUAL REPORTS OF PERIODIC INSPECTIONS SHALL BE FURNISHED WITHIN ONE WEEK OF INSPECTION DATES. THE REPORTS SHALL NOTE UNCORRECTED DEFICIENCIES, AND NET CHANGES TO THE APPROVED CONSTRUCTION DOCUMENTS AUTHORIZED BY THE ENGINEER OF RECORD.

5.3. THE SPECIAL INSPECTOR SHALL SUBMIT A FINAL SIGNED REPORT WITHIN TEN DAYS OF THE FINAL INSPECTION STATING WHETHER THE WORK REQUIRING A SPECIAL INSPECTION WAS, TO THE BEST OF THE INSPECTOR'S KNOWLEDGE AND BELIEF, IN CONFORMANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS AND THE APPLICABLE WORKMANSHIP PROVISIONS OF THE INTERNATIONAL BUILDING CODE. WORK NOT IN COMPLIANCE SHALL BE NOTED IN THE REPORT.

5.4. SPECIAL INSPECTION FIRM SHALL BE EMPLOYED BY OWNER AND COORDINATED BY THE CONTRACTOR.

# LAYOUT NOTES:

1. MONUMENTS DELINEATING PROPERTY LINES OR RIGHT OF WAYS SHALL NOT BE DISTURBED DURING CONSTRUCTION OPERATIONS. IN THE CASE A MONUMENT IS DISTURBED, AT THE CONTRACTOR'S EXPENSE, THE MONUMENT SHALL BE RESET TO ITS ORIGINAL LOCATION AND ELEVATION BY A LICENSED PROFESSIONAL LAND SURVEYOR.

2. ALL DIMENSIONS ON THE FOLLOWING SHEETS TAKE PRECEDENT OVER SCALED DIMENSIONS. EACH DRAWING WITH A BAR SCALE MEANS THAT THE DRAWING/DETAIL HAS BEEN SCALED AS ACCURATELY AS POSSIBLE, AND THE BAR SCALE IS FOR GENERAL REFERENCE ONLY. IF NO BAR SCALE IS PRESENT, THEN THERE IS NO SCALE TO THAT DRAWING/DETAIL. AT NO TIME SHOULD DRAWINGS BE SCALED FROM. ANY DISCREPANCIES BETWEEN DRAWINGS, DETAILS, SPECIFICATIONS AND THE FIELD CONDITION SHALL BE IMMEDIATELY REPORTED TO ACORN FOR FURTHER DIRECTIONS BEFORE ANY ADDITIONAL WORK PROCEEDS.

3. SIGNAGE, STRIPING, AND PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).

4. ALL TRAFFIC CONTROL SIGNS INDICATED ON THE SITE LAYOUT PLAN ARE TO MEET ALL REQUIREMENTS & CONDITIONS OF THE CITY OF BIDDEFORD, MAINE DEPARTMENT OF TRANSPORTATION AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.

5. THE CONTRACTOR SHALL OBTAIN THE SERVICES OF A LICENSED PROFESSIONAL LAND SURVEYOR TO PROVIDE A MINIMUM OF TWO TEMPORARY BENCHMARKS WITHIN THE SITE AND TO LOCATE PROPOSED STRUCTURE CORNERS.

6. CONTRACTOR TO ENSURE THAT ACCESS, INCLUDING BUT NOT LIMITED TO WALKWAYS, DRIVEWAYS, AND MAILBOXES ADJACENT TO THE PROJECT REMAIN FUNCTIONAL AND AVAILABLE FOR USE AT ALL TIMES.

# PERMITTING NOTES

1. THIS PROJECT IS SUBJECT TO THE TERMS AND CONDITIONS OF A MAJOR SUBDIVISION & SITE PLAN PERMIT FROM THE CITY OF BIDDEFORD, PERMIT FROM THE SACO RIVER CORRIDOR COMMISSION, NATURAL RESOURCE PROTECTION ACT (NRPA) PERMIT AND STORMWATER PERMIT BY RULE FROM MDEP, AND TRAFFIC MOVEMENT PERMIT FROM MDOT.

2. THE CONTRACTOR SHALL REVIEW THE ABOVE REFERENCED PERMITS PRIOR TO SUBMITTING A BID FOR THIS PROJECT, AND INCLUDE COSTS AS NECESSARY TO COMPLY WITH THE CONDITIONS OF THESE PERMITS.

3. ALL WORK WITHIN THE PUBLIC RIGHT-OF-WAY REQUIRES A STREET OPENING PERMIT FROM THE CITY OF BIDDEFORD. ADDITIONALLY, COORDINATE WITH THE DEPARTMENT OF PUBLIC WORKS.

# GRADING AND DRAINAGE NOTES:

1. TOPSOIL STRIPPED FROM THE SITE THAT IS SUITABLE FOR REUSE AS LOAM (MEETS THE REQUIREMENTS WITHIN SECTION 615 OF THE MDOT STANDARD SPECIFICATIONS, MOST RECENT VERSION AND IS FREE OF TRACEABLE AMOUNTS OF CONTAMINANTS) SHALL BE STOCKPILED WITHIN THE PROPOSED LIMIT OF WORK AREA. THE CONTRACTOR SHALL NOT ASSUME THAT ANY STRIPPED TOPSOIL WILL BE ACCEPTABLE FOR REUSE WITH THEIR ESTIMATE.

2. THE CONTRACTOR SHALL ANTICIPATE THAT GROUNDWATER WILL BE ENCOUNTERED DURING CONSTRUCTION AND SHALL INCLUDE SUFFICIENT COSTS WITHIN THEIR BID TO PROVIDE DEWATERING AS NECESSARY; NO SEPARATE PAYMENT SHALL BE MADE TO THE CONTRACTOR FOR DEWATERING. DEWATERING SHALL INCLUDE TREATMENT OF SILT THROUGH THE USE OF A DIRTBAG BY ACF ENVIRONMENTAL OR APPROVED EQUIVALENT.

3. THE OWNER SHALL BE RESPONSIBLE FOR OBTAINING ANY EASEMENT OR TEMPORARY CONSTRUCTION RIGHTS AS NECESSARY BY PRIVATE ADJACENT LAND OWNERS. THE CONTRACTOR SHALL NOT DISTURB ANY SOIL BEYOND THE PROPERTY LINE WITHOUT NOTIFYING AND OBTAINING SUCH EASEMENT OR TEMPORARY CONSTRUCTION RIGHT FROM THE ADJACENT LAND OWNERS. PRIOR TO THE CONTRACTOR PRICING THE WORK, THEY SHALL PROVIDE ACORN WITH PROOF OF SUCH EASEMENT OR TEMPORARY RIGHTS. SHOULD EASEMENTS OR TEMPORARY RIGHTS NOT BE AVAILABLE, THE CONTRACTOR SHALL INCLUDE COST FOR BRACING AND SHORING AS NECESSARY.

4. THE CONTRACTOR SHALL PROVIDE A FINISH PAVEMENT SURFACE FREE OF LOW SPOTS AND PONDING AREAS. THE MINIMUM SLOPE SHALL MEET OR EXCEED 0.5% IN ALL CASES. ALL SLOPES SHALL BE AWAY FROM BUILDINGS AND TOP OF PAVEMENT SHALL BE AT OR BELOW EXISTING FINISH FLOOR ELEVATIONS.

5. NO ADDITIONAL PAYMENT FOR UNSUITABLE MATERIALS.

6. ALL STORM DRAIN PIPE SHALL BE SMOOTH BORE INTERIOR PROVIDING A MANNINGS ROUGHNESS COEFFICIENT OF N=0.012 OR LESS.

7. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.

8. NATIVE SOILS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LIMIT THE DISTURBANCE TO SUBGRADE SOILS. SHOULD THE SUBGRADE BECOME YIELDING OR DIFFICULT TO WORK, CONTACT ACORN. THE DISTURBED AREAS SHALL BE EXCAVATED AND BACKFILLED WITH COMPACTED SELECT FILL OR CRUSHED STONE AT NO ADDITIONAL EXPENSE TO THE OWNER.

9. ALL SUBGRADE PREPARATION IS SUBJECT TO THE RECOMMENDATIONS OF THE PROJECT GEOTECHNICAL ENGINEER, IF APPLICABLE.

# EROSION CONTROL NOTES:

1. DISTURBED AREAS ARE DEFINED AS THOSE SURFACES WHERE EXISTING VEGETATION OR STRUCTURES HAVE BEEN REMOVED, EXPOSING NATIVE SOIL TO THE ELEMENTS.

2. ALL ROUTINE WORK ACTIVITIES SHALL BE CONDUCTED IN SUCH A WAY TO LIMIT THE AMOUNT OF DISTURBED AREA AT ONE TIME TO THE EXTENT PRACTICABLE.

3. PRIOR TO THE START OF ANY CLEARING/LAND DISTURBING ACTIVITIES, THE CONTRACTOR SHALL INSTALL APPLICABLE EROSION CONTROL DEVICES SUCH AS PERIMETER SILT FENCE, AND OTHER APPLICABLE MEASURES. IN THE EVENT THE CONTRACTOR IS NOT SURE A EROSION CONTROL MEASURE SHOULD BE IMPLEMENTED, THE CONTRACTOR SHALL CONTACT THE ENGINEER OF RECORD TO CONFIRM IMPLEMENTATION OF ANY EROSION CONTROL DEVICES.

4. ALL GROUND AREAS GRADED FOR CONSTRUCTION SHALL BE GRADED, LOAMED, SEEDED AND MULCH SHALL BE APPLIED AS SOON AS POSSIBLE WITHIN 7 DAYS FOLLOWING THE COMPLETION OF ANY SOIL DISTURBANCE, AND PRIOR TO ANY STORM EVENT.

5. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED TO THE SATISFACTION OF THE CITY. THE CONTRACTOR SHALL REFERENCE THE APPROVED EROSION AND SEDIMENTATION CONTROL REPORT FOR TEMPORARY AND PERMANENT EROSION AND SEDIMENTATION CONTROL DEVICES IN ADDITION TO THE PLAN SET. THE CONTRACTOR SHALL ALSO REFER TO THE MAINE D.E.P.'S PERMIT CONDITIONS, FINDINGS OF FACT AND ORDER (IF ANY), AND THE CURRENT MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL FOR ADDITIONAL INFORMATION.

6. PRIOR TO PAVING, THE CONTRACTOR SHALL REMOVE ALL SEDIMENT FROM STORM DRAINS, CATCH BASINS, AND APPURTENANCES.

7. REFER TO THE EROSION CONTROL DETAILS & NOTES FOR ADDITIONAL INFORMATION.

# UTILITY NOTES:

1. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND ELEVATION OF THE EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED UPON RECORDS OF VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION IS NOT TO BE RELIED UPON AS BEING EXACT OR COMPLETE. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO TEST PIT TO DETERMINE THE EXACT LOCATION AND ELEVATION OF UTILITIES TO COORDINATE WITH THE PROPOSED CONNECTIONS OR CROSSING. ANY DISCREPANCIES SHALL BE IMMEDIATELY REPORTED TO ACORN FOR FURTHER DIRECTIONS BEFORE ANY ADDITIONAL WORK PROCEEDS.

2. CONTRACTOR SHALL, AT NO ADDITIONAL COST TO THE OWNER, CONDUCT EXPLORATORY EXCAVATIONS AT LOCATIONS WHERE PROPOSED EXCAVATION WILL INTERSECT WITH EXISTING UTILITIES, PRIOR TO THE ORDERING OF STRUCTURES.

3. ALL NEW SANITARY MANHOLES SHALL BE VACUUM TESTED BEFORE BACKFILLING. TESTING SHALL BE COMPLETED IN ACCORDANCE WITH TECHNICAL REPORT #16 (TR-16): GUIDES FOR THE DESIGN OF WASTEWATER TREATMENT WORKS, PREPARED BY THE NEW ENGLAND INTERSTATE WATER POLLUTION CONTROL COMMISSION.

4. SEWER MANHOLES SHALL BE 4' ID UNLESS OTHERWISE STATED ON THE PLANS.

5. CONTRACTOR TO PROVIDE MIN. 5.5' OF COVER FROM TOP OF PIPE TO FINISH GRADE FOR WATER MAINS.

6. THRUST BLOCKS SHALL BE USED FOR THRUST RESTRAIN ON WATER MAINS. DETAIL AND LIMITS FOR THRUST BLOCKS ARE SHOWN WITHIN THE PLAN SET.

7. ALL REQUIRED FITTINGS FOR THE WATER MAIN ARE NOT SHOWN ON DRAWINGS. CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY FITTINGS REQUIRED TO CONSTRUCT THE WATER MAIN IN ACCORDANCE WITH CITY OF BIDDEFORD, STATE OF MAINE, AND AMERICAN WATER WORKS ASSOCIATION STANDARDS AND REGULATIONS.

8. CONTRACTOR SHALL COORDINATE WORK REGARDING ANY WATER MAIN CONNECTION AND WATER MAIN SHUTDOWN WITH THE PORTLAND WATER DISTRICT AT LEAST SEVEN (7) DAYS PRIOR TO CONSTRUCTION.

9. ALL WATER PIPE INSTALLATION SHALL CONFORM WITH THE MAINE WATER COMPANY SPECIFICATIONS AND PROCEDURES, MOST RECENT EDITION.

10. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.

11. SEWER, GAS, TELEPHONE, ELECTRICITY, CABLE, WATER AND ANY OTHER UTILITY CONNECTIONS SHALL BE REVIEWED BY PLUMBING, ELECTRICAL, AND MECHANICAL DESIGNER FOR CONSISTENCY WITH THEIR PLANS PRIOR TO CONSTRUCTION.

12. COORDINATE EXIT POINT FOR SECONDARY UTILITY SERVICES WITH THE ARCHITECT/ELECTRICAL ENGINEER. SECONDARY LINE LOCATIONS NOT PROVIDED BY ACORN WITHIN THE UTILITY PLAN.

13. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ALL THE NECESSARY PERMITS FOR THE INSTALLATION OF THE UTILITIES AND STORMDRAINS WITHIN THE PUBLIC RIGHT OF WAY. THE CONTRACTOR SHALL SUBMIT A MAINTENANCE OF TRAFFIC PLAN TO THE CITY IN ACCORDANCE WITH THE CITY OF PORTLAND TECHNICAL MANUAL PRIOR TO ANY WORK.

14. 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.

15. ALL PIPE LINES SHALL SLOPE UNIFORMLY BETWEEN ELEVATIONS INDICATED ON THE DRAWINGS. NO CRESTS OR SAGS IN THE PIPING WILL BE PERMITTED. ALL HORIZONTAL AND VERTICAL BENDS IN PRESSURIZED PIPE LINES SHALL BE SUITABLY RESTRAINED WITH THRUST BLOCKS OR RETAINER GLANDS. RETAINER GLANDS ALLOWED FOR DUCTILE IRON PIPE ONLY. PROVIDE ALL BENDS, HORIZONTAL AND VERTICAL, AS REQUIRED TO MEET THE GRADES AND ALIGNMENTS INDICATED ON THE DRAWINGS.

16. ALL WASTEWATER PIPING, EXCLUDING BUILDING DRAINS, AND ALL PRESSURIZED PIPING, TO INCLUDE WATER MAINS, INSTALLED BENEATH STRUCTURES SHALL BE ENCASED IN CONCRETE.

17. WHERE NEW PIPING IS TO BE CONNECTED TO EXISTING PIPING, THE CONTRACTOR SHALL FURNISH AND INSTALL ALL ADAPTERS, FITTINGS AND ADDITIONAL PIPE AS REQUIRED TO ENSURE A COMPLETE AND PROPERLY FUNCTIONING CONNECTION. CONTRACTOR TO VERIFY LOCATION, ELEVATION, ORIENTATION AND MATERIAL OF CONSTRUCTION. ADAPTERS AND FITTINGS ARE INCIDENTAL TO THE PIPE INSTALLATION.

18. WHENEVER POSSIBLE, WATER LINES SHOULD BE INSTALLED OVER WASTEWATER LINES. A MINIMUM SEPARATION OF 18 INCHES BETWEEN THE BOTTOM OF THE WATER LINE AND THE TOP OF THE WASTEWATER LINE SHALL BE MAINTAINED WHERE POSSIBLE. WHERE A WATER LINE CROSSES UNDER THE WASTEWATER LINE, A FULL LENGTH OF WASTEWATER PIPE SHALL BE CENTERED ABOVE THE WATER LINE SO THAT BOTH JOINTS WILL BE AS FAR FROM THE WATER LINE AS POSSIBLE,

19. THE CONTRACTOR SHALL BE ANTICIPATE THAT THE NATIVE SILT AND CLAY SOILS WILL NOT BE SUITABLE FOR PIPE TRENCH BACKFILL IN PAVED AREAS.

20. GROUNDWATER SHALL BE CONTROLLED TO A LEVEL OF AT LEAST ONE FOOT BELOW SUBGRADE OF THE PIPE OR STRUCTURE. THE CONTRACTOR SHALL MAINTAIN THE LOWERED GROUNDWATER LEVEL UNTIL CONSTRUCTION HAS BEEN COMPLETED TO SUCH AN EXTENT THAT THE STRUCTURES OR PIPES WILL NOT BE FLOATED OR OTHERWISE DAMAGED.

21. EXCAVATION TO SUBRADE IN NATIVE SILT AND CLAY SHALL BE COMPLETED WITH A SMOOTH EDGE BUCKET TO MINIMIZE SUBGRADE DISTURBANCE.

22. ALL ADJUSTMENTS TO FINISHED GRADE ARE TO BE COMPLETED BY THE CONTRACTOR. THE CONTRACTOR SHALL CONFIRM STRUCTURES THAT REQUIRE ADJUSTMENT WITH THE ENGINEER OR OWNERS REPRESENTATIVE PRIOR TO ADJUSTING FRAMES.

# DEMOLITION NOTES:

1. THE FOLLOWING ITEMS ARE TYPICAL OF MATERIAL WHICH MAY BE ON SITE:
   - ROCK AND CONCRETE FOUNDATIONS
   - CONCRETE SLABS
   - BITUMINOUS ASPHALT PAVEMENT
   - CONCRETE PADS AND BLOCKS
   - FENCE POST AND FENCING
   - UNDERGROUND UTILITY LINES
   - ABOVE AND OR BELOW FUEL OIL AND PROPANE GAS TANKS
   - STORM DRAIN PIPES AND APPURTENANCE STRUCTURES
   - OTHER TRASH & MISCELLANEOUS SOLID WASTES

2. THE CONTRACTOR IS ADVISED TO VISIT THE SITE TO CONFIRM DEMOLITION ITEMS SINCE THE LIST IS NOT INCLUSIVE OF THE SITE CONDITIONS WHICH MAY BE ENCOUNTERED

3. ALL DISPOSAL OF DEMOLITION DEBRIS OR WASTE SHALL BE IN ACCORDANCE WITH ALL LOCAL, STATE, & FEDERAL REGULATIONS. CONTRACTORS SHALL PROVIDE OWNER WITH APPROPRIATE "BILLS OF LADING" DEMONSTRATING PROPER DISPOSAL OF ALL MATERIALS.

4. CONTRACTOR TO REVIEW PHASE 1 ENVIRONMENTAL SITE ASSESSMENT, PREPARED BY RANSOM CONSULTING, LLC, DATED 11/2/2020. ALL WORK SHALL BE IN CONFORMANCE WITH SPECIFICATIONS AS OUTLINED IN REPORT.

PERMIT LEVEL
NOT ISSUED FOR
CONSTRUCTION

| ISSUED FOR | BY DATE |
|---|---|
| SRCC | PFH 1/28/2021 |
| CITY REVIEW | PFH 2/5/2021 |
| DEP SW APP | PFH 3/30/2021 |
| FINAL APP | PFH 4/7/2021 |
| COMMENT RESPONSE | PFH 5/14/2021 |

DRAWING NAME: GENERAL NOTES

PROJECT NAME/ ADDRESS: 1 GOOCH STREET REDEVELOPMENT

CLIENT/OWNER OF RECORD: TOM WATSON & CO.
188 STATE STREET, 3RD FLOOR, PORTLAND ME 04101

ACORN ENGINEERING, INC.
ACORN ENGINEERING, INC.
PO BOX 4322 PORTLAND, MAINE 04101
(207) 775-2655

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY MODIFICATIONS, WHETHER OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

| | |
|---|---|
| FILE: | 1093.10_CIVIL |
| JN: | 1093.10 |
| SCALE: | AS NOTED |
| DESIGNED BY: | PFH |
| DRAWN BY: | ZMS |
| CHECKED BY: | WHS |

STATE OF MAINE
PETER F. HEIL
15318
LICENSED
PROFESSIONAL ENGINEER

DRAWING NO.
C-02

## General Notes

1. OWNER OF RECORD: PRECISION SCREW MACHINE PRODUCTS, INC.
P.O. BOX 1944, BIDDEFORD, ME 04005
TAX MAP 40 LOT 55 & 55–3
Y.C.R.D. BOOK 15535 PAGE 402

2. BEARINGS ARE BASED ON MAINE STATE PLANE COORDINATE SYSTEM, WEST ZONE, NAD 83.

3. NO EVIDENCE OF RECENT EARTH MOVING WORK, BUILDING CONSTRUCTION, BUILDING ADDITIONS, OR RECENT STREET OR SIDEWALK CONSTRUCTION OR REPAIRS WAS OBSERVED.

4. NO PROPOSED CHANGES IN STREET LINES IS KNOWN BY THIS SURVEYOR.

5. ELEVATIONS ARE BASED ON NAVD 88 DATUM PER STATIC GPS OBSERVATIONS.

6. THE SUBJECT PROPERTY HAS ACCESS TO ELM ST., A PUBLIC WAY VIA THE FORMER GOOCH ST. RIGHT OF WAY.

7. THE PROPERTY DESCRIBED IN FIRST AMERICAN TITLE INSURANCE COMMITMENT NO. 111220–01, EFFECTIVE NOVEMBER 5, 2020, IS THE SAME AS THE PROPERTY SHOWN HEREON.

8. BASED ON EXISTING MONUMENTATION FOUND, PLANS REFERENCED AND RESEARCH CONDUCTED, THERE ARE NO GAPS OR GORES.

9. PARCEL 2 IN DEED BOOK 15535, PAGE 402 DOES NOT CREATE A CLOSED MATHEMATICAL FIGURE. THE DEED DISTANCE OF 95.97 FEET IS BELIEVED TO BE 169.48 FEET BASED ON PLAN REFERENCE #5.

10. THE BEARINGS IN THE RECORD DEEDS ARE BASED ON A MAGNETIC BEARING SYSTEM. THE BEARING SHOWN HEREON ARE BASED ON GRID NORTH.

11. NO DETERMINATION HAS BEEN MADE TO THE STATUS OR FEE OWNERSHIP OF THE 30 FOOT WIDE RIGHT OF WAY, FORMERLY KNOWN AS GOOCH STREET.

12. AREA OF PARCEL 1&2= 61,314 S.F. OR 1.14 ACRES ±

## Flood Zone Note

BY GRAPHIC PLOTTING ONLY, THIS PROPERTY IS LOCATED IN ZONE A8 & ZONE B, ON THE FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NO. 2301450004B, WHICH BEARS AN EFFECTIVE DATE OF MAY 15, 1984.

## Zoning Information

ZONING SOLUTIONS, INC., 836 WASHINGTON STREET, BRAINTREE, MA 02185 ZONING CERTIFICATE DATE: DECEMBER 7, 2020

ZONING DISTRICT: HIGH DENSITY MIXED USE (MSRD3) AND THE GENERAL DEVELOPMENT (GD–1) OVERLAY DISTRICT

| | |
|---|---|
| MINIMUM LOT SIZE: | NONE |
| FRONTAGE: | NONE |
| FRONT SETBACK: | NONE |
| SIDE SETBACK: | NONE |
| REAR SETBACK: | NONE |
| MAXIMUM HEIGHT: | MIN. 2 STORIES OR 26 FEET |

## Plan References

1. "BOUNDARY & TOPOGRAPHIC SURVEY AT 59 ELM STREET & 10 GOOCH STREET, BIDDEFORD, MAINE MADE FOR PORT PROPERTY MANAGEMENT" DECEMBER 14, 2020 BY OWEN HASKELL, INC.

2. "ALTA/NSPS LAND TITLE SURVEY 59 ELM STREET, BIDDEFORD, MAINE PREPARED FOR PORT PROPERTY MANAGEMENT BY NORTH EAST CIVIL SOLUTIONS" DATED NOV. 4, 2020.

3. "ALTA/ACSM LAND TITLE SURVEY MADE FOR THE CITY OF BIDDEFORD, MAINE BY DOW & COULOMB, INC. LOCATED AT LINCOLN ST., ELM. ST. AND SACO RIVER" DATED NOV. 14, 2012.

4. "PLAN OF LAND OF THE SACO–LOWELL SHOPS AND PEPPERELL MANUFACTURING CO." BY LIBBY & DOW DATED JUNE, 1092 RECORDED IN PLAN BOOK 11, PAGE 31.

5. "PLAN SHOWING LAND SOLD BY THE BIDDEFORD & SACO DEVELOPMENT CORP. TO GRONDIN SUPPLY CO. INC." BY LIBBY & DOW DATED JAN. 18, 1962 RECORDED IN PLAN BOOK 32, PAGE 12.

## 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.

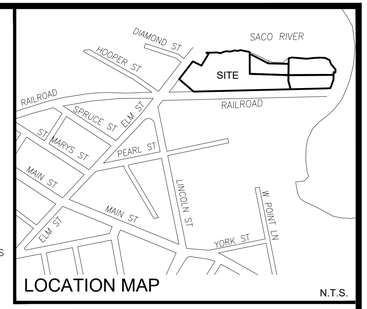
## Possible Encroachments

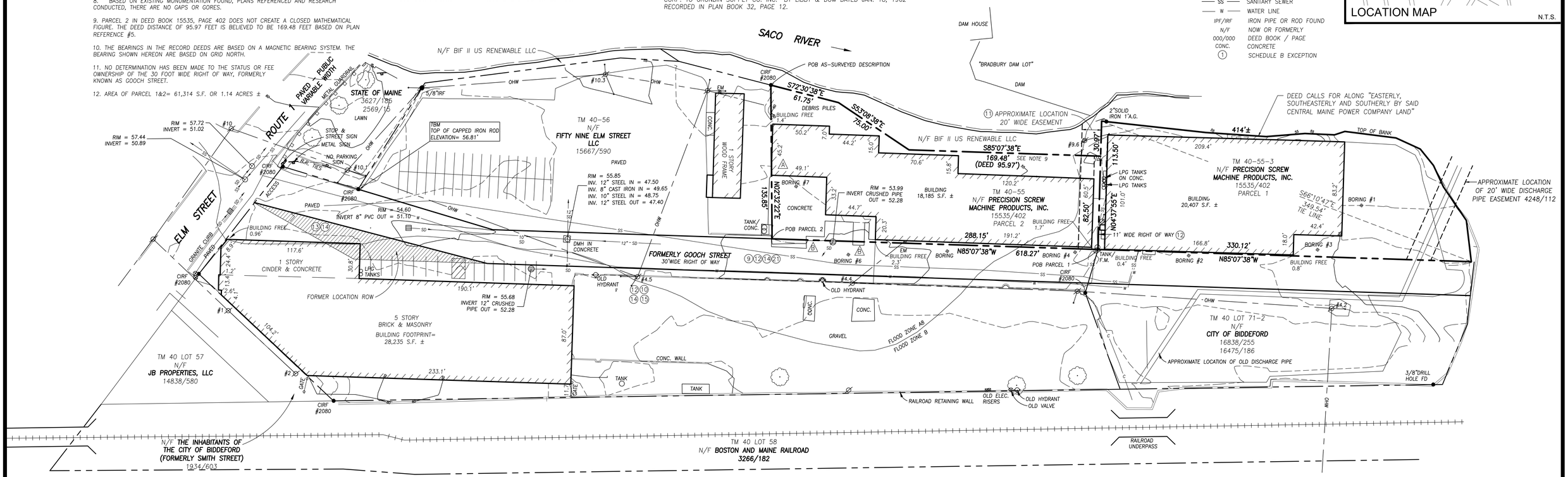
(A) BUILDING ONTO ABUTTER 0.3'±

(B) CONCRETE PADS ONTO ABUTTER 3'–7'±

## Legend

- IRON PIPE OR ROD FOUND
- UTILITY POLE
- MANHOLE
- EM ELECTRIC METER
- SIGN
- CATCH BASIN
- HYDRANT
- WATER VALVE OR SHUTOFF
- DECIDUOUS TREE
- FENCE
- CURB
- OHW OVERHEAD WIRES
- 100 1' CONTOUR
- SD STORM DRAIN
- C UNDERGROUND COMMUNICATIONS
- SS SANITARY SEWER
- W WATER LINE
- IPF/IRF IRON PIPE OR ROD FOUND
- N/F NOW OR FORMERLY
- 000/000 DEED BOOK / PAGE
- CONC. CONCRETE
- (1) SCHEDULE B EXCEPTION




## Legal Description

THE LAND REFERRED TO HEREIN IS SET FORTH BELOW:

PARCEL 1

A CERTAIN LOT OR PARCEL OF LAND WITH THE BUILDINGS THEREON, SITUATED IN BIDDEFORD, COUNTY OF YORK, STATE OF MAINE, BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT A SPIKE DRIVEN INTO THE BITUMINOUS CONCRETE PAVEMENT AT THE SOUTHERLY CORNER OF LAND CONVEYED BY THE BIDDEFORD AND SACO DEVELOPMENT CORPORATION TO GRONDIN SUPPLY CO., INC., SAID SPIKE BEING A LINE WHICH IS FORTY–SEVEN (47) FEET NORTHEASTERLY FROM AND PARALLEL WITH THE NORTHEASTERLY FACE OF THE ORIGINAL BUILDINGS OF THE SACO–LOWELI SHOPS, AND FORMERLY KNOWN AS 30–A, B, C AND D; THENCE N 20° 04' E BY SAID GRONDIN LAND EIGHTY–TWO AND 50/100 (82.50) FEET TO A SPIKE DRIVEN INTO THE PAVEMENT, SAID LINE BEING PARALLEL WITH AND FIVE AND 88/100 (5.88) FEET NORTHWESTERLY OF THE NORTHWESTERLY FACE OF THE WATER TABLES ON THE PILASTERS EXISTING ON THE NORTHWESTERLY SIDE OF THE BRICK BUILDING STANDING ON THE LAND HEREBY CONVEYED FORMERLY KNOWN AS BUILDING #24; THENCE THE SAME COURSE BY REMAINING LAND OF THE BIDDEFORD AND SACO DEVELOPMENT CORPORATION OR OWNER, THIRTY–SEVEN (37) FEET, MORE OR LESS, OR TO LAND OF THE CENTRAL MAINE POWER COMPANY; THENCE EASTERLY, SOUTHEASTERLY AND SOUTHERLY BY SAID CENTRAL MAINE POWER COMPANY LAND TO A POINT IN SAID LINE WHICH IS FORTY–SEVEN (47) FEET NORTHEASTERLY FROM AND PARALLEL TO THE NORTHEASTERLY FACE OF SAID ORIGINAL BUILDINGS OF THE SACO–LOWELL SHOPS; THENCE N 69° 42' W BY SAID LINE THREE HUNDRED THIRTY AND 12/1.00 (330.12) FEET TO THE POINT OF BEGINNING.

THE ABOVE BEARINGS REFER TO THE 1929 MAGNETIC MERIDIAN.

ALSO TOGETHER WITH A RIGHT OF WAY FROM THE EASTERLY SIDELINE OF THE ABOVE DESCRIBED LOT WESTERLY TO ELM STREET, SAID RIGHT OF WAY TO BE ADJOINING SAID LOT ON THE SOUTHERLY SIDE AND TO BE THIRTY (30) FEET WIDE ALONG SAID LOT AND FOR SIX HUNDRED SIXTY AND 82/100 (660.82) FEET WESTERLY FROM THE SOUTHWESTERLY CORNER OF SAID LOT TO A LARGE SPIKE DRIVEN INTO THE BITUMINOUS CONCRETE PAVING. FROM THENCE THE NORTHERLY SIDELINE RUNS N 32° 55' W BY LAND FORMERLY OF THE BIDDEFORD AND SACO DEVELOPMENT CORPORATION EIGHTY–THREE AND 751100 (83.75) FEET TO ELM STREET WHERE SAID RIGHT OF WAY IS TO BE FORTY AND 8811 00 (40.88) FEET WIDE MEASURED ALONG SAID ELM STREET, SAID LAST DESCRIBED RIGHT OF WAY IS TO BE USED BY PRECISION SCREW MACHINE PRODUCTS, INC. AND THE BIDDEFORD AND SACO DEVELOPMENT CORPORATION, THEIR RESPECTIVE SUCCESSORS AND ASSIGNS AND OTHERS.

PARCEL 2

A CERTAIN LOT OR PARCEL OF LAND TOGETHER WITH THE BUILDINGS THEREON, SITUATED IN SAID BIDDEFORD, BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT A SPIKE DRIVEN INTO THE BITUMINOUS CONCRETE PAVEMENT AT THE JUNCTION OF A LINE WHICH IS FORTY–SEVEN (47) FEET NORTHEASTERLY FROM AND PARALLEL WITH THE NORTHEASTERLY FACE OF THE MAIN ORIGINAL BUILDINGS OF THE SACO–LOWELL SHOPS AND FORMERLY KNOWN AS 30–A, B, C AND D AND A LINE WHICH RUNS ALONG THE NORTHWESTERLY EDGE OF THE CONCRETE PLATFORM ON WHICH THE BUILDING FORMERLY KNOWN AS #33 STOOD; THENCE S 69° 42' E BY SAID FORTY–SEVEN (47) FOOT LINE TWO HUNDRED EIGHTY–EIGHT AND 15/100 (288.15) TO A SPIKE DRIVEN IN THE PAVEMENT AND RETAINING LAND OF BIDDEFORD & SACO DEVELOPMENT CORPORATION; THENCE N 20° 04' E BY SAID REMAINING LAND OF BIDDEFORD & SACO DEVELOPMENT CORPORATION EIGHTY–TWO AND 50/100 (82.50) FEET TO A SPIKE DRIVEN INTO THE PAVEMENT; THE LAST DESCRIBED LINE BEING PARALLEL WITH AND FIVE AND 88/100 (5.88) FEET NORTHWESTERLY OF THE NORTHWESTERLY FACE OF THE WATER TABLES ON THE PILASTERS EXISTING ON THE NORTHWESTERLY SIDE OF THE BRICK BUILDING STANDING ON SAID OTHER LAND OF BIDDEFORD & SACO DEVELOPMENT CORPORATION FORMERLY KNOWN AS BUILDING #24; THENCE N 69° 42' W BY REMAINING LAND OF SAID BIDDEFORD & SACO DEVELOPMENT CORPORATION AND BY LAND OF THE CENTRAL MAINE POWER COMPANY NINETY–FIVE AND 97/100 (95.97) FEET TO AN IRON PIPE DRIVEN INTO THE GROUND; THENCE N 37° 43' W BY SAID LAND OF THE CENTRAL MAINE POWER COMPANY SEVENTY–FIVE (75) FEET TO AN IRON PIPE DRIVEN INTO THE GROUND; THENCE N 57° 05' W BY SAID LAND OF THE CENTRAL MAINE POWER COMPANY SIXTY–ONE AND 75/100 (61.75) FEET TO AN IRON PIPE DRIVEN INTO THE GROUND AND REMAINING LAND OF SAID BIDDEFORD & SACO DEVELOPMENT CORPORATION; THENCE S 17° 58' W BY SAID REMAINING LAND OF BIDDEFORD & SACO DEVELOPMENT CORPORATION ONE HUNDRED THIRTY–FIVE AND 84/100 (135.84) FEET TO THE POINT OF BEGINNING.

## As-Surveyed Description

A CERTAIN LOT OR PARCEL OF LAND ON THE EASTERLY SIDE OF, BUT NOT ADJACENT TO ELM STREET IN THE TOWN OF BIDDEFORD, COUNTY OF YORK AND STATE OF MAINE BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEASTERLY CORNER OF LAND NOW OR FORMERLY OF FIFTY NINE ELM STREET LLC AS DESCRIBED IN DEED BOOK 15667, PAGE 590 ON THE SOUTHERLY LINE OF LAND NOW OR FORMERLY OF BIF II US RENEWABLE LLC AT A CAPPED IRON ROD STAMPED "PLS 2080";

THENCE, THE FOLLOWING COURSES AND DISTANCES ALONG LAND OF SAID BIF II US RENEWABLE LLC:

S 72°30'38" E A DISTANCE OF 61.75 FEET;
S 53°08'38" E A DISTANCE OF 75.00 FFET;
S 85°07'38" E A DISTANCED OF 169.48 FEET;
N 04°37'55" E A DISTANCE OF 31 FEET, MORE OR LESS TO LAND NOW OR FORMERLY CENTRAL MAINE POWER COMPANY;

THENCE, EASTERLY, SOUTHEASTERLY AND SOUTHERLY BY SAID CENTAL MAINE POWER COMPANY LAND 414 FEET, MORE OR LESS TO THE NORTHERLY SIDELINE OF A CERTAIN 30 FOOT WIDE RIGHT OF WAY, FORMERLY KNOW AS GOOCH STREET, POINT BEING S 66°10'47" E A DISTANCE OF 349.54 FEET FROM THE LAST MENTIONED COURSE;

THENCE, N 85°07'38" W ALONG THE NORTHERLY SIDELINE OF SAID 30 FOOT WIDE RIGHT OF WAY 618.27 FEET TO LAND OF SAID FIFTY NINE ELM STREET LLC;

THENCE, N 02°32'22" E ALONG THE LAND OF FIFTY NINE ELM STREET LLC 135.85 FEET TO THE POINT OF BEGINNING, CONTAINING 61,314 S.F. OR 1.14 ACRES, MORE OR LESS.

## Schedule B Section II Exceptions

FIRST AMERICAN TITLE INSURANCE COMPANY
COMMITMENT NO. 111220–01 EFFECTIVE DATE: NOVEMBER 5, 2020

1 – 8. NON SURVEY ITEMS

9. RIGHTS, EASEMENTS, COVENANTS, CONDITIONS, AND RESTRICTIONS SET FORTH IN QUITCLAIM DEED GRANTED BY SACO–LOWELL SHOPS TO BIDDEFORD & SACO DEVELOPMENT CORPORATION DATED APRIL 9, 1959 AND RECORDED IN THE YORK COUNTY REGISTRY OF DEEDS IN BOOK 1398, PAGE 145. – AS SHOWN

10. RIGHTS AND EASEMENTS GRANTED BY BIDDEFORD & SACO DEVELOPMENT CORPORATION TO CENTRAL MAINE POWER COMPANY BY INSTRUMENT DATED MARCH 22, 1961 AND RECORDED IN THE YORK COUNTY REGISTRY OF DEEDS IN BOOK 1461, PAGE 460. –NO POLE NUMBERED REFERENCED IN DOCUMENT, EXISTING POLES SHOWN

11. RIGHTS AND EASEMENTS GRANTED BY BIDDEFORD & SACO DEVELOPMENT CORPORATION TO CENTRAL MAINE POWER COMPANY BY INSTRUMENT SACO–LOWELL SHOPS TO CENTRAL MAINE POWER COMPANY BY INSTRUMENT DATED JUNE 23, 1944 AND RECORDED IN THE YORK COUNTY REGISTRY OF DEEDS IN BOOK 1017, PAGE 409. – AS SHOWN ON PLAN

12. RIGHTS, EASEMENTS, COVENANTS, CONDITIONS, AND TERMS SET FORTH IN DEED GRANTED BY BIDDEFORD & SACO DEVELOPMENT CORPORATION TO GRONDIN SUPPLY CO. INC. DATED JANUARY 18, 1962 AND RECORDED IN THE YORK COUNTY REGISTRY OF DEEDS IN BOOK 1478, PAGE 465. –AS SHOWN

13. RIGHTS OF OTHERS AND TERMS AND CONDITIONS PURSUANT TO THE FOLLOWING:

A. AGREEMENT BY AND BETWEEN CENTRAL MAINE POWER COMPANY AND STORAGE REALTY CORP., DATED APRIL 1, 1971 AND RECORDED IN THE YORK COUNTY REGISTRY OF DEEDS IN BOOK 1907, PAGE 182; – AS SHOWN

B. AGREEMENT BY AND BETWEEN BIDDEFORD & SACO DEVELOPMENT CORPORATION AND STORAGE REALTY CORP., DATED MARCH 10, 1971 AND RECORDED IN THE YORK COUNTY REGISTRY OF DEEDS IN BOOK 1907, PAGE 186; – AS SHOWN

C. AGREEMENT BY AND BETWEEN METAL–TECH INC. AND STORAGE REALTY CORP., DATED MARCH 25, 1971 AND RECORDED IN THE YORK COUNTY REGISTRY OF DEEDS IN BOOK 1907, PAGE 190; AND – AS SHOWN

D. AGREEMENT BY AND BETWEEN GRONDIN SUPPLY CO. AND STORAGE REALTY CORP. DATED MARCH 23, 1971 AND RECORDED IN THE YORK COUNTY REGISTRY OF DEEDS IN BOOK 1907, PAGE 195. – AS SHOWN

14. RIGHTS, EASEMENTS, CONDITIONS, AND RESTRICTIONS SET FORTH IN WARRANTY DEED GRANTED BY METAL–TECH INC. DATED JANUARY 2, 1974 AND RECORDED IN THE YORK COUNTY REGISTRY OF DEEDS IN BOOK 2023, PAGE 253. – AS SHOWN

15. RIGHTS AND EASEMENTS GRANTED BY PRECISION SCREW MACHINE PRODUCTS INC. TO CENTRAL MAINE POWER AND NEW ENGLAND TELEPHONE AND TELEGRAPH COMPANY BY INSTRUMENT DATED AND RECORDED IN THE YORK COUNTY REGISTRY OF DEEDS 2375, PAGE 50. – AS SHOWN

16. EASEMENT DEED GRANTED BY PRECISION SCREW MACHINE PRODUCTS, INC. TO MAINE ENERGY RECOVERY COMPANY DATED APRIL 14, 1987 AND RECORDED IN THE YORK COUNTY REGISTRY OF DEEDS IN BOOK 4248, PAGE 112. – SHOWN ON PLAN

17. RIPARIAN RIGHTS OF OTHERS IN AND TO THE SACO RIVER AS THE SAME PASSES THROUGH OR BY THE INSURED PREMISES. – NOT PLOTTABLE

18. SUCH STATE OF FACTS INCLUDING NOTES DISCLOSED ON PLAN ENTITLED "PLAN OF LAND OF THE SACO–LOWELL SHOPS AND THE PEPPERELL MANUFACTURING CO., BIDDEFORD, MAINE, PREPARED BY LIBBY & DOW ENGINEER'S DATED JUNE, 1929, LAST REVISED APRIL 24, 1930 AND RECORDED IN THE YORK COUNTY REGISTRY OF DEEDS IN PLAN BOOK 11, PAGE 31. – ALL PERTINENT INFORMATION SHOWN HEREON

19. SUCH STATE OF FACTS INCLUDING NOTES DISCLOSED ON UNRECORDED PLAN ENTITLED "PLAN SHOWING LAND SURVEYED FOR MAINE ENERGY RECOVERY COMPANY" BY DOWN & COULOMBE INC. DATED JANUARY 15, 1985 WITH FINAL REVISION DATED OF JANUARY 30, 1985. – ALL PERTINENT INFORMATION SHOWN HEREON

20. SUCH STATE OF FACTS INCLUDING NOTES DISCLOSED ON PLAN ENTITLED "PLAN SHOWING LAND SOLD BY BIDDEFORD & SACO DEVELOPMENT CORP. TO GRONDIN SUPPLY CO. INC., PREPARED BY LIBBY & DOW ENGINEERS, DATED JANUARY 18, 1962 AND RECORDED IN THE YORK COUNTY REGISTRY OF DEEDS IN PLAN BOOK 32, PAGE 12. – ALL PERTINENT INFORMATION SHOWN HEREON

21. RIGHTS OF OTHERS IN AND TO THE APPURTENANT EASEMENTS KNOWN AS GOOCH STREET TO BE INSURED. – AS SHOWN

SCALE : 1" = 40'
0' 20' 40' 80'

# ALTA / NSPS Land Title Survey

59 Elm Street & 10 Gooch Street
Biddeford, York County, Maine
Made For
Port Property Management, Inc.
188 State Street, Suite 303, Portland, Maine

## Surveyor's Certification

TO: PORT PROPERTY MANAGEMENT, INC., AND 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 2016 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), 11, 13, 14, 16, 17, 19 AND 21 OF TABLE A THEREOF. THE FIELD WORK WAS COMPLETED ON , 2018.

RANDY R. LOUBIER
PROFESSIONAL LAND SURVEYOR NO. 2407

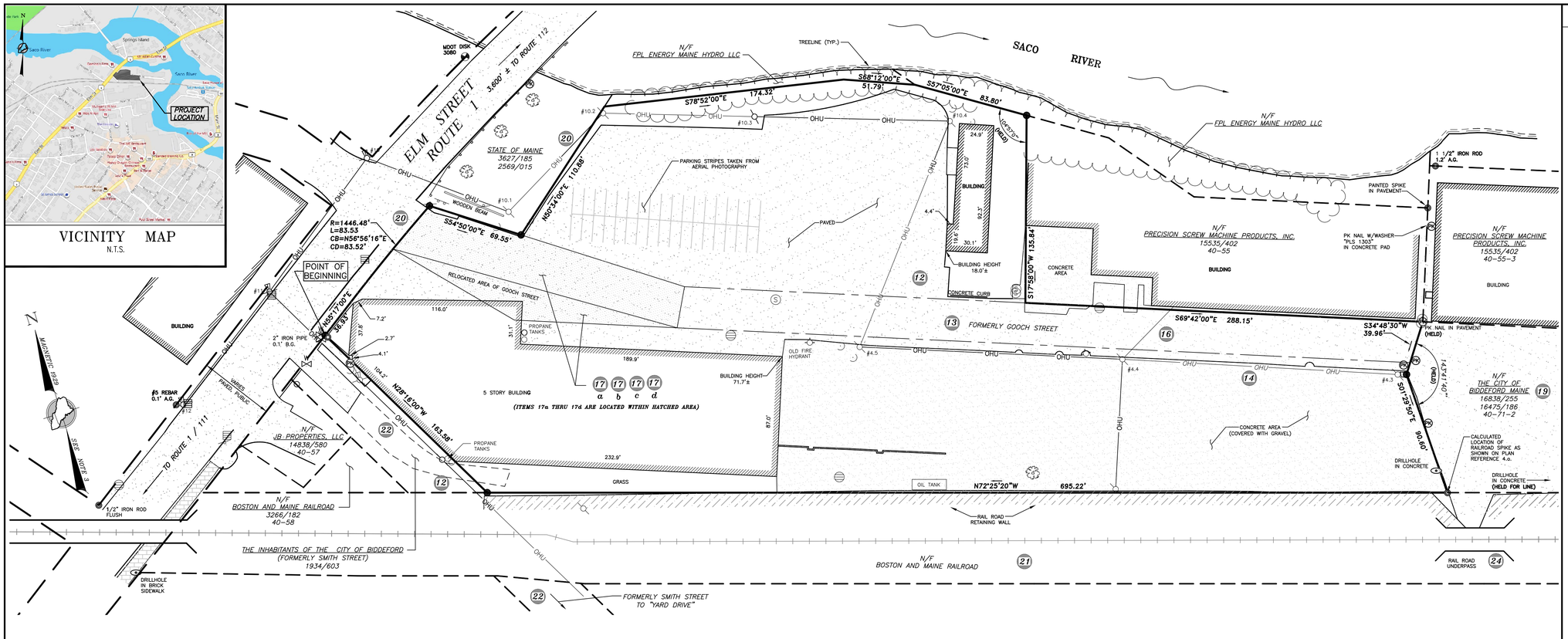
DATE OF PLAT OR MAP: DECEMBER 23, 2020
DATE OF LAST REVISION:

STATE OF MAINE
RANDY R. LOUBIER
2407
PROFESSIONAL LAND SURVEYOR

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. | 2020-295 B-Y |
| CHECKED BY: | RRL | SCALE: | 1" = 40' | DRWG. NO. | 1 |

VICINITY MAP
N.T.S.




# NOTES

1. RECORD OWNER OF THE PARCEL SURVEYED IS FIFTY NINE ELM STREET, LLC, AS DESCRIBED IN A DEED FROM PIONEER CAPITAL CORPORATION, DATED JUNE 24, 2009 AND RECORDED IN BOOK 15667, PAGE 590 IN THE YORK COUNTY REGISTRY OF DEEDS.

   TOTAL LOT AREA IS: 3.64± Ac.

2. THE PARCEL SURVEYED IS IDENTIFIED ON THE CITY OF BIDDEFORD TAX ASSESSOR'S MAP 40, PARCEL 56.

3. THE BEARINGS SHOWN ON THIS PLAN ARE BASED ON MAGNETIC NORTH 1929. TAKEN FROM PLAN REFERENCE 4.c.

4. PLAN REFERENCES:
   a. "STANDARD BOUNDARY AND TOPOGRAPHIC SURVEY FOR RAYMOND E. CRONKITE" BY OEST ASSOCIATES, INC., DATED NOVEMBER, 2002 (MARCH 15, 2006) UNRECORDED.

   b. "ALTA/ACSM LAND TITLE SURVEY (URBAN) FOR MAINE ENERGY RECOVERY COMPANY" BY DOW & COULOMBE, INC., DATED MARCH 1, 1996 (REV. APRIL 29, 1996) UNRECORDED.

   c. "PLAN OF LAND OF THE SACO–LOWELL SHOPS AND THE PEPPERELL MANUFACTURING CO." BY LIBBY & DOW, ENG'RS, DATED JUNE, 1929 (REV. FEBRUARY 21, 1930) RECORDED IN PLAN BOOK 11, PAGE 31.

   d. "MAINE DEPARTMENT OF TRANSPORTATION, RIGHT OF WAY MAP, STATE HIGHWAY "1", FEDERAL AID PROJECT NO. BR–01–1(74)" DATED JANUARY, 1985, UPDATED MAY, 1985, D.O.T. FILE NO. 16289, RECORDED IN PLAN BOOK 161, PAGE 16.

   e. "PLAN SHOWING LAND SOLD BY THE BIDDEFORD & SACO DEVELOPMENT CORP. TO GRONDIN SUPPLY CO. INC." BY LIBBY & DOW–ENG'RS, DATED JANUARY 18, 1962, RECORDED IN PLAN BOOK 32, PAGE 12.

   f. "PLAN SHOWING LAND SURVEYED FOR MAINE ENERGY RECOVERY COMPANY" BY DOW & COULOMBE, INC., DATED JANUARY 15, 1985, RECORDED IN PLAN BOOK 134, PAGE 28.

   g. "SACO–LOWELL SHOPS SACO & BIDDEFORD, MAINE" SURVEYED BY H.H. WEST, TRACING BY C.M. LIDDEN, SURVEYED JULY 26, 1949, LAST REVISED MARCH 27 1958, UNRECORDED.

   h. "STATION MAP–LANDS, BOSTON AND MAINE R.R. OPERATED BY THE BOSTON AND MAINE R.R. STATION 5212+40 TO STATION 5265+20" DATED JUNE 30, 1914, PLAN NUMBER V2ME/SL98, UNRECORDED.

5. THE WIDTH OF ELM STREET VARIES BASED ON PLAN REFERENCE 4.d. THE LAYOUT OF THE RIGHT–OF–WAY LIMITS IS BASED ON PLAN REFERENCE 4.d. AND MONUMENTATION FOUND.

6. REFERENCE IS MADE TO THE FOLLOWING EASEMENTS OF RECORD:
   (SEE SCHEDULE B–II EXCEPTIONS)

7. AS OF THE ORIGINAL DATE OF THIS PLAN, THE PARCEL SURVEYED IS LOCATED IN THE MSRD3 ZONE. PORTIONS OF BULK & SPACE REQUIREMENTS ARE AS FOLLOWS:
   MINIMUM LOT AREA = N/A (SEE BIDDEFORD ESTABLISHMENT OF ZONES–TABLE B)
   MINIMUM FRONTAGE = NONE
   SETBACKS:
   FRONT = NONE
   SIDE = NONE
   REAR = NONE
   OTHER MUNICIPAL AND STATE OVERLAY ZONES MAY EXIST AND APPLY. BEFORE PROCEEDING ON ANY PROJECT WE RECOMMEND VERIFYING CURRENT ZONE AND ALL APPLICABLE SETBACKS AND RESTRICTIONS WITH THE APPROPRIATE AGENCIES.

8. THE UTILITIES SHOWN ON THIS PLAN WERE FROM FIELD OBSERVATION ONLY. THERE MAY BE OTHER UTILITIES EXISTING THAT ARE NOT SHOWN. CONTACT DIG–SAFE (888)DIG–SAFE PRIOR TO ANY EXCAVATION WORK.

9. RIPARIAN RIGHTS BETWEEN HIGH WATER AND LOW WATER WERE NOT DETERMINED DURING THIS SURVEY.

10. THE PROPERTY DESCRIBED IN TITLE COMMITMENT FOR NO. 091620–01, EFFECTIVE DATE OF SEPTEMBER 8, 2020, IS THE SAME AS THE PROPERTY SHOWN HEREON.

11. TO THE BEST OF OUR KNOWLEDGE, BASED ON EXISTING MONUMENTATION FOUND, PLANS REFERENCED IN NOTE 4 AND RESEARCH CONDUCTED, THERE ARE NO GAPS OR GORES IN THE LOCUS PARCEL.

# SCHEDULE B–II EXCEPTIONS

1–8 – ITEMS ARE NOT SURVEY MATTERS.

9 SUCH STATE OF FACTS INCLUDING NOTES DISCLOSED ON PLAN ENTITLED "PLAN OF LAND OF THE SACO–LOWELL SHOPS AND THE PEPPERELL MANUFACTURING CO., BIDDEFORD, MAINE," PREPARED BY LIBBY & DOW ENGINEERS DATED JUNE, 1929, LAST REVISED APRIL 24, 1930.

– AS SHOWN ON ABOVE REFERENCED PLAN.

10 SUCH STATE OF FACTS INCLUDING NOTES DISCLOSED ON UNRECORDED PLAN ENTITLED "PLAN SHOWING LAND SURVEYED FOR MAINE ENERGY RECOVER COMPANY" BY DOWN & COULOMBE INC. DATED JANUARY 15, 1983 WITH FINAL REVISION DATE OF OCTOBER 4, 1986.

– AS SHOWN IN ABOVE REFERENCED PLAN.

11 SUCH STATE OF FACTS INCLUDED NOTES DISCLOSED ON PLAN ENTITLED "PLAN SHOWING LAND SOLD BY BIDDEFORD & SACO DEVELOPMENT CORP. TO GRONDIN SUPPLY CO. INC., PREPARED BY LIBBY & DOW ENGINEERS, DATED JANUARY 18, 1962 AND RECORDED IN THE YORK COUNTY REGISTRY OF DEEDS IN PLAN BOOK 32, PAGE 12.

– AS SHOWN IN ABOVE REFERENCED PLAN.

12 COVENANTS, CONDITIONS, AND RESTRICTIONS, TOGETHER WITH THE RIGHTS AND EASEMENTS GRANTED TO OTHERS OR RESERVED IN INDENTURE BY AND BETWEEN BIDDEFORD & SACO DEVELOPMENT CORPORATION AND GRAFTON LUMBER COMPANY DATED APRIL 6, 1962 AND RECORDED IN THE YORK COUNTY REGISTRY OF DEEDS IN BOOK 1484, PAGE 121.

– A PORTION OF THE ABOVE IS SHOWN ON THIS PLAN.

13 RIGHTS OF OTHERS IN AND TO THE USE OF THE PRIVATE WAY KNOWN AS GOOCH STREET LOCATED WITHIN THE BOUNDARIES OF THE INSURED LAND.

– LOCATION SHOWN ON THIS PLAN.

14 RIGHTS AND EASEMENTS GRANTED BY STORAGE REALTY CORPORATION TO CENTRAL MAINE POWER COMPANY AND NEW ENGLAND TELEPHONE AND TELEGRAPH COMPANY BY INSTRUMENT DATED JANUARY 23, 1970 AND RECORDED IN THE YORK COUNTY REGISTRY OF DEEDS IN BOOK 1489, PAGE 500.

– LOCATION SHOWN ON THIS PLAN.

15 RIGHTS AND EASEMENTS GRANTED BY STORAGE REALTY CORPORATION TO CENTRAL MAINE POWER COMPANY AND NEW ENGLAND TELEPHONE AND TELEGRAPH COMPANY BY INSTRUMENT DATED NOVEMBER 17, 1969 AND RECORDED IN THE YORK COUNTY REGISTRY OF DEEDS IN BOOK 1489, PAGE 501.

– POLE #9.4 (ELM STREET) AND POLE #9.41 NOT FOUND DURING THIS SURVEY.

16 RIGHTS AND EASEMENTS GRANTED BY STORAGE REALTY CORPORATION TO CENTRAL MAINE POWER COMPANY AND NEW ENGLAND TELEPHONE AND TELEGRAPH COMPANY BY INSTRUMENT DATED FEBRUARY 2, 1970 AND RECORDED IN THE YORK COUNTY REGISTRY OF DEEDS IN BOOK 1871, PAGE 442.

– LOCATION SHOWN ON THIS PLAN.

RIGHTS, EASEMENTS, COVENANTS, CONDITIONS, AND RESTRICTIONS SET FORTH IN THE FOLLOWING:

17a AGREEMENT BY AND BETWEEN CENTRAL MAINE POWER COMPANY AND STORAGE REALTY CORP. DATED MARCH 18, 1971 AND RECORDED IN THE YORK COUNTY REGISTRY OF DEEDS IN BOOK 1907, PAGE 182.

– LOCATION SHOWN ON THIS PLAN.

17b AGREEMENT BY AND BETWEEN BIDDEFORD & SACO DEVELOPMENT CORPORATION AND STORAGE REALTY CORP. DATED MARCH 18, 1971 AND RECORDED IN THE YORK COUNTY REGISTRY OF DEEDS IN BOOK 1907, PAGE 186.

– LOCATION SHOWN ON THIS PLAN.

17c AGREEMENT BY AND BETWEEN METAL–TECH INC. AND STORAGE REALTY CORP. DATED MARCH 25, 1971 AND RECORDED IN THE YORK COUNTY REGISTRY OF DEEDS IN BOOK 1907, PAGE 190.

– LOCATION SHOWN ON THIS PLAN.

17d AGREEMENT BY AND BETWEEN GRONDIN SUPPLY CO. AND STORAGE REALTY CORP. DATED MARCH 18, 1971 AND RECORDED IN THE YORK COUNTY REGISTRY OF DEEDS IN BOOK 1907, PAGE 195.

– LOCATION SHOWN ON THIS PLAN.

18 RIGHTS AND EASEMENTS SET FORTH IN QUITCLAIM DEED WITH COVENANT GRANTED BY STORAGE REALTY CORP. TO THE CITY OF BIDDEFORD DATED OCTOBER 29, 1984 AND RECORDED IN THE YORK COUNTY REGISTRY OF DEEDS IN BOOK 3403, PAGE 20.

– NOT LOCATED WITHIN LOCUS PARCEL.

# SCHEDULE B–II EXCEPTIONS CONTINUED

19 RIGHTS AND EASEMENTS SET FORTH IN QUITCLAIM DEED WITH COVENANT GRANTED BY STORAGE REALTY CORP. TO MAINE ENERGY RECOVERY COMPANY DATED AUGUST 13, 1985 AND RECORDED IN THE YORK COUNTY REGISTRY OF DEEDS IN BOOK 3611, PAGE 161.

– LOCATION SHOWN ON THIS PLAN.

20 NOTICE OF LAYOUT AND TAKING BY THE STATE OF MAINE BY ITS DEPARTMENT OF TRANSPORTATION DATED AUGUST 27, 1985 AND RECORDED IN THE YORK COUNTY REGISTRY OF DEEDS IN BOOK 3627, PAGE 185

– LOCATION SHOWN ON THIS PLAN.

21 LAND OF BOSTON & MAINE R.R.

– LOCATION SHOWN ON THIS PLAN.

22 RIGHTS OF OTHERS IN AND TO THE USE OF SMITH STREET.

– SEE SMITH STREET SHOWN ON THIS PLAN.

23 RIPARIAN RIGHTS OF OTHERS; THE FINAL POLICY WILL NOT ENSURE THE STATUS OF RIPARIAN RIGHTS OF THE OWNER OF THE INSURED PREMISES.

– RIPARIAN RIGHTS NOT DETERMINED AS PART OF THIS SURVEY.

24 TITLE TO AND RIGHTS OF OTHERS IN AND TO THE UNDERPASS WHICH CROSSES THE BOSTON & MAINE R.R.

– LOCATION OF AN UNDERPASS IS SHOWN ON THIS PLAN.

# SURVEY LEGAL DESCRIPTION

A CERTAIN LOT, OR PARCEL OF LAND, LOCATED ON THE SOUTHERLY SIDE OF ELM STREET, IN THE CITY OF BIDDEFORD, COUNTY OF YORK, STATE OF MAINE, BEING BOUND AND DESCRIBED AS FOLLOWS:

BEGINNING ON THE SOUTHERLY SIDE OF ELM STREET, AT A PROPOSED MAG NAIL W/WASHER STAMPED "NCS 2080" TO BE SET AT THE INTERSECTION OF THE SOUTHERLY SIDE OF ELM STREET AND THE EASTERLY SIDE OF LAND NOW OR FORMERLY (N/F) THE INHABITANTS OF THE CITY OF BIDDEFORD (BEING A PORTION OF LAND FORMALLY KNOWN AS SMITH STREET), AS DESCRIBED IN BOOK 1934, PAGE 603;

THENCE: N 55°17'00" E, ALONG SAID ELM STREET, 36.93', TO A POINT;

THENCE: FOLLOWING A CURVE TO THE RIGHT, ALONG SAID ELM STREET, HAVING A RADIUS OF 1446.48', AN ARC LENGTH OF 83.53', A CHORD BEARING OF N 56°56'16" E, AND A CHORD DISTANCE OF 83.52', TO A PROPOSED #5 REBAR W/ CAP STAMPED "NCS 2080" TO BE SET;

THENCE: S 54°50'00" E, ALONG LAND N/F STATE OF MAINE, AS DESCRIBED IN BOOK 3569, PAGE 015, 69.55', TO A PROPOSED #5 REBAR W/CAP STAMPED "NCS 2080" TO BE SET;

THENCE: N 50°34'00" E, ALONG SAID STATE OF MAINE, 110.88', TO LAND N/F FPL ENERGY MAINE HYDRO LLC;

THENCE: S 78°52'00" E, ALONG SAID FPL ENERGY MAINE HYDRO LLC, 174.32', TO A POINT;

THENCE: S 68°12'00" E, ALONG SAID FPL ENERGY MAINE HYDRO LLC, 51.79', TO A POINT;

THENCE: S 57°05'00" E, ALONG SAID FPL ENERGY MAINE HYDRO LLC, 83.80', TO A PROPOSED #5 REBAR W/CAP STAMPED "NCS 2080" TO BE SET;

THENCE: S 17°58'00" W, ALONG LAND N/F PRECISION SCREW MACHINE PRODUCTS, INC., AS DESCRIBED IN BOOK 15535, PAGE 402, 135.84', TO A POINT;

THENCE: S 69°42'00" E, ALONG SAID PRECISION SCREW MACHINE PRODUCTS, INC., 288.15', TO A P/K NAIL FOUND;

THENCE: S 34°48'30" W, ALONG LAND N/F CITY OF BIDDEFORD, MAINE AS DESCRIBED IN BOOK 16838, PAGE 255 AND BOOK 16475, PAGE 186, 39.96', TO A PROPOSED #5 REBAR W/CAP STAMPED "NCS 2080" TO BE SET;

THENCE: S 01°29'50" E, ALONG SAID CITY OF BIDDEFORD, MAINE 90.60', TO A POINT;

THENCE: N 72°25'20" W, ALONG LAND N/F BOSTON AND MAINE RAILROAD, 695.22', TO A PROPOSED #5 REBAR W/CAP STAMPED "NCS 2080" TO BE SET;

THENCE: N 28°16'00" W, ALONG SAID CITY OF BIDDEFORD, MAINE 163.58', TO THE POINT OF BEGINNING.

THE ABOVE DESCRIBED PARCEL CONTAINS 3.64 ACRES, MORE OR LESS.

# LEGEND

- NEW PROPERTY MARKER (PROPOSED)
- FOUND IRON (SIZE & TYPE AS NOTED)
- FOUND DRILL HOLE
- UTILITY POLE (NUMBER AS NOTED)
- GUY WIRE ANCHOR
- FOUND DECIDUOUS TREE (SIZE & TYPE AS NOTED)
- BOUNDARY LINE
- EASEMENT LINE
- EDGE OF WATER
- EDGE OF GRAVEL
- EDGE OF PAVEMENT
- RIGHT–OF–WAY LINE
- ABUTTER LINE
- OVERHEAD UTILITY
- FORMER DEED LINES
- N/F — NOW OR FORMERLY OWNED BY
- 1234/567 — DEED BOOK AND PAGE
- 12–34 — TAX MAP–LOT
- (123.45) — PARENTHESIS DENOTE RECORD DATA

# FLOOD ZONE CRITERIA

| | |
|---|---|
| COUNTY: | YORK |
| COMMUNITY: | BIDDEFORD |
| COMM NO: | 230145 |
| PANEL NO: | 0004 B |
| EFFECTIVE DATE: | MAY 15, 1984 |
| FLOOD ZONE: | PORTIONS BELOW ELEVATION 57 ARE WITHIN FLOOD ZONE AB REMAINDER OF AREA IS IN FLOODZONE B |

# ALTA CERTIFICATION

CATIC TITLE INSURANCE COMPANY
TITLE NO. 091620–01
EFFECTIVE DATE: SEPTEMBER 8, 2020

TO: TOM WATSON & CO., LLC, ITS SUCCESSORS AND ASSIGNS LENDER AND CATIC TITLE INSURANCE COMPANY AND THE SUCCESSORS AND ASSIGNS OF EACH:

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2016 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, 6b, 7a & b(1), 8, 9, 11, 13, 14, 16, 17, 19, 20 AND 21 OF TABLE A THEREOF. THE FIELDWORK WAS COMPLETED ON 10/19/2020.

DATE OF PLAT OR MAP:
10/28/2020

*Preliminary*

TROY F. McDONALD — DATE
MAINE PROFESSIONAL LAND SURVEYOR. No. 2080

| Revision: | By: | Date: | Change: |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |

| | | | |
|---|---|---|---|
| PROJECT: 42267 | DRAWING NAME: 42267.dwg | | |
| ISSUED: OCTOBER 28, 2020 | SCALE: 1"=40' | FB # 438 | DRAWN BY: ASF |
| FIELDED BY: ASF/CJB | FIELD DATE: 10/19/2020 | | CHECKED BY: DMM/TFM |

Drawing Name and Location:
ALTA/NSPS LAND TITLE SURVEY
59 ELM STREET, BIDDEFORD, MAINE

Owner:
FIFTY NINE ELM STREET, LLC
380 WARREN AVENUE, PORTLAND, MAINE

Prepared For:
PORT PROPERTY MANAGEMENT

SURVEYING • ENGINEERING • LAND PLANNING
Northeast Civil Solutions
INCORPORATED
381 PAYNE ROAD, SCARBOROUGH, MAINE 04074
tel 207.883.1000 fax 207.883.1001
e–mail / website info@northeastcivilsolutions.com www.northeastcivilsolutions.com

0 40' 80' 160'

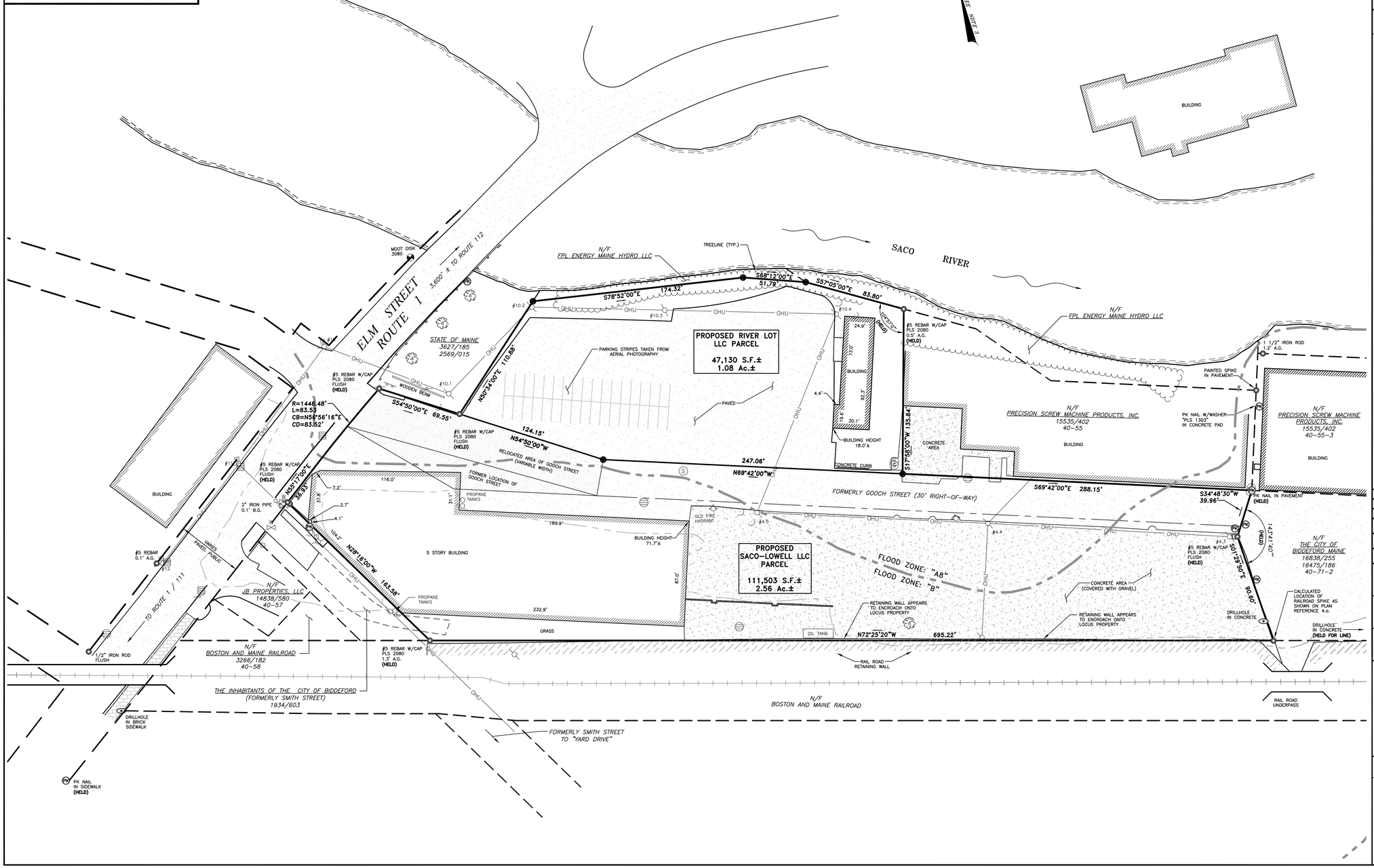
# STAMP AND SIGNATURE

*Preliminary*

TROY F. McDONALD — DATE
MAINE PROFESSIONAL LAND SURVEYOR. No. 2080

E:\Land Projects\42000\42267 Port Property Management–Biddeford\dwg\42267.dwg

VICINITY MAP
N.T.S.




# LEGEND

| | |
|---|---|
| ● | #5 REBAR WITH CAP (PROPOSED) |
| | FOUND IRON (SIZE & TYPE AS NOTED) |
| | FOUND DRILL HOLE |
| | UTILITY POLE (NUMBER AS NOTED) |
| | GUY WIRE ANCHOR |
| | FOUND DECIDUOUS TREE (SIZE & TYPE AS NOTED) |
| | BOUNDARY LINE |
| | EASEMENT LINE |
| | EDGE OF WATER |
| | EDGE OF GRAVEL |
| | EDGE OF PAVEMENT |
| | RIGHT-OF-WAY LINE |
| | ABUTTER LINE |
| OHU | OVERHEAD UTILITY |
| | FORMER DEED LINES |
| N/F | NOW OR FORMERLY OWNED BY |
| 1234/567 | DEED BOOK AND PAGE |
| 12-34 | TAX MAP-LOT |
| (123.45') | PARENTHESIS DENOTE RECORD DATA |

# NOTES

1. RECORD OWNER OF THE PARCEL SURVEYED IS FIFTY NINE ELM STREET, LLC, AS DESCRIBED IN A DEED FROM PIONEER CAPITAL CORPORATION, DATED JUNE 24, 2009 AND RECORDED IN BOOK 15667, PAGE 590 IN THE YORK COUNTY REGISTRY OF DEEDS.

   TOTAL LOT AREA IS: 3.64± Ac.

2. THE PARCEL SURVEYED IS IDENTIFIED ON THE CITY OF BIDDEFORD TAX ASSESSOR'S MAP 40, PARCEL 56.

3. THE BEARINGS SHOWN ON THIS PLAN ARE BASED ON MAGNETIC NORTH 1929. TAKEN FROM PLAN REFERENCE 4.a.

4. PLAN REFERENCES:
   a. "ALTA / NSPS LAND TITLE SURVEY, 59 ELM STREET, BIDDEFORD, MAINE" BY NORTHEAST CIVIL SOLUTIONS, INC., DATED NOVEMBER 4, 2020, LAST REVISED NOVEMBER 20,2020, NCS PROJECT NO. 42267.

5. THE WIDTH OF ELM STREET VARIES BASED ON PLAN REFERENCE 4.d. THE LAYOUT OF THE RIGHT-OF-WAY LIMITS IS BASED ON PLAN REFERENCE 4.d. AND MONUMENTATION FOUND.

6. REFERENCE IS MADE TO THE FOLLOWING EASEMENTS OF RECORD:
   (SEE SCHEDULE B-II EXCEPTIONS)

7. THE UTILITIES SHOWN ON THIS PLAN WERE FROM FIELD OBSERVATION ONLY. THERE MAY BE OTHER UTILITIES EXISTING THAT ARE NOT SHOWN. CONTACT DIG-SAFE (888)DIG-SAFE PRIOR TO ANY EXCAVATION WORK.

8. RIPARIAN RIGHTS BETWEEN HIGH WATER AND LOW WATER WERE NOT DETERMINED DURING THIS SURVEY.

| Revision: | By: | Date: | Change: |
|---|---|---|---|
| | | | |
| | | | |

| | | |
|---|---|---|
| PROJECT: 42267 | DRAWING NAME: 42267 Lot Split.dwg | |
| ISSUED: DECEMBER 15, 2020 | SCALE: 1"=40' | FB # 438 | DRAWN BY: JAP |
| FIELDED BY: ASF / CJB | FIELD DATE: 10/19/2020 | CHECKED BY: DMM / TFM |

Drawing Name and Location:

LOT SPLIT PLAN
59 ELM STREET, BIDDEFORD, MAINE

Owner:

FIFTY NINE ELM STREET, LLC
380 WARREN AVENUE, PORTLAND, MAINE 04101

Prepared For:

PORT PROPERTY MANAGEMENT

SURVEYING • ENGINEERING • LAND PLANNING
Northeast Civil Solutions
INCORPORATED
381 PAYNE ROAD, SCARBOROUGH, MAINE 04074
tel 207.883.1000 fax 207.883.1001
e-mail / website info@northeastcivilsolutions.com www.northeastcivilsolutions.com

0 1' 2' 4'

STAMP AND SIGNATURE

*Preliminary*

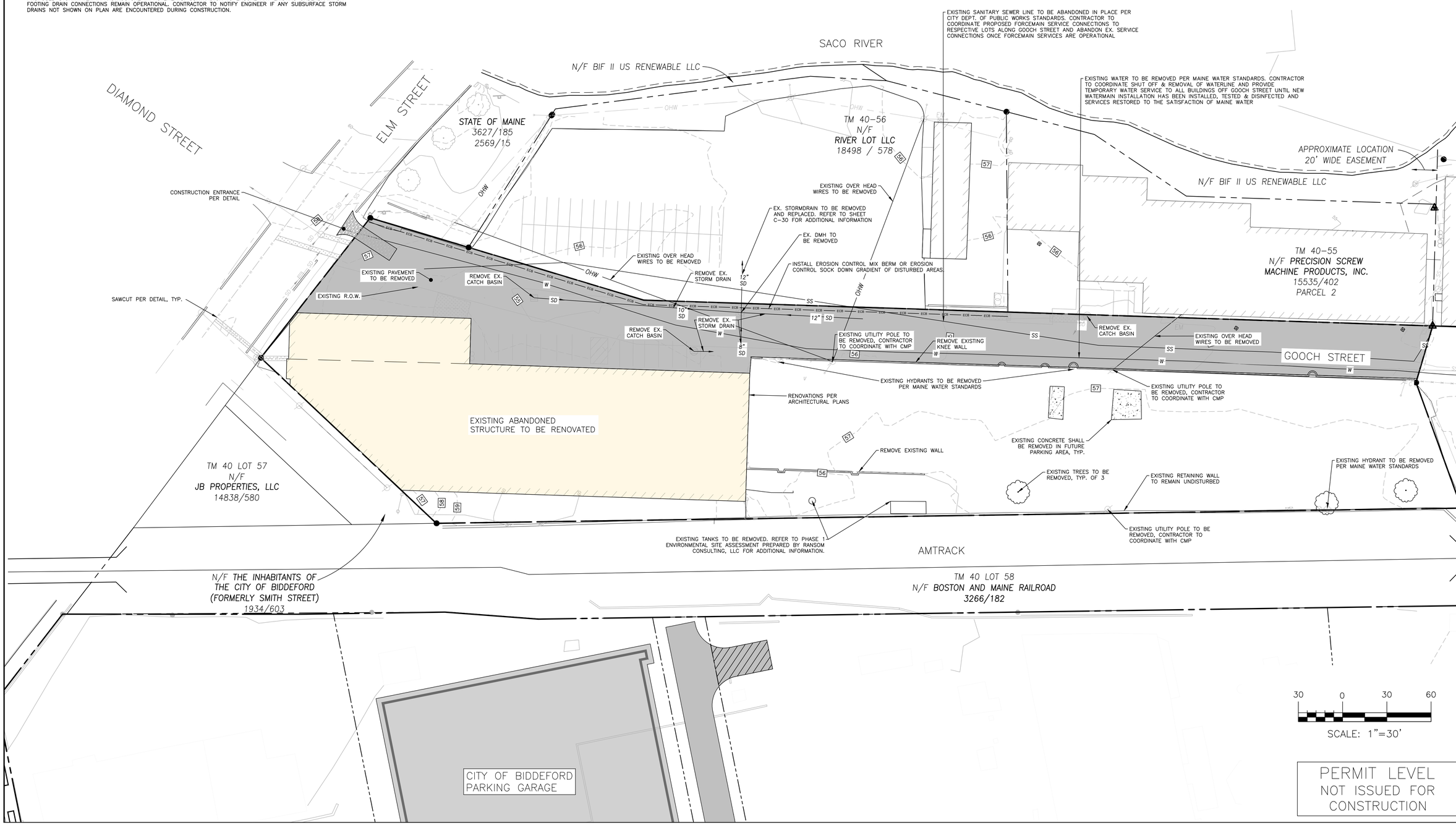
TROY F. McDONALD
MAINE PROFESSIONAL LAND SURVEYOR No. 2080

DATE

E:\Land Projects\42000\27777\dwg\27777.dwg

GENERAL NOTES:

1. EXISTING ASPHALT TO BE REMOVED SHALL BE STRIPPED AND PROPERLY DISPOSED OF OFFSITE.
2. ALL DISPOSAL OF DEMOLITION DEBRIS OR WASTE SHALL BE IN ACCORDANCE WITH ALL LOCAL, STATE, & FEDERAL REGULATIONS. CONTRACTOR SHALL PROVIDE OWNER WITH APPROPRIATE "BILLS OF LADING" TO DEMONSTRATE PROPER DISPOSAL OF ALL MATERIALS.
3. SITE DEMOLITION SHALL NOT OCCUR UNTIL PROPER ABATEMENT PROCEDURES HAVE OCCURRED. ABATEMENT, IF NECESSARY, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
4. THE CONTRACTOR SHALL CALL THE APPROPRIATE UTILITY COMPANIES AND DIG SAFE AT LEAST 72 HOURS PRIOR TO EXCAVATION TO REQUEST EXACT FIELD LOCATION FOR UTILITIES. OTHERWISE IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF UNDERGROUND UTILITIES AND LOCATE POTENTIAL CONFLICT WITH THE APPROVED PLANS PRIOR TO CONSTRUCTION.
5. ALL CONSTRUCTION SIGNAGE IS TEMPORARY AND WILL BE REMOVED AT PROJECT COMPLETION. FINAL SIGNAGE WORDING AND PLACEMENT LOCATION TO BE ACCEPTED BY THE CITY.
6. SEDIMENT BARRIERS TO BE PLACED DIRECTLY ON THE FRONT AND SIDE PROPERTY LINES, DOWN GRADIENT OF THE PROPOSED PROJECT WORK PER DETAIL; FENCES ARE OFFSET OF THE PROPERTY LINES AS SHOWN ON THE PLAN FOR CLARITY PURPOSES AND DO NOT NECESSARILY DEPICT THE PHYSICAL LOCATION.
7. CONTRACTOR SHALL PLACE CATCH BASIN INLET PROTECTION ON CATCH BASINS AND FIELD INLETS DOWN-GRADIENT OF ALL NON-STABILIZED SURFACES, PER DETAIL.
8. DEMOLITION PLAN IS NOT INCLUSIVE OF ALL EXISTING ITEMS TO BE REMOVED AS PART OF SITE CONSTRUCTION INCLUDING BUT NOT LIMITED TO LANDSCAPING, UTILITIES, WORK WITHIN THE ROW, ETC. ALL DEMOLITION WORK SHALL BE IN ACCORDANCE WITH THE CITY OF BIDDEFORD REGULATIONS.
9. CONTRACTOR TO PROVIDE ACCESS TO EXISTING BUSINESSES ALONG GOOCH STREET THROUGH THE DURATION OF CONSTRUCTION.
10. ALL EXISTING STORM DRAINS SHOWN IN THE PLAN SET ARE TO BE REMOVED. PLEASE REFER TO C-30 FOR PROPOSED STORMWATER INFRASTRUCTURE IMPROVEMENTS. CONTRACTOR TO ENSURE ANY EXISTING UNDERDRAIN OR FOOTING DRAIN CONNECTIONS REMAIN OPERATIONAL. CONTRACTOR TO NOTIFY ENGINEER IF ANY SUBSURFACE STORM DRAINS NOT SHOWN ON PLAN ARE ENCOUNTERED DURING CONSTRUCTION.




PERMIT LEVEL
NOT ISSUED FOR
CONSTRUCTION

| ISSUED FOR | BY | DATE |
|---|---|---|
| SRCC | PFH | 1/28/2021 |
| CITY REVIEW | PFH | 2/5/2021 |
| DEP SW APP | PFH | 3/30/2021 |
| FINAL APP | PFH | 4/7/2021 |
| COMMENT RESPONSE | PFH | 5/14/2021 |

DRAWING NAME: CONSTRUCTION MANAGEMENT / E&SC PLAN

PROJECT NAME/ ADDRESS: 1 GOOCH STREET REDEVELOPMENT

CLIENT/OWNER OF RECORD: TOM WATSON & CO. 188 STATE STREET, 3RD FLOOR, PORTLAND ME 04101

ACORN ENGINEERING, INC.

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ACORN ENGINEERING, INC.
100 COMMERCIAL STREET, PORTLAND, MAINE 04101
PO BOX 3422 PORTLAND, ME 04104-3422
(207) 775-2655

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| FILE: | 1093.10_CIVIL |
| JN: | 1093.10 |
| SCALE: | AS NOTED |
| DESIGNED BY: | PFH |
| DRAWN BY: | ZMS |
| CHECKED BY: | WHS |

STATE OF MAINE
PETER F. HEIL
15318
LICENSED
PROFESSIONAL ENGINEER

DRAWING NO.
C-03

GENERAL NOTES:

1. ALL SIDEWALK AND VERTICAL GRANITE CURB TO BE REPLACED SHALL BE REBUILT TO CITY OF BIDDEFORD STANDARD.
2. ALL PAVEMENT STRIPING AND MARKINGS SHALL COMPLY TO CITY OF BIDDEFORD STANDARDS.
3. ANY ASPHALT AND CONCRETE TO BE REMOVED SHALL BE STRIPPED AND PROPERLY DISPOSED OF OFFSITE.
4. CURB TO BE REMOVED, STOCKPILED AND RESET IN ACCORDANCE WITH DETAIL. BROKEN CURB SHALL BE PROPERLY DISPOSED OF AND SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
5. ALL RAMPS TO CONFORM TO ADA GUIDELINES. SLOPE SHALL NOT EXCEED 1 INCH PER FOOT.
6. ALL SITE SIGNAGE & PAVEMENT MARKINGS TO COMPLY WITH MUTCD STANDARDS. CONTRACTOR TO COORDINATE AND INSTALL.
7. FOLLOWING COMPLETION OF CONSTRUCTION, THE OWNER SHALL BE RESPONSIBLE FOR THE MAINTENANCE AND MANAGEMENT OF DRIVEWAYS, TRASH REMOVAL AND SNOW REMOVAL.
8. THE CITY OF BIDDEFORD SHALL NOT BE RESPONSIBLE FOR THE COST OF MATERIALS, INSTALLATION, MAINTENANCE, OR POWER FOR STREETLIGHTING. THE OWNER SHALL ASSUME ALL COSTS ASSOCIATED WITH THE LIGHTING SYSTEM.

SIGNATURE (CITY PLANNER): ____________________ DATE:__________
GREG TANSLEY (CITY PLANNER), DULY AUTHORIZED TO SIGN ON BEHALF OF THE BIDDEFORD PLANNING BOARD

NOTE: DUE TO THE CORONAVIRUS PANDEMIC AND THE GOVERNOR'S DECLARATION OF A CIVIL STATE OF EMERGENCY, THE BIDDEFORD PLANNING BOARD AUTHORIZED THE CITY PLANNER TO SIGN THE FINAL PLAN ON BEHALF OF THE PLANNING BOARD AND DECLARED THAT THE FINAL PLAN, ONCE SIGNED BY THE CITY PLANNER, SHALL BE DEEMED TO HAVE BEEN SIGNED BY THE INDIVIDUAL MEMBERS OF THE PLANNING BOARD, EVIDENCING APPROVAL OF THE FINAL PLAN.

## SPACE AND BULK STANDARDS

| ZONE: | REQUIRED (MSRD3) | REQUIRED (G-1) | EXISTING | PROPOSED |
|---|---|---|---|---|
| MINIMUM LOT SIZE | NONE | NONE (WITHIN EX. STRUCTURES ONLY) | 111,442 SF | 111,442 SF |
| MINIMUM STREET FRONTAGE | NONE | – | GOOCH STREET: 729' ELM STREET: 120' | GOOCH STREET: 729' ELM STREET: 120' |
| MINIMUM FRONT YARD SETBACK | NONE | – | 0.90' | 0.90' |
| MINIMUM REAR YARD SETBACK | NONE | – | 11.70' | 11.70' |
| MINIMUM SIDE YARD SETBACK | NONE | – | 0.14' | 0.14' |
| MINIMUM BUILDING HEIGHT | MIN. 2 STORIES OR 26 FEET | – | 71' | 71' |
| MINIMUM SHORE FRONTAGE | – | NONE (WITHIN EX. STRUCTURES ONLY) | – | – |
| SACO RIVER SETBACK (INCLUDING PARKING AREAS) | – | 100' FROM NORMAL HIGH-WATER LINE | – | > 100' |
| SACO RIVER NO-CUT ZONE (SRCC) | – | 75' | – | N/A |
| MAX LOT COVERAGE | 100% | – | 96.3% | 85.2% |
| SHORELAND ZONE MAX LOT COVERAGE | – | 70% | 96.3% | 85.2% |

* INCLUDING THE GOOCH STREET ROADWAY IMPROVEMENTS

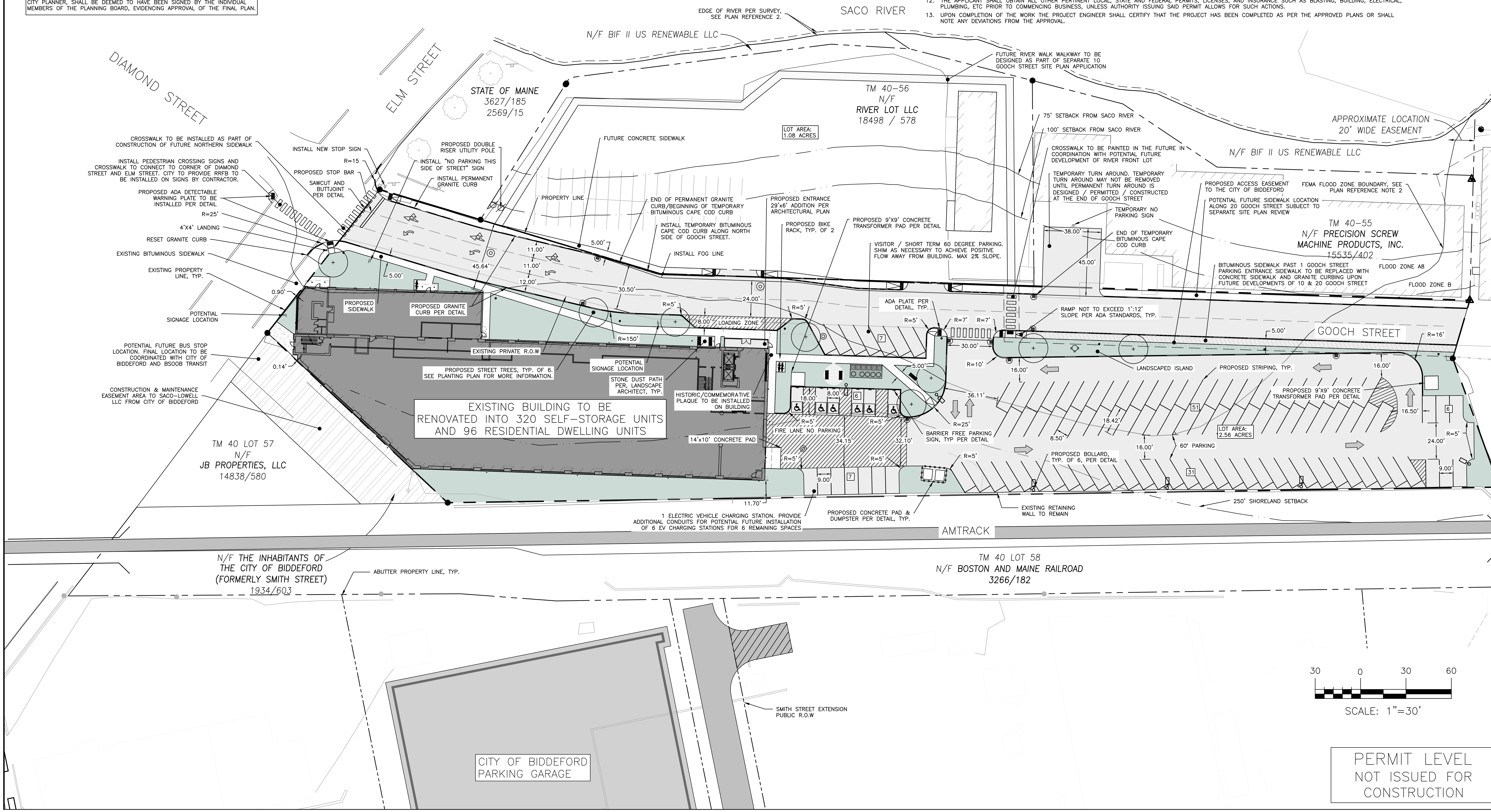
## PARKING SUMMARY

| USE | UNITS | SPACES REQUIRED | PROPOSED |
|---|---|---|---|
| SELF-STORAGE | 320 | 1 SPACE/50 UNITS = 7 SPACES | – |
| RESIDENTIAL | 96 | 1 SPACE / DWELLING UNIT (EXCLUSIVELY FOR & OCCUPANCY RESTRICTED) = 96 SPACES | – |
| MULTIFAMILY DEVELOPMENTS | – | INCREASE OF 5% (OF 96 SPACES) TO ALLOW FOR VISITORS = 5 SPACES | – |
| ADA (8'X18') | – | – | 6 |
| STANDARD (9'X18') | – | – | 13 |
| 60 DEGREE (8.5'X18.42') | – | – | 89 |
| TOTAL SPACES | – | 108 | 108 |

PLAN REFERENCES:
1. "BIDDEFORD PARKING GARAGE, MERC SITE" PLAN SET, PREPARED BY DESMAN, DATED SEPTEMBER 18, 2020.
2. "ALTA/NSPS LAND TITLE SURVEY" PREPARED BY OWEN HASKELL, INC., DATED DECEMBER 18, 2020.

## CONDITIONS OF APPROVAL:

1. PRIOR TO ANY GROUND DISTURBANCE OR ISSUANCE OF ANY PERMITS:
A. THE APPLICANT MUST SUBMIT A RECORDED COPY OF THE SUBDIVISION/SITE PLAN TO THE PLANNING DEPARTMENT.
B. A PRE-CONSTRUCTION MEETING WITH THE CONTRACTOR NEEDS TO BE HELD WITH THE PLANNING DEPARTMENT TO DISCUSS INSPECTION REQUIREMENTS.
C. BEST MANAGEMENT PRACTICES SHALL BE ADHERED TO DURING ALL GROUND DISTURBANCE OPERATIONS. ALL CATCH BASIN'S IN THE VICINITY OF EARTHWORK OPERATIONS SHALI HAVE SILT SACKS INSTALLED & MAINTAINED FOR THE DURATION OF THE WORK.
D. A PERFORMANCE GUARANTEE (ACCEPTABLE TO THE PLANNING DEPARTMENT) IN THE AMOUNT DETERMINED BY THE CITY SHALL BE SUBMITTED TO THE PLANNING DEPARTMENT.
2. PRIOR TO COMMENCING ANY WORK IN THE CITY RIGHT-OF-WAY THE APPLICANT MUST OBTAIN A ROAD-OPENING PERMIT FROM THE PUBLIC WORKS DEPARTMENT.
3. A SEWER PERMIT APPLICATION MUST BE FILED AND APPLICABLE FEES PAID AS DETERMINED BY THE WASTEWATER DEPARTMENT. CONTINUED USE OF FLOOR DRAINS MUST BE APPROVED BY THE SEWER DEPARTMENT. ROOF DRAINS CONNECTED TO THE SEWER SYSTEM MUST BE DISCONNECTED AS PART OF THIS APPROVAL.
4. PRIOR TO THE ISSUANCE OF A SEWER PERMIT:
1. PROVIDE WRITTEN EVIDENCE OF THE AUTHORIZATION FOR THE APPLICANT TO CONVEY SEWERAGE VIA THE SYSTEM AT 1 GOOCH STREET.
2. NO TRASH IS PERMITTED TO BE PLACED AT THE CURB FOR CITY PICKUP. TRASH PICKUP AND DISPOSAL, FOR ALL UNITS ASSOCIATED WITH THIS APPROVAL OR PREVIOUS APPROVALS, IS THE RESPONSIBILITY OF THE APPLICANT.
3. TEMPORARY TRASH STORAGE IS LIMITED OUTSIDE OF THE BUILDINGS ONLY IN THE APPROVED, FENCED IN, SOLID WASTE STORAGE AREA INDICATED ON THE APPROVED PLANS.
4. STANDARD CONDITIONS OF APPROVAL APPLY.
5. PRIOR TO ISSUANCE OF AN OCCUPANCY PERMIT:
A. THE PLANNING DEPARTMENT SHALL CONDUCT A COMPLIANCE INSPECTION AND SHALL DETERMINE THAT ALL REQUIRED SITE IMPROVEMENTS RELATED TO THE PUBLIC'S HEALTH, SAFETY, AND WELFARE HAVE BEEN COMPLETED, AND THAT THE CITY HOLDS A PERFORMANCE GUARANTEE SUFFICIENT TO COVER ANY REMAINING SITE IMPROVEMENTS AND/OR DEFICIENCIES.
10. CONFIRM E-911 ADDRESSING WITH JOANN FISK AT THE BIDDEFORD POLICE DEPARTMENT.
11. IF REQUESTED BY THE PLANNING DEPARTMENT, COPIES OF MAINTENANCE LOGS FOR THE CATCH BASINS SHALL BE PROVIDED TO THE CITY.
12. THE APPLICANT SHALL OBTAIN ALL OTHER PERTINENT LOCAL, STATE AND FEDERAL PERMITS, LICENSES, AND INSURANCE SUCH AS BLASTING, BUILDING, ELECTRICAL, PLUMBING, ETC PRIOR TO COMMENCING BUSINESS, UNLESS AUTHORITY ISSUING SAID PERMIT ALLOWS FOR SUCH ACTIONS.
13. UPON COMPLETION OF THE WORK THE PROJECT ENGINEER SHALL CERTIFY THAT THE PROJECT HAS BEEN COMPLETED AS PER THE APPROVED PLANS OR SHALL NOTE ANY DEVIATIONS FROM THE APPROVAL.




PERMIT LEVEL
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| ISSUED FOR | BY / DATE |
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| SRCC | PFH 1/28/2021 |
| CITY REVIEW | PFH 2/3/2021 |
| DEP SW APP | PFH 3/30/2021 |
| FINAL APP | PFH 4/7/2021 |
| COMMENT RESPONSE | PFH 5/14/2021 |

DRAWING NAME: **SITE PLAN**

PROJECT NAME/ ADDRESS: **1 GOOCH STREET REDEVELOPMENT**

CLIENT/OWNER OF RECORD: TOM WATSON & CO.
188 STATE STREET, 3RD FLOOR, PORTLAND ME 04101


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ACORN ENGINEERING, INC.
PO BOX 3372, PORTLAND MAINE 04101
(207) 775-2655


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| CHECKED BY: | WHS |

STATE OF MAINE
PETER F. HEIL
15318
LICENSED PROFESSIONAL ENGINEER
5/13/21

DRAWING NO.
C-10

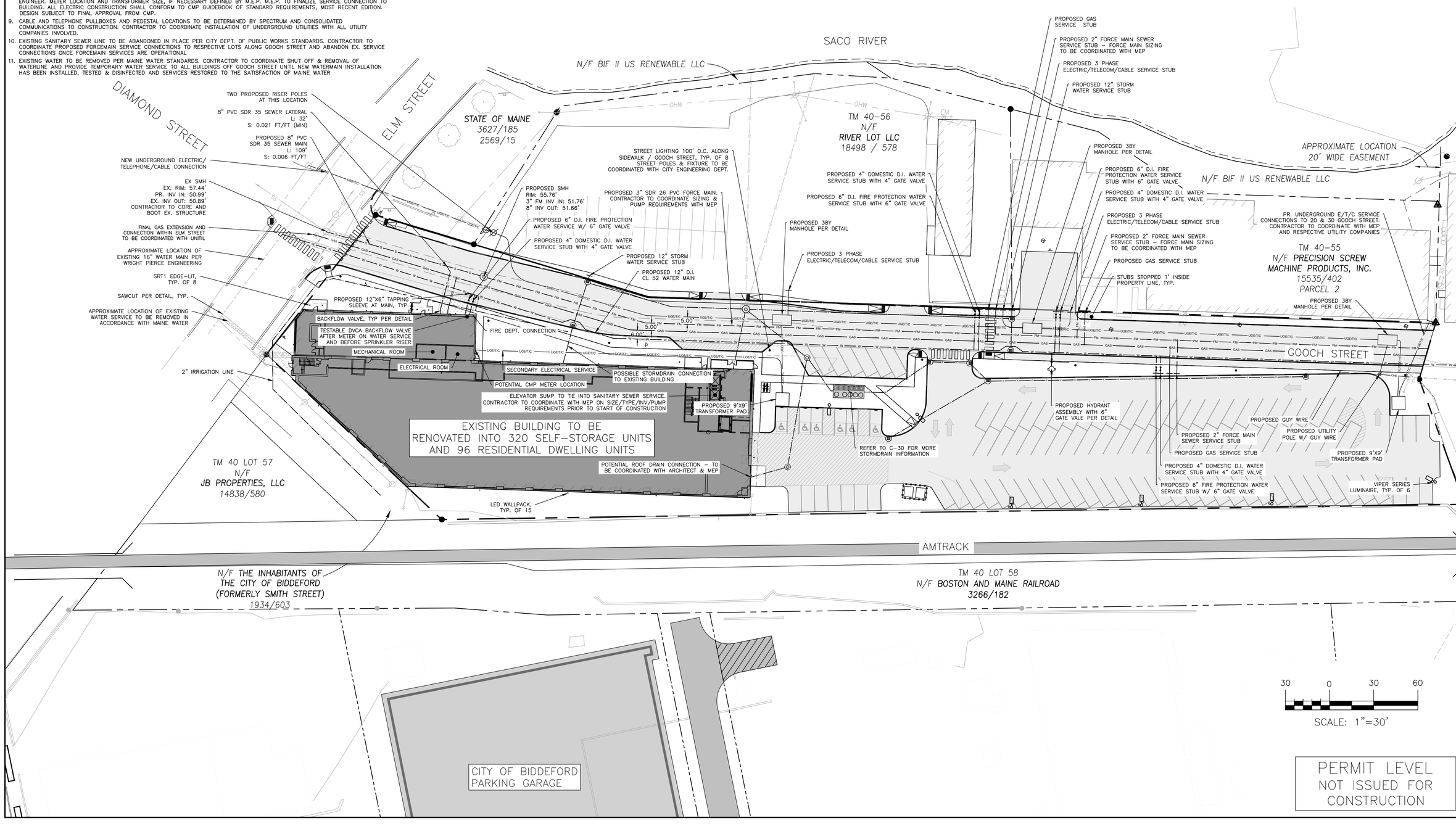
GENERAL NOTES:

1. LOCATION OF PROPOSED CONNECTIONS ARE APPROXIMATE. CONTRACTOR TO CONTACT ENGINEER IF FIELD INFORMATION VARIES FROM INFORMATION ON PLANS.
2. CONTRACTOR IS TO BE CAUTIONED THAT CERTAIN LOCATIONS AND/OR ELEVATIONS OF EXISTING UTILITIES HAVE BEEN PROVIDED THROUGH UTILITY COORDINATION OR OTHER OBSERVATIONS. INFORMATION IS NOT TO BE RELIED UPON AS EXACT OR COMPLETE. CONTRACTOR TO FIELD VERIFY AND COORDINATE WITH UTILITY COMPANY AND DIG SAFE NO LESS THAN 72 HOURS PRIOR TO ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF ALL UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS INDICATED IN THE CONTRACT DOCUMENTS. CONTRACTOR TO NOTIFY ENGINEER OF ANY DIFFERENTIATIONS FROM EXISTING CONDITIONS, INCLUDING UTILITY INFORMATION, PRIOR TO ANY CHANGES.
3. FOR ALL UTILITIES, ACORN ENGINEERING DESIGN LIMITS END AT EXTERIOR WALL OF BUILDING. METERING OF UTILITIES TO BE COMPLETED BY M.E.P. UNLESS SPECIFIED OTHERWISE.
4. CONTRACTOR TO COORDINATE WITH ARCHITECT ON FINAL UTILITY CONNECTIONS WITHIN THE BUILDING.
5. SEWER UTILITIES: CONTRACTOR TO COORDINATE WITH ARCHITECT FOR FINAL SERVICE CONNECTION. SEWER UTILITIES TO BE CONSTRUCTED IN ACCORDANCE WITH CITY OF BIDDEFORD TECHNICAL STANDARDS. VALVE FOR BACKFLOW PREVENTION SHALL BE INSTALLED WITHIN THE THE PROPERTY LINES FOR EACH CITY SEWER CONNECTION. CONTACT ENGINEER IF INVERT FIELD CONDITIONS VARY FROM DESIGN.
6. WATER UTILITIES: FINAL PIPE SIZING PROVIDED BY M.E.P. ENGINEER AND FIRE PROTECTION DESIGNER. INTERNAL METERING, BACKFLOW PREVENTION, AND PRESSURE REDUCERS TO BE COMPLETED BY M.E.P. ENGINEER. DOMESTIC WATER PIPE SIZES WILL DETERMINE THE FINAL WATER METERING OPTIONS. METER MAY BE SMALLER THAN PROPOSED WATER MAIN. WATER METERING, PRESSURE REDUCER AND BACKFLOW PREVENTION TO BE IN ACCORDANCE WITH THE MAINE WATER STANDARDS. CONTRACTOR TO FOLLOW METERING GUIDELINES OF THE MAINE WATER AND CITY OF BIDDEFORD.
7. GAS UTILITIES: PROJECT GAS LOAD, GAS UTILITY DESIGN, AND FINAL GAS SERVICE LOCATION AND METERS TO BE DEFINED BY M.E.P. AND IN ACCORDANCE WITH UNITIL.
8. ELECTRIC UTILITIES: ELECTRIC DESIGN TO BE FINALIZED BY M.E.P. ENGINEER. ELECTRICAL LOAD TO BE DETERMINED BY M.E.P. ENGINEER. METER LOCATION AND TRANSFORMER SIZE, IF NECESSARY DEFINED BY M.E.P. M.E.P. TO FINALIZE SERVICE CONNECTION TO BUILDING. ALL ELECTRIC CONSTRUCTION SHALL CONFORM TO CMP GUIDEBOOK OF STANDARD REQUIREMENTS, MOST RECENT EDITION. DESIGN SUBJECT TO FINAL APPROVAL FROM CMP.
9. CABLE AND TELEPHONE PULLBOXES AND PEDESTAL LOCATIONS TO BE DETERMINED BY SPECTRUM AND CONSOLIDATED COMMUNICATIONS TO CONSTRUCTION. CONTRACTOR TO COORDINATE INSTALLATION OF UNDERGROUND UTILITIES WITH ALL UTILITY COMPANIES INVOLVED.
10. EXISTING SANITARY SEWER LINE TO BE ABANDONED IN PLACE PER CITY DEPT. OF PUBLIC WORKS STANDARDS. CONTRACTOR TO COORDINATE PROPOSED FORCEMAIN SERVICE CONNECTIONS TO RESPECTIVE LOTS ALONG GOOCH STREET AND ABANDON EX. SERVICE CONNECTIONS ONCE FORCEMAIN SERVICES ARE OPERATIONAL.
11. EXISTING WATER TO BE REMOVED PER MAINE WATER STANDARDS. CONTRACTOR TO COORDINATE SHUT OFF & REMOVAL OF WATERLINE AND PROVIDE TEMPORARY WATER SERVICE TO ALL BUILDINGS OFF GOOCH STREET UNTIL NEW WATERMAIN INSTALLATION HAS BEEN INSTALLED, TESTED & DISINFECTED AND SERVICES RESTORED TO THE SATISFACTION OF MAINE WATER

MINIMUM HORIZONTAL UTILITY SEPARATION

| UTILITY | UGE/T/C | WATER | SEWER | GAS | STORMWATER |
|---|---|---|---|---|---|
| UGE/T/C | – | 6' | 5' | 4' | 6' |
| WATER | 6' | – | 5'* | 6' | 3' |
| SEWER | 5' | 5'* | – | 5' | 10' |
| GAS | 4' | 6' | 5' | – | 3' |
| STORMWATER | 6' | 3' | 10' | 3' | – |

*PERMISSIBLE ONLY IF SEWER IS LAID MIN. 18" BELOW WATER SERVICE; OTHERWISE, 10' OF HORIZONTAL SEPARATION MUST BE MAINTAINED.




PERMIT LEVEL
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| FINAL APP | PFH 4/7/2021 |
| COMMENT RESPONSE | PFH 5/14/2021 |

DRAWING NAME: UTILITY PLAN

PROJECT NAME/ ADDRESS: 1 GOOCH STREET REDEVELOPMENT

CLIENT/OWNER OF RECORD: TOM WATSON & CO. 188 STATE STREET, 3RD FLOOR, PORTLAND ME 04101

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PO BOX 3372, PORTLAND MAINE 04101
(207) 775–2655

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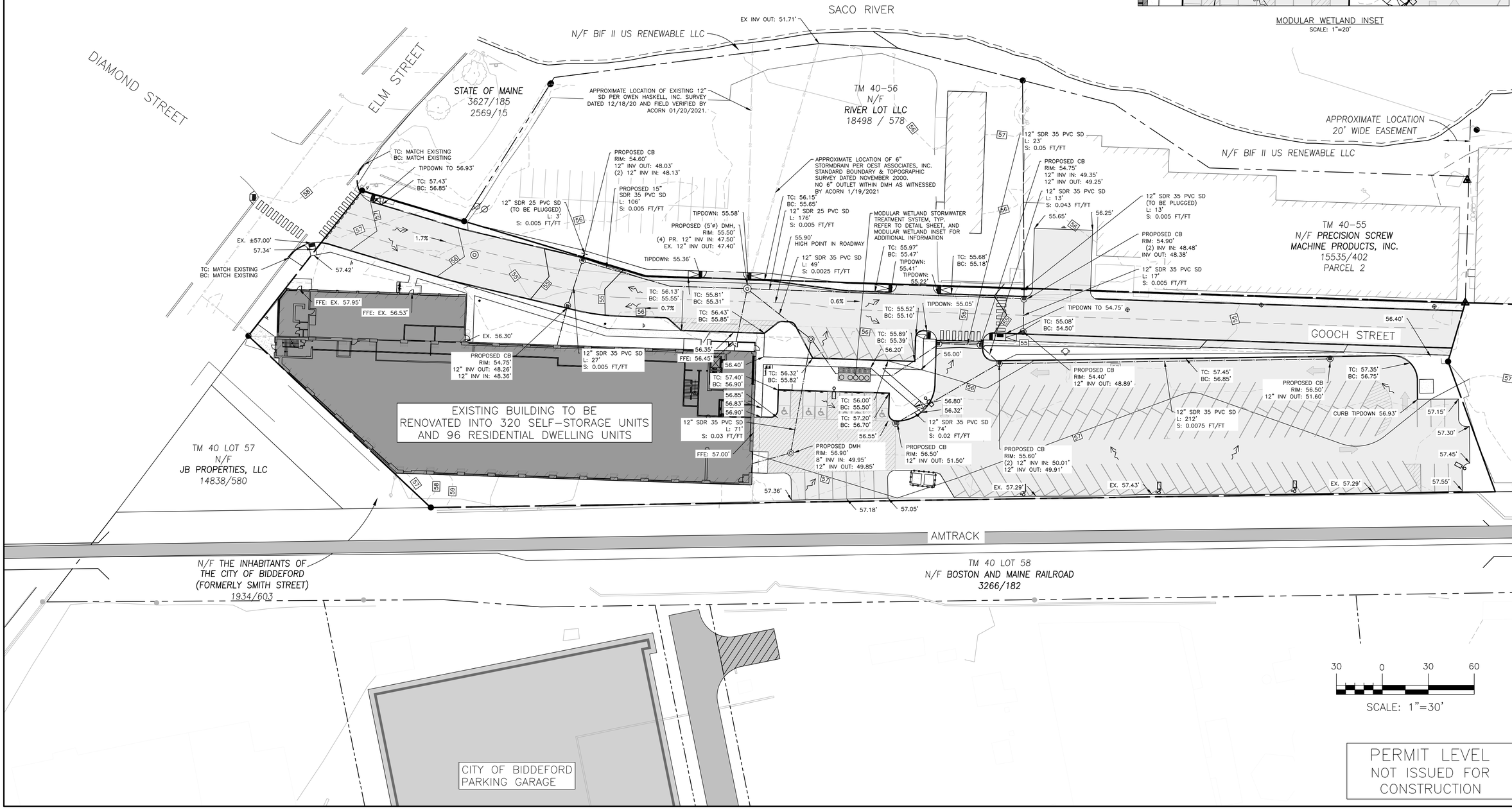
| CHECKED BY: | WHS |

STATE OF MAINE PETER F. HEIL 15318 LICENSED PROFESSIONAL ENGINEER

DRAWING NO.
C-20

GENERAL NOTES:

1. ALL WORK WITHIN THE CITY STREET RIGHT OF WAY SHALL MEET CITY OF BIDDEFORD STANDARDS.
2. DESIGN OF TEMPORARY SOIL RESTRAINT MEASURES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR IF NECESSARY FOR CONSTRUCTION.
3. CONTRACTOR SHALL ENSURE THAT UNDERDRAINS ARE CONSTRUCTED WITH POSITIVE OUTLET TO PROPOSED CONNECTIONS.
4. CATCH BASIN INLET PROTECTION TO BE INSTALLED WITHIN ANY STRUCTURES DOWNGRADIENT OF ACTIVE CONSTRUCTION.
5. SEDIMENTATION BARRIERS ARE TO BE INSTALLED DOWNGRADIENT OF ALL ACTIVE CONSTRUCTION WORK PER DETAIL. BARRIERS TO NOT EXTEND PAST PROPERTY LINES; BARRIERS SHOWN OFFSET FROM PROPERTY LINES ON PLANS FOR VISUAL PURPOSES ONLY.

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| DEP SW APP | PFH 3/30/2021 |
| FINAL APP | PFH 4/7/2021 |
| COMMENT RESPONSE | PFH 5/14/2021 |

DRAWING NAME: GRADING & DRAINAGE PLAN

PROJECT NAME/ ADDRESS: 1 GOOCH STREET REDEVELOPMENT

CLIENT/OWNER OF RECORD: TOM WATSON & CO.
188 STATE STREET, 3RD FLOOR, PORTLAND ME 04101

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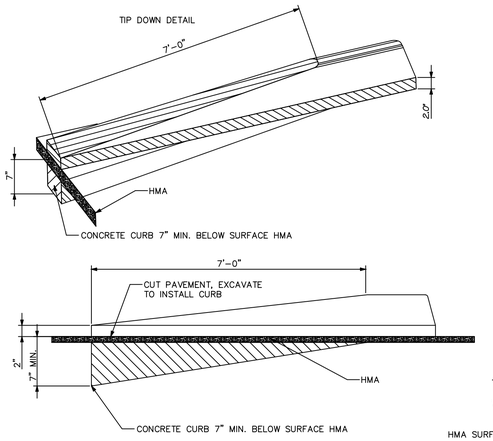
STATE OF MAINE PETER F. HEIL 15318 LICENSED PROFESSIONAL ENGINEER

DRAWING NO.
C-30

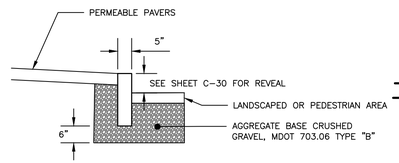



## SLIPFORM CONCRETE CURB DETAIL

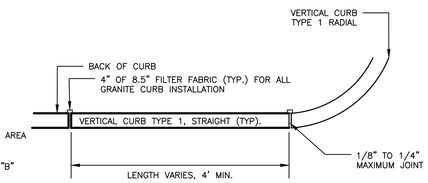
NOT TO SCALE

NOTES:

1. CURB SHALL BE RESET IN ACCORDANCE WITH MDOT 609.08 WITH THE EXCEPTION OF CURB SPACING TO BE INSTALLED PER DETAIL.



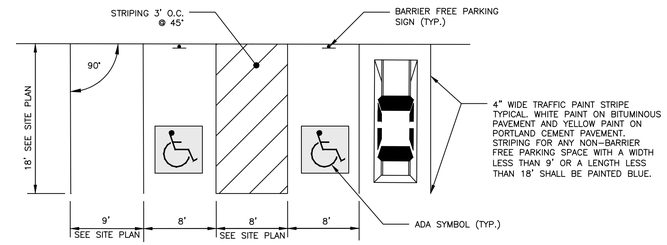

VERTICAL GRANITE CURB CROSS SECTION




VERTICAL GRANITE CURB PLAN VIEW

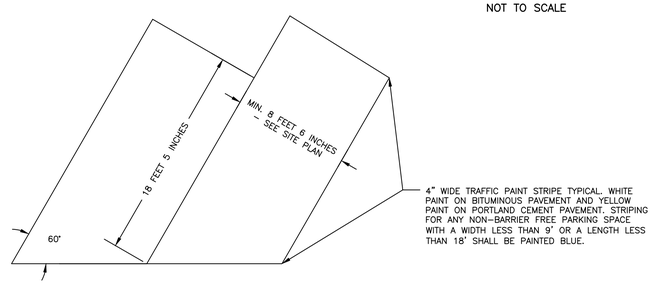
## VERTICAL GRANITE CURB DETAIL

NOT TO SCALE




## PARKING SPACE DIMENSIONS

NOT TO SCALE

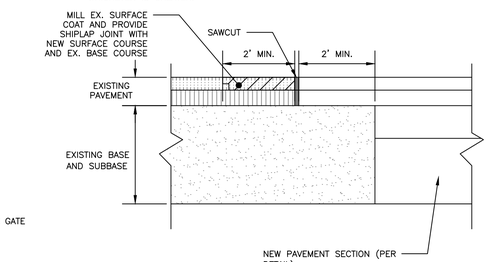



## ANGLED PARKING SPACE DIMENSIONS

NOT TO SCALE

NOTES:

1. SAWCUT EXISTING PAVEMENT AND REMOVE 2' STRIP OF EXISTING PAVEMENT. CREATE UNIFORM AND RIGID BUTT JOINT AND APPLY BITUMINOUS TACK COAT AT AN APPLICATION RATE OF 0.10 TO 0.14 GALLONS PER SQUARE YARD PRIOR TO PLACEMENT OF NEW BITUMINOUS PAVEMENT.
2. THE NEW PAVEMENT SECTION SHALL MEET PAVEMENT SECTION DETAIL AT A MINIMUM OR THE THE EXISTING PAVEMENT AND AGGREGATE BASE AND SUBBASE DEPTH WHICHEVER IS GREATER.

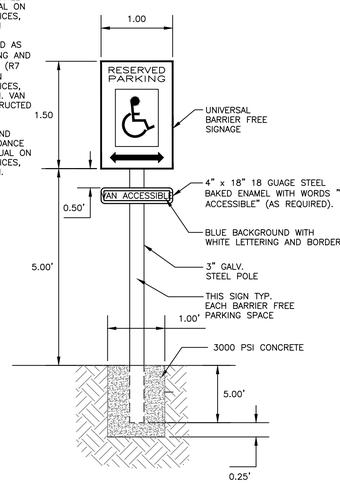



## PAVEMENT SAWCUT DETAIL

NOT TO SCALE

NOTES:

1. ALL ASPECTS OF RESERVED PARKING SIGN CONSTRUCTION SHALL BE IN ACCORDANCE WITH MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, 2009 OR MOST RECENT EDITION
2. SIGN SHALL BE CONSTRUCTED AS SIGN R7-8 UNDER THE "PARKING AND STANDING SIGNS AND PLAQUES" (R7 SERIES) WITHIN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, 2009 OR MOST RECENT EDITION. VAN ACCESSIBILITY SHALL BE CONSTRUCTED AS SIGN R7-8a OR R7-8b.
3. SIGN POST CONSTRUCTION AND MOUNTING SHALL BE IN ACCORDANCE WITH CHAPTER 2A OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, 2009 OR MOST RECENT EDITION.

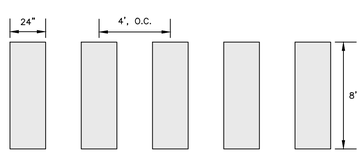



## BARRIER FREE PARKING SIGN

NOT TO SCALE

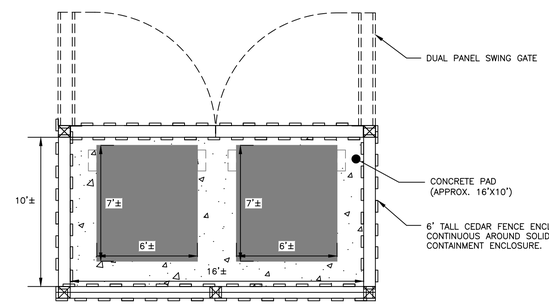
NOTE:

1. CROSSWALKS TO BE BUILT IN CONFORMANCE WITH MUTCD STANDARDS, LATEST EDITION.
2. CROSSWALKS ARE TO BE PAINTED WHITE MEETING MAINE DOT SPECIFICATIONS.
3. BLOCKS TO BE PARALLEL TO THE DIRECTION OF CAR TRAFFIC.



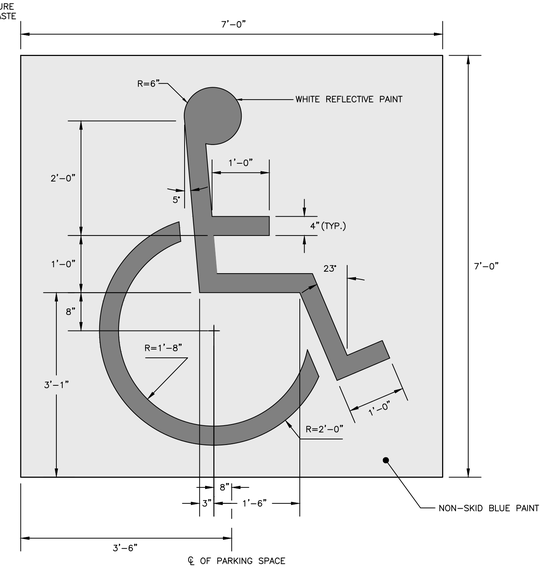

## BLOCK CROSSWALK

NOT TO SCALE



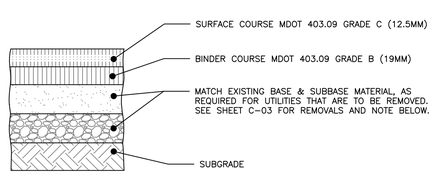

## SCREENED TRASH ENCLOSURE

NOT TO SCALE




## INTERNATIONAL BARRIER FREE SYMBOL

NOT TO SCALE




NOTE:

1. COMPACT SUBGRADE TO 95% MAXIMUM DRY DENSITY IN ACCORDANCE WITH ASTM D-1557.
2. CONTRACTOR TO VERIFY EXISTING GOOCH STREET BASE AND SUBBASE MATERIALS AND MATCH EXISTING.
3. PROJECT PROPOSES TO MILL EXISTING PAVEMENT AND INSTALL NEW BITUMINOUS PAVEMENT PER DETAIL. REFER TO APPLICABLE UTILITY CROSS SECTIONS FOR NEW UTILITY INSTALLATION.

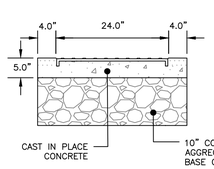
| THICKNESS OF LAYERS | |
|---|---|
| STANDARD | LAYERS |
| 1.25" | SURFACE COURSE MDOT 403.09 GRADE C (12.5mm) |
| 2" | BINDER COURSE MDOT 403.09 GRADE B (19mm) |
| 4" | AGGREGATE BASE GRAVEL MDOT 703.06 TYPE B OR A |
| 18" | AGGREGATE SUBBASE GRAVEL MDOT 703.06 TYPE D |

## PAVEMENT PROFILE: GOOCH STREET (MAJOR RESIDENTIAL STREETS)

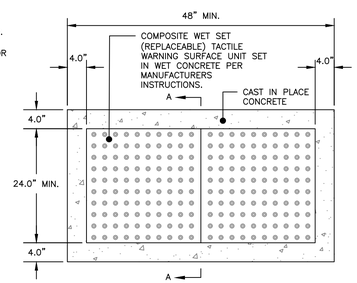
NOT TO SCALE

NOTES:

1. COMPOSITE WET SET (REPLACEABLE TACTILE WARNING SURFACE UNITS SHALL BE AS MANUFACTURED BY ADA SOLUTIONS, INC. (WWW.ADATILE.COM), OR APPROVED EQUAL.
2. CAST IN PLACE CONCRETE SHALL MEET SPECIFICATIONS FOR MDOT CLASS A STRUCTURAL CONCRETE, MINIMUM COMPRESSIVE STRENGTH 4,000 PSI. THE CONCRETE SHALL BE SEALED PRIOR TO SETTING PANELS. THE EXPOSED CONCRETE BORDER SHALL RECEIVE A UNIFORM BROOM FINISH PERPENDICULAR TO THE FLOW OF PEDESTRIAN TRAFFIC.
3. TRUNCATED DOMES SHALL BE ALIGNED IN ROWS, PARALLEL AND PERPENDICULAR TO THE PREDOMINANT DIRECTION OF TRAVEL. TRUNCATED DOME BRICKS AND GRANITE PAVERS ARE NOT ALLOWED.
4. FOR ALL SIDEWALK RAMPS, FEDERAL YELLOW COLORED (#33538) TILES SHALL BE USED. FOLLOW MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION.
5. DETECTABLE WARNING PANELS SHALL BE APPROVED BY THE CITY PRIOR TO INSTALLATION.




SECTION A–A




PLAN VIEW

## SIDEWALK RAMP DETECTABLE WARNING PANEL

NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

| ISSUED FOR | BY DATE |
|---|---|
| SRCC | PFH 1/28/2021 |
| CITY REVIEW | PFH 2/5/2021 |
| DEP SW APP | PFH 3/30/2021 |
| FINAL APP | PFH 4/7/2021 |
| COMMENT RESPONSE | PFH 5/14/2021 |

DRAWING NAME: SITE DETAILS – 1

PROJECT NAME/ ADDRESS: 1 GOOCH STREET REDEVELOPMENT

CLIENT/OWNER OF RECORD: TOM WATSON & CO. 188 STATE STREET, 3RD FLOOR, PORTLAND ME 04101

ACORN ENGINEERING, INC.

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY MODIFICATIONS, WHETHER WRITTEN OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

ACORN ENGINEERING, INC. PO BOX 4321 PORTLAND, MAINE 04101 (207) 775-2655

| | |
|---|---|
| FILE: | 1093.10_CIVIL |
| JN: | 1093.10 |
| SCALE: | AS NOTED |
| DESIGNED BY: | PFH |
| DRAWN BY: | ZMS |
| CHECKED BY: | WHS |

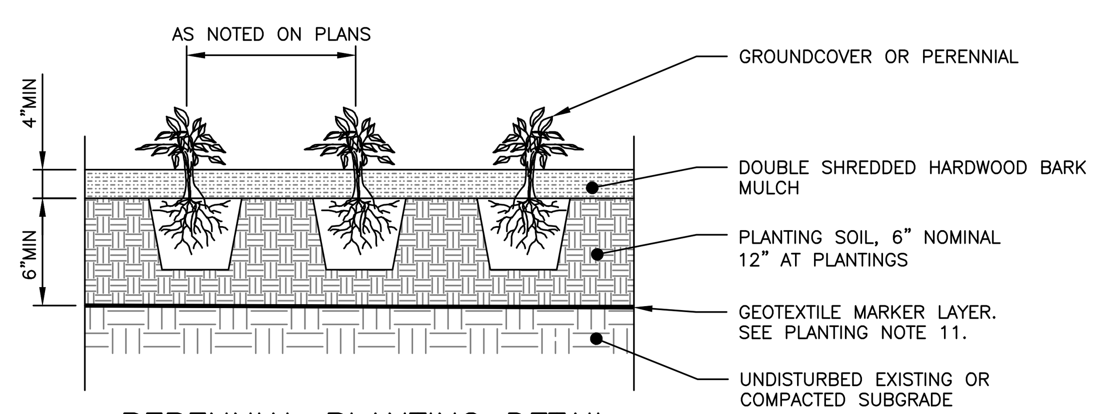
STATE OF MAINE PETER F. HEIL 15318 LICENSED PROFESSIONAL ENGINEER

DRAWING NO.

C-40

## PLANTING NOTES:

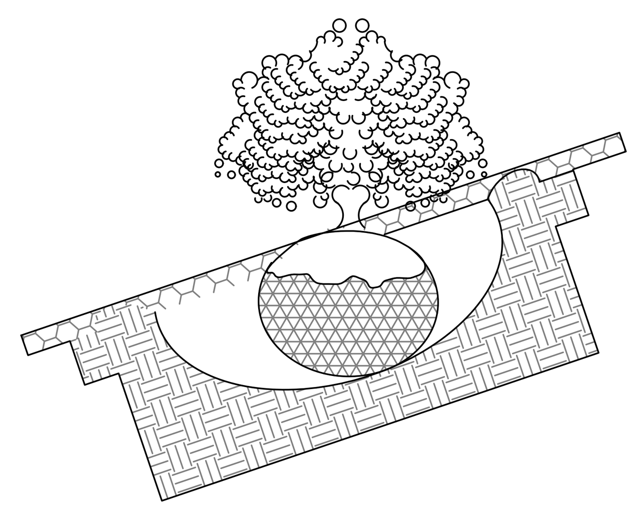
1. ALL PLANT SELECTION AND INSTALLATION WILL BE IN COMPLIANCE WILL THE CITY OF PORTLAND TECHNICAL MANUAL (SECTION 4).
2. CONTRACTOR TO VERIFY ALL UTILITIES ON PROPERTY AND TO PROTECT ALL UTILITIES DURING EXCAVATION FOR PLANTS.
3. IF THERE IS A DISCREPANCY BETWEEN THE NUMBER OF PLANTS SHOWN ON THE PLAN AND THE NUMBER OF PLANTS SHOWN IN PLANT LIST (IF ANY), THE NUMBER OF PLANTS SHOWN ON PLAN WILL TAKE PRECEDENCE.
4. ALL MATERIAL SHALL COMPLY WITH THE LATEST EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK, AMERICAN ASSOCIATION OF NURSERYMAN.
5. ALL DISTURBED AREAS NOT TO BE PAVED OR PLANTED SHALL BE LOAMED AND SEEDED AS SHOWN. THE SEED MIX SPECIFICATIONS ARE AS FOLLOWS: LESCO FINE FESCUE LINKS BLEND OF 35% HARD FESCUE, 35% CREEPING RED FESCUE, 20% CHEWINGS FESCUE AND 10% SHEEP FESCUE. ADD 5% LITTLE BLUESTEM AND 5% NORTHEAST WILDFLOWER SEED MIXTURE BY WEIGHT TO THE LINKS BLEND.
6. FOR PRICING PURPOSES, PROVIDE A PER TREE UNIT COST FOR STAKING AND GUYING. IF STAKING AND GUYING IS REQUIRED, REMOVE TREE WRAP, STAKES, AND GUY WIRES AT END OF FIRST GROWING SEASON.
7. FOR TREE PLANTING IN LAWN AREAS, ANY DISTURBED LAWN SHALL BE LOAMED AND SEEDED AS NECESSARY.
8. NEW TREES TO BE INSTALLED WITH A SLOW RELEASE WATERING BAG.
9. CONTRACTOR TO BE HELD RESPONSIBLE FOR THE WATERING AND MAINTENANCE OF ALL PLANT MATERIAL AND LANDSCAPING IMPROVEMENTS FOR AT LEAST 30 DAYS FOLLOWING INSTALLATION. FOLLOWING THIS PERIOD, THE LANDOWNER OR PROPERTY MANAGEMENT SHALL BE RESPONSIBLE FOR CONTINUED WATERING AND MAINTENANCE. CONTRACTOR TO MAINTAIN A ONE YEAR WARRANTY ON ALL PLANTINGS FOLLOWING FINAL INSTALLATION.
10. ALL PROPOSED PLANTS SHALL BE LOCATED AS SHOWN ON THE PLANS. CONTRACTOR TO NOTIFY ENGINEER WHEN PLANTINGS HAVE BEEN MOBILIZED ON SITE. ENGINEER TO INSPECT AND ACCEPT OR REJECT ANY SPECIMENS ON THE BASIS OF APPARENT HEALTH, HARDINESS, AND CONFORMANCE WITH THE PLANTING SCHEDULE. REJECTED SPECIMENS ARE TO BE REPLACED BY THE CONTRACTOR AT NO ADDED COST TO THE OWNER. ACCEPTANCE DOES NOT WAIVE THE REQUIRED ONE YEAR PLANTING WARRANTY.
11. GEOTEXTILE MARKER LAYER REQUIRED IN AREAS WHERE EXISTING SUBGRADE IS COMPRISED OF URBAN FILL – SEE ENVIRONMENTAL MEDIA MANAGEMENT PLAN.



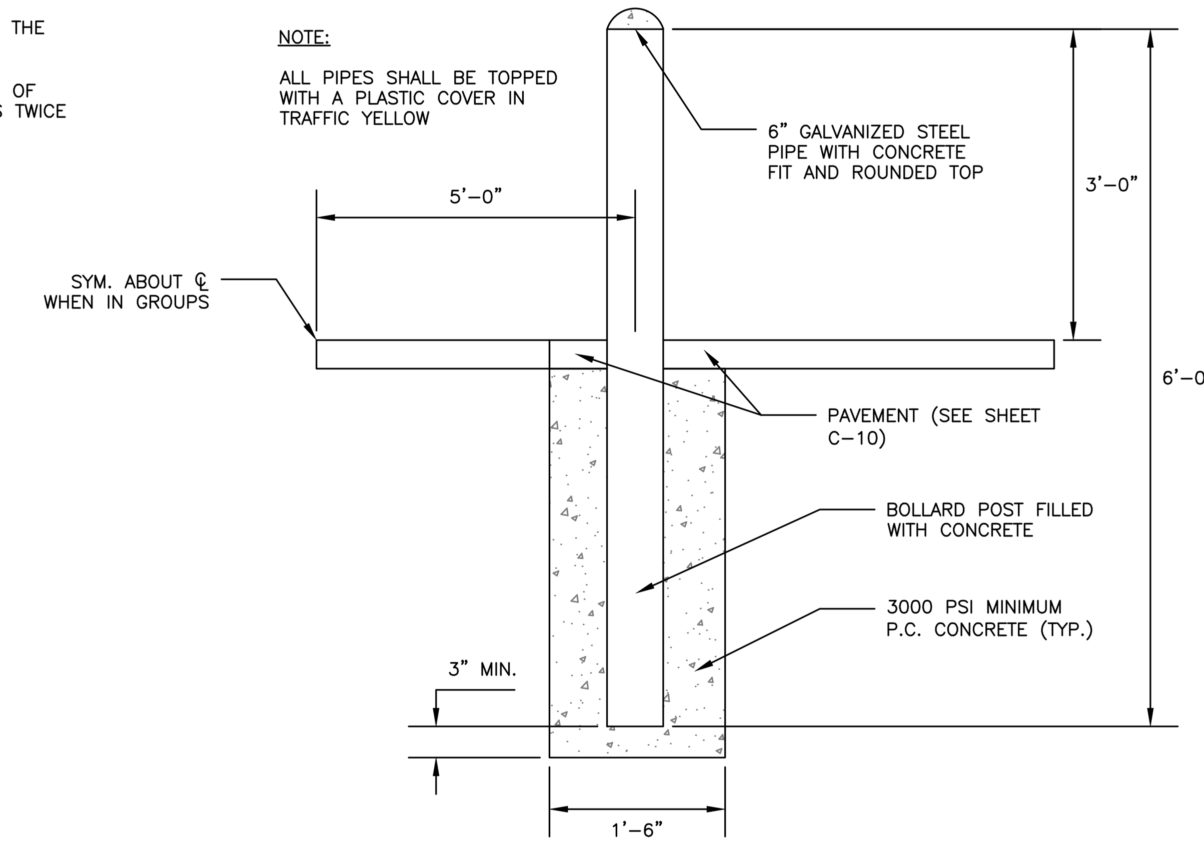

PERENNIAL PLANTING DETAIL
NOT TO SCALE

NOTES:

1. DIG HOLE AT LEAST 2 TIMES THE DIAMETER OF THE ROOT BALL AND AS DEEP AS THE ROOT BALL (NO DEEPER). SET ROOT BALL CENTERED, WITH THE TOP AT DOWNHILL EDGE OF THE HOLE.
2. TOPSOIL BACKFILL SHALL BE NATURAL FRIABLE, FERTILE, FINE LOAMY SOIL POSSESSING THE CHARACTERISTICS OF TOPSOIL IN THE VICINITY WHICH PRODUCE A HEAVY GROWTH. TOPSOIL SHALL CONTAIN NOT LESS THAN 6% NOR MORE THAN 20% ORGANIC MATTER. TOP SOIL SHALL HAVE A pH VALUE OF NOT LESS THAN 5.5 NOR MORE THAN 7.0.
3. CONTAINER GROWN STOCK – REMOVE CONTAINER PROTECTING THE ROOT BALL. GENTLY COMB OUT THE ROOTS. PRUNE DAMAGED ROOTS.
4. BACKFILL THE HOLE WITH TOPSOIL TO A DEPTH NOT TO EXCEED 8" THEN WATER SUFFICIENTLY TO SETTLE TOPSOIL. REPEAT SOIL BACKFILL, WATER, DRAIN. TOPSOIL SHALL BE TAMPED UNDER EDGES OF THE BALLED PLANTS. BACKFILL TO FINISH GRADE AND CREATE AN EARTHEN SAUCER. SOAK PLANTS TWICE WITHIN THE FIRST TWENTY–FOUR HOURS OF PLANTING.



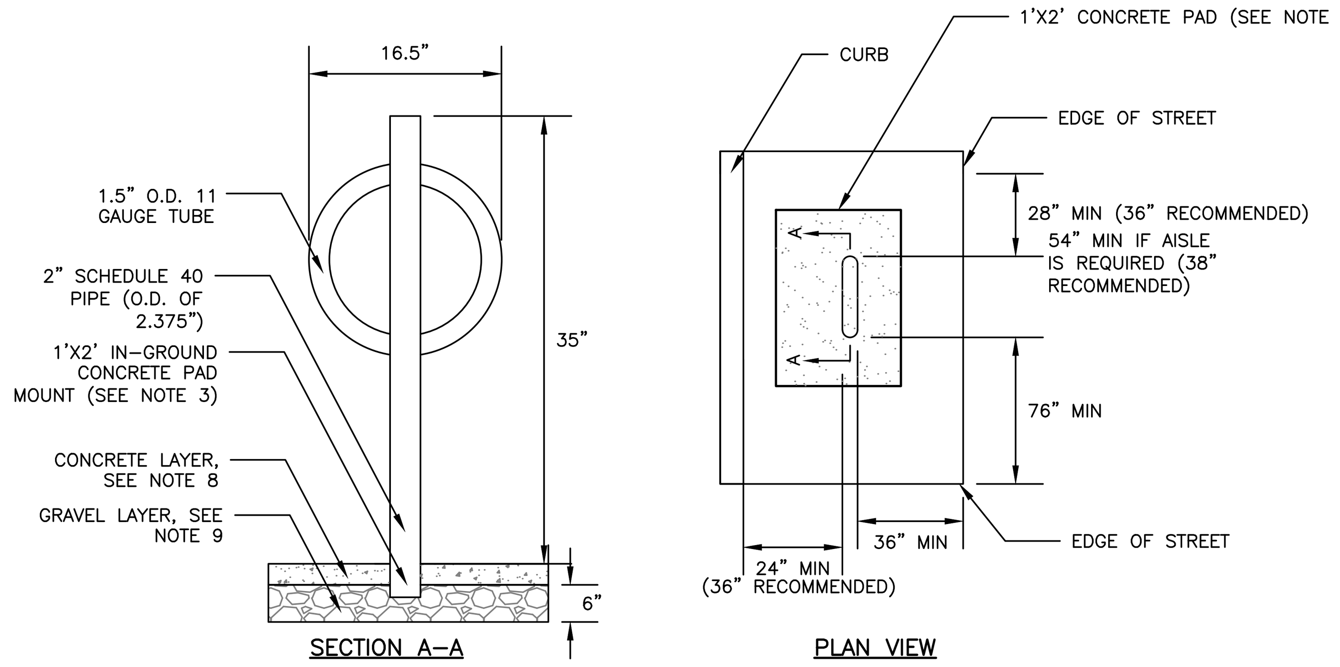
TYPICAL PLANTING
NOT TO SCALE



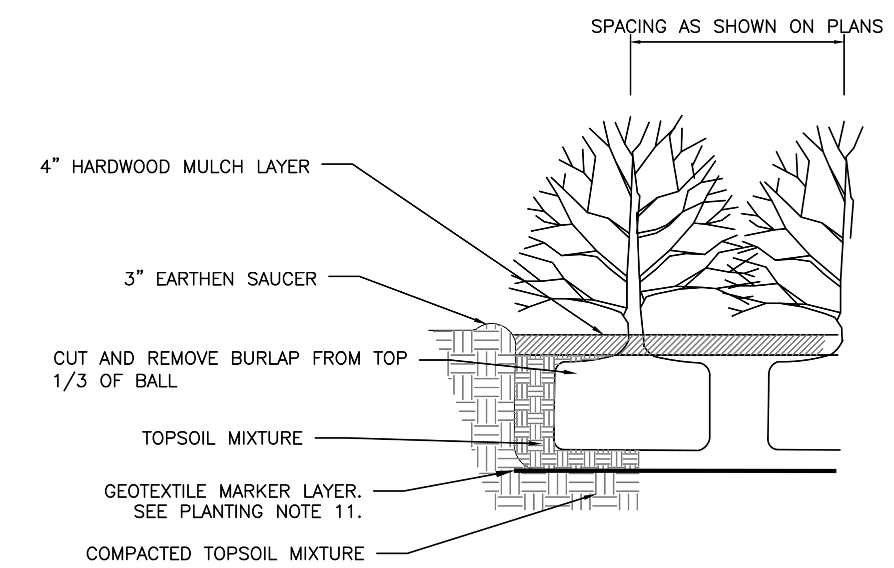

PIPE BOLLARD
NOT TO SCALE

NOTES:

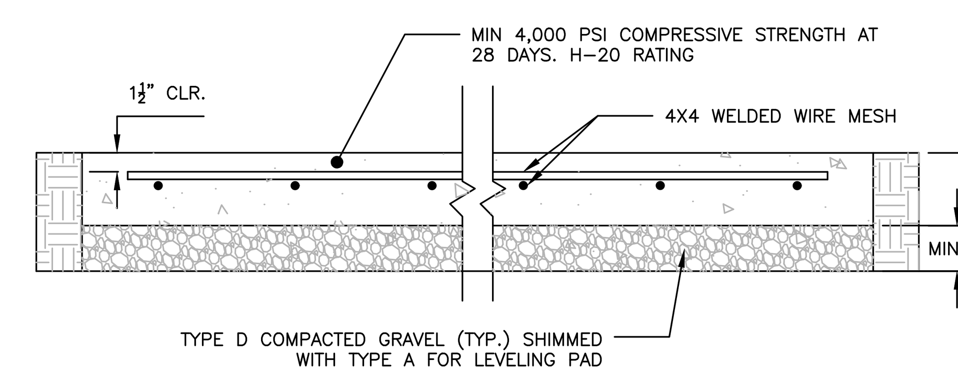
1. BICYCLE RACK SHALL BE "DERO BIKE HITCH", AS MANUFACTURED BY DERO BIKE RACKS.
2. BICYCLE RACK SHALL HAVE CAPACITY FOR TWO BICYCLES.
3. BICYCLE RACK PARTS SHALL BE OF UNIFORM COLOR AND SHALL BE FINISHED IN ACCORDANCE WITH PRODUCT SPECIFICATION.
4. BICYCLE RACK SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S MOST RECENT INSTALLATION RECOMMENDATIONS, AND SHALL BE INSTALLED WITH AN IN–GROUND MOUNT UNLESS OTHERWISE APPROVED BY ENGINEER.
5. MINIMUM OFFSETS SHOWN. MANUFACTURER'S RECOMMENDED OFFSETS SHALL BE ENFORCED WHERE POSSIBLE.
6. MINIMUM DISTANCE BETWEEN BICYCLE RACKS SHALL BE 24". RECOMMENDED DISTANCE BETWEEN BICYCLE RACKS SHALL BE 38".
7. ALL OFFSETS ARE FROM OUTSIDE EDGES OF ITEMS.
8. CONCRETE SHALL BE 4000 PSI @28 DAYS. BOTTOM OF CONCRETE SHALL BE AT TOP OF SIDEWALK GRAVEL ELEVATION. DEPTH VARIES APPROX. 4"–7".
9. GRAVEL LAYER SHALL BE INSTALLED IN ACCORDANCE WITH CONCRETE SIDEWALK DETAIL, AND SHALL BE MAINEDOT 703.06 TYPE B.




DERO BIKE HITCH
NOT TO SCALE



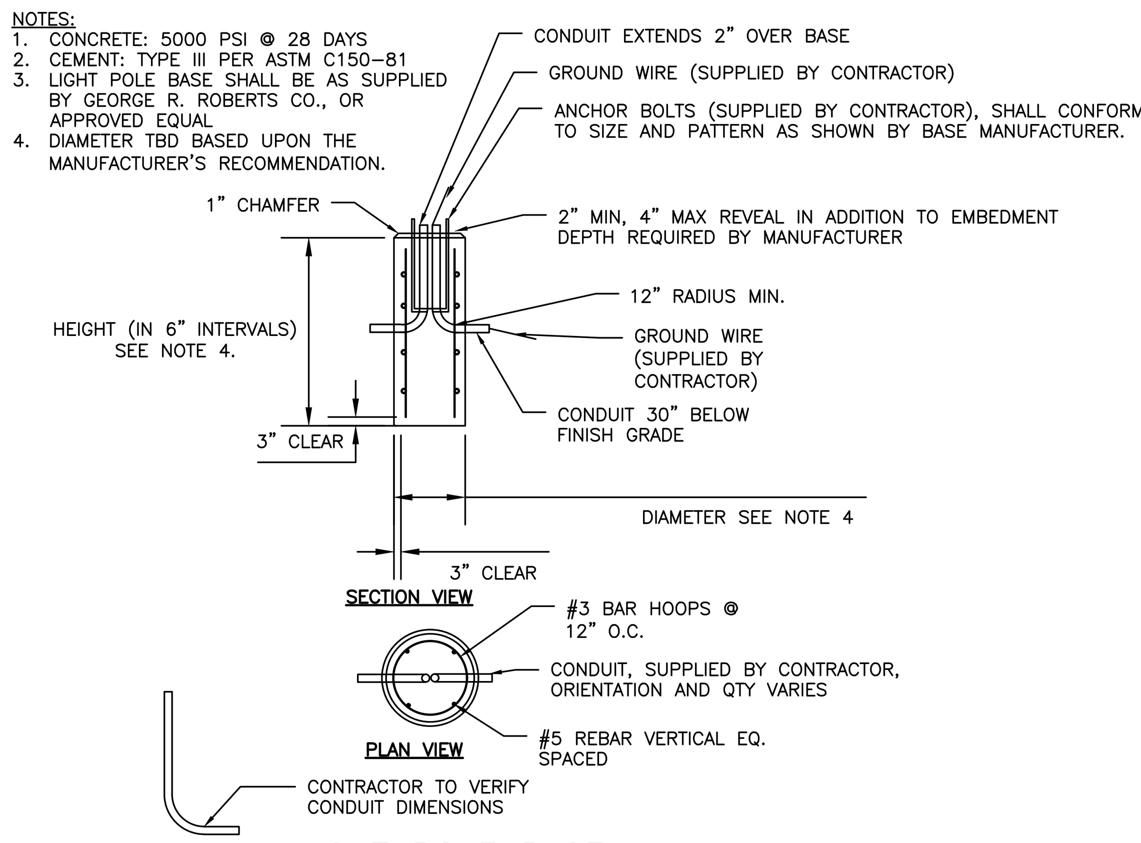

SHRUB PLANTING DETAIL
NOT TO SCALE



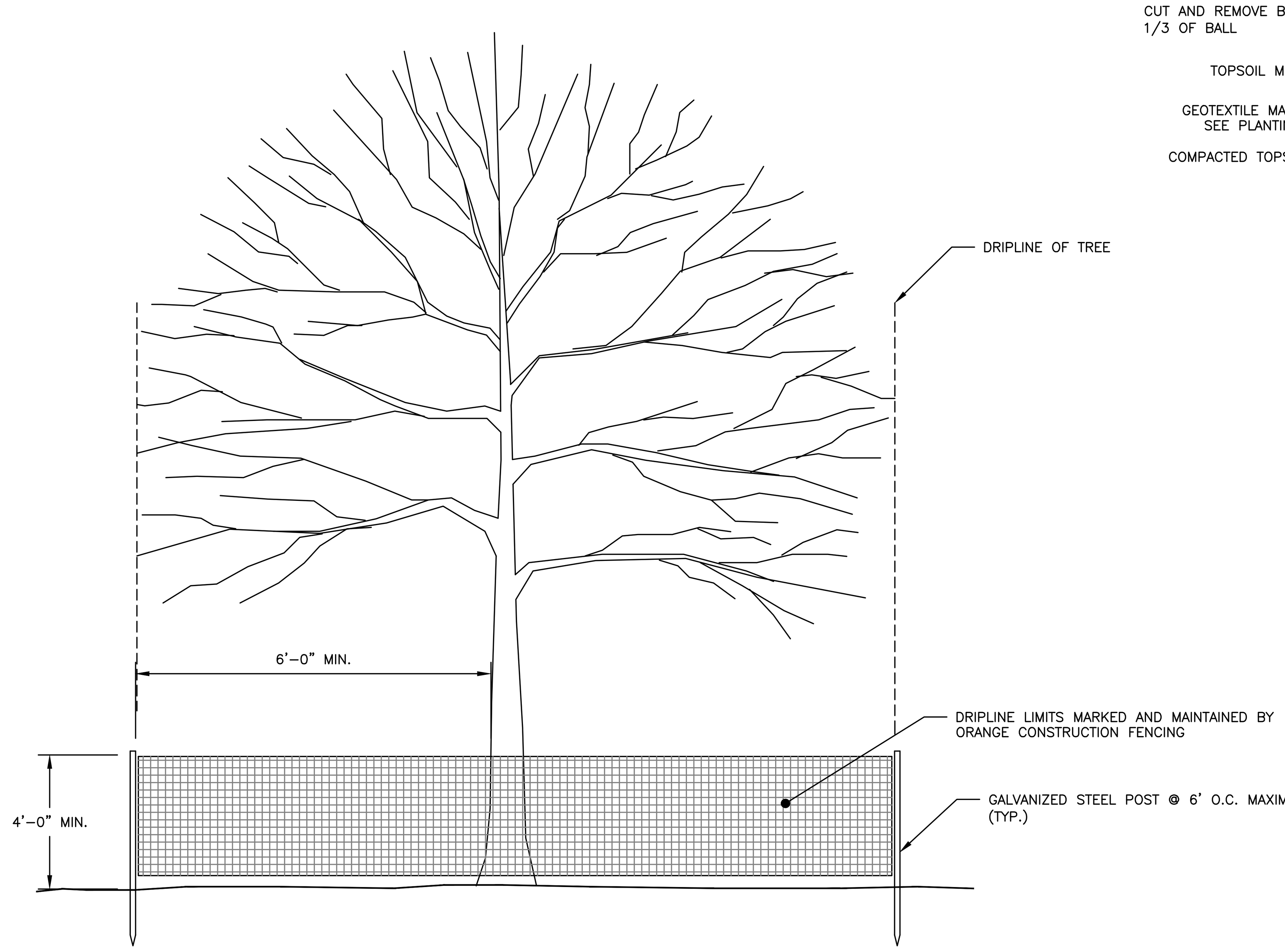

CONCRETE PAD DETAIL
NOT TO SCALE

NOTES:

1. CONCRETE: 5000 PSI @ 28 DAYS
2. CEMENT: TYPE III PER ASTM C150–81
3. LIGHT POLE BASE SHALL BE AS SUPPLIED BY GEORGE R. ROBERTS CO., OR APPROVED EQUAL
4. DIAMETER TBD BASED UPON THE MANUFACTURER'S RECOMMENDATION.




LIGHT POLE BASE
NOT TO SCALE



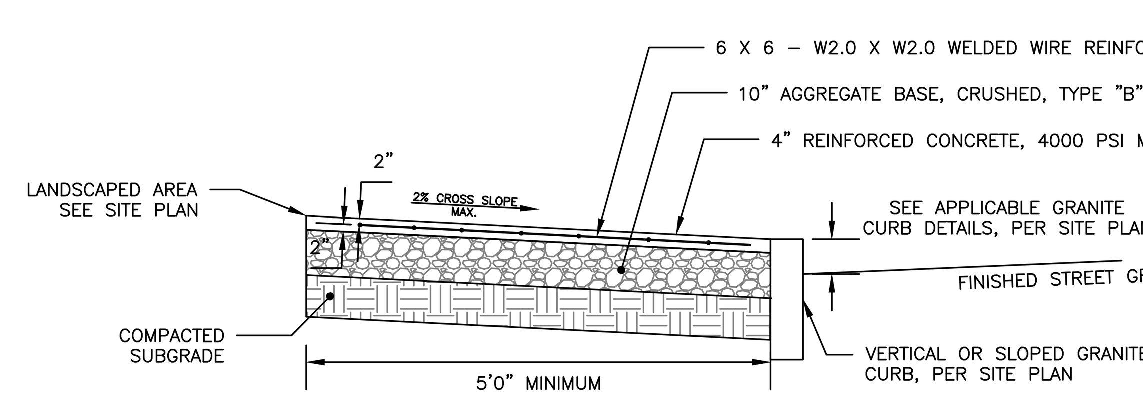

NOTES:

1. TREE PROTECTION FENCING SHALL BE INSTALLED PRIOR TO ANY CONSTRUCTION ACTIVITY.
2. INSTALL PROTECTIVE FENCING TO LIMIT OF DRIPLINE ON TREE OR A MINIMUM OF 6' FROM TRUNK WHEN NECESSARY, WITH PRIOR PERMISSION OF LANDSCAPE ARCHITECT.
3. DO NOT STORE CONSTRUCTION EQUIPMENT, MATERIALS, TOOLS, ETC. WITHIN PROTECTIVE FENCING.
4. MAINTAIN FENCING IN A NEAT AND ORDERLY FASHION THROUGHOUT CONSTRUCTION PERIOD.

TREE PROTECTION DETAIL
NOT TO SCALE

NOTES:

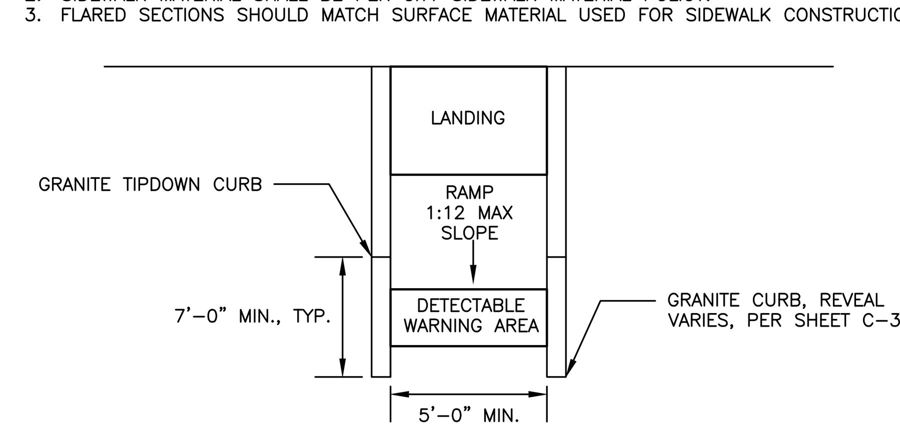
1. AT A MINIMUM, TESTING SHALL CONSIST OF ENTRAINED AIR AND SLUMP TESTS ON SITE PRIOR TO POURING THE SIDEWALKS. ENTRAINED AIR TESTS SHALL BE DONE IN ACCORDANCE WITH AASHTO T152. TEST FIRST TWO LOADS AND EVERY THIRD LOAD THEREAFTER PROVIDED CONSISTENT RESULTS ARE ACHIEVED.
2. WELDED WIRE FABRIC SHALL BE PLACED 2 INCHES ABOVE THE CRUSHED GRAVEL, AND 2 INCHES FROM ALL FINISHED EDGES, EXPANSION JOINTS AND CURBS. ALL FABRIC JOINTS SHALL BE OVERLAPPED A MINIMUM OF 1 FOOT AND BE PROPERLY TIED. IF THE CONTRACTOR ELECTS TO USE REBAR, ONLY 4–GAUGE WILL BE ACCEPTABLE. IF THE CONTRACTOR ELECTS TO USE A PRE–MIXED FIBER MESH, A SPECIFICATION SHEET MUST BE SUBMITTED AND PRE–APPROVED BY THE ENGINEER PRIOR TO ITS APPLICATION.
3. SLABS SHALL BE PLACED ALTERNATELY IN LENGTHS NOT TO EXCEED 30 FEET OR AS DIRECTED AND SHALL BE SEPARATED BY AN EXPANSION JOINT OF PREFORMED EXPANSION FILLER ½ INCH IN THICKNESS.
4. WHEN CONSTRUCTED ADJACENT TO A BUILDING, RETAINING WALL OR OTHER FIXED STRUCTURE, A ¼ INCH THICK PREFORMED JOINT FILLER SHALL BE USED BETWEEN THE SLAB AND THE STRUCTURE.
5. THE SIDEWALK SURFACE SHALL BE SCORED INTO BLOCK UNITS NO GREATER THAN 40 SQUARE FEET AS DIRECTED. THE DEPTH OF THE SCORING SHALL BE AT LEAST ONE QUARTER OF THE THICKNESS OF THE SLAB.
6. ANY MATCHING INTO EXISTING SIDEWALKS SHALL BE DONE SO WITH A CLEAN VERTICAL FACE CONNECTION.
7. THE SURFACE SHALL BE FINISHED TO PRODUCE A BROOMLIKE "BRUSHED" PATTERN. NO PLASTERING OF THE SURFACE WITH MORTAR WILL BE PERMITTED. THE FINISH SHALL RESULT IN A SURFACE OF UNIFORM TEXTURE AND COLOR. ALL OUTSIDE EDGES OF THE SLAB AND ALL JOINTS SHALL BE ROUNDED WITH A ¼ INCH RADIUS EDGING TOOL.
8. CONCRETE SHALL BE CURED FOR 72 HOURS. CURING SHALL BE BY MEANS OF THOMPSON'S WATER SEAL AS MANUFACTURED BY E.A. THOMPSON CO., INC. OF MEMPHIS, TENNESSEE, BOILED LINSEED OIL, WHITE PIGMENTED CURING COMPOUND, OR BY OTHER APPROVED METHODS. CONCRETE SIDEWALK TO BE SEALED WITH CONSOLIDECK SALTGUARD WB OR APPROVED EQUAL 28 DAYS AFTER PLACEMENT. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR APPLICATION.
9. GENERAL CONTRACTOR TO COLLECT DELIVERY SLIPS AND TRANSFER TO THE OWNER.
10. WHERE REINFORCED CONCRETE SIDEWALK IS PROPOSED IN A PUBLIC RIGHT OF WAY, THE DETAIL MUST BE APPROVED BY THE PUBLIC WORKS DEPARTMENT PRIOR TO THE INSTALLATION OF THE WALK.




REINFORCED CONCRETE SIDEWALK
NOT TO SCALE

NOTES:

1. ALL RAMPS SHALL COMPLY WITH CITY OF BIDDEFORD AND ADA STANDARDS.
2. SIDEWALK MATERIAL SHALL BE PER CITY SIDEWALK MATERIAL POLICY.
3. FLARED SECTIONS SHOULD MATCH SURFACE MATERIAL USED FOR SIDEWALK CONSTRUCTION.




| DESIGN ELEMENT | SLOPE IN DIRECTION OF TRAVEL | CROSS SLOPE |
|---|---|---|
| APPROACH | 8.33% MAX | 2% |
| LANDING | 2% | 2% |
| RAMP | 8.33% MAX | MATCH STREET GRADE |
| SIDEWALK | PER C–30 | 2% |

SIDEWALK RAMP LAYOUT
NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

| ISSUED FOR | BY / DATE |
|---|---|
| SRCC | PFH 1/28/2021 |
| CITY REVIEW | PFH 2/3/2021 |
| DEP SW APP | PFH 3/30/2021 |
| FINAL APP | PFH 4/7/2021 |
| COMMENT RESPONSE | PFH 5/14/2021 |

DRAWING NAME: **SITE DETAILS – 2**

PROJECT NAME/ADDRESS: **1 GOOCH STREET REDEVELOPMENT**

CLIENT/OWNER OF RECORD: TOM WATSON & CO.
188 STATE STREET, 3RD FLOOR, PORTLAND ME 04101

ACORN ENGINEERING, INC.

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ACORN ENGINEERING, INC.
PO BOX 3372, PORTLAND MAINE 04101
(207) 775–2655

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| FILE: | 1093.10_CIVIL |
| JN: | 1093.10 |
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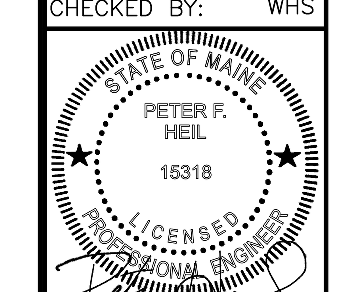
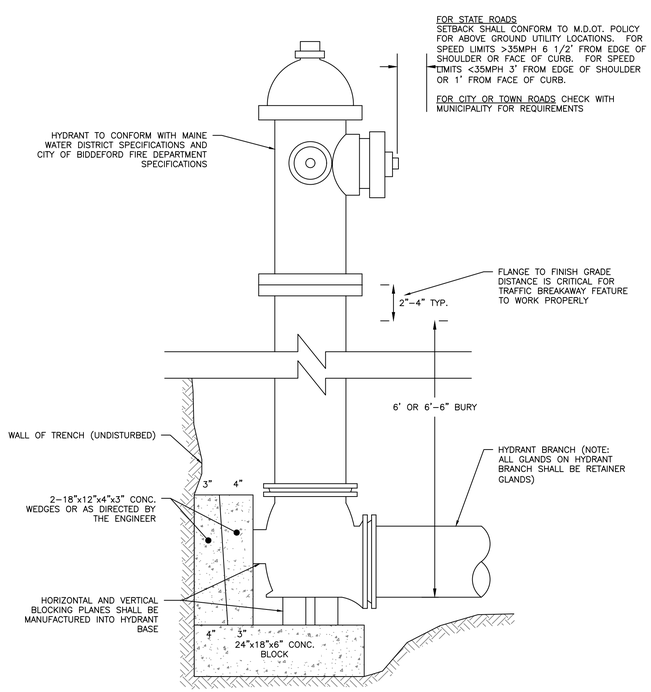
| CHECKED BY: | WHS |



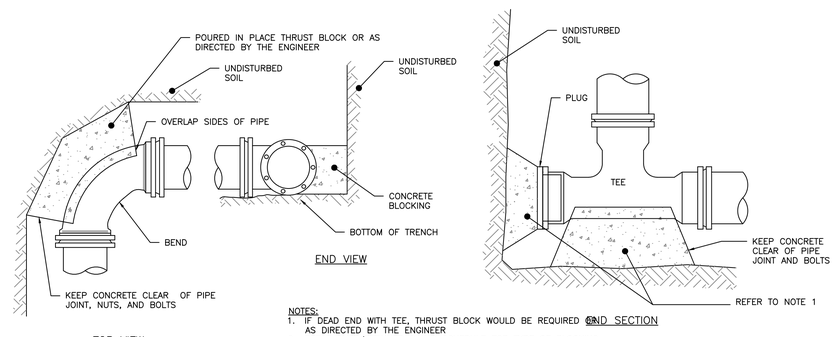

DRAWING NO.

C-41




TYPICAL HYDRANT INSTALLATION DETAIL

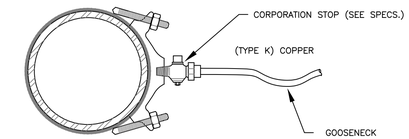
NOT TO SCALE




NOTES:
1. IF DEAD END WITH TEE, THRUST BLOCK WOULD BE REQUIRED AS DIRECTED BY THE ENGINEER
2. SEE THRUST/RETAINER GLAND SCHEDULE FOR TYPE OF BLOCKING TO BE USED ON BENDS

THRUST BLOCKING: REGULAR BEND

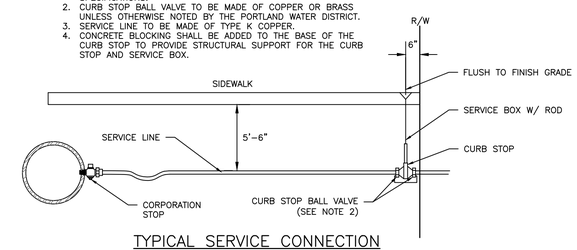
NOT TO SCALE




SERVICE SADDLE: 1–1/2" AND 2" C.C. THREAD

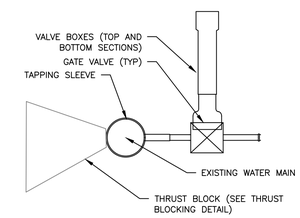
NOT TO SCALE

NOTES:
1. ALL MATERIALS AND INSTALLATION PROCEDURES MUST COMPLY WITH THE CITY OF PORTLAND WATER DISTRICT (PWD) SPECIFICATIONS.
2. CURB STOP BALL VALVE TO BE MADE OF COPPER OR BRASS UNLESS OTHERWISE NOTED BY THE PORTLAND WATER DISTRICT.
3. SERVICE LINE TO BE MADE OF TYPE K COPPER.
4. CONCRETE BLOCKING SHALL BE ADDED TO THE BASE OF THE CURB STOP TO PROVIDE STRUCTURAL SUPPORT FOR THE CURB STOP AND SERVICE BOX.




TYPICAL SERVICE CONNECTION

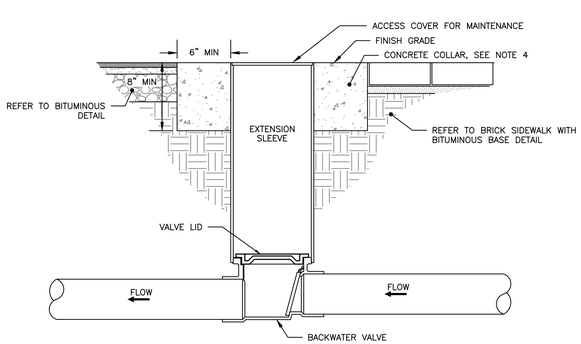
NOT TO SCALE




SIDE VIEW

TAPPING SLEEVE AND VALVE

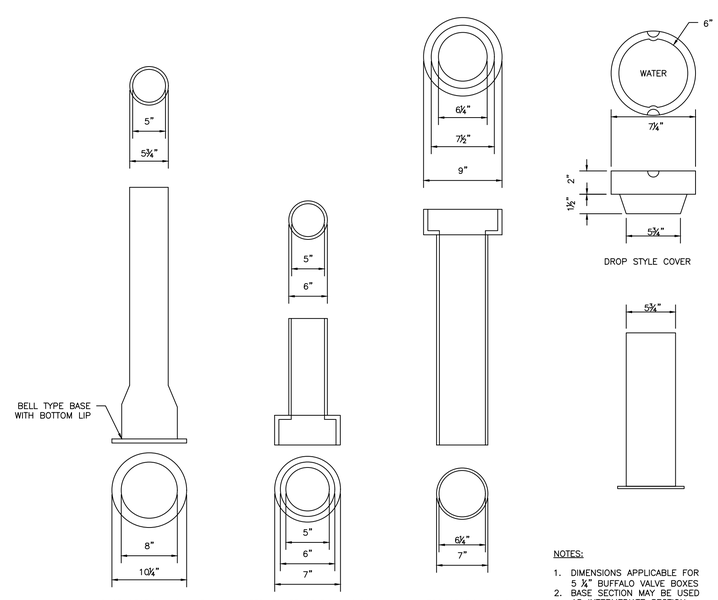
NOT TO SCALE




NOTES:
1. BACKFLOW VALVE TO BE PROVIDED BY AGRI DRAIN CORPORATION OR AN APPROVED EQUAL.
2. VALVE TO BE INSTALLED TO MANUFACTURER'S SPECIFICATIONS AND COMPLY WITH RULES AND REGULATIONS AS OUTLINED IN SECTION 2 OF THE CITY OF PORTLAND TECHNICAL MANUAL.
3. VALVE SHALL BE INSTALLED WITH A VALVE BOX AND COVER TO PROVIDE EASY ACCESS AND MAINTENANCE; VALVE COVER SHALL STATE 'SEWER' ON LID FLUSH TO SURFACE. REFER TO VALVE & BOX COVER DETAIL FOR ADDITIONAL INFORMATION.
4. CONCRETE COLLAR AT A MINIMUM 24–HOUR COMPRESSIVE STRENGTH OF 3,000 PSI.

BACKFLOW VALVE ASSEMBLY

NOT TO SCALE

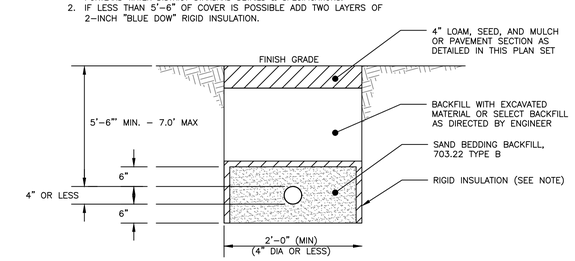



NOTES:
1. DIMENSIONS APPLICABLE FOR 5 ¼" BUFFALO VALVE BOXES
2. BASE SECTION MAY BE USED AS INTERMEDIATE SECTION

VALVE BOX & COVER

NOT TO SCALE

NOTES:
1. THE WATER TRENCH SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE PORTLAND WATER DISTRICT STANDARD DETAILS & SPECIFICATIONS.
2. IF LESS THAN 5'–6" OF COVER IS POSSIBLE ADD TWO LAYERS OF 2–INCH "BLUE DOW" RIGID INSULATION.




WATER SERVICE TRENCH SECTION DETAIL

NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

| ISSUED FOR | BY / DATE |
|---|---|
| SRCC | PFH 1/28/2021 |
| CITY REVIEW | PFH 2/5/2021 |
| DEP SW APP | PFH 3/30/2021 |
| FINAL APP | PFH 4/7/2021 |
| COMMENT RESPONSE | PFH 5/14/2021 |

DRAWING NAME: UTILITY DETAILS – 1

PROJECT NAME/ADDRESS: 1 GOOCH STREET REDEVELOPMENT

CLIENT/OWNER OF RECORD: TOM WATSON & CO. 188 STATE STREET, 3RD FLOOR, PORTLAND ME 04101

ACORN ENGINEERING, INC.

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ACORN ENGINEERING, INC.
PO BOX 4232, PORTLAND, MAINE 04101
(207) 775-2655

| | |
|---|---|
| FILE: | 1093.10_CIVIL |
| JN: | 1093.10 |
| SCALE: | AS NOTED |
| DESIGNED BY: | PFH |
| DRAWN BY: | ZMS |
| CHECKED BY: | WHS |

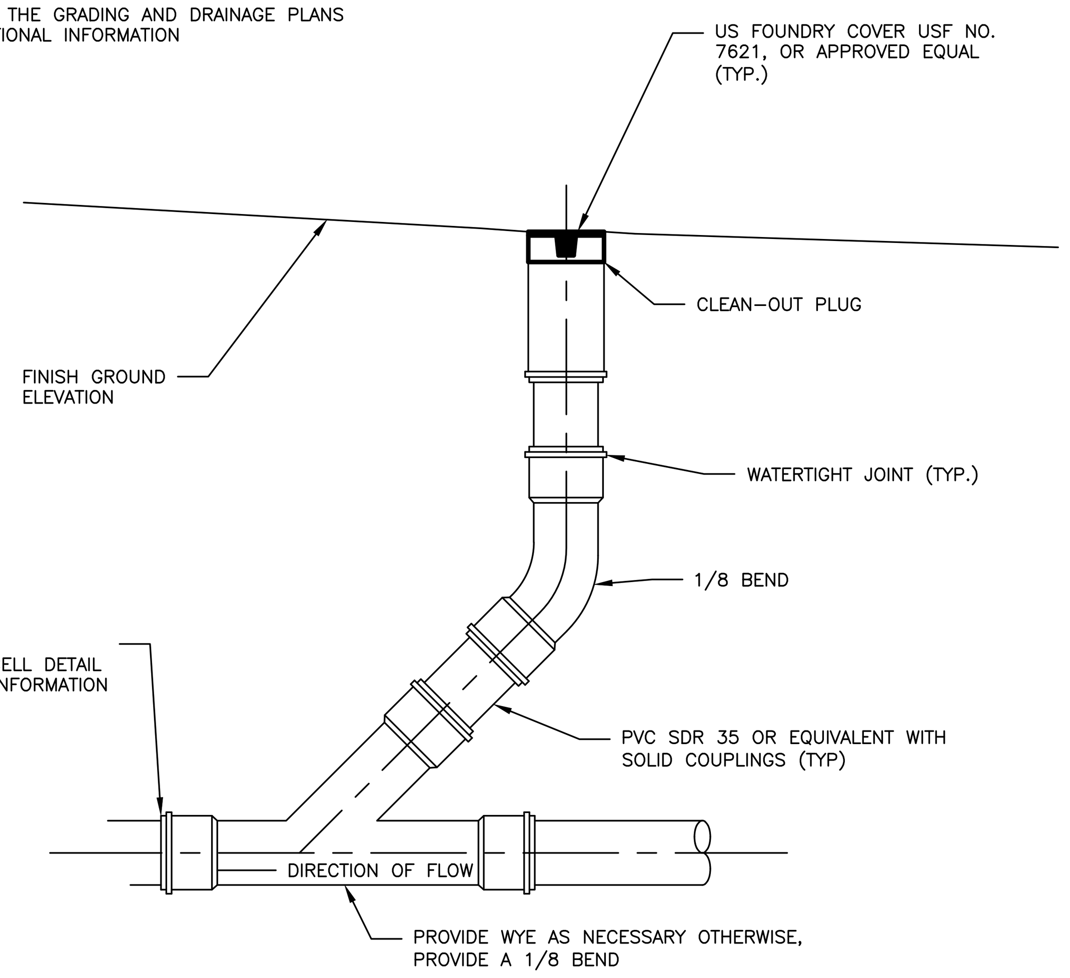
STATE OF MAINE PETER F. HEIL 15318 LICENSED PROFESSIONAL ENGINEER

DRAWING NO.

C-42

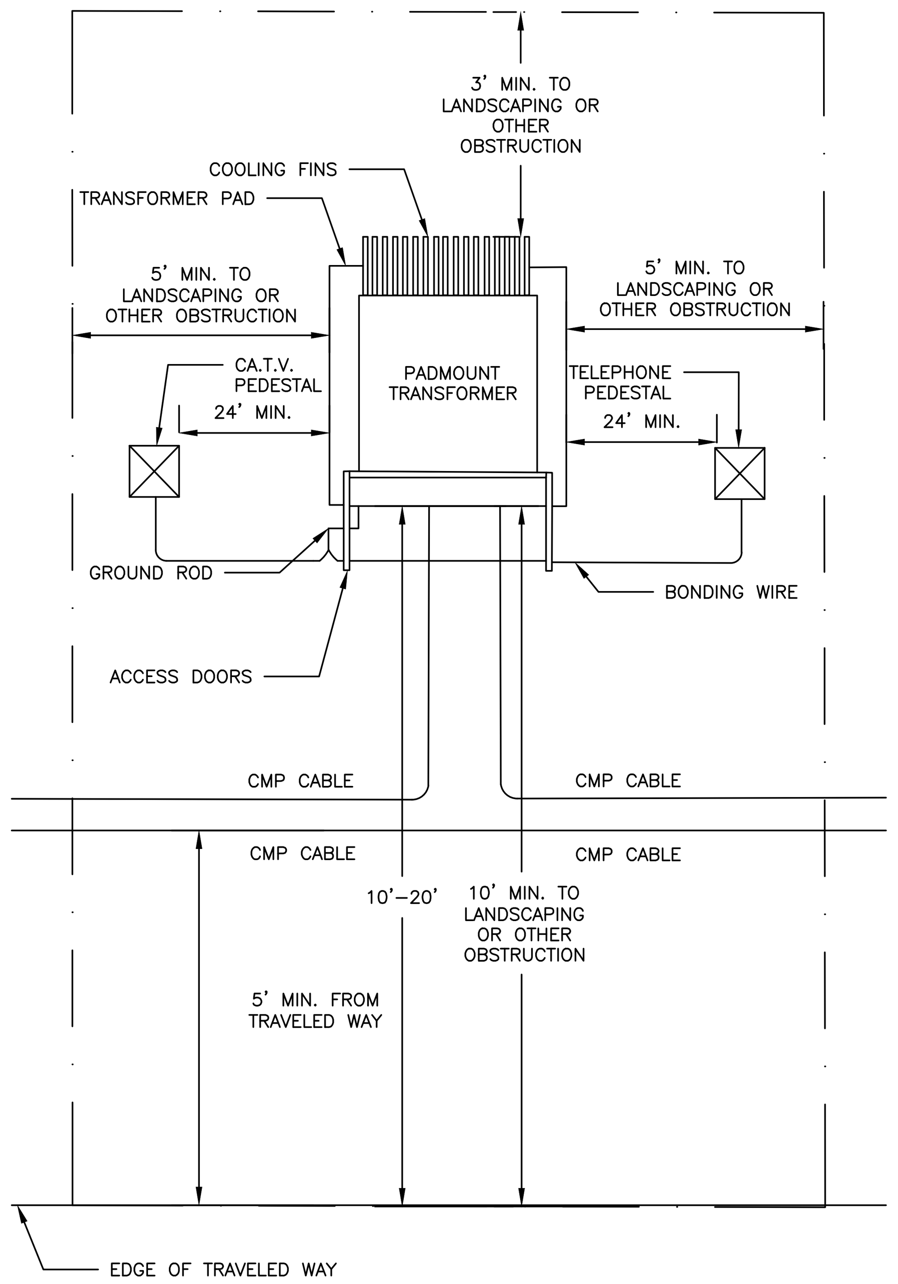
NOTES:

1. REFER TO THE GRADING AND DRAINAGE PLANS FOR ADDITIONAL INFORMATION



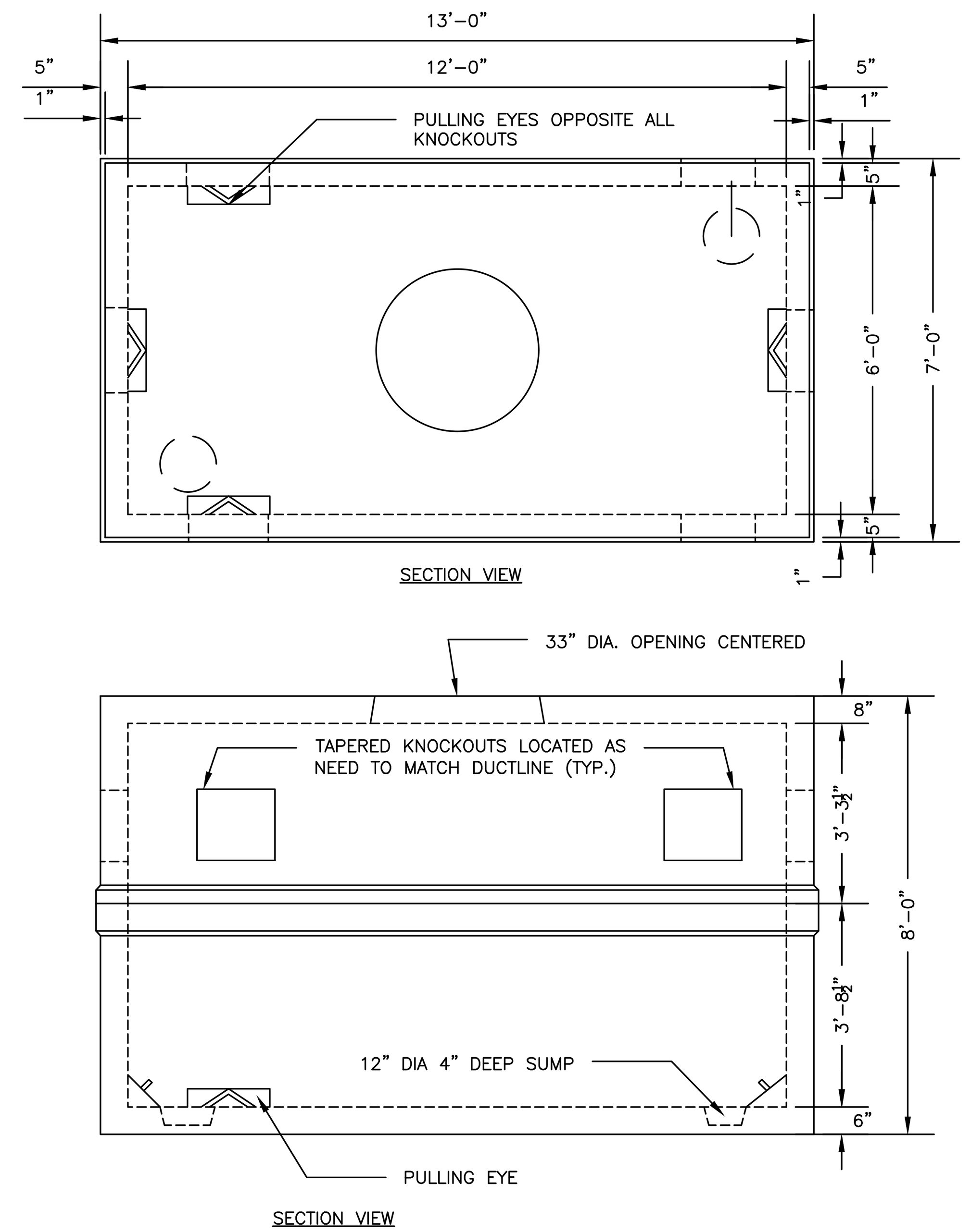

CLEANOUT DETAIL

NOT TO SCALE



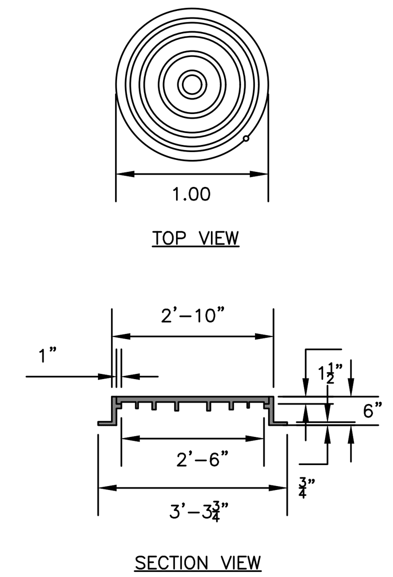

PAD MOUNTED TRANSFORMER

NOT TO SCALE




38Y MANHOLE

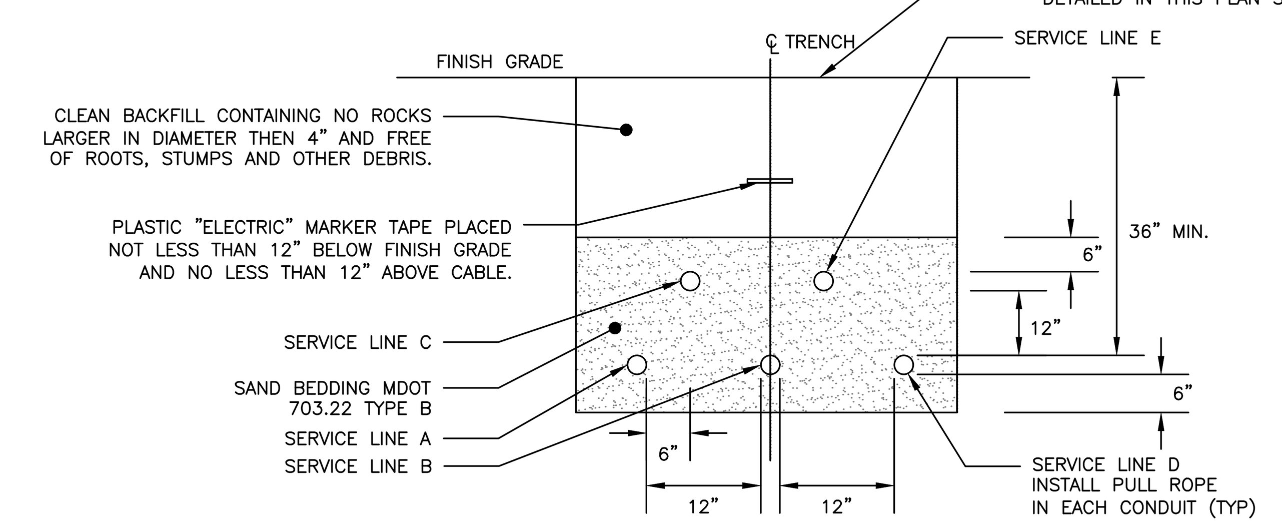
NOT TO SCALE




COVER DETAIL

NOTES:

1. VAULT SHALL BE DESIGNED TO WITHSTAND A H2O WHEEL LOADING WITH 6 INCHES OF OVERBURDERN. THE DESIGN SHALL ALSO COMPLY WITH THE STRENGTH REQUIREMENTS OF NATIONAL ELECTRICAL SAFETY CODE SECTION 323A. PROVIDE SHOW DRAWINGS STAMPED BY A STATE OF MAINE REGISTERED PROFESSIONAL ENGINEER UPON REQUEST.
2. JOINTS SHALL BE SEALED WITH ASPHALT.
3. MOUNTING FOR CABLE ROCKS, ETC. CAST IN WALL BY FURTHER PLANS OR FIELD LOCATED.
4. MANHOLE SHALL BE SET ON A SUITABLE GRAVEL BASE.
5. CABLES ARE TO BE RACKED ALONG ONE WALL ONLY.
6. COVER: BRICK AS REQUIRED TO REACH FINISHED GRADE.



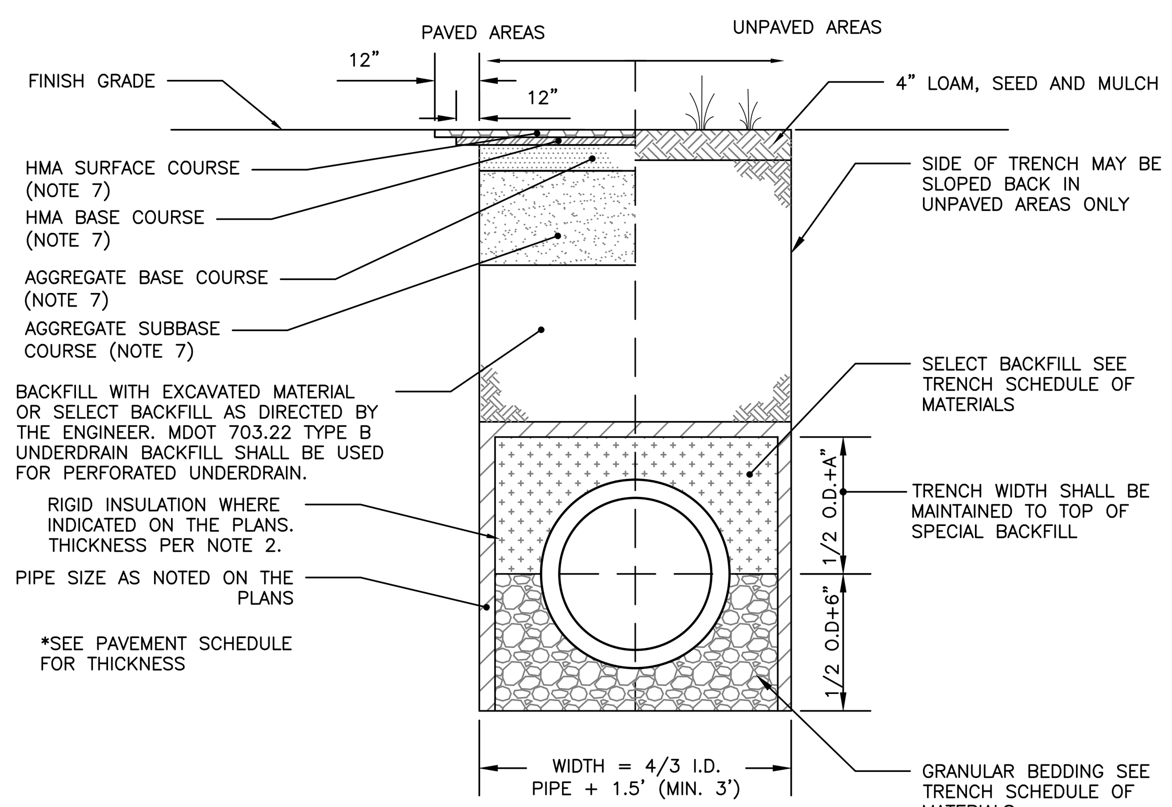

| CONDUIT TYPE | | | | |
|---|---|---|---|---|
| SERVICE | CONDUIT SIZE | GRASS AND PAVED AREAS | UTILITY | REMARKS |
| A | 5" | SCHEDULE 40 PVC ELECTRICAL GRADE | PRIMARY POWER | SEE NOTE 1 |
| B | 5" | SCHEDULE 40 PVC ELECTRICAL GRADE | PRIMARY POWER | SEE NOTE 1 |
| C | 2-4" | SCHEDULE 40 PVC | COMMUNICATION | – |
| D | 5" | SCHEDULE 40 PVC ELECTRICAL GRADE | SPARE | SEE NOTE 1 |
| E | 2-4" | SCHEDULE 40 PVC | CABLE | – |

NOTES:

1. ONE CONDUIT CAPPED FOR SPARE, PROVIDE GALVANIZED STEEL LONG SWEEP AT RISER POLE AND EXTEND GALVANIZED CONDUIT TO 10" ABOVE GRADE AT POLE WITH STAND-OFF BRACKETS.
2. MINIMUM SEPARATION OF 24 INCHES BETWEEN PRIMARY CABLE/CONDUIT AND GAS LINES SHALL BE MAINTAINED.
3. CONDUITS WITHIN THE CITY RIGHT-OF-WAY SHALL BE ENCASED IN CONCRETE.
4. FINAL SIZE OF CONDUITS TO BE SPECIFIED BY MEP, ELECTRICIAN, OR DESIGN/BUILD ELECTRICAL CONTRACTOR.

UTILITY TRENCH – PRIMARY AND SECONDARY POWER, TELEPHONE, AND CABLE

NOT TO SCALE




ALLOWABLE PIPE MATERIALS:

- REINFORCED CONCRETE PIPE (RCP) MIN. STRENGTH OF CLASS III
- PVC RING TYPE SEWER (SDR 35) OR EQUIVALENT, MIN PS-46 RATING
- PVC RING TYPE SEWER PIPE MEETING ASTM F 789
- DUCTILE IRON PIPE (DIP)
- ADS N-12 HP TRIPLE-WALL MIN PS-46 RATING
- ADS SANITITE HP MIN. PS-46

| SCHEDULE OF MATERIALS | | |
|---|---|---|
| TYPE OF PIPE | GRANULAR BEDDING | SELECT BACKFILL |
| CMP DUCTILE IRON RCP | MDOT 703.22 TYPE B UD BACKFILL | MDOT 703.22 TYPE B UD BACKFILL |
| PVC/HDPE | MDOT 703.22 TYPE C 3/4" CRUSHED STONE | MDOT 703.22 TYPE B UD BACKFILL |
| CMP | MDOT 703.22 TYPE C 3/4" CRUSHED STONE | MDOT 703.22 TYPE C 3/4" CRUSHED STONE |

NOTES:

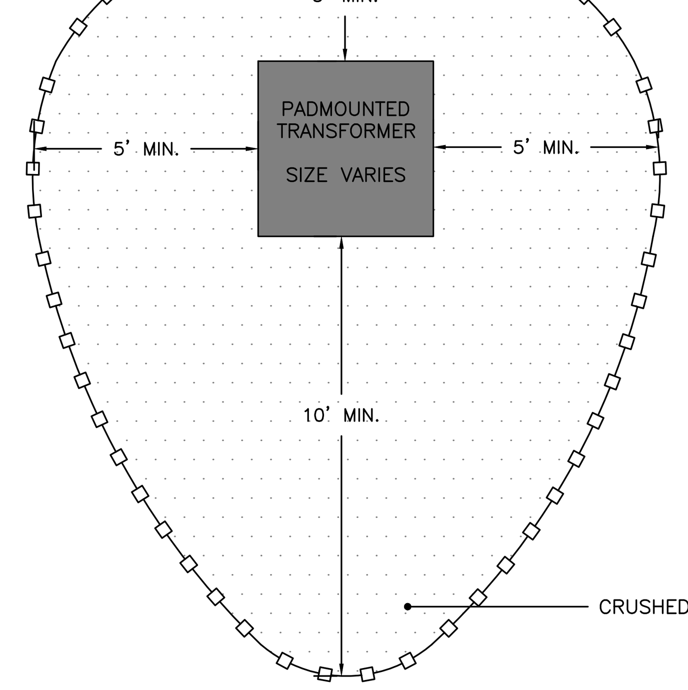
1. BRACING AND SHEETING OR OTHER TRENCH PROTECTION TO BE PROVIDED TO MEET APPLICABLE STATE AND O.S.H.A. SAFETY STANDARDS. ALL SUCH TRENCH PROTECTION TO BE THE RESPONSIBILITY OF THE CONTRACTOR.
2. STORM DRAIN COVER BETWEEN 2' AND 3' SHALL INCLUDE 4" OF RIGID INSULATION. COVER BETWEEN 3' AND 4' SHALL INCLUDE 2' RIGID INSULATION. OTHER UTILITIES: ADD 2" OF RIGID INSULATION FOR EACH FOOT ABOVE MINIMUM DEPTH.
3. INSTALL WARNING TAPE DIRECTLY ABOVE UTILITIES AT THE TOP OF SUBGRADE.
4. MINIMUM COVER
   4.1. 2'-0" – STORM DRAIN
   4.2. 5'-0" – SEWER
5. NO TREES SHALL BE PLANTED WITHIN 5' OF A SEWER PIPE OR SERVICE
6. THIS DETAIL SHALL BE APPLIED ONLY TO DRAINAGE PIPE TRENCHES OUTSIDE OF THE CITY OF BIDDEFORD ROW.
7. THICKNESS AS NOTED BY SURFACE DETAILS
8. ALL PROPOSED TREES PLANTED WITHIN 10' OF A STORM OR SEWER PIPE SHALL BE PLANTED AT A DEPTH NO GREATER THAN 3' DEEP. PERMEABLE LANDSCAPE FABRIC SHALL CREATE A ROOT BARRIER AROUND THE PIPES. CONTRACTOR SHALL COORDINATE WITH THE LANDSCAPE DRAWINGS.

STORM DRAIN AND SEWER TYPICAL TRENCH SECTION WITHIN PROPERTY

NOT TO SCALE

NOTES:

1. WHERE DANGER OF PLOW OR TRAFFIC DAMAGE EXISTS, BARRIERS CONSISTING OF CONCRETE FILLED 6 INCH IPS STEEL POSTS SET 4 FEET DEEP SHALL BE PROVIDED FOR PROTECTION (PRESSURE TREATED 6X6 INCH MIN. TIMBER POSTS MAY BE SUBSTITUTED IN RESIDENTIAL AREAS). POSTS SHALL NOT INTERFERE WITH TRANSFORMER ACCESS. GENERALLY THE POSTS SHALL BE LOCATED NEAR THE CORNERS OF THE TRANSFORMERS.
2. THE SETBACKS DEPICT CLEARANCES FROM OBSTRUCTIONS INCLUDING TREES, SHRUBS, AND FENCES.
3. THERE SHALL BE NO OPENINGS IN THE BUILDING WALL IN BACK OF, BESIDE, OR OVER THE TRANSFORMER UNLESS THE TRANSFORMER IS A MIN. OF 10 FEET FROM THE BUILDING.
4. SIDE CLEARANCES FROM DOORS OR WINDOWS SHALL NOT BE LESS THAN 10 FEET.
5. THERE SHALL BE A MIN. OF 10 FEET BETWEEN THE TRANSFORMER AND ANY GAS METER/REGULATOR, GAS RELIEF VALVE, GAS VENT DISCHARGE, GAS FILLING CONNECTION, OR PROPANE TANK. SOME INSURANCE COMPANIES MAY REQUIRE INCREASED CLEARANCES.
6. TRANSFORMER SHALL BE LOCATED FAR ENOUGH AWAY FROM BUILDING OVERHANGS SO THAT THEY WILL NOT BE SUBJECT TO DAMAGE BY FALLING ICE AND SNOW.
7. IF TRANSFORMER IS NOT INSTALLED IMMEDIATELY UPON THE INSTALLATION OF THE CABLE IN THE PAD, THE DEVELOPER SHALL PROVIDE AND INSTALL A CMP APPROVED CONCRETE, STEEL, OR FIBERGLASS COVER OVER THE PAD OPENING TO ELIMINATE EXPOSURE OF THE CABLE.

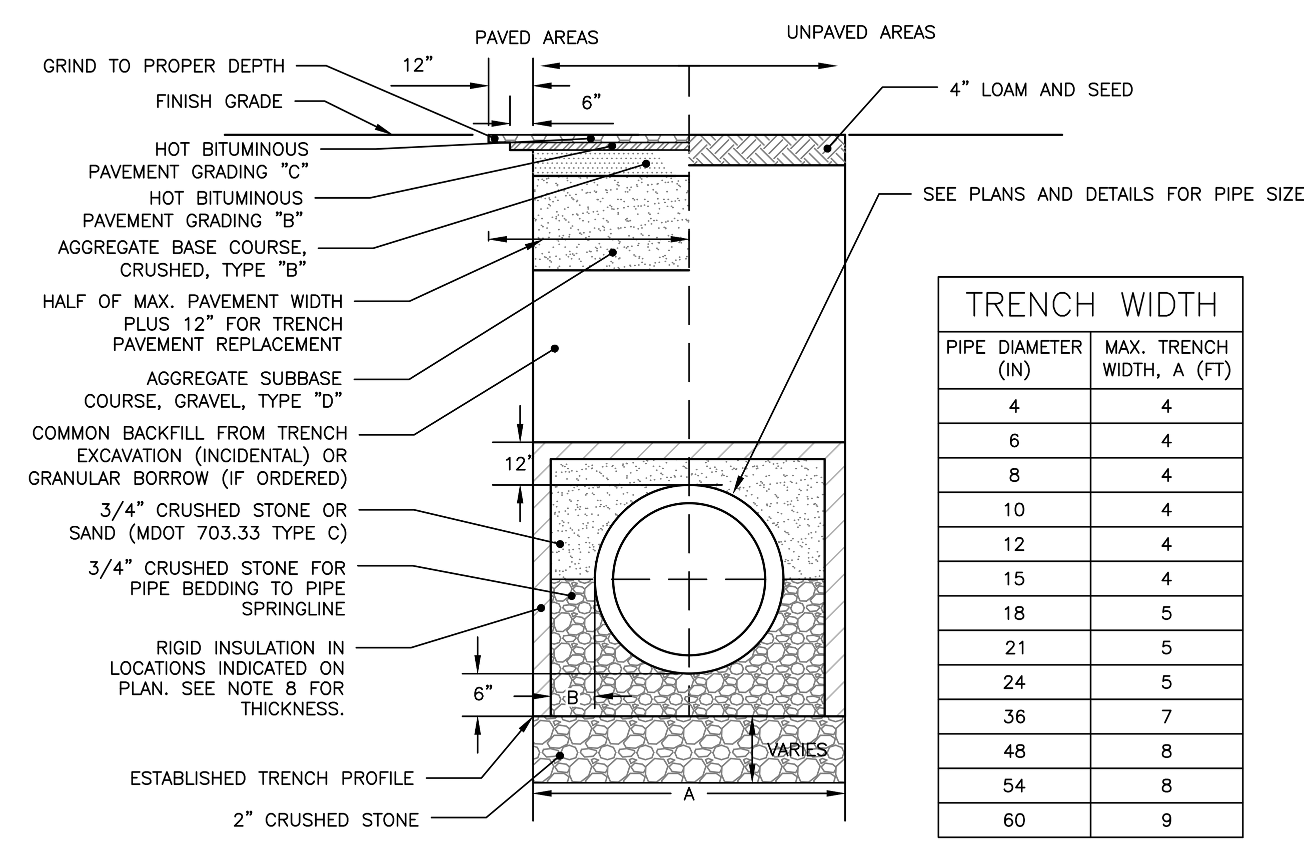



CMP TRANSFORMER SETBACKS

NOT TO SCALE

DESIGN NOTES:

1. ANY ALTERNATE TRENCHING METHODS SHALL BE APPROVED IN ADVANCE BY THE CITY.
2. ALL CONSTRUCTION METHODS SHALL CONFORM TO THE CITY OF BIDDEFORD TECHNICAL STANDARDS FIGURE II-2.
3. BRACING & SHEETING OR OTHER TRENCH PROTECTION TO BE PROVIDED TO MEET APPLICABLE STATE AND O.S.H.A SAFETY STANDARDS. ALL SUCH TRENCH PROTECTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
4. WHERE APPLICABLE, PERFORATIONS IN STORM DRAIN (PERF. SD) SHALL BE ORIENTED UP.
5. ALL STORM DRAINS SHALL BE PVC SDR 35 MIN PS-46 RATING OR OR IN ACCORDANCE WITH CITY OF BIDDEFORD TECHNICAL MANUAL , SECTION 2 – SANITARY SEWER AND STORM DRAIN – PART 2.5.2
6. IN PAVED AREAS, DEPTHS OF GRAVEL AND HOT MIX ASPHALT PAVEMENT SHALL MATCH THE GREATER OF EXISTING CONDITIONS OR THE REQUIREMENTS FOR THE CORRESPONDING STREET CLASSIFICATION.
7. THIS DETAIL SHALL BE APPLIED ONLY TO PIPE TRENCHES WITHIN OF THE CITY OF BIDDEFORD R.O.W.
8. STORM DRAIN COVER BETWEEN 2' AND 3' SHALL INCLUDE 4" OF RIGID INSULATION. COVER BETWEEN 3' AND 4' SHALL INCLUDE 2" RIGID INSULATION. OTHER UTILITIES: ADD 2" OF RIGID INSULATION FOR EACH FOOT ABOVE MINIMUM DEPTH.
9. DEPTH OF BITUMINOUS PAVEMENT AND AGGREGATE COURSES SHALL BE DETERMINED BY STREET CLASSIFICATION.
10. DIMENSION B SHALL BE SUFFICIENT TO ALLOW CRUSHED STONE BEDDING TO BE PLACED AND COMPACTED UNDER THE HAUNCHES OF THE PIPE; BUT IN ALL CASES DIMENSION B SHALL BE AT LEAST 9".
11. DIMENSION A IS THE MAXIMUM WIDTH ALLOWED FOR CALCULATING PAY QUANTITIES UNDER GRANULAR BORROW, CRUSHED STONE, STRUCTURAL EARTH EXCAVATION, AND STRUCTURAL ROCK EXCAVATION. DIMENSION A SHALL BE BASED ON PIPE DIAMETER D, AS SET FORTH IN THE TABLE BELOW.




| TRENCH WIDTH | |
|---|---|
| PIPE DIAMETER (IN) | MAX. TRENCH WIDTH, A (FT) |
| 4 | 4 |
| 6 | 4 |
| 8 | 4 |
| 10 | 4 |
| 12 | 4 |
| 15 | 4 |
| 18 | 5 |
| 21 | 5 |
| 24 | 5 |
| 36 | 7 |
| 48 | 8 |
| 54 | 8 |
| 60 | 9 |

TYPICAL PIPE TRENCH DETAIL WITHIN RIGHT-OF-WAY

NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR
CONSTRUCTION

| ISSUED FOR | BY DATE |
|---|---|
| SRCC | PFH 1/28/2021 |
| CITY REVIEW | PFH 2/3/2021 |
| DEP SW APP | PFH 3/30/2021 |
| FINAL APP | PFH 4/7/2021 |
| COMMENT RESPONSE | PFH 5/14/2021 |

DRAWING NAME: UTILITY DETAILS – 2

PROJECT NAME/ADDRESS: 1 GOOCH STREET REDEVELOPMENT

CLIENT/OWNER OF RECORD: TOM WATSON & CO.
188 STATE STREET, 3RD FLOOR, PORTLAND ME 04101


A C O R N ENGINEERING, INC.
ACORN ENGINEERING, INC.
PO BOX 3372, PORTLAND MAINE 04101
(207) 775-2655



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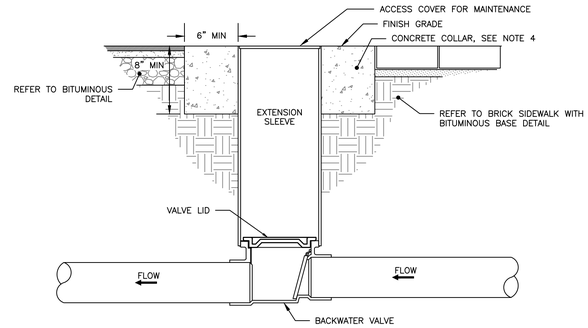
FILE: 1093.10_CIVIL
JN: 1093.10
SCALE: AS NOTED
DESIGNED BY: PFH
DRAWN BY: ZMS
CHECKED BY: WHS

STATE OF MAINE
PETER F. HEIL
15318
LICENSED PROFESSIONAL ENGINEER
5/13/21

DRAWING NO.

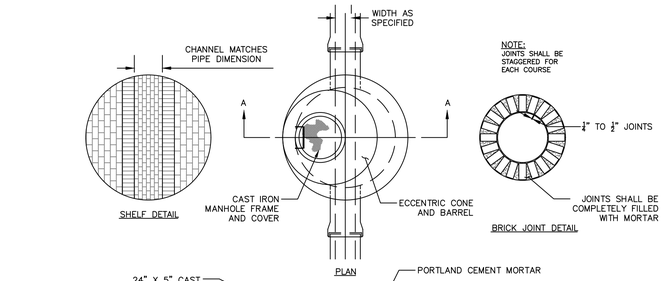
C-43

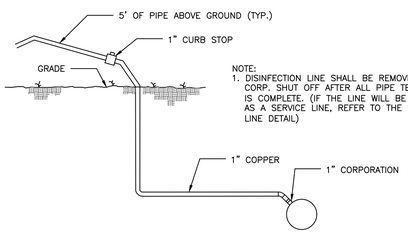



NOTES:

1. BACKFLOW VALVE TO BE PROVIDED BY AGRI DRAIN CORPORATION OR AN APPROVED EQUAL.
2. VALVE TO BE INSTALLED TO MANUFACTURER'S SPECIFICATIONS AND COMPLY WITH RULES AND REGULATIONS AS OUTLINED IN SECTION 2 OF THE CITY OF PORTLAND TECHNICAL MANUAL.
3. VALVE SHALL BE INSTALLED WITH A VALVE BOX AND COVER TO PROVIDE EASY ACCESS AND MAINTENANCE; VALVE COVER SHALL STATE 'SEWER' ON LID FLUSH TO SURFACE. REFER TO VALVE & BOX COVER DETAIL FOR ADDITIONAL INFORMATION.
4. CONCRETE COLLAR AT A MINIMUM 24-HOUR COMPRESSIVE STRENGTH OF 3,000 PSI.

## BACKFLOW VALVE ASSEMBLY
NOT TO SCALE



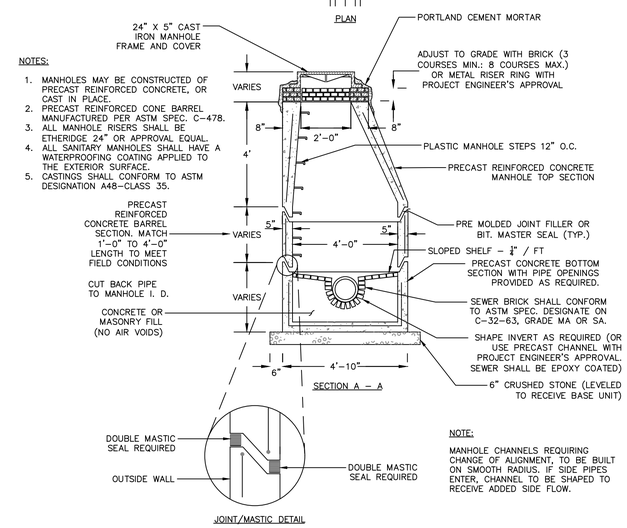




NOTE:
1. DISINFECTION LINE SHALL BE REMOVED AND CORP. SHUT OFF AFTER ALL PIPE TESTING IS COMPLETE. (IF THE LINE WILL BE USED AS A SERVICE LINE, REFER TO THE SERVICE LINE DETAIL)

## DISINFECTION LINE DETAIL
NOT TO SCALE

NOTES:

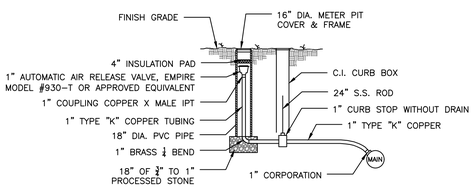
1. MANHOLES MAY BE CONSTRUCTED OF PRECAST REINFORCED CONCRETE, OR CAST IN PLACE.
2. PRECAST REINFORCED CONE BARREL MANUFACTURED PER ASTM SPEC. C-478.
3. ALL MANHOLE RISERS SHALL BE ETHERIDGE 24" OR APPROVAL EQUAL.
4. ALL SANITARY MANHOLES SHALL HAVE A WATERPROOFING COATING APPLIED TO THE EXTERIOR SURFACE.
5. CASTINGS SHALL CONFORM TO ASTM DESIGNATION A48-CLASS 35.




NOTE:

MANHOLE CHANNELS REQUIRING CHANGE OF ALIGNMENT, TO BE BUILT ON SMOOTH RADIUS. IF SIDE PIPES ENTER, CHANNEL TO BE SHAPED TO RECEIVE ADDED SIDE FLOW.

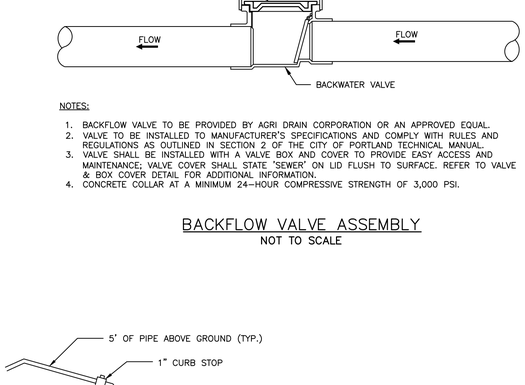
## PRECAST CONCRETE MANHOLE
NOT TO SCALE



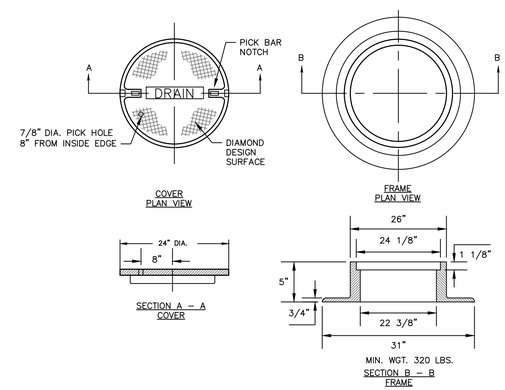

## AIR RELEASE VALVE DETAIL
NOT TO SCALE

NOTES:

1. LOCATION WITH WARNING TAPE SHALL BE INSTALLED OVER CENTERLINE OF PIPE AT A MAXIMUM OF 24 INCHES BELOW FINISH GRADE.
2. SITE CONTRACTOR TO COORDINATE CONNECTION OF SEWER LATERAL TO STRUCTURE PLUMBING WITH ARCHITECTURAL CONTRACTOR.
3. CONNECTION OF PROPOSED SEWER LATERAL TO STRUCTURE PLUMBING SHOULD INCORPORATE USE OF SIMILAR PIPE MATERIALS. IN THE CASE OF DISSIMILAR PIPES BEING USED, A FERNCO FLEXIBLE COUPLING SHALL BE USED.



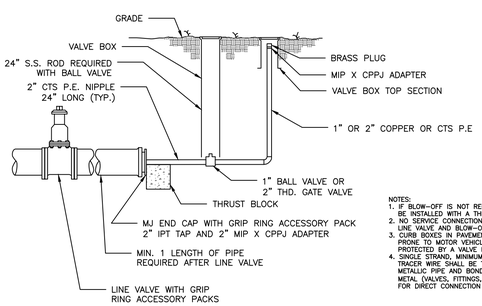

## SEWER TEE/WYE CONNECTION DETAIL
NOT TO SCALE




NOTES:

1. ALL MANHOLE COVERS SHALL BE SOLID AND SHALL HAVE ONE 7/8" DIAMETER DRILLED PICK HOLE, LOCATED 8" FROM THE CENTER OF THE COVER
2. ALL SANITARY AND STORMWATER/DRAIN MANHOLE COVERS SHALL BE 24" x 5".
3. ALL SANITARY MANHOLE COVERS AND SHALL HAVE "SEWER" CAST INTO THE COVER.
4. ALL STORMWATER/DRAIN MANHOLE COVERS SHALL HAVE "DRAIN" CAST INTO THE COVER.
5. APPROVED MANHOLE FRAMES:
   5.1. EAST JORDAN = 1690Z
   5.2. NEENAH = R-1496
   5.3. OR APPROVED EQUAL
6. APPROVED MANHOLE COVERS
   6.1. EAST JORDAN = 2160A
   6.2. NEENAH = R-1496
   6.3. OR APPROVED EQUAL

## CAST IRON MANHOLE COVER AND FRAME
NOT TO SCALE




NOTES:
1. IF BLOW-OFF IS NOT REQUIRED, CAP CAN BE INSTALLED WITH A THRUST BLOCK.
2. NO SERVICE CONNECTIONS BETWEEN LINE VALVE AND BLOW-OFF ASSEMBLY.
3. CURB BOXES IN PAVEMENT OR IN GRAVEL PRONE TO MOTOR VEHICLE TRAFFIC SHALL BE PROTECTED BY A VALVE BOX TOP.
4. SINGLE STRAND, MINIMUM 12 GAUGE, METALLIC TRACER WIRE SHALL BE TAPED TO ALL NON-METALLIC PIPE AND BONDED TO ASSOCIATED METAL (VALVES, FITTINGS, ETC.) AT THE ENDS FOR DIRECT CONNECTION SIGNAL LOCATING.

## 1-INCH OR 2-INCH BLOW-OFF DETAIL
NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

| ISSUED FOR | BY / DATE |
|---|---|
| SRCC | PFH 1/28/2021 |
| CITY REVIEW | PFH 2/2/2021 |
| DEP SW APP | PFH 3/30/2021 |
| FINAL APP | PFH 4/7/2021 |
| COMMENT RESPONSE | PFH 5/14/2021 |

DRAWING NAME: UTILITY DETAILS - 3

PROJECT NAME/ADDRESS: 1 GOOCH STREET REDEVELOPMENT

CLIENT/OWNER OF RECORD: TOM WATSON & CO. 188 STATE STREET, 3RD FLOOR, PORTLAND ME 04101

ACORN ENGINEERING, INC.
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ACORN ENGINEERING, INC.
PO BOX 4544, PORTLAND, MAINE 04101
(207) 775-2655

| | |
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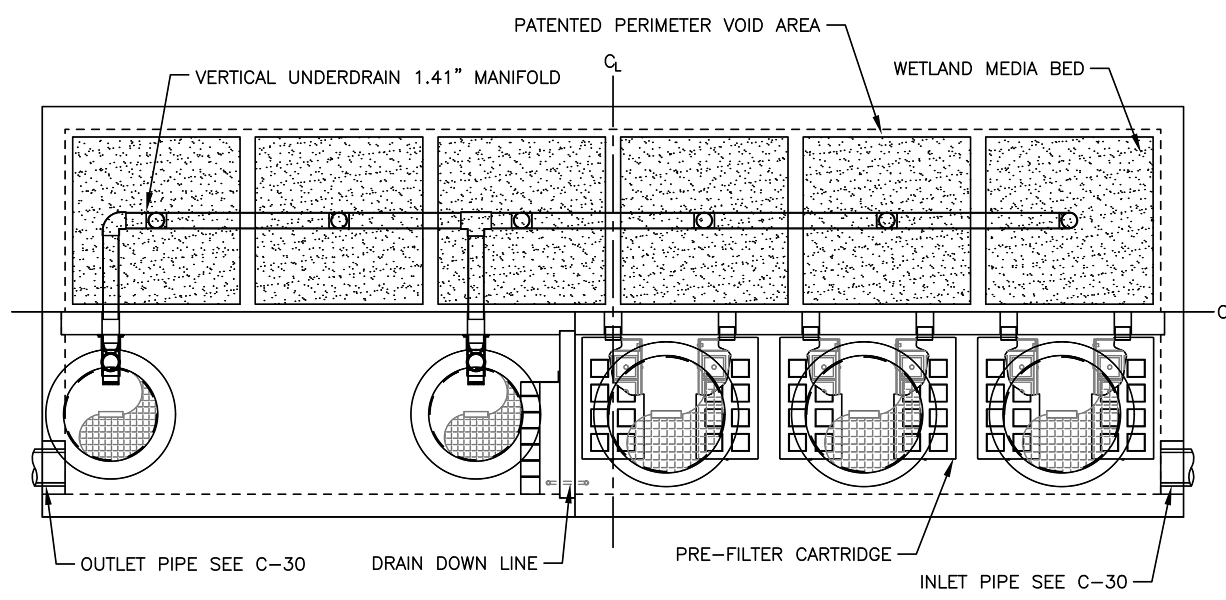
| FILE: | 1093.10_CIVIL |
| JN: | 1093.10 |
| SCALE: | AS NOTED |
| DESIGNED BY: | PFH |
| DRAWN BY: | ZMS |
| CHECKED BY: | WHS |

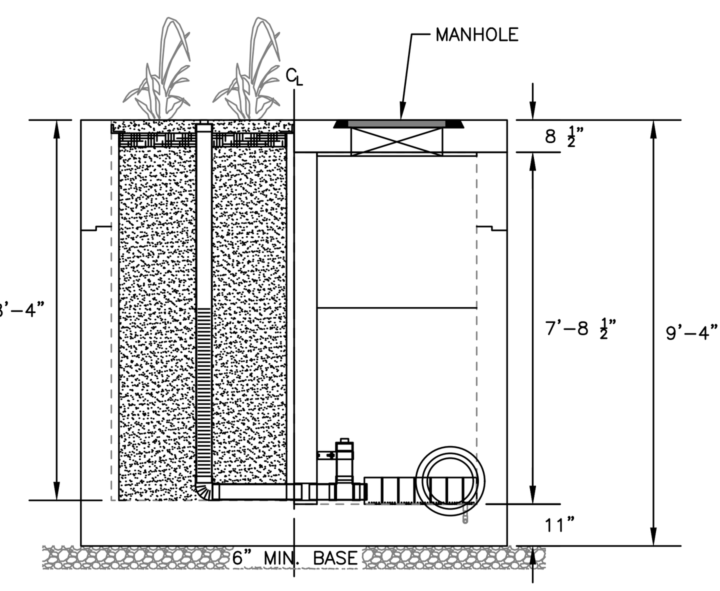
STATE OF MAINE — PETER F. HEIL — 15318 — LICENSED PROFESSIONAL ENGINEER

DRAWING NO.
C-44

| SITE SPECIFIC DATA | | | |
|---|---|---|---|
| PROJECT NUMBER | | 12779 | |
| PROJECT NAME | | 1 GOOCH STREET | |
| PROJECT LOCATION | | BIDDEFORD, ME | |
| STRUCTURE ID | | MODULAR WETLAND | |
| TREATMENT REQUIRED | | | |
| VOLUME BASED (CF) | | FLOW BASED (CFS) | |
| N/A | | 0.86 | |
| TREATMENT HGL AVAILABLE (FT) | | | 4.2 |
| PEAK BYPASS REQUIRED (CFS)– IF APPLICABLE | | | 6.53 |
| PIPE DATA | I.E. | MATERIAL | DIAMETER |
| INLET PIPE 1 | 48.28 | PVC | 12" |
| INLET PIPE 2 | N/A | N/A | N/A |
| OUTLET PIPE | 47.78 | PVC | 12" |
| | PRETREATMENT | BIOFILTRATION | DISCHARGE |
| RIM ELEVATION | 56.20 | 56.20 | 56.20 |
| SURFACE LOAD | PEDESTRIAN | OPEN PLANTER | PEDESTRIAN |
| FRAME/COVER | 3 EA ø30" | OPEN PLANTER | 2 EA ø24" |
| WETLAND MEDIA VOLUME (CY) | | | 25.36 |
| ORIFICE SIZE (DIA. INCHES) | | | ø1.41" EA |
| NOTES: PRELIMINARY, NOT FOR CONSTRUCTION | | | |




PLAN VIEW



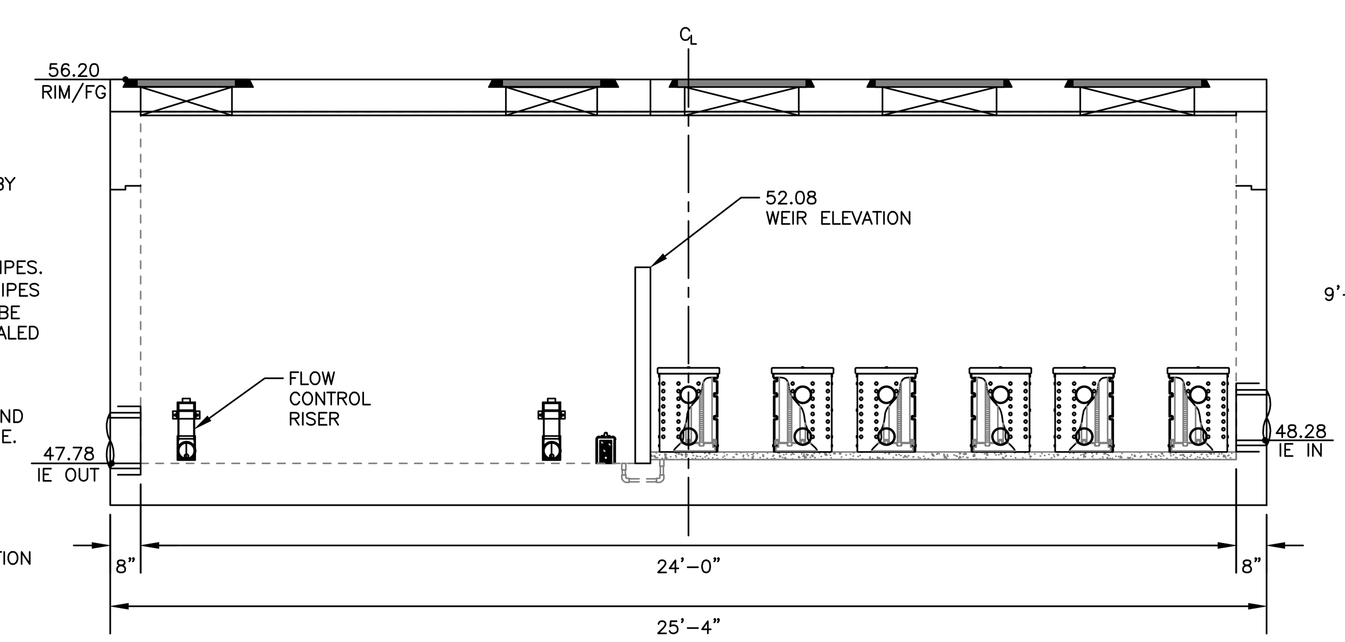

LEFT END VIEW

INSTALLATION NOTES:

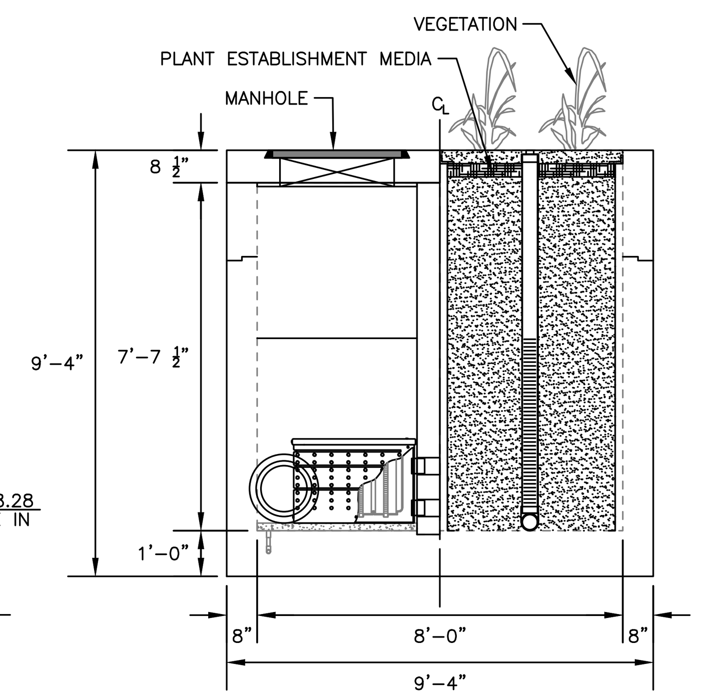
1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURER'S SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURER'S CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEER'S RECOMMENDED BASE SPECIFICATIONS.
3. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL PIPES SHALL BE SEALED WATER TIGHT PER MANUFACTURER'S STANDARD CONNECTION DETAIL.
4. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
5. VEGETATION SUPPLIED AND INSTALLED BY OTHERS. ALL UNITS WITH VEGETATION MUST HAVE DRIP OR SPRAY IRRIGATION SUPPLIED AND INSTALLED BY OTHERS.
6. CONTRACTOR RESPONSIBLE FOR CONTACTING BIO CLEAN FOR ACTIVATION OF UNIT. MANUFACTURER'S WARRANTY IS VOID WITHOUT PROPER ACTIVATION BY A BIO CLEAN REPRESENTATIVE.

GENERAL NOTES:

1. PRODUCT MODEL MWS-L-8-24-8'-4"-V MANUFACTURER BY BIO CLEAN ENVIRONMENTAL SERVICES, INC.
2. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
3. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT BIO CLEAN.




ELEVATION VIEW




RIGHT END VIEW

| OPERATING HEAD (FT) | 4.2 |
|---|---|
| PRETREATMENT LOADING RATE (GPM/SF) | 3.0 |
| WETLAND MEDIA LOADING RATE (GPM/SF) | 1.0 |

## MODULAR WETLAND SYSTEM – LINEAR BIOFILTRATION SYSTEM

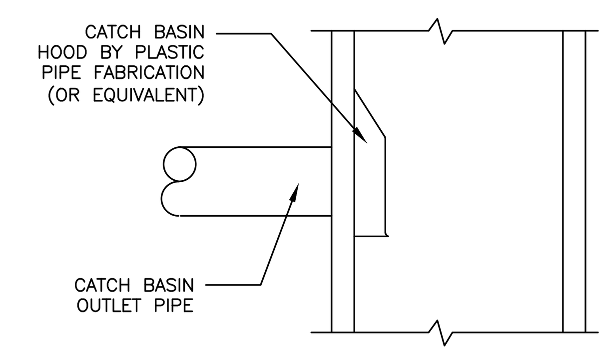
NOT TO SCALE

1. ALL CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 4000 lbs. PER SQ. INCH AT THE END OF 28 DAYS, UNLESS OTHERWISE NOTED.
2. MANHOLES MAY BE CONSTRUCTED OF PRECAST REINFORCED CONCRETE, OR CAST IN PLACE.
3. PRECAST REINFORCED CONE BARREL MANUFACTURED PER ASTM SPEC. C-478.
4. ALL STORM AND SEWER MANHOLE COVERS SHALL BE SOLD AND SHALL HAVE ONE 7/8" DIAMETER DRILLED PICK HOLE LOCATED 8" FROM THE CENTER OF THE COVER.
5. ALL SANITARY MANHOLE COVERS SHALL HAVE "SEWER" CAST INTO THE COVER. ALL STORMWATER/DRAIN MANHOLE COVERS SHALL HAVE "DRAIN" CAST INTO THE COVER.
6. ALL MANHOLE RISERS SHALL BE ETHERIDGE 24" OR APPROVAL EQUAL.
7. SEWER BRICK SHALL CONFORM TO ASTM SPEC. DESIGNATE ON C-32-63, GRADE MA AND SA.
8. ALL SANITARY MANHOLES SHALL HAVE A WATERPROOFING COATING APPLIED TO THE EXTERIOR SURFACE.
9. CATCH BASIN FRAMES FOR TYPE A4 CATCH BASIN CURB INLETS SHALL BE ETHERIDGE DR5A OR APPROVED EQUAL.
10. CASTINGS SHALL CONFORM TO ASTM DESIGNATION A48-CLASS 35.
11. EXISTING MANHOLES, CATCH BASINS, FRAMES, AND COVERS SHALL BE SALVAGED BY THE CONTRACTOR, AND SHALL REMAIN THE PROPERTY OF THE CITY OF PORTLAND.
12. ALL CATCH BASIN OUTLETS SHALL BE INSTALLED WITH A CASCO TRAP PER DETAIL.

## GENERAL NOTES FOR MANHOLES AND CATCH BASINS

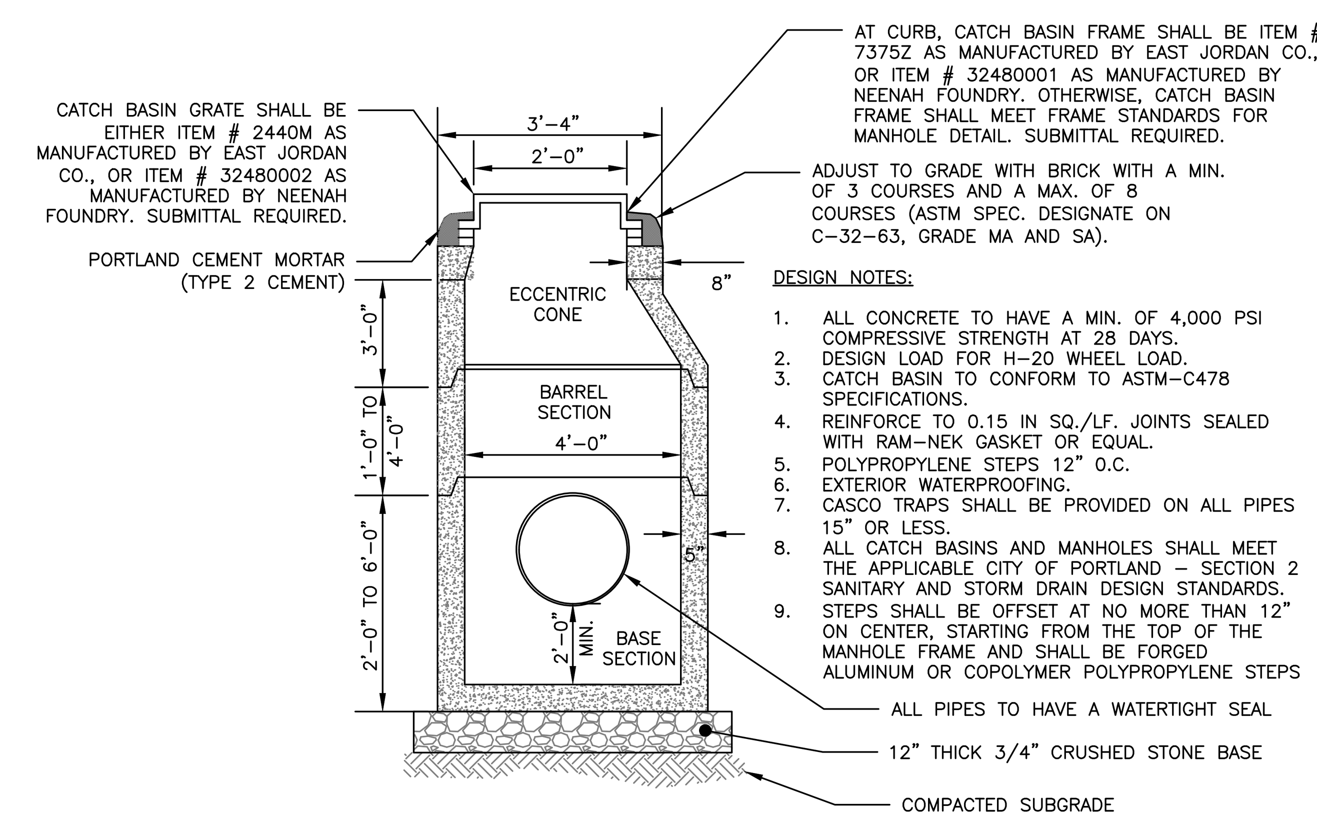
NOTES:

1. INSTALL CATCH BASIN HOODS IN ALL CATCH BASINS WITH A 12" OR 15" OUTLET PIPE.
2. PREFERRED STYLE DESIGNED TO ELIMINATE CEMENTING OF THE TRAP.
3. REFER TO MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION REQUIREMENTS




## CATCH BASIN HOOD DETAIL

NOT TO SCALE




DESIGN NOTES:

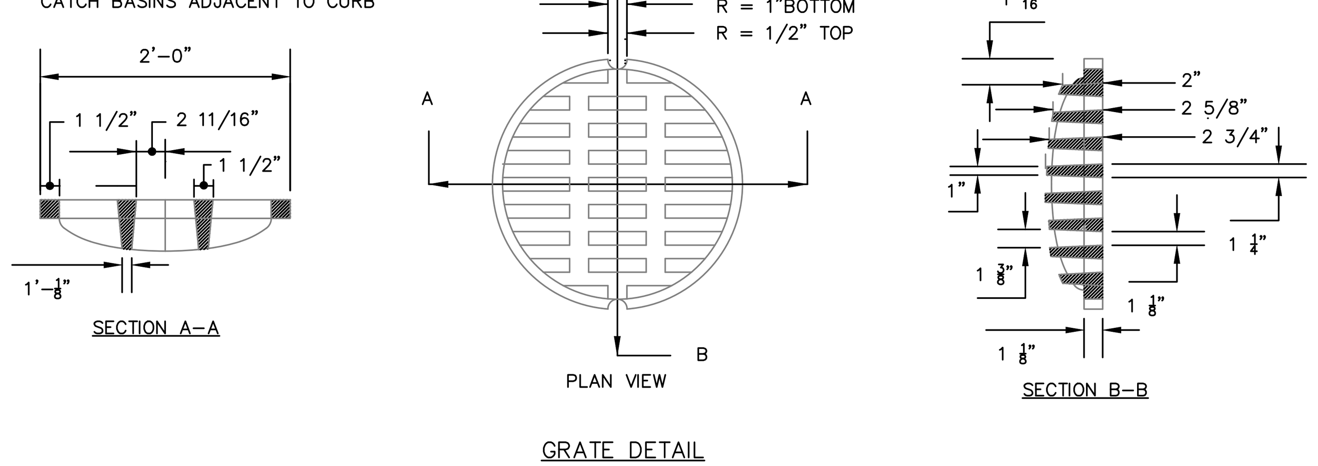
1. ALL CONCRETE TO HAVE A MIN. OF 4,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
2. DESIGN LOAD FOR H-20 WHEEL LOAD.
3. CATCH BASIN TO CONFORM TO ASTM-C478 SPECIFICATIONS.
4. REINFORCE TO 0.15 IN SQ./LF. JOINTS SEALED WITH RAM-NEK GASKET OR EQUAL.
5. POLYPROPYLENE STEPS 12" O.C.
6. EXTERIOR WATERPROOFING.
7. CASCO TRAPS SHALL BE PROVIDED ON ALL PIPES 15" OR LESS.
8. ALL CATCH BASINS AND MANHOLES SHALL MEET THE APPLICABLE CITY OF PORTLAND – SECTION 2 SANITARY AND STORM DRAIN DESIGN STANDARDS.
9. STEPS SHALL BE OFFSET AT NO MORE THAN 12" ON CENTER, STARTING FROM THE TOP OF THE MANHOLE FRAME AND SHALL BE FORGED ALUMINUM OR COPOLYMER POLYPROPYLENE STEPS

## 4'–0" DIAMETER PRECAST CATCH BASIN/MANHOLE

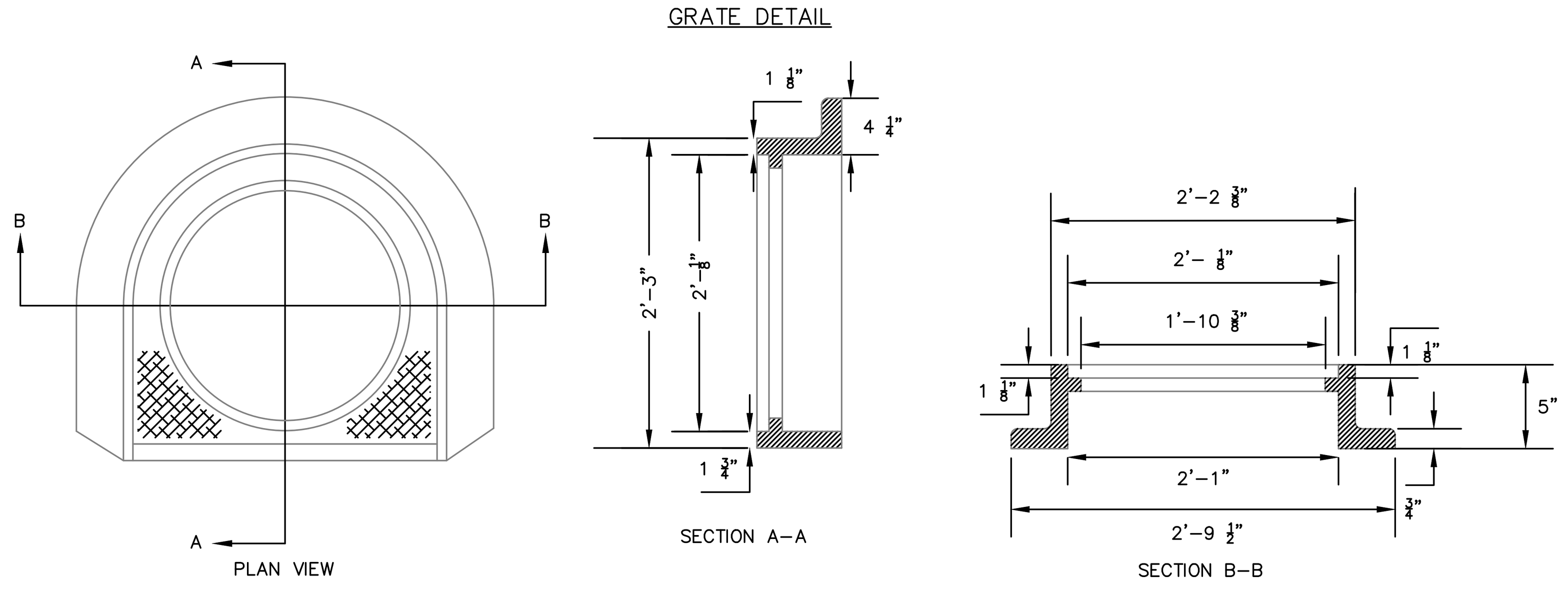
NOT TO SCALE

NOTES:

1. APPROVED CATCH BASIN FRAMES:
   1.1. EAST JORDAN = 7375Z
   1.2. NEENAH = R-3248
   1.3. OR APPROVED EQUAL
2. APPROVED CATCH BASIN GRATES
   2.1. EAST JORDAN = 2440M
   2.2. NEENAH = R-3248
   2.3. OR APPROVED EQUAL
3. PROVIDE 24" SQUARE GRATE FOR CATCH BASINS ADJACENT TO CURB



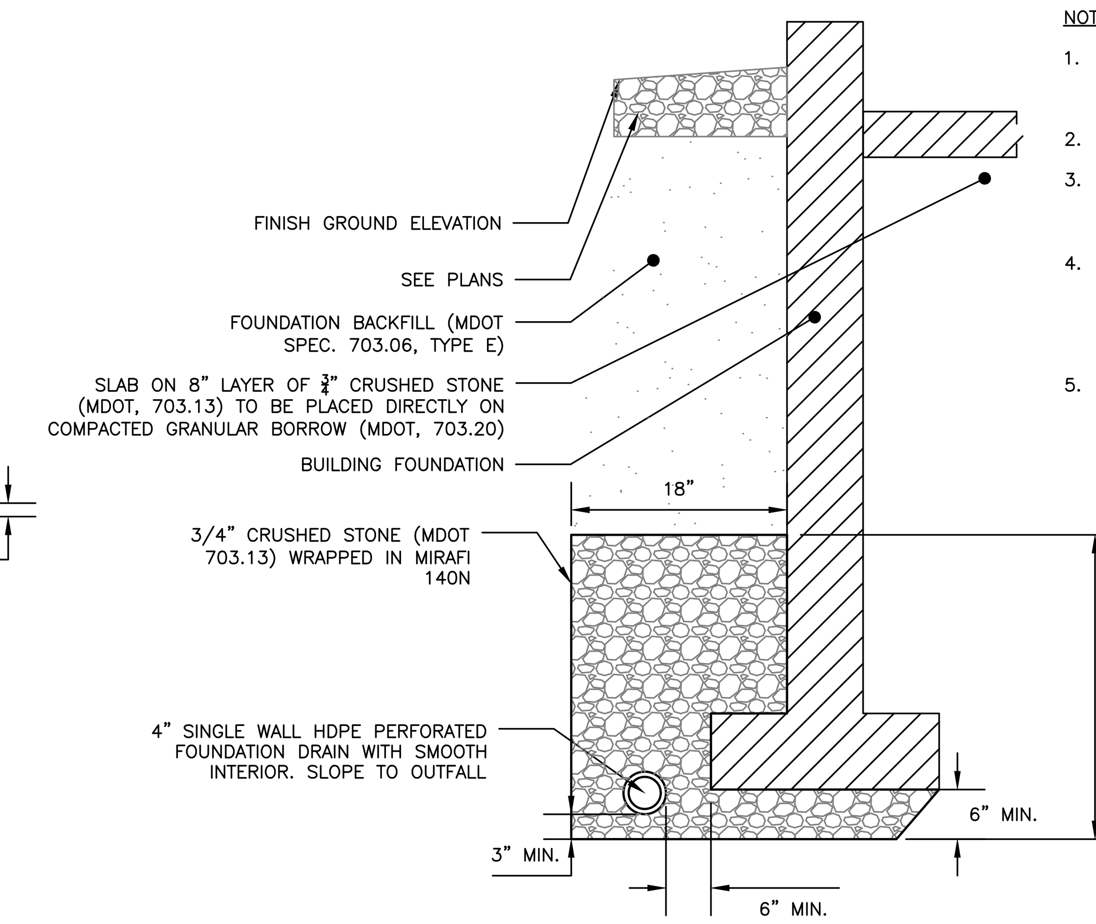

GRATE DETAIL




FRAME DETAIL

## CATCH BASIN FRAME & GRATE

NOT TO SCALE

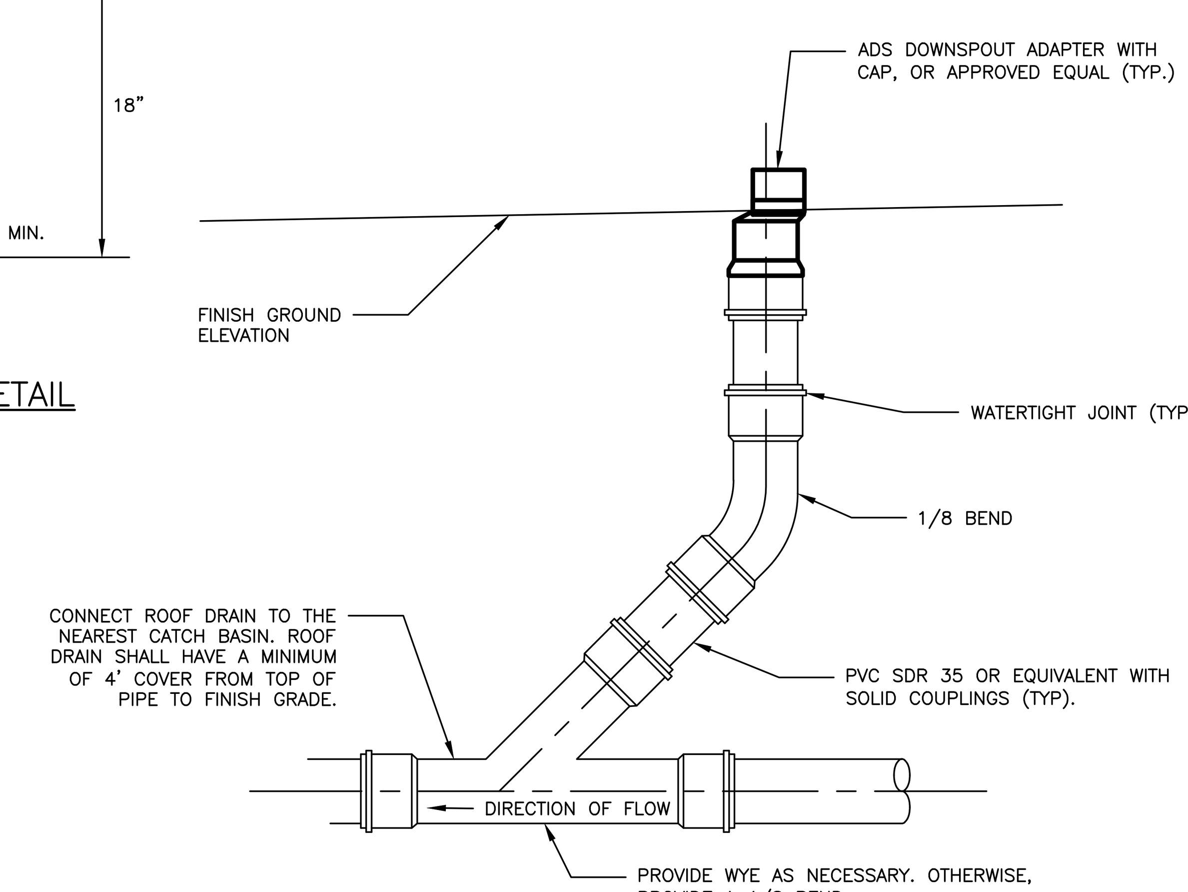



NOTES:

1. REFER TO THE BUILDING ARCHITECTS PLANS FOR THE BUILDING FOUNDATION, BACKFILL, ROOF DRAIN, SIDEWALK AND OTHER DETAILS.
2. PERFORATIONS IN UNDERDRAIN PIPE SHALL BE ORIENTED DOWN.
3. INSTALL STONE DRIP EDGE IN A LOCATIONS SUBJECT TO ROOF RUNOFF. WIDTH SHALL BE A MIN. 12" BEYOND THE PROJECTION OF THE ROOF EVE.
4. FOUNDATION WALL FOOTINGS SHALL BE CONSTRUCTED TO A MIN. DEPTH OF 4 FT BELOW ADJACENT FINISH GRADE. REFER TO STRUCTURAL ENGINEERS PLANS FOR ADDITIONAL INFORMATION AND MIN. REQUIREMENTS.
5. IF FOUNDATION DRAIN DAYLIGHTS, INSTALL DRAINAGE SOLUTIONS ANIMAL GUARD 4" EXTERNAL PVC OR CORRUGATED PLASTIC PIPE, OR INDUSTRY APPROVED EQUAL.

## FOUNDATION DRAIN DETAIL

NOT TO SCALE

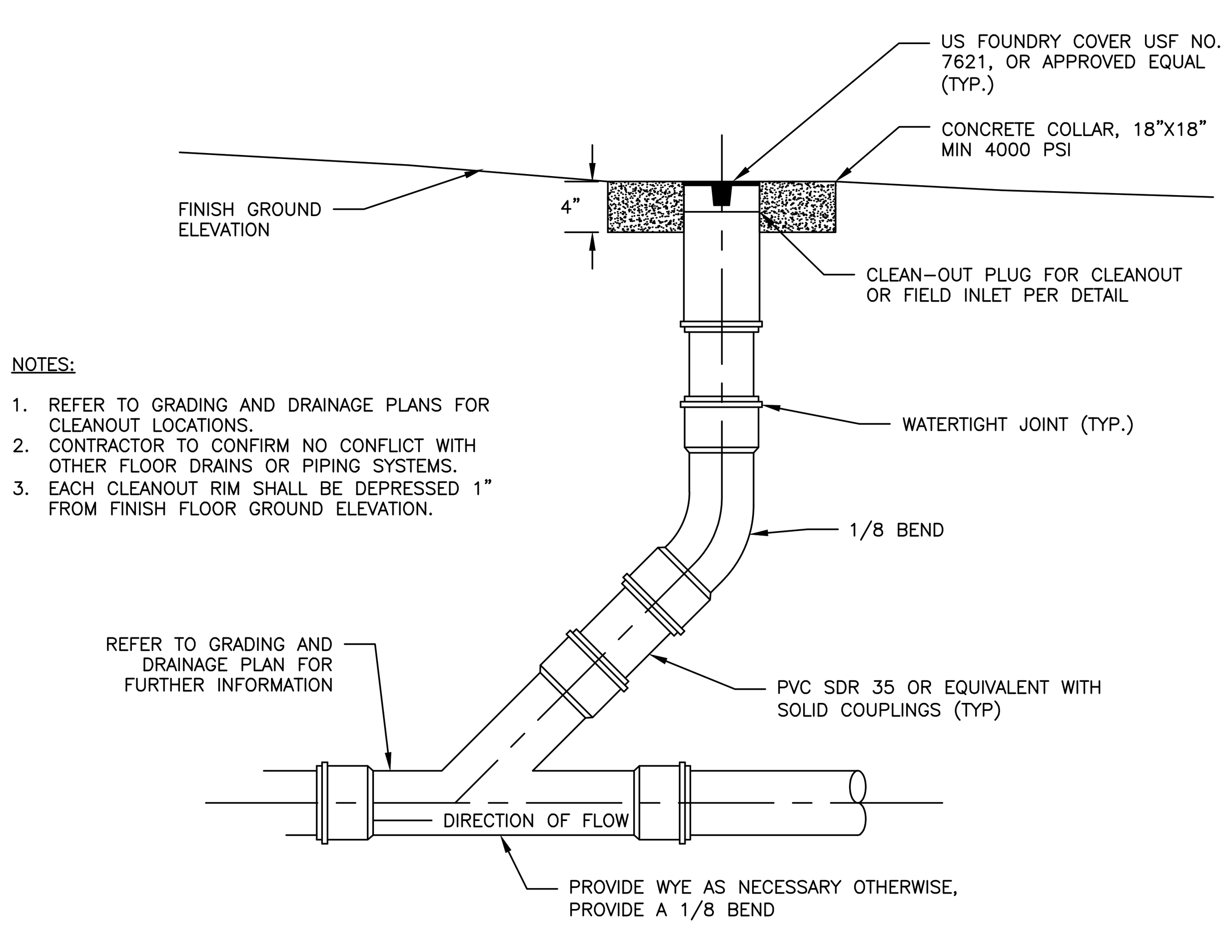



## ROOF DRAIN DETAIL

NOT TO SCALE

NOTES:

1. REFER TO GRADING AND DRAINAGE PLANS FOR CLEANOUT LOCATIONS.
2. CONTRACTOR TO CONFIRM NO CONFLICT WITH OTHER FLOOR DRAINS OR PIPING SYSTEMS.
3. EACH CLEANOUT RIM SHALL BE DEPRESSED 1" FROM FINISH FLOOR GROUND ELEVATION.




## CONCRETE COLLAR FOR CLEANOUTS IN THE TRAVEL WAY

NOT TO SCALE

PERMIT LEVEL
NOT ISSUED FOR
CONSTRUCTION

| ISSUED FOR | BY / DATE |
|---|---|
| SRCC | PFH 1/28/2021 |
| CITY REVIEW | PFH 2/3/2021 |
| DEP SW APP | PFH 3/30/2021 |
| FINAL APP | PFH 4/7/2021 |
| COMMENT RESPONSE | PFH 5/14/2021 |

DRAWING NAME: **DRAINAGE DETAILS**

PROJECT NAME/ADDRESS: **1 GOOCH STREET REDEVELOPMENT**

CLIENT/OWNER OF RECORD: TOM WATSON & CO.
188 STATE STREET, 3RD FLOOR, PORTLAND ME 04101


A C O R N ENGINEERING, INC.
ACORN ENGINEERING, INC.
PO BOX 3372, PORTLAND MAINE 04101
(207) 775-2655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| FILE: | 1093.10_CIVIL |
| JN: | 1093.10 |
| SCALE: | AS NOTED |
| DESIGNED BY: | PFH |
| DRAWN BY: | ZMS |
| CHECKED BY: | WHS |

STATE OF MAINE
PETER F. HEIL
15318
LICENSED PROFESSIONAL ENGINEER
5/13/21

DRAWING NO.

C-45

NOTES:

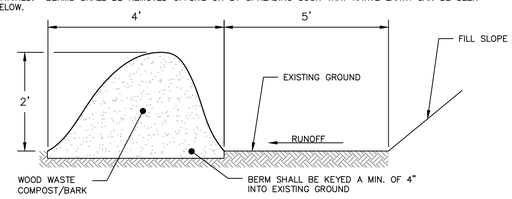
1. THE EROSION CONTROL MIX SHALL CONFORM TO THE FOLLOWING STANDARDS AND IN ACCORDANCE WITH THE MAINE DOT CHAPTER 700, SECTION 717.04(D):

   1.1. pH BETWEEN 5.0 – 8.0
   1.2. PARTICLE SIZE (BY WEIGHT):
   1.2.1. 100% PASSING A 150 MM (6 IN) SCREEN
   1.2.2. 75 TO 85% PASSING A 19 MM (0.75 IN) SCREEN
   1.3. SOLUBLE SALTS CONTENT < 4.0 MMHOS/CM
   1.4. ORGANIC MATTER 20 TO 100% , DRY WEIGHT BASIS

2. THE BERM SHOULD BE PLACED, UNCOMPACTED, ALONG A RELATIVELY LEVEL CONTOUR, WHEN NECESSARY THE BERM MAY BE PLACED PERPENDICULAR TO THE SLOPE ALONG THE PROPERTY LINE TO CONTAIN THE SEDIMENT PROVIDED A BERM IS LOCATED AT THE BASE OF THE SLOPE.

3. THE BERM MAY BE USED IN LIEU OF SILTATION FENCE, AT THE TOE OF SHALLOW SLOPES, ON FROZEN GROUND, LEDGE OUT CROPS, VERY ROOTED FORESTED AREA OR AT THE EDGE OF GRAVEL PARKING AREAS.

4. BERMS SHALL REMAIN IN PLACE UNTIL UPSTREAM AREA IS STABILIZED OR 90% CATCH OF VEGETATION IS ATTAINED. BERMS SHALL BE REMOVED OFFSITE OR BY SPREADING SUCH THAT NATIVE EARTH CAN BE SEEN BELOW.

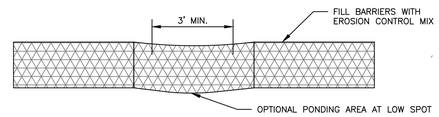



## EROSION CONTROL MIX BERM DETAIL

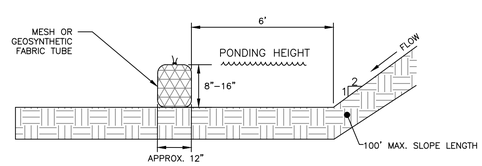
NOT TO SCALE

NOTES:

1. FULL CONTACT WITH THE GROUND IS CRITICAL TO PREVENT SHORT CIRCUITING UNDER THE TUBE – THE GROUND SURFACE SHOULD BE SMOOTH AND LEVEL. IN WOODED AREAS, PROTRUDING ROOTS AND DEBRIS MAY NEED TO BE REMOVED. IN GRASSED AREAS, THE GRASS NEEDS TO BE EITHER MOWED OR COMPRESSED DOWN.
2. STAKING MAY BE NECESSARY ON STEEP SLOPES.
3. UPON FINAL STABILIZATION, THE TUBE CAN BE CUT OPEN AND THE MATERIAL SPREAD OUT ONTO THE GROUND. THE MESH MATERIAL SHOULD BE REMOVE.
4. LOOSE COMPOST MAY BE BACKFILLED ALONG THE UPSLOPE SIDE OF THE COMPOST FILTER SOCK, FILLING THE SEAM BETWEEN THE SOIL SURFACE AND THE DEVICE, IMPROVING FILTRATION AND SEDIMENT RETENTION.



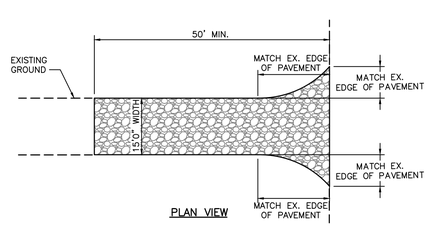

FRONT VIEW



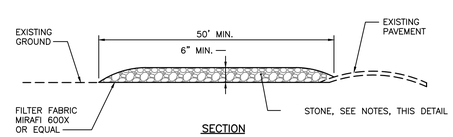

SIDE VIEW

## FILTER SOCK DETAIL

NOT TO SCALE




PLAN VIEW




SECTION

NOTES:

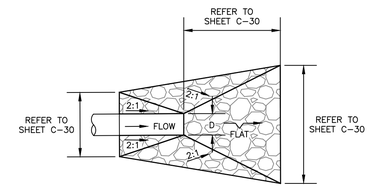
1. CONTRACTOR SHALL ADD STONE TO ENTRANCE AS MUD/SILT MATERIAL ACCUMULATES
2. STONE SHALL BE 2"–3" COARSE AGGREGATE
3. CONSTRUCTION ENTRANCE SHALL BE GRADED TO NOT ALLOW ANY STORMWATER TO BE CONVEYED OFF SITE. IN SITUATIONS WHERE THIS IS NOT POSSIBLE, ANY STORMWATER CONVEYED OFFSITE SHALL BE TREATED OR RETAINED IN A MANNER APPROVED BY ENGINEER.
4. WHEN NECESSARY, ON–SITE VEHICLES SHALL HAVE THEIR WHEELS CLEANED PRIOR TO LEAVING SITE.
5. CONSTRUCTION ENTRANCE SHALL BE GRADED IN A MANNER THAT PREVENTS TRACKING OF SEDIMENTS ONTO PUBLIC RIGHT–OF–WAY

## STABILIZED CONSTRUCTION ENTRANCE

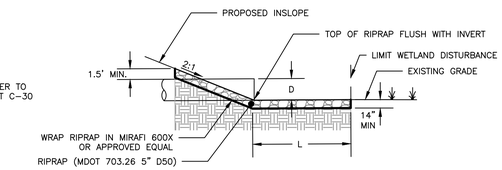
NOT TO SCALE

NOTES:

1. RIPRAP SHALL BE DESCRIBED BY M.D.O.T. 703.26 EXCEPT SIZE SHALL BE AS SHOWN.
2. REFERENCE FOR ADDITIONAL INFORMATION: BEST MANAGEMENT PRACTICES FOR EROSION AND SEDIMENT CONTROL – CULVERT INLET/OUTLET PROTECTION.



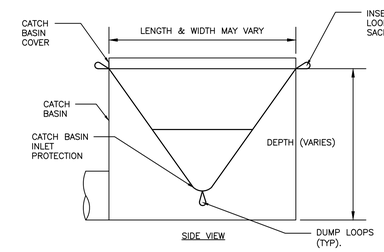

PLAN VIEW




SECTION VIEW

## RIPRAP OUTLET APRON DETAIL

NOT TO SCALE



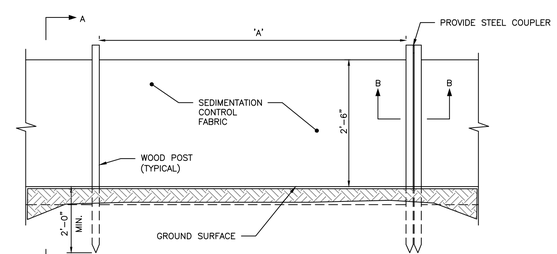

SIDE VIEW

NOTES:

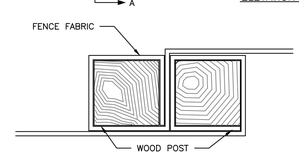
1. CATCH BASIN INLET PROTECTION SHALL BE INSTALLED DOWNGRADIENT OF PROPOSED PROJECT AND ROUTINELY MAINTAINED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS
2. CATCH BASIN SIZE VARIES. CONTRACTOR TO ENSURE CATCH BASIN INLET PROTECTION MATCHES CATCH BASIN DIMENSIONS.
3. SILT SACK SHALL BE ACF ENVIRONMENTAL SILT SACK, TYPE A, OR APPROVED EQUAL.

## CATCH BASIN INLET PROTECTION

NOT TO SCALE

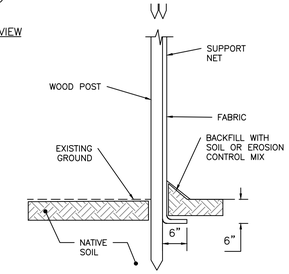



ELEVATION VIEW




SECTION B–B

| SILT FENCE REINFORCEMENT | MAX. SPACING "A" |
|---|---|
| NONE | 6' |
| WIRE REINFORCEMENT 14 GAUGE, 6" MESH | 10' |




SECTION A–A

## SILTATION FENCE DETAIL

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| SRCC | PFH 1/28/2021 |
| CITY REVIEW | PFH 2/5/2021 |
| DEP SW APP | PFH 3/30/2021 |
| FINAL APP | PFH 4/7/2021 |
| COMMENT RESPONSE | PFH 5/14/2021 |

DRAWING NAME: EROSION & SEDIMENTATION CONTROL DETAILS

PROJECT NAME/ ADDRESS: 1 GOOCH STREET REDEVELOPMENT

CLIENT/OWNER OF RECORD: TOM WATSON & CO. 188 STATE STREET, 3RD FLOOR, PORTLAND ME 04101


ACORN ENGINEERING, INC.
PO BOX 7322, PORTLAND, MAINE 04101
(207) 775–2655



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| JN: | 1093.10 |
| SCALE: | AS NOTED |
| DESIGNED BY: | PFH |
| DRAWN BY: | ZMS |
| CHECKED BY: | WHS |

STATE OF MAINE
PETER F. HEIL
15318
LICENSED
PROFESSIONAL ENGINEER

DRAWING NO.
C-46

## 1.0 EROSION CONTROL MEASURES AND SITE STABILIZATION

AS PART OF THE SITE DEVELOPMENT, THE FOLLOWING TEMPORARY AND PERMANENT EROSION AND SEDIMENTATION CONTROL DEVICES SHALL BE IMPLEMENTED. DEVICES SHALL BE INSTALLED AS DESCRIBED IN THIS REPORT OR WITHIN THE PLAN SET. SEE THE MAINE EROSION AND SEDIMENT CONTROL HANDBOOK FOR CONSTRUCTION: BEST MANAGEMENT PRACTICES FOR FURTHER REFERENCE.

### 1.1 TEMPORARY EROSION CONTROL MEASURES

THE FOLLOWING TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES ARE PLANNED FOR THE PROJECT'S CONSTRUCTION PERIOD:

1.1.1 CRUSHED STONE STABILIZED CONSTRUCTION ENTRANCES SHALL BE PLACED AT ALL ACCESS POINTS TO THE PROJECT SITE WHERE THERE ARE DISTURBED AREAS. THE FOLLOWING SPECIFICATIONS SHALL BE FOLLOWED AT A MINIMUM:
- STONE SIZE SHALL BE 2–3 INCHES, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
- THE THICKNESS OF THE ENTRANCE STONE LAYER SHALL BE NO LESS THAN 6 INCHES.
- THE ENTRANCE SHALL NOT BE LESS THAN 20 FEET WIDE, HOWEVER NOT LESS THAN THE FULL WIDTH OF POINTS WHERE INGRESS OR EGRESS OCCURS. THE LENGTH SHALL NOT BE LESS THAN 50 FEET IN LENGTH.
- GEOTEXTILE FABRIC (WOVEN OR NON–WOVEN) SHALL BE PLACED OVER THE ENTIRE ENTRANCE AREA.
- THE ENTRANCE/EXIT SHALL BE MAINTAINED TO THE EXTENT THAT IT WILL PREVENT THE TRACKING OF SEDIMENT ONTO PUBLIC ROAD WAYS.

1.1.2 SILTATION FENCE OR EROSION CONTROL BERM SHALL BE INSTALLED DOWN GRADIENT OF ANY DISTURBED AREAS TO TRAP RUNOFF BORNE SEDIMENTS UNTIL PERMANENT STABILIZATION IS ACHIEVED. THE SILT FENCE OR EROSION CONTROL BERM SHALL BE INSTALLED PER THE DETAILS PROVIDED IN THE PLAN SET AND INSPECTED BEFORE AND IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. REPAIRS SHALL BE MADE IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THE FENCE LINE OR BERM. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR THE EDGES, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THE FENCE OR BERM, THE BARRIER SHALL BE REPLACED WITH A STONE CHECK DAM.

1.1.3 HAY MULCH INCLUDING HYDRO SEEDING IS INTENDED TO PROVIDE COVER FOR DENUDED OR SEEDED AREAS UNTIL REVEGETATION IS ESTABLISHED. MULCH PLACED BETWEEN APRIL 15TH AND NOVEMBER 1ST ON SLOPES OF LESS THAN 15 PERCENT SHALL BE COVERED BY FABRIC NETTING AND ANCHORED WITH STAPLES IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION. MULCH PLACED BETWEEN NOVEMBER 1ST AND APRIL 15TH ON SLOPES EQUAL TO OR STEEPER THAN 8 PERCENT AND EQUAL TO OR FLATTER THAN 2:1 SHALL USE MATS OR FABRIC NETTING AND ANCHORED WITH STAPLES IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION.

1.1.4 AT ANY TIME OF THE YEAR, ALL SLOPES STEEPER THAN 3:1 SHALL BE STABILIZED WITH DOUBLE NET EROSION CONTROL BLANKET BIONET SC150BN BY NORTH AMERICAN GREEN OR APPROVED EQUAL, OR EROSION CONTROL MIX SLOPE PROTECTION AS DETAILED WITHIN THE PLANS.

1.1.5 ELM STREET AND GOOCH STREET SHALL BE SWEPT TO CONTROL MUD AND DUST FROM THE CONSTRUCTION SITE AS NECESSARY. ADD ADDITIONAL STONE TO THE STABILIZED CONSTRUCTION ENTRANCE TO MINIMIZE THE TRACKING OF MATERIAL OFF THE SITE AND ONTO THE SURROUNDING ROADWAYS.

1.1.6 DURING DEMOLITION, CLEARING AND GRUBBING OPERATIONS, STONE CHECK DAMS SHALL BE INSTALLED AT ANY AREAS OF CONCENTRATED FLOW. THE MAXIMUM HEIGHT OF THE CHECK DAM SHALL NOT EXCEED 2 FEET. THE CENTER OF THE CHECK DAM SHALL BE 6 INCHES BELOW THE OUTER EDGES OF THE DAM. THE CONTRACTOR SHALL MULCH THE SIDE SLOPES AND INSTALL STONE CHECK DAMS FOR ALL NEWLY EXCAVATED DITCH LINES WITHIN 24 HOURS OF THEIR CREATION.

1.1.7 SILT FENCE STAKE SPACING SHALL NOT EXCEED 6 FEET UNLESS THE FENCE IS SUPPORTED WITH 14 GAUGE WIRE IN WHICH CASE THE MAXIMUM SPACING SHALL NOT EXCEED 10 FEET. THE SILT FENCE SHALL BE "TOED" INTO THE GROUND.

1.1.8 STORMDRAIN INLET PROTECTION SHALL BE PROVIDED TO STORMDRAINS THROUGH THE USE OF ANY OF THE FOLLOWING: HAY BALE DROP INLET STRUCTURES, SILT FENCE DROP INLET SEDIMENT FILTER, GRAVEL AND WIRE MESH DROP INLET SEDIMENT FILTER, OR CURB INLET SEDIMENT FILTER. BARRIERS SHALL BE INSPECTED AFTER EVERY RAINFALL EVENT AND REPAIRED AS NECESSARY. SEDIMENTS SHALL BE REMOVED WHEN ACCUMULATION HAS REACHED ½ THE DESIGN HEIGHT.

1.1.9 DUST CONTROL SHALL BE ACCOMPLISHED BY THE USE OF ANY OF THE FOLLOWING: WATER, CALCIUM CHLORIDE, STONE, OR AN APPROVED MDEP PRODUCT. DUST CONTROL SHALL BE APPLIED AS NEEDED TO ACCOMPLISH DUST CONTROL.

1.1.10 TEMPORARY LOAM, SEED, AND MULCHING SHALL BE USED IN AREAS WHERE NO OTHER EROSION CONTROL MEASURE IS USED. APPLICATION RATES FOR SEEDING ARE PROVIDED AT THE END OF THIS REPORT.

1.1.11 STOCKPILES SHALL BE STABILIZED WITHIN 7 DAYS OF FORMATION UNLESS A SCHEDULED RAIN EVENT OCCURS PRIOR TO THE 7 DAY WINDOW, IN WHICH CASE THE STOCKPILE SHALL BE STABILIZED PRIOR TO THE RAIN EVENT. METHODS OF STABILIZATION SHALL BE MULCH, EROSION CONTROL MIX, OR EROSION CONTROL BLANKETS/MATS. SILT FENCE OR A WOOD WASTE COMPOST FILTER BERM SHALL BE PLACED DOWNHILL OF ANY SOIL STOCKPILE LOCATION.

1.1.12 FOR DISTURBANCE BETWEEN NOVEMBER 1 AND APRIL 15, PLEASE REFER TO WINTER STABILIZATION PLAN IN THIS REPORT AND THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL FOR FURTHER INFORMATION.

1.1.13 IT IS OF THE UTMOST IMPORTANCE THAT STORMWATER RUNOFF AND POTENTIAL SEDIMENT FROM THE CONSTRUCTION SITE BE DIVERTED AROUND THE PROPOSED UNDERDRAINS UNTIL THE TRENCH IS BACKFILLED.

### 1.2 PERMANENT EROSION CONTROL MEASURES

THE FOLLOWING PERMANENT EROSION CONTROL MEASURES ARE INTENDED FOR POST DISTURBANCE AREAS OF THE PROJECT.

1.2.1 ALL DISTURBED AREAS DURING CONSTRUCTION, NOT SUBJECT TO OTHER PROPOSED CONDITIONS, SHALL RECEIVE A MINIMUM 4" OF LOAM AND SHALL BE LIMED, AND MULCHED.
EROSION CONTROL BLANKETS OR MATS SHALL BE PLACED OVER THE MULCH IN AREAS NOTED IN PARAGRAPH 4.2 OF THIS REPORT.

1.2.2 ALL STORMWATER DEVICES SHALL BE INSTALLED AND TRIBUTARY AREAS STABILIZED PRIOR RECEIVING STORMWATER.

1.2.3 REFER TO THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL FOR ADDITIONAL INFORMATION.

## 2.0 EROSION AND SEDIMENTATION CONTROL PLAN

2.1 THE EROSION AND SEDIMENTATION CONTROL PLAN IS INCLUDED WITHIN THE PLAN SET.

## 3.0 DETAILS AND SPECIFICATIONS

3.1 EROSION CONTROL DETAILS AND SPECIFICATIONS ARE INCLUDED IN THE PLAN SET.

## 4.0 STABILIZATION PLAN FOR WINTER CONSTRUCTION

WINTER CONSTRUCTION CONSISTS OF EARTHWORK DISTURBANCE BETWEEN THE DATES OF NOVEMBER 1 AND APRIL 15. IF A CONSTRUCTION SITE IS NOT STABILIZED WITH PAVEMENT, A ROAD GRAVEL BASE, 75% MATURE VEGETATION COVER OR RIPRAP BY NOVEMBER 15, THEN THE SITE SHALL BE PROTECTED WITH OVER–WINTER STABILIZATION. ANY AREA NOT STABILIZED WITH PAVEMENT, VEGETATION, MULCHING, EROSION CONTROL MIX, EROSION CONTROL MATS, RIPRAP, OR GRAVEL BASE ON A ROAD SHALL BE CONSIDERED OPEN.

THE CONTRACTOR SHALL LIMIT THE WORK AREA TO AREAS THAT WORK WILL OCCUR IN DURING THE SUBSEQUENT 15 DAYS AND SO THAT IT CAN BE MULCHED ONE DAY PRIOR TO A SNOW EVENT. THE CONTRACTOR SHALL STABILIZE WORK AREAS PRIOR TO OPENING ADDITIONAL WORK AREAS TO MINIMIZE AREAS WITHOUT EROSION CONTROL MEASURES.

THE FOLLOWING MEASURES SHALL BE IMPLEMENTED DURING WINTER CONSTRUCTION PERIODS:

### 4.1 SEDIMENT BARRIERS

DURING FROZEN CONDITIONS, SEDIMENT BARRIERS MAY CONSIST OF EROSION CONTROL MIX BERMS OR ANY OTHER RECOGNIZED SEDIMENT BARRIERS AS FROZEN SOIL PREVENTS THE PROPER INSTALLATION OF HAY BALES OR SILT FENCES.

### 4.2 MULCHING

ALL AREAS SHALL BE CONSIDERED TO BE DENUDED UNTIL SEEDED AND MULCHED. HAY AND STRAW MULCH SHALL BE APPLIED AT A RATE OF 150 LB. PER 1,000 SQUARE FEET OR 3 TONS/ACRE (TWICE THE NORMAL ACCEPTED RATE OF 75–LBS./1,000 S.F. OR 1.5 TONS/ACRE) AND SHALL BE PROPERLY ANCHORED. EROSION CONTROL MIX MUST BE APPLIED WITH A MINIMUM 4 INCH THICKNESS. MULCH SHALL NOT BE SPREAD ON TOP OF SNOW. THE SNOW SHALL BE REMOVED DOWN TO A ONE–INCH DEPTH OR LESS PRIOR TO APPLICATION. AFTER EACH DAY OF FINAL GRADING, THE AREA SHALL BE PROPERLY STABILIZED WITH ANCHORED HAY OR STRAW OR EROSION CONTROL MATTING. AN AREA SHALL BE CONSIDERED TO HAVE BEEN STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED OR ADEQUATELY ANCHORED SO THAT GROUND SURFACE IS NOT VISIBLE THROUGH THE MULCH. BETWEEN THE DATES OF NOVEMBER 1 AND APRIL 15, ALL MULCH SHALL BE ANCHORED BY EITHER MULCH NETTING, TRACKING OR WOOD CELLULOSE FIBER. THE COVER WILL BE CONSIDERED SUFFICIENT WHEN THE GROUND SURFACE IS NOT VISIBLE THROUGH THE MULCH. AFTER NOVEMBER 1ST, MULCHING AND ANCHORING OF ALL EXPOSED SOIL SHALL OCCUR AT THE END OF EACH FINAL GRADING WORKDAY.

### 4.3 SOIL STOCKPILING

STOCKPILES OF SOIL OR SUBSOIL SHALL BE MULCHED FOR OVER WINTER PROTECTION WITH HAY OR STRAW AT TWICE THE NORMAL RATE OR WITH A FOUR–INCH LAYER OF EROSION CONTROL MIX. THIS SHALL BE DONE WITHIN 24 HOURS OF STOCKING AND RE–ESTABLISHED PRIOR TO ANY RAINFALL OR SNOWFALL.

### 4.4 SEEDING

BETWEEN THE DATES OF OCTOBER 15TH AND APRIL 1ST, LOAM OR SEED SHALL NOT BE REQUIRED. DURING PERIODS OF ABOVE FREEZING TEMPERATURES FINISHED AREAS SHALL BE FINE GRADED AND EITHER PROTECTED WITH MULCH OR TEMPORARILY SEEDED AND MULCHED UNTIL SUCH TIME AS THE FINAL TREATMENT CAN BE APPLIED. IF THE DATE IS AFTER NOVEMBER 1ST AND IF THE EXPOSED AREA HAS NOT BEEN LOAMED, FINAL GRADING WITH A UNIFORM SURFACE, THEN THE AREA MAY BE DORMANT SEEDED AT A RATE OF 3 TIMES HIGHER THAN SPECIFIED FOR PERMANENT SEED AND THEN MULCHED.

DORMANT SEEDING MAY BE PLACED PRIOR TO THE PLACEMENT OF MULCH OR EROSION CONTROL BLANKETS. IF DORMANT SEEDING IS USED FOR THE SITE, ALL DISTURBED AREAS SHALL RECEIVE 4" OF LOAM AND SEED AT AN APPLICATION RATE OF 5 LBS/1,000 S.F. ALL AREAS SEEDED DURING THE WINTER SHALL BE INSPECTED IN THE SPRING FOR ADEQUATE CATCH. ALL AREAS INSUFFICIENTLY VEGETATED (LESS THAN 75% CATCH) SHALL BE REVEGETATED BY REPLACING LOAM, SEED AND MULCH. IF DORMANT SEEDING IS NOT USED FOR THE SITE, ALL DISTURBED AREAS SHALL BE REVEGETATED IN THE SPRING.

### 4.5 OVER WINTER STABILIZATION OF DISTURBED SOILS

BY SEPTEMBER 15TH, ALL DISTURBED SOILS ON AREAS HAVING A SLOPE LESS THAN 15% SHALL BE SEEDED AND MULCHED. IF THE DISTURBED AREAS ARE NOT STABILIZED BY THIS DATE, THEN ONE OF THE FOLLOWING ACTIONS SHALL BE TAKEN TO STABILIZE THE SOIL FOR LATE FALL AND WINTER:

- STABILIZE THE SOIL WITH TEMPORARY VEGETATION – BY OCTOBER 1ST, SEED THE DISTURBED SOIL WITH WINTER RYE AT A SEEDING RATE OF 3LBS PER 1,000 S.F., LIGHTLY MULCH THE SEEDED SOIL WITH HAY OR STRAW AT 75 LBS PER 1,000 S.F., AND ANCHOR THE MULCH WITH PLASTIC NETTING. MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR FAILS TO COVER AT LEAST 75% OF THE DISTURBED SOIL BEFORE NOVEMBER 1ST, THEN MULCH THE AREA FOR OVER–WINTER PROTECTION.
- STABILIZE THE SOIL WITH SOD – STABILIZE THE DISTURBED SOIL WITH PROPERLY INSTALLED SOD BY OCTOBER 1ST. PROPER INSTALLATION INCLUDES PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL.
- STABILIZE THE SOIL WITH MULCH – BY NOVEMBER 15TH, MULCH THE DISTURBED SOIL BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150 LBS PER 1,000 S.F. ON THE AREA SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. IMMEDIATELY AFTER APPLYING THE MULCH, ANCHOR THE MULCH WITH PLASTIC NETTING TO PREVENT WIND FROM MOVING THE MULCH OFF THE DISTURBED SOIL.

### 4.6 OVER WINTER STABILIZATION OF DISTURBED SLOPES

ALL STONE–COVERED SLOPES SHALL BE CONSTRUCTED AND STABILIZED BY NOVEMBER 15TH. ALL SLOPES TO BE VEGETATED SHALL BE SEEDED AND MULCHED BY SEPTEMBER 1ST. A SLOPE IS CONSIDERED A GRADE GREATER THAN 15%. IF A SLOPE TO BE VEGETATED IS NOT STABILIZED BY SEPTEMBER 1ST, THEN ONE OF THE FOLLOWING ACTION SHALL BE TAKEN TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER:

- STABILIZE THE SOIL WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS – BY OCTOBER 1ST THE DISTURBED SLOPE SHALL BE SEEDED WITH WINTER RYE AT A SEEDING RATE OF 3 LBS PER 1,000 S.F. AND THEN INSTALL EROSION CONTROL MATS OR ANCHORED MULCH OVER THE SEEDING. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR FAILS TO COVER AT LEAST 75% OF THE SLOPE BY NOVEMBER 1ST, THEN THE CONTRACTOR SHALL COVER THE SLOPE WITH A LAYER OF EROSION CONTROL MIX OR WITH STONE RIPRAP.
- STABILIZE THE SOIL WITH SOD – THE DISTURBED SLOPE SHALL BE STABILIZED WITH PROPERLY INSTALLED SOD BY OCTOBER 1ST. PROPER INSTALLATION INCLUDES THE CONTRACTOR PINNING THE SOD ONTO THE SLOPE WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL. THE CONTRACTOR SHALL NOT USE LATE–SEASON SOD INSTALLATION TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 3H:1V OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.
- STABILIZE THE SOIL WITH EROSION CONTROL MIX – EROSION CONTROL MIX SHALL BE PROPERLY INSTALLED BY NOVEMBER 15TH. THE CONTRACTOR SHALL NOT USE EROSION CONTROL MIX TO STABILIZE SLOPES HAVING GRADES GREATER THAN 2H:1V OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.
- STABILIZE THE SOIL WITH STONE RIPRAP – PLACE A LAYER OF STONE RIPRAP ON THE SLOPE BY NOVEMBER 15TH. A REGISTERED PROFESSIONAL ENGINEER SHALL BE HIRED TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY ON THE SLOPE AND TO DESIGN A FILTER LAYER FOR UNDERNEATH THE RIPRAP.

## 5.0 INSPECTION AND MAINTENANCE

A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS AND CONDITIONS IN THE PERMIT, SHALL CONDUCT PERIODIC VISUAL INSPECTIONS OF INSTALLED EROSION CONTROL MEASURES. THE FREQUENCY OF INSPECTION SHALL OCCUR AT LEAST ONCE EVERY TWO WEEKS, AS WELL AS AFTER A "STORM EVENT". A "STORM EVENT" SHALL CONSIST 0.5 INCHES OF RAIN WITHIN A 24 HOUR PERIOD. THE FOLLOWING EROSION AND SEDIMENT CONTROL – BEST MANAGEMENT PRACTICES (BMP'S) SHALL INSPECTED IN THE MANNER AS DESCRIBED.

### 5.1 SEDIMENT BARRIERS

HAY BALE BARRIERS, SILT FENCES AND FILTER BERMS SHALL BE INSPECTED AND REPAIRED FOR THE FOLLOWING IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THEM. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR THE EDGES OF THE BARRIER, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THEM, SEDIMENT BARRIERS SHALL BE REPLACED WITH A TEMPORARY CHECK DAM. SHOULD THE FABRIC ON A SILT FENCE OR FILTER BARRIER DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER IS STILL NECESSARY, THE FABRIC SHALL BE REPLACED PROMPTLY. SEDIMENT DEPOSITS SHOULD BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE–HALF THE HEIGHT OF THE BARRIER. FILTER BERMS SHOULD BE RESHAPED AS NEEDED. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE OR FILTER BARRIER IS NO LONGER REQUIRED SHOULD BE DRESSED TO CONFORM TO THE EXISTING GRADE, PREPARED AND SEEDED.

### 5.2 STABILIZED STONE CONSTRUCTION ENTRANCES

THE EXIT SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY. WHEN THE CONTROL PAD BECOMES INEFFECTIVE, THE STONE SHALL BE REMOVED ALONG WITH THE COLLECTED SOIL MATERIAL AND REDISTRIBUTED ON SITE IN A STABLE MANNER. THE ENTRANCE SHOULD THEN BE RECONSTRUCTED. THE CONTRACTOR SHALL SWEEP OR WASH PAVEMENT AT EXITS, WHICH HAVE EXPERIENCED MUD–TRACKING ON TO THE PAVEMENT OR TRAVELED WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH AGGREGATE, WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING STORM DRAINS, DITCHES, OR WATERWAYS.

### 5.3 MULCHED AREAS

ALL MULCHES MUST BE INSPECTED PERIODICALLY, IN PARTICULAR AFTER RAINSTORMS, TO CHECK FOR RILL EROSION. IF LESS THAN 90% OF THE SOIL SURFACE IS COVERED BY MULCH, ADDITIONAL MULCH SHALL BE IMMEDIATELY APPLIED. NETS MUST BE INSPECTED AFTER RAIN EVENTS FOR DISLOCATION OR FAILURE. IF WASHOUTS OR BREAKAGE OCCUR, RE–INSTALL THE NETS AS NECESSARY AFTER REPAIRING DAMAGE TO THE SLOPE. WHERE MULCH IS USED IN CONJUNCTION WITH ORNAMENTAL PLANTINGS, INSPECT PERIODICALLY THROUGHOUT THE YEAR TO DETERMINE IF MULCH IS MAINTAINING COVERAGE OF THE SOIL SURFACE. REPAIR AS NEEDED.

### 5.4 DUST CONTROL

WHEN TEMPORARY DUST CONTROL MEASURES ARE USED, REPETITIVE TREATMENT SHALL BE APPLIED AS NEEDED TO ACCOMPLISH CONTROL.

### 5.5 STORMWATER APPURTENANCES

ALL UNDERDRAINS, STORM DRAINS, AND CATCH BASINS NEED TO BE OPERATING EFFECTIVELY AND FREE OF DEBRIS.

### 5.6 EROSION AND SEDIMENTATION CONTROL INSPECTIONS:

ACORN ENGINEERING HAS PERSONNEL QUALIFIED TO CONDUCT EROSION AND SEDIMENTATION CONTROL INSPECTIONS. FOR FURTHER INFORMATION CONTACT:

CONTACT: WILL SAVAGE, PE
TELEPHONE: (207) 775–2655

QUALIFICATIONS:

- MAINE PROFESSIONAL ENGINEERING LICENSE #11419
- MAINE DEP – CERTIFIED IN MAINTENANCE & INSPECTION OF STORMWATER BMP'S CERT #14
- CERTIFIED EROSION, SEDIMENT AND STORM WATER INSPECTOR (CESSWI) CERT #0293
- CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC) CERT. #4620

THE CONTRACTOR HAS SOLE RESPONSIBILITY FOR COMPLYING WITH THE EROSION AND SEDIMENTATION REPORT/PLAN, INCLUDING CONTROL OF FUGITIVE DUST. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY MONETARY PENALTIES RESULTING FROM FAILURE TO COMPLY WITH THESE STANDARDS.

## 6.0 IMPLEMENTATION SCHEDULE

THE FOLLOWING IMPLEMENTATION SEQUENCE IS INTENDED TO MAXIMIZE THE EFFECTIVENESS OF THE ABOVE DESCRIBED EROSION CONTROL MEASURES. CONTRACTORS SHOULD AVOID OVEREXPOSING DISTURBED AREAS AND LIMIT THE AMOUNT OF STABILIZATION AREA.

1. INSTALL A STABILIZED CONSTRUCTION ENTRANCE IN ALL LOCATIONS WHERE CONSTRUCTION TRAFFIC WILL ENTER AND EXIT THE SITE.
2. INSTALL PERIMETER SILT FENCE OR EROSION CONTROL BERM.
3. INSTALL ALL OTHER EROSION CONTROL DEVICES AS NECESSARY THROUGHOUT THE REMAINDER OF THIS SCHEDULE.
4. COMMENCE INSTALLATION OF DRAINAGE INFRASTRUCTURE.
5. PRIORITIZE THE DOWNHILL SIDE TO CONTAIN RUNOFF WITHIN THE SITE WHILE PROVIDING AN ENGINEERED OUTLET WITH SILTATION BARRIER TO THE MUNICIPAL STORMWATER SYSTEM.
6. COMMENCE EARTHWORK OPERATIONS, WALL AND FOUNDATION INSTALLATION.
7. COMMENCE INSTALLATION OF UTILITIES.
8. CONTINUE EARTHWORK AND GRADING TO SUBGRADE AS NECESSARY FOR CONSTRUCTION.
9. COMPLETE INSTALLATION OF DRAINAGE INFRASTRUCTURE, AS WELL AS OTHER UTILITY WORK.
10. COMPLETE REMAINING EARTHWORK OPERATIONS.
11. INSTALL SUB–BASE AND BASE GRAVELS IN PAVED AREAS.
12. INSTALL PAVING, CURBING AND BRICKWORK.
13. LOAM, LIME, FERTILIZE, SEED AND MULCH DISTURBED AREAS AND COMPLETE ALL LANDSCAPING.
14. ONCE THE SITE IS STABILIZED, 90% CATCH OF GRASS HAS BEEN OBTAINED, OR MULCHING OF LANDSCAPE AREAS IS COMPLETE REMOVE ALL TEMPORARY EROSION CONTROL MEASURES.
15. TOUCH UP AREAS WITHOUT A VIGOROUS CATCH OF GRASS WITH LOAM AND SEED.
16. COMPLETE SITE SIGNAGE AND STRIPING.
17. EXECUTE PROPER MAINTENANCE OF ALL TEMPORARY AND PERMANENT EROSION CONTROL MEASURES THROUGHOUT THE PROJECT.

THE ABOVE IMPLEMENTATION SEQUENCE SHOULD BE GENERALLY FOLLOWED BY THE SITE CONTRACTOR. HOWEVER, THE CONTRACTOR MAY CONSTRUCT SEVERAL ITEMS SIMULTANEOUSLY. THE CONTRACTOR SHALL SUBMIT TO THE OWNER A SCHEDULE OF THE COMPLETION OF THE WORK. IF THE CONTRACTOR IS TO COMMENCE THE CONSTRUCTION OF MORE THAN ONE ITEM ABOVE, THEY SHALL LIMIT THE AMOUNT OF EXPOSED AREAS TO THOSE AREAS IN WHICH WORK IS EXPECTED TO BE UNDERTAKEN DURING THE FOLLOWING 30 DAYS.

THE CONTRACTOR SHALL RE–VEGETATE DISTURBED AREAS AS RAPIDLY AS POSSIBLE. ALL AREAS SHALL BE PERMANENTLY STABILIZED WITHIN 7 DAYS OF FINAL GRADING OR BEFORE A STORM EVENT. THE CONTRACTOR SHALL INCORPORATE PLANNED INLETS AND DRAINAGE SYSTEMS AS EARLY AS POSSIBLE INTO THE CONSTRUCTION PHASE.

## 7.0 SEEDING PLAN

### 7.1 SITE PREPARATION

THE SEEDED AREAS SHALL BE FEASIBLY GRADED OUT TO PROVIDE THE USE OF EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION, AND MULCH ANCHORING. IF NECESSARY, THE SITE MAY REQUIRE ADDITIONAL TEMPORARY EROSION CONTROL MEASURES OUTLINED IN THE EROSION CONTROL REPORT.

### 7.2 SEEDBED PREPARATION

FERTILIZER SHALL BE APPLIED TO THE SITE AT A RATE OF 13.8 POUNDS PER 1,000 SQUARE FEET. THE COMPOSITION OF THE FERTILIZER SHALL BE 10–10–10 (N–P2O5–K2O) OR EQUIVALENT.

LIMESTONE SHALL BE APPLIED TO THE SITE AT A RATE OF 138 POUNDS PER 1,000 SQUARE FEET.

### 7.3 SEEDING

THE COMPOSITION AND AMOUNT OF TEMPORARY SEED APPLIED TO A SITE SHALL BE DETERMINED BY THE FOLLOWING TABLE:

TEMPORARY SEED APPLICATION RATES

| SEED | LBS / ACRE | RECOMMENDED SEEDING DATES |
|---|---|---|
| WINTER RYE | 2.57 | 8/15 TO 10/1 |
| OATS | 1.84 | 4/1 TO 7/1 8/15 TO 9/15 |
| ANNUAL RYGRASS | 0.92 | 4/1 TO 7/1 |
| SUDANGRASS | 0.92 | 5/15 TO 8/15 |
| PERENNIAL | 0.92 | 8/15 TO 9/15 |
| TOTAL | 7.17 LBS/ACRE | |

PERMANENT SEED APPLICATION RATES

| SEED | LBS / ACRE |
|---|---|
| KENTUCKY BLUEGRASS | 20.00 |
| CREEPING RED FESCUE | 20.00 |
| PERENNIAL RYEGRASS | 4.80 |
| TOTAL | 44.8 LBS/ACRE |

### 7.4 MULCHING

MULCH SHALL BE HARDWOOD AND APPLIED AT A RATE OF 70 LBS – 90 LBS PER 1,000 SQUARE FEET. THE MULCH SHALL BE INSTALLED AT A MINIMUM DEPTH OF 4 INCHES. THE SEEDED AREA SHALL BE MULCHED IMMEDIATELY AFTER SEED IS APPLIED. MULCHING DURING THE WINTER SEASON SHALL BE DOUBLE THE NORMAL AMOUNT. REFER TO DETAIL FOR MORE INFORMATION.

## 8.0 CONCLUSION

THE ABOVE EROSION CONTROL NARRATIVE IS INTENDED TO MINIMIZE THE DEVELOPMENT IMPACT BY IMPLEMENTING TEMPORARY AND PERMANENT EROSION CONTROL MEASURES. THE CONTRACTOR SHALL ALSO REFER TO THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL FOR ADDITIONAL INFORMATION.

PERMIT LEVEL
NOT ISSUED FOR
CONSTRUCTION

| ISSUED FOR | BY / DATE |
|---|---|
| SRCC | PFH 1/28/2021 |
| CITY REVIEW | PFH 2/3/2021 |
| DEP SW APP | PFH 3/30/2021 |
| FINAL APP | PFH 4/7/2021 |
| COMMENT RESPONSE | PFH 5/14/2021 |

DRAWING NAME: EROSION & SEDIMENTATION CONTROL NOTES

PROJECT NAME/ADDRESS: 1 GOOCH STREET REDEVELOPMENT

CLIENT/OWNER OF RECORD: TOM WATSON & CO.
188 STATE STREET, 3RD FLOOR, PORTLAND ME 04101

ACORN ENGINEERING, INC.
ACORN ENGINEERING, INC.
PO BOX 3372, PORTLAND MAINE 04101
(207) 775–2655

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

| | |
|---|---|
| FILE: | 1093.10_CIVIL |
| JN: | 1093.10 |
| SCALE: | AS NOTED |
| DESIGNED BY: | PFH |
| DRAWN BY: | ZMS |
| CHECKED BY: | WHS |

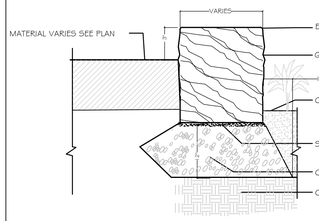
STATE OF MAINE
PETER F. HEIL
15318
LICENSED
PROFESSIONAL ENGINEER
5/13/21

DRAWING NO.

C-47

NOTE:
ADJUST INSTALL DEPTHS TO ALLOW FOR VARIATIONS IN STONE AND FINAL GRADE

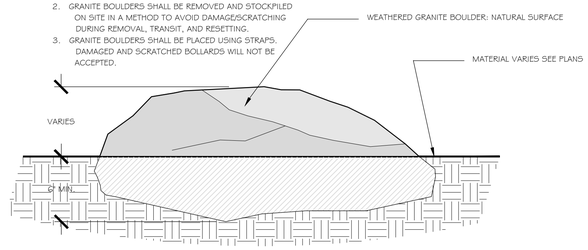
MAINTAIN LEVEL TOP OF STONE FROM BLOCK TO BLOCK



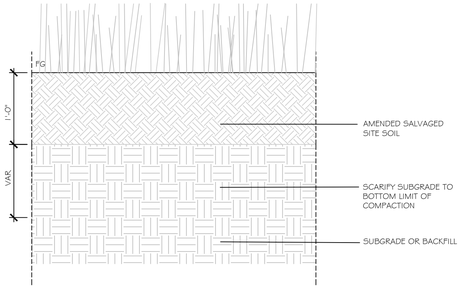

1 RECLAIMED GRANITE BLOCK FOR PATH AREA-ADD ALTERNATIVE 3
NOT TO SCALE

NOTES:

1. LOCATIONS OF GRANITE BOULDERS TO BE STAKED IN THE FIELD BY LANDSCAPE ARCHITECT.
2. GRANITE BOULDERS SHALL BE REMOVED AND STOCKPILED ON SITE IN A METHOD TO AVOID DAMAGE/SCRATCHING DURING REMOVAL, TRANSIT, AND RESETTING.
3. GRANITE BOULDERS SHALL BE PLACED USING STRAPS. DAMAGED AND SCRATCHED BOLLARDS WILL NOT BE ACCEPTED.



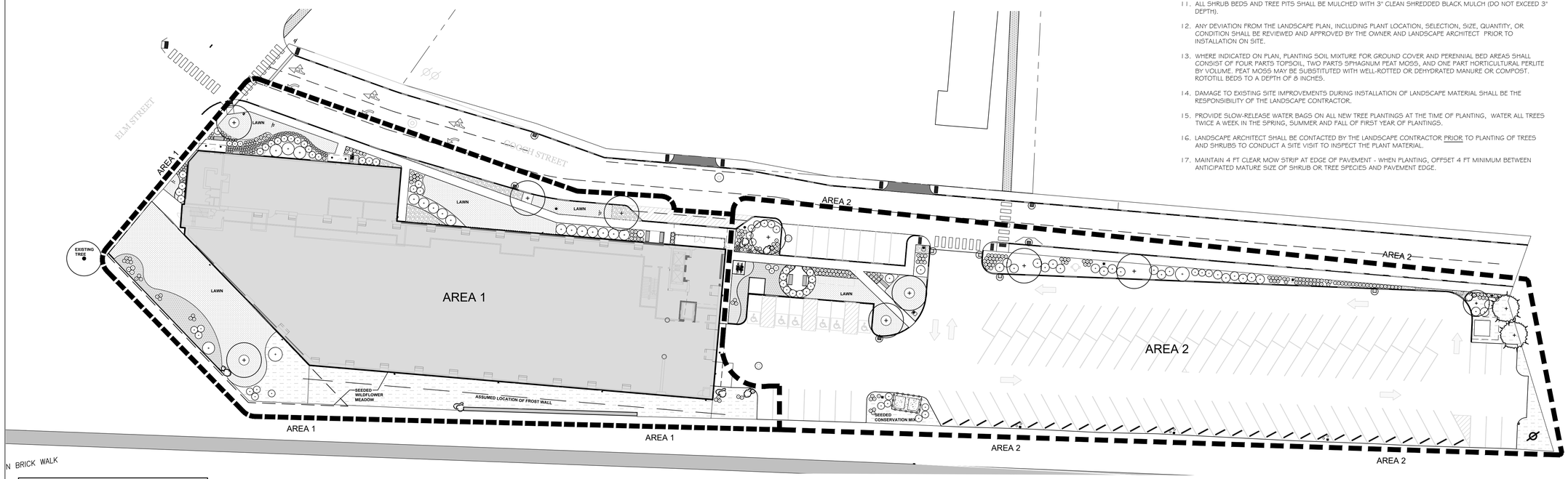

2 BOULDER
NOT TO SCALE




3 SOIL PROFILE (SEEDED WILDFLOWER MEADOW)
NOT TO SCALE

## GENERAL PLANT NOTES

1. CALL DIG-SAFE (1-888-344-7233) PRIOR TO BEGINNING WORK. THE LANDSCAPE CONTRACTOR IS ADVISED OF THE PRESENCE OF UNDERGROUND UTILITIES AND SHALL VERIFY THE EXISTENCE AND LOCATION OF SAME BEFORE COMMENCING AND DIGGING OPERATIONS. THE LANDSCAPE CONTRACTOR SHALL REPLACE OR REPAIR UTILITIES PAVING, WALKS, CURBING, ETC. DAMAGED IN PERFORMANCE OF THIS JOB AT NO ADDITIONAL COST TO OWNER.
2. CONTRACTOR SHALL THOROUGHLY FAMILIARIZE HIMSELF WITH ALL SITE CONDITIONS PRIOR TO CONSTRUCTION BIDDING.
3. DO NOT SCALE FROM DRAWINGS. ANY OMISSIONS IN DIMENSIONING SHALL BE REPORTED IMMEDIATELY TO THE LANDSCAPE ARCHITECT. ANY DISCREPANCIES BETWEEN DRAWINGS, DETAILS, NOTES AND SPECS SHALL BE IMMEDIATELY REPORTED TO THE LANDSCAPE ARCHITECT FOR FURTHER DIRECTION AND RESOLUTION BEFORE ANY ADDITIONAL WORK PROCEEDS.
4. PROVIDE SMOOTH TRANSITION WHERE NEW WORK MEETS EXISTING CONDITIONS.
5. CONTRACTOR SHALL FURNISH AND PLACE 12 INCHES OF LOAM IN ALL SHRUB BEDS, 30 INCHES IN ALL TREE PITS, AND 6 INCHES UNDER ALL TURF AREAS. THE LANDSCAPE CONTRACTOR SHALL COORDINATE SUBGRADE PREPARATION WITH THE GENERAL CONTRACTOR PRIOR TO PLACING LOAM.
6. ALL PLANT MATERIAL INSTALLED SHALL MEET THE SPECIFICATIONS OF "AMERICAN STANDARDS FOR NURSERY STOCK BY THE AMERICAN ASSOCIATION OF NURSERYMEN" LATEST EDITION.
7. ALL PLANT MATERIAL SHALL BE FREE FROM INSECTS AND DISEASE.
8. ALL PLANTING SHALL BE DONE IN ACCORDANCE WITH ACCEPTABLE HORTICULTURAL PRACTICES. THIS IS TO INCLUDE PROPER PLANTING MIX, PLANT BED AND TREE PIT PREPARATION, PRUNING, STAKING OR GUYING, WRAPPING, SPRAYING, FERTILIZATION, PLANTING AND ADEQUATE MAINTENANCE UNTIL ACCEPTANCE FROM THE OWNER.
9. ALL GRASS, OTHER VEGETATION AND DEBRIS SHALL BE REMOVED FROM ALL PLANTING AREAS PRIOR TO PLANTING.
10. EXISTING TREES TO BE PRESERVED SHALL BE PROTECTED DURING CONSTRUCTION AND SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.
11. ALL SHRUB BEDS AND TREE PITS SHALL BE MULCHED WITH 3" CLEAN SHREDDED BLACK MULCH (DO NOT EXCEED 3" DEPTH).
12. ANY DEVIATION FROM THE LANDSCAPE PLAN, INCLUDING PLANT LOCATION, SELECTION, SIZE, QUANTITY, OR CONDITION SHALL BE REVIEWED AND APPROVED BY THE OWNER AND LANDSCAPE ARCHITECT PRIOR TO INSTALLATION ON SITE.
13. WHERE INDICATED ON PLAN, PLANTING SOIL MIXTURE FOR GROUND COVER AND PERENNIAL BED AREAS SHALL CONSIST OF FOUR PARTS TOPSOIL, TWO PARTS SPHAGNUM PEAT MOSS, AND ONE PART HORTICULTURAL PERLITE BY VOLUME. PEAT MOSS MAY BE SUBSTITUTED WITH WELL-ROTTED OR DEHYDRATED MANURE OR COMPOST. ROTOTILL BEDS TO A DEPTH OF 8 INCHES.
14. DAMAGE TO EXISTING SITE IMPROVEMENTS DURING INSTALLATION OF LANDSCAPE MATERIAL SHALL BE THE RESPONSIBILITY OF THE LANDSCAPE CONTRACTOR.
15. PROVIDE SLOW-RELEASE WATER BAGS ON ALL NEW TREE PLANTINGS AT THE TIME OF PLANTING. WATER ALL TREES TWICE A WEEK IN THE SPRING, SUMMER AND FALL OF FIRST YEAR OF PLANTINGS.
16. LANDSCAPE ARCHITECT SHALL BE CONTACTED BY THE LANDSCAPE CONTRACTOR PRIOR TO PLANTING OF TREES AND SHRUBS TO CONDUCT A SITE VISIT TO INSPECT THE PLANT MATERIAL.
17. MAINTAIN 4 FT CLEAR MOW STRIP AT EDGE OF PAVEMENT - WHEN PLANTING, OFFSET 4 FT MINIMUM BETWEEN ANTICIPATED MATURE SIZE OF SHRUB OR TREE SPECIES AND PAVEMENT EDGE.



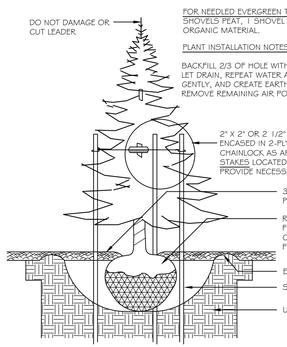

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

DIG HOLE AT LEAST 2 TIMES THE WIDTH OF ROOT BALL AND AS DEEP AS THE ROOT BALL (NO DEEPER). SET ROOT BALL CENTERED, WITH TOP AT GROUND LEVEL OR SLIGHTLY HIGHER. CORRECT HOLE DEPTH AS NEEDED.

FOR NEEDLED EVERGREEN TREES: 1 FULL WHEELBARROW EXISTING SOIL, 2 SHOVELS PEAT, 1 SHOVEL WELL ROTTED MANURE, OR OTHER COMPOSTED ORGANIC MATERIAL.

PLANT INSTALLATION NOTES:

BACKFILL 2/3 OF HOLE WITH AMENDED SOIL THEN FILL HOLE WITH WATER, LET DRAIN, REPEAT WATER AND DRAIN. BACK FILL TO FINISH GRADE, TAMP GENTLY, AND CREATE EARTH SAUCER. WATER THOROUGHLY ONCE AGAIN TO REMOVE REMAINING AIR POCKETS.




4 TREE INSTALLATION
NOT TO SCALE

PLANT INSTALLATION NOTES:
DIG HOLE AT LEAST 2 TIMES THE WIDTH OF ROOT BALL AND AS DEEP AS THE ROOT BALL (NO DEEPER). SET ROOT BALL CENTERED, WITH TOP AT GROUND LEVEL OR SLIGHTLY HIGHER. CORRECT HOLE DEPTH AS NEEDED.

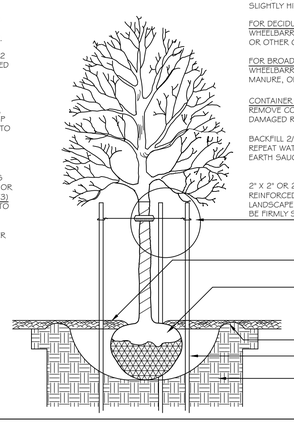
FOR DECIDUOUS AND NEEDLED EVERGREEN TREES AND SHRUBS: 1 FULL WHEELBARROW EXISTING SOIL, 2 SHOVELS PEAT, 1 SHOVEL WELL ROTTED MANURE, OR OTHER COMPOSTED ORGANIC MATERIAL.

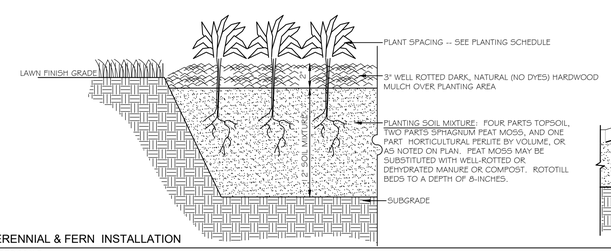
FOR BROADLEAVED EVERGREENS AND RELATED ERICACAE PLANTS: 1 FULL WHEELBARROW EXISTING SOIL, 3-4 SHOVELS PEAT, 1 SHOVEL WELL ROTTED MANURE, OR OTHER COMPOSTED ORGANIC MATERIAL OF LOW pH

CONTAINER GROWN STOCK:
REMOVE CONTAINER PROTECTING ROOT BALL. GENTLY COMB OUT ROOTS, PRUNE DAMAGED ROOTS.

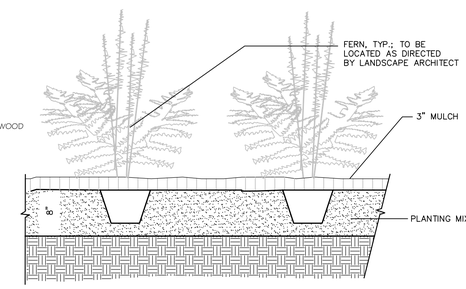
BACKFILL 2/3 OF HOLE WITH AMENDED SOIL THEN FILL HOLE WITH WATER, LET DRAIN, REPEAT WATER AND DRAIN. BACK FILL TO FINISH GRADE, TAMP GENTLY, AND CREATE EARTH SAUCER. WATER THOROUGHLY ONCE AGAIN TO REMOVE REMAINING AIR POCKETS.

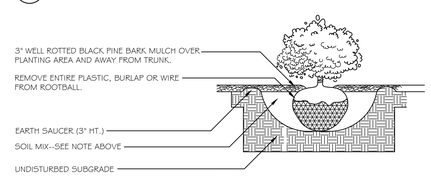
2" X 2" OR 2 1/2" DIAMETER STAKES WITH 2 #12 GAUGE WIRES ENCASED IN 2-PLY REINFORCED RUBBER HOSE 1/2" DIAMETER OR CHAINLOCK AS APPROVED BY LANDSCAPE ARCHITECT. THREE (3) STAKES LOCATED 120° APART. STAKES SHALL BE FIRMLY SET TO PROVIDE NECESSARY TENSION.




5 PERENNIAL & FERN INSTALLATION
NOT TO SCALE




6 SHRUB INSTALLATION
NOT TO SCALE

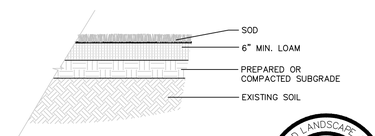
PLANT INSTALLATION NOTES:
DIG HOLE AT LEAST 2 TIMES THE WIDTH OF ROOT BALL AND AS DEEP AS THE ROOT BALL (NO DEEPER). SET ROOT BALL CENTERED, WITH TOP AT GROUND LEVEL OR SLIGHTLY HIGHER. CORRECT HOLE DEPTH AS NEEDED.

FOR DECIDUOUS AND NEEDLED EVERGREEN TREES AND SHRUBS: 1 FULL WHEELBARROW EXISTING SOIL, 2 SHOVELS PEAT, 1 SHOVEL WELL ROTTED MANURE, OR OTHER COMPOSTED ORGANIC MATERIAL.

FOR BROADLEAVED EVERGREENS AND RELATED ERICACAE PLANTS: 1 FULL WHEELBARROW EXISTING SOIL, 3-4 SHOVELS PEAT, 1 SHOVEL WELL ROTTED MANURE, OR OTHER COMPOSTED ORGANIC MATERIAL OF LOW pH

CONTAINER GROWN STOCK:
REMOVE CONTAINER PROTECTING ROOT BALL. GENTLY COMB OUT ROOTS, PRUNE DAMAGED ROOTS.

BACKFILL 2/3 OF HOLE WITH AMENDED SOIL THEN FILL HOLE WITH WATER, LET DRAIN, REPEAT WATER AND DRAIN. BACK FILL TO FINISH GRADE, TAMP GENTLY, AND CREATE EARTH SAUCER. WATER THOROUGHLY ONCE AGAIN TO REMOVE REMAINING AIR POCKETS.




7 LAWN (SOD)
NOT TO SCALE

REGISTERED LANDSCAPE ARCHITECT
ROBERT METCALF
No.1815
STATE OF MAINE

Prepared For:
**Applicant:**
**TOM WATSON & CO.**
**188 STATE STREET**
**Portland, Maine**

Prepared By:
**MITCHELL & ASSOCIATES**
**Landscape Architects**
**The Staples School, 70 Center Street**
**Portland, Maine 04101**
**Tel: (207) 774-4427**

**ACORN ENGINEERING INC.**
**PO BOX 3372, Portland, Maine 04104**
**Tel: (207) 775-2655**

1 GOOCH STREET REDEVELOPMENT
TOM WATSON & CO.
188 STATE STREET, 3RD FLOOR, PORTLAND ME 04101

Date: **05.10.21**

Issued For:
**DESIGN DEVELOPMENT**

Revisions:

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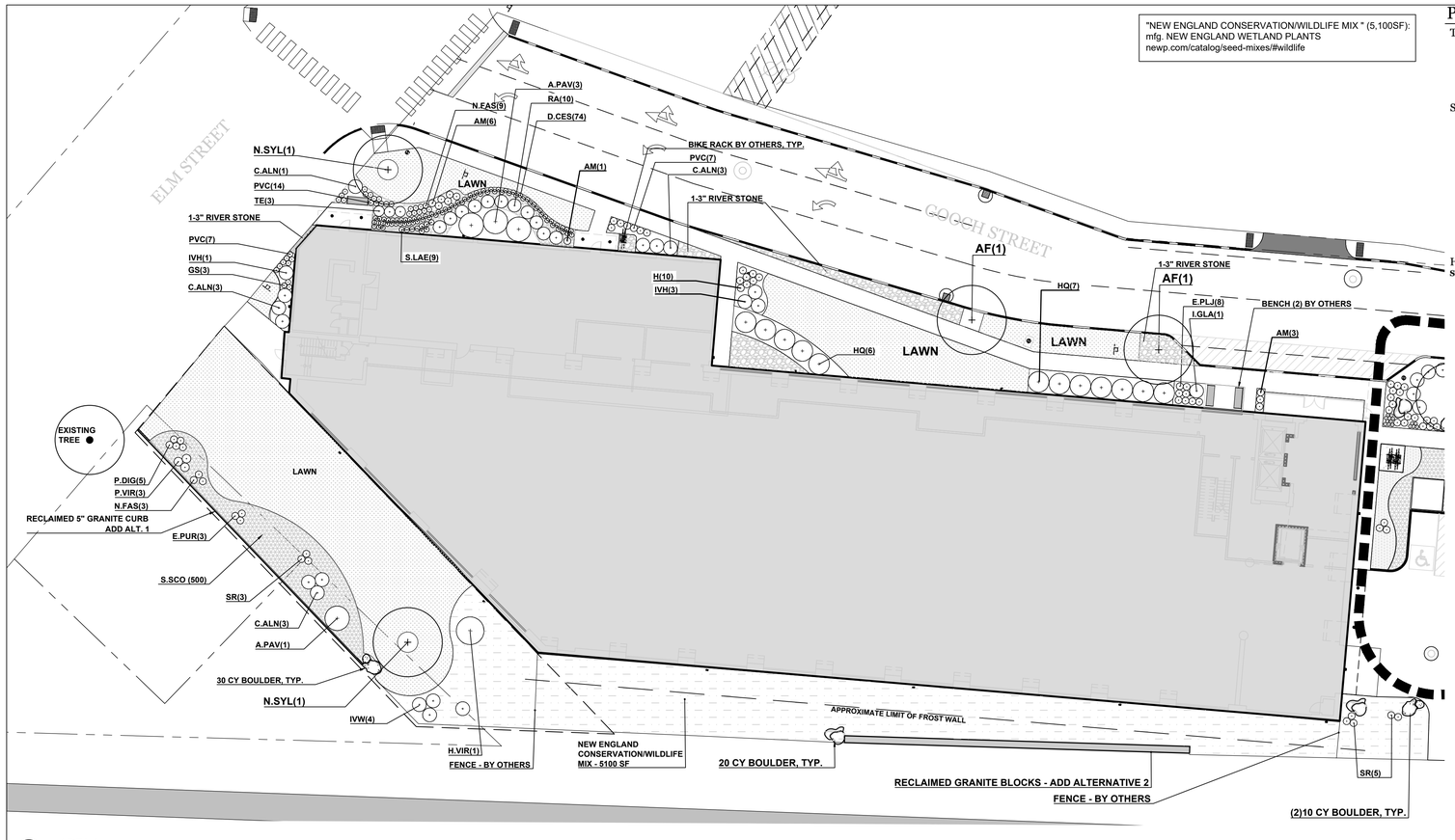
Title:
**PLANTING PLAN**

Scale: **1"=30'**
0 15 30 60 ft.

North:

Sheet No.: **1**

"NEW ENGLAND CONSERVATION/WILDLIFE MIX " (5,100SF):
mfg. NEW ENGLAND WETLAND PLANTS
newp.com/catalog/seed-mixes/#wildlife




A1 AREA 1

## PLANT LIST

### TREES

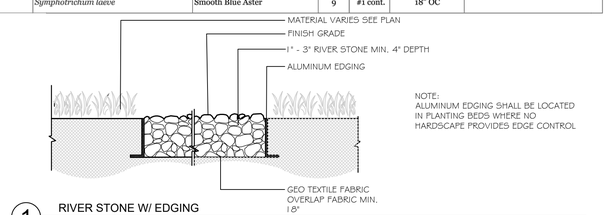
| CODE | BOTANICAL NAME | COMMON NAME | QTY. | SIZE | SPACING | NOTES |
|---|---|---|---|---|---|---|
| AF | *Acer x freemanii 'Jeffersred' AUTUMN BLAZE* | Freeman Maple | 6 | 2.5" cal | per plan | |
| B.NIG | *Betula nigra 'heritage'* | Heritage River birch | 2 | 8-10' | per plan | Clump |
| JV | *Juniperus virginiana* | Eastern Red Cedar | 2 | 8-10' | per plan | |
| NS | *Nyssa sylvatica* | Black Gum | 2 | 2.5" cal | per plan | |

### SHRUBS

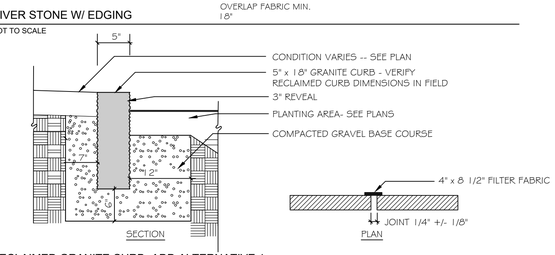
| CODE | BOTANICAL NAME | COMMON NAME | QTY. | SIZE | SPACING | NOTES |
|---|---|---|---|---|---|---|
| A.PAV | *Aesculus parviflora* | Bottle Brush Buckeye | 4 | 3-4' H | 8' OC/Per Plan | |
| C.ALN | *Clethra alnifolia* | Clethra Compacta | 18 | 3-4' H | 4' OC/per plan | |
| H.VIR | *Hamamelis vernalis* | Witchazel | 2 | 3-4' H | 8' OC/Per Plan | |
| HQ | *Hydrangea quercifolia* | Oakleaf Hydrangea | 13 | 3-4' H | 6' OC/Per Plan | |
| HA | *Hydrangea arborescens* | Smooth Hydrangea | 4 | 3-4' H | 4' OC/per plan | |
| IVH | | Virginia Sweetspire | 7 | 3-4' H | 4' OC/per plan | |
| I.GLA | *Ilex glabra 'compacta'* | Inkberry | 13 | 3-4' H | 4' OC/per plan | straight native |
| IVW | *Ilex verticillata 'red sprite'* | Winterberry | 4 | 2-3' H | per plan | Provide one male per 4 female- male must be planted 40' from female plants. |
| RA | *Rhus aromatica 'lo gro'* | Lo Gro Fragrant Sumac | 25 | #2 cont. | 3' OC/per plan | |
| TE | *Taxus x media 'Everlow'* | Everlow Yew | 9 | #2 cont. | 3' OC/per plan | |

### HERBACEOUS

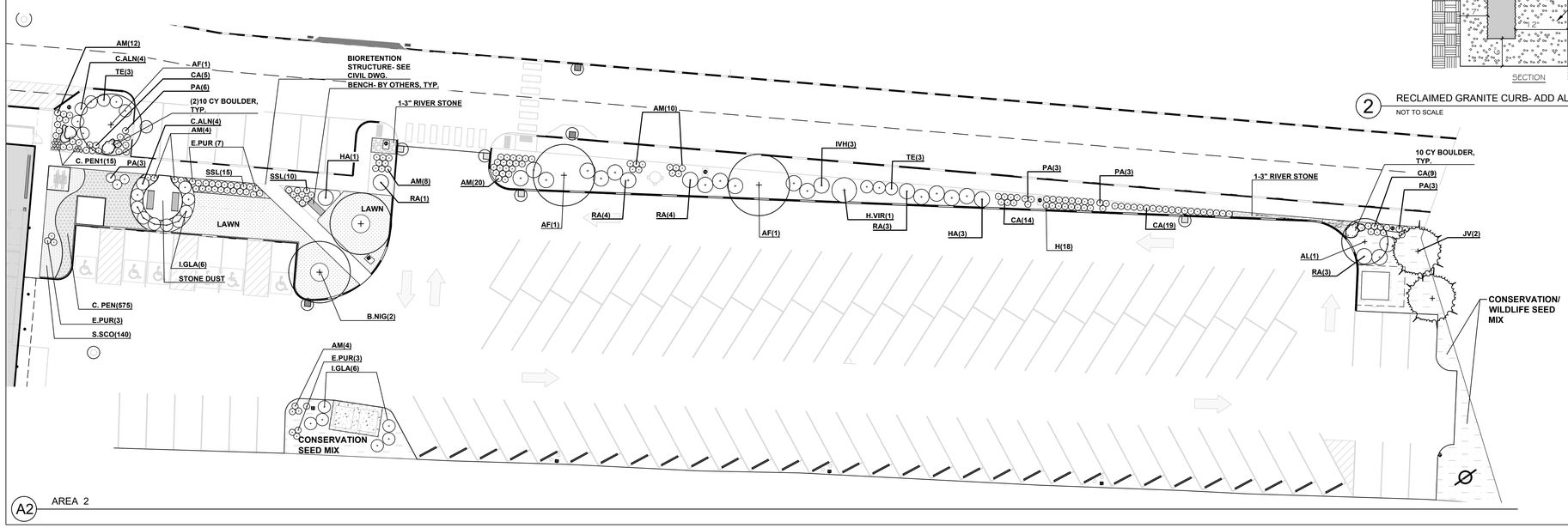
| SYMB. CODE | BOTANICAL NAME | COMMON NAME | QTY. | SIZE | SPACING | NOTES |
|---|---|---|---|---|---|---|
| AM | *Aronia melanocarpa Ground Hug* | Ground Hug Choke Cherry | 68 | #1 cont. | 24" OC | |
| CA | *Calamagrostis acutiflora* | Karl Foester | 49 | #1 cont. | 24" OC | |
| C.PEN | *Carex pennsylvanica* | Pennsylvania Sedge | 575 | plug | 10" OC | Triangle Planting Pattern |
| C.PEN1 | *Carex pennsylvanica* | Pennsylvania Sedge | 15 | #1 | 12" | |
| D.CES | *Deschampsia cespitosa* | Tufted Hair Grass | 74 | plug | 15" OC | Triangle Planting Pattern |
| GS | *Geranium sanguineum 'New Hampshire Purple'* | Bloody Cranesbill | 3 | #1 cont. | 18" OC | |
| E.PUR | *Echinacea purpurea* | Echinacea | 15 | #1 cont. | 18" OC | |
| E.PLJ | *Eupatorium purpureum'Little Joe'* | Little Joe' Dwarf Pye-weed | 8 | #1 cont. | 24" OC | |
| H | *Hermerocallis* | Sheepscot Vallet Enchantress | 28 | #1 cont. | 18" OC | |
| N.FAS | *Nepeta x fassenii* | Catmint | 12 | #1 cont. | 18" OC | |
| PA | *Perovskia atriplicifolia* | Russian Sage | 12 | #1 cont. | 18" OC | |
| P.VIR | *Panicum virginicum* | Switchgrass | 3 | #1 cont. | 30" OC | |
| PVC | *Panicum virgatum* 'Cape Breeze | Dwarf Switchgrass | 28 | #1 cont. | 18" OC | |
| P.DIG | *Penstamon digitalis* | Foxglove Beardtongue | 5 | #1 cont. | 18" OC | |
| S.SCO | *Schizachyrium scoparium* | Little Bluestem Grass | 640 | plug | 15" OC | Triangle Planting Pattern |
| SSL | *Schizachyrium scoparium* | Little Bluestem Grass Seacoast | 25 | #1 cont. | 24" OC | Biotretention Area |
| SR | *Solidago rugosa 'Fireworks'* | Goldenrod | 8 | #1 cont. | 24" | |
| S.LAE | *Symphotrichum laeve* | Smooth Blue Aster | 9 | #1 cont. | 18" OC | |




1 RIVER STONE W/ EDGING
NOT TO SCALE




2 RECLAIMED GRANITE CURB- ADD ALTERNATIVE 1
NOT TO SCALE




A2 AREA 2

PERMIT LEVEL
NOT ISSUED FOR CONSTRUCTION

ROBERT METCALF No.1815 REGISTERED LANDSCAPE ARCHITECT STATE OF MAINE

Prepared For:
Applicant:
TOM WATSON & CO.
188 STATE STREET
Portland, Maine

Prepared By:
MITCHELL & ASSOCIATES
Landscape Architects
The Staples School, 70 Center Street
Portland, Maine 04101
Tel: (207) 774-4427

ACORN ENGINEERING INC.
PO BOX 3372, Portland, Maine 04104
Tel: (207) 775-2655

1 GOOCH STREET REDEVELOPMENT
TOM WATSON & CO.
188 STATE STREET, 3RD FLOOR, PORTLAND ME 04101

Date: 05.10.21

Issued For:
DESIGN DEVELOPMENT

Revisions:

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Title:
PLANTING PLAN
AREA 1 & 2

Scale: 1"=20'
0 10 20 40 ft.

North:

Sheet No.: 2

| Calculation Summary | | | | | |
|---|---|---|---|---|---|
| **Label** | **Avg** | **Max** | **Min** | **Avg/Min** | **Max/Min** |
| SITE | 1.58 | 13.2 | 0.0 | N.A. | N.A. |
| PARKING | 1.18 | 3.8 | 0.2 | 5.90 | 19.00 |

| Luminaire Schedule (note fixture cataloge numbers are not complete) | | | | | |
|---|---|---|---|---|---|
| **Type** | **Qty** | **Lum. Lumens** | **LLF** | **Lum. Watts** | **Description** |
| CS | 9 | 8407 | 1.000 | 61 | GVD3 P30 40K XXXX GL3 |
| SA | 1 | 7908 | 0.900 | 80.52 | VP-S-36L-80-3K7-4W |
| SB | 5 | 8100 | 0.900 | 81 | VP-S-36L-80-3K7-4 |
| SC | 8 | 2846 | 0.900 | 22.6 | SRT1-20-3K7-5QW-UNV |
| W1 | 15 | 3538 | 0.900 | 28 | RWL1-48L-25-3K7-4W-U |
| WG1 | 36 | 2208 | 0.900 | 35.3 | KFL2-11L-35-RGBW-NS |

**NOTES:**
1) EXACT MOUNTING DETAILS TO BE DETERMINED AT JOBSITE BY OTHERS.
2) CALCULATIONS MAY or MAY NOT SHOW THE EFFECT OF SHADOWING CAUSED BY BUILDINGS AND OBJECTS WITHIN THE CALCULATED SPACE OR IN THE SITE AREA.
3) READINGS SHOWN ARE INITIAL HORIZONTAL FOOTCANDLES ON A FLAT SITE WITHOUT REFLECTIONS OR OBSTRUCTIONS UNLESS OTHERWISE INDICATED.
4) THIS CALCULATION IS BASED ON LIMITED INFORMATION SUPPLIED BY OTHERS TO SWANEY LIGHTING ASSOCIATES AND STANDARD ASSUMPTIONS OF THE SPACE AND/OR SITE.
5) CONFORMANCE TO CODES AND OTHER LOCAL REQUIREMENTS AS DETERMINED BY THE AHJ ARE THE RESPONSIBILITY OF THE OWNER AND/OR THE OWNER'S REPRESENTATIVE.
6) THIS LAYOUT DRAWING MUST BE COORDINATED WITH THE SITE LOCATION FOR CORRECT FIXTURE ORIENTATION.
7) DOCUMENTS PRINTED OR PLOTTED FROM ELECTRONIC FILES MAY APPEAR AT OTHER THAN THE DESIRED OR ASSUMED GRAPHIC SCALES. IT IS THE RESPONSIBILITY OF THE RECIPIENT TO VERIFY THAT THE PRINTED OR PLOTTED-TO-SCALE DRAWING IS PRINTED TO SCALE.

PLAN VIEW

SITE LTG 5-11-21.AGI

GENERATED BY SWANEY LIGHTING, SCARBOROUGH ME - 207-883-7100 - swaneylighting.com

TITLE
**59 ELM ST - 1 GOOCH ST**
**BIDDEFORD, ME**
**SITE LIGHTING LAYOUT**

Date:5/11/2021

GENERATED FOR:
ACORN ENGINEERING

SCALE NOT TO SCALE

Page 1 of 1

SWANEY LIGHTING ASSOCIATES, INC.

NOTICE: THIS DRAWING IS THE EXCLUSIVE PROPERTY OF SWANEY LIGHTING ASSOCIATES. ITS ACCEPTANCE CONSTITUTES AN AGREEMENT THAT THE DRAWING WILL BE TREATED AS CONFIDENTIAL. THIS DRAWING IS TO BE USED FOR NO PURPOSE OTHER THAN AS DETAILED HEREIN. THIS DRAWING IS TO BE KEPT IN ITS ENTIRETY AND ALL COPIES MADE MUST BE RETURNED UPON REQUEST AND IS NOT TO BE COMMUNICATED, DISCLOSED OR COPIED; EXCEPT AS EXPRESSLY AUTHORIZED BY SWANEY LIGHTING ASSOCIATES.
ALL FIXTURES SHOWN HEREON ARE ASSUMED TO BE THE BEST UTILIZATION OF LIGHTING FIXTURES INCLUDED IN THIS DRAWING. IT IS PROVIDED USING FIXTURE PHOTOMETRICS ESTIMATED BY THE MANUFACTURER. ANY VARIATION IN FIXTURE PERFORMANCE FROM THE PERFORMANCE SHOWN IN IES FILE IS NOT THE RESPONSIBILITY OF THE MANUFACTURER. ITS USE FOR ANY OTHER PURPOSE IS NOT AUTHORIZED BY SWANEY LIGHTING ASSOCIATES.

# CITY OF BIDDEFORD

## Planning and Development

Mathew Eddy
Director, Planning and Development
205 Main Street
Biddeford, ME 04005
Mathew.Eddy@biddefordmaine.org
207-282-7119

To: Biddeford Planning Board
From: Mathew Eddy

Date: May 26, 2021

Subject: BRI Contract Regarding Wildlife Review

In Greg's absence, he asked me to provide a review of the proposal from BRI to conduct a wildlife review of the proposed Mike eon subdivision in the area of Winding Creek Drive. As background, the City advertised over a two-week period for interest in providing environmental services that are two-fold: an on-call wildlife specialist to the City to conduct reviews and a firm to specifically conduct an analysis of the proposed subdivision. Staff interviewed two companies, and selected BRI. Beyond this specific project (for example, Biddeford Pool or the Biddeford/Kennebunkport Vernal Pool Complex), BRI offered other environmental planning advantages, given their research and analysis capability Innovative Wildlife Science Worldwide - Biodiversity Research Institute | Portland, ME USA (briloon.org) .

Attached you will find BRI's scope of work to conduct the wildlife review. The scope of work is acceptable. It:

- Reviews existing information to set the parameters of the scope of work;
- Proposes appropriate desk top and site walk analyses;
- Will coordinate communication with appropriate agencies; and,
- Provides for appropriate reporting and support of staff and the Planning Board during the review process.

The proposed contract for review is for $7,450. With your approval, we will sign the contract and begin work.

Cc
Greg Tansley
Mike Eon.

5/24/21

Greg Tansley, AICP
Biddeford City Planner
PO Box 586
Biddeford, ME 04005

## Consulting Services Scope of Work: Clifford Park Connectivity Review

Biodiversity Research Institute, Inc. (BRI) is pleased to present the City of Biddeford (City) with the following Scope of Work and associated cost estimate to review potential impacts to wildlife habitat resulting from the proposed development provided in the email dated 5/19/21. BRI appreciates the opportunity to provide you this scope to complete this analysis in a timely and cost-effective manner.

## Introduction

We have selected a review area that is larger than the proposed development, this was done to better ascertain the potential habitat impacts that may result from the project being reviewed. The review area selected is an approximately 264-acre area located near Winding Creek Road, in Biddeford Maine (Exhibit A). The intent of this scope is to provide technical support to the City planning board and aid in their review of potential impacts on habitat connectivity and wildlife habitat resulting from the proposed development.

## Project Understanding

Publicly available resource data was obtained for the review area to aid in preparation of this scope. In addition, routine letters of inquiry were sent to the Maine Department of Inland Fisheries and Wildlife (MDIFW) and the Maine Natural Areas Program (MNAP) to identify rare species and habitats that may be existing within (or in the vicinity of) the proposed review area (Exhibit B). BRI will examine existing public data sets in the performance of this Scope of Work including potential wetlands and waterbodies existing on the Site, recent high-resolution aerial imagery, United States Department of Agriculture Natural Resources Conservation Service (USDA NRCS) soils, USFWS National Wetlands Inventory, Federal Emergency Management Agency (FEMA) flood maps, elevation data, U.S. Geological Survey (USGS) topography maps and National Hydrography Data.

## Scope of Work

The proposed scope of work includes four separate tasks as described below. These tasks include a review of existing publicly available data sets, a site walk and field review of existing habitat, agency consultation, reporting, and planning board support.

## Task 1: Due Diligence

### Task 1.1 Desktop Review

Publicly available data sets for the desktop review have already been obtained by BRI, this task includes a further review and analysis of this data to better understand potentially available habitat and potential wildlife usage within the review area. Additional data, from the USDA NRCS, USFWS National Wetlands Inventory, FEMA flood maps will be compiled and provided in the final report as attachments.

### Task 1.2 Site Walk

A site walk will be completed by BRI and include technical experts in wetlands, wildlife (birds, mammals, reptiles, and amphibians), and wildlife habitats (i.e., general habitat and plants). Based on the size of the review area (264 acres) we have proposed a two-day effort.

Identified wetlands and waterbodies within the review area will not be delineated, but will be mapped based, in part, on the Routine On-site Determination method described in the 1987 USACE Wetlands Delineation Manual[1] (1987 Manual) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region[2] (Regional Supplement). Wetlands will be classified by type in accordance with Classification of Wetlands and Deepwater Habitats of the United States[3] (Cowardin et al. 1979).

The site walk will include a review of existing vernal pools which have been previously identified on site (Exhibit A), and include a review of the site for additional vernal pools. While the site walk will occur outside of the recommended survey season, the pools can be reviewed for potential significance, significance is defined within Chapter 335 of NRPA:

*"A vernal pool, also referred to as a seasonal forest pool, is a natural, temporary to semi-permanent body of water occurring in a shallow depression that typically fills during the spring*

---

[1] USACE. 1987. Wetlands Delineation Manual. January 1987. Wetlands Research Program Technical Report Y-871. 143 pp. Available online at: http://www.cpe.rutgers.edu/Wetlands/1987-Army-Corps-Wetlands-Delineation-Manual.pdf

[2] USACE. 2012. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0). January 2012. 176 pp. Available online at: http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/reg supp/NCNE suppv2.pdf

[3] Cowardin, L.M, V. Carter, F.C. Golet, and E.T. Roe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. December 1979. 142 pp. Available online at: https://www.fws.gov/wetlands/documents/Classification-of-Wetlands-and-Deepwater-Habitats-of-the-United-States.pdf

*or fall and may dry during the summer. Vernal pools have no permanent inlet or outlet and no viable populations of predatory fish. A vernal pool may provide the primary breeding habitat for wood frogs (Rana [Lithobates] sylvatica), spotted salamanders (Ambystoma maculatum), blue-spotted salamanders (Ambystoma laterale), and fairy shrimp (Eubranchipus sp.), as well as valuable habitat for other plants and wildlife including several rare, threatened, and endangered species. A vernal pool intentionally created for the purposes of compensatory mitigation is included in this definition."*

Surveyors will compile a list of all species of birds, mammals, reptiles and amphibians encountered (visually or aurally) during the site walk. Standardized surveys for these groups of organisms or others (i.e., tree/plants) is beyond the scope of a site walk and this scope of work; however, additional taxa-specific surveys can be conducted within appropriate seasonal timeframes at the request of the City.

During summer, northern long-eared bats roost singly or in colonies underneath bark, in cavities, or in crevices of both live and dead trees. Males and non-reproductive females may also roost in cooler places, like caves, mines or boulder fields. This bat seems opportunistic in selecting roosts, using tree species based on suitability to retain bark or provide cavities or crevices. It has also been found, rarely, roosting in structures like barns and sheds. It also moves roosts every 1-14 days but tends to stay in small area that will have multiple roost trees. The best trees suitable for roosting are snags with good solar exposure.

*"The northern long-eared bat 4(d) rule prohibits incidental take that may occur from tree removal activities within 150 feet of a known occupied maternity roost tree during the pup season (June 1 to July 31) or within a 1/4 mile of a hibernation site, year round[4]."*

Generalized habitat types will be characterized in the field using standard accepted terminology and mapped as necessary to supplement habitat type characterizations available from state databases.

### *Task 1.2 Assumptions*

- Project Site access will be coordinated and approved by the City prior to initiation of field survey efforts. The City will communicate any access restrictions and requirements.
- Natural resources will be mapped during the site walk at a reconnaissance level only; a formal natural resources delineation will not be provided. These natural resource boundaries will be approximate and suitable for general assessment purposes (i.e., boundaries for design or permitting).
- Incidental observations regarding other natural resources and wildlife will be recorded as feasible during all field tasks.

---

- [4]USFWS Northern Long-eared bat Final 4(d) Rule https://www.fws.gov/midwest/endangered/mammals/nleb/nhisites.html

## Task 2: Agency Consultation

BRI has initiated initial inquiry letters with the MNAP and MDIFW (Exhibit B), responses will be forwarded to the City upon receipt. This task includes time for additional meetings or inquiries as required. A virtual meeting will be scheduled to review findings of the desktop and site walk and evaluate natural resources data collected for within the review area. This meeting and may include representatives from MDIFW.

### *Task 2 Assumptions*

- This task includes coordination, preparation and participation in up to two remote meetings.
- A public hearing will not be required for this task.

## Task 3: Reporting

BRI will prepare a summary report which will include the results of the desktop analysis as well as a summary of findings from the site walk and any agency interactions. The report will include summary figures which identify mapped resources or other important resource observations. The report will include a description of wetland and upland habitats, a characterization of streams present on site, and a summary of observed flora and fauna. The report will also include a summary of potential habitat impacts resulting from the proposed project, as well as recommendations to limit potential impacts on wildlife and habitats.

### *Task 3 Assumptions*

- This task includes a single round of revision on the report.

## Task 4: Planning Board Support

We recognize that planning board support is a key component of this scope, and that providing technical input from BRI wildlife biologists will be important. Under this task we will be available to provide technical guidance and answer questions for the planning board and general public. This task includes presentation of the findings of the report (Task 3) to members of the planning board as well as answer question pertaining to the findings.

### *Task 4 Assumptions*

- This task assumes one in person (or remote) planning board meeting will be sufficient to complete this task.

## Project Schedule

The City has set a goal providing materials to the planning board by the end of June 2021. Our team has the capacity and expertise to help meet this goal. As with any complex project, not every variable can be fully planned or accounted for. The Project Team plans to hold a kickoff meeting immediately following contract award. At this time the schedule and deliverable deadlines will be clarified and key points of contact will be identified at the kick-off meeting.

## Project Cost Estimate

Based on BRI's understanding of the Project, as outlined above we estimate the cost to be **$7,450.00**. Table 1 includes BRI's category rates and Table 2 outlines the total estimated cost for the Scope of Work identified for the Project. Work will be completed on a Time & Materials, Not-to-Exceed basis.

**Table 1. Category Rates (2021)**

| Category | Hourly Rate |
|---|---|
| Senior Project Manager | $130 |
| Project Manager | $115 |
| Senior Environmental Scientist | $115 |
| Environmental Scientist | $85 |
| Environmental Technician | $75 |
| GIS Technician I | $75 |

**Table 2. Scope of Work: Costing by Task**

| Task | Description | Cost |
|---|---|---|
| Task 1 | Desktop Analysis | $735.00 |
| Task 2 | Site Walk | $4,300.00 |
| Task 3 | Reporting | $1,320.00 |
| Task 4 | Planning Board Support | $1095.00 |
| | Total | **$7,450.00** |

## Terms and Conditions

The costs provided herein anticipate only tasks explicitly described within this Scope. Additional studies that may be requested by the City may result in the need for changes in scopes and estimated costs. Upon request by the City, BRI will be willing to provide proposals for additional services deemed necessary. BRI will not perform work outside of this Scope unless directed by the City.

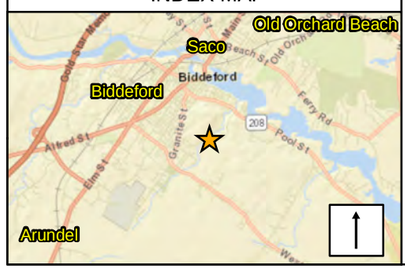
BRI requests a net 30-day invoice payment period from the date of invoice submission as outlined in the BRI Terms and Conditions included as Exhibit C. Cost assumptions and conditions used as the basis for this proposal are valid for 3 months.

BRI looks forward to working alongside the City to support your planning board's review of the proposed project.

Exhibit A

Site Maps

INDEX MAP




**LEGEND**

Project Parcels (Approx 264 Acres)

BIODIVERSITY RESEARCH INSTITUTE
innovative wildlife science

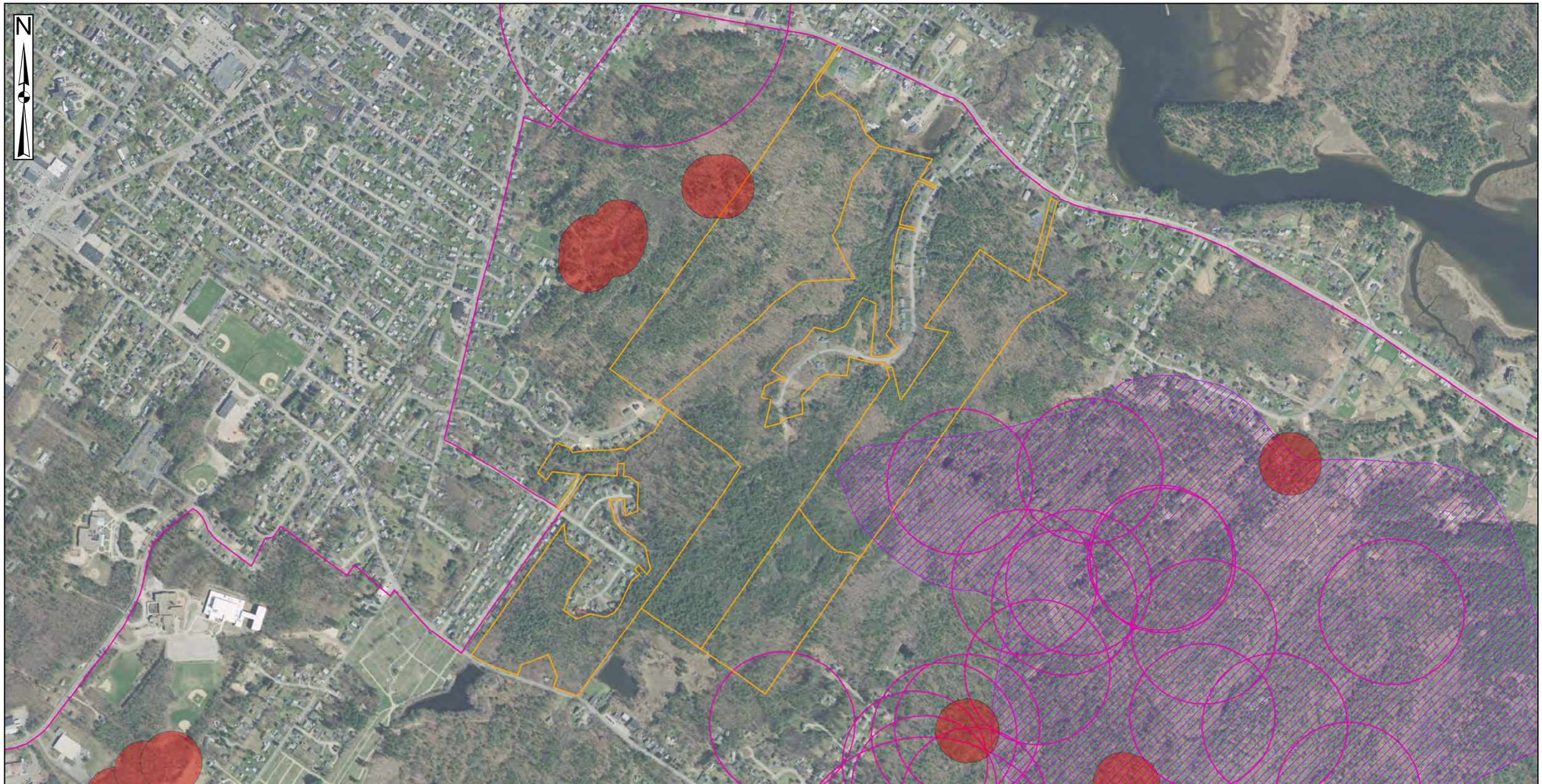
SCALE:

0 850 1,700 Feet

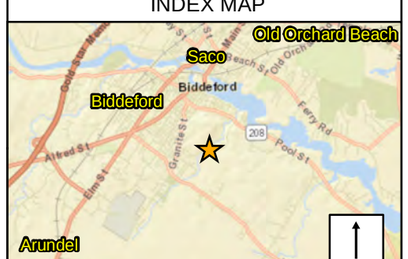
1 inch = 850 feet

**PROJECT LOCATION MAP - AERIAL**
**BIDDEFORD, MAINE**

**MAY 21, 2021**




INDEX MAP




**LEGEND**

- Significant Vernal Pools
- Maine Deer Wintering Areas
- Endangered Threatened and Special Concern Wildlife Habitat
- Project Parcels

BIODIVERSITY RESEARCH INSTITUTE
innovative wildlife science

SCALE:
0 850 1,700 Feet
1 inch = 850 feet

CITY OF BIDDEFORD MAINE

**DESKTOP HABITAT MAP**
**BIDDEFORD, MAINE**

**MAY 20, 2021**

# Exhibit B

## Agency Inquiry Letters

May 21, 2021

Maine Department of Inland Fisheries and Wildlife
41 State House Station Lane
Augusta, ME 04333-0041

**RE: Biddeford, ME, Maine Rare Species Site Review**

To whom it may concern,

Biodiversity Research Institute (BRI) is performing a natural resource assessment of an approximately 264-acre survey area located off of Winding Creek Lane Biddeford, ME (Site). The goal of this assessment is to identify regulated natural resources (i.e., wetlands, streams, and vernal pools) and review the site for potential rare species and habitat. As part of the natural resource assessment, BRI is requesting information regarding the documented or potential presence of rare, threatened, or endangered plant species or other protected communities and habitats from the Maine Department of Inland Fisheries and Wildlife.

We have included a shapefile of the approximate area of interest to aid in your review. If you have any questions please contact me at steve.knapp@brienvironmental.org or at 207-570-9462.

Respectfully submitted,

Steve Knapp
Senior Environmental Scientist
BRI Environmental

May 21, 2021

Maine Natural Areas Program
177 State House Station Lane
Augusta, ME 04333-0177

**RE: Biddeford, ME, Maine Rare Species Site Review**

To whom it may concern,

Biodiversity Research Institute (BRI) is performing a natural resource assessment of an approximately 264-acre survey area located off of Winding Creek Lane Biddeford, ME (Site). The goal of this assessment is to identify regulated natural resources (i.e., wetlands, streams, and vernal pools) and review the site for potential rare species and habitat. As part of the natural resource assessment BRI is requesting information regarding the documented or potential presence of rare, threatened, or endangered plant species or other protected communities and habitats from the Maine Natural Areas Program.

We have included a shapefile of the Survey Area boundary to aid in your review. If you have any questions, please contact me at steve.knapp@brienvironmental.org or at 207-570-9462.

Respectfully submitted,

Steve Knapp
Senior Environmental Scientist
BRI Environmental

# Exhibit C

## Biodiversity Research Institute

## Terms and Conditions

**Biodiversity Research Institute**
**STANDARD TERMS AND CONDITIONS**
Rev. April 1, 2021

These Terms and Conditions are between The City of Biddeford (hereby known as "Client") and Biodiversity Research Institute, Inc. (hereby known as "BRI"). BRI has provided Client a written proposal for the delivery of services based upon BRI's understanding of Client's needs (the "Proposal" and the "Services"), respectively and Client has accepted that Proposal. These Terms and Conditions, along with the Proposal and any attachments or exhibits thereto comprise the agreement between BRI and Client with respect to the Services. These Terms and Conditions shall also apply to any additional Services that BRI may perform for Client from time to time, whether pursuant to the Proposal as It may be amended or otherwise. The tangible results of the Services, such as reports, maps and similar materials may be referred to herein as Work Product.

**1. COMPENSATION**

Unless otherwise detailed in the Proposal, BRI shall be compensated as follows:

(i) Client shall pay BRI at the applicable rates for the personnel based upon the r time engaged in performing Services outlined in the Proposal. Such rates are subject to modifications periodically;

(ii) Client shall reimburse BRI for reasonable personnel expenses, including travel, living, and incidental expenses approved by BRI for personnel performing Services specified in the Proposal away from BRI's office. Other associated costs and certain out-of-pocket expenses that are necessary in performing Services will be included in reimbursable expenses. Use of field equipment will be invoiced at BRI's customary rates. BRI's invoices are distributed monthly and are payable upon receipt. Any amounts not paid within thirty (30) days of invoice date may be subject to interest at the rate of two percent (2%) per month. If any invoice is unpaid for sixty (60) days, BRI may suspend or terminate its Services.

**2. CONFIDENTIALITY, ACCESS, AND INFORMATION**

Client shall coordinate access to site(s), facilities, and information necessary for BRI to perform the Services efficiently. This includes maps, drawings, and project background needed for the proper performance of the Services. Client shall alert BRI of any known Inaccuracies In the Information provided to BRI. Client shall be responsible for the costs Incurred arising out of Inaccurate Information provided to BRI by Client. Client shall conspicuously mark as confidential any materials it deems confidential. BRI shall use reasonable commercial efforts to maintain the confidentiality of Client confidential information.

**3. INSURANCE**

During the course of performance of Services, BRI will maintain the following required insurance coverages:

| TYPE OF COVERAGE | AMOUNT OF COVERAGE |
|---|---|
| Workers' Compensation/Employers Liability | Statutory/$1,000,000 |
| Commercial General Liability/Excess Liability | $2,000,000/$3,000,000 |
| Automobile Public Liability and Property Damage | $1,000,000 |

(ii) If required, BRI shall deliver to Client, Certificates demonstrating evidence that the associated coverages are in effect and will not be terminated or changed without thirty (30) days written notice;

(iii) If requested, BRI is willing to request additional coverages on a cost-reimbursable basis to acquire other desired insurance coverages if applicable/available to the work being performed.

**4. INDEMNIFICATION**

BRI shall indemnify and hold Client harmless from claims, actions, and judgments originating from bodily injury, death, or damage to physical property of third parties ("Loss") to the extent caused by the negligence of BRI up to the amount of BRI's insurance for such Loss. If Client or another person is also at fault with respect to the Loss, BRI's responsibility will be apportioned

**5. WARRANTY REGARDING SERVICES**

BRI warrants that Services provided by BRI and its employees shall comply with accepted standard practices and procedures relevant to the time and location for the type of Service completed. BRI and its employees shall exercise a diligent and consistent degree of skill and care for each individual Service performed. In the case that BRI should fail to perform to the aforementioned standards, BRI shall

(i) without cost to Client, reperform and correct any Services mutually deemed inadequate; and

(ii) reimburse Client for Client's direct damages, resulting from such inadequate Services. This reimbursement is limited to the total amount paid by Client with respect to the subject Proposal.

Services involving activities such as the assessing of ecological or health impacts, wetland and waterbody delineations, wildlife assessments, air or water modeling, population assessments, scheduling, and estimating cost are greatly susceptible to revisions or changes in regulatory and scientific criteria, methodologies, and interpretations and are not guaranteed to conform to client of agency expectations. Client acknowledges these circumstances and accepts the risk that, although BRI may perform to accepted good standards and practices, the Client's goals or desires may still not be achieved.

BRI makes no other warranties with regard to its performance of the Services. Any claim asserting a breach of this warranty must be brought within one year of the date the Services that are complained of were provided by BRI.

**6. BRI LIABILITY**

Except as set forth in Section 4 above, BRI's total aggregate liability in connection with the Services shall not exceed the total amount of compensation paid to BRI for the Services rendered in connection with the Proposal..

**7. CONSEQUENTIAL DAMAGES AND OTHER LIABILITIES**

BRI and its employees shall not be liable for any incidental, special, or consequential damages. This includes, but without limitation, any damages based on loss of profits or revenue, loss of or interference, whether or not by third parties, with full or limited use of any equipment, facility, or property, including real property, cost of power, energy, or product, delay in or failure to perform and/or to obtain permits or approvals, cost of capital, loss of goodwill, fines or penalties against Client or similar damages, or claims of customers. These terms provide allocations of risk and reward consistent with the description and scope of the Services and include

(a) protections against, and limitations on, liability of BRI and

(b) specific remedies of Client which shall be its sole and exclusive remedies. The allocations, including without limitation those defined in the preceding Articles 4, 5, 6 and 7, shall survive this contract and apply to the fullest

extent allowed by law regardless of whether liability of BRI is claimed, or found, to be based in contract, tort or otherwise (including negligence, warranty, indemnity and strict liability) and Client hereby waives all rights of recovery and assumes all risks beyond those explicitly allocated to BRI herein.

**8. DELAYS**

Neither party shall be considered in default in the performance of its obligations hereunder to the degree that the performance of such obligations is prevented or delayed by any cause which is beyond the reasonable control of the affected party, and the time for performance of either party hereunder shall in such event be extended for a period equivalent to any time lost as a result thereof. The foregoing sentence shall not apply to Client's obligation to make timely payment of amounts due hereunder. In the case of a material delay in the ability of BRI to perform the Services due to circumstances beyond BRI's reasonable control, BRI shall be permitted to adjust the cost of Services to account for actual increased costs incurred or anticipated by BRI, subject to Client's approval. If Client does not accept such increases, BRI may decline to provide the Services.

**9. THIRD PARTY INTERESTS**

All Services and Work Product produced under this Contract are exclusively for the benefit of Client, with no intent to be for the benefit, or to be construed as creating rights in favor, of any third party. If Client is not the ultimate beneficiary of the Services or Client provides BRI's Work Product to any third party, Client represents and warrants

(a) that it shall bind its clients and/or such third parties to limitations on and protections against liability "protective provisions" commensurate with those afforded BRI hereunder and that such protective provisions will, in fact, inure to the benefit of BRI, and/or

(b) that Client has the capability to act on behalf of its clients and/or such third parties and does hereby bind such parties to these protective provisions.

**10. CHANGES AND TERMINATION**

No modification of the Proposal or these terms and conditions shall be made unless mutually agreed upon in writing and signed by both parties. Client shall retain the right to request changes to the scope of the Services provided pursuant to the Proposal which shall be binding only upon execution of a change order or amendment by the Parties. Client shall also retain the right to terminate this Contract prior to completion of the Services, after reasonable notice to BRI in writing, in which event Client shall compensate BRI all amounts due to BRI hereunder up to the effective date of termination, plus BRI's reasonable costs incurred after such date in terminating the Services. In the event that Client alleges breach on behalf of BRI, Client shall afford BRI 30 days written notice to correct any alleged deficiency prior to termination. If Client terminates the Services before completion, Client will indemnify BRI against any third-party claims arising out of such termination.

**11. Assignment; Delegation. Client may assign Its rights under the Proposal upon advance written notice to BRI, but Client shall remain responsible for payment of all amounts due to BRI. BRI may not assign Its rights under the Proposal without the consent of Client, except to an entity controlled by BRI. BRI may perform the Services using the services of Independent contractors, provided the BRI shall remain responsible for the quality of the performance by such subcontractors.**

**12. GOVERNING LAW, PRECEDENCE AND DIVISIBILITY**

This Agreement shall be governed by the laws of the State of Maine excluding choice of law rules which direct application of the laws of another jurisdiction, unless otherwise specified in Proposals. The provisions of the BRI Proposal and these Terms and Conditions shall govern solely any Services provided by BRI and shall take precedence over and render void any inconsistent or conflicting provision in any purchase order or similar document issued by Client. If any term, condition, provision or portion of this Contract is declared void or unenforceable, or limited in its application or effect, such event shall not affect any other provision or portion hereof. All other provisions and unaffected portions thereof shall remain fully enforceable and an adjustment in the compensation or other provisions shall be made with the purpose of equitably effecting the intent of the Contract to the maximum extent allowed by law.

**13. ENTIRE AGREEMENT**.

This Contract and the Proposal contain the entire agreement between the parties as to the Services. All previous or coexisting agreements, representations, warranties, promises, and conditions relating to the subject matter of the Proposal are superseded by the Proposal and these Terms and Conditions.

**Biodiversity Research Institute, Inc**
**TERMS AND CONDITIONS ACCEPTANCE**

ACCEPTED BY:

_____
CLIENT (PRINT NAME)

_____
TITLE

_____
SIGNATURE

_____
DATE

# CITY OF BIDDEFORD

## Planning and Development Department

Greg D. Tansley, A.I.C.P.
City Planner
205 Main Street
P.O. Box 586
Biddeford, ME 04005
(207) 282-7119 or (207) 284-9115
Greg.Tansley@biddefordmaine.org

**PLANNING BOARD MEMORANDUM**

TO: William Southwick, Chair & Members of the Biddeford Planning Board

FROM: Greg Tansley, A.I.C.P., City Planner

DATE: May 26, 2021

**RE:** **NEW BUSINESS –** 2020.15 Extension of a previously approved Subdivision, Site Plan, and Shoreland Zoning review for The Mills at Pepperell, LLC and Mill 11, LLC, to convert Building #11 of the Pepperell Mill complex into 71 housing units located off Laconia Street (Tax Map 71, Lot 10) in the MSRD-3 zone.

MEETING DATE: June 2, 2021 @ 6:00 PM

---

In June 2020 the applicant received approval for the project identified above. The applicant has been delayed in pulling permits die to contractor and construction delays resulting from an unanticipated pandemic (COVID-19). They are now preparing to begin the project but will be enable to do so prior to the projects approval expiration date of June 3, 2021.

Based on staff's review, nothing has changed in the Ordinances that would affect this approval. Staff Recommend the Planning Board extend the approval by an additional year to allow the applicant to complete preparing for the project and to pull permits to get things moving.

Staff Recommendation:

*Motion to approve a 1-Year extension for a previously approved Subdivision, Site Plan, and Shoreland Zoning review for The Mills at Pepperell, LLC and Mill 11, LLC, to convert Building #11 of the Pepperell Mill complex into 71 housing units based on the same conditions previously approved on June 3, 2020.*

Attachments:

1. Applicant's Extension Request Letter
2. Notice of Decision Dated June 18, 2020

# CITY OF BIDDEFORD

Planning and Development Department

Greg D. Tansley, A.I.C.P.
City Planner
205 Main Street
P.O. Box 586
Biddeford, ME 04005
(207) 282-7119 or (207) 284-9115
Greg.Tansley@biddefordmaine.org

**NOTICE OF DECISION**

**June 18, 2020**

Megan Higgins
The Mills at Pepperell, LLC and Mill 11, LLC
2 Main Street, Bldg. 17, Ste. 301-E
Biddeford, ME 04005

**RE: 2020.15 Subdivision, Site Plan, and Shoreland Zoning review for The Mills at Pepperell, LLC and Mill 11, LLC, to convert Building #11 of the Pepperell Mill complex into 71 housing units located off Laconia Street (Tax Map 71, Lot 10) in the MSRD-3 zone.**

Dear Ms. Higgins,

At their meeting of June 3, 2020, the Biddeford Planning Board reviewed the final Subdivision, Site Plan, and Shoreland Zoning for the conversion of Building #11 on the Campus to up to 71 units of residential housing. The Mills at Pepperell, LLC and Mill 11, LLC owns the property and you presented the application to the Board.

Based on the presentation, materials submitted, and public comment the Planning Board approved the following requested waivers:

a. *Article VI Section 49.A.11(a) – Vehicles backing out onto the street.*
b. *Article VI Section 49.A.11(g) – Parking lots to be landscaped with a continuous border.*
c. *Article VI Section 49.C.3(a) – Access to parking stalls should not be from major interior travel lanes*
d. *Article VI Section 49.C.3(l) – Parking Requirements – Waiver Requested is for 25 parking spaces*

Further, the Planning Board decided to review this project under Site Plan Review rather than Subdivision per *MRS Title 30-A, §4402. 6.*

Lastly, the Planning Board, based on the presentation, materials submitted, and public comment, approved the Site Plan, Subdivision and Shoreland Zoning Permit and approved the findings of fact conditioned on the following:

1. **<u>Prior to any ground disturbance or issuance of any permits:</u>**
   a. **A pre-construction meeting with the contractor needs to be held with the Engineering Office to discuss inspection requirements.**

b. **Best management practices shall be adhered to during all ground disturbance operations. All Catch Basin's in the vicinity of earthwork operations shall have silt sacks installed & maintained for the duration of the work.**
c. **Applicant shall provide a Financial Capacity letter indicating sufficient financial resources to complete the project.**
d. **A performance guarantee (in an amount acceptable to the Planning Department) in the amount of 150% of the remaining improvements shall be submitted to the Planning Department.**
e. **The design of the elevator sump drainage must be reviewed and approved of by the Engineering Department.**
f. **A traffic impact fee shall be paid with a fee based on $1,082 per trip end in the peak hour. Provide trip generation calculations for 71 unit elderly housing project to the Planning Department for review and approval.**
g. **Striped Fire Lane on back side of Building #11 to be reorientated and approved per Fire Departments.**
h. **Striped pedestrian walkway system needs to be shown from the current end on Laconia all the way to the intersection of York & Laconia. Additionally, striped pedestrian walkway system needs to be shown from building #11 sidewalk to Saco Falls Way.**
i. **ADA no barrier pedestrian movement must be provided through the walkway system shown on the approved plans.**
j. **Screening of headlights towards Mill at Saco Falls property to be determined with a proposal provided to the Planning Department for review and approval. If the applicant and Planning Department cannot come to agreement, the applicant can return to the Planning Board for review and a final decision.**
k. **Ability to Serve Letters be provided by Maine Water and the Biddeford Wastewater Department.**
l. **Financial Capacity Letter to be provided to the satisfaction of the Planning Department.**

2. **<u>Prior to commencing any work in the City Right-of-Way</u> the applicant must obtain a road-opening permit from the Public Works Department.**
3. **A sewer permit is required prior to any permit issuance. Any existing floor drains which are to be utilized by a unit owner/leasee must be inspected and outfall location determined. The use of floor drains must be signed off on by the Sewer Department. If any roof drains are connected to the sewer system they must be disconnected as part of this approval.**
4. **No trash is permitted to be placed at the curb for City pickup. Trash pickup and disposal, for all units associated with this approval or previous approvals, is the responsibility of the applicant.**
5. **Standard Conditions of Approval apply.**
6. **<u>Prior to issuance of an occupancy permit</u>:**
   a. **The previous conditions of the Saco River Corridor Commission shall be implemented which were the installation of two stormwater treatment basins:**
      i. **A Filterra system**
      ii. **Sump area with filter**
   b. **Conditions of Maine Water's ability serve letter- Maine Water to provide letter of compliance with their requirements:**
      i. **Have Fire Flows performed on the 8" private main**
      ii. **Have separate Fire & Domestic lines going into the building.**

iii. **Provide an easement to operate the Shut Off to the Fire & Domestic services.**

c. **An alarm beacon to be provided at the loading dock on Building 13 that will be tied into the alarm panel for all area buildings (including building 11) with a sign attached below it that states a message to all delivery drivers that if the beacon is lit, they must vacate the loading dock immediately as emergency vehicles will be coming down Laconia St to respond to an incident.**

d. **Provide a parabolic mirror on the West side of the access drive (In vicinity of current Laconia St. gate to afford visibility to emergency vehicles if a truck is parked in the loading dock so drivers can see if pedestrians are coming into Laconia St from Building 13.**

e. **The Planning Department shall conduct a compliance inspection and shall determine that all required site improvements related to the public's health, safety, and welfare have been completed, and that the City holds a Performance Guarantee sufficient to cover any remaining site improvements and/or deficiencies.**

7. **Copies of the maintenance logs for the stormwater devices must be submitted to the City for each calendar year no later than January 15th of the following year.**
8. **Snow storage will be done in a manner to keep accessways & walkways clear and to avoid damage to the landscaped areas.**

Following the date of final approval, such approval shall be valid for one year from date of said approval. If a building permit/occupancy permit has not been issued, then said approval shall become automatically null and void.

Appeals of the Planning Board's decision may be made as per the Biddeford Revised Code of Ordinances.

If you have any questions please call the Planning Department at 284-9115.

FOR THE BIDDEFORD PLANNING BOARD

Sincerely,

Greg D. Tansley, AICP
City Planner

Cc: R. Fecteau, Code Enforcement Officer (via e-mail)
M. Eddy, Planning and Development Director (via e-mail)
File

# CITY OF BIDDEFORD

## Planning and Development Department

Greg D. Tansley, A.I.C.P.
City Planner
205 Main Street
P.O. Box 586
Biddeford, ME 04005
(207) 282-7119 or (207) 284-9115
Greg.Tansley@biddefordmaine.org

## Standard Conditions of Approval

**Owner/Applicant:** The Mills at Pepperell, LLC and Mill 11, LLC
2 Main Street, Bldg. 17, Ste. 301-E
Biddeford, ME 04005

**Project Description:** Conversion of Building #11 into up to 71 Residential Units

**Project Location:** Building #11, Pepperell Mill Campus

**Tax Map / Lot Number:** Tax Map 71, Lot 10

**Project ID:** 2020.12

1. The material provided for the proposed project has been reviewed only for general conformance to the City technical requirements. The applicant(s) and/or their technical consultant shall be responsible for the actual design details and completeness of their work. It is incumbent upon the applicant(s) to ensure that the project is in conformance and complies with all City Codes, ordinances and regulations as well as with all state regulations, including, but not limited to, space and bulk standards, performance standards, use standards and other zoning type requirements.

2. All work shall be in conformance with the approved plans and submission documents. No deviations from the approved plans are permitted without prior approval from the Planning Board for major changes, and from the City Planner and City Engineer for minor changes. The City Planner shall make the determination of major or minor.

3. If Site Development is required as part of the project, a Letter of Credit or other surety acceptable to the City of Biddeford shall be submitted prior to the issuance of permits or site work being initiated. The financial guarantee shall be established for 150% of the cost of the remaining project improvements. (Items include but are not limited to the following):

    a. Landscaping
    b. Paving
    c. Work within ROW (existing or proposed)
    d. Drainage
    e. Loam & seed

f. Sediment & erosion control
g. As–builts
h. Monuments

4. Prior to any ground disturbance, the applicant shall establish a construction inspection account equal to: N/A.

5. Prior to any ground disturbance, a pre-construction meeting with the owner/applicant, contractor, and City is required. Contact the Engineering Department to schedule this meeting.

6. Contact the Department of Public Works for driveway location permits, curb cut permits and/or street opening permits prior to the start of construction.

7. If Site Development is required as part of the project, an as-built plan must be provided to the City of Biddeford Engineering Office at the end of the project on mylar and on a disk, in a format, which can be read by the City of Biddeford's Geographic Information System software. If a disk copy cannot be provided, a charge for staff time to enter the plan into the City system will be assessed to the applicant.

8. The applicant shall incorporate appropriate erosion control measures into this project to reduce erosion affects from the work. All disturbed areas must be re-vegetated and/or otherwise stabilized at the appropriate stage of the work per Maine DEP standards in the Best Management Practice (BMP) manual.

9. That the Article VI Performance Standards requirements regarding Dust, Fumes, Vapors & Gases (sect 25), Explosive Materials (sect 28), Glare (sect 37), Noise (sect 48) be followed.

10. The applicant is required to comply with all applicable requirements of Chapter 70 (Utilities) and Chapter 71 (Utilities/Industrial Pretreatment Program).

11. The applicant shall obtain all other pertinent local, state and federal permits, licenses, and insurance such as blasting, building, electrical, plumbing, etc prior to commencing business.

12. If Site Development is required as part of the project, at the completion of the project the owner/applicant shall request a final inspection. This request shall be directed to the Planning Office. Performance Guarantees and remaining escrow accounts shall not be released until the Planning Office certifies that the project has been completed and is in compliance with the approval and all applicable City Ordinances.

5/24/21

Greg Tansley
City Planner
205 Main Street
P.O. Box 586
Biddeford, ME 04005

RE: The Mills at Pepperell, LLC and Mill 11, LLC Request for extension for Approval for 71 Residential Units in Building 11

Dear Greg,

The Mills at Pepperell LLC requests to go before the Planning Board to request an extension to the approvals for 71 Residential Units in Building 11 due to unanticipated delays due to COVID-19. We anticipate a Summer 2021 start date for the project. Please confirm we can be added to the agenda to request the extensions at The Planning Board's June 2, 2021 meeting.

Thank you for your consideration,

Megan Higgins
The Mills at Pepperell LLC
2 Main Street, Bldg. 17, Ste. 301-E
Biddeford, ME 04005