

**CITY OF DOVER**

## PLANNING TECHNICAL REVIEW COMMITTEE –AGENDA

**REVISED**

Meeting Type: Regular Meeting  
Meeting Location: First Floor Conference Rm, City Hall, 288 Central Ave, Dover NH 03820  
Meeting Date: **Thursday, October 23, 2025**  
Meeting Time: **10:30 AM**

1. Site Plan for Summit Land Development, LLC (Owners: 16 Industrial Park, LLC), Assessor's Map G, Lot 4, zoned CM, located at 14 Industrial Park Road. (Proposal is to construct a 15,000 s.f. warehouse and a 6,200 s.f. addition to the existing building) (SITE-2025-0017)



# PLAN SNAPSHOT REPORT SITE-2025-0017 FOR CITY OF DOVER, N.H.

**Plan Type:** Site Plan - Major  
**Work Class:** New Construction  
**Status:** In Review  
**Valuation:** \$0.00  
**Description:** New 15,000 sf Warehouse Building and 6200 sf Addition to Existing Building

**Project:**  
**District:** None  
**Square Feet:** 0.00  
**Assigned To:** Blonigen, Rachel

**App Date:** 10/02/2025  
**Exp Date:** 12/06/2025  
**Completed:** NOT COMPLETED  
**Approval**  
**Expire Date:**

|                             |      |                                                    |      |                                                     |
|-----------------------------|------|----------------------------------------------------|------|-----------------------------------------------------|
| <b>Parcel:</b> G0004-000000 | Main | <b>Address:</b> 14 Industrial Park Rd<br>Dover, NH | Main | <b>Zone:</b> CM(Non-Residential - Commercial Manuf. |
|-----------------------------|------|----------------------------------------------------|------|-----------------------------------------------------|

|                                                                                                                 |                                                                                                                                                                                      |                                                                                                                                                                |                                                                                                                          |
|-----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| Surveyor<br>McEaney Survey<br>Associates<br>P.O. Box 1166<br>DOVER, NH 03821<br>Business: (603) 742-0911        | Applicant<br>summit land development<br>john sullivan<br>340 Central Avenue 202 202<br>Dover, NH 03820<br>Home: (603) 749-2800<br>Business: (603) 749-2800<br>Mobile: (603) 860-8519 | Applicant<br>Civilworks New England<br>Steve Haight<br>181 Watson Road PO Box<br>1166<br>Dover, NH 03820<br>Business: (603) 749-0443<br>Mobile: (603) 817-6651 | Architect<br>Seacoast Crane & Building<br>Company, Inc.<br>98 Route 236<br>Kittery, ME 03904<br>Business: (207) 439-5899 |
| Soil Scientist<br>BAG Land Consultants<br>43 Rockingham Street<br>Concord, NH 03301<br>Business: (603) 228-5775 | Owner<br>Summit land Development<br>340 central ave 202<br>dover, NH 03820<br>Business: (603) 749-2300                                                                               |                                                                                                                                                                |                                                                                                                          |

## Plan Custom Fields

|                                                   |                                                 |                                           |                                                           |                                          |           |
|---------------------------------------------------|-------------------------------------------------|-------------------------------------------|-----------------------------------------------------------|------------------------------------------|-----------|
| Total                                             | 0                                               | Total2                                    | 0                                                         | Total3                                   | 3620      |
| Total4                                            | 0                                               | Total5                                    | 6200                                                      | Total6                                   | 0         |
| Total7                                            | 0                                               | Total8                                    | 15000                                                     | Total9                                   | 15000     |
| Street Classification<br>Type                     | Municipal                                       | Net Change in # Parking<br>Spaces (+/-)   | 13                                                        | Water Service                            | Municipal |
| Recording Number                                  |                                                 | Sewer Service                             | Municipal                                                 | Total Acres (GIS)                        | 5.34      |
| Deed Book                                         |                                                 | Total SQFT                                | 232610                                                    | Deed Page                                |           |
| Deed Date                                         |                                                 | Proposed Property Use                     | Commercial / Light<br>Industrial / Light<br>Manufacturing | Area of Parcel to be<br>Developed (SQFT) | 53717     |
| Number of Parking<br>Spaces Existing              | 47                                              | Number of Parking<br>Spaces Proposed      | 60                                                        | Number of Employees<br>Total             | 4         |
| Number of Employees<br>in Max Shift               | 1                                               | Distance to City Water                    | 25                                                        | Distance to City Sewer                   | 25        |
| Type of Building to be<br>Built                   | Typical Warehouse<br>Building with Metal Siding | Estimated Construction<br>Value           | 250000.00                                                 | Refuse Removal                           | Private   |
| Is there an existing<br>Conservation<br>Easement? | No                                              | Existing Conservation<br>Easement Details |                                                           | TotalImpactFeeSDTOD                      | 0.00      |
| TotalImpactFeeTHTOD                               | 0.00                                            | TotalImpactFee23FTOD                      | 0.00                                                      | TotalImpactFeeA4TOD                      | 0.00      |
| TotalImpactFeeMHTOD                               | 0.00                                            | TotalImpactFeeADUTOD                      | 0.00                                                      | TotalImpactFeeAONRTOD                    | 0.00      |
| TotalImpactFeeAR55TOD                             | 0.00                                            | TotalImpactFeeAR62TOD                     | 0.00                                                      | Sub Total Residential                    | 0.00      |
| TotalImpactFeeRIRCTOD                             | 0.00                                            | TotalImpactFeeOCSTOD                      | 0.00                                                      | TotalImpactFeeITWCTOD                    | 0.00      |
| TotalImpactFeeNHALTOD                             | 0.00                                            | TotalImpactFeeOIUTOD                      | 0.00                                                      | TotalImpactFeeAFAOTOD                    | 0.00      |
| Sub Total<br>Non-Residential                      | 0.00                                            | Total of Impact Fees to<br>be Assessed    | 0.00                                                      |                                          |           |

# PLAN SNAPSHOT REPORT (SITE-2025-0017)

| Attachment File Name                 | Added On         | Added By      | Attachment Group | Notes            |
|--------------------------------------|------------------|---------------|------------------|------------------|
| Signature_Steve_Haight_10/2/2025.jpg | 10/02/2025 11:38 | Haight, Steve |                  | Uploaded via CSS |

| Invoice No.    | Fee                                     | Fee Amount        | Amount Paid   |
|----------------|-----------------------------------------|-------------------|---------------|
| INV-2025014099 | Planning General Application Fee        | \$200.00          | \$0.00        |
|                | <b>Total for Invoice INV-2025014099</b> | <b>\$200.00</b>   | <b>\$0.00</b> |
| NOT INVOICED   | Planning Non-Residential – Addition     | \$620.00          | \$0.00        |
|                | Planning Impervious Paved Area Fee      | \$253.40          | \$0.00        |
|                | <b>Total for Invoice NOT INVOICED</b>   | <b>\$873.40</b>   | <b>\$0.00</b> |
|                | <b>Grand Total for Plan</b>             | <b>\$1,073.40</b> | <b>\$0.00</b> |

| Workflow Step / Action Name                           | Action Type       | Start Date       | End Date         |
|-------------------------------------------------------|-------------------|------------------|------------------|
| <b>Review v.1</b>                                     |                   | 10/02/2025 13:30 |                  |
| Confirm application complete v.1                      | Generic Action    |                  | 10/02/2025 13:30 |
| Technical Review Committee Meeting Agenda v.1         | Task              | 10/02/2025 13:30 |                  |
| Land Use Plan Technical Review v.1                    | Receive Submittal |                  |                  |
| Technical Review Committee Meeting v.1                | Hold Meeting      |                  |                  |
| <b>Planning Board v.1</b>                             |                   |                  |                  |
| Planning Board Agenda v.1                             | Task              |                  |                  |
| Invoice for Notices v.1                               | Task              |                  |                  |
| Send Notices v.1                                      | Task              |                  |                  |
| Planner Creates Staff Recommendations v.1             | Plan Activity     |                  |                  |
| Distribute Planning Board Materials v.1               | Task              |                  |                  |
| Planning Board Hearing v.1                            | Hold Hearing      |                  |                  |
| Planning Board Decision v.1                           | Plan Activity     |                  |                  |
| NOD Sent to Applicant v.1                             | Create Report     |                  |                  |
| <b>Final Plan v.1</b>                                 |                   |                  |                  |
| Land Use Plan Stamped and Signed v.1                  | Generic Action    |                  |                  |
| Recording v.1                                         | Task              |                  |                  |
| Document Archival v.1                                 | Generic Action    |                  |                  |
| Internal Notification of Plan Completion v.1          | Generic Action    |                  |                  |
| Building Official Notifies Address v.1                | Generic Action    |                  |                  |
| Pre-Con Meeting v.1                                   | Hold Meeting      |                  |                  |
| <b>Create/Link to Records v.1</b>                     |                   |                  |                  |
| Create / Link to Permit - Building Major v.1          | Create Sub Permit |                  |                  |
| Create / Link to Permit - Site Work, Construction v.1 | Create Sub Permit |                  |                  |



# City of Dover, New Hampshire SITE REVIEW APPLICATION

[Revision Date: July 1, 2021]

|                 |              |       |                |       |
|-----------------|--------------|-------|----------------|-------|
| Office Use Only | Project #:   | _____ | Date Received: | _____ |
|                 | Amount Paid: | _____ | Time Received: | _____ |

## APPLICANT AND OWNER INFORMATION

Name of Applicant: Summit Land Development Telephone # (603) 749-2800

Address of Applicant: 340 Central Avenue, Suite 202 Dover, NH 03820

E-Mail Address: Sullivan@summitlanddev.com

Name of Property Owner (if different from applicant): 16 Industrial Park, LLC Telephone # (603) 749-2800

Address of Property Owner: 340 Central Avenue, Suite 202 Dover, NH 03820

## PROPERTY INFORMATION

Address of Property: 14 Industrial Park Road

Assessor's Map # G Lot(s) # 4

Zoning District(s) Commercial Manufacturing (CM) Overlay District(s) N/A

Size of Parcel: 232,408 sq. ft. 5.34 ac. Property Deed: Book 5190 Page: 36

Existing Use of Property: Commercial/Office/Light Manufacturing

## SITE PLAN INFORMATION

Describe Proposed Use: Warehouse Building w/Small Office and Addition to Existing Building

Area of Parcel to be Developed: \_\_\_\_\_ 53,717 sq. ft.

If Multi-family Residential: Number of Units N/A & Buildings Proposed N/A

If lodging: Number of Units N/A & number of Buildings N/A

Number of Parking Spaces: Existing 47 Proposed 60

Highway Access (check where applicable): ☒ City Street ☐ State Highway

Number of Employees Total: 4 In Maximum Shift: 1

Disposition of Parcel:

Building Setbacks:

Building Footprint 15,000 sq. ft. Front Yard 35 ft.

Total Building Area 15,000 sq. ft. Rear Yard 10 ft.

Paved Area 3,620 sq. ft. Side Yard: Right 10 ft. Left 10 ft.



City Water? ☒ Yes ☐ No How far is city water from the property? at Industrial Park Road

City Sewer? ☒ Yes ☐ No How far is city sewer from the property? at Industrial Park Road

### TRANSFER OF DEVELOPMENT RIGHTS INFORMATION

Type of TRANSFER OF DEVELOPMENT RIGHT REQUEST (Check All That Apply):

☐ Residential ☐ Residential (reduced size) ☐ Industrial | ☐ Purchase ☐ Land Preservation

Relief sought (Check All That Apply):

☐ Lot Size ☐ Frontage ☐ Setback ☐ 30' Buffer ☐ Increase by \_\_\_\_\_ units

Describe Proposed Use or Activity that requires TDR; describe any impacts and document mitigation:

N/A

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### BUILDING INFORMATION

Type of Building to be Built: Typical industrial warehouse building with metal siding.

Height of Building: 29 feet Finished Floor Elevation: 116±

Number of Seats (where applicable) N/A

Estimated value of construction: \$ 250,000.00 Refuse removal: Public/Private (circle one) Private

### WAIVER REQUESTS

Site Review Regulations section(s) to be waived: Article IV 153-13 A.12

Justification for waiver request(s) (*attach additional sheets as needed*):

Relief from the requirement to have a landscape plan certified/stamped by a New Hampshire Licensed  
Landscape Architect. Alternatively, a site specific landscape plan and O&M will be provided showing an  
appropriate landscape treatment for this industrial park setting, consistent with similar properties located  
within this park.

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**SURVEYOR INFORMATION**

Name of Surveyor and Company (Licensed in N.H.) Kevin McEneaney- McEneaney Survey Associates

Address P.O. Box 1166 Dover, NH 03821 Telephone #: 603-742-0911

Professional License #: NH LLS # 661 E-mail address: kevin@surveynh.com

**ENGINEER INFORMATION**

Name of Engineer and Company (Licensed in N.H.) Stephen J. Haight, PE - Civilworks New England

Address P.O. Box 1166 Dover, NH 03821 Telephone #: 603-749-0443

Professional License #: NH PE # 7978 E-mail address: shaight@civilworksne.com

**ARCHITECT INFORMATION**

Name of Architect and Company (Licensed in N.H.) Seacoast Crane & Building Company, Inc.

Address 98 Route 236, Suite 3 Kittery, ME 03904 Telephone #: 207-439-5899

Professional License #: \_\_\_\_\_ E-mail address: \_\_\_\_\_

**LANDSCAPE ARCHITECT INFORMATION**

Name of Landscape Architect and Company (Licensed in N.H.) N/A

Address \_\_\_\_\_ Telephone #: \_\_\_\_\_

Professional License #: \_\_\_\_\_ E-mail address: \_\_\_\_\_

**SOIL SCIENTIST INFORMATION**

Bruce A. Gilday, CSS, CWS

Name of Soil Scientist and Company (Licensed in N.H.) BAG Land Consultants, LLC

Address 43 Rockingham Street Concord, NH 03301 Telephone #: 603-228-5775

Professional License #: NH CSS 12, NH CWS 88 E-mail address: bagilday@comcast.net

**CONSERVATION EASEMENT HOLDER**

Name of Easement Holder: N/A Telephone # \_\_\_\_\_

Address Easement Holder: \_\_\_\_\_

**SIGNATURES**

I/We hereby submit this application to the City of Dover Planning Board and attest that to the best of my knowledge all of the information on this application form and in the accompanying application materials and documentation is true and accurate. Furthermore, I/we submit that the existing conditions sheet of the plan represents the lot in question, and that no alteration of the site shall take place during Planning Board review up to and including the pre-construction meeting. As applicant or as agent, I attest that I am duly authorized to act in this capacity.

Signature of Property Owner: \_\_\_\_\_ Date: 10-2-25

Signature of Applicant (if different from owner): \_\_\_\_\_ Date: 10-2-25

Signature of Agent: \_\_\_\_\_ Date: \_\_\_\_\_

**AUTHORIZATION TO ENTER SUBJECT PROPERTY**

I, and my successors, hereby authorize members of the Dover Planning Board, Planning Department and other pertinent City Departments and boards to enter my property for the purpose of evaluating this application, including performing inspections during the application phase, post-approval phase, construction phase and occupancy phase. It is understood that these individuals must use all reasonable care, courtesy, and diligence when on the property.

Signature of Property Owner: \_\_\_\_\_ Date: 10-2-25

**AUTHORIZATION TO COMPLETE THE PROJECT ON SUBJECT PROPERTY**

I, and my successors, hereby the City of Dover or its assigns to enter my property for the purpose of completing the site work as required by the approved plan should the letter or credit or other surety be called. It is understood that these individuals must use all reasonable care, courtesy, and diligence when on the property.

Signature of Property Owner: \_\_\_\_\_ Date: 10-2-25

Signature of Applicant (if different from owner): \_\_\_\_\_ Date: 10-2-25

**CERTIFICATION OF FEES**

I, and my successors, hereby certify that I understand that the City of Dover collects impact fees, utility investment fees and inspection fees for projects developed in Dover. Said fees must be paid before a Certificate of Occupancy can be obtained for a structure, unless a different payment schedule is agreed to by the applicant and the City prior to approvals being issued by the Dover Planning Board. Additionally, should the property be in "Current Use" it will be subject to the Land Use Change Tax.

Signature of Property Owner: \_\_\_\_\_ Date: 10-2-25

Signature of Applicant (if different from owner): \_\_\_\_\_ Date: 10-2-25

***CITY OF DOVER SITE REVIEW  
LIST OF ABUTTERS***

Pursuant to RSA 676:4, the State Law of New Hampshire, the City of Dover is required to notify the applicant, abutters (including holders of conservation easements), and any professional whose seal is on the plan, of the public hearing by certified mail, return receipt requested. Staff will provide the abutter information, while the applicant must provide accurate contact information for the owner, applicant and professional agents representing the project.

**Owner:**

| <b>TAX MAP</b> | <b>LOT #</b> | <b>PROPERTY OWNER</b>   | <b>MAILING ADDRESS</b>                     |
|----------------|--------------|-------------------------|--------------------------------------------|
| G              | 4            | 16 Industrial Park, LLC | 340 Central Ave, Suite 202 Dover, NH 03820 |

**Applicant (if different from owner):**

| <b>APPLICANT NAME</b> | <b>APPLICANT COMPANY</b>     | <b>MAILING ADDRESS</b>                     |
|-----------------------|------------------------------|--------------------------------------------|
| John Sullivan         | Summit Land Development, LLC | 340 Central Ave, Suite 202 Dover, NH 03820 |

**Surveyor and/or Engineer/Professional Agent:**

| <b>NAME</b>           | <b>COMPANY</b>              | <b>MAILING ADDRESS</b>        |
|-----------------------|-----------------------------|-------------------------------|
| Stephen J. Haight, PE | Civilworks New England      | P.O. Box 1166 Dover, NH 03821 |
|                       |                             |                               |
| Kevin McEneaney, LLS  | McEneaney Survey Associates | P.O. Box 1166 Dover, NH 03821 |

**Conservation Easement Holder:**

| <b>TAX MAP</b> | <b>LOT #</b> | <b>NAME OF EASEMENT HOLDER</b> | <b>MAILING ADDRESS</b> |
|----------------|--------------|--------------------------------|------------------------|
|                |              |                                |                        |



## City of Dover, New Hampshire SITE PLAN REVIEW SUBMISSION CHECKLIST

[Revision Date: June 4, 2019]

This site plan review checklist, as required by Chapter 153-6-B(2), should be completed by the applicant. It is intended to assist the applicant in the planning process of preparing a Site Plan Review application for Planning Board action. The size of the project will determine the types of information required for review, therefore, a **pre-application conference** with the Planning Department to determine the list of items that must be completed is strongly encouraged.

The first step would be to appear before the Technical Review Committee, to apply, eight (8) folded copies of the site plan with scale of not less than 1"=50' or 1"=100' for larger site plans, need to be provided, along with payment of plan review fees.

Two weeks prior to Planning Board, three (3) full size and twelve (12) half size (11x17), folded, copies of the plan set and materials, including response to TRC comments, will be due. Abutter/Notice Fees will be invoiced and need to be paid 28 hours prior to the Planning Board meeting.

*The applicant is cautioned that this checklist is only a guide and is not intended to be a complete list of all site plan review requirements. Please refer to the Site Plan Review Regulations for full details.*

APPLICANT: Summit Land Development, LLC File Number: SITE-2025- xxx

PROJECT TITLE: Warehouse Building & Addition

PROPERTY LOCATION: 14 Industrial Park Road Tax Map: G Lot: 4

|                                                                                                                                                                   | Where/How Provided                  | Reviewed |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|----------|
| 1. Completed and signed Application form                                                                                                                          | <input checked="" type="checkbox"/> |          |
| 2. Plan Review Fees are provided                                                                                                                                  | <input checked="" type="checkbox"/> |          |
| 3. Electronic copy of the engineered/surveyed plan layout                                                                                                         | <input checked="" type="checkbox"/> |          |
| 4. Electronic copy of supplementary materials and application                                                                                                     | <input checked="" type="checkbox"/> |          |
| 5. Traffic Impact Assessment and Analysis (Standard or Advanced)                                                                                                  | <input checked="" type="checkbox"/> |          |
| 6. Waiver requests to the Site Plan Review Regulations, with written justification                                                                                | <input checked="" type="checkbox"/> |          |
| 7. Conditional Use Permit applications                                                                                                                            | <input checked="" type="checkbox"/> |          |
| 8. A colored rendering of the streetscape that will be created along the existing public right-of-way                                                             | <input type="checkbox"/>            |          |
| 9. A colored architectural plan showing all sides of buildings                                                                                                    | <input checked="" type="checkbox"/> |          |
| 10. Folded copies of site plan w/scale of not less than 1"=50' or 1"=100' for larger site plans, for TRC. Plans shall contain the following items as appropriate: | <input checked="" type="checkbox"/> |          |
| Location map at appropriate scale                                                                                                                                 | <input checked="" type="checkbox"/> |          |
| Proposed Project name and title and Planning File #                                                                                                               | <input checked="" type="checkbox"/> |          |
| Date, north arrow and scale                                                                                                                                       | <input checked="" type="checkbox"/> |          |
| Names of all abutting property owners                                                                                                                             | <input checked="" type="checkbox"/> |          |
| Name and address of owners and/or applicants                                                                                                                      | <input checked="" type="checkbox"/> |          |
| Signature & stamp of NH licensed land surveyor and/or engineer                                                                                                    | <input checked="" type="checkbox"/> |          |
| Zoning District boundaries, including any special or overlay districts                                                                                            | <input type="checkbox"/> N/A        |          |
| Location of Conservation District areas                                                                                                                           | <input type="checkbox"/> N/A        |          |
| Location, names and widths of existing and proposed streets, including pavement widths, grades, curbs and crosswalks                                              | <input checked="" type="checkbox"/> |          |
| Location and widths of existing & proposed easements & right of ways                                                                                              | <input type="checkbox"/> N/A        |          |
| Location and width of existing and proposed access/egress ways                                                                                                    | <input checked="" type="checkbox"/> |          |

|                                                                                                                                     | Explain How Provided                                    | Reviewed |
|-------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|----------|
| Depict pedestrian walkways and accessible access                                                                                    | <input checked="" type="checkbox"/>                     |          |
| Existing and proposed property lines with dimensions and bearings tied into Dover's Geographic Information System coordinate system | <input checked="" type="checkbox"/>                     |          |
| Existing and proposed topographic information at two foot intervals                                                                 | <input checked="" type="checkbox"/>                     |          |
| Existing and proposed buildings and structure locations                                                                             | <input checked="" type="checkbox"/>                     |          |
| Minimum building setbacks or build to lines on all lots                                                                             | <input checked="" type="checkbox"/>                     |          |
| Location and size of existing and proposed electric, telephone, gas cable and other underground utilities                           | <input checked="" type="checkbox"/>                     |          |
| Existing and proposed water lines and fire hydrants, including materials and capacity needed                                        | <input checked="" type="checkbox"/>                     |          |
| Location and materials of sanitary sewage facilities within project site and projected additional peak hour sewer load              | <input checked="" type="checkbox"/>                     |          |
| Existing and proposed stormwater lines and facilities                                                                               | <input checked="" type="checkbox"/>                     |          |
| Lighting plan depicting all existing and proposed exterior light fixtures and a lighting level analysis for parking lots            | <input checked="" type="checkbox"/>                     |          |
| Location of Flood Hazard Zone                                                                                                       | <input type="checkbox"/> N/A                            |          |
| Location of all bodies of water and watercourses                                                                                    | <input type="checkbox"/> N/A                            |          |
| Location of wetlands and buffers                                                                                                    | <input checked="" type="checkbox"/>                     |          |
| Neighborhood plan with aerial underlay showing how project relates to abutting uses within the plan set                             | <input checked="" type="checkbox"/>                     |          |
| Existing natural features and/or significant vegetation on property                                                                 | <input checked="" type="checkbox"/>                     |          |
| Depict existing contours up to 100 ft. beyond project limits                                                                        | <input checked="" type="checkbox"/>                     |          |
| Landscape plan depicting existing and proposed landscaping, prepared by a licensed Professional Landscape Architect                 | <input checked="" type="checkbox"/> See attached Waiver |          |
| Location of parking layout delineating spaces and arrangement; note addressing maximum required spaces                              | <input checked="" type="checkbox"/>                     |          |
| Location, material and size of existing and proposed pavement area                                                                  | <input checked="" type="checkbox"/>                     |          |
| Location of proposed fire lanes                                                                                                     | <input type="checkbox"/> N/A                            |          |
| Specify finished floor elevations of buildings                                                                                      | <input checked="" type="checkbox"/>                     |          |
| Location of solid waste disposal facilities (dumpster, pad and screening, etc.), including required screening                       | <input checked="" type="checkbox"/>                     |          |
| Depict all service, storage, loading bays and utility areas                                                                         | <input checked="" type="checkbox"/>                     |          |
| All applicable Dover Common Site Plan notes                                                                                         | <input checked="" type="checkbox"/>                     |          |
| <b>11. Additional Information if appropriate</b>                                                                                    | <input checked="" type="checkbox"/>                     |          |
| Stormwater Management Plan depicting the existing & proposed storm drainage system and engineered drainage analysis                 | <input checked="" type="checkbox"/>                     |          |
| Stormwater Management System Operation and Maintenance Plan                                                                         | <input checked="" type="checkbox"/>                     |          |
| Letter to Serve from Public and Private Utilities                                                                                   | <input checked="" type="checkbox"/>                     |          |
| Erosion and Sedimentation Control Plan                                                                                              | <input checked="" type="checkbox"/>                     |          |
| Landscape Operation and Maintenance Plan                                                                                            | <input checked="" type="checkbox"/>                     |          |
| Proposed restrictive covenants or homeowners association documents                                                                  | <input type="checkbox"/> N/A                            |          |
| Dates and permit numbers of all required state and federal permits                                                                  | <input checked="" type="checkbox"/>                     |          |
| If wetland buffer, indicate placards locations, as applicable                                                                       | <input checked="" type="checkbox"/>                     |          |
| Depict test boring locations, groundwater elevations and soil profiles and/or soils types call-outs                                 | <input checked="" type="checkbox"/>                     |          |
| Location of proposed drive-in facilities                                                                                            | <input type="checkbox"/> N/A                            |          |
| Provide additional exhibits/technical data determined appropriate by the Planning Board or its staff as required                    | <input checked="" type="checkbox"/>                     |          |

REVIEWED BY: \_\_\_\_\_ DATE \_\_\_\_\_ TRC DATE \_\_\_\_\_

*Summit Land Development, LLC  
16 Industrial Park, LLC  
340 Central Avenue, Suite 202  
Dover, New Hampshire 03820*

October 1, 2025

City of Dover  
288 Central Avenue  
Dover, NH 03820

Attn: Planning Board

Re: LETTER OF APPLICANT/OWNER AUTHORIZATION  
Site Plan Review & Conditional Use Permit Applications & Approvals  
14 Industrial Park Road – Tax Map G, Lot 4

I, Chad Kageleiry, authorize Civilworks New England and McEneaney Survey Associates to represent all applications made on behalf of me as Member of both Summit Land Development, LLC (APPLICANT) and 16 Industrial Park, LLC (OWNER) to the City of Dover Planning Board and any other Dover Board or Committee, as well as any State of NH departments, as necessary, relative to the pursuit of approvals and permits for the development of the subject parcel.

Sincerely,



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Chad Kageleiry, Member  
Summit Land Development, LLC & 16 Industrial Park, LLC

# PROJECT NARRATIVE

for

Summit Land Development, LLC

## Site Plan Review

Tax Map G, Lot 4

14 Industrial Park Road

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### PROJECT OVERVIEW & SITE CHARACTERISTICS

The proposed site development includes a 15,000 square foot building along with a 6,200 square foot addition to the existing building on the 5.34-acre parcel in the Commercial Manufacturing District (CM) located at 14 Industrial Park Road, Dover, NH.

The lot is currently occupied by an existing 58,156 square foot building. Adjacent to the proposed development are the following: the Boston and Maine Railroad to the South; Littleworth Road to the East; 34 Industrial Park Road to the West and Industrial Park Road to the North.

The proposed site design includes the construction of a stand-alone 15,000 square foot warehouse with a small office area, along with a 6,200 square foot warehouse in addition to the existing building, grading & drainage improvements, and underground utility service improvements.

The project site consists of the following general improvement plan:

- Clear the site, as necessary, for construction.
- Construction of on-site stormwater detention and treatment system, grading, and other drainage requirements.
- Construction of 15,000 sf warehouse building
- Construction of 6,200 sf building addition
- Site utility construction & installation.
- Stabilize remaining areas with loam and seed.

In addition to a Site Plan Review permit through the Planning Board, a Conditional Use Permit will be required for 6,618 sf of Wetland Buffer Impacts.

### DRIVEWAY AND PARKING LOT

The proposed development will utilize the existing site access, which is located along the parking lot adjacent to Industrial Park Road. This development will provide 13 parking spaces (net 7 additional) spaces directly adjacent to the proposed 15,000 sf building.

### WETLAND PROTECTION DISTRICT SETBACK & IMPACT

There is a small wetland finger (122 sf) on-site that extends from a larger wetland complex along the ditch of the railroad. The proposed project includes 6,618± sf of wetland buffer impacts, which have been limited to 290 sf of the proposed 15,000 sf building, the construction of the Bioretention Basin w/ISR and the associated grading. The site design incorporates the unique site characteristics including existing slopes, depth to estimated seasonal high water, and soil type to minimize wetland buffer impacts and maximize stormwater treatment for pollutant removal. The site is designed to provide the ability to treat the project site stormwater run-off from both proposed and existing impervious areas, while maintaining existing drainage ways from adjacent sites. The proposed project does not include any direct impacts to wetlands.



## **DRAINAGE**

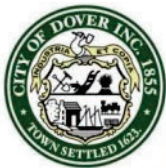
The project proposes the construction of a 15,000-sf warehouse building and a 6,200-sf building addition, which includes associated parking areas, grading & drainage improvements, and underground utility services. The proposed drainage system incorporates a bioretention basin with internal storage reservoir and pre-treatment using a Rain Guardian Fortress (Ferguson Waterworks). The proposed stormwater system captures, treats, and stores stormwater runoff from 0.575 acres of proposed impervious surfaces and 0.506 acres of existing impervious surfaces and directs it to the existing discharge point. The proposed stormwater drainage structures will be maintained by the project proponent as outlined within the Stormwater Management System Inspection & Maintenance Manual (Stormwater I&M Manual) in Appendix C.

## **TRAFFIC**

A traffic assessment was completed for the project and is attached as a report to this submittal. The traffic assessment indicates, and as expected, there is a minimal increase in traffic as a result of the proposed development.

## **UTILITIES**

The proposed project will connect to the existing City of Dover water and sewer lines located in Industrial Park Road. Existing electric and communication services are also located on Industrial Park Road and along the Railroad. Building and utility connections will be made per the City's Community Services Utility Division and Fire Department requirements and standards.



# City of Dover, New Hampshire

## CONDITIONAL USE PERMIT APPLICATION

[Revision Date: October 19, 2020]

|                 |                    |                      |
|-----------------|--------------------|----------------------|
| Office Use Only | Project #: _____   | Date Received: _____ |
|                 | Amount Paid: _____ | Time Received: _____ |

### APPLICANT AND OWNER INFORMATION

Name of Applicant: Summit Land Development Telephone # (603) 749-2800

Address of Applicant: 340 Central Avenue, Suite 202 Dover, NH 03820

E-Mail Address: Sullivan@summitlanddev.com

Name of Property Owner (if different from applicant): 16 Industrial Park, LLC Telephone # 603-749-2800

Address of Property Owner: 340 Central Avenue, Suite 202 Dover, NH 03820

### PROPERTY INFORMATION

Assessor's Map # G Lot(s) # 4

Address of Property: 14 Industrial Park Road

Zoning District(s) Commercial Manufacturing (CM) Overlay District(s) N/A

Existing Use of Property: Commercial/Light Manufacturing/Office

### CONDITIONAL USE PERMIT INFORMATION

#### Type of Conditional Use Permit (Check All That Apply):

- |                                                                 |                                                         |                                                        |
|-----------------------------------------------------------------|---------------------------------------------------------|--------------------------------------------------------|
| <input type="checkbox"/> Conservation District                  | <input type="checkbox"/> RCM Use Overlay District       | <input type="checkbox"/> Gateway District              |
| <input type="checkbox"/> Groundwater Protection                 | <input type="checkbox"/> Off-Street Parking and Loading | <input type="checkbox"/> Alternative Treatment Center  |
| <input checked="" type="checkbox"/> Wetland Protection District | <input type="checkbox"/> Central Business District      | <input type="checkbox"/> Heritage Residential District |

Describe Proposed Use or Activity That Requires Conditional Use Permit and Describe Any Impacts:

The site design is for a new stand along 15,000 sf warehouse building and a 6,200 sf warehouse addition

to the existing building, with expanded paved areas for associated additional parking, grading , utility and

drainage improvements. These site design elements, including a portion of the warehouse building, result

in a total impact of 6,618 sf.

List Any Associated State or Federal Permits That Have Been or Will Be Applied For and Indicate Their Status: EPA Construction General Permit

Name of Professional That Prepared Plans: Stephen J. Haight, PE - Civilworks New England

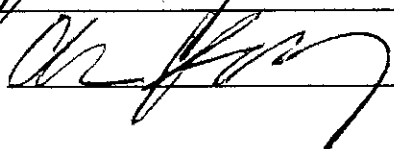
Address P.O. Box 1166 Dover, NH 03821 Telephone #: (603) 749-0443

Professional License #: NH PE #7978 E-mail address: shaight@civilworksne.com

### SIGNATURES

I/We hereby submit this application to the City of Dover Planning Board and attest that to the best of my knowledge all of the information on this application form and in the accompanying application materials and documentation is true and accurate. As applicant or as agent, I attest that I am duly authorized to act in this capacity.

Signature of Property Owner:  Date: 10-2-25

Signature of Applicant (if different from owner):  Date: 10-2-25

Signature of Agent: \_\_\_\_\_ Date: \_\_\_\_\_

### AUTHORIZATION TO ENTER SUBJECT PROPERTY

I, and my successors, hereby authorize members of the Dover Planning Board, Planning Department and other pertinent City Departments and boards to enter my property for the purpose of evaluating this application, including performing inspections during the application phase, post-approval phase, construction phase and occupancy phase. It is understood that these individuals must use all reasonable care, courtesy, and diligence when on the property.

Signature of Property Owner:  Date: 10-2-25

## CITY OF DOVER CONDITIONAL USE LIST OF ABUTTERS

Pursuant to RSA 676:4, the State Law of New Hampshire, the City of Dover is required to notify the applicant, abutters (including holders of conservation easements), and any professional whose seal is on the plan, of the public hearing by certified mail, return receipt requested. Staff will provide the abutter information, while the applicant must provide accurate contact information for the owner, applicant and professional agents representing the project.

**Owner:**

| <b>TAX MAP</b> | <b>LOT #</b> | <b>PROPERTY OWNER</b>   | <b><u>MAILING ADDRESS</u></b>              |
|----------------|--------------|-------------------------|--------------------------------------------|
| G              | 4            | 16 Industrial Park, LLC | 340 Central Ave, Suite 202 Dover, NH 03820 |

**Applicant (if different from owner):**

| <b>APPLICANT NAME</b> | <b>APPLICANT COMPANY</b>     | <b><u>MAILING ADDRESS</u></b>              |
|-----------------------|------------------------------|--------------------------------------------|
| John Sullivan         | Summit Land Development, LLC | 340 Central Ave, Suite 202 Dover, NH 03820 |

**Surveyor and/or Engineer/Professional Agent:**

| <b>NAME</b>           | <b>COMPANY</b>              | <b><u>MAILING ADDRESS</u></b> |
|-----------------------|-----------------------------|-------------------------------|
| Stephen J. Haight, PE | Civilworks New England      | P.O. Box 1166 Dover, NH 03821 |
|                       |                             |                               |
| Kevin McEneaney, LLS  | McEneaney Survey Associates | P.O. Box 1166 Dover, NH 03821 |

**Conservation Easement Holder:**

| <b>TAX MAP</b> | <b>LOT #</b> | <b>NAME OF EASEMENT HOLDER</b> | <b><u>MAILING ADDRESS</u></b> |
|----------------|--------------|--------------------------------|-------------------------------|
|                |              |                                |                               |

**CONDITIONAL USE NARRATIVE**  
**§170-28**  
**WETLAND PROTECTION DISTRICT**  
**CONDITIONAL USE APPROVAL REQUIREMENTS**  
for  
**Summit Land Development, LLC**  
**Tax Map G, Lot 4**  
**14 Industrial Park Road**

F. Conditional use approval.

(1) Conditional use approval may be granted by the PLANNING BOARD (RSA 674:21II) after proper public notice and public hearing, for construction within the Wetland Protection District or buffer. Said construction may include but is not limited to a road or other accessway, utility right-of-way, communication lines, power lines and pipelines, structures, and parking lots provided that the proposed construction complies with the following standards:

- (a) Practicable Alternative: There is no practicable alternative that would have a less adverse impact on the area. **The site design will not impact any wetlands. The site design incorporates unique site characteristics including existing slope, depth to estimated seasonal high water, and soil type to minimize wetland buffer impacts and maximize stormwater treatment for pollutant removal. The site layout is designed to limit the wetland buffer impacts for 290 sf of the proposed 15,000 sf building, the stormwater management system and associated grading. Additionally, the area disturbed within the wetland buffer will be loamed and seeded with a conservation mix.**
- (b) Avoidance: The potential impacts have been avoided to the maximum extent practicable. The APPLICANT will demonstrate by plan and example that the proposed construction represents the least impacting alternative. **There is a small wetland finger (122 sf) on-site that extends from a larger wetland complex along the ditch of the railroad. The proposed project includes 6,618± sf of wetland buffer impacts, which have been limited to 290 sf of the proposed 15,000 sf building, the construction of the Bioretention Basin w/ISR and the associated grading. The site design incorporates the unique site characteristics including existing slopes, depth to estimated seasonal high water, and soil type to minimize wetland buffer impacts and maximize stormwater treatment for pollutant removal. The site is designed to provide the ability to treat the project site stormwater run-off from both proposed and existing impervious areas, while maintaining existing drainage ways from adjacent sites.**
- (c) Minimization: Any unavoidable impacts have been minimized. No reasonable Alternative to the proposed construction exists which does not impact a wetland, or which has less detrimental impact on a wetland. Design, construction, and maintenance methods will be prepared by a registered engineer to minimize detrimental impacts to the wetlands and include restoration of the site as nearly as possible to its original grade. **The proposed project includes 6,618± sf of wetland buffer impacts. All impacts have been minimized to the greatest extent practicable, including the use of 3:1 & 2:1 slope to help minimize grading within the wetland buffer. Increasing the slopes from 3:1 to 2:1 in the area of the wet extended detention pond and sediment detention basins is not allowed per Env-Wq 1508.03(e) and Env-Wq 1508.12(e).**

(d) Mitigation: If the APPLICANT is required by State rules to prepare a compensatory mitigation plan, the APPLICANT shall provide the Conservation Commission and PLANNING BOARD with one copy each of said plan for their review. **Mitigation is not required. There will be no impact on wetlands.**

(e) Approval for the wetlands impact has been received from the NHDES Wetlands Bureau pursuant to Section G (3), below. **There will be no impact on wetlands.**

#### G. Specific provisions.

##### (1) Wetland Buffers.

(a) Buffers Established. Buffers are hereby established around and encircling all wetlands other than those that were created as legally permitted sedimentation/detention basins or roadside drainage ditches. The minimum width of the wetland buffers shall be fifty (50) feet horizontal distance as measured outward from the perimeter edge of the wetland. Wherever a permit to fill a wetland has been issued by either the New Hampshire Department of Environmental Services (NHDES) or the U.S. Army Corps of Engineers (USACOE), the perimeter of the wetland shall be deemed to be the new edge between the fill as placed in accordance with the permit and the remaining wetland. If there is no remaining wetland, there is no buffer. All other wetland edges shall be determined in accordance with Section D (1) above. **There will be no disturbance within the wetlands. A 50-foot wetland buffer is shown on the site plan, a portion of which will be impacted by the project design for 290 sf of the proposed 15,000 sf building, the construction of the Bioretention Basin w/ISR, and the associated grading.**

(b) Natural Conditions to be Maintained within Buffers. Where wetland buffer disturbance is allowed pursuant to a state or federal permit, or a conditional use permit, restoration of the disturbed area is required. Restoration is defined as filling ruts or excavated areas with similar soils while maintaining original grade. Applications for a City of Dover BUILDING permit that includes a temporary disturbance of wetlands buffers, pursuant to Section G (1) (e) (iv) below, shall include a "Wetlands Buffer Encroachment and Restoration Plan." Said plan shall be submitted, reviewed, and approved by Building Inspector, in consultation with City staff, prior to the disturbance. Replanting to restore buffers shall be with native non-invasive species specified in the "Wetlands Buffer Encroachment and Restoration Plan". Implementation of the plan shall include the clear delineation of the boundaries of wetland buffers in the field using construction tape or other clear marking devise. Mowing to maintain an existing lawn or field within a wetland buffer area is allowed without a permit, as specified in Section G (1)(e), below, provided the roots of the vegetation are not disturbed and the ground is frozen or sufficiently dry to avoid making ruts. **The wetland buffer impact for this project will be primarily of a permanent nature as allowed by obtaining a Conditional Use Permit. Some areas being impacted by typical grading around the site will be restored as much as is practical as a maintained lawn area.**

(c) Certain Uses Prohibited in Buffers. The following uses and activities are prohibited within a wetland buffer: DOVER CODE P 170-107 (i) The establishment or expansion of salt storage, JUNKYARDS, resource recovery facilities, transfer stations, landfills, or solid or hazardous waste facilities; (ii) The BULK storage of chemicals, petroleum products, or toxic and hazardous materials; (iii) The dumping or disposal of snow and ice collected from roadways and parking LOTs. **Not applicable.**

(d) Uses Allowed Only with a Conditional Use Permit. The following uses and activities are allowed within a wetland buffer only if a conditional use permit is obtained in accordance with Section F above: (i) All uses not specifically prohibited in Section G (1) (c) above or specifically exempted in Section G (1) (e) below. (ii) The erection or construction of a BUILDING or STRUCTURE, excluding FENCES that meet the requirements of 170-33, or the construction of parking LOTs or loading areas. (iii) Timber harvesting, except as conducted in accordance with the terms and provisions of RSA 227-J, Timber Harvesting. (iv) The removal of stumps and roots (grubbing), the recontouring or grading of the land, or the placement of impervious surfaces or creation of storm water detention ponds. (v) The installation of water, sewer, or buried electrical or telecommunications cables. (vi) The installation of water supply wells. **A Conditional Use Permit is being requested to allow for a stormwater management system, and associated grading within the wetland buffer for this project.**

(e) Uses Allowed Without a Conditional Use Permit. The following uses and activities are allowed within a wetland buffer with the noted conditions: (i) Activities within wetlands jurisdictional areas that are allowed without a State of New Hampshire Dredge and Fill Permit, in accordance with NHDES Rules Env-Wt 308.01(a) and 308.02 – repair of an existing legal STRUCTURE; or successor rules. (ii) The removal of vegetation in accordance with NHDES Rules Env-Wt 303.05(b), or successor rules, provided the roots of the vegetation are ZONING P 170-108 not disturbed, and the ground is frozen or sufficiently dry to avoid making ruts. (iii) The installation of monitoring or test wells or geotechnical borings completed in accordance with NHDES Rules Env-Wt 309.02(i) or successor rules. (iv) Temporary disturbance of the wetland buffer to facilitate construction activities completed under a valid City of Dover BUILDING permit, provided the temporary disturbance is restored in accordance with Section G (1) (b) above. **Not applicable.**

(2) No septic tank or leach field may be constructed or enlarged closer than seventy-five (75) feet to any Wetland Protection District. In new subdivisions approved subsequent to adoption of this section, there must be sufficient LOT size to place a house, a state-approved septic system, where applicable, and a state-approved well, where applicable, without locating them in a wetland. This provision can be waived if conditional use approval is obtained from the PLANNING BOARD. **Not applicable.**

(3) A state dredge and fill application shall be submitted for any proposed change to a wetland (RSA 482-A). **Not applicable.**

## Jase Gregoire

---

**From:** Mark Beaudry  
**Sent:** Wednesday, October 1, 2025 8:55 AM  
**To:** j.semprini@doover.nh.gov  
**Cc:** Jase Gregoire  
**Subject:** CNE#25114 – 14 Industrial Park Road, Dover - Tax Map G, Lot 4  
**Attachments:** CNE 25114 - 14 Industrial Park Rd, Dover - Utility Plan 100225 DRAFT.pdf

Hello Jillian: 16 Industrial Park LLC is proposing to build a second building on the 14 Industrial Park Road property. The building is 15,000 SF total containing a mix of warehouse and unspecified office space as follows:

- Warehouse = 4 employees x 20 GPD/empl = 80 GPD
- Office = 200 SF x 5 GPD/100 SF = 10 GPD
- Total = 90 GPD

These design flow rates are based on NHDES Env-Wq 1008.03 Table 1008-1 Design Flow figures for employees in warehouse space (20 GPD/employee) and unspecified office space (5 GPD/100 SF).

Attached is a draft utility plan to depict the location, site layout of the building project and utility services.

Please advise on the availability of sewer and water service to the project.

If you have any questions or require more information do not hesitate to get back to myself or Jase Gregoire.

Thank you again for your assistance on these projects.

Mark

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### **Mark Beaudry, PE**

Senior Associate/Sr. Project Manager

Project Manager

Direct: (603) 749-0443 x110 (NH) and x113 (MA)

Cell: (413) 325-3384

[mbeaudry@civilworksne.com](mailto:mbeaudry@civilworksne.com)

### **Civilworks New England**

P.O. Box 1166, Dover, NH 03821

181 Watson Road Dover, NH 03820

and, P.O. Box 161, Turners Falls, MA 01376

<https://civilworksne.com>





October 1<sup>st</sup>, 2025

Mark Beaudry, PE  
Senior Associate/ Senior Project Manager  
Civil Works New England  
181 Watson Road  
Dover, New Hampshire

**Natural Gas to Proposed Storage Facility at 14 Industrial Park Rd. in Dover, NH**

Hello Mark.

Unitil/Northern Utilities Natural Gas Division has reviewed the requested site for Natural Gas service.

Unitil hereby confirms that natural gas is available for the proposed development at 14 Industrial Park Rd. at Tax Map G, Lot 4 in Dover, New Hampshire.

If you have any questions, please contact me at 603-264-2033.

Sincerely,

A handwritten signature in blue ink, appearing to read "J. Wilk", with a stylized, cursive script.

**Josh Wilk**  
Senior Business Development Rep



**T** 603.227.4628  
**M** 603.264.2033  
**F** 603.294.5264  
Email [wilkj@unitil.com](mailto:wilkj@unitil.com)

## Jase Gregoire

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**From:** Mark Beaudry  
**Sent:** Tuesday, September 30, 2025 4:58 PM  
**To:** Emmons, Trevor S  
**Cc:** Jase Gregoire  
**Subject:** CNE 25114 – 14 Industrial Park Road, Dover, NH 03820 Tax Map G, Lot 4  
**Attachments:** CNE 25114 - 14 Industrial Park Rd, Dover - Utility Plan 100225 DRAFT.pdf; 25114 - 14 Industrial Park Road, Dover, NH - Eversource Letter to Serve.docx

Hello Trevor: Per the City of Dover, as part of the site review permit process we are required to provide a “will serve” letter stating that electric utilities are available for our proposed project. The project is located at 14 Industrial Park Road at Tax Map G, Lot 4.

The project consists of the construction of a 15,000 square foot warehouse building including 200 sq. ft. of unspecified office space supporting the warehouse.

Attached is the utility plan to depict the location, site layout of the building and anticipated utility services.

The project proponent will be in contact with you at a later date to set up a work order and provide any additional information.

If you have any questions or require more information do not hesitate to get back to us.

Thank you again for your assistance with these projects.

Mark

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**Mark Beaudry, PE**

Senior Associate/Sr. Project Manager

Project Manager

Direct: (603) 749-0443 x110 (NH) and x113 (MA)

Cell: (413) 325-3384

[mbeaudry@civilworksne.com](mailto:mbeaudry@civilworksne.com)

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P.O. Box 1166, Dover, NH 03821

181 Watson Road Dover, NH 03820

and, P.O. Box 161, Turners Falls, MA 01376

<https://civilworksne.com>

# **CIVILWORKS NEW ENGLAND**

181 WATSON ROAD  
P.O. BOX 1166  
DOVER, NH 03821-1166  
PHONE: 603.749.0443

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## **TRAFFIC ASSESSMENT MEMORANDUM**

October 2, 2025

### **INTRODUCTION**

Civilworks New England has prepared this traffic-assessment memorandum (TAM) in regard to the development project proposed on Tax Map G, Lot 4-0 at 14 Industrial Park Road in the City of Dover, NH.

This TAM includes:

- existing site description
- proposed project description
- road description
- public transit
- sight distances at the proposed driveways
- trip generation
- trip distribution/assignment
- potential traffic impacts

This TAM concludes that:

- relevant sight distances at the existing site access onto Industrial Park Road is adequate (the proposed project will utilize the existing site access).
- The proposed project is not anticipated to add significant new traffic to the area.

### **EXISTING SITE DESCRIPTION**

The site:

- is along the easterly side of the eastern leg of Industrial Park Road (in the open field area on the property, adjacent to the existing paved parking lot).
- has an area of 232,408 SF (5.34 acres).

### **PROPOSED PROJECT DESCRIPTION**

The project will provide:

- one warehouse building that is proposed to have a floor area of 15,000 square feet (sf) as follows:
  - 14,800 sf of warehouse space.
  - 200 sf of office space.

### **ROAD DESCRIPTION**

Industrial Park Road:

- is under the jurisdiction of the City of Dover.
- in the vicinity of the site has a straight horizontal alignment oriented about southwest-northeast.
- has minor vertical grades.

# **CIVILWORKS NEW ENGLAND**

181 WATSON ROAD  
P.O. BOX 1166  
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- has bituminous concrete pavement in overall good condition.
- has one travel lane per direction, with an overall pavement width of 32 ft.
- has no lane markings.
- has no posted speed limit therefore, the NH default of 35 MPH is presumed.
- has no sidewalks on either side.
- streetside parking is not observed (and is prohibited via no parking signs along specific sections of the road).
- includes existing utility services.

## **Littleworth Road:**

- has a posted speed limit of 35 MPH in the Industrial Park Road project area.
- has a total average daily traffic (ADT) volume of 10,722\* vehicles (5,376 eastbound and 5,346 westbound) as reported by the NHDOT for 2023.  
[\* actual reported volume = 9,696 vehicles which is not the sum of EB and WB traffic]

## **PUBLIC TRANSIT**

Collaborative Alliance for Seacoast Transportation (COAST) Route 34 provides bus service along Knox Marsh Road. A bus stop is located just west of Littleworth Road. Service is on non-holiday weekdays and Saturdays. COAST Route 34 connects with central Dover and the Dover Transportation Center.

## **SIGHT DISTANCES**

The project site is on a straight section of Industrial Park Road that has limited elevation change so sight distance in both directions is optimized. Several commercial driveways, including the one located at the project site, exist along this stretch of roadway.

The American Association of State Highway and Transportation Officials (AASHTO) has established authoritative policy for appropriate sight distances in terms of stopping sight distance (SSD) for vehicles on the main road reacting to existing traffic, and intersection sight distance (ISD) for left turn movements from a stop. There is no posted speed limit for Industrial Park Road so the speed limit on Littleworth Road will be considered. For a 35 mile per hour roadway, AASHTO has established the SSD to be 250 feet and ISD to be 390 feet.

The available sight distance along Industrial Park Road to the northeast and southwest from the existing site access servicing the proposed project (where loading egress will occur) is in excess of 400 feet. Therefore, ample stopping and intersection sight distances are provided and are adequate for a safe means of egress. Sight distance from the existing access drive will not and are currently not impeded by the unobstructed nature of the streetside, and with the absence of streetside parking, the opportunity to maintain these sightlines unhindered throughout the year currently exists.

# CIVILWORKS NEW ENGLAND

181 WATSON ROAD  
P.O. BOX 1166  
DOVER, NH 03821-1166  
PHONE: 603.749.0443

## CALCULATED TRIP GENERATION

The Institute of Transportation Engineers (ITE) compiles and publishes trip-generation information for a variety of land uses in *Trip Generation Manual*.<sup>1</sup> This authoritative guide for calculating site traffic includes vehicle trip information for Warehousing (Land Use Code 150) based on floor area<sup>2</sup> and General Office Building (Land Use Code 710) based on number of employees.<sup>3</sup> Table 1 shows calculated vehicle trip ends due to the light industrial portion of the proposed development project while Table 2 shows the calculations for the general office building portion of the proposed development.

**Table 1: Trip Generation - Warehouse**

| Weekday Period                                                         | Vehicle Trips*              |       |      |      |
|------------------------------------------------------------------------|-----------------------------|-------|------|------|
|                                                                        | Prop. S.F. (1,000's)<br>= X | Total | In   | Out  |
| Daily                                                                  | 14.8                        | 61.7  | 30.8 | 30.8 |
| AM - Peak Hour of Adjacent Street Traffic                              | 14.8                        | 25.4  | 19.6 | 5.8  |
| PM - Peak Hour of Adjacent Street Traffic                              | 14.8                        | 28.2  | 7.9  | 20.3 |
| * ITE, <i>Trip Generation Manual</i> , Warehousing - Land Use Code 150 |                             |       |      |      |

Weekday Trips =  $T = 1.58(X) + 38.29$  (50% entering, 50% exiting)

AM Trips - A.S.T. =  $T = 0.12(X) + 23.62$  (77% entering, 23% exiting)

PM Trips - A.S.T. =  $T = 0.12(X) + 26.48$  (28% entering, 72% exiting)

**Table 2: Trip Generation - Small Office**

| Weekday Period                                                                   | Vehicle Trips*    |       |     |     |
|----------------------------------------------------------------------------------|-------------------|-------|-----|-----|
|                                                                                  | No. Employees = X | Total | In  | Out |
| Daily                                                                            | 4                 | 30    | 15  | 15  |
| AM - Peak Hour of Adjacent Street Traffic                                        | 4                 | 4.3   | 3.6 | 0.7 |
| PM - Peak Hour of Adjacent Street Traffic                                        | 4                 | 4.3   | 1.4 | 2.9 |
| * ITE, <i>Trip Generation Manual</i> , Small Office Building - Land Use Code 712 |                   |       |     |     |

Weekday Trips =  $\ln(T) = 0.83 \ln(X) + 2.25$  (50% entering, 50% exiting)

AM Trips - A.S.T. =  $T = 0.96(X) + 0.44$  (85% entering, 15% exiting)

PM Trips - A.S.T. = No Equation Use Average Rate = 1.08 Trips per Employee (33% entering, 67% exiting)

Refer to Total Vehicle Trips on next page

<sup>1</sup> ITE, *Trip Generation Manual*, 11<sup>th</sup> edition (Washington DC, September 2021).

<sup>2</sup> ITE, *Trip Generation Manual*, Volume 3, General Urban/Suburban and Rural (Land Uses 000-399), pages 95 - 97.

<sup>3</sup> ITE, *Trip Generation Manual*, Volume 4, General Urban/Suburban and Rural (Land Uses 400-799), pages 733 to 735.

# **CIVILWORKS NEW ENGLAND**

181 WATSON ROAD  
P.O. BOX 1166  
DOVER, NH 03821-1166  
PHONE: 603.749.0443

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## ***Total Vehicle Trips:***

The total vehicle trips generated by the project are:

- Daily (weekday) = 91.7 total trips (45.8 into site and 45.8 out of site)
- AM peak hour (weekday) = 29.7 total trips (23.2 in and 6.5 out)
- PM peak hour (weekday) = 32.5 total trips (9.3 in and 23.2 out)

## **TRIP DISTRIBUTION/ASSIGNMENT**

All project-related trips will access the site from Industrial Park Road. The calculated vehicle trip generation for the development project is so low, especially at peak hours, that area traffic operations are not sensitive to trip distribution/assignment of project vehicle trips.

## **POTENTIAL TRAFFIC IMPACTS**

The calculations show fewer than 100 weekday vehicle trips and less than 33 peak-hour trips, due to the proposed project with these totals being split between vehicles entering and vehicles exiting the site.

The increase in weekday trips represents only 0.86 percent of the ADT on Littleworth Road as counted in 2023. Therefore, the proposed project is not anticipated to add significant new traffic to Industrial Park Road (nor to Littleworth Road).

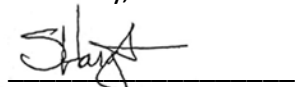
## **CONCLUSION**

In conclusion:

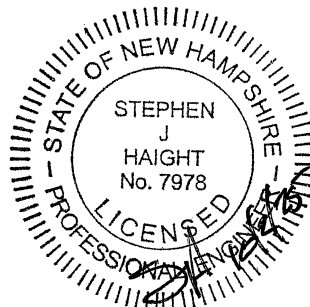
- Relevant sight distances at the existing site access onto Industrial Park Road is adequate
- The proposed project is not anticipated to add significant new traffic to the area.

## **CIVILWORKS NEW ENGLAND**

Sincerely,



Stephen J. Haight, PE



# **Landscape Best Management Practices Operations and Maintenance Plan**

Prepared for:

**SUMMIT LAND DEVELOPMENT  
340 Central Ave Suite 202  
Dover, NH**

**14 Industrial Park Road  
Dover, New Hampshire  
Tax Map G, Lot 4  
Strafford County**

**October 2025**

Owner of Record:

**16 INDUSTRIAL PARK, LLC**  
340 Central Ave Suite 202  
Dover, New Hampshire 03820

## **Landscape Maintenance**

The landscape enhancements proposed for the 14 Industrial Park development will require modest maintenance at various times throughout the year. For the site plantings maintenance is most important during the first 1-2 years following installation when the plants/trees are becoming established. All maintenance personnel shall become familiar with the landscape and its features. Identified below are the required minimum maintenance tasks:

### **Weekly Tasks**

- Prune back any shrubs overhanging curbs or sidewalks.
- Remove litter from plant beds.
- Remove broken or fallen branches from trees.
- Prune sucker growth from tree trunks.
- Physically remove weeds that are taller than 2". Weeds 2" and taller must be removed to minimize the opportunity for the dispersal of weed seeds; weeds should not be killed and left in planting beds. The application of herbicides such as roundup is discouraged.
- Any invasive species seedlings observed should be removed and disposed of properly.
- Replace any bark mulch that has been washed out of plant beds. Smooth mulch layer if it has been disturbed.
- Check plants for signs of stress, pests or disease.
- Notify owner for authorization to replace dead plants at the appropriate time.
- If a significant decline in plant health is attributed to an insect pest, apply an organic product and/or process to control the pest.
- Water plants that are dry and stressed.
- Identify other tasks listed on the annual and monthly checklist tasks.

### **Annual Tasks**

#### **Early Spring:**

- Inspect for winter damage
- Prune winter damage
- Trim dead perennial foliage to within six inches of the ground
- Gently prune shrubs for shape and form, do not shear. (time of year based on species)
- As applicable, inspect, repair, and activate irrigation system.
- Inspect all mulch beds and add new mulch to a maximize depth of 2" as needed.

#### **Summer:**

- No additional tasks

#### **September:**

- Inspect and inventory all plantings, shrubs, and trees
- Replace dead or missing plants

#### **October:**



- No additional tasks

#### November:

- Remove leaf litter
- Remove dead vegetation
- As applicable, deactivate irrigation system
- Apply “WILT-PRUF” to broadleaf evergreens, according to label instructions, to protect shrubs from winter die back.

#### December:

- Prune tree branches that are broken or interfere with public safety.
- Prune parking lot trees

### **STORMWATER FACILITIES**

The stormwater facilities are used to attenuate and treat stormwater runoff. The stormwater system includes a large bioretention basin with internal storage reservoir and a grassed spillway. The grassed areas will be seeded with a conservation mix that has a variety of native, adaptable, and rugged perennial grasses, that can withstand water inundation for an extended period of time. Refer to the Stormwater Inspection and Maintenance manual for additional information.

**WAIVER REQUEST**  
FOR  
**SITE PLAN REVIEW APPLICATION**  
14 Industrial Park Road  
Tax Map G, Lot 4  
October 2, 2025

**ARTICLE IV**  
§ 153-13. Site Design and Development Criteria

- A. (12) A landscape plan that delineates the arrangement, species and dimensions of all existing and proposed landscaping materials. The landscape plan, in sufficient detail to indicate compliance with these regulations, shall be prepared by a professional landscape architect who is licensed by the State of New Hampshire. The licensed landscape architect shall sign the plan. The landscape plan shall be certified by the licensed landscape architect and include his/her State of New Hampshire license number.

**Requesting relief from the requirement to have a landscape plan certified by a New Hampshire Licensed Landscape Architect.**

**Alternatively, a site-specific landscape plan has been provided for the project site located at 14 Industrial Park Road within the CM (Commercial /Manufacturing) District. The project is in an existing industrial park occupied by various commercial properties. The site-specific landscape layout provided will maintain the existing trees located at the primary building entrance near the road. Additional minor landscaping features will be added consistent with similar sites within this and other industrial park settings.**

# **Stormwater Management System Inspection & Maintenance Plan**

Prepared for:

**SUMMIT LAND DEVELOPMENT  
340 Central Ave Suite 202  
Dover, NH**

**14 Industrial Park Road  
Dover, New Hampshire  
Tax Map G, Lot 4  
Strafford County**

**October 2025**

Owner of Record:

**16 INDUSTRIAL PARK, LLC**  
340 Central Ave Suite 202  
Dover, New Hampshire 03820

Prepared By:

**CIVILWORKS NEW ENGLAND**  
P.O. Box 1166  
181 Watson Road  
Dover, New Hampshire 03821



## **Introduction**

Civilworks New England, has prepared the following Stormwater Management System Inspection & Maintenance Plan for **the proposed project located at 14 Industrial Park Drive, Dover, NH 03820**. The intent of this plan is to provide a list of procedures that document the inspection and maintenance requirements of the Stormwater Management System for this site.

**The inspection and maintenance requirements outlined in this document are required to be performed in perpetuity. In the event the property is sold, future owners will be responsible for implementing the responsibilities outlined in this document.**

The inspection and maintenance program is necessary in order to keep the Stormwater Management System functioning properly. These measures will also help to minimize potential environmental impacts to the areas surrounding the developed site. By following the enclosed procedures, the property owners, and maintenance personnel will be able to maintain the functional design of the Stormwater Management System and maximize its ability to remove sediment and other contaminants from site generated stormwater runoff.

This plan also requires the Owner/Operator to prepare and implement a salt minimization plan to reduce salt usage on-site and ultimately within the watershed. This plan will allow the owner/operator to monitor and modify how much salt is needed, when it should be applied, and where it needs to be applied, with the ultimate goal of reducing salt-use without compromising safety. It is expected that salt-use reduction will lead to long-term cost-savings as a result of purchasing less salt and reduced impacts on vegetation (e.g., landscaping) and corrosion of infrastructure.

The salt minimization plan should include the retention of a contractor who has completed the Green SnowPro Training course and obtained NHDES Salt Application Certification.

It is anticipated that this be a living document that will be updated at regular intervals (recommend updating annually in advance of the winter season in order to facilitate adjustments).

Owner:

**16 Industrial Park, LLC  
340 Central Ave Suite 202  
Dover NH 03820**

In the event of a change in ownership, this Inspection and Maintenance Plan shall be transferred to the new party.

Contact / Responsible Party:

**Summit Land Development, LLC  
340 Central Ave Suite 202  
Dover NH 03820**

**John Sullivan  
[sullivan@summitlanddev.com](mailto:sullivan@summitlanddev.com)  
(603) 749-2800**

The contact information for the Contact / Responsible Party shall be kept current.

Management Company:

**Summit Land Development, LLC  
340 Central Ave Suite 202  
Dover NH 03820**

The contact information for the Management Party shall be kept current.

## **Inspection Schedule / Record Retention**

Inspection frequency should, at a minimum, be in accordance with New Hampshire Stormwater Manual, Volume 2, latest edition, as updated by NHDES. See the Inspection and Maintenance Plan for frequency requirements. A copy of the completed Stormwater Management System's Inspection & Maintenance Log and Deicing Salt Quantity Use Log shall be maintained, kept on-site, and be made available to local, state, or federal regulators as applicable by law. All Inspection and Maintenance records must be provided to the City of Dover Community Services Department annually before Dec 15<sup>th</sup>.

## **Stormwater Management System Components**

The Stormwater Management System associated with the project is designed to mitigate both the quantity and quality of site-generated stormwater runoff. As a result, its design includes the following elements:

- Pipes/Culverts
- Outlet Structure(s)
- Bioretention Basin w/ Internal Storage Reservoir (ISR)
- Rain Guardian Fortress (Ferguson Waterworks)
- Energy Dissipation Structures (Rip Rap)
- Pavement
- Litter / Trash Removal

Design elements are identified in the design plans and are depicted on a Stormwater I&M Plan attached to this document. A copy of which shall be maintained with this Inspection and Maintenance Plan.

## **Control of Invasive Species**

During maintenance activities, check for the presence of invasive plants and remove in a safe manner. Invasive plants shall be controlled to prevent them from reproducing, spreading, or re-growing. See the University of New Hampshire – Cooperative Extension's "Method for Disposing Non-Native Invasive Plants", included at the end of this manual, for guidance on the removal and disposal of invasive species.

## **Inspection and Maintenance Plan**

By implementing the following procedures, the owners will be able to maintain the functional design of the Stormwater Management System and maximize the system's ability to remove sediment and other contaminants from site generated stormwater runoff.

### **PIPES/CULVERTS:**

- Inspect once per year.
- Inspect for clogging and sediment accumulation.
- Remove all debris immediately and sediment accumulations  $\geq 2$  inches.

### **OUTLET STRUCTURE(S):**

- Inspect once per year.
- Inspect for clogging and sediment accumulation.
- Remove all debris immediately and sediment accumulations  $\geq 2$  inches.

### **BIORETENTION BASIN W/ ISR:**

- Inspection, by a **qualified professional**, of the Bioretention Basin at least twice annually, and following any rainfall event exceeding 2.5 inches in a 24-hour period, with maintenance or rehabilitation conducted as warranted by such inspection. If the Bioretention Basin systems do not drain within 72-hours following a rainfall event, a **qualified professional** should assess the condition and determine measures required to restore filtration practice (as applicable).
- Inlet and outlet pipes, inlet and outlet structures, containment structures, energy dissipation structures or practices, and other structural appurtenances should be inspected by a **qualified professional**, and corrective action implemented (e.g., maintenance, repairs, or replacement) as indicated by such inspection.
- Embankments and spillways should be inspected by a **qualified professional** for settlement, erosion, seepage, animal burrows, woody vegetation, and other conditions that could degrade the embankment and reduce its stability for impounding water. Immediate corrective action should be implemented if any such conditions are found.
- Vegetation should be inspected at least annually and maintained in healthy condition, including pruning, removal and replacement of dead or diseased vegetation, and removal of invasive species.
- The bottoms, interior and exterior side slopes, and crest of earthen detention basins should be mowed at least once annually. The vegetation should be maintained in a healthy condition, as appropriate to the function of the facility and type of vegetation, to prevent the establishment of woody vegetation.
- Pretreatment measures should be inspected at least twice annually, and cleaned of accumulated sediment as warranted by inspection, but no less than once annually.
- Trash and debris should be removed from the pond and any inlet or outlet structures whenever observed.
- Accumulated sediment should be removed when it significantly affects pond capacity.

#### RAIN GUARDIAN FORTRESS (Ferguson Waterworks):

- Common maintenance needs include periodic removal of accumulated leaves (and other organic debris) and garbage from the internal grate and sediment and fine debris from the concrete and metal dry filter box. Contributing watersheds with high sediment concentrations may require up to monthly or twice monthly visits to satisfy maintenance needs.
- If sediment accumulates beyond an acceptable level in the system, it will be necessary to remove. This can be done by manual removal with a shovel or vacuum device. The filter screen can be cleaned manually through brushing or with pressurized water.

#### ENERGY DISSIPATION STRUCTURES (RIP RAP):

- Inspect at least once a year.
- Inspect for sediment accumulation.
- Remove all debris immediately.
- Inspect the outlet protection annually for damage or deterioration. Repair damages immediately.
- If stones become displaced from riprap areas, they should be replaced immediately and chinked in to ensure stability. Add additional riprap as needed.

#### PAVEMENT:

- Minimize sanding.
- Minimize application of salt for ice control.
- Clean periodically (1-2 times per year) using a sweeper or vacuum sweeper. Vacuum sweeping is the preferred method.

#### LITTER / TRASH REMOVAL:

- Routinely patrol site for litter pick-up.

#### DE-ICING AGENTS:

- To address the concerns associated with the application of chlorides and other deicing materials, NHDES recommends that the Owner/Operator develop a Road Salt and Deicing Minimization Plan for the parking lots and roadways. The plan should develop the policies that the development will keep in place to minimize salt and other deicer use after the project has been completed. The plan should include tracking the use of salt and other deicers for each storm event and compiling salt use data annually. (See Deicing Salt Quantity Use Log).
- Use sand as primary agent for driveway and access way safety during ice and snow conditions.
- Minimize the use of salt during the winter.
- Use de-icing or anti-caking agents, added to enhance performance and application characteristics of sand mixtures, only as necessary and at minimum application rates.
- Recommend using a certified Winter Operator (Green SnowPro Trained) for applying de-icing agents.
- Monitor weather and apply de-icing agents based on weather conditions and temperatures.



#### ANTI-ICING AND SALT MINIMIZATION:

- Owner to develop a Road Salt and Deicing Minimization Plan.
- Provide a written policy that the "Development" will keep in place to minimize salt and other deicer use after the project has been completed.
- Use the attached form to track the use of salt and other deicers for each storm event and compiling salt use data annually.

## **Inspection & Maintenance Table**

| <b>System Component / BMP</b>                                                                                                                                                                                  | <b>Minimum Inspection Frequency</b>                          | <b>Minimum Inspection Requirements</b>                                                                                                                                                                                                                                                                                     | <b>Maintenance / Cleanout Threshold</b>                                                                                              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Pipes/Culverts                                                                                                                                                                                                 | Annually                                                     | <ul style="list-style-type: none"> <li>Check for clogging</li> <li>Check for sediment accumulation</li> </ul>                                                                                                                                                                                                              | Remove when noticed<br>Clean when necessary                                                                                          |
| Outlet Structure(s)                                                                                                                                                                                            | Annually                                                     | <ul style="list-style-type: none"> <li>Inspect once per year</li> <li>Inspect for clogging and sediment accumulation</li> <li>Remove all debris immediately and sediment accumulations <math>\geq 2</math> inches</li> </ul>                                                                                               | $\geq 2$ in. sediment<br>Remove immediately                                                                                          |
| Bioretention Basin w/ ISR <ul style="list-style-type: none"> <li>Inlet/Outlet Piping</li> <li>Pond</li> <li>Sediment</li> <li>Drawdown</li> <li>Trash/Debris</li> <li>Vegetation (Veg.)</li> </ul> Embankments | Bi-Annually<br>“ “<br>Annually<br>Periodically<br>“ “<br>“ “ | <ul style="list-style-type: none"> <li>Check for erosion, settlement, seepage, etc.</li> <li>Check for sediment accum. in pond</li> <li>Check drainage time</li> <li>Check for and remove trash/debris</li> <li>Maintain <math>&gt;75\%</math> veg. (pond &amp; slopes)</li> <li>Maintain healthy stand of veg.</li> </ul> | Repair immediately<br>$\geq 2$ in sediment<br>$>72$ hours<br>Remove all trash/debris<br>Restore veg. in-kind<br>Mow when $\geq 6$ in |
| Rain Guardian Fortress                                                                                                                                                                                         | Periodically                                                 | <ul style="list-style-type: none"> <li>Check for trash, debris, and accumulated sediments in grate</li> <li>Check sediment level</li> </ul>                                                                                                                                                                                | Remove debris and veg. periodically<br>$\geq 3$ in. sediment depth shovel sediment                                                   |
| Energy Dissipation (ED) Structures (Rip Rap)                                                                                                                                                                   | Annually                                                     | <ul style="list-style-type: none"> <li>Check for erosion</li> <li>Check for displaced stones</li> <li>Check for woody vegetation</li> <li>Check for sediment accumulation</li> </ul>                                                                                                                                       | $\geq 3$ in. sediment<br>Remove annually<br>Remove/ reset dislodged stones immediately                                               |
| Pavement: <ul style="list-style-type: none"> <li>Sanding</li> <li>Salt Applications</li> <li>Sweep/Vacuum</li> <li>Trash/Debris</li> </ul>                                                                     | Limit use<br>As required<br>1 - 2 x's Year<br>Periodically   | <ul style="list-style-type: none"> <li>Minimize use to prevent tracking issues</li> <li>RECORD APPLICATION RATES</li> <li>Sweep or vacuum to prevent tracking issues</li> <li>Check for trash/debris</li> </ul>                                                                                                            | Sweep to prevent issues<br>Minimize (as required)<br>Sweep/Vac as needed<br>Remove when noticed                                      |
| Litter / Trash Removal                                                                                                                                                                                         | Periodically                                                 | <ul style="list-style-type: none"> <li>Check for litter and trash</li> </ul>                                                                                                                                                                                                                                               | Remove when noticed                                                                                                                  |

## **Inspection & Maintenance Checklist/Log**

The following pages contain a blank copy of the Stormwater Management System's Inspection & Maintenance Log and a Deicing Salt Quantity Use Log. These forms are provided to assist the owners with the inspection and maintenance of the aforementioned Stormwater Management System.

## Stormwater Management System's Inspection & Maintenance Log

Date of Inspection/Maintenance \_\_\_\_\_ Inspector: \_\_\_\_\_

[illegible]

## Deicing Salt Quantity Use Log

[illegible]

## Methods for Disposing Non-Native Invasive Plants

*Prepared by the Invasives Species Outreach Group, volunteers interested in helping people control invasive plants. Assistance provided by the Piscataquog Land Conservancy and the NH Invasives Species Committee. Edited by Karen Bennett, Extension Forestry Professor and Specialist.*



**Tatarian honeysuckle**

*Lonicera tatarica*

USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 3: 282.

Non-native invasive plants crowd out natives in natural and managed landscapes. They cost taxpayers billions of dollars each year from lost agricultural and forest crops, decreased biodiversity, impacts to natural resources and the environment, and the cost to control and eradicate them.

Invasive plants grow well even in less than desirable conditions such as sandy soils along roadsides, shaded wooded areas, and in wetlands. In ideal conditions, they grow and spread even faster. There are many ways to remove these non-native invasives, but once removed, care is needed to dispose the removed plant material so the plants don't grow where disposed.

Knowing how a particular plant reproduces indicates its method of spread and helps determine the appropriate disposal method. Most are spread by seed and are dispersed by wind, water, animals, or people. Some reproduce by vegetative means from pieces of stems or roots forming new plants. Others spread through both seed and vegetative means.

Because movement and disposal of viable plant parts is restricted (see NH Regulations), viable invasive parts can't be brought to most transfer stations in the state. Check with your transfer station to see if there is an approved, designated area for invasives disposal. This fact sheet gives recommendations for rendering plant parts non-viable.

Control of invasives is beyond the scope of this fact sheet. For information about control visit [www.nhinvasives.org](http://www.nhinvasives.org) or contact your UNH Cooperative Extension office.

### **New Hampshire Regulations**

Prohibited invasive species shall only be disposed of in a manner that renders them nonliving and nonviable. (Agr. 3802.04)

No person shall collect, transport, import, export, move, buy, sell, distribute, propagate or transplant any living and viable portion of any plant species, which includes all of their cultivars and varieties, listed in Table 3800.1 of the New Hampshire prohibited invasive species list. (Agr. 3802.01)

## How and When to Dispose of Invasives?

To prevent seed from spreading remove invasive plants before seeds are set (produced). Some plants continue to grow, flower and set seed even after pulling or cutting. Seeds can remain viable in the ground for many years. If the plant has flowers or seeds, place the flowers and seeds in a heavy plastic bag “head first” at the weeding site and transport to the disposal site. The following are general descriptions of disposal methods. See the chart for recommendations by species.

**Burning:** Large woody branches and trunks can be used as firewood or burned in piles. For outside burning, a written fire permit from the local forest fire warden is required unless the ground is covered in snow. Brush larger than 5 inches in diameter can’t be burned. Invasive plants with easily airborne seeds like black swallow-wort with mature seed pods (indicated by their brown color) shouldn’t be burned as the seeds may disperse by the hot air created by the fire.

**Bagging (solarization):** Use this technique with softer-tissue plants. Use heavy black or clear plastic bags (contractor grade), making sure that no parts of the plants poke through. Allow the bags to sit in the sun for several weeks and on dark pavement for the best effect.

**Tarping and Drying:** Pile material on a sheet of plastic and cover with a tarp, fastening the tarp to the ground and monitoring it for escapes. Let the material dry for several weeks, or until it is clearly nonviable.

**Chipping:** Use this method for woody plants that don’t reproduce vegetatively.

**Burying:** This is risky, but can be done with watchful diligence. Lay thick plastic in a deep pit before placing the cut up plant material in the hole. Place the material away from the edge of the plastic before covering it with more heavy plastic. Eliminate as much air as possible and toss in soil to weight down the material in the pit. Note that the top of the buried material should be at least three feet underground. Japanese knotweed should be at least 5 feet underground!

**Drowning:** Fill a large barrel with water and place soft-tissue plants in the water. Check after a few weeks and look for rotted plant material (roots, stems, leaves, flowers). Well-rotted plant material may be composted. A word of caution- seeds may still be viable after using this method. Do this before seeds are set. This method isn’t used often. Be prepared for an awful stink!

**Composting:** Invasive plants can take root in compost. Don’t compost any invasives unless you know there is no viable (living) plant material left. Use one of the above techniques (bagging, tarping, drying, chipping, or drowning) to render the plants nonviable before composting. Closely examine the plant before composting and avoid composting seeds.



**Japanese knotweed**  
*Polygonum cuspidatum*  
USDA-NRCS PLANTS Database /  
Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 1: 676.

**Be diligent looking for seedlings for years in areas where removal and disposal took place.**

## Suggested Disposal Methods for Non-Native Invasive Plants

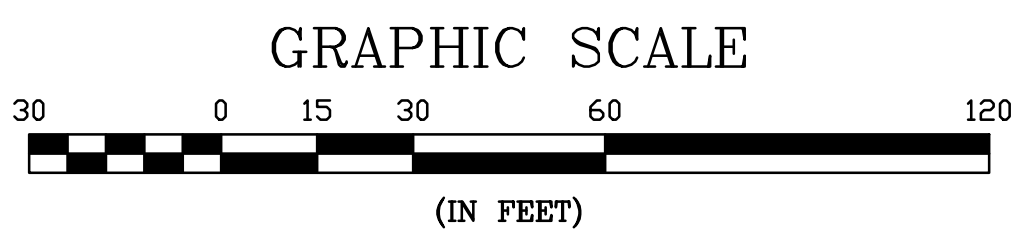
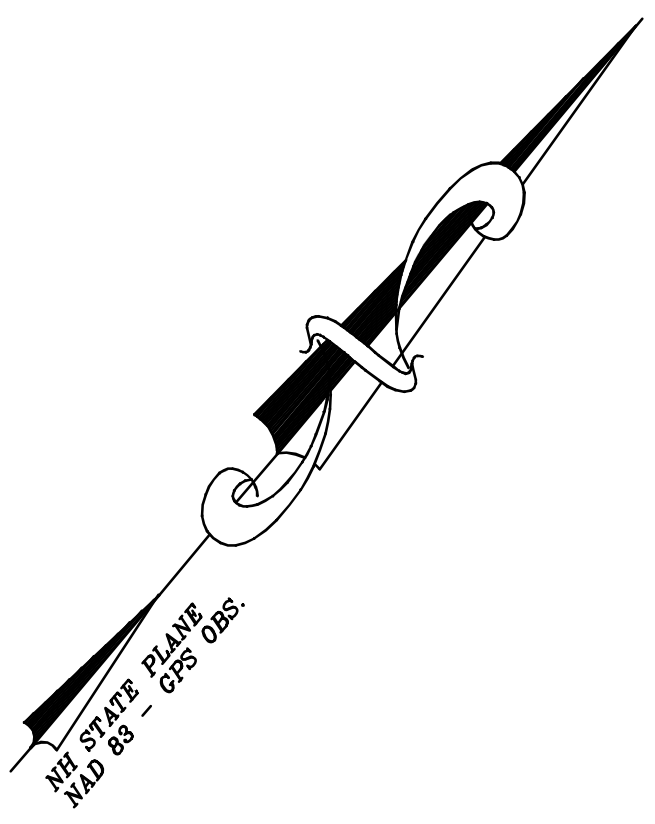
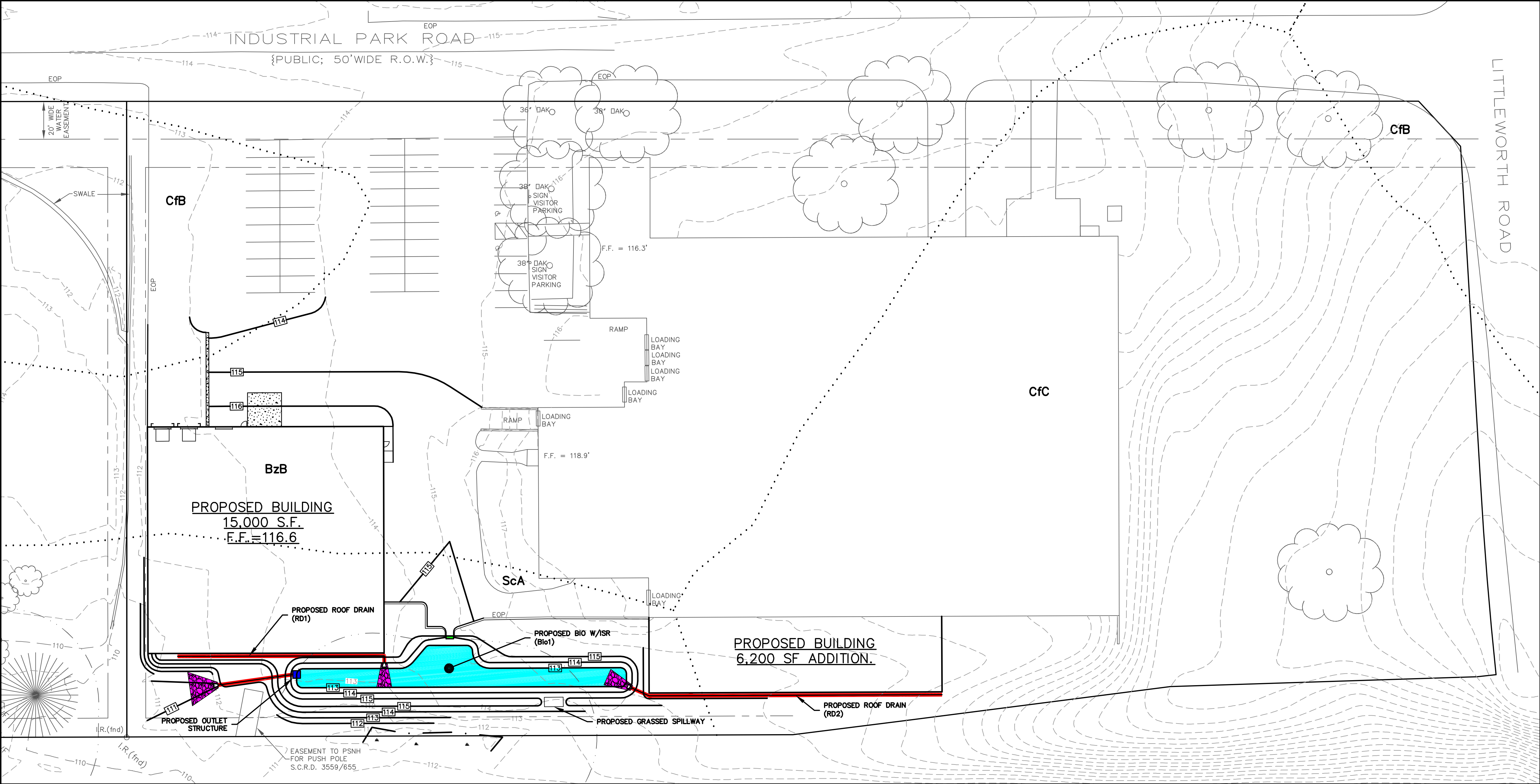
This table provides information concerning the disposal of removed invasive plant material. If the infestation is treated with herbicide and left in place, these guidelines don't apply. Don't bring invasives to a local transfer station, unless there is a designated area for their disposal, or they have been rendered non-viable. This listing includes wetland and upland plants from the New Hampshire Prohibited Invasive Species List. The disposal of aquatic plants isn't addressed.

| Woody Plants                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Method of Reproducing                                                                                                        | Methods of Disposal                                                                                                                                                                                                                                                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Norway maple<br><i>(Acer platanoides)</i><br>European barberry<br><i>(Berberis vulgaris)</i><br>Japanese barberry<br><i>(Berberis thunbergii)</i><br>autumn olive<br><i>(Elaeagnus umbellata)</i><br>burning bush<br><i>(Euonymus alatus)</i><br>Morrow's honeysuckle<br><i>(Lonicera morrowii)</i><br>Tatarian honeysuckle<br><i>(Lonicera tatarica)</i><br>showy bush honeysuckle<br><i>(Lonicera x bella)</i><br>common buckthorn<br><i>(Rhamnus cathartica)</i><br>glossy buckthorn<br><i>(Frangula alnus)</i> | <b>Fruit and Seeds</b><br>                 | <b>Prior to fruit/seed ripening</b><br>Seedlings and small plants <ul style="list-style-type: none"> <li>▪ Pull or cut and leave on site with roots exposed. No special care needed.</li> </ul> Larger plants <ul style="list-style-type: none"> <li>▪ Use as firewood.</li> <li>▪ Make a brush pile.</li> <li>▪ Chip.</li> <li>▪ Burn.</li> </ul> |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                              | <b>After fruit/seed is ripe</b><br>Don't remove from site. <ul style="list-style-type: none"> <li>▪ Burn.</li> <li>▪ Make a covered brush pile.</li> <li>▪ Chip once all fruit has dropped from branches.</li> <li>▪ Leave resulting chips on site and monitor.</li> </ul>                                                                         |
| oriental bittersweet<br><i>(Celastrus orbiculatus)</i><br>multiflora rose<br><i>(Rosa multiflora)</i>                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Fruits, Seeds, Plant Fragments</b><br> | <b>Prior to fruit/seed ripening</b><br>Seedlings and small plants <ul style="list-style-type: none"> <li>▪ Pull or cut and leave on site with roots exposed. No special care needed.</li> </ul> Larger plants <ul style="list-style-type: none"> <li>▪ Make a brush pile.</li> <li>▪ Burn.</li> </ul>                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                              | <b>After fruit/seed is ripe</b><br>Don't remove from site. <ul style="list-style-type: none"> <li>▪ Burn.</li> <li>▪ Make a covered brush pile.</li> <li>▪ Chip – only after material has fully dried (1 year) and all fruit has dropped from branches. Leave resulting chips on site and monitor.</li> </ul>                                      |



| Non-Woody Plants                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Method of Reproducing                                                                                                                                                                                                                                                                   | Methods of Disposal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>garlic mustard<br/>(<i>Alliaria petiolata</i>)</p> <p>spotted knapweed<br/>(<i>Centaurea maculosa</i>)</p> <ul style="list-style-type: none"> <li>▪ Sap of related knapweed can cause skin irritation and tumors. Wear gloves when handling.</li> </ul> <p>black swallow-wort<br/>(<i>Cynanchum nigrum</i>)</p> <ul style="list-style-type: none"> <li>▪ May cause skin rash. Wear gloves and long sleeves when handling.</li> </ul> <p>pale swallow-wort<br/>(<i>Cynanchum rossicum</i>)</p> <p>giant hogweed<br/>(<i>Heracleum mantegazzianum</i>)</p> <ul style="list-style-type: none"> <li>▪ Can cause major skin rash. Wear gloves and long sleeves when handling.</li> </ul> <p>dame's rocket<br/>(<i>Hesperis matronalis</i>)</p> <p>perennial pepperweed<br/>(<i>Lepidium latifolium</i>)</p> <p>purple loosestrife<br/>(<i>Lythrum salicaria</i>)</p> <p>Japanese stilt grass<br/>(<i>Microstegium vimineum</i>)</p> <p>mile-a-minute weed<br/>(<i>Polygonum perfoliatum</i>)</p> | <p><b>Fruits and Seeds</b></p>                                                                                                                                                                        | <p><b>Prior to flowering</b></p> <p>Depends on scale of infestation</p> <p>Small infestation</p> <ul style="list-style-type: none"> <li>▪ Pull or cut plant and leave on site with roots exposed.</li> </ul> <p>Large infestation</p> <ul style="list-style-type: none"> <li>▪ Pull or cut plant and pile. (You can pile onto or cover with plastic sheeting).</li> <li>▪ Monitor. Remove any re-sprouting material.</li> </ul> <hr/> <p><b>During and following flowering</b></p> <p>Do nothing until the following year or remove flowering heads and bag and let rot.</p> <p>Small infestation</p> <ul style="list-style-type: none"> <li>▪ Pull or cut plant and leave on site with roots exposed.</li> </ul> <p>Large infestation</p> <ul style="list-style-type: none"> <li>▪ Pull or cut plant and pile remaining material. (You can pile onto plastic or cover with plastic sheeting).</li> <li>▪ Monitor. Remove any re-sprouting material.</li> </ul> |
| <p>common reed<br/>(<i>Phragmites australis</i>)</p> <p>Japanese knotweed<br/>(<i>Polygonum cuspidatum</i>)</p> <p>Bohemian knotweed<br/>(<i>Polygonum x bohemicum</i>)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <p><b>Fruits, Seeds, Plant Fragments</b></p> <p>Primary means of spread in these species is by plant parts. Although all care should be given to preventing the dispersal of seed during control activities, the presence of seed doesn't materially influence disposal activities.</p> | <p><b>Small infestation</b></p> <ul style="list-style-type: none"> <li>▪ Bag all plant material and let rot.</li> <li>▪ Never pile and use resulting material as compost.</li> <li>▪ Burn.</li> </ul> <p><b>Large infestation</b></p> <ul style="list-style-type: none"> <li>▪ Remove material to unsuitable habitat (dry, hot and sunny or dry and shaded location) and scatter or pile.</li> <li>▪ Monitor and remove any sprouting material.</li> <li>▪ Pile, let dry, and burn.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

January 2010



- LEGEND:**
- = BIORETENTION BASIN W/ INTERNAL STORAGE RESERVOIR
  - = ENERGY DISSIPATION STRUCTURES (RIP RAP)
  - = RAIN GUARDIAN FORTRESS (FERGUSON WATERWORKS)
  - = PIPES/CULVERTS
  - = OUTLET STRUCTURE

**I&M LOCATION PLAN**

**15,000 SF WAREHOUSE &  
6,200 SF BUILDING ADDITION  
14 INDUSTRIAL PARK ROAD  
DOVER, NH 03821**

**16 INDUSTRIAL PARK, LLC  
340 CENTRAL AVENUE  
DOVER, NH 03820**

| DATE        | 10-2-25  | NO. | FILE DRAINAGE |
|-------------|----------|-----|---------------|
| SCALE       | 1" = 30' | NO. | FILE DRAINAGE |
| DRAWN BY    | ETA      | NO. | FILE DRAINAGE |
| DESIGN BY   | JRG      | NO. | FILE DRAINAGE |
| APPROVED BY | JRG      | NO. | FILE DRAINAGE |
| PROJECT NO. | 25114    | NO. | FILE DRAINAGE |
| REVISION    |          | NO. | FILE DRAINAGE |
| APP'D       |          | NO. | FILE DRAINAGE |
| DATE        |          | NO. | FILE DRAINAGE |

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CNE

CIVILWORKS NEW ENGLAND

181 Watson Road, PO Box 1166  
Dover, NH 03821

DATE: 10-2-25

SCALE: 1" = 30'

DRAWN BY: ETA

DESIGN BY: JRG

APPROVED BY: JRG

PROJECT NO: 25114

FILE DRAINAGE

NO.

FILE DRAINAGE

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FILE DRAINAGE

NO.

FILE DRAINAGE

# SITE DEVELOPMENT DESIGN CRITERIA NARRATIVE

## §153-14

### STORMWATER MANAGEMENT

for  
14 Industrial Park Road  
Tax Map G, Lot 4

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#### A. Stormwater management, erosion control and flood hazards.

(1) Purpose and objective. These regulations establish standards to manage the discharge of runoff to the City of Dover's municipal storm sewer system and water bodies, in a manner compliant with the requirements of state and federal law, including provisions of the federal stormwater management legislation for municipal separate storm sewer systems (MS4), as amended. These provisions and standards are implemented for the purpose of:

(a) Managing stormwater runoff to protect water quality and quantity. **The proposed development has been designed in accordance with City of Dover's Stormwater management regulations to include the treatment of stormwater runoff utilizing a rain guardian fortress, bioretention basin w/ISR, and outlet protection.**

(b) Minimizing the contribution of a pollutant for which a water body is impaired to the maximum extent practicable (MEP). **The proposed development has been designed in accordance with City of Dover's Stormwater management regulations to include the treatment of stormwater runoff utilizing a rain guardian fortress, bioretention basin w/ISR, and outlet protection.**

(c) Causing no discharge of runoff to an adjacent property in excess of runoff discharge in the existing developed or undeveloped condition. **The proposed stormwater BMPs will effectively mitigate stormwater runoff and there will not be an increase of stormwater runoff to abutting properties.**

(d) Encouraging the use of low-impact development (LID) strategies. **The project proposes the use of a rain guardian fortress, bioretention basin w/ISR, and outlet protection.**

#### (2) Applicability of the stormwater standards.

(a) All projects requiring site plan or major subdivision approval shall be subject to the following set of stormwater standards according to the amount and type of disturbance. Applicability is as follows: **The project qualifies for the redevelopment standards.**

[1] The minimum protections and management standards shall apply to all projects. **The design incorporates these standards.**

[2] The stormwater management for new development standards shall apply to any project that results in a contiguous land disturbance of more than 20,000 square feet or creates more than 4,000 square feet of new impervious area. **The new development standards are not applicable to this project as this is a redevelopment project.**

[3] The stormwater management for redevelopment standards shall apply to any project that results in a contiguous land disturbance of more than 20,000 square feet or creates more than 4,000 square feet of new impervious area where the existing land use has been previously developed as commercial, industrial, institutional, governmental, recreational, or multifamily.

**The design incorporates these standards since there will be more than 4,000 square feet of new impervious area and the existing land use has been previously developed for industrial use.**

(b) All projects of such magnitude as to require a permit from the National Pollutant Discharge Elimination System (NPDES) Program or the New Hampshire Department of Environmental Services (NHDES) Alteration of Terrain (AoT) Program shall also comply with the standards of the Environmental Protection Agency (EPA) and/or NHDES permits and this section, whereas the stricter standards shall apply. **The project will require a NPDES CGP, however will not require NH DES AoT permitting.**

(3) Design standards.

(a) Minimum protections and management standards.

[1] Where applicable, all development must comply with the EPA Phase II Stormwater Rules and the City's MS4 permit, as amended. **The project complies with the City's design and stormwater requirements.**

[2] Existing surface waters, including ponds, rivers, perennial and intermittent streams (natural or channelized), and wetlands (including vernal pools), shall be protected by the minimum buffer setback as specified in Chapter 170, Zoning, § 170-27.1. Stormwater and erosion and sediment control best management practices (BMPs) shall be located outside the specified buffer zone unless otherwise approved by the Planning Board. **The proposed project has been designed to limit the wetland buffer impacts to the greatest extent possible. The disturbance has been limited for the bioretention basin w/ISR construction and associated grading. There is no proposed work within a wetland.**

[3] Low-impact development (LID) site planning and design strategies shall be used to the MEP in order to reduce the generation of the stormwater runoff Volume for both new and redevelopment projects. An owner/applicant must document why LID strategies are not appropriate if not used to manage stormwater. **The proposed stormwater management is designed per City of Dover's requirements and the NHDES Stormwater Manual. LID strategies were implemented to the maximum extent practicable, however the on-site soils are not conducive for infiltration practices.**

[4] All proposed stormwater practices and measures shall be installed and maintained in accordance with manufacturers' specifications and performance specifications outlined in the New Hampshire Stormwater Management Manual Volume 2 (December 2008 or current revision) a copy of which can be found on The NHDES website. **The project incorporates stormwater BMPs designed in accordance with NH DES requirements. A stormwater I&M is also provided.**

[5] All storage facilities for fuel, chemicals, chemical or industrial wastes, and biodegradable raw materials shall meet the regulations of the NHDES, including but not limited to those involving underground storage tanks, aboveground storage tanks, hazardous waste, and best management practices for groundwater protection (Part Env Wq 401). **The project does not propose the storage of the referenced materials onsite.**

[6] Salt and other deicing materials shall be stored under cover or located such that no direct discharges to receiving waters are possible. Snow storage areas shall be located such that no direct discharges to receiving waters are possible. See the NHDES guidance fact sheet on road salt and snow disposal. **The project does not propose the storage of deicing materials onsite.**

[7] The use of sodium-chloride-based materials for winter maintenance shall be the minimum necessary for safety. The use of sodium-chloride-based materials is discouraged within the groundwater protection districts. **The project I&M manual directs the owner/operator to produce a salt minimization plan as part of the winter maintenance of the site.**

[8] Impervious surfaces for parking areas and roads shall be minimized to the extent possible. **The project design incorporated the minimization of impervious areas to the maximum extent possible. All aspects of the design including the required number of parking spaces, drive aisle width, and turning areas were evaluated.**

[9] Stormwater runoff from new impervious surfaces shall be directed to a best management practice for flow mitigation, treatment and/or infiltration. **The proposed development has been designed in accordance with City of Dover's Stormwater management regulations to include the treatment of stormwater runoff utilizing a rain guardian fortress, bioretention basin w/ISR, and outlet protection.**

(b) Stormwater management for new development. **The project meets redevelopment requirements thus this section is Not Applicable (N/A).**

[1] Runoff of impervious surfaces shall be treated to provide 80% removal of total suspended solids (TSS) and 50% removal of both total nitrogen and phosphorus. Removal rates shall be determined using approved manufacturer's pollutant removal efficiency analysis or the pollutant removal efficiencies outlined in the New Hampshire Stormwater Management Manual Volume 1, Appendix E (December 2008 or current revision), a copy of which is available from the NHDES website. **N/A**

[2] Rainfall amount shall be based on current extreme precipitation estimates obtained from the Northeast Regional Climate Center. **N/A**

[3] Measures shall be taken to control the post-development peak rate runoff so that it does not exceed predevelopment runoff for the two-, ten-, twenty-five- and fifty-year, twenty-four-hour storm events. **N/A**

[4] Measures shall be taken to control the post-development surface water runoff volume so that it does not exceed predevelopment runoff for the two-, ten-, twenty-five- and fifty-year, twenty-four-hour storm events. For sites where infiltration/recharge is limited or not practicable, the owner/applicant must demonstrate that the project will not cause or contribute to flooding or functional impairments to streets, adjacent properties, and downstream properties. **N/A**



[5] Infiltration rates for designing groundwater recharge practices shall be determined in accordance with Section Env-Wq 1504.14. **N/A**

[6] Stormwater conveyance practices shall be sized appropriately to convey the ten-year, twenty-four-hour storm event without overtopping or causing flooding on the property. **N/A**

[7] For large projects adding greater than or equal to 10 acres of impervious cover, or projects located in known areas of flooding concern, or specifically within areas with a 1% chance of being inundated by water in any given year, the owner/applicant shall submit a supplementary report that describes how the project will not increase the future flooding potential and complies with the AoT requirements pertaining to floodplain impacts as described in Section Env-Wq 1503.09, regardless of whether an AoT permit is required. **N/A**

[8] The design of the stormwater management systems shall take into account upstream and upgradient runoff that flows onto, over, or through the site to be developed or redeveloped and provide for this contribution of runoff. **N/A**

[9] Seasonal high-water table elevations must be accounted for in all BMP design criteria. **N/A**

[10] Access for maintenance of stormwater facilities must be included as part of the design, where necessary. Access easements may be required. **N/A**

[11] Plantings in treatment areas shall be native grasses, shrubs and/or other native plants in sufficient numbers and density to prevent soil erosion and to achieve water-quality treatment. **N/A**

(c) Stormwater management for redevelopment. In order to determine the stormwater requirements for redevelopment projects, the percentage of the site covered by existing impervious areas must be calculated. Stormwater requirements for redevelopment will vary based upon the amount of site surface area that is covered by existing impervious surfaces. **The project meets redevelopment requirements as the existing land use has been previously developed as industrial.**

[1] For sites meeting the definition of a redevelopment project and having less than 40% existing impervious surface coverage, the stormwater management requirements will be the same as new development projects, with the important distinction that the applicant can meet those requirements either on site or at an approved off-site location (i.e., off-site mitigation). The applicant must satisfactorily demonstrate that impervious area reduction, LID strategies and BMPs have been implemented on site to the MEP. **The subject parcel is 5.34 acres with an existing impervious on-site cover of approximately 102,417 square feet (2.35 ac), which is approximately 44% of the entire parcel. The site qualifies to follow redevelopment project stormwater management requirements.**

[2] For sites meeting the definition of a redevelopment project and having more than 40% existing impervious surface coverage, stormwater shall be managed in accordance with one or more of the following techniques, listed in order of preference: **The subject parcel is 5.34 acres with an existing impervious on-site cover of approximately 102,417 square feet (2.35 ac), which is approximately 44% of the entire parcel.**

[a] Implement measures on site that result in mitigation and treatment of at least 30% of the existing impervious cover as well as 50% of the additional proposed impervious surfaces and pavement areas through the application of LID; or **Mitigation and treatment practices have been designed for at least 30% of existing impervious cover and 50% of proposed impervious surfaces. Pollutant removal calculations have been attached to the drainage report highlighting that stormwater treatment and mitigation for impervious surfaces exceeds City of Dover standard requirements.**

[b] Implement other LID techniques on site to the MEP to provide mitigation and treatment for at least 50% of the entire site area. **Mitigation and treatment practices have been designed following for at least 30% of existing impervious cover and 50% of proposed impervious surfaces.**

[3] The owner/applicant may utilize off-site mitigation to meet the redevelopment requirements when the following standards have been met. **The project has not been designed to utilize off-site mitigation to meet redevelopment requirements.**

[a] The owner/applicant shall demonstrate, to the satisfaction of the Planning Board, that on-site treatment has been implemented to the MEP. **N/A**

[b] The owner/applicant shall find an approved, off-site location within the same watershed as the project site or within the drainage area of the same receiving water body. **N/A**

[c] Off-site mitigation shall be equivalent to no less than the total area of pervious cover not treated on site. **N/A**

[d] The owner/applicant shall submit a full design of the proposed off-site measures for review and approval. **N/A**

[e] The owner/applicant must also demonstrate that there is no downstream drainage or flooding impact as a result of not providing on-site management. **N/A**

(d) Erosion control standards during construction. The following standards shall be applied in project planning and shall be implemented prior to and during construction activity: **The plan set includes temporary and permanent sediment and erosion control practice notes and details in support of meeting the erosion control standards.**

[1] All proposed measures shall meet, at a minimum, the design standards for best management practices set forth in the New Hampshire Stormwater Management Manual Volume 3 (December 2008 or current revision), a copy of which is available from the NHDES website. **The sediment and erosion control details provided in the plan set are all designed in accordance with the NH Stormwater Manual.**

[2] When a project requires a stormwater permit from the EPA Construction General Permit (CGP) Program, copies of the stormwater pollution prevention plan (SWPPP) inspections shall be provided to the Community Services Department. **Acknowledged, a copy of the SWPPP inspections will be provided to Community Services.**

[3] Stripping of vegetation shall be done in a manner that minimizes soil erosion. Whenever practical, natural vegetation shall be retained, protected, or supplemented. **The Erosion Control Notes in the provided plan set indicate that the smallest practical area shall be disturbed during construction.**



[4] The area of land disturbance shall be kept to a minimum and be limited to an area only large enough to accommodate construction activities for a particular construction phase. **The Erosion Control Notes in the provided plan set indicate that the smallest practical area shall be disturbed during construction.**

[5] Off-site surface water and runoff from undisturbed areas shall be diverted away from disturbed areas where feasible, or measures to convey stormwater through the project area without causing erosion of sediment must be included. The integrity of downstream drainage systems shall be maintained. **Direction to ensure that stormwater conveyance practices shall be stabilized prior to receiving stormwater runoff is included on the Erosion Control Notes sheet provided as part of this submittal.**

[6] Appropriate erosion and sediment control measures shall be installed prior to any soil land disturbance and must be reviewed and approved by the Community Services Department. **Construction scheduling and inspections will be discussed with Community Services at the required pre-construction meeting.**

[7] Perimeter site controls shall not be placed within wetland areas, stream channels or wetland buffers. **The project proposed disturbance within a wetland buffer. Erosion control measures are proposed along the down slope side of all construction and will be doubled up within wetland buffer to ensure protection to the onsite wetlands and abutting properties.**

[8] Disturbed soil areas shall be either temporarily or permanently stabilized. In areas where final grading has not occurred, temporary stabilization measures should be in place within seven calendar days for exposed soil areas that are within 100 feet of a surface water body or a wetland and no more than 14 calendar days for all other areas. Permanent stabilization should be in place within three calendar days following completion of final grading of exposed soil areas. **The definitions of, and direction for, stabilization of the site are provided on the Erosion Control Notes sheet provided as part of this submittal.**

[9] All temporary erosion and sediment control measures shall be maintained in functioning condition until final site stabilization is accomplished. A proposed BMP inspection schedule shall be included in the submittal. **The erosion control inspection scheduling requirements are identified on the Erosion Control Notes sheet provided as part of this submittal.**

[10] Additional temporary stabilization for the winter season consistent with NHDES guidelines shall be in place for disturbed areas that are not permanently stabilized by October 1, or at the discretion of the Community Services Department. **The NH DES AoT winter construction notes are identified on the Erosion Control Notes sheet provided as part of this submittal.**

[11] Special stabilization details shall be provided with the submission for any land disturbance on slopes equal to or steeper than 3:1. **Slopes greater than 3:1 require erosion control matting and/or armoring and those details are provided in the plan set.**

[12] All temporary erosion and sediment control measures shall be removed after final site stabilization. Trapped sediment and other disturbed soil areas resulting from the removal of temporary measures shall be permanently stabilized within 30 calendar days unless conditions dictate otherwise. **Temporary practice details identify the need to remove sediment and/or stabilize the area once the practices have been removed.**



[13] For projects proposing to disturb and expose soils in areas of 10 acres or more at one time, a temporary (or permanent) sediment basin must be provided with storage for a calculated volume of runoff from a drainage area from a two-year, twenty-four-hour storm, or equivalent control measures, where attainable, until final stabilization of the site. Alternatively, the sediment of storage per acre of drainage area until final stabilization of the site. In determining appropriate locations and number of sediment basins needed, the operators may consider such factors as erodibility of site soils, slope lengths, available area on site, construction period and other unique site considerations. **The project does not propose the disturbance of greater than 10 acres of area. A temporary sediment trap detail, designed with a maximum contributing area of 5 acres, has been provided in accordance with NH DES AoT design requirements.**

[14] Use of temporary sediment basins should avoid any additional vegetation clearing or site land disturbance not otherwise needed for post-construction. Sediment basin locations must be reviewed by the Community Services Department prior to construction and must consider the potential for off-site impacts, including public safety, especially as it relates to sediment movement and/or sediment basin failure, and alternative sediment controls must be used where site limitations preclude a safe design. **Temporary sediment basin locations, if constructed, will be discussed with Community Services prior to the construction of the practices.**

(e) Installation and construction inspections. The owner/applicant shall be responsible for inspection requirements as follow:

[1] The Community Services Department or its designated agent shall have access to the site to complete routine inspections. **Community Services access and inspection requirements will be discussed at the pre-construction meeting.**

[2] The Community Services Department shall be notified 24 hours prior to installation of a stormwater BMP in order to schedule an inspection. These inspections shall be completed during normal working hours. **The project notes provide direction for the contractor to notify the design engineer and the Community Services Department as required.**

[3] The Planning Board or Community Services Department may require the design engineer and/or an independent third party to provide inspection and oversight of the construction of the stormwater management facilities and erosion and sediment control measures at its discretion. Such oversight may be especially important for implementing techniques such as porous pavement or subsurface stormwater infiltration systems. The owner/applicant shall be responsible for all fees associated with third-party inspections. **A letter can be provided if requested. This letter, if required, will be discussed at the pre-construction meeting.**

[4] All SWPPP inspections must be conducted by a qualified professional such as a professional engineer (PE), a certified professional in erosion and sediment control (CPESC), a certified erosion sediment and stormwater inspector (CESSWI), or a certified professional in stormwater quality (CPSWQ). Inspection reports shall be submitted to the Community Services Department. **The project notes provide direction for the inspector to be qualified and for all reports to be submitted to the Community Services Department.**

[5] The owner is ultimately responsible for the installation, construction, inspection, and disposition of all stormwater management and erosion control measures required by the provisions of these regulations. **The project notes identify the owner as having the responsibility for ensuring the stormwater management and erosion control measures are installed as approved.**

(f) Stormwater management plan (SWMP) submittal requirements. At the discretion of the Planning Board or Community Services Department, a technical review by an independent third party may be required of any SWMP prepared under these regulations. Such a review shall be performed by a qualified professional consultant and the expense of which shall be the full responsibility of the owner/applicant. **The SWMP is a comprehensive set of documents that include, at a minimum, a drainage report, plan set, and Stormwater I&M Manual. These documents each serve a role in presenting the necessary information to the appropriate audience. The information required in this section is provided within the SWMP documents.**

[1] For projects requiring minimum protection standards, a plan including the following information shall be submitted:

[a] Description of erosion and sediment control measures as well as sequence for final stabilization of the project site. **This information is provided within the Erosion Control Notes within the plan set.**

[b] Proposed changes in impervious cover areas and any changes in pre- and post-development drainage patterns. **This information is provided within the drainage report and the Pre/Post Development Watershed Plans.**

[c] Description of LID proposed measures. **This information is provided in the drainage report and throughout the plan set and details.**

[2] For projects requiring new development or redevelopment standards, a drainage report that contains the following items shall be submitted: **This information is provided in the drainage report and throughout the plan set and details.**

[a] Description of construction period and earth movement schedule, including anticipated project start and completion dates, sequence and duration of grading and construction activities, sequence, and timing of installation and/or application of soil erosion and sediment control measures as well as sequence for final stabilization of the project site. **This information is provided in the drainage report and throughout the plan set and details.**

[b] Description of the on-site and adjacent wetlands, streams and other water resources, including methods used to identify these resources, and a description of any buffer setbacks that may apply, steep slopes, critical habitat, existing vegetation, areas with a 1% chance of being inundated by water in any given year, and whether any downstream water bodies are listed as impaired according to NHDES's most recent 303(d) list. **This information is provided in the drainage report and throughout the plan set and details.**

[c] Soils information for proposed disturbed areas shall be delineated by a certified soil scientist. For all other areas that contribute runoff to the project site, soil types may be identified in accordance with Natural Resources Conservation Service (NRCS) countywide soil survey. **This information is provided in the drainage report and throughout the plan set and details.**

[d] Description of existing drainage patterns, receiving water bodies or drainage infrastructure and soil types for recharge potential. **This information is provided in the drainage report and throughout the plan set and details.**

[e] Watershed area limits, including any off-site and upstream areas contributing flow to shared drainage channels and/or infrastructure. **This information is provided in the drainage report and throughout the plan set and details.**

[f] Description of proposed changes in impervious cover areas and any changes in pre- and post-development drainage patterns. **This information is provided in the drainage report and throughout the plan set and details.**

[g] Methods and assumptions used to calculate pre- and post-development runoff volume, peak discharge, and discharge velocity for the specified design storm events. **This information is provided in the drainage report and throughout the plan set and details.**

[h] Methods and assumptions used to calculate the pollutant load removal. **This information is provided in the drainage report and throughout the plan set and details.**

[i] Description of LID measures that are proposed to limit the development footprint, preserve existing vegetation and mimic existing hydrology to the extent feasible. **This information is provided in the drainage report and throughout the plan set and details.**

[j] If not used, provide rationale why LID measures are not practical for the site.  
**N/A**

[k] Describe measures and calculations for proposed practices used to achieve no net increase in runoff volumes leaving the site. **This information is provided in the drainage report and throughout the plan set and details.**

[l] Provide calculations for the infiltration or exfiltration system. **This information is provided in the drainage report and throughout the plan set and details.**

[m] If an increase in post-development runoff volume is anticipated due to limited applicability for LID measures and site constraints, provide an assessment and supporting calculations to demonstrate no adverse impacts to downstream infrastructure, adjacent properties, or aquatic habitat. **N/A**

[n] Descriptions, details, and design criteria and calculations for all structural, nonstructural, permanent, and temporary erosion and sedimentation control measures and BMPs. This information should include seeding mixtures and rates, types of sod, methods of seedbed preparation, expected seeding dates (or limitations on seeding time frames), type and rate of lime and fertilizer application, and type and quantity of mulching for temporary and permanent control facilities. **This information is provided in the drainage report and throughout the plan set and details.**

[o] Where proposed changes are anticipated within mapped limits of the areas with a 1% chance of being inundated by water in any given year, provide hydrologic and hydraulic analysis to show no net increase in flood elevations.  
**N/A**

[p] Proposed schedule for the inspection and maintenance of all erosion control measures on site prior to achieving final site stabilization. **This information is provided in the drainage report and throughout the plan set and details.**

[q] Describe procedures for removing temporary erosion control measures and removal of accumulated sediment captured by such measures. **This information is provided in the drainage report and throughout the plan set and details.**

[r] Any other specific study, calculation, or investigation as requested by the City. **Additional information is provided as requested and may include traffic studies, structural designs, septic/sewer designs, geotechnical reports, etc. These documents are provided on a case-by-case basis and as requested by the City.**

[s] Describe procedures to limit and/or optimize the use of deicing materials and minimize off-site increases in chloride levels in adjacent surface water and groundwater. **The Stormwater I&M Manual includes the implementation of a salt minimization plan.**

[t] Provide a maintenance and inspection plan for post-construction monitoring of stormwater BMPs to ensure long-term performance and functionality, including details of who will be responsible for inspections and maintenance, proposed schedule, documentation, submittal procedures and contingency plans if future maintenance is required. **A Stormwater I&M Manual is provided as part of the submission.**

[u] Provide copies of pertinent state and federal permits. **Copies of permits will be provided to the City, as applicable.**

(g) Long-term operation and maintenance. The owner shall be responsible for continued inspection and maintenance requirements. **An I&M Manual that identifies the owner's responsibilities has been provided as a part of the submission.**

[1] An operation and maintenance manual shall be created with the following information:

[a] The names of the responsible qualified professionals who will implement the required reporting, inspections, and maintenance activities. **The Owner, Responsible Party, and the Management Company are identified in the I&M Manual.**

[b] An inspection checklist, identifying item or BMP, inspection frequency, and components to be inspected. The list shall clearly outline performance thresholds and triggers for maintenance. **Inspection requirements and maintenance thresholds are identified in the I&M Manual.**

[c] Snow and ice removal shall be performed by a contractor certified by the "Green SnoPro" Program, or approved equivalent, following best management practices for the application of deicing materials. **The I&M Manual requires the use of a Green SnowPro contractor.**

[d] Deicing log to track amount and type of deicing material applied. **The I&M Manual requires the implementation of a salt minimization plan that also requires the owner or operator to track salt usage onsite through a quantity usage log.**

[e] A site plan clearly identifying the locations of all stormwater practices to be inspected and maintained. **The approved Grading and Drainage Plan accompanies the I&M Manual identifying each stormwater practice that must be maintained.**

[f] Inspection and maintenance log to be submitted to the City of Dover Community Services Department on an annual basis. Documents shall be submitted no later than December 15 of each year. **The I&M Manual identifies this requirement.**

[2] The owner of record shall record at the Registry of Deeds documentation sufficient to provide notice to all persons that may acquire any property subject to the requirements and responsibilities described in the approved stormwater management plan. The notice shall comply with the applicable requirements for recording contained in RSA 477 and 478. The notice need not set forth the requirements at length, so long as it is sufficient to provide notice to prospective purchasers of the requirements for maintenance and reporting. **Not Applicable.**

# DRAINAGE ANALYSIS

16 INDUSTRIAL PARK, LLC  
14 INDUSTRIAL PARK ROAD  
TAX MAP G, LOT 4  
DOVER, NH

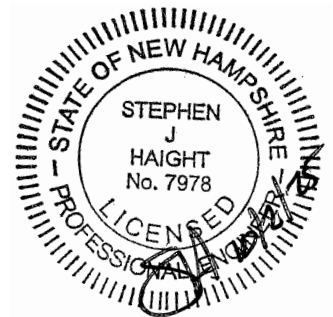
October 2025

**Prepared For:**

Summit Land Development, LLC  
340 Central Ave Suite 202  
Dover, NH 03820

**Prepared By:**

Civilworks New England  
**PO Box 1166**  
**181 Watson Road**  
**Dover, NH 03821**



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| 2.5.2 | Pollutant Removal                                                                                                                                                                                                                                                |
| 2.5.3 | Outlet Protection                                                                                                                                                                                                                                                |
| 3.0   | APPENDIX A – HYDROLOGIC CALCULATIONS                                                                                                                                                                                                                             |
| A     | Extreme Precipitation Map & Table                                                                                                                                                                                                                                |
| A-1   | Existing Watersheds                                                                                                                                                                                                                                              |
|       | <ul style="list-style-type: none"><li>• Drainage Diagram, Area, and Soil Listings</li><li>• Node Listing – 2-yr</li><li>• Node Listing – 10-yr</li><li>• 10-yr Storm Summary Hydrographs</li><li>• Node Listing – 25-yr</li><li>• Node Listing – 50-yr</li></ul> |
| A-2   | Developed Watersheds                                                                                                                                                                                                                                             |
|       | <ul style="list-style-type: none"><li>• Drainage Diagram, Area, and Soil Listings</li><li>• Node Listing – 2-yr</li><li>• Node Listing – 10-yr</li><li>• 10-yr Storm Summary Hydrographs</li><li>• Node Listing – 25-yr</li><li>• Node Listing – 50-yr</li></ul> |
| 4.0   | APPENDIX B – DESIGN                                                                                                                                                                                                                                              |
| B-1   | Stormwater Best Management Practices                                                                                                                                                                                                                             |
| B-2   | Pollutant Removal                                                                                                                                                                                                                                                |
| B-3   | Outlet Protection                                                                                                                                                                                                                                                |
| 5.0   | APPENDIX C – INSPECTION AND MAINTENANCE                                                                                                                                                                                                                          |
| C-1   | Stormwater Management System Inspection & Maintenance Plan                                                                                                                                                                                                       |
| 6.0   | APPENDIX D – WATERSHED PLANS                                                                                                                                                                                                                                     |
| D-1   | Pre-Development Conditions                                                                                                                                                                                                                                       |
| D-2   | Post-Development Conditions                                                                                                                                                                                                                                      |

## 1.0 INTRODUCTION

This is a hydrologic analysis of the subject parcel located at 14 Industrial Park Road, Dover, NH. The 5.34± acre lot is identified as Tax Map G, Lot 4. The site is currently developed as industrial general with a large 58,156 sf building, associated pavement and walkways, parking, and utility services. The ground cover surrounding the existing industrial building and parking consists primarily of lawn. The lot is bounded by a commercial/industrial lot to the southwest, Industrial Park Road to the northwest, Littleworth Road to the northeast, and the Boston and Maine Railroad to the southeast.

The project proposes the construction of a 15,000-sf warehouse building and a 6,200-sf building addition, as well as associated parking areas, grading & drainage improvements, and underground utility services. The proposed drainage system incorporates a bioretention basin with internal storage reservoir and pre-treatment using a rain guardian fortress (Ferguson Waterworks). The proposed stormwater system captures, treats, and stores stormwater runoff from 0.575 acres of proposed impervious surfaces and 0.506 acres of existing impervious surfaces and directs it to the existing discharge point. The proposed stormwater drainage structures will be maintained by the project proponent as outlined within the Stormwater Management System Inspection & Maintenance Manual (Stormwater I&M Manual) in Appendix C.

To effectively analyze the pre-development subject parcel, the site was analyzed as one watershed, A. Watershed A drains from Industrial Park Road, through a swale, to the wetlands along the Boston and Maine railroad. Soil characteristics were obtained utilizing web soil survey and are a mix of HSG B & C soils. Topography information was obtained from an on-site survey.

The post development is further divided into four (4) subcatchments that are routed to the same discharge point, A, as defined in the pre-development model. This provides a direct comparison to the pre-development model. This analysis indicates that the proposed stormwater measures and stormwater management plan will treat and mitigate stormwater runoff in general accordance with The City of Dover's stormwater regulations. The proposed development of the site in conjunction with the implementation of the Stormwater I&M Manual will have minimal impact on the watershed.



## 2.0 DRAINAGE ANALYSIS

A comprehensive hydrologic study of this site has been performed utilizing nationally recognized runoff estimating techniques developed by the USDA, Soil Conservation Services (SCS). The technique and runoff models are described in various SCS publications and references as follows:

“Stormwater Management and Erosion Sediment Control Handbook for Urban and Developing Areas in New Hampshire”

“New Hampshire Stormwater Manual Volume 2 - Post-Construction Best Management Practices Selection & Design”

“Civil Engineering Reference Manual, Fifth Edition”

“Open-Channel Hydraulics” Chow.

“Stormwater Modeling System” HydroCAD Ver. 10.10

### 2.1 DRAINAGE DESIGN PARAMETERS

A brief review of the procedures and parameters used in the drainage study follows:

#### 2.1.1 Watersheds

The watersheds were delineated using on site topographic and existing condition survey data field located by McEneaney Survey Associates of New England.

#### 2.1.2 Soils

Soil types were determined utilizing the NRCS Web Soil Survey (WSS) mapping tool at <http://websoilsurvey.nrcs.usda.gov>. The soil survey area is Strafford County, NH, the soil survey data is Version 25, dated September 3rd, 2024 and the aerial images are dated June 19th to September 20th, 2020.

#### Hydrologic Drainage Class B:

| Map Unit Symbol | Slopes    | Map Unit Name            |
|-----------------|-----------|--------------------------|
| CfB             | 3 to 8 %  | Charlton Fine Sandy Loam |
| CfC             | 8 to 15 % | Charlton Fine Sandy Loam |

#### Hydrologic Drainage Class C:

| Map Unit Symbol | Slopes   | Map Unit Name     |
|-----------------|----------|-------------------|
| BzB             | 3 to 8 % | Buxton Silt Loam  |
| ScA             | 0 to 3 % | Scantic Silt Loam |

### 2.1.3 Rainfall Data

Extreme precipitation estimate values from the Northeast Regional Climate Center were utilized in this analysis. The analysis has been performed for the 2-year, 10-year, 25-year, and 50-year storm events with 3.14", 4.73", 5.99", and 7.15" rainfall depths respectively.

### 2.1.4 Runoff Curve Numbers

The SCS runoff curve numbers were used and are summarized within each sub-catchment drainage summary in Appendix A.

## 2.2 EXISTING CONDITIONS

For the purposes of this analysis, the subject parcel was analyzed as a single watershed that discharges to wetlands located along the Boston and Maine Railroad in the predevelopment condition.

### 2.2.1 Table A – Existing Conditions (2, 10, 25, and 50-year storm events)

| <b>Watershed</b> | <b>Pre-Development Volume (af)</b> | <b>Pre Development Peak Flows (cfs)</b> |                     |                     |                     |
|------------------|------------------------------------|-----------------------------------------|---------------------|---------------------|---------------------|
| Discharge Point  | <u><b>2-yr</b></u>                 | <u><b>2-yr</b></u>                      | <u><b>10-yr</b></u> | <u><b>25-yr</b></u> | <u><b>50-yr</b></u> |
| A                | 0.69                               | 5.7                                     | 9.9                 | 13.2                | 16.0                |

## 2.3 DEVELOPED CONDITIONS

The post development model analyzes runoff to the post development discharge point, which is the wetlands located along the Boston and Maine Railroad.

### 2.3.1 Table B – Developed Conditions (2, 10, 25, and 50-year storm events)

| <b>Watershed</b> | <b>Post-Development Volume (af)</b> | <b>Post Development Peak Flows (cfs)</b> |                     |                     |                     |
|------------------|-------------------------------------|------------------------------------------|---------------------|---------------------|---------------------|
| Discharge Point  | <u><b>2-yr</b></u>                  | <u><b>2-yr</b></u>                       | <u><b>10-yr</b></u> | <u><b>25-yr</b></u> | <u><b>50-yr</b></u> |
| A                | 0.80                                | 4.5                                      | 9.3                 | 12.2                | 14.7                |

## 2.4 HYDROLOGIC COMPARISON

The analysis indicates that the proposed project will have negligible impact on the watershed.

### 2.4.1 Table C – Pre/Post Development Comparison (2, 10, 25, and 50-year storm events)

| <b>Watershed</b>       | <b>Pre/Post-Development Volume (af)</b> | <b>Pre/Post Development Peak Flows (cfs)</b> |                     |                     |                     |
|------------------------|-----------------------------------------|----------------------------------------------|---------------------|---------------------|---------------------|
| <b>Discharge Point</b> | <b><u>2-yr</u></b>                      | <b><u>2-yr</u></b>                           | <b><u>10-yr</u></b> | <b><u>25-yr</u></b> | <b><u>50-yr</u></b> |
| <b>A</b>               | <b>0.69/0.80</b>                        | <b>5.7/4.5</b>                               | <b>9.9/9.3</b>      | <b>13.2/12.2</b>    | <b>16.0/14.7</b>    |

## 2.5 STORMWATER DESIGN

The project incorporates best management practices to mitigate runoff as well as treat and convey stormwater.

### 2.5.1 Stormwater Best Management Practices

This project incorporates a single Bioretention Basin w/ Internal Storage Reservoir for stormwater treatment, along with one (1) Rain Guardian Fortress (Ferguson Waterworks) for pre-treatment. See Appendix B-1 for Best Management Practice Design forms.

### 2.5.2 Pollutant Removal

The project proposes 0.578 acres of new impervious area. The proposed stormwater mitigation system effectively captures and treats 1.081 acres of impervious surfaces, 0.575 acres of proposed and 0.506 acres of existing. BMP Pollutant Removal Efficiency Rates were determined utilizing the BMP Performance Curve for Enhanced Bio-Filtration w/ISR published in NH MS4 General Permit, Appendix F, Attachment 3.

The proposed stormwater mitigation measures implemented on site exceed the minimum pollutant removal requirements for TSS, TN, and TP required by the City's regulations for redevelopment projects.

|                            |            |            |            |
|----------------------------|------------|------------|------------|
|                            | <b>TSS</b> | <b>TN</b>  | <b>TP</b>  |
| Bioretention Basin w/ ISR: | <b>90%</b> | <b>75%</b> | <b>76%</b> |

### 2.5.3 Outlet Protection

NHDES BMP outlet protection has been sized to accommodate the 25-year, 24-hour storm event. All proposed rip-rap applications shall consist of a minimum stone d50=6" with a stone layer thickness of 12" (min.) on a fabric layer or a 6" thick (min.) gravel base. See the plan set for rip rap locations and the drainage details for additional information.

# APPENDIX A

## HYDROLOGIC CALCULATIONS

# Extreme Precipitation in New York & New England

An Interactive Web Tool for Extreme Precipitation Analysis

About this Project

Data & Products

Daily Monitoring

Documentation

## Select Product ?

Extreme Precipitation  
Tables - HTML ?

Extreme Precipitation  
Tables - Text/CSV ?

Partial Duration Series -  
by Point ?

Partial Duration Series -  
by Station ?

Distribution Curves -  
Graphical ?

Distribution Curves -  
Text/TBL ?

Intensity Frequency  
Duration Graphs ?

Precipitation Frequency  
Duration Graphs ?

GIS Data Files ?

Regional/State Maps ?

## Select Location ? Double-click map to place a marker, or enter address or latitude/longitude.

Hybrid

Map

Locate by Address ?

Locate by Lat/Lon ?

Locate by State/County ?

Satellite

Terrain

43.186°N -70.90°W



## Select Options ?

Smoothing ?

Yes ▾

Delivery ?

Popup ▾

Submit ?

Version 2.0

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This project is a joint collaboration between:

Northeast Regional Climate Center (NRCC)



Powered by  
ACIS  
Northeast Regional  
Climate Center



Cornell University

Natural Resources Conservation Service (NRCS)



Contact: [precip@cornell.edu](mailto:precip@cornell.edu)

# Extreme Precipitation Tables

## Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

| Metadata for Point |                                                           |
|--------------------|-----------------------------------------------------------|
| Smoothing          | Yes                                                       |
| State              | New Hampshire                                             |
| Location           | New Hampshire, United States                              |
| Latitude           | 43.186 degrees North                                      |
| Longitude          | 70.9 degrees West                                         |
| Elevation          | 30 feet                                                   |
| Date/Time          | Mon Sep 29 2025 11:49:08 GMT-0400 (Eastern Daylight Time) |

### Extreme Precipitation Estimates

|       | 5min | 10min | 15min | 30min | 60min | 120min |       | 1hr  | 2hr  | 3hr  | 6hr  | 12hr | 24hr  | 48hr  |       | 1day  | 2day  | 4day  | 7day  | 10day |       |
|-------|------|-------|-------|-------|-------|--------|-------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1yr   | 0.26 | 0.40  | 0.50  | 0.65  | 0.81  | 1.03   | 1yr   | 0.70 | 0.98 | 1.20 | 1.54 | 1.99 | 2.60  | 2.85  | 1yr   | 2.30  | 2.74  | 3.14  | 3.87  | 4.44  | 1yr   |
| 2yr   | 0.32 | 0.49  | 0.61  | 0.81  | 1.01  | 1.29   | 2yr   | 0.87 | 1.17 | 1.50 | 1.91 | 2.44 | 3.14  | 3.49  | 2yr   | 2.78  | 3.35  | 3.85  | 4.58  | 5.22  | 2yr   |
| 5yr   | 0.37 | 0.57  | 0.72  | 0.96  | 1.23  | 1.58   | 5yr   | 1.06 | 1.44 | 1.85 | 2.38 | 3.07 | 3.96  | 4.47  | 5yr   | 3.51  | 4.30  | 4.91  | 5.79  | 6.54  | 5yr   |
| 10yr  | 0.40 | 0.63  | 0.80  | 1.09  | 1.42  | 1.84   | 10yr  | 1.22 | 1.69 | 2.18 | 2.82 | 3.65 | 4.73  | 5.39  | 10yr  | 4.19  | 5.18  | 5.92  | 6.91  | 7.77  | 10yr  |
| 25yr  | 0.46 | 0.74  | 0.94  | 1.29  | 1.72  | 2.26   | 25yr  | 1.48 | 2.09 | 2.69 | 3.52 | 4.59 | 5.99  | 6.91  | 25yr  | 5.30  | 6.65  | 7.56  | 8.73  | 9.76  | 25yr  |
| 50yr  | 0.51 | 0.83  | 1.06  | 1.48  | 1.99  | 2.66   | 50yr  | 1.72 | 2.45 | 3.17 | 4.17 | 5.47 | 7.15  | 8.35  | 50yr  | 6.33  | 8.03  | 9.11  | 10.44 | 11.61 | 50yr  |
| 100yr | 0.58 | 0.93  | 1.20  | 1.70  | 2.31  | 3.11   | 100yr | 2.00 | 2.88 | 3.74 | 4.94 | 6.51 | 8.55  | 10.09 | 100yr | 7.57  | 9.70  | 10.98 | 12.47 | 13.81 | 100yr |
| 200yr | 0.64 | 1.04  | 1.36  | 1.95  | 2.69  | 3.66   | 200yr | 2.32 | 3.39 | 4.41 | 5.87 | 7.77 | 10.23 | 12.19 | 200yr | 9.05  | 11.72 | 13.23 | 14.92 | 16.43 | 200yr |
| 500yr | 0.75 | 1.24  | 1.61  | 2.34  | 3.29  | 4.52   | 500yr | 2.84 | 4.21 | 5.48 | 7.35 | 9.79 | 12.97 | 15.67 | 500yr | 11.48 | 15.06 | 16.95 | 18.91 | 20.70 | 500yr |

### Lower Confidence Limits

|       | 5min | 10min | 15min | 30min | 60min | 120min |       | 1hr  | 2hr  | 3hr  | 6hr  | 12hr | 24hr | 48hr  |       | 1day | 2day  | 4day  | 7day  | 10day |       |
|-------|------|-------|-------|-------|-------|--------|-------|------|------|------|------|------|------|-------|-------|------|-------|-------|-------|-------|-------|
| 1yr   | 0.24 | 0.37  | 0.45  | 0.61  | 0.74  | 0.90   | 1yr   | 0.64 | 0.88 | 0.91 | 1.25 | 1.55 | 2.07 | 2.47  | 1yr   | 1.83 | 2.38  | 2.92  | 3.36  | 4.05  | 1yr   |
| 2yr   | 0.31 | 0.49  | 0.60  | 0.81  | 1.00  | 1.18   | 2yr   | 0.86 | 1.15 | 1.36 | 1.83 | 2.36 | 3.04 | 3.39  | 2yr   | 2.69 | 3.26  | 3.74  | 4.46  | 5.06  | 2yr   |
| 5yr   | 0.35 | 0.54  | 0.67  | 0.91  | 1.16  | 1.40   | 5yr   | 1.00 | 1.37 | 1.61 | 2.15 | 2.78 | 3.70 | 4.12  | 5yr   | 3.28 | 3.96  | 4.59  | 5.40  | 6.10  | 5yr   |
| 10yr  | 0.38 | 0.59  | 0.73  | 1.02  | 1.32  | 1.60   | 10yr  | 1.14 | 1.56 | 1.82 | 2.45 | 3.13 | 4.26 | 4.78  | 10yr  | 3.77 | 4.59  | 5.31  | 6.24  | 7.00  | 10yr  |
| 25yr  | 0.44 | 0.67  | 0.83  | 1.18  | 1.55  | 1.91   | 25yr  | 1.34 | 1.87 | 2.11 | 2.85 | 3.66 | 5.02 | 5.79  | 25yr  | 4.44 | 5.57  | 6.48  | 7.55  | 8.41  | 25yr  |
| 50yr  | 0.48 | 0.73  | 0.91  | 1.31  | 1.77  | 2.19   | 50yr  | 1.52 | 2.14 | 2.35 | 3.20 | 4.12 | 5.75 | 6.68  | 50yr  | 5.09 | 6.42  | 7.53  | 8.72  | 9.65  | 50yr  |
| 100yr | 0.54 | 0.81  | 1.02  | 1.47  | 2.02  | 2.51   | 100yr | 1.74 | 2.46 | 2.63 | 3.59 | 4.60 | 6.58 | 7.71  | 100yr | 5.82 | 7.41  | 8.75  | 10.06 | 11.05 | 100yr |
| 200yr | 0.60 | 0.90  | 1.14  | 1.65  | 2.30  | 2.88   | 200yr | 1.98 | 2.81 | 2.93 | 4.02 | 5.15 | 7.52 | 8.89  | 200yr | 6.65 | 8.55  | 10.16 | 11.62 | 12.67 | 200yr |
| 500yr | 0.70 | 1.04  | 1.34  | 1.94  | 2.76  | 3.46   | 500yr | 2.38 | 3.39 | 3.40 | 4.66 | 5.99 | 8.93 | 10.73 | 500yr | 7.91 | 10.31 | 12.39 | 14.07 | 15.13 | 500yr |

### Upper Confidence Limits

|       | 5min | 10min | 15min | 30min | 60min | 120min |       | 1hr  | 2hr  | 3hr  | 6hr  | 12hr  | 24hr  | 48hr  |       | 1day  | 2day  | 4day  | 7day  | 10day |       |
|-------|------|-------|-------|-------|-------|--------|-------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1yr   | 0.28 | 0.43  | 0.53  | 0.71  | 0.87  | 1.08   | 1yr   | 0.75 | 1.05 | 1.23 | 1.74 | 2.21  | 2.84  | 3.06  | 1yr   | 2.51  | 2.94  | 3.39  | 4.19  | 4.77  | 1yr   |
| 2yr   | 0.33 | 0.51  | 0.62  | 0.84  | 1.04  | 1.24   | 2yr   | 0.90 | 1.22 | 1.48 | 1.95 | 2.50  | 3.25  | 3.60  | 2yr   | 2.88  | 3.46  | 3.97  | 4.73  | 5.40  | 2yr   |
| 5yr   | 0.39 | 0.60  | 0.75  | 1.03  | 1.31  | 1.58   | 5yr   | 1.13 | 1.54 | 1.85 | 2.49 | 3.19  | 4.22  | 4.81  | 5yr   | 3.74  | 4.63  | 5.25  | 6.19  | 6.96  | 5yr   |
| 10yr  | 0.46 | 0.70  | 0.87  | 1.21  | 1.57  | 1.92   | 10yr  | 1.35 | 1.87 | 2.23 | 3.04 | 3.84  | 5.19  | 6.00  | 10yr  | 4.60  | 5.77  | 6.59  | 7.60  | 8.48  | 10yr  |
| 25yr  | 0.55 | 0.84  | 1.05  | 1.50  | 1.97  | 2.47   | 25yr  | 1.70 | 2.41 | 2.87 | 3.95 | 4.93  | 6.95  | 8.06  | 25yr  | 6.15  | 7.75  | 8.79  | 10.00 | 11.04 | 25yr  |
| 50yr  | 0.64 | 0.97  | 1.21  | 1.74  | 2.34  | 2.98   | 50yr  | 2.02 | 2.91 | 3.48 | 4.81 | 5.98  | 8.57  | 10.08 | 50yr  | 7.59  | 9.70  | 10.96 | 12.29 | 13.50 | 50yr  |
| 100yr | 0.74 | 1.12  | 1.41  | 2.03  | 2.79  | 3.60   | 100yr | 2.40 | 3.52 | 4.22 | 5.88 | 7.26  | 10.58 | 12.62 | 100yr | 9.36  | 12.14 | 13.65 | 15.13 | 16.51 | 100yr |
| 200yr | 0.86 | 1.29  | 1.64  | 2.37  | 3.31  | 4.36   | 200yr | 2.86 | 4.26 | 5.13 | 7.19 | 8.80  | 13.09 | 15.82 | 200yr | 11.59 | 15.21 | 17.02 | 18.61 | 20.23 | 200yr |
| 500yr | 1.05 | 1.56  | 2.01  | 2.92  | 4.15  | 5.59   | 500yr | 3.58 | 5.47 | 6.62 | 9.40 | 11.38 | 17.38 | 21.33 | 500yr | 15.38 | 20.51 | 22.79 | 24.52 | 26.47 | 500yr |



# Hydrologic Soil Group—Strafford County, New Hampshire (WSS-HSG)



## MAP LEGEND

### Area of Interest (AOI)

 Area of Interest (AOI)

### Soils

#### Soil Rating Polygons

 A  
 A/D  
 B  
 B/D  
 C  
 C/D  
 D  
 Not rated or not available

#### Soil Rating Lines

 A  
 A/D  
 B  
 B/D  
 C  
 C/D  
 D  
 Not rated or not available

#### Soil Rating Points

 A  
 A/D  
 B  
 B/D

 C  
 C/D  
 D  
 Not rated or not available

### Water Features

 Streams and Canals

### Transportation

 Rails  
 Interstate Highways  
 US Routes  
 Major Roads  
 Local Roads

### Background

 Aerial Photography

## MAP INFORMATION

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

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: Strafford County, New Hampshire  
Survey Area Data: Version 25, Sep 3, 2024

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

Date(s) aerial images were photographed: Jun 19, 2020—Sep 20, 2020

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



## Hydrologic Soil Group

| Map unit symbol                    | Map unit name                                    | Rating | Acres in AOI | Percent of AOI |
|------------------------------------|--------------------------------------------------|--------|--------------|----------------|
| BzB                                | Buxton silt loam, 3 to 8 percent slopes          | C/D    | 4.5          | 30.5%          |
| CfB                                | Charlton fine sandy loam, 3 to 8 percent slopes  | B      | 2.5          | 17.0%          |
| CfC                                | Charlton fine sandy loam, 8 to 15 percent slopes | B      | 4.2          | 28.7%          |
| ScA                                | Scantic silt loam, 0 to 3 percent slopes         | C/D    | 3.5          | 23.8%          |
| <b>Totals for Area of Interest</b> |                                                  |        | <b>14.6</b>  | <b>100.0%</b>  |

## Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

## Rating Options

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff:* None Specified

*Tie-break Rule:* Higher

# Saturated Hydraulic Conductivity (Ksat)—Strafford County, New Hampshire (WSS-KSAT)



## MAP LEGEND

### Area of Interest (AOI)

 Area of Interest (AOI)

### Soils

#### Soil Rating Polygons

-   $\leq 2.6411$
-   $> 2.6411$  and  $\leq 4.0422$
-   $> 4.0422$  and  $\leq 10.3488$
-   $> 10.3488$  and  $\leq 11.4095$
-  Not rated or not available

#### Soil Rating Lines

-   $\leq 2.6411$
-   $> 2.6411$  and  $\leq 4.0422$
-   $> 4.0422$  and  $\leq 10.3488$
-   $> 10.3488$  and  $\leq 11.4095$
-  Not rated or not available

#### Soil Rating Points

-   $\leq 2.6411$
-   $> 2.6411$  and  $\leq 4.0422$
-   $> 4.0422$  and  $\leq 10.3488$
-   $> 10.3488$  and  $\leq 11.4095$
-  Not rated or not available

### Water Features

 Streams and Canals

### Transportation

-  Rails
-  Interstate Highways

-  US Routes
-  Major Roads
-  Local Roads

### Background

 Aerial Photography

## MAP INFORMATION

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

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: Strafford County, New Hampshire  
Survey Area Data: Version 25, Sep 3, 2024

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

Date(s) aerial images were photographed: Jun 19, 2020—Sep 20, 2020

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

## Saturated Hydraulic Conductivity (Ksat)

| Map unit symbol                    | Map unit name                                    | Rating (micrometers per second) | Acres in AOI | Percent of AOI |
|------------------------------------|--------------------------------------------------|---------------------------------|--------------|----------------|
| BzB                                | Buxton silt loam, 3 to 8 percent slopes          | 2.6411                          | 4.5          | 30.5%          |
| CfB                                | Charlton fine sandy loam, 3 to 8 percent slopes  | 11.4095                         | 2.5          | 17.0%          |
| CfC                                | Charlton fine sandy loam, 8 to 15 percent slopes | 10.3488                         | 4.2          | 28.7%          |
| ScA                                | Scantic silt loam, 0 to 3 percent slopes         | 4.0422                          | 3.5          | 23.8%          |
| <b>Totals for Area of Interest</b> |                                                  |                                 | <b>14.6</b>  | <b>100.0%</b>  |

## Description

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity is considered in the design of soil drainage systems and septic tank absorption fields.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

The numeric Ksat values have been grouped according to standard Ksat class limits.

## Rating Options

*Units of Measure:* micrometers per second

*Aggregation Method:* Weighted Average

*Component Percent Cutoff:* None Specified

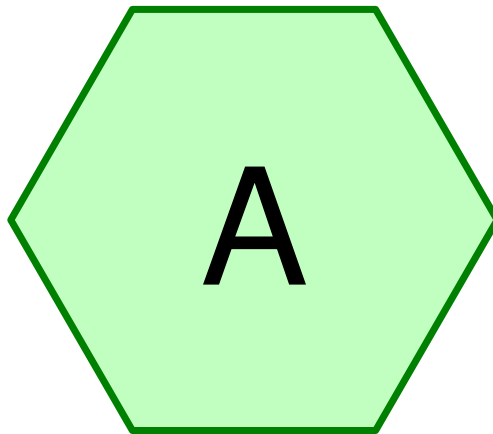
*Tie-break Rule:* Slowest

*Interpret Nulls as Zero:* No

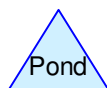
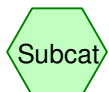
*Layer Options (Horizon Aggregation Method):* All Layers (Weighted Average)

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## EXISTING WATERSHEDS



A





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**Area Listing (selected nodes)**

| Area<br>(acres) | CN        | Description<br>(subcatchment-numbers) |
|-----------------|-----------|---------------------------------------|
| 1.809           | 61        | >75% Grass cover, Good, HSG B (A)     |
| 1.325           | 74        | >75% Grass cover, Good, HSG C (A)     |
| 0.039           | 98        | Concrete, HSG B (A)                   |
| 0.014           | 98        | Concrete, HSG C (A)                   |
| 0.325           | 98        | Paved parking, HSG B (A)              |
| 0.946           | 98        | Paved parking, HSG C (A)              |
| 0.765           | 98        | Roofs, HSG B (A)                      |
| 0.570           | 98        | Roofs, HSG C (A)                      |
| <b>5.793</b>    | <b>81</b> | <b>TOTAL AREA</b>                     |



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### Soil Listing (selected nodes)

| Area<br>(acres) | Soil<br>Group | Subcatchment<br>Numbers |
|-----------------|---------------|-------------------------|
| 0.000           | HSG A         |                         |
| 2.937           | HSG B         | A                       |
| 2.856           | HSG C         | A                       |
| 0.000           | HSG D         |                         |
| 0.000           | Other         |                         |
| <b>5.793</b>    |               | <b>TOTAL AREA</b>       |

A - 1

NODE LISTING - 2-YR

**25114 - PRE***25114 24-hr S1 2-yr Rainfall=3.14"*

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Page 1

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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 A: A**

Runoff Area=252,348 sf 45.90% Impervious Runoff Depth=1.42"

Flow Length=1,103' Tc=18.6 min CN=81 Runoff=5.7 cfs 0.69 af

**Total Runoff Area = 5.793 ac Runoff Volume = 0.69 af Average Runoff Depth = 1.42"****54.10% Pervious = 3.134 ac 45.90% Impervious = 2.659 ac**

A - 1

NODE LISTING - 10-YR

**25114 - PRE***25114 24-hr S1 10-yr Rainfall=4.73"*

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Page 1

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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 A: A**

Runoff Area=252,348 sf 45.90% Impervious Runoff Depth=2.75"

Flow Length=1,103' Tc=18.6 min CN=81 Runoff=9.9 cfs 1.33 af

**Total Runoff Area = 5.793 ac Runoff Volume = 1.33 af Average Runoff Depth = 2.75"****54.10% Pervious = 3.134 ac 45.90% Impervious = 2.659 ac**

A - 1

## 10-YR STORM SUMMARY

**Summary for Subcatchment A: A**

Runoff = 9.9 cfs @ 12.21 hrs, Volume= 1.33 af, Depth= 2.75"

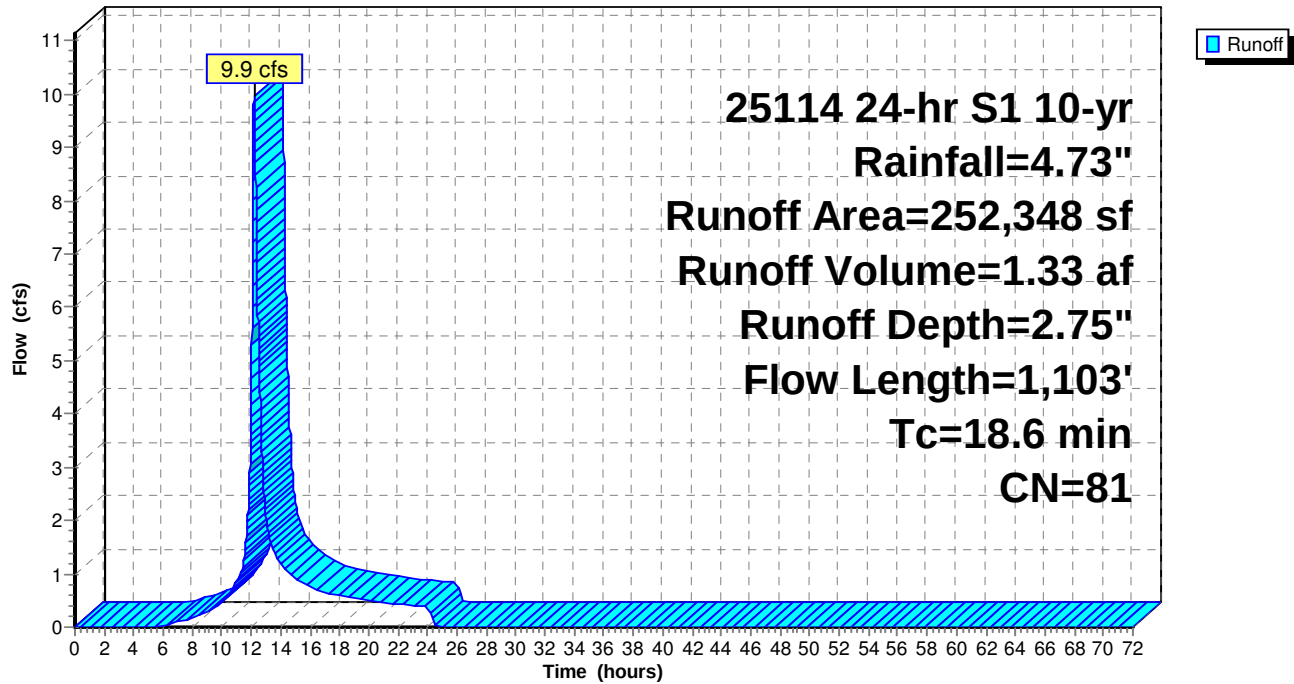
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
25114 24-hr S1 10-yr Rainfall=4.73"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 78,784    | 61 | >75% Grass cover, Good, HSG B |
| 57,738    | 74 | >75% Grass cover, Good, HSG C |
| * 1,687   | 98 | Concrete, HSG B               |
| * 614     | 98 | Concrete, HSG C               |
| 14,167    | 98 | Paved parking, HSG B          |
| 41,201    | 98 | Paved parking, HSG C          |
| 33,318    | 98 | Roofs, HSG B                  |
| 24,839    | 98 | Roofs, HSG C                  |
| 252,348   | 81 | Weighted Average              |
| 136,522   |    | 54.10% Pervious Area          |
| 115,826   |    | 45.90% Impervious Area        |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description                                                          |
|-------------|------------------|------------------|----------------------|-------------------|----------------------------------------------------------------------|
| 6.9         | 50               | 0.0260           | 0.12                 |                   | <b>Sheet Flow,</b><br>Grass: Dense n= 0.240 P2= 3.61"                |
| 1.4         | 155              | 0.0690           | 1.84                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 1.2         | 150              | 0.0200           | 2.12                 |                   | <b>Shallow Concentrated Flow,</b><br>Grassed Waterway Kv= 15.0 fps   |
| 1.2         | 64               | 0.0172           | 0.92                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 0.1         | 15               | 0.0100           | 2.03                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps              |
| 0.6         | 37               | 0.0230           | 1.06                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 0.1         | 21               | 0.0190           | 2.80                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps              |
| 2.2         | 211              | 0.0118           | 1.63                 |                   | <b>Shallow Concentrated Flow,</b><br>Grassed Waterway Kv= 15.0 fps   |
| 1.8         | 213              | 0.0099           | 2.02                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps              |
| 0.1         | 11               | 0.0818           | 2.00                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 3.0         | 176              | 0.0043           | 0.98                 |                   | <b>Shallow Concentrated Flow,</b><br>Grassed Waterway Kv= 15.0 fps   |
| 18.6        | 1,103            | Total            |                      |                   |                                                                      |

## Subcatchment A: A

## Hydrograph





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NODE LISTING - 25-YR

**25114 - PRE***25114 24-hr S1 25-yr Rainfall=5.99"*

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Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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 A: A**Runoff Area=252,348 sf 45.90% Impervious Runoff Depth=3.87"  
Flow Length=1,103' Tc=18.6 min CN=81 Runoff=13.2 cfs 1.87 af**Total Runoff Area = 5.793 ac   Runoff Volume = 1.87 af   Average Runoff Depth = 3.87"**  
**54.10% Pervious = 3.134 ac   45.90% Impervious = 2.659 ac**

A - 1

NODE LISTING - 50-YR

**25114 - PRE***25114 24-hr S1 50-yr Rainfall=7.15"*

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Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points

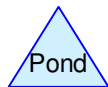
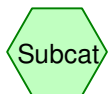
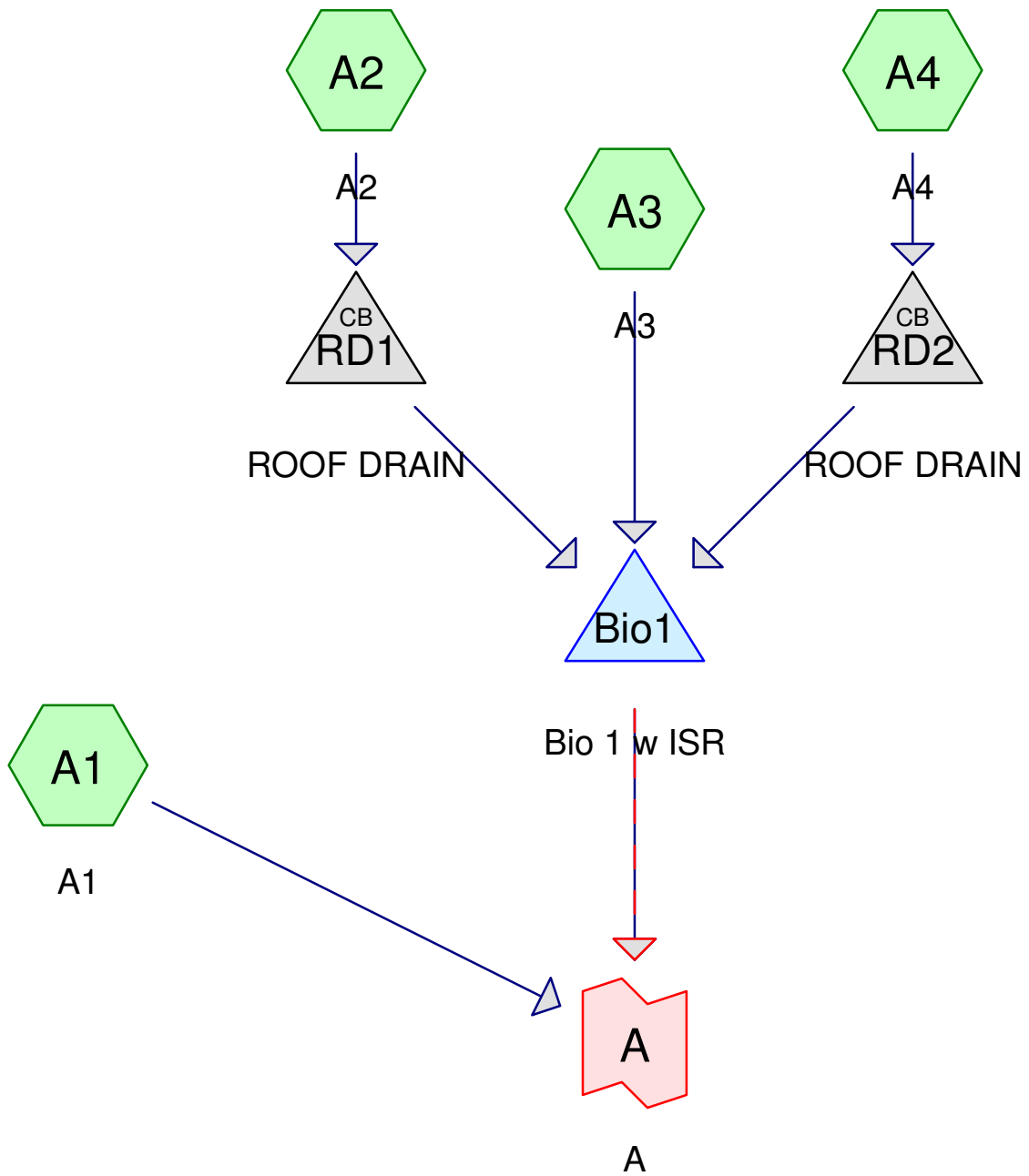
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment A: A**Runoff Area=252,348 sf 45.90% Impervious Runoff Depth=4.94"  
Flow Length=1,103' Tc=18.6 min CN=81 Runoff=16.0 cfs 2.39 af**Total Runoff Area = 5.793 ac   Runoff Volume = 2.39 af   Average Runoff Depth = 4.94"**  
**54.10% Pervious = 3.134 ac   45.90% Impervious = 2.659 ac**

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## DEVELOPED WATERSHEDS



## 25114 - POST

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### Area Listing (all nodes)

| Area<br>(acres) | CN        | Description<br>(subcatchment-numbers)  |
|-----------------|-----------|----------------------------------------|
| 1.686           | 61        | >75% Grass cover, Good, HSG B (A1)     |
| 0.877           | 74        | >75% Grass cover, Good, HSG C (A1, A3) |
| 0.039           | 98        | Concrete, HSG B (A1)                   |
| 0.024           | 98        | Concrete, HSG C (A1, A3)               |
| 0.325           | 98        | Paved parking, HSG B (A1)              |
| 1.021           | 98        | Paved parking, HSG C (A1, A3)          |
| 0.888           | 98        | Roofs, HSG B (A1, A4)                  |
| 0.934           | 98        | Roofs, HSG C (A1, A2, A3, A4)          |
| <b>5.793</b>    | <b>84</b> | <b>TOTAL AREA</b>                      |

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### Soil Listing (all nodes)

| Area<br>(acres) | Soil<br>Group | Subcatchment<br>Numbers |
|-----------------|---------------|-------------------------|
| 0.000           | HSG A         |                         |
| 2.937           | HSG B         | A1, A4                  |
| 2.856           | HSG C         | A1, A2, A3, A4          |
| 0.000           | HSG D         |                         |
| 0.000           | Other         |                         |
| <b>5.793</b>    |               | <b>TOTAL AREA</b>       |



A – 2

NODE LISTING – 2-YR

**25114 - POST****25114 24-hr S1 2-yr Rainfall=3.14"**

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Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

|                                                                                                                                                            |                                                                                                                                        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| <b>Subcatchment A1: A1</b>                                                                                                                                 | Runoff Area=195,459 sf 47.90% Impervious Runoff Depth=1.42"<br>Flow Length=1,103' Tc=18.6 min CN=81 Runoff=4.4 cfs 0.53 af             |
| <b>Subcatchment A2: A2</b>                                                                                                                                 | Runoff Area=15,000 sf 100.00% Impervious Runoff Depth=2.91"<br>Flow Length=120' Tc=1.2 min CN=98 Runoff=1.2 cfs 0.08 af                |
| <b>Subcatchment A3: A3</b>                                                                                                                                 | Runoff Area=22,045 sf 55.56% Impervious Runoff Depth=1.86"<br>Flow Length=120' Tc=4.0 min CN=87 Runoff=1.2 cfs 0.08 af                 |
| <b>Subcatchment A4: A4</b>                                                                                                                                 | Runoff Area=19,844 sf 100.00% Impervious Runoff Depth=2.91"<br>Flow Length=128' Tc=1.2 min CN=98 Runoff=1.6 cfs 0.11 af                |
| <b>Pond Bio1: Bio 1 w ISR</b>                                                                                                                              | Peak Elev=114.53' Storage=6,814 cf Inflow=3.9 cfs 0.27 af<br>Primary=0.4 cfs 0.26 af Secondary=0.1 cfs 0.02 af Outflow=0.5 cfs 0.27 af |
| <b>Pond RD1: ROOF DRAIN</b>                                                                                                                                | Peak Elev=114.70' Inflow=1.2 cfs 0.08 af<br>12.0" Round Culvert n=0.012 L=113.0' S=0.0050 '/' Outflow=1.2 cfs 0.08 af                  |
| <b>Pond RD2: ROOF DRAIN</b>                                                                                                                                | Peak Elev=115.83' Inflow=1.6 cfs 0.11 af<br>12.0" Round Culvert n=0.012 L=165.2' S=0.0100 '/' Outflow=1.6 cfs 0.11 af                  |
| <b>Link A: A</b>                                                                                                                                           | Inflow=4.5 cfs 0.80 af<br>Primary=4.5 cfs 0.80 af                                                                                      |
| <b>Total Runoff Area = 5.793 ac Runoff Volume = 0.80 af Average Runoff Depth = 1.67"</b><br><b>44.24% Pervious = 2.563 ac 55.76% Impervious = 3.230 ac</b> |                                                                                                                                        |

A – 2

NODE LISTING – 10-YR

**25114 - POST****25114 24-hr S1 10-yr Rainfall=4.73"**

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Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

|                                                                                                                                                            |                                                                                                                                        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| <b>Subcatchment A1: A1</b>                                                                                                                                 | Runoff Area=195,459 sf 47.90% Impervious Runoff Depth=2.75"<br>Flow Length=1,103' Tc=18.6 min CN=81 Runoff=7.7 cfs 1.03 af             |
| <b>Subcatchment A2: A2</b>                                                                                                                                 | Runoff Area=15,000 sf 100.00% Impervious Runoff Depth=4.49"<br>Flow Length=120' Tc=1.2 min CN=98 Runoff=1.5 cfs 0.13 af                |
| <b>Subcatchment A3: A3</b>                                                                                                                                 | Runoff Area=22,045 sf 55.56% Impervious Runoff Depth=3.31"<br>Flow Length=120' Tc=4.0 min CN=87 Runoff=1.8 cfs 0.14 af                 |
| <b>Subcatchment A4: A4</b>                                                                                                                                 | Runoff Area=19,844 sf 100.00% Impervious Runoff Depth=4.49"<br>Flow Length=128' Tc=1.2 min CN=98 Runoff=2.0 cfs 0.17 af                |
| <b>Pond Bio1: Bio 1 w ISR</b>                                                                                                                              | Peak Elev=114.66' Storage=7,238 cf Inflow=5.4 cfs 0.44 af<br>Primary=3.5 cfs 0.38 af Secondary=1.5 cfs 0.06 af Outflow=5.0 cfs 0.44 af |
| <b>Pond RD1: ROOF DRAIN</b>                                                                                                                                | Peak Elev=115.04' Inflow=1.5 cfs 0.13 af<br>12.0" Round Culvert n=0.012 L=113.0' S=0.0050 '/' Outflow=1.5 cfs 0.13 af                  |
| <b>Pond RD2: ROOF DRAIN</b>                                                                                                                                | Peak Elev=115.97' Inflow=2.0 cfs 0.17 af<br>12.0" Round Culvert n=0.012 L=165.2' S=0.0100 '/' Outflow=2.0 cfs 0.17 af                  |
| <b>Link A: A</b>                                                                                                                                           | Inflow=9.3 cfs 1.47 af<br>Primary=9.3 cfs 1.47 af                                                                                      |
| <b>Total Runoff Area = 5.793 ac Runoff Volume = 1.47 af Average Runoff Depth = 3.04"</b><br><b>44.24% Pervious = 2.563 ac 55.76% Impervious = 3.230 ac</b> |                                                                                                                                        |

A – 2

## 10-YR STORM SUMMARY

**25114 - POST**

25114 24-hr S1 10-yr Rainfall=4.73"

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Page 1

**Summary for Subcatchment A1: A1**

Runoff = 7.7 cfs @ 12.21 hrs, Volume= 1.03 af, Depth= 2.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
25114 24-hr S1 10-yr Rainfall=4.73"

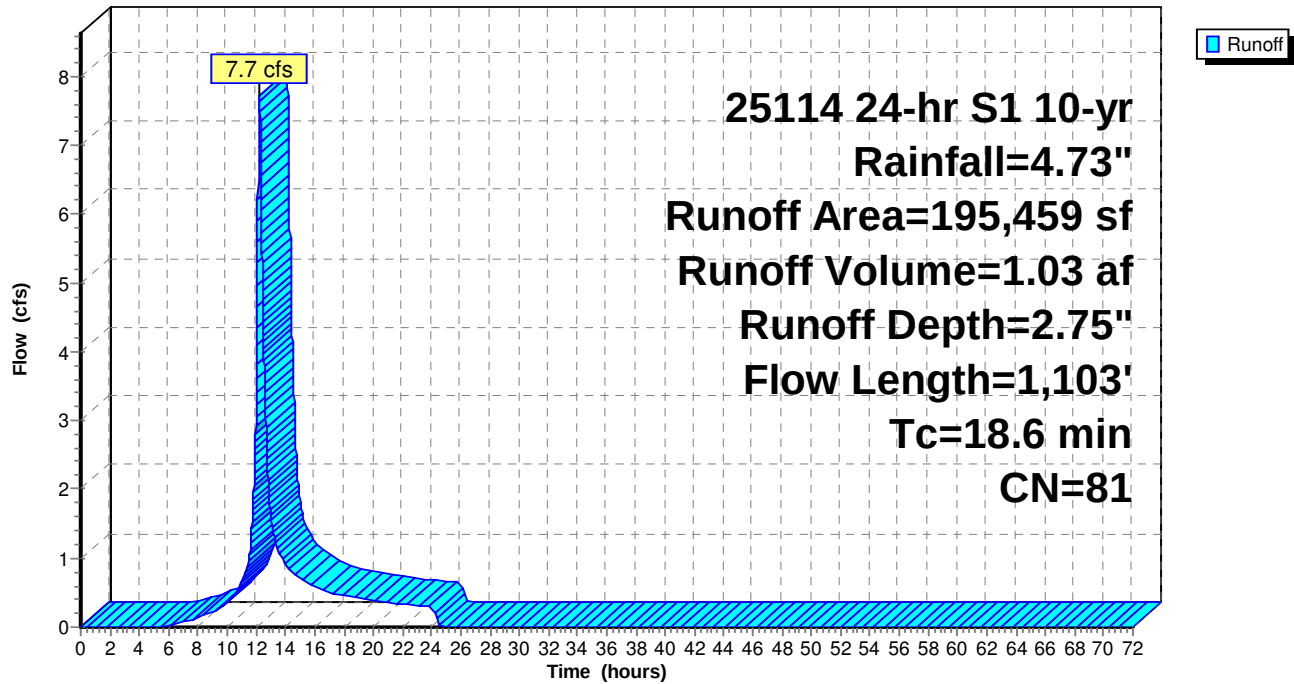
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 73,423    | 61 | >75% Grass cover, Good, HSG B |
| 28,419    | 74 | >75% Grass cover, Good, HSG C |
| * 1,705   | 98 | Concrete, HSG B               |
| * 704     | 98 | Concrete, HSG C               |
| 14,159    | 98 | Paved parking, HSG B          |
| 37,820    | 98 | Paved parking, HSG C          |
| 23,648    | 98 | Roofs, HSG B                  |
| 15,581    | 98 | Roofs, HSG C                  |
| 195,459   | 81 | Weighted Average              |
| 101,842   |    | 52.10% Pervious Area          |
| 93,617    |    | 47.90% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                                          |
|----------|---------------|---------------|-------------------|----------------|----------------------------------------------------------------------|
| 6.9      | 50            | 0.0260        | 0.12              |                | <b>Sheet Flow,</b><br>Grass: Dense n= 0.240 P2= 3.61"                |
| 1.4      | 155           | 0.0690        | 1.84              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 1.2      | 150           | 0.0200        | 2.12              |                | <b>Shallow Concentrated Flow,</b><br>Grassed Waterway Kv= 15.0 fps   |
| 1.2      | 64            | 0.0172        | 0.92              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 0.1      | 15            | 0.0100        | 2.03              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps              |
| 0.6      | 37            | 0.0230        | 1.06              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 0.1      | 21            | 0.0190        | 2.80              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps              |
| 2.2      | 211           | 0.0118        | 1.63              |                | <b>Shallow Concentrated Flow,</b><br>Grassed Waterway Kv= 15.0 fps   |
| 1.8      | 213           | 0.0099        | 2.02              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps              |
| 0.1      | 11            | 0.0818        | 2.00              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 3.0      | 176           | 0.0043        | 0.98              |                | <b>Shallow Concentrated Flow,</b><br>Grassed Waterway Kv= 15.0 fps   |
| 18.6     | 1,103         | Total         |                   |                |                                                                      |

## Subcatchment A1: A1

## Hydrograph



**Summary for Subcatchment A2: A2**

Runoff = 1.5 cfs @ 11.99 hrs, Volume= 0.13 af, Depth= 4.49"

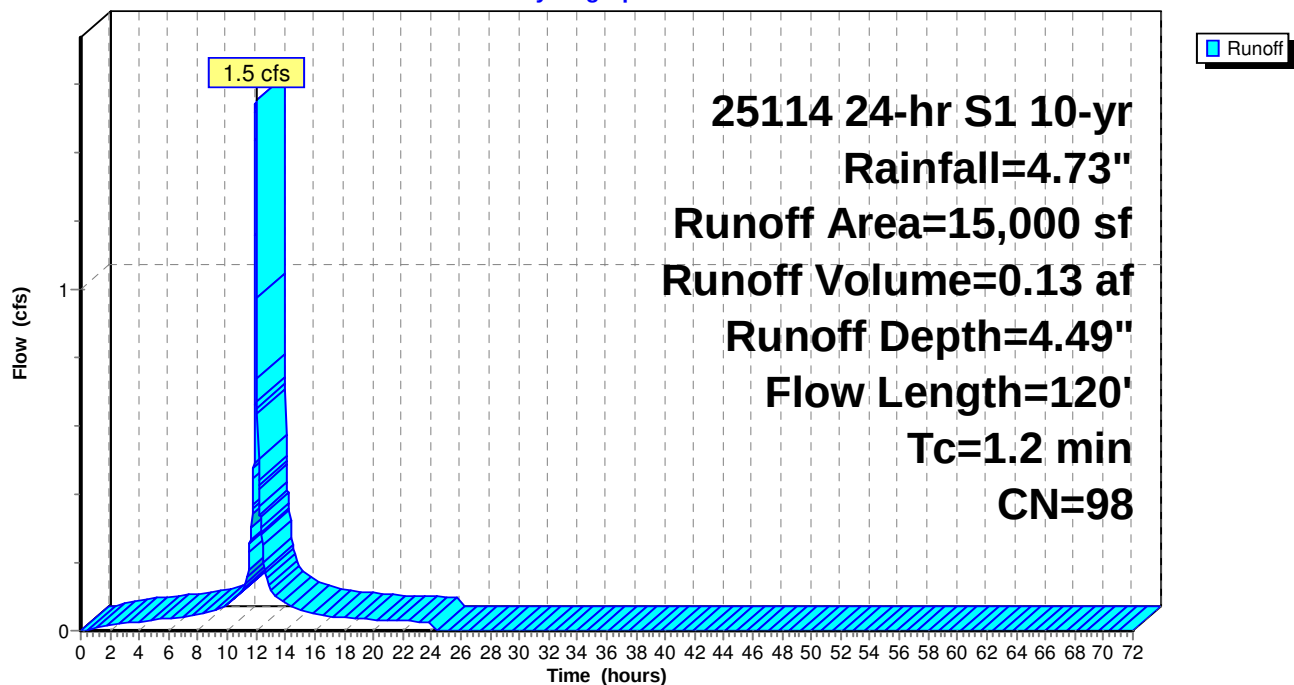
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
 25114 24-hr S1 10-yr Rainfall=4.73"

| Area (sf) | CN | Description             |
|-----------|----|-------------------------|
| 15,000    | 98 | Roofs, HSG C            |
| 15,000    |    | 100.00% Impervious Area |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description        |
|-------------|------------------|------------------|----------------------|-------------------|--------------------|
| 1.2         | 120              |                  | 1.67                 |                   | Direct Entry, ROOF |

**Subcatchment A2: A2**

Hydrograph





**25114 - POST**

25114 24-hr S1 10-yr Rainfall=4.73"

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**Summary for Subcatchment A3: A3**

Runoff = 1.8 cfs @ 12.02 hrs, Volume= 0.14 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
25114 24-hr S1 10-yr Rainfall=4.73"

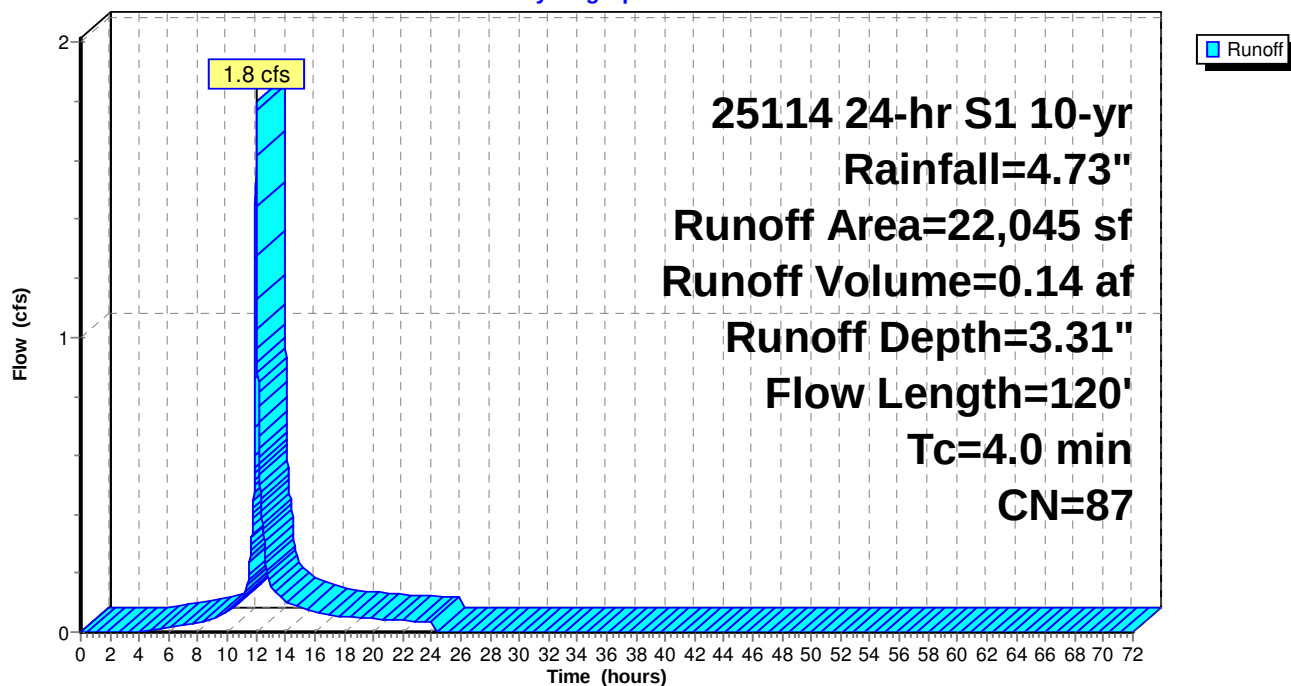
| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 9,797     | 74 | >75% Grass cover, Good, HSG C |
| * 328     | 98 | Concrete, HSG C               |
| 6,636     | 98 | Paved parking, HSG C          |
| 5,284     | 98 | Roofs, HSG C                  |
| 22,045    | 87 | Weighted Average              |
| 9,797     |    | 44.44% Pervious Area          |
| 12,248    |    | 55.56% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                                      |
|----------|---------------|---------------|-------------------|----------------|--------------------------------------------------|
| 3.5      | 35            | 0.0729        | 0.17              |                | Sheet Flow,<br>Grass: Dense n= 0.240 P2= 3.61"   |
| 0.5      | 85            | 0.0194        | 2.83              |                | Shallow Concentrated Flow,<br>Paved Kv= 20.3 fps |
| 4.0      | 120           | Total         |                   |                |                                                  |

**Subcatchment A3: A3**

Hydrograph



**Summary for Subcatchment A4: A4**

Runoff = 2.0 cfs @ 11.99 hrs, Volume= 0.17 af, Depth= 4.49"

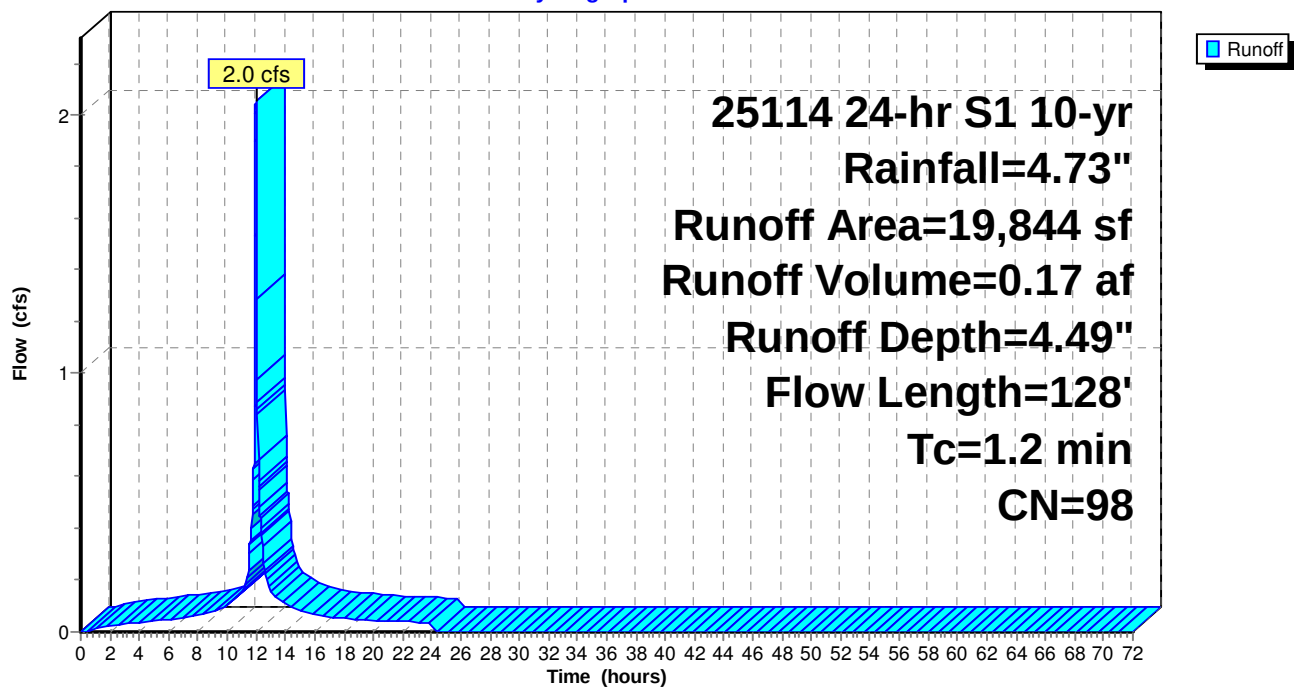
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
25114 24-hr S1 10-yr Rainfall=4.73"

| Area (sf) | CN | Description             |
|-----------|----|-------------------------|
| 15,021    | 98 | Roofs, HSG B            |
| 4,823     | 98 | Roofs, HSG C            |
| 19,844    | 98 | Weighted Average        |
| 19,844    |    | 100.00% Impervious Area |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description        |
|-------------|------------------|------------------|----------------------|-------------------|--------------------|
| 1.2         | 128              |                  | 1.78                 |                   | Direct Entry, ROOF |

**Subcatchment A4: A4**

Hydrograph



**Summary for Pond Bio1: Bio 1 w ISR**

Inflow Area = 1.306 ac, 82.78% Impervious, Inflow Depth = 4.04" for 10-yr event  
 Inflow = 5.4 cfs @ 12.00 hrs, Volume= 0.44 af  
 Outflow = 5.0 cfs @ 12.01 hrs, Volume= 0.44 af, Atten= 7%, Lag= 0.7 min  
 Primary = 3.5 cfs @ 12.01 hrs, Volume= 0.38 af  
 Secondary = 1.5 cfs @ 12.01 hrs, Volume= 0.06 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Starting Elev= 111.25' Surf.Area= 2,110 sf Storage= 1,055 cf

Peak Elev= 114.66' @ 12.01 hrs Surf.Area= 4,122 sf Storage= 7,238 cf (6,183 cf above start)

Flood Elev= 115.10' Surf.Area= 5,014 sf Storage= 8,813 cf (7,758 cf above start)

Plug-Flow detention time= 575.6 min calculated for 0.41 af (94% of inflow)

Center-of-Mass det. time= 490.0 min ( 1,260.8 - 770.8 )

| Volume              | Invert               | Avail.Storage    | Storage Description                                        |                           |                           |                     |
|---------------------|----------------------|------------------|------------------------------------------------------------|---------------------------|---------------------------|---------------------|
| #1                  | 110.00'              | 8,813 cf         | <b>Bioretention Area 1 w/ ISR (Irregular)</b> Listed below |                           |                           |                     |
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Perim.<br>(feet) | Voids<br>(%)                                               | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) | Wet.Area<br>(sq-ft) |
| 110.00              | 2,110                | 375.8            | 0.0                                                        | 0                         | 0                         | 2,110               |
| 111.25              | 2,110                | 375.8            | 40.0                                                       | 1,055                     | 1,055                     | 2,580               |
| 111.50              | 2,110                | 375.8            | 30.0                                                       | 158                       | 1,213                     | 2,674               |
| 113.00              | 2,110                | 375.8            | 20.0                                                       | 633                       | 1,846                     | 3,237               |
| 115.00              | 4,532                | 409.7            | 100.0                                                      | 6,490                     | 8,336                     | 5,497               |
| 115.10              | 5,014                | 418.9            | 100.0                                                      | 477                       | 8,813                     | 6,105               |

| Device | Routing   | Invert  | Outlet Devices                                                                                                                                                                                                                                                                    |  |  |  |
|--------|-----------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|
| #1     | Primary   | 111.25' | <b>12.0" Round Culvert</b> L= 40.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 111.25' / 111.00' S= 0.0063 '/' Cc= 0.900<br>n= 0.012, Flow Area= 0.79 sf                                                                                                      |  |  |  |
| #2     | Device 1  | 111.25' | <b>1.2" Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads                                                                                                                                                                                                        |  |  |  |
| #3     | Device 2  | 110.33' | <b>6.0" Round Culvert</b> L= 12.0' CPP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 110.33' / 110.33' S= 0.0000 '/' Cc= 0.900<br>n= 0.012, Flow Area= 0.20 sf                                                                                                    |  |  |  |
| #4     | Device 3  | 110.00' | <b>10.000 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'                                                                                                                                                                                                                |  |  |  |
| #5     | Device 3  | 114.20' | <b>12.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads                                                                                                                                                                                                      |  |  |  |
| #6     | Device 1  | 114.50' | <b>48.0" x 48.0" Horiz. Orifice/Grate</b> C= 0.600<br>Limited to weir flow at low heads                                                                                                                                                                                           |  |  |  |
| #7     | Secondary | 114.50' | <b>10.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00<br>2.50 3.00 3.50 4.00 4.50 5.00 5.50<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65<br>2.67 2.66 2.68 2.70 2.74 2.79 2.88 |  |  |  |

**Primary OutFlow** Max=3.5 cfs @ 12.01 hrs HW=114.66' TW=111.28' (Dynamic Tailwater)

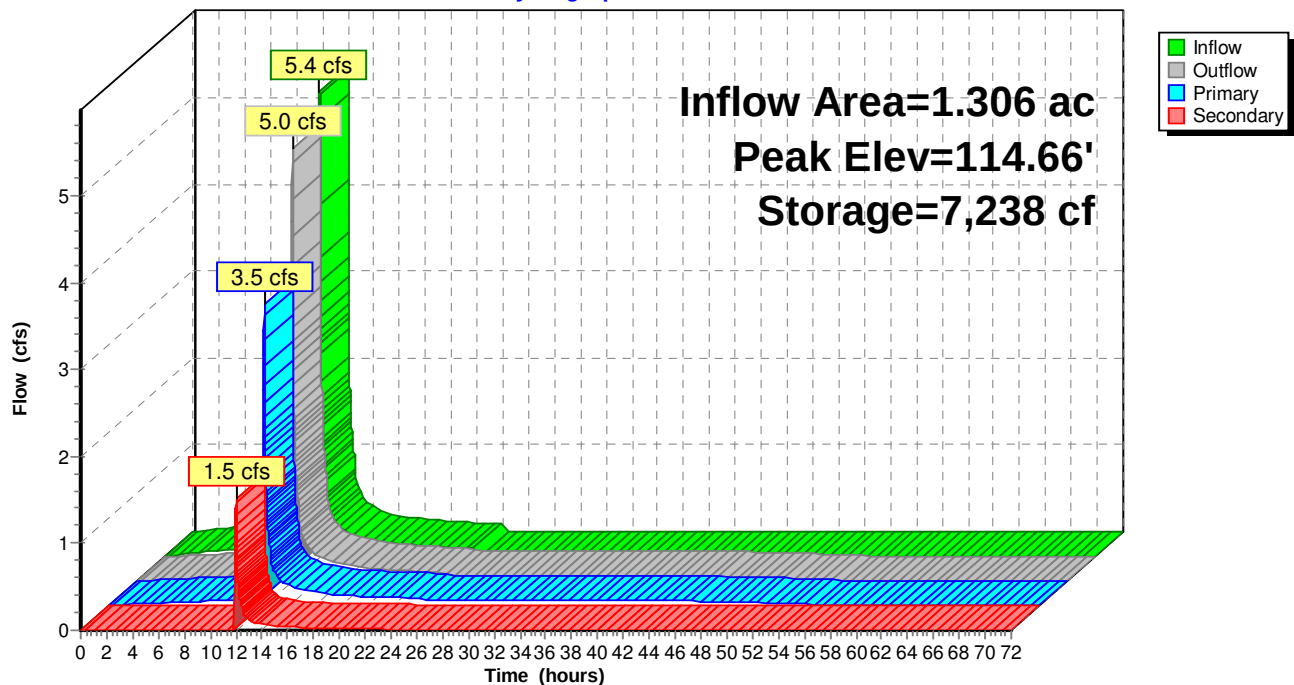
- ↑ 1=Culvert (Passes 3.5 cfs of 6.4 cfs potential flow)
- ↑ 2=Orifice/Grate (Orifice Controls 0.1 cfs @ 8.83 fps)
- ↑ 3=Culvert (Passes 0.1 cfs of 1.4 cfs potential flow)
- ↑ 4=Exfiltration (Passes < 1.0 cfs potential flow)
- ↑ 5=Orifice/Grate (Passes < 2.6 cfs potential flow)
- ↑ 6=Orifice/Grate (Weir Controls 3.4 cfs @ 1.31 fps)

**Secondary OutFlow** Max=1.5 cfs @ 12.01 hrs HW=114.66' TW=0.00' (Dynamic Tailwater)

- ↑ 7=Broad-Crested Rectangular Weir (Weir Controls 1.5 cfs @ 0.94 fps)

### Pond Bio1: Bio 1 w ISR

Hydrograph



**Summary for Pond RD1: ROOF DRAIN**

Inflow Area = 0.344 ac, 100.00% Impervious, Inflow Depth = 4.49" for 10-yr event  
 Inflow = 1.5 cfs @ 11.99 hrs, Volume= 0.13 af  
 Outflow = 1.5 cfs @ 11.99 hrs, Volume= 0.13 af, Atten= 0%, Lag= 0.0 min  
 Primary = 1.5 cfs @ 11.99 hrs, Volume= 0.13 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

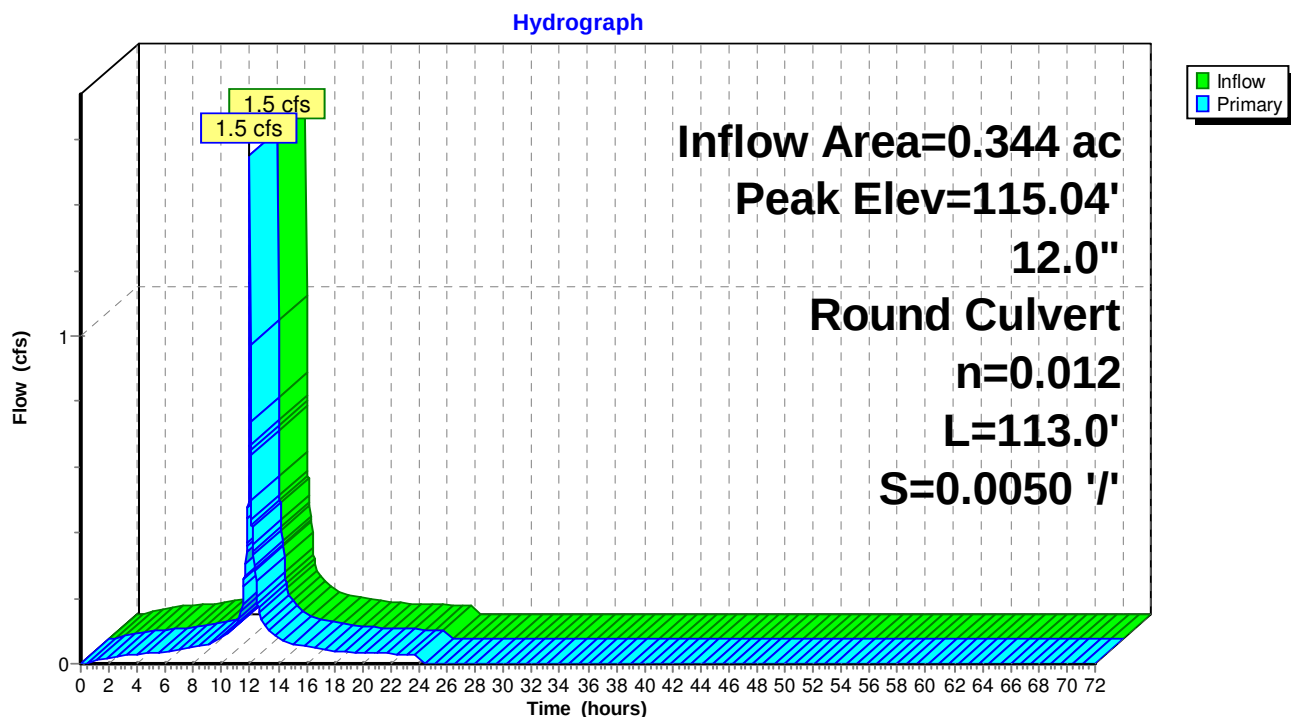
Peak Elev= 115.04' @ 12.00 hrs

Flood Elev= 116.00'

| Device | Routing | Invert  | Outlet Devices                                                                                                                                                                                                  |
|--------|---------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 114.06' | <b>12.0" Round Culvert</b><br>L= 113.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 114.06' / 113.50' S= 0.0050 '/' Cc= 0.900<br>n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf |

**Primary OutFlow** Max=1.5 cfs @ 11.99 hrs HW=115.03' TW=114.65' (Dynamic Tailwater)

↑**1=Culvert** (Outlet Controls 1.5 cfs @ 2.50 fps)

**Pond RD1: ROOF DRAIN**

**Summary for Pond RD2: ROOF DRAIN**

Inflow Area = 0.456 ac, 100.00% Impervious, Inflow Depth = 4.49" for 10-yr event  
 Inflow = 2.0 cfs @ 11.99 hrs, Volume= 0.17 af  
 Outflow = 2.0 cfs @ 11.99 hrs, Volume= 0.17 af, Atten= 0%, Lag= 0.0 min  
 Primary = 2.0 cfs @ 11.99 hrs, Volume= 0.17 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

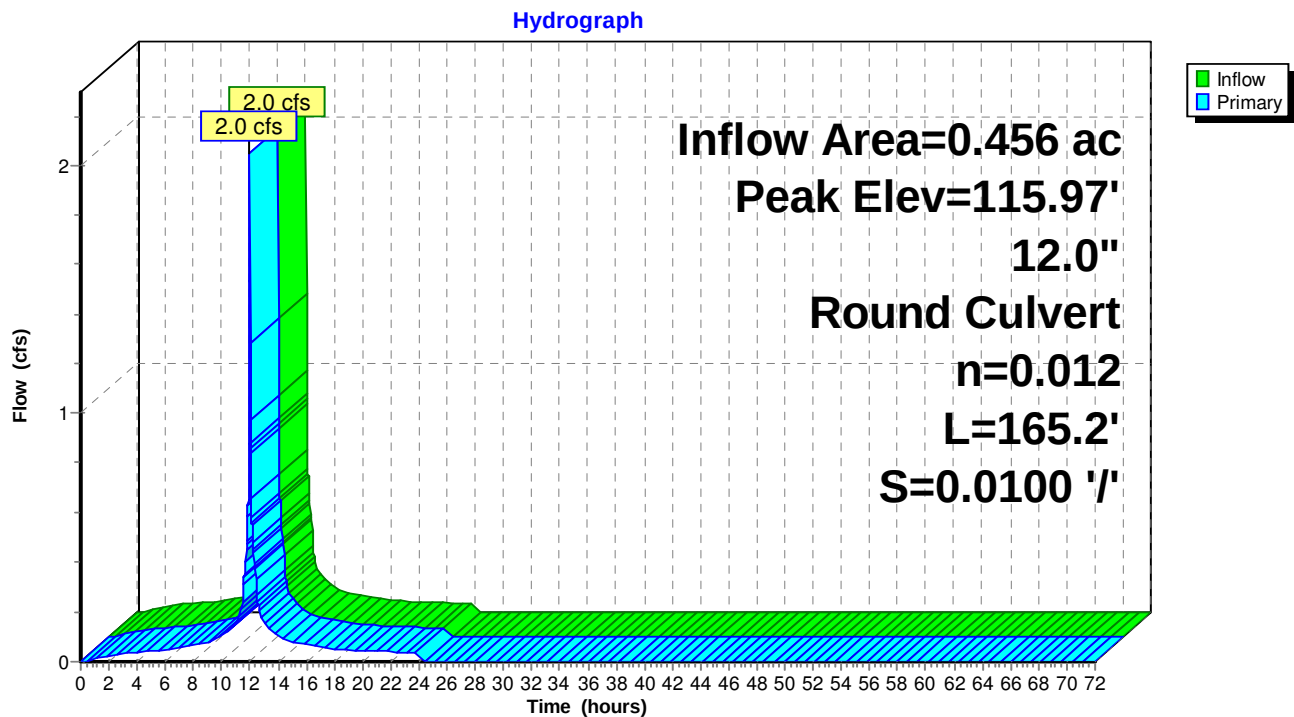
Peak Elev= 115.97' @ 12.00 hrs

Flood Elev= 118.00'

| Device | Routing | Invert  | Outlet Devices                                                                                                                                                                                                  |
|--------|---------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 115.15' | <b>12.0" Round Culvert</b><br>L= 165.2' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 115.15' / 113.50' S= 0.0100 '/' Cc= 0.900<br>n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf |

**Primary OutFlow** Max=2.0 cfs @ 11.99 hrs HW=115.97' TW=114.65' (Dynamic Tailwater)

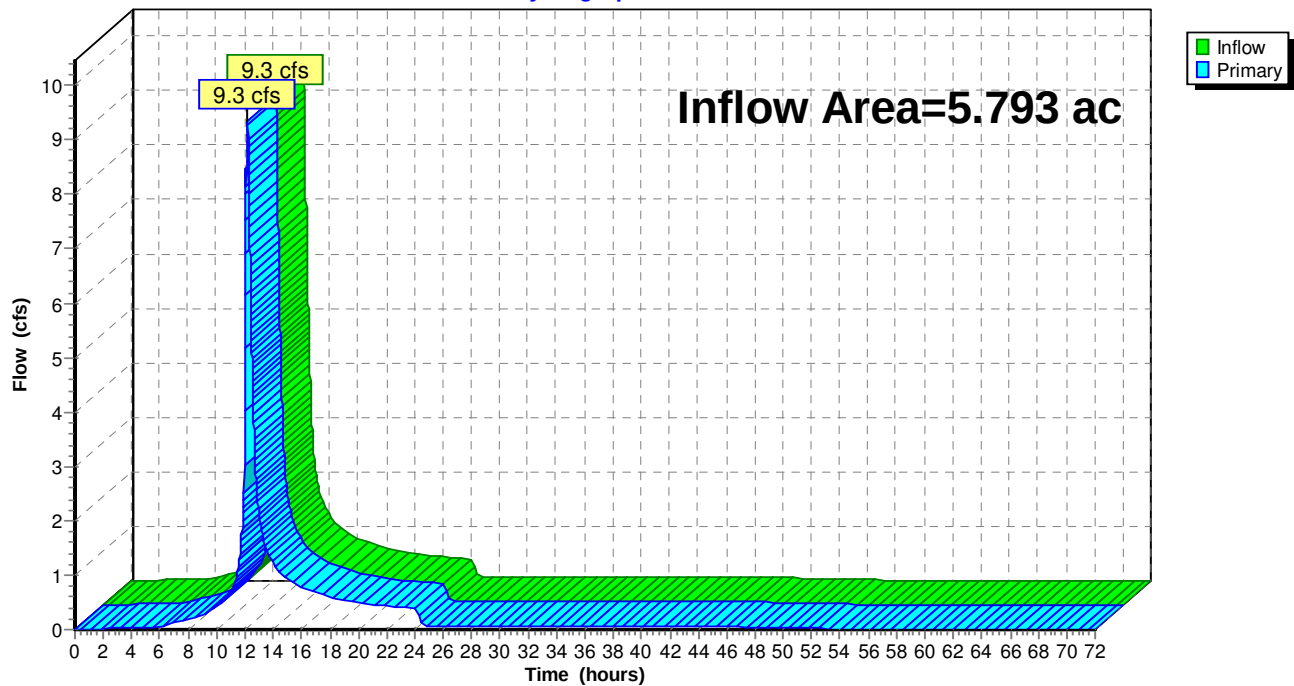
↑ **1=Culvert** (Outlet Controls 2.0 cfs @ 4.02 fps)

**Pond RD2: ROOF DRAIN**

**Summary for Link A: A**

Inflow Area = 5.793 ac, 55.76% Impervious, Inflow Depth = 3.04" for 10-yr event  
Inflow = 9.3 cfs @ 12.19 hrs, Volume= 1.47 af  
Primary = 9.3 cfs @ 12.19 hrs, Volume= 1.47 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

**Link A: A****Hydrograph**

A – 2

NODE LISTING – 25-YR



**25114 - POST****25114 24-hr S1 25-yr Rainfall=5.99"**

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Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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 A1: A1**

Runoff Area=195,459 sf 47.90% Impervious Runoff Depth=3.87"  
Flow Length=1,103' Tc=18.6 min CN=81 Runoff=10.2 cfs 1.45 af

**Subcatchment A2: A2**

Runoff Area=15,000 sf 100.00% Impervious Runoff Depth=5.75"  
Flow Length=120' Tc=1.2 min CN=98 Runoff=1.8 cfs 0.17 af

**Subcatchment A3: A3**

Runoff Area=22,045 sf 55.56% Impervious Runoff Depth=4.51"  
Flow Length=120' Tc=4.0 min CN=87 Runoff=2.2 cfs 0.19 af

**Subcatchment A4: A4**

Runoff Area=19,844 sf 100.00% Impervious Runoff Depth=5.75"  
Flow Length=128' Tc=1.2 min CN=98 Runoff=2.4 cfs 0.22 af

**Pond Bio1: Bio 1 w ISR**

Peak Elev=114.69' Storage=7,320 cf Inflow=6.4 cfs 0.57 af  
Primary=4.3 cfs 0.47 af Secondary=1.9 cfs 0.10 af Outflow=6.2 cfs 0.57 af

**Pond RD1: ROOF DRAIN**

Peak Elev=115.12' Inflow=1.8 cfs 0.17 af  
12.0" Round Culvert n=0.012 L=113.0' S=0.0050 '/' Outflow=1.8 cfs 0.17 af

**Pond RD2: ROOF DRAIN**

Peak Elev=116.06' Inflow=2.4 cfs 0.22 af  
12.0" Round Culvert n=0.012 L=165.2' S=0.0100 '/' Outflow=2.4 cfs 0.22 af

**Link A: A**

Inflow=12.2 cfs 2.02 af  
Primary=12.2 cfs 2.02 af

**Total Runoff Area = 5.793 ac Runoff Volume = 2.02 af Average Runoff Depth = 4.19"**  
**44.24% Pervious = 2.563 ac 55.76% Impervious = 3.230 ac**

A - 2

NODE LISTING - 50-YR

**25114 - POST****25114 24-hr S1 50-yr Rainfall=7.15"**

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Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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 A1: A1**

Runoff Area=195,459 sf 47.90% Impervious Runoff Depth=4.94"  
Flow Length=1,103' Tc=18.6 min CN=81 Runoff=12.4 cfs 1.85 af

**Subcatchment A2: A2**

Runoff Area=15,000 sf 100.00% Impervious Runoff Depth=6.91"  
Flow Length=120' Tc=1.2 min CN=98 Runoff=2.1 cfs 0.20 af

**Subcatchment A3: A3**

Runoff Area=22,045 sf 55.56% Impervious Runoff Depth=5.62"  
Flow Length=120' Tc=4.0 min CN=87 Runoff=2.6 cfs 0.24 af

**Subcatchment A4: A4**

Runoff Area=19,844 sf 100.00% Impervious Runoff Depth=6.91"  
Flow Length=128' Tc=1.2 min CN=98 Runoff=2.7 cfs 0.26 af

**Pond Bio1: Bio 1 w ISR**

Peak Elev=114.70' Storage=7,378 cf Inflow=7.3 cfs 0.70 af  
Primary=4.9 cfs 0.56 af Secondary=2.2 cfs 0.14 af Outflow=7.1 cfs 0.70 af

**Pond RD1: ROOF DRAIN**

Peak Elev=115.20' Inflow=2.1 cfs 0.20 af  
12.0" Round Culvert n=0.012 L=113.0' S=0.0050 '/' Outflow=2.1 cfs 0.20 af

**Pond RD2: ROOF DRAIN**

Peak Elev=116.17' Inflow=2.7 cfs 0.26 af  
12.0" Round Culvert n=0.012 L=165.2' S=0.0100 '/' Outflow=2.7 cfs 0.26 af

**Link A: A**

Inflow=14.7 cfs 2.55 af  
Primary=14.7 cfs 2.55 af

**Total Runoff Area = 5.793 ac Runoff Volume = 2.55 af Average Runoff Depth = 5.28"**  
**44.24% Pervious = 2.563 ac 55.76% Impervious = 3.230 ac**

# APPENDIX B

## DESIGN

B – 1

STORMWATER BEST MANAGEMENT  
PRACTICES



**Summary for Pond Bio1: Bio 1 w ISR**

Inflow Area = 1.306 ac, 82.78% Impervious, Inflow Depth = 6.41" for 50-yr event  
 Inflow = 7.3 cfs @ 12.00 hrs, Volume= 0.70 af  
 Outflow = 7.1 cfs @ 12.01 hrs, Volume= 0.70 af, Atten= 3%, Lag= 0.6 min  
 Primary = 4.9 cfs @ 12.01 hrs, Volume= 0.56 af  
 Secondary = 2.2 cfs @ 12.01 hrs, Volume= 0.14 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Starting Elev= 111.25' Surf.Area= 2,110 sf Storage= 1,055 cf

Peak Elev= 114.70' @ 12.01 hrs Surf.Area= 4,175 sf Storage= 7,378 cf (6,323 cf above start)

Flood Elev= 115.10' Surf.Area= 5,014 sf Storage= 8,813 cf (7,758 cf above start)

Plug-Flow detention time= 385.6 min calculated for 0.67 af (97% of inflow)

Center-of-Mass det. time= 334.3 min ( 1,095.7 - 761.3 )

| Volume              | Invert               | Avail.Storage    | Storage Description                                        |                           |                           |                     |
|---------------------|----------------------|------------------|------------------------------------------------------------|---------------------------|---------------------------|---------------------|
| #1                  | 110.00'              | 8,813 cf         | <b>Bioretention Area 1 w/ ISR (Irregular)</b> Listed below |                           |                           |                     |
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Perim.<br>(feet) | Voids<br>(%)                                               | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) | Wet.Area<br>(sq-ft) |
| 110.00              | 2,110                | 375.8            | 0.0                                                        | 0                         | 0                         | 2,110               |
| 111.25              | 2,110                | 375.8            | 40.0                                                       | 1,055                     | 1,055                     | 2,580               |
| 111.50              | 2,110                | 375.8            | 30.0                                                       | 158                       | 1,213                     | 2,674               |
| 113.00              | 2,110                | 375.8            | 20.0                                                       | 633                       | 1,846                     | 3,237               |
| 115.00              | 4,532                | 409.7            | 100.0                                                      | 6,490                     | 8,336                     | 5,497               |
| 115.10              | 5,014                | 418.9            | 100.0                                                      | 477                       | 8,813                     | 6,105               |

| Device | Routing   | Invert  | Outlet Devices                                                                                                                                                                                                                                                                    |  |
|--------|-----------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| #1     | Primary   | 111.25' | <b>12.0" Round Culvert</b> L= 40.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 111.25' / 111.00' S= 0.0063 '/' Cc= 0.900<br>n= 0.012, Flow Area= 0.79 sf                                                                                                      |  |
| #2     | Device 1  | 111.25' | <b>1.2" Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads                                                                                                                                                                                                        |  |
| #3     | Device 2  | 110.33' | <b>6.0" Round Culvert</b> L= 12.0' CPP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 110.33' / 110.33' S= 0.0000 '/' Cc= 0.900<br>n= 0.012, Flow Area= 0.20 sf                                                                                                    |  |
| #4     | Device 3  | 110.00' | <b>10.000 in/hr Exfiltration over Surface area</b> Phase-In= 0.01'                                                                                                                                                                                                                |  |
| #5     | Device 3  | 114.20' | <b>12.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads                                                                                                                                                                                                      |  |
| #6     | Device 1  | 114.50' | <b>48.0" x 48.0" Horiz. Orifice/Grate</b> C= 0.600<br>Limited to weir flow at low heads                                                                                                                                                                                           |  |
| #7     | Secondary | 114.50' | <b>10.0' long x 5.0' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00<br>2.50 3.00 3.50 4.00 4.50 5.00 5.50<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65<br>2.67 2.66 2.68 2.70 2.74 2.79 2.88 |  |

## 25114 - POST

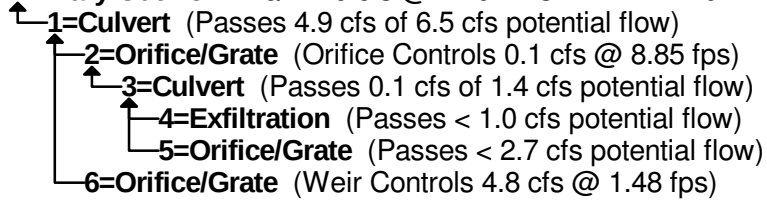
25114 24-hr S1 50-yr Rainfall=7.15"

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**Primary OutFlow** Max=4.9 cfs @ 12.01 hrs HW=114.70' TW=111.33' (Dynamic Tailwater)



**Secondary OutFlow** Max=2.2 cfs @ 12.01 hrs HW=114.70' TW=0.00' (Dynamic Tailwater)





**25114 - POST**

25114 24-hr S1 50-yr Rainfall=7.15"

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**Stage-Area-Storage for Pond Bio1: Bio 1 w ISR (continued)**

| Elevation<br>(feet) | Surface<br>(sq-ft) | Storage<br>(cubic-feet) | Elevation<br>(feet) | Surface<br>(sq-ft) | Storage<br>(cubic-feet) |
|---------------------|--------------------|-------------------------|---------------------|--------------------|-------------------------|
| 113.24              | 2,401              | 2,625                   | 113.78              | 3,055              | 4,377                   |
| 113.25              | 2,413              | 2,657                   | 113.79              | 3,067              | 4,410                   |
| 113.26              | 2,425              | 2,690                   | 113.80              | 3,079              | 4,442                   |
| 113.27              | 2,437              | 2,722                   | 113.81              | 3,091              | 4,475                   |
| 113.28              | 2,449              | 2,755                   | 113.82              | 3,103              | 4,507                   |
| 113.29              | 2,461              | 2,787                   | 113.83              | 3,115              | 4,539                   |
| 113.30              | 2,473              | 2,820                   | 113.84              | 3,127              | 4,572                   |
| 113.31              | 2,485              | 2,852                   | 113.85              | 3,139              | 4,604                   |
| 113.32              | 2,498              | 2,885                   | 113.86              | 3,151              | 4,637                   |
| 113.33              | 2,510              | 2,917                   | 113.87              | 3,164              | 4,669                   |
| 113.34              | 2,522              | 2,949                   | 113.88              | 3,176              | 4,702                   |
| 113.35              | 2,534              | 2,982                   | 113.89              | 3,188              | 4,734                   |
| 113.36              | 2,546              | 3,014                   | 113.90              | 3,200              | 4,767                   |
| 113.37              | 2,558              | 3,047                   | 113.91              | 3,212              | 4,799                   |
| 113.38              | 2,570              | 3,079                   | 113.92              | 3,224              | 4,831                   |
| 113.39              | 2,582              | 3,112                   | 113.93              | 3,236              | 4,864                   |
| 113.40              | 2,594              | 3,144                   | 113.94              | 3,248              | 4,896                   |
| 113.41              | 2,607              | 3,177                   | 113.95              | 3,260              | 4,929                   |
| 113.42              | 2,619              | 3,209                   | 113.96              | 3,273              | 4,961                   |
| 113.43              | 2,631              | 3,242                   | 113.97              | 3,285              | 4,994                   |
| 113.44              | 2,643              | 3,274                   | 113.98              | 3,297              | 5,026                   |
| 113.45              | 2,655              | 3,306                   | 113.99              | 3,309              | 5,059                   |
| 113.46              | 2,667              | 3,339                   | 114.00              | 3,321              | 5,091                   |
| 113.47              | 2,679              | 3,371                   | 114.01              | 3,333              | 5,123                   |
| 113.48              | 2,691              | 3,404                   | 114.02              | 3,345              | 5,156                   |
| 113.49              | 2,703              | 3,436                   | 114.03              | 3,357              | 5,188                   |
| 113.50              | 2,716              | 3,469                   | 114.04              | 3,369              | 5,221                   |
| 113.51              | 2,728              | 3,501                   | 114.05              | 3,382              | 5,253                   |
| 113.52              | 2,740              | 3,534                   | 114.06              | 3,394              | 5,286                   |
| 113.53              | 2,752              | 3,566                   | 114.07              | 3,406              | 5,318                   |
| 113.54              | 2,764              | 3,598                   | 114.08              | 3,418              | 5,351                   |
| 113.55              | 2,776              | 3,631                   | 114.09              | 3,430              | 5,383                   |
| 113.56              | 2,788              | 3,663                   | 114.10              | 3,442              | 5,416                   |
| 113.57              | 2,800              | 3,696                   | 114.11              | 3,454              | 5,448                   |
| 113.58              | 2,812              | 3,728                   | 114.12              | 3,466              | 5,480                   |
| 113.59              | 2,824              | 3,761                   | 114.13              | 3,478              | 5,513                   |
| 113.60              | 2,837              | 3,793                   | 114.14              | 3,491              | 5,545                   |
| 113.61              | 2,849              | 3,826                   | 114.15              | 3,503              | 5,578                   |
| 113.62              | 2,861              | 3,858                   | 114.16              | 3,515              | 5,610                   |
| 113.63              | 2,873              | 3,890                   | 114.17              | 3,527              | 5,643                   |
| 113.64              | 2,885              | 3,923                   | 114.18              | 3,539              | 5,675                   |
| 113.65              | 2,897              | 3,955                   | 114.19              | 3,551              | 5,708                   |
| 113.66              | 2,909              | 3,988                   | 114.20              | 3,563              | 5,740                   |
| 113.67              | 2,921              | 4,020                   | 114.21              | 3,575              | 5,772                   |
| 113.68              | 2,933              | 4,053                   | 114.22              | 3,587              | 5,805                   |
| 113.69              | 2,946              | 4,085                   | 114.23              | 3,600              | 5,837                   |
| 113.70              | 2,958              | 4,118                   | 114.24              | 3,612              | 5,870                   |
| 113.71              | 2,970              | 4,150                   | 114.25              | 3,624              | 5,902                   |
| 113.72              | 2,982              | 4,182                   | 114.26              | 3,636              | 5,935                   |
| 113.73              | 2,994              | 4,215                   | 114.27              | 3,648              | 5,967                   |
| 113.74              | 3,006              | 4,247                   | 114.28              | 3,660              | 6,000                   |
| 113.75              | 3,018              | 4,280                   | 114.29              | 3,672              | 6,032                   |
| 113.76              | 3,030              | 4,312                   | 114.30              | 3,684              | 6,064                   |
| 113.77              | 3,042              | 4,345                   | 114.31              | 3,696              | 6,097                   |

Volume @ lowest orifice-Volume @ pond bottom)

(5,740 cf - 1,846 cf)

Volume below lowest orifice = 3,894 cf

Volume below lowest orifice &gt; WQV

3,894 cf &gt; 3,769 cf

**Stage-Discharge for Pond Bio1: Bio 1 w ISR (continued)**

| Elevation<br>(feet) | Discharge<br>(cfs) | Primary<br>(cfs) | Secondary<br>(cfs) | Elevation<br>(feet) | Discharge<br>(cfs) | Primary<br>(cfs) | Secondary<br>(cfs) |
|---------------------|--------------------|------------------|--------------------|---------------------|--------------------|------------------|--------------------|
| 113.24              | 0.05               | 0.05             | 0.00               | 113.78              | 0.06               | 0.06             | 0.00               |
| 113.25              | 0.05               | 0.05             | 0.00               | 113.79              | 0.06               | 0.06             | 0.00               |
| 113.26              | 0.05               | 0.05             | 0.00               | 113.80              | 0.06               | 0.06             | 0.00               |
| 113.27              | 0.05               | 0.05             | 0.00               | 113.81              | 0.06               | 0.06             | 0.00               |
| 113.28              | 0.05               | 0.05             | 0.00               | 113.82              | 0.06               | 0.06             | 0.00               |
| 113.29              | 0.05               | 0.05             | 0.00               | 113.83              | 0.06               | 0.06             | 0.00               |
| 113.30              | 0.05               | 0.05             | 0.00               | 113.84              | 0.06               | 0.06             | 0.00               |
| 113.31              | 0.05               | 0.05             | 0.00               | 113.85              | 0.06               | 0.06             | 0.00               |
| 113.32              | 0.05               | 0.05             | 0.00               | 113.86              | 0.06               | 0.06             | 0.00               |
| 113.33              | 0.05               | 0.05             | 0.00               | 113.87              | 0.06               | 0.06             | 0.00               |
| 113.34              | 0.05               | 0.05             | 0.00               | 113.88              | 0.06               | 0.06             | 0.00               |
| 113.35              | 0.05               | 0.05             | 0.00               | 113.89              | 0.06               | 0.06             | 0.00               |
| 113.36              | 0.05               | 0.05             | 0.00               | 113.90              | 0.06               | 0.06             | 0.00               |
| 113.37              | 0.05               | 0.05             | 0.00               | 113.91              | 0.06               | 0.06             | 0.00               |
| 113.38              | 0.05               | 0.05             | 0.00               | 113.92              | 0.06               | 0.06             | 0.00               |
| 113.39              | 0.05               | 0.05             | 0.00               | 113.93              | 0.06               | 0.06             | 0.00               |
| 113.40              | 0.05               | 0.05             | 0.00               | 113.94              | 0.06               | 0.06             | 0.00               |
| 113.41              | 0.05               | 0.05             | 0.00               | 113.95              | 0.06               | 0.06             | 0.00               |
| 113.42              | 0.06               | 0.06             | 0.00               | 113.96              | 0.06               | 0.06             | 0.00               |
| 113.43              | 0.06               | 0.06             | 0.00               | 113.97              | 0.06               | 0.06             | 0.00               |
| 113.44              | 0.06               | 0.06             | 0.00               | 113.98              | 0.06               | 0.06             | 0.00               |
| 113.45              | 0.06               | 0.06             | 0.00               | 113.99              | 0.06               | 0.06             | 0.00               |
| 113.46              | 0.06               | 0.06             | 0.00               | 114.00              | 0.06               | 0.06             | 0.00               |
| 113.47              | 0.06               | 0.06             | 0.00               | 114.01              | 0.06               | 0.06             | 0.00               |
| 113.48              | 0.06               | 0.06             | 0.00               | 114.02              | 0.06               | 0.06             | 0.00               |
| 113.49              | 0.06               | 0.06             | 0.00               | 114.03              | 0.06               | 0.06             | 0.00               |
| 113.50              | 0.06               | 0.06             | 0.00               | 114.04              | 0.06               | 0.06             | 0.00               |
| 113.51              | 0.06               | 0.06             | 0.00               | 114.05              | 0.06               | 0.06             | 0.00               |
| 113.52              | 0.06               | 0.06             | 0.00               | 114.06              | 0.06               | 0.06             | 0.00               |
| 113.53              | 0.06               | 0.06             | 0.00               | 114.07              | 0.06               | 0.06             | 0.00               |
| 113.54              | 0.06               | 0.06             | 0.00               | 114.08              | 0.06               | 0.06             | 0.00               |
| 113.55              | 0.06               | 0.06             | 0.00               | 114.09              | 0.06               | 0.06             | 0.00               |
| 113.56              | 0.06               | 0.06             | 0.00               | 114.10              | 0.06               | 0.06             | 0.00               |
| 113.57              | 0.06               | 0.06             | 0.00               | 114.11              | 0.06               | 0.06             | 0.00               |
| 113.58              | 0.06               | 0.06             | 0.00               | 114.12              | 0.06               | 0.06             | 0.00               |
| 113.59              | 0.06               | 0.06             | 0.00               | 114.13              | 0.06               | 0.06             | 0.00               |
| 113.60              | 0.06               | 0.06             | 0.00               | 114.14              | 0.06               | 0.06             | 0.00               |
| 113.61              | 0.06               | 0.06             | 0.00               | 114.15              | 0.06               | 0.06             | 0.00               |
| 113.62              | 0.06               | 0.06             | 0.00               | 114.16              | 0.06               | 0.06             | 0.00               |
| 113.63              | 0.06               | 0.06             | 0.00               | 114.17              | 0.06               | 0.06             | 0.00               |
| 113.64              | 0.06               | 0.06             | 0.00               | 114.18              | 0.06               | 0.06             | 0.00               |
| 113.65              | 0.06               | 0.06             | 0.00               | 114.19              | 0.06               | 0.06             | 0.00               |
| 113.66              | 0.06               | 0.06             | 0.00               | 114.20              | 0.06               | 0.06             | 0.00               |
| 113.67              | 0.06               | 0.06             | 0.00               | 114.21              | 0.06               | 0.06             | 0.00               |
| 113.68              | 0.06               | 0.06             | 0.00               | 114.22              | 0.06               | 0.06             | 0.00               |
| 113.69              | 0.06               | 0.06             | 0.00               | 114.23              | 0.06               | 0.06             | 0.00               |
| 113.70              | 0.06               | 0.06             | 0.00               | 114.24              | 0.06               | 0.06             | 0.00               |
| 113.71              | 0.06               | 0.06             | 0.00               | 114.25              | 0.06               | 0.06             | 0.00               |
| 113.72              | 0.06               | 0.06             | 0.00               | 114.26              | 0.07               | 0.07             | 0.00               |
| 113.73              | 0.06               | 0.06             | 0.00               | 114.27              | 0.07               | 0.07             | 0.00               |
| 113.74              | 0.06               | 0.06             | 0.00               | 114.28              | 0.07               | 0.07             | 0.00               |
| 113.75              | 0.06               | 0.06             | 0.00               | 114.29              | 0.07               | 0.07             | 0.00               |
| 113.76              | 0.06               | 0.06             | 0.00               | 114.30              | 0.07               | 0.07             | 0.00               |
| 113.77              | 0.06               | 0.06             | 0.00               | 114.31              | 0.07               | 0.07             | 0.00               |

B - 2

POLLUTANT REMOVAL

# CIVILWORKS NEW ENGLAND

181 WATSON ROAD  
P.O. BOX 1166  
DOVER, NH 03821-1166  
PHONE: 603.749.0443

**Objective:** Stormwater treatment and mitigation for impervious surfaces has been provided in accordance with Chapter 153-14.A.3.C.

**Narrative:** The subject parcel is 5.34 acres and located at 14 Industrial Park Drive in Dover, NH. The site is currently developed as industrial general with a large 58,156 sf building, associated pavement and walkways, parking, and utility services. The project proposes the construction of a 15,000-sf warehouse building and a 6,200-sf building addition, as well as associated parking areas, grading & drainage improvements, and underground utility services. The existing impervious on-site cover is approximately 102,417-sf (2.351 ac), which is approximately 44% of the entire parcel and qualifies this project as a “redevelopment” project per Chapter 153-14.

The development proposes **0.578** acres of new impervious area including the 15,000-sf proposed building, 6,200-sf proposed building addition, and associated parking areas. The proposed project effectively treats and mitigates stormwater runoff in accordance with City of Dover Code Chapter 153-14.A.3.C.2.

**Pollutant Loads:** Pollutant loads were calculated in accordance with NH Stormwater Manual, Volume 1, December 2008 utilizing the Simple Method.

| Polutant Load Equations                        |                         |                                  |
|------------------------------------------------|-------------------------|----------------------------------|
| Annual Load - Simple Method Equation:          | $L = 0.226 * R * C * A$ |                                  |
|                                                | L                       | Annual Load (lbs/yr)             |
|                                                | 0.226                   | Unit Conversion Constant         |
|                                                | R                       | Annual Runoff (in)               |
|                                                | C                       | Pollutant Concentration (mg/l)   |
|                                                | A                       | Area (ac)                        |
| Annual Runoff (R) Equation:                    | $R = P * P_j * R_v$     |                                  |
|                                                | R                       | Annual Runoff (in)               |
|                                                | P                       | Annual Rainfall (in)             |
|                                                | P <sub>j</sub>          | Rainfall Runoff Fraction (0.9)   |
|                                                | R <sub>v</sub>          | Runoff Coefficient               |
| Runoff Coefficient (R <sub>v</sub> ) Equation: | $R_v = 0.05 + 0.9I_a$   |                                  |
|                                                | R <sub>v</sub>          | Runoff Coefficient               |
|                                                | I <sub>a</sub>          | % Impervious Area (decimal form) |

## CIVILWORKS NEW ENGLAND

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Runoff Coefficient (Rv): Dover requires the treatment of all impervious surfaces therefore the % Impervious Area (Ia) in decimal form is 1.

$$R_v = 0.05 + 0.9(1) = 0.95$$

Annual Runoff (R): U.S. Climate Data (<https://www.usclimatedata.com/climate/madbury/new-hampshire/united-states/usnh0285>) provides an average annual precipitation for Madbury, NH of 47.83 inches.

$$R = 47.83 \text{ in} * 0.9 * 0.95 = 40.89 \text{ in}$$

Annual Load (L): Utilizing the existing and proposed sites impervious areas of 2.351 ac and 0.578 ac of Industrial General and the Event Mean Concentrations identified in Appendix D of the NH Stormwater Manual, Volume 1, December 2008 for Industrial General (149 mg/L TSS, 3.97 mg/L TN, and 0.32 mg/L TP) provides the following pollutant loads for the impervious development of the parcel.

Industrial General-Existing Impervious Areas:

$$L_{TSS} = 0.226 * 40.89 \text{ in} * 149 \text{ mg/L} * 2.351 \text{ ac} = 3,237.40 \text{ lb/yr}$$

$$L_{TN} = 0.226 * 40.89 \text{ in} * 3.97 \text{ mg/L} * 2.351 \text{ ac} = 86.26 \text{ lb/yr}$$

$$L_{TP} = 0.226 * 40.89 \text{ in} * 0.32 \text{ mg/L} * 2.351 \text{ ac} = 6.95 \text{ lb/yr}$$

Industrial General-Proposed Impervious Areas:

$$L_{TSS} = 0.226 * 40.89 \text{ in} * 149 \text{ mg/L} * 0.578 \text{ ac} = 795.18 \text{ lb/yr}$$

$$L_{TN} = 0.226 * 40.89 \text{ in} * 3.97 \text{ mg/L} * 0.578 \text{ ac} = 21.19 \text{ lb/yr}$$

$$L_{TP} = 0.226 * 40.89 \text{ in} * 0.32 \text{ mg/L} * 0.578 \text{ ac} = 1.71 \text{ lb/yr}$$

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**Existing Pollutant Loading:** As a redevelopment project, 30% of existing impervious areas are required to be treated.

| <b>POLLUTANT LOADING-EXISTING IMPERVIOUS AREA-2.351 AC</b> |                                      |                                              |
|------------------------------------------------------------|--------------------------------------|----------------------------------------------|
| <b>Pollutant</b>                                           | <b>Annual Load Existing (lbs/yr)</b> | <b>30 % of Existing Annual Load (lbs/yr)</b> |
| <b>TSS</b>                                                 | <b>3,237.40</b>                      | <b>971.22</b>                                |
| <b>TN</b>                                                  | <b>86.26</b>                         | <b>25.88</b>                                 |
| <b>TP</b>                                                  | <b>6.95</b>                          | <b>2.09</b>                                  |

**Proposed Pollutant Loading:** As a redevelopment project, 50% of proposed impervious areas are required to be treated.

| <b>POLLUTANT LOADING-PROPOSED IMPERVIOUS AREA-0.578AC</b> |                                      |                                              |
|-----------------------------------------------------------|--------------------------------------|----------------------------------------------|
| <b>Pollutant</b>                                          | <b>Annual Load Existing (lbs/yr)</b> | <b>50 % of Proposed Annual Load (lbs/yr)</b> |
| <b>TSS</b>                                                | <b>795.18</b>                        | <b>397.59</b>                                |
| <b>TN</b>                                                 | <b>21.19</b>                         | <b>10.59</b>                                 |
| <b>TP</b>                                                 | <b>1.71</b>                          | <b>0.85</b>                                  |

**Total Effective Pollutant Loading for Treatment:** The table below summarizes the effective annual pollutant load calculated from 30% existing and 50% proposed impervious areas.

| <b>POLLUTANT LOADING</b> |                                             |
|--------------------------|---------------------------------------------|
| <b>Pollutant</b>         | <b>Total Effective Annual Load (lbs/yr)</b> |
| <b>TSS</b>               | <b>1,368.81</b>                             |
| <b>TN</b>                | <b>36.47</b>                                |
| <b>TP</b>                | <b>2.94</b>                                 |

## CIVILWORKS NEW ENGLAND

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**Pollutant Removal Required:** In accordance with City of Dover's Site Plan regulations, at a minimum, the following pollutant removal of 80% TSS, 50% TN, & 50% TP is required. The required pollutant removal rates are applied to the Total Effective Annual Load.

| POLLUTANT REMOVAL REQUIRED |                                      |                    |                                           |
|----------------------------|--------------------------------------|--------------------|-------------------------------------------|
| Pollutant                  | Total Effective Annual Load (lbs/yr) | % Removal Required | Total Effective Removal Required (lbs/yr) |
| TSS                        | 1,368.81                             | 80%                | 1095.05                                   |
| TN                         | 36.47                                | 50%                | 18.24                                     |
| TP                         | 2.94                                 | 50%                | 1.47                                      |

**Pollutant Removal Provided:** The project proposes 0.578 acres of new impervious area. The proposed stormwater mitigation system effectively captures and treats 1.081 acres of impervious surfaces, 0.575 acres of proposed and 0.506 acres of existing. BMP Pollutant Removal Efficiency Rates were determined utilizing the BMP Performance Curve for Enhanced Bio-Filtration w/ISR published in NH MS4 General Permit Appendix F Attachment 3.

### Bio-Retention w/ISR:

The Bio-Retention w/ISR captures and treats 1.081 ac of existing and proposed impervious areas.

Industrial General-Contributing Impervious Areas to BIO W/ISR:

$$L_{TSS} = 0.226 * 40.89 \text{ in} * 149 \text{ mg/L} * 1.081 \text{ ac} = 1,488.46 \text{ lb/yr}$$

$$L_{TN} = 0.226 * 40.89 \text{ in} * 3.97 \text{ mg/L} * 1.081 \text{ ac} = 39.66 \text{ lb/yr}$$

$$L_{TP} = 0.226 * 40.89 \text{ in} * 0.32 \text{ mg/L} * 1.081 \text{ ac} = 3.20 \text{ lb/yr}$$

| POLLUTANT REMOVAL PROVIDED BY BIO W/ISR |                                                |                                                   |                          |                           |
|-----------------------------------------|------------------------------------------------|---------------------------------------------------|--------------------------|---------------------------|
| Pollutant                               | Contributing Impervious Area to BIO W/ISR (ac) | Contributing Pollutant Load to BIO W/ISR (lbs/yr) | Effective Removal Rate % | Removal Provided (lbs/yr) |
| TSS                                     | 1.081                                          | 1,488.46                                          | 90%                      | 1339.62                   |
| TN                                      | 1.081                                          | 39.66                                             | 75%                      | 29.74                     |
| TP                                      | 1.081                                          | 3.20                                              | 76%                      | 2.43                      |

## **CIVILWORKS NEW ENGLAND**

181 WATSON ROAD  
P.O. BOX 1166  
DOVER, NH 03821-1166  
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| <b>POLLUTANT REMOVAL PROVIDED</b> |                                                   |                                                          |                                            |
|-----------------------------------|---------------------------------------------------|----------------------------------------------------------|--------------------------------------------|
| <b>Pollutant</b>                  | <b>Removal Provided by<br/>BIO W/ISR (lbs/yr)</b> | <b>Total Effective<br/>Removal Required<br/>(lbs/yr)</b> | <b>Effective Removal<br/>Rate (lbs/yr)</b> |
| <b>TSS</b>                        | <b>1339.62</b>                                    | <b>1,095.05</b>                                          | <b>122%</b>                                |
| <b>TN</b>                         | <b>29.74</b>                                      | <b>18.24</b>                                             | <b>163%</b>                                |
| <b>TP</b>                         | <b>2.43</b>                                       | <b>1.47</b>                                              | <b>165%</b>                                |

**Conclusion:** The proposed stormwater mitigation measures implemented on site exceed the minimum pollutant removal requirements for TSS, TN, and TP required by the City's regulations for redevelopment projects.



| Typical Pollutant EMCs Found in Stormwater Runoff by Source Area*                                                                                                                                                                                                                                                                                                |                  |                   |                         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------------|-------------------------|
| Source Area Unit                                                                                                                                                                                                                                                                                                                                                 | TSS<br>mg/L      | TP<br>mg/L        | TN<br>mg/L <sup>3</sup> |
| RESIDENTIAL (general) <sup>4</sup>                                                                                                                                                                                                                                                                                                                               | 100              | 0.40              | 2.2                     |
| Med. Density Residential <sup>5</sup>                                                                                                                                                                                                                                                                                                                            | 85               | 0.52              | 5.15                    |
| Residential roof                                                                                                                                                                                                                                                                                                                                                 | 19 <sup>1</sup>  | 0.11 <sup>2</sup> | 1.5                     |
| Residential street                                                                                                                                                                                                                                                                                                                                               | 172 <sup>1</sup> | 0.55 <sup>2</sup> | 1.4                     |
| Driveway                                                                                                                                                                                                                                                                                                                                                         | 173 <sup>1</sup> | 0.56 <sup>2</sup> | 2.1                     |
| COMMERCIAL (general) <sup>5</sup>                                                                                                                                                                                                                                                                                                                                | 77               | 0.33              | 2.97                    |
| Commercial roof                                                                                                                                                                                                                                                                                                                                                  | 9 <sup>1</sup>   | 0.14 <sup>2</sup> | 2.1                     |
| Commercial street                                                                                                                                                                                                                                                                                                                                                | 468 <sup>1</sup> |                   |                         |
| Commercial/<br>Residential parking                                                                                                                                                                                                                                                                                                                               | 27 <sup>1</sup>  | 0.15 <sup>2</sup> | 1.9                     |
| INDUSTRIAL (general) <sup>5</sup>                                                                                                                                                                                                                                                                                                                                | 149              | 0.32              | 3.97                    |
| Industrial roof                                                                                                                                                                                                                                                                                                                                                  | 17 <sup>1</sup>  |                   |                         |
| Industrial parking                                                                                                                                                                                                                                                                                                                                               | 228 <sup>1</sup> |                   |                         |
| Heavy industrial                                                                                                                                                                                                                                                                                                                                                 | 124 <sup>1</sup> |                   |                         |
| HIGHWAY (general) <sup>5</sup>                                                                                                                                                                                                                                                                                                                                   | 141              | 0.43              | 2.65                    |
| Urban highway                                                                                                                                                                                                                                                                                                                                                    | 142 <sup>1</sup> | 0.32 <sup>2</sup> | 3                       |
| Rural highway                                                                                                                                                                                                                                                                                                                                                    | 51 <sup>1</sup>  |                   | 22                      |
| Lawns                                                                                                                                                                                                                                                                                                                                                            | 80 <sup>1</sup>  | 2.1 <sup>2</sup>  | 9.1                     |
| Landscaping                                                                                                                                                                                                                                                                                                                                                      | 37 <sup>1</sup>  |                   |                         |
| Urban open <sup>5</sup>                                                                                                                                                                                                                                                                                                                                          | 51               | 0.11              | 1.74                    |
| Rural open/forest <sup>5</sup>                                                                                                                                                                                                                                                                                                                                   | 51               | 0.11              | 1.78                    |
| Ag/pasture <sup>5</sup>                                                                                                                                                                                                                                                                                                                                          | 145              | 0.37              | 5.98                    |
| Water/wetland <sup>5</sup>                                                                                                                                                                                                                                                                                                                                       | 6                | 0.08              | 1.38                    |
| Sources: 1: Claytor and Schueler (1996)<br>2: Average of Steuer et al. (1997), Bannerman (1993) and Waschbusch (2000)<br>3: Steuer et al. (1997)<br>4: Caraco (2001), default values averaged from several individual assessments<br>5: Camp, Dresser, and McKee, <i>Merrimack River Watershed Assessment Study, Draft Screening Level Model</i> , January 2004. |                  |                   |                         |

\*To address the concerns associated with the application of chlorides and other deicing materials, NHDES requests the development of a Road Salt and Deicing Minimization Plan when a development will create one acre or more of pavement, including parking lots and roadways. The plan should address the policies that the development will keep in place to minimize salt and other deicer use after the project has been completed. The plan should include tracking the use of salt and other deicers for each storm event and compiling salt use data annually.

New Hampshire does not yet have salt reduction guidance, but recommends following the guidelines available in the Minnesota Snow and Ice Control handbook, available at: <http://www.mnltap.umn.edu/pdf/snowicecontrolhandbook.pdf>. Deicing application rate guidelines and a form for tracking salt and other deicer usage are included in Appendix C.

**Table 5-2. SCM Treatment Unit Operations and Processes (UOPs)<sup>1</sup>**

| UOPs                                           | Primary Pollutant Targeted              | Example SCM                                        |
|------------------------------------------------|-----------------------------------------|----------------------------------------------------|
| <b>Hydrologic</b>                              |                                         |                                                    |
| Evaporation and Transpiration                  | Runoff volume                           | Planted basins                                     |
| Infiltration and Runoff Reduction              | Runoff volume and associated pollutants | Infiltration systems                               |
| Attenuation                                    | Peak flow                               | Extended detention basins                          |
| <b>Physical</b>                                |                                         |                                                    |
| Flotation                                      | Oil/ grease, litter, vegetation         | Catch basins with hoods                            |
| Screening                                      | Gross pollutants, vegetation            | Catch basin grates                                 |
| Filtration                                     | Suspended solids, bacteria              | Bioretention system (filtering)                    |
| Sedimentation                                  | Suspended solids                        | Wet pond                                           |
| Enhanced Sedimentation and Swirl Concentration | Heavy solids                            | Hydrodynamic separator (flow-through device)       |
| <b>Biological</b>                              |                                         |                                                    |
| Plant Metabolism                               | Dissolved nutrients                     | Bioretention systems                               |
| Nitrification/ Denitrification                 | Nitrogen                                | Bioretention with internal storage reservoir (ISR) |
| <b>Chemical</b>                                |                                         |                                                    |
| Adsorption                                     | Dissolved nutrients                     | Bioretention with ISR                              |
| Precipitation                                  | Dissolved inorganic pollutants          | Alum addition to filter media                      |
| Coagulation                                    | Colloidal solids                        | Chemical treatment                                 |
| Ion Exchange                                   | Heavy metals and phosphorus             | Chemical treatment                                 |
| <b>Other</b>                                   |                                         |                                                    |
| Thermal/ Temperature Control                   | Temperature                             | Gravel wetland                                     |

<sup>1</sup>Source: [SNEP 2022 New England Stormwater Retrofit Manual](#) as adapted from the [Minnesota Stormwater Manual](#)

### 5.3.3 Pollutant Removal Capabilities

Stormwater Control Measure pollutant removal capabilities are dependent on many variables including proper selection, sizing, installation, proper placement on a site, and proper maintenance. To meet water quality goals, it is often recommended that SCMs are designed to treat the water quality volume (WQV) of stormwater runoff associated with the first 1-inch of rainfall. Treatment of the WQV is not pollutant specific and is a “catchall” for minimizing pollutant discharges of all types. For site specific water quality goals, designers must focus on the pollutant removal capabilities of certain SCMs relative to their tiers and functional UOPs. This applies to sites with requirements related to water quality limitations as defined in the 2017 New Hampshire Small Municipal Separate Storm Sewer (MS4) Permit and coastal communities regulated by the [Great Bay Total Nitrogen General Permit \(GBTNGP\)](#).

**Table 5-3** below lists SCMs that are generally effective at providing significant reductions of target pollutants (i.e., TN, TP, TSS, metals) within a reasonably sized footprint. Actual pollutant removal efficiencies may be calculated for SCMs with an applicable EPA Performance Removal Curve based on guidance provided in **Chapter 4.2** to confirm goals are being met.

**Table 5-3. General Suitability of SCMs to Treat Common Stormwater Pollutants<sup>1,6</sup>**

|                                            | Applicable EPA Performance Curve <sup>2</sup> | Pollutant of Concern |     |     |                     |                       |
|--------------------------------------------|-----------------------------------------------|----------------------|-----|-----|---------------------|-----------------------|
|                                            |                                               | TN                   | TP  | TSS | Metals <sup>3</sup> | Bacteria <sup>4</sup> |
| Nonstructural Source Controls <sup>5</sup> |                                               |                      |     |     |                     |                       |
| Catch Basin Cleaning                       | --                                            | No                   | No  | No  | No                  | No                    |
| Leaf Litter Pickup                         | --                                            | No                   | No  | No  | No                  | No                    |
| Snow and Ice Management                    | --                                            | No                   | No  | No  | No                  | No                    |
| Street Sweeping                            | --                                            | No                   | No  | No  | No                  | No                    |
| Structural Treatment                       |                                               |                      |     |     |                     |                       |
| Bioretention System (Infiltrating)         | Infiltration Basin                            | Yes                  | Yes | Yes | Yes                 | Yes                   |
| “Hybrid” Bioretention System               | Infiltration Basin                            | Yes                  | Yes | Yes | Yes                 | Yes                   |
| Infiltration Basin                         | Infiltration Basin                            | Yes                  | Yes | Yes | Yes                 | Yes                   |
| Infiltration Trench                        | Infiltration Trench                           | Yes                  | Yes | Yes | Yes                 | Yes                   |
| Permeable Pavement (Infiltrating)          | Infiltration Trench                           | Yes                  | Yes | Yes | Yes                 | Yes                   |
| Subsurface Infiltration Chamber            | Infiltration Trench                           | Yes                  | Yes | Yes | Yes                 | Yes                   |
| Bioretention System (Filtering)            | Biofiltration                                 | No                   | Yes | Yes | Yes                 | Yes                   |
| Bioretention with ISR (Filtering)          | Biofiltration with ISR                        | Yes                  | Yes | Yes | Yes                 | Yes                   |
| Permeable Pavement (Filtering)             | Porous Pavement                               | Yes                  | Yes | Yes | Yes                 | Yes                   |
| Dry Well                                   | Infiltration Trench                           | Yes                  | Yes | Yes | Yes                 | Yes                   |
| Gravel Wetland                             | Gravel Wetland                                | Yes                  | Yes | Yes | Yes                 | Yes                   |
| Impervious Area Disconnection              | IA Disconnection                              | Yes                  | Yes | Yes | Yes                 | Yes                   |
| Leaching Catch Basin                       | Infiltration Trench                           | Yes                  | Yes | Yes | Yes                 | Yes                   |
| Roof Drip Edge (Infiltrating)              | Infiltration Trench                           | Yes                  | Yes | Yes | Yes                 | Yes                   |
| Roof Drip Edge (Filtering)                 | Biofiltration                                 | No                   | Yes | Yes | Yes                 | Yes                   |
| Stormwater Wetland                         | Gravel Wetland                                | Yes                  | Yes | Yes | Yes                 | Yes                   |
| Tree Box Filter (Infiltrating)             | Infiltration Trench                           | Yes                  | Yes | Yes | Yes                 | Yes                   |
| Tree Box Filter (Filtering)                | Biofiltration                                 | No                   | Yes | Yes | Yes                 | Yes                   |
| Extended Dry Detention Pond                | Dry Pond                                      | No                   | No  | No  | Yes                 | Yes                   |
| Flow-Through Treatment Swale               | Grass Swale                                   | No                   | No  | Yes | No                  | No                    |
| Green Roof                                 | N/A - reduces EIC                             | No                   | No  | No  | No                  | No                    |
| Rain Barrel/ Cistern (with reuse)          | IA Disconnection (Storage)                    | No                   | No  | No  | No                  | No                    |
| Sand Filter                                | Sand Filter                                   | No                   | Yes | Yes | Yes                 | Yes                   |
| Wet Pond                                   | Wet Pond                                      | No                   | Yes | Yes | Yes                 | No                    |

**Notes:**

<sup>1</sup> Table Key:

Yes = Likely to provide significant reduction of target pollutant.

No = Unlikely to provide significant reduction of target pollutant.

<sup>2</sup> Refer to **Chapter 4.2** for discussion of the EPA Performance Curves. The most current EPA PRCs can be found on the UNHSC webpage (<https://extension.unh.edu/stormwater-center/ms4-resources>) in graphical and tabular format.

<sup>3</sup> Metals include zinc, cadmium, lead, aluminum, and iron.

<sup>4</sup> Bacteria includes fecal coliform, *E. coli*, and enterococcus.

<sup>5</sup> Nonstructural Source Controls provide source control. While there are no applicable EPA Performance Curves, some controls have MS4 pollutant removal credit methods. See **Appendix A** for more information on Nonstructural Source Controls.

<sup>6</sup> SCMs were determined to provide a “significant” reduction in target pollutants as follows for this screening level table:

- **TSS (≥ 90%), TP (≥ 60%), TN (≥ 50%), Metals (≥ 80%):** The EPA Performance Removal Curves were used with a target runoff depth (RD) from impervious area of approximately 1-inch. Infiltrating SCMs assumed an infiltration rate of 0.17 inches per hour. Zinc was used as an indicator of metals removal.
- **Bacteria:** The EPA Performance Removal Curves do not currently provide data on bacteria removal. Summary statistics from the International BMP Database were used to determine if the SCM provided a statistically significant decrease in bacteria.

### 5.3.4 Land Use Criteria

Most SCMs can be adapted for a particular land use provided that the physical feasibility factors discussed in **Chapter 5.3.5** can be met. However, there are some land uses, specifically high-load areas and water supply areas where the use of certain SCMs (i.e., infiltrating practices, filtering practices, unlined SCMs, etc.) is restricted to avoid potential contamination of water resources. These uses are described below, followed by a summary table of restrictions for SCM implementation in these areas (**Table 5-4**).

#### High-Load Areas

High-load areas are defined as:

- Any land use or activity in which regulated substances are exposed to rainfall or stormwater runoff, with the exception of road salt applied for deicing of pavement on the site.
- Any land use or activity that typically generates higher concentrations of hydrocarbons, metals or suspended solids than are found in typical stormwater runoff, including but not limited to:
  - Industrial facilities subject to the NPDES Multi-Sector General Permit, not including areas where industrial activities do not occur, such as at office buildings and their associated parking facilities or in drainage areas at the facility where a certification of no exposure pursuant to 40 CFR §122.26(g) will always be possible.
  - Petroleum storage facilities.
  - Petroleum dispensing facilities.
  - Vehicle fueling facilities.
  - Vehicle service, maintenance, and equipment cleaning facilities.
  - Fleet storage areas.
  - Public works storage areas.
  - Road salt facilities.
  - Commercial nurseries.
  - Non-residential facilities with uncoated metal roofs with a slope less than 20 percent.

Table 3- 20: Enhanced Bio-filtration\* with Internal Storage Reservoir (ISR) BMP Performance Table

Enhanced Bio-filtration\* w/ ISR BMP Performance Table: Long-Term Phosphorus & Nitrogen Load Reduction

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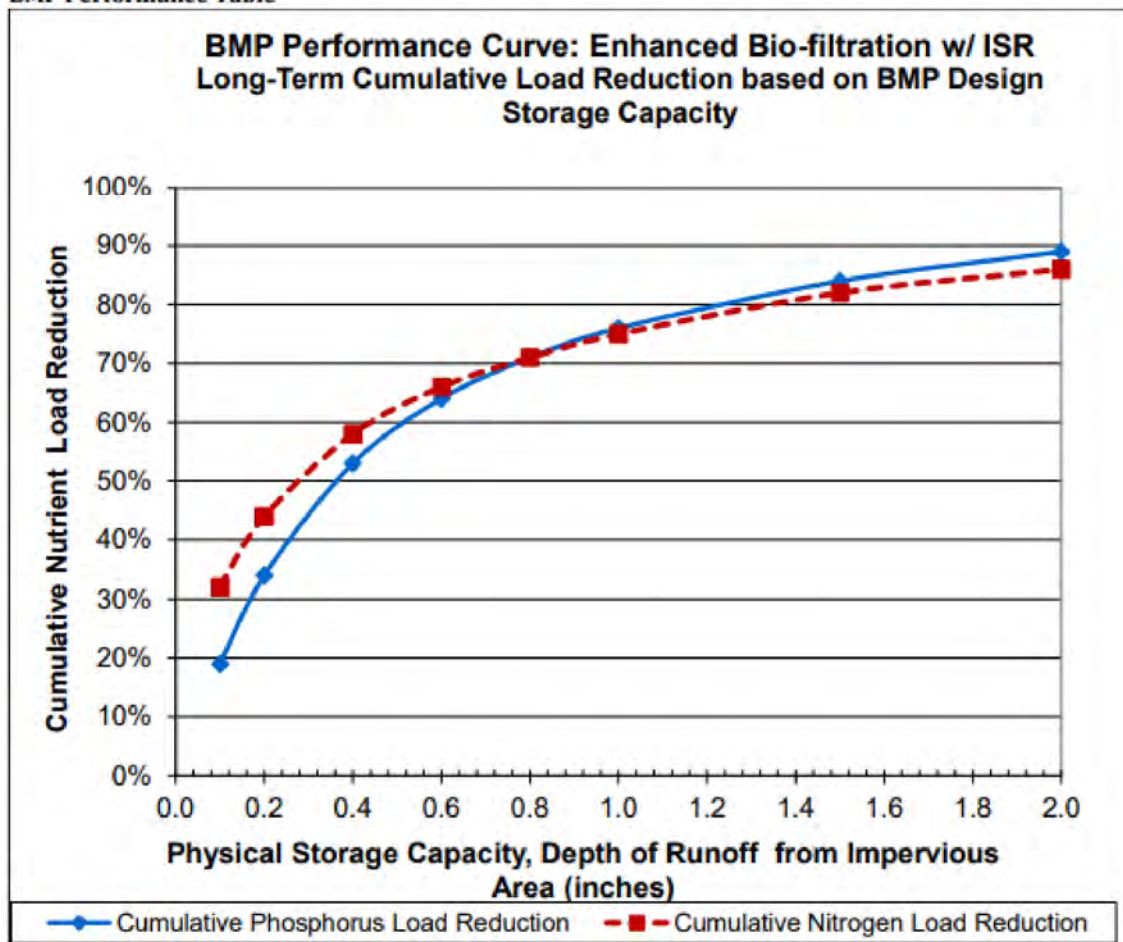
NH MS4 General Permit

Appendix F Attachment 3

| BMP Capacity: Depth of Runoff from Impervious Area (inches) | 0.1 | 0.2 | 0.4 | 0.6 | 0.8 | 1.0 | 1.5 | 2.0 |
|-------------------------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| Cumulative Phosphorus Load Reduction                        | 19% | 34% | 53% | 64% | 71% | 76% | 84% | 89% |
| Cumulative Nitrogen Load Reduction                          | 32% | 44% | 58% | 66% | 71% | 75% | 82% | 86% |

\*Filter media augmented with phosphorus sorbing materials to enhance phosphorus removal.

Figure 3-15: BMP Performance Curve: Enhanced Bio-filtration with Internal Storage Reservoir (ISR) BMP Performance Table



B - 3

OUTLET PROTECTION

**OUTLET PROTECTION DESIGN CALCS**  
**NON DEFINED CHANNEL**

Job #: 25114  
 Date: 9/29/2025  
 Structure: Outlet from  
 Bio1

**Variables:**

Q= Discharge from the pipe (cfs)  
 $D_0$ = Diameter of the pipe (ft)  
 Tw= Tailwater depth above the invert of the pipe (ft)  
 La= Apron length  
 $w_1$ = Apron width at pipe outlet  
 $w_2$ = Apron width at downstream end of apron

**Input:** Outlet elev: 111  
 Tailwater elev: 111.31  
 Tw: 0.31  
 Q: 4.3  
 $D_0$ : 1

Apron Dimensions

|         |    |      |
|---------|----|------|
| $w_1$ = | 3  | (ft) |
| $w_2$ = | 18 | (ft) |
| La=     | 15 | (ft) |

Apron Length:

$\frac{Tw > .5D_0}{La: 19.900}$        $\frac{Tw < .5D_0}{La: 14.740}$

Apron Width:

$\frac{Tw > .5D_0}{w_2: 10.96}$        $\frac{Tw < .5D_0}{w_2: 17.74}$

$w_1$ : 3

$w_1$ = 3.00  
 $w_2$ = 17.74  
 La= 14.74

RipRap Sizing

|            |      |      |
|------------|------|------|
| $d_{50}$ = | 0.45 | (ft) |
| $d_{50}$ = | 5.41 | (in) |

RipRap Gradation

|      | Stone Size |      | % of Weight Smaller Than the Given Size |
|------|------------|------|-----------------------------------------|
| 0.68 | TO         | 0.90 | 100                                     |
| 0.59 | TO         | 0.81 | 85                                      |
| 0.45 | TO         | 0.68 | 50                                      |
| 0.14 | TO         | 0.23 | 15                                      |

Minimum Depth of Rock= 1.35 (ft)



**Summary for Pond Bio1: Bio 1 w ISR**

Inflow Area = 1.306 ac, 82.78% Impervious, Inflow Depth = 5.27" for 25-yr event  
 Inflow = 6.4 cfs @ 12.00 hrs, Volume= 0.57 af  
 Outflow = 6.2 cfs @ 12.01 hrs, Volume= 0.57 af, Atten= 4%, Lag= 0.6 min  
 Primary = 4.3 cfs @ 12.01 hrs, Volume= 0.47 af  
 Secondary = 1.9 cfs @ 12.01 hrs, Volume= 0.10 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Starting Elev= 111.25' Surf.Area= 2,110 sf Storage= 1,055 cf

Peak Elev= 114.69' @ 12.01 hrs Surf.Area= 4,153 sf Storage= 7,320 cf (6,265 cf above start)

Flood Elev= 115.10' Surf.Area= 5,014 sf Storage= 8,813 cf (7,758 cf above start)

Plug-Flow detention time= 455.7 min calculated for 0.55 af (96% of inflow)

Center-of-Mass det. time= 392.2 min ( 1,157.5 - 765.3 )

| Volume              | Invert               | Avail.Storage    | Storage Description                                 |                           |                           |                     |
|---------------------|----------------------|------------------|-----------------------------------------------------|---------------------------|---------------------------|---------------------|
| #1                  | 110.00'              | 8,813 cf         | Bioretention Area 1 w/ ISR (Irregular) Listed below |                           |                           |                     |
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Perim.<br>(feet) | Voids<br>(%)                                        | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet) | Wet.Area<br>(sq-ft) |
| 110.00              | 2,110                | 375.8            | 0.0                                                 | 0                         | 0                         | 2,110               |
| 111.25              | 2,110                | 375.8            | 40.0                                                | 1,055                     | 1,055                     | 2,580               |
| 111.50              | 2,110                | 375.8            | 30.0                                                | 158                       | 1,213                     | 2,674               |
| 113.00              | 2,110                | 375.8            | 20.0                                                | 633                       | 1,846                     | 3,237               |
| 115.00              | 4,532                | 409.7            | 100.0                                               | 6,490                     | 8,336                     | 5,497               |
| 115.10              | 5,014                | 418.9            | 100.0                                               | 477                       | 8,813                     | 6,105               |

| Device | Routing   | Invert  | Outlet Devices                                                                                                                                                                                                 |                                                                                                                                                      |  |  |
|--------|-----------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| #1     | Primary   | 111.25' | 12.0" Round Culvert                                                                                                                                                                                            | L= 40.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 111.25' / 111.00' S= 0.0063 '/' Cc= 0.900<br>n= 0.012, Flow Area= 0.79 sf    |  |  |
| #2     | Device 1  | 111.25' | 1.2" Vert. Orifice/Grate                                                                                                                                                                                       | C= 0.600 Limited to weir flow at low heads                                                                                                           |  |  |
| #3     | Device 2  | 110.33' | 6.0" Round Culvert                                                                                                                                                                                             | L= 12.0' CPP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 110.33' / 110.33' S= 0.0000 '/' Cc= 0.900<br>n= 0.012, Flow Area= 0.20 sf |  |  |
| #4     | Device 3  | 110.00' | 10.000 in/hr Exfiltration over Surface area Phase-In= 0.01'                                                                                                                                                    |                                                                                                                                                      |  |  |
| #5     | Device 3  | 114.20' | 12.0" Horiz. Orifice/Grate                                                                                                                                                                                     | C= 0.600 Limited to weir flow at low heads                                                                                                           |  |  |
| #6     | Device 1  | 114.50' | 48.0" x 48.0" Horiz. Orifice/Grate                                                                                                                                                                             | C= 0.600<br>Limited to weir flow at low heads                                                                                                        |  |  |
| #7     | Secondary | 114.50' | 10.0' long x 5.0' breadth Broad-Crested Rectangular Weir                                                                                                                                                       |                                                                                                                                                      |  |  |
|        |           |         | Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00<br>2.50 3.00 3.50 4.00 4.50 5.00 5.50<br>Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65<br>2.67 2.66 2.68 2.70 2.74 2.79 2.88 |                                                                                                                                                      |  |  |



**Primary OutFlow** Max=4.3 cfs @ 12.01 hrs HW=114.69' TW=111.31' (Dynamic Tailwater)

- ↑ 1=Culvert (Passes 4.3 cfs of 6.4 cfs potential flow)
  - ↑ 2=Orifice/Grate (Orifice Controls 0.1 cfs @ 8.85 fps)
    - ↑ 3=Culvert (Passes 0.1 cfs of 1.4 cfs potential flow)
      - ↑ 4=Exfiltration (Passes < 1.0 cfs potential flow)
        - ↑ 5=Orifice/Grate (Passes < 2.6 cfs potential flow)
          - ↑ 6=Orifice/Grate (Weir Controls 4.2 cfs @ 1.41 fps)

**Secondary OutFlow** Max=1.9 cfs @ 12.01 hrs HW=114.69' TW=0.00' (Dynamic Tailwater)

- ↑ 7=Broad-Crested Rectangular Weir (Weir Controls 1.9 cfs @ 1.01 fps)

**OUTLET PROTECTION DESIGN CALCS**  
**NON DEFINED CHANNEL**

Job #: 25114  
Date: 9/29/2025  
Structure: Outlet from  
RD1

**Variables:**

Q= Discharge from the pipe (cfs)  
D<sub>0</sub>= Diameter of the pipe (ft)  
Tw= Tailwater depth above the invert of the pipe (ft)  
La= Apron length  
w<sub>1</sub>= Apron width at pipe outlet  
w<sub>2</sub>= Apron width at downstream end of apron

**Input:**    Outlet elev: 113.5  
              Tailwater elev: 114.68  
              Tw: 1.18  
              Q: 1.8  
              D<sub>0</sub>: 1

Apron Dimensions

|                  |    |      |
|------------------|----|------|
| w <sub>1</sub> = | 3  | (ft) |
| w <sub>2</sub> = | 8  | (ft) |
| La=              | 13 | (ft) |

Apron Length:

$\frac{Tw > .5D_0}{La: 12.400}$                        $\frac{Tw < .5D_0}{La: 10.240}$

Apron Width:

$\frac{Tw > .5D_0}{w_2: 7.96}$                        $\frac{Tw < .5D_0}{w_2: 13.24}$

w<sub>1</sub>: 3

w<sub>1</sub>= 3.00  
w<sub>2</sub>= 7.96  
La= 12.4

RipRap Sizing

|                   |      |      |
|-------------------|------|------|
| d <sub>50</sub> = | 0.04 | (ft) |
| d <sub>50</sub> = | 0.45 | (in) |

RipRap Gradation

|      | <u>Stone Size</u> |      | <u>% of Weight Smaller Than the Given Size</u> |
|------|-------------------|------|------------------------------------------------|
| 0.06 | TO                | 0.07 | 100                                            |
| 0.05 | TO                | 0.07 | 85                                             |
| 0.04 | TO                | 0.06 | 50                                             |
| 0.01 | TO                | 0.02 | 15                                             |

Minimum Depth of Rock= 0.11 (ft)

**Summary for Pond RD1: ROOF DRAIN**

Inflow Area = 0.344 ac, 100.00% Impervious, Inflow Depth = 5.75" for 25-yr event  
 Inflow = 1.8 cfs @ 11.99 hrs, Volume= 0.17 af  
 Outflow = 1.8 cfs @ 11.99 hrs, Volume= 0.17 af, Atten= 0%, Lag= 0.0 min  
 Primary = 1.8 cfs @ 11.99 hrs, Volume= 0.17 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 115.12' @ 12.00 hrs

Flood Elev= 116.00'

| Device | Routing | Invert  | Outlet Devices                                                                                                                                                                                                         |
|--------|---------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 114.06' | <b>12.0" Round Culvert</b><br>L= 113.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 114.06' / <b>113.50'</b> S= 0.0050 ' ' Cc= 0.900<br>n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf |

**Primary OutFlow** Max=1.8 cfs @ 11.99 hrs HW=115.12' **TW=114.68'** (Dynamic Tailwater)  
 ↑ **1=Culvert** (Outlet Controls 1.8 cfs @ 2.71 fps)

**OUTLET PROTECTION DESIGN CALCS**  
**NON DEFINED CHANNEL**

Job #: 25114  
Date: 9/29/2025  
Structure: Outlet from  
RD2

**Variables:**

Q= Discharge from the pipe (cfs)  
D<sub>0</sub>= Diameter of the pipe (ft)  
Tw= Tailwater depth above the invert of the pipe (ft)  
La= Apron length  
w<sub>1</sub>= Apron width at pipe outlet  
w<sub>2</sub>= Apron width at downstream end of apron

**Input:**    Outlet elev: 113.5  
              Tailwater elev: 114.68  
              Tw: 1.18  
              Q: 2.4  
              D<sub>0</sub>: 1

*Apron Dimensions*

|                  |    |      |
|------------------|----|------|
| w <sub>1</sub> = | 3  | (ft) |
| w <sub>2</sub> = | 9  | (ft) |
| La=              | 15 | (ft) |

Apron Length:

|                                 |                                 |
|---------------------------------|---------------------------------|
| $\frac{Tw > .5D_0}{La: 14.200}$ | $\frac{Tw < .5D_0}{La: 11.320}$ |
|---------------------------------|---------------------------------|

Apron Width:

|                                |                                 |
|--------------------------------|---------------------------------|
| $\frac{Tw > .5D_0}{w_2: 8.68}$ | $\frac{Tw < .5D_0}{w_2: 14.32}$ |
|--------------------------------|---------------------------------|

w<sub>1</sub>: 3

|                  |      |
|------------------|------|
| w <sub>1</sub> = | 3.00 |
| w <sub>2</sub> = | 8.68 |
| La=              | 14.2 |

*RipRap Sizing*

|                   |      |      |
|-------------------|------|------|
| d <sub>50</sub> = | 0.05 | (ft) |
| d <sub>50</sub> = | 0.65 | (in) |

*RipRap Gradation*

|      | <u>Stone Size</u> |      | <u>% of Weight Smaller Than the Given Size</u> |
|------|-------------------|------|------------------------------------------------|
| 0.08 | TO                | 0.11 | 100                                            |
| 0.07 | TO                | 0.10 | 85                                             |
| 0.05 | TO                | 0.08 | 50                                             |
| 0.02 | TO                | 0.03 | 15                                             |

Minimum Depth of Rock= 0.16 (ft)

**Summary for Pond RD2: ROOF DRAIN**

Inflow Area = 0.456 ac, 100.00% Impervious, Inflow Depth = 5.75" for 25-yr event  
 Inflow = 2.4 cfs @ 11.99 hrs, Volume= 0.22 af  
 Outflow = 2.4 cfs @ 11.99 hrs, Volume= 0.22 af, Atten= 0%, Lag= 0.0 min  
 Primary = 2.4 cfs @ 11.99 hrs, Volume= 0.22 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 116.06' @ 12.00 hrs

Flood Elev= 118.00'

| Device | Routing | Invert  | Outlet Devices                                                                                                                                                                                                         |
|--------|---------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #1     | Primary | 115.15' | <b>12.0" Round Culvert</b><br>L= 165.2' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 115.15' / <b>113.50'</b> S= 0.0100 ' ' Cc= 0.900<br>n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf |

**Primary OutFlow** Max=2.4 cfs @ 11.99 hrs HW=116.06' **TW=114.68'** (Dynamic Tailwater)  
 ↑ **1=Culvert** (Outlet Controls 2.4 cfs @ 4.20 fps)

## APPENDIX C

### INSPECTION AND MAINTENANCE

C – 1

STORMWATER MANAGEMENT SYSTEM  
INSPECTION & MAINTENANCE PLAN

# **Stormwater Management System Inspection & Maintenance Plan**

Prepared for:

**SUMMIT LAND DEVELOPMENT  
340 Central Ave Suite 202  
Dover, NH**

**14 Industrial Park Road  
Dover, New Hampshire  
Tax Map G, Lot 4  
Strafford County**

**October 2025**

Owner of Record:

**16 INDUSTRIAL PARK, LLC**  
340 Central Ave Suite 202  
Dover, New Hampshire 03820

Prepared By:

**CIVILWORKS NEW ENGLAND**  
P.O. Box 1166  
181 Watson Road  
Dover, New Hampshire 03821





## **Introduction**

Civilworks New England, has prepared the following Stormwater Management System Inspection & Maintenance Plan for **the proposed project located at 14 Industrial Park Drive, Dover, NH 03820**. The intent of this plan is to provide a list of procedures that document the inspection and maintenance requirements of the Stormwater Management System for this site.

**The inspection and maintenance requirements outlined in this document are required to be performed in perpetuity. In the event the property is sold, future owners will be responsible for implementing the responsibilities outlined in this document.**

The inspection and maintenance program is necessary in order to keep the Stormwater Management System functioning properly. These measures will also help to minimize potential environmental impacts to the areas surrounding the developed site. By following the enclosed procedures, the property owners, and maintenance personnel will be able to maintain the functional design of the Stormwater Management System and maximize its ability to remove sediment and other contaminants from site generated stormwater runoff.

This plan also requires the Owner/Operator to prepare and implement a salt minimization plan to reduce salt usage on-site and ultimately within the watershed. This plan will allow the owner/operator to monitor and modify how much salt is needed, when it should be applied, and where it needs to be applied, with the ultimate goal of reducing salt-use without compromising safety. It is expected that salt-use reduction will lead to long-term cost-savings as a result of purchasing less salt and reduced impacts on vegetation (e.g., landscaping) and corrosion of infrastructure.

The salt minimization plan should include the retention of a contractor who has completed the Green SnowPro Training course and obtained NHDES Salt Application Certification.

It is anticipated that this be a living document that will be updated at regular intervals (recommend updating annually in advance of the winter season in order to facilitate adjustments).

Owner:

**16 Industrial Park, LLC  
340 Central Ave Suite 202  
Dover NH 03820**

In the event of a change in ownership, this Inspection and Maintenance Plan shall be transferred to the new party.

Contact / Responsible Party:

**Summit Land Development, LLC  
340 Central Ave Suite 202  
Dover NH 03820**

**John Sullivan  
[sullivan@summitlanddev.com](mailto:sullivan@summitlanddev.com)  
(603) 749-2800**

The contact information for the Contact / Responsible Party shall be kept current.

Management Company:

**Summit Land Development, LLC  
340 Central Ave Suite 202  
Dover NH 03820**

The contact information for the Management Party shall be kept current.

## **Inspection Schedule / Record Retention**

Inspection frequency should, at a minimum, be in accordance with New Hampshire Stormwater Manual, Volume 2, latest edition, as updated by NHDES. See the Inspection and Maintenance Plan for frequency requirements. A copy of the completed Stormwater Management System's Inspection & Maintenance Log and Deicing Salt Quantity Use Log shall be maintained, kept on-site, and be made available to local, state, or federal regulators as applicable by law. All Inspection and Maintenance records must be provided to the City of Dover Community Services Department annually before Dec 15<sup>th</sup>.

## **Stormwater Management System Components**

The Stormwater Management System associated with the project is designed to mitigate both the quantity and quality of site-generated stormwater runoff. As a result, its design includes the following elements:

- Pipes/Culverts
- Outlet Structure(s)
- Bioretention Basin w/ Internal Storage Reservoir (ISR)
- Rain Guardian Fortress (Ferguson Waterworks)
- Energy Dissipation Structures (Rip Rap)
- Pavement
- Litter / Trash Removal

Design elements are identified in the design plans and are depicted on a Stormwater I&M Plan attached to this document. A copy of which shall be maintained with this Inspection and Maintenance Plan.

## **Control of Invasive Species**

During maintenance activities, check for the presence of invasive plants and remove in a safe manner. Invasive plants shall be controlled to prevent them from reproducing, spreading, or re-growing. See the University of New Hampshire – Cooperative Extension's "Method for Disposing Non-Native Invasive Plants", included at the end of this manual, for guidance on the removal and disposal of invasive species.

## **Inspection and Maintenance Plan**

By implementing the following procedures, the owners will be able to maintain the functional design of the Stormwater Management System and maximize the system's ability to remove sediment and other contaminants from site generated stormwater runoff.

### **PIPES/CULVERTS:**

- Inspect once per year.
- Inspect for clogging and sediment accumulation.
- Remove all debris immediately and sediment accumulations  $\geq 2$  inches.

### **OUTLET STRUCTURE(S):**

- Inspect once per year.
- Inspect for clogging and sediment accumulation.
- Remove all debris immediately and sediment accumulations  $\geq 2$  inches.

### **BIORETENTION BASIN W/ ISR:**

- Inspection, by a **qualified professional**, of the Bioretention Basin at least twice annually, and following any rainfall event exceeding 2.5 inches in a 24-hour period, with maintenance or rehabilitation conducted as warranted by such inspection. If the Bioretention Basin systems do not drain within 72-hours following a rainfall event, a **qualified professional** should assess the condition and determine measures required to restore filtration practice (as applicable).
- Inlet and outlet pipes, inlet and outlet structures, containment structures, energy dissipation structures or practices, and other structural appurtenances should be inspected by a **qualified professional**, and corrective action implemented (e.g., maintenance, repairs, or replacement) as indicated by such inspection.
- Embankments and spillways should be inspected by a **qualified professional** for settlement, erosion, seepage, animal burrows, woody vegetation, and other conditions that could degrade the embankment and reduce its stability for impounding water. Immediate corrective action should be implemented if any such conditions are found.
- Vegetation should be inspected at least annually and maintained in healthy condition, including pruning, removal and replacement of dead or diseased vegetation, and removal of invasive species.
- The bottoms, interior and exterior side slopes, and crest of earthen detention basins should be mowed at least once annually. The vegetation should be maintained in a healthy condition, as appropriate to the function of the facility and type of vegetation, to prevent the establishment of woody vegetation.
- Pretreatment measures should be inspected at least twice annually, and cleaned of accumulated sediment as warranted by inspection, but no less than once annually.
- Trash and debris should be removed from the pond and any inlet or outlet structures whenever observed.
- Accumulated sediment should be removed when it significantly affects pond capacity.

#### RAIN GUARDIAN FORTRESS (Ferguson Waterworks):

- Common maintenance needs include periodic removal of accumulated leaves (and other organic debris) and garbage from the internal grate and sediment and fine debris from the concrete and metal dry filter box. Contributing watersheds with high sediment concentrations may require up to monthly or twice monthly visits to satisfy maintenance needs.
- If sediment accumulates beyond an acceptable level in the system, it will be necessary to remove. This can be done by manual removal with a shovel or vacuum device. The filter screen can be cleaned manually through brushing or with pressurized water.

#### ENERGY DISSIPATION STRUCTURES (RIP RAP):

- Inspect at least once a year.
- Inspect for sediment accumulation.
- Remove all debris immediately.
- Inspect the outlet protection annually for damage or deterioration. Repair damages immediately.
- If stones become displaced from riprap areas, they should be replaced immediately and chinked in to ensure stability. Add additional riprap as needed.

#### PAVEMENT:

- Minimize sanding.
- Minimize application of salt for ice control.
- Clean periodically (1-2 times per year) using a sweeper or vacuum sweeper. Vacuum sweeping is the preferred method.

#### LITTER / TRASH REMOVAL:

- Routinely patrol site for litter pick-up.

#### DE-ICING AGENTS:

- To address the concerns associated with the application of chlorides and other deicing materials, NHDES recommends that the Owner/Operator develop a Road Salt and Deicing Minimization Plan for the parking lots and roadways. The plan should develop the policies that the development will keep in place to minimize salt and other deicer use after the project has been completed. The plan should include tracking the use of salt and other deicers for each storm event and compiling salt use data annually. (See Deicing Salt Quantity Use Log).
- Use sand as primary agent for driveway and access way safety during ice and snow conditions.
- Minimize the use of salt during the winter.
- Use de-icing or anti-caking agents, added to enhance performance and application characteristics of sand mixtures, only as necessary and at minimum application rates.
- Recommend using a certified Winter Operator (Green SnowPro Trained) for applying de-icing agents.
- Monitor weather and apply de-icing agents based on weather conditions and temperatures.

#### ANTI-ICING AND SALT MINIMIZATION:

- Owner to develop a Road Salt and Deicing Minimization Plan.
- Provide a written policy that the "Development" will keep in place to minimize salt and other deicer use after the project has been completed.
- Use the attached form to track the use of salt and other deicers for each storm event and compiling salt use data annually.

## Inspection & Maintenance Table

| System Component / BMP                                                                                                                                                                                         | Minimum Inspection Frequency                                 | Minimum Inspection Requirements                                                                                                                                                                                                                                                                                            | Maintenance / Cleanout Threshold                                                                                                     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Pipes/Culverts                                                                                                                                                                                                 | Annually                                                     | <ul style="list-style-type: none"> <li>Check for clogging</li> <li>Check for sediment accumulation</li> </ul>                                                                                                                                                                                                              | Remove when noticed<br>Clean when necessary                                                                                          |
| Outlet Structure(s)                                                                                                                                                                                            | Annually                                                     | <ul style="list-style-type: none"> <li>Inspect once per year</li> <li>Inspect for clogging and sediment accumulation</li> <li>Remove all debris immediately and sediment accumulations <math>\geq 2</math> inches</li> </ul>                                                                                               | $\geq 2$ in. sediment<br>Remove immediately                                                                                          |
| Bioretention Basin w/ ISR <ul style="list-style-type: none"> <li>Inlet/Outlet Piping</li> <li>Pond</li> <li>Sediment</li> <li>Drawdown</li> <li>Trash/Debris</li> <li>Vegetation (Veg.)</li> </ul> Embankments | Bi-Annually<br>“ “<br>Annually<br>Periodically<br>“ “<br>“ “ | <ul style="list-style-type: none"> <li>Check for erosion, settlement, seepage, etc.</li> <li>Check for sediment accum. in pond</li> <li>Check drainage time</li> <li>Check for and remove trash/debris</li> <li>Maintain <math>&gt;75\%</math> veg. (pond &amp; slopes)</li> <li>Maintain healthy stand of veg.</li> </ul> | Repair immediately<br>$\geq 2$ in sediment<br>$>72$ hours<br>Remove all trash/debris<br>Restore veg. in-kind<br>Mow when $\geq 6$ in |
| Rain Guardian Fortress                                                                                                                                                                                         | Periodically                                                 | <ul style="list-style-type: none"> <li>Check for trash, debris, and accumulated sediments in grate</li> <li>Check sediment level</li> </ul>                                                                                                                                                                                | Remove debris and veg. periodically<br>$\geq 3$ in. sediment depth shovel sediment                                                   |
| Energy Dissipation (ED) Structures (Rip Rap)                                                                                                                                                                   | Annually                                                     | <ul style="list-style-type: none"> <li>Check for erosion</li> <li>Check for displaced stones</li> <li>Check for woody vegetation</li> <li>Check for sediment accumulation</li> </ul>                                                                                                                                       | $\geq 3$ in. sediment<br>Remove annually<br>Remove/ reset dislodged stones immediately                                               |
| Pavement: <ul style="list-style-type: none"> <li>Sanding</li> <li>Salt Applications</li> <li>Sweep/Vacuum</li> <li>Trash/Debris</li> </ul>                                                                     | Limit use<br>As required<br>1 - 2 x's Year<br>Periodically   | <ul style="list-style-type: none"> <li>Minimize use to prevent tracking issues</li> <li>RECORD APPLICATION RATES</li> <li>Sweep or vacuum to prevent tracking issues</li> <li>Check for trash/debris</li> </ul>                                                                                                            | Sweep to prevent issues<br>Minimize (as required)<br>Sweep/Vac as needed<br>Remove when noticed                                      |
| Litter / Trash Removal                                                                                                                                                                                         | Periodically                                                 | <ul style="list-style-type: none"> <li>Check for litter and trash</li> </ul>                                                                                                                                                                                                                                               | Remove when noticed                                                                                                                  |

## **Inspection & Maintenance Checklist/Log**

The following pages contain a blank copy of the Stormwater Management System's Inspection & Maintenance Log and a Deicing Salt Quantity Use Log. These forms are provided to assist the owners with the inspection and maintenance of the aforementioned Stormwater Management System.



## Stormwater Management System's Inspection & Maintenance Log

Date of Inspection/Maintenance \_\_\_\_\_ Inspector: \_\_\_\_\_

[illegible]

## Deicing Salt Quantity Use Log

[illegible]

## Methods for Disposing Non-Native Invasive Plants

*Prepared by the Invasives Species Outreach Group, volunteers interested in helping people control invasive plants. Assistance provided by the Piscataquog Land Conservancy and the NH Invasives Species Committee. Edited by Karen Bennett, Extension Forestry Professor and Specialist.*



**Tatarian honeysuckle**

*Lonicera tatarica*

USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 3: 282.

Non-native invasive plants crowd out natives in natural and managed landscapes. They cost taxpayers billions of dollars each year from lost agricultural and forest crops, decreased biodiversity, impacts to natural resources and the environment, and the cost to control and eradicate them.

Invasive plants grow well even in less than desirable conditions such as sandy soils along roadsides, shaded wooded areas, and in wetlands. In ideal conditions, they grow and spread even faster. There are many ways to remove these non-native invasives, but once removed, care is needed to dispose the removed plant material so the plants don't grow where disposed.

Knowing how a particular plant reproduces indicates its method of spread and helps determine the appropriate disposal method. Most are spread by seed and are dispersed by wind, water, animals, or people. Some reproduce by vegetative means from pieces of stems or roots forming new plants. Others spread through both seed and vegetative means.

Because movement and disposal of viable plant parts is restricted (see NH Regulations), viable invasive parts can't be brought to most transfer stations in the state. Check with your transfer station to see if there is an approved, designated area for invasives disposal. This fact sheet gives recommendations for rendering plant parts non-viable.

Control of invasives is beyond the scope of this fact sheet. For information about control visit [www.nhinvasives.org](http://www.nhinvasives.org) or contact your UNH Cooperative Extension office.

### **New Hampshire Regulations**

Prohibited invasive species shall only be disposed of in a manner that renders them nonliving and nonviable. (Agr. 3802.04)

No person shall collect, transport, import, export, move, buy, sell, distribute, propagate or transplant any living and viable portion of any plant species, which includes all of their cultivars and varieties, listed in Table 3800.1 of the New Hampshire prohibited invasive species list. (Agr 3802.01)

## How and When to Dispose of Invasives?

To prevent seed from spreading remove invasive plants before seeds are set (produced). Some plants continue to grow, flower and set seed even after pulling or cutting. Seeds can remain viable in the ground for many years. If the plant has flowers or seeds, place the flowers and seeds in a heavy plastic bag “head first” at the weeding site and transport to the disposal site. The following are general descriptions of disposal methods. See the chart for recommendations by species.

**Burning:** Large woody branches and trunks can be used as firewood or burned in piles. For outside burning, a written fire permit from the local forest fire warden is required unless the ground is covered in snow. Brush larger than 5 inches in diameter can’t be burned. Invasive plants with easily airborne seeds like black swallow-wort with mature seed pods (indicated by their brown color) shouldn’t be burned as the seeds may disperse by the hot air created by the fire.

**Bagging (solarization):** Use this technique with softer-tissue plants. Use heavy black or clear plastic bags (contractor grade), making sure that no parts of the plants poke through. Allow the bags to sit in the sun for several weeks and on dark pavement for the best effect.

**Tarpping and Drying:** Pile material on a sheet of plastic and cover with a tarp, fastening the tarp to the ground and monitoring it for escapes. Let the material dry for several weeks, or until it is clearly nonviable.

**Chipping:** Use this method for woody plants that don’t reproduce vegetatively.

**Burying:** This is risky, but can be done with watchful diligence. Lay thick plastic in a deep pit before placing the cut up plant material in the hole. Place the material away from the edge of the plastic before covering it with more heavy plastic. Eliminate as much air as possible and toss in soil to weight down the material in the pit. Note that the top of the buried material should be at least three feet underground. Japanese knotweed should be at least 5 feet underground!

**Drowning:** Fill a large barrel with water and place soft-tissue plants in the water. Check after a few weeks and look for rotted plant material (roots, stems, leaves, flowers). Well-rotted plant material may be composted. A word of caution- seeds may still be viable after using this method. Do this before seeds are set. This method isn’t used often. Be prepared for an awful stink!

**Composting:** Invasive plants can take root in compost. Don’t compost any invasives unless you know there is no viable (living) plant material left. Use one of the above techniques (bagging, tarping, drying, chipping, or drowning) to render the plants nonviable before composting. Closely examine the plant before composting and avoid composting seeds.



**Japanese knotweed**  
*Polygonum cuspidatum*  
USDA-NRCS PLANTS Database /  
Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 1: 676.

**Be diligent looking for seedlings for years in areas where removal and disposal took place.**

## Suggested Disposal Methods for Non-Native Invasive Plants

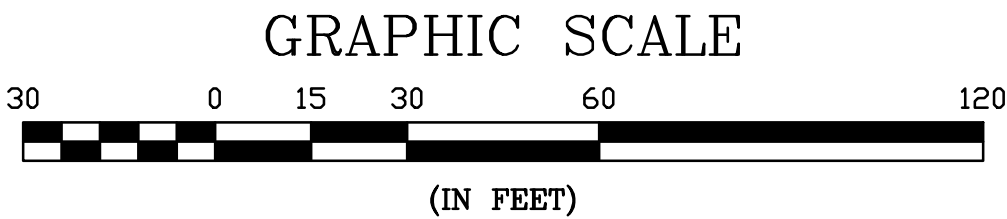
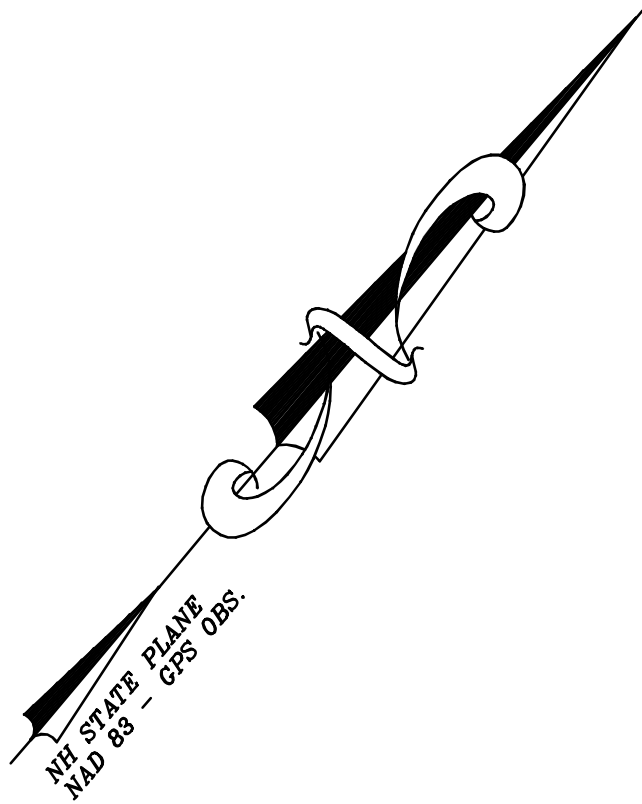
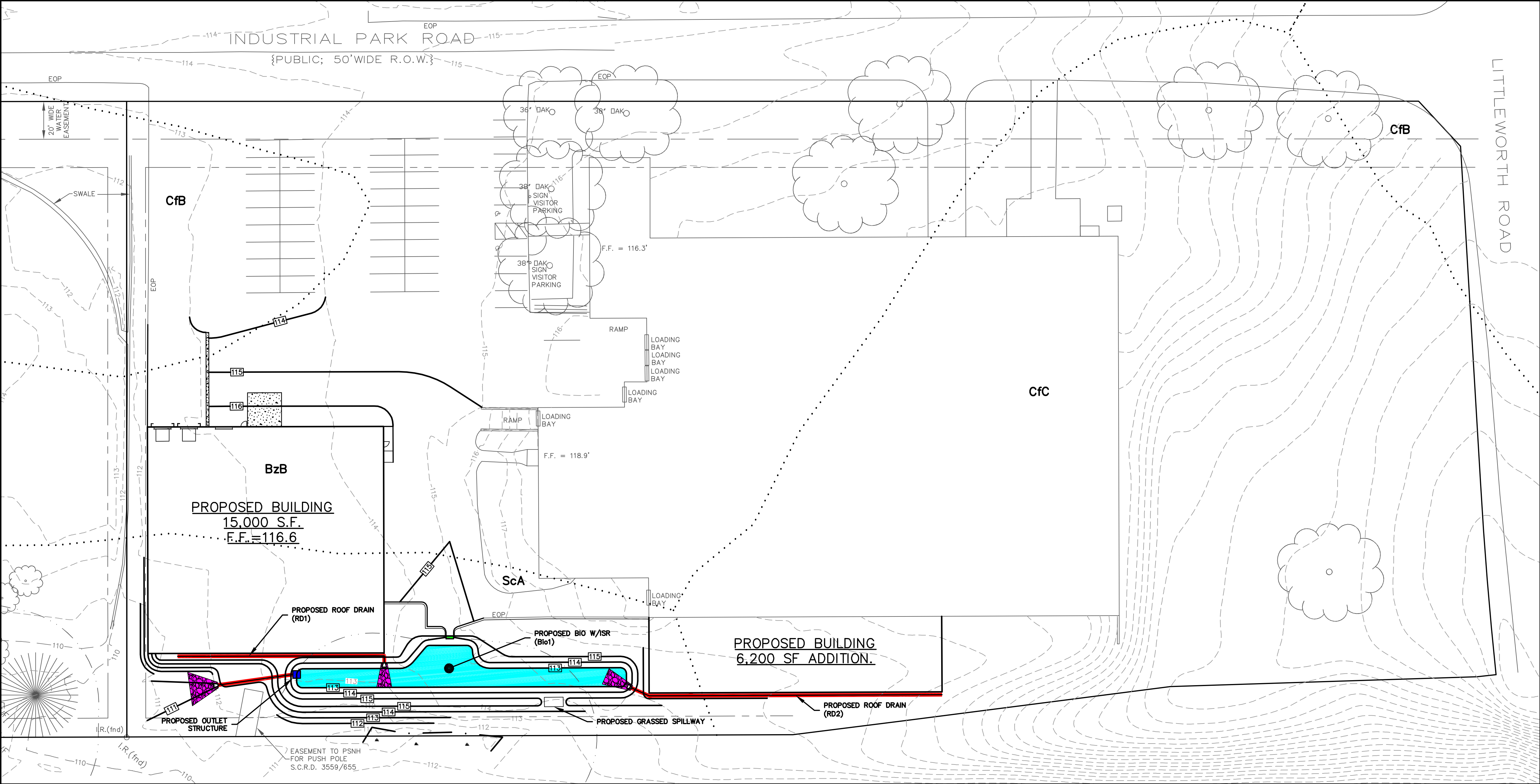
This table provides information concerning the disposal of removed invasive plant material. If the infestation is treated with herbicide and left in place, these guidelines don't apply. Don't bring invasives to a local transfer station, unless there is a designated area for their disposal, or they have been rendered non-viable. This listing includes wetland and upland plants from the New Hampshire Prohibited Invasive Species List. The disposal of aquatic plants isn't addressed.

| Woody Plants                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Method of Reproducing                                                                                                        | Methods of Disposal                                                                                                                                                                                                                                                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Norway maple<br><i>(Acer platanoides)</i><br>European barberry<br><i>(Berberis vulgaris)</i><br>Japanese barberry<br><i>(Berberis thunbergii)</i><br>autumn olive<br><i>(Elaeagnus umbellata)</i><br>burning bush<br><i>(Euonymus alatus)</i><br>Morrow's honeysuckle<br><i>(Lonicera morrowii)</i><br>Tatarian honeysuckle<br><i>(Lonicera tatarica)</i><br>showy bush honeysuckle<br><i>(Lonicera x bella)</i><br>common buckthorn<br><i>(Rhamnus cathartica)</i><br>glossy buckthorn<br><i>(Frangula alnus)</i> | <b>Fruit and Seeds</b><br>                 | <b>Prior to fruit/seed ripening</b><br>Seedlings and small plants <ul style="list-style-type: none"> <li>▪ Pull or cut and leave on site with roots exposed. No special care needed.</li> </ul> Larger plants <ul style="list-style-type: none"> <li>▪ Use as firewood.</li> <li>▪ Make a brush pile.</li> <li>▪ Chip.</li> <li>▪ Burn.</li> </ul> |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                              | <b>After fruit/seed is ripe</b><br>Don't remove from site. <ul style="list-style-type: none"> <li>▪ Burn.</li> <li>▪ Make a covered brush pile.</li> <li>▪ Chip once all fruit has dropped from branches.</li> <li>▪ Leave resulting chips on site and monitor.</li> </ul>                                                                         |
| oriental bittersweet<br><i>(Celastrus orbiculatus)</i><br>multiflora rose<br><i>(Rosa multiflora)</i>                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Fruits, Seeds, Plant Fragments</b><br> | <b>Prior to fruit/seed ripening</b><br>Seedlings and small plants <ul style="list-style-type: none"> <li>▪ Pull or cut and leave on site with roots exposed. No special care needed.</li> </ul> Larger plants <ul style="list-style-type: none"> <li>▪ Make a brush pile.</li> <li>▪ Burn.</li> </ul>                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                              | <b>After fruit/seed is ripe</b><br>Don't remove from site. <ul style="list-style-type: none"> <li>▪ Burn.</li> <li>▪ Make a covered brush pile.</li> <li>▪ Chip – only after material has fully dried (1 year) and all fruit has dropped from branches. Leave resulting chips on site and monitor.</li> </ul>                                      |

| Non-Woody Plants                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Method of Reproducing                                                                                                                                                                                                                                                                   | Methods of Disposal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>garlic mustard<br/>(<i>Alliaria petiolata</i>)</p> <p>spotted knapweed<br/>(<i>Centaurea maculosa</i>)</p> <ul style="list-style-type: none"> <li>▪ Sap of related knapweed can cause skin irritation and tumors. Wear gloves when handling.</li> </ul> <p>black swallow-wort<br/>(<i>Cynanchum nigrum</i>)</p> <ul style="list-style-type: none"> <li>▪ May cause skin rash. Wear gloves and long sleeves when handling.</li> </ul> <p>pale swallow-wort<br/>(<i>Cynanchum rossicum</i>)</p> <p>giant hogweed<br/>(<i>Heracleum mantegazzianum</i>)</p> <ul style="list-style-type: none"> <li>▪ Can cause major skin rash. Wear gloves and long sleeves when handling.</li> </ul> <p>dame's rocket<br/>(<i>Hesperis matronalis</i>)</p> <p>perennial pepperweed<br/>(<i>Lepidium latifolium</i>)</p> <p>purple loosestrife<br/>(<i>Lythrum salicaria</i>)</p> <p>Japanese stilt grass<br/>(<i>Microstegium vimineum</i>)</p> <p>mile-a-minute weed<br/>(<i>Polygonum perfoliatum</i>)</p> | <p><b>Fruits and Seeds</b></p>                                                                                                                                                                        | <p><b>Prior to flowering</b></p> <p>Depends on scale of infestation</p> <p>Small infestation</p> <ul style="list-style-type: none"> <li>▪ Pull or cut plant and leave on site with roots exposed.</li> </ul> <p>Large infestation</p> <ul style="list-style-type: none"> <li>▪ Pull or cut plant and pile. (You can pile onto or cover with plastic sheeting).</li> <li>▪ Monitor. Remove any re-sprouting material.</li> </ul> <hr/> <p><b>During and following flowering</b></p> <p>Do nothing until the following year or remove flowering heads and bag and let rot.</p> <p>Small infestation</p> <ul style="list-style-type: none"> <li>▪ Pull or cut plant and leave on site with roots exposed.</li> </ul> <p>Large infestation</p> <ul style="list-style-type: none"> <li>▪ Pull or cut plant and pile remaining material. (You can pile onto plastic or cover with plastic sheeting).</li> <li>▪ Monitor. Remove any re-sprouting material.</li> </ul> |
| <p>common reed<br/>(<i>Phragmites australis</i>)</p> <p>Japanese knotweed<br/>(<i>Polygonum cuspidatum</i>)</p> <p>Bohemian knotweed<br/>(<i>Polygonum x bohemicum</i>)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <p><b>Fruits, Seeds, Plant Fragments</b></p> <p>Primary means of spread in these species is by plant parts. Although all care should be given to preventing the dispersal of seed during control activities, the presence of seed doesn't materially influence disposal activities.</p> | <p><b>Small infestation</b></p> <ul style="list-style-type: none"> <li>▪ Bag all plant material and let rot.</li> <li>▪ Never pile and use resulting material as compost.</li> <li>▪ Burn.</li> </ul> <p><b>Large infestation</b></p> <ul style="list-style-type: none"> <li>▪ Remove material to unsuitable habitat (dry, hot and sunny or dry and shaded location) and scatter or pile.</li> <li>▪ Monitor and remove any sprouting material.</li> <li>▪ Pile, let dry, and burn.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

January 2010





- LEGEND:**
-  = BIORETENTION BASIN W/ INTERNAL STORAGE RESERVOIR
  -  = ENERGY DISSIPATION STRUCTURES (RIP RAP)
  -  = RAIN GUARDIAN FORTRESS (FERGUSON WATERWORKS)
  -  = PIPES/CULVERTS
  -  = OUTLET STRUCTURE

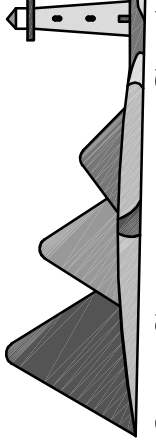
**I&M LOCATION PLAN**

**15,000 SF WAREHOUSE &  
6,200 SF BUILDING ADDITION  
14 INDUSTRIAL PARK ROAD  
DOVER, NH 03821**

**16 INDUSTRIAL PARK, LLC  
340 CENTRAL AVENUE  
DOVER, NH 03820**

**I&M**

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY



**CIVILWORKS NEW ENGLAND**  
CHALM WATERBURY ENGINEERING  
181 Watson Road, PO Box 1166  
Dover, NH 03821

| DATE    | SCALE  | DRAWN BY | DESIGN BY | APPROVED BY | PROJECT NO. | FILE DRAINAGE | NO. | REVISION | APP'D | DATE |
|---------|--------|----------|-----------|-------------|-------------|---------------|-----|----------|-------|------|
| 10-2-25 | 1"=30' | ETA      | JRG       | BYJH        | 25114       |               |     |          |       |      |

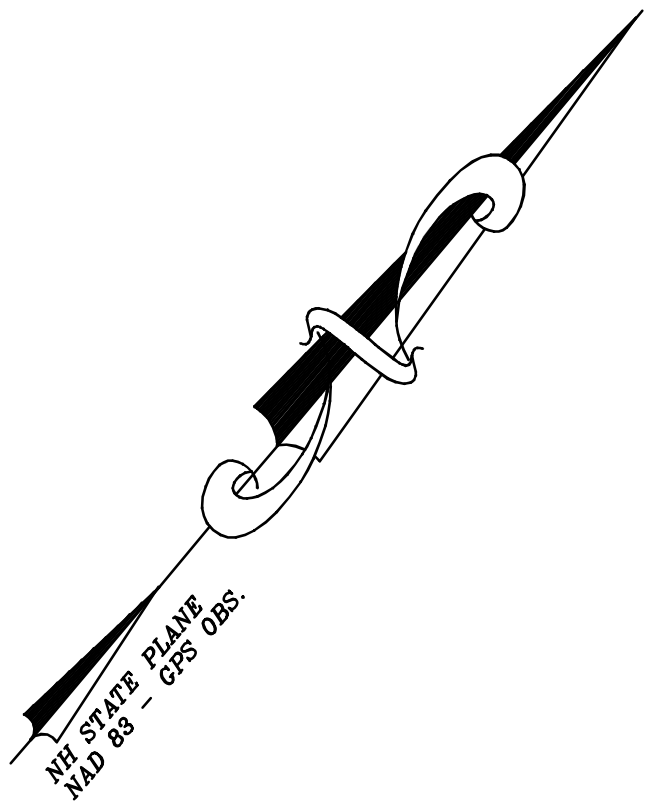
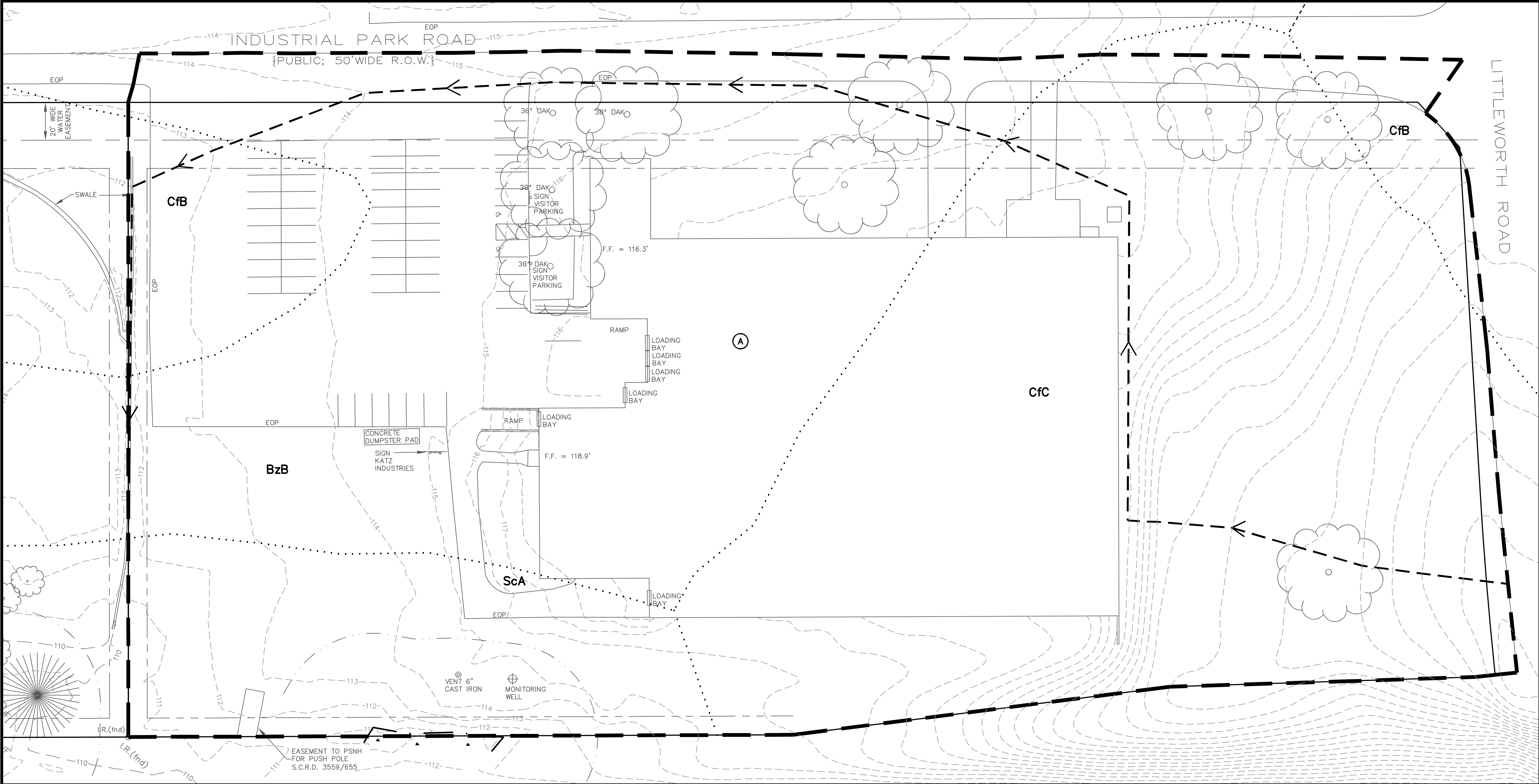
# APPENDIX D

## WATERSHED PLANS



D – 1

PRE-DEVELOPMENT CONDITIONS

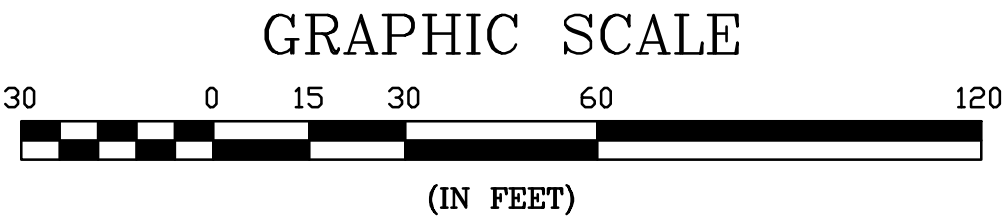


PRE-DEVELOPMENT WATERSHED CHARACTERISTICS

| SUBCATCHMENT DESIGNATION | AREA (ACRES) | LONGEST FLOW PATH (FEET) | Tc (MIN) |
|--------------------------|--------------|--------------------------|----------|
| A                        | 5.79         | 1,103                    | 18.6     |

SOILS DATA

- Hydrologic Drainage Class B:
- CfB - Charlton Fine Sandy Loam, 3 - 8 Percent Slopes
  - CfC - Charlton Fine Sandy Loam, 8 - 15 Percent Slopes
- Hydrologic Drainage Class C:
- BzB - Buxton Silt Loam, 3 - 8 Percent Slopes
  - ScA - Scantic Silt Loam, 0 - 3 Percent Slopes



LEGEND:

- EX 1' CONTOUR
- EX 10' CONTOUR
- PROPERTY LINE
- EXISTING EDGE OF PAVEMENT
- SOIL BOUNDARY
- SUBCATCHMENT BOUNDARY
- LONGEST FLOW PATH WITH DIRECTION OF FLOW
- EXISTING WETLAND BOUNDARY
- EXISTING WETLAND
- SUBCATCHMENT DESIGNATION
- SOIL DESIGNATION

| DATE    | SCALE  | DRAWN BY | DESIGN BY | APPROVED BY | PROJECT NO. | FILE DRAINAGE | NO. | REVISION | APP'D | DATE |
|---------|--------|----------|-----------|-------------|-------------|---------------|-----|----------|-------|------|
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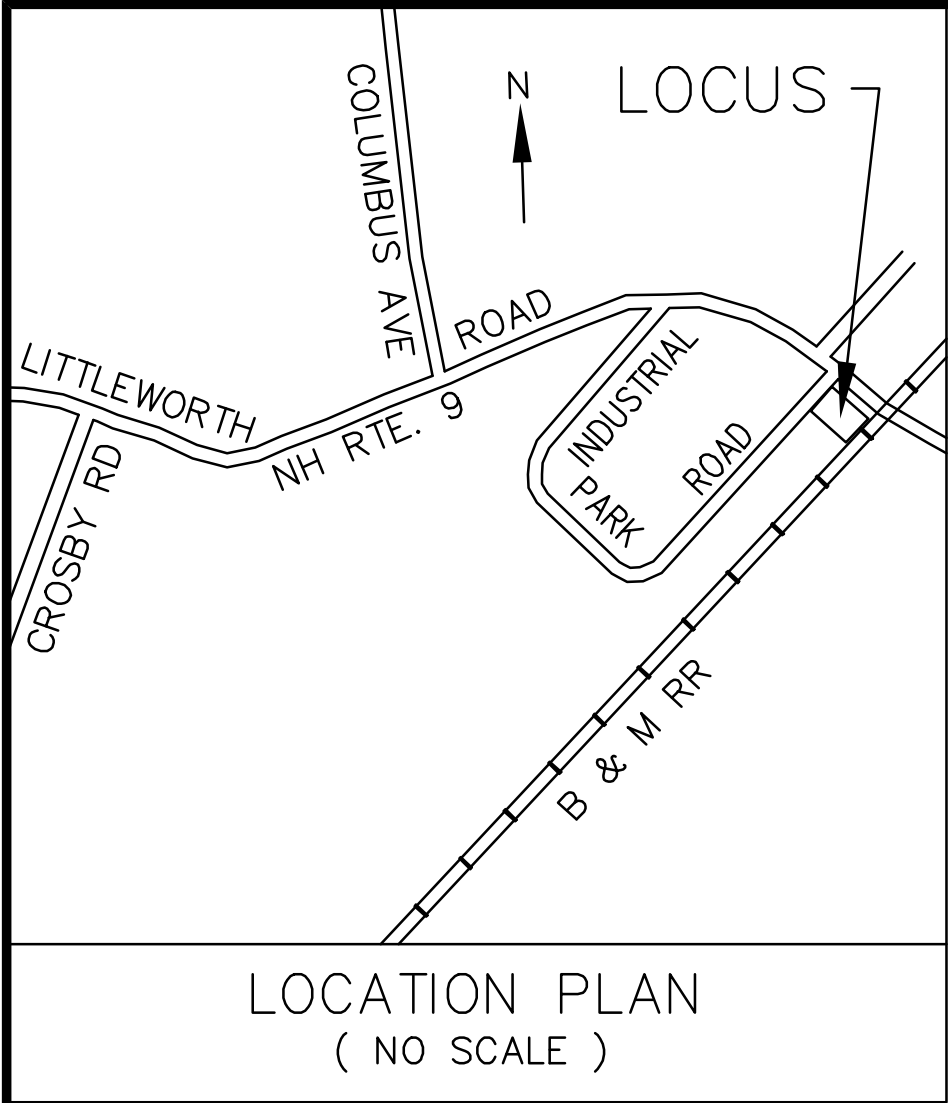
D – 2

POST-DEVELOPMENT CONDITIONS









# SITE PLAN FOR A 15,000 S.F. WAREHOUSE BUILDING & A 6,200 S.F. BUILDING ADDITION

TAX MAP G, LOT 4-0  
14 INDUSTRIAL PARK ROAD  
DOVER, NH  
OCTOBER 2, 2025

OWNER  
16 INDUSTRIAL PARK, LLC  
340 CENTRAL AVENUE  
SUITE 202  
DOVER, NH 03820

\_\_\_\_\_  
DATE

APPLICANT  
SUMMITT LAND DEVELOPMENT, LLC  
340 CENTRAL AVENUE  
SUITE 202  
DOVER, NH 03820

\_\_\_\_\_  
DATE

SITE CIVIL  
ENGINEER



LAND SURVEYOR  
MCENEANEY SURVEY ASSOCIATES OF NEW ENGLAND  
P.O. BOX 1166  
DOVER, NH 03821  
(603) 742-0911

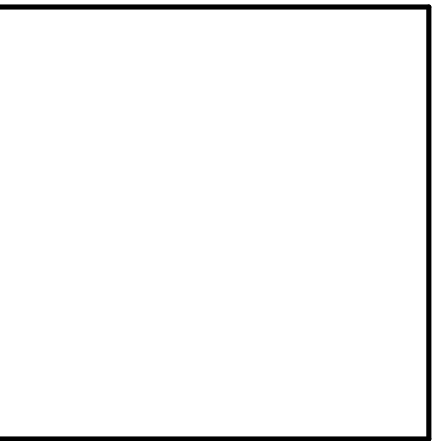
ARCHITECT  
SEACOAST CRANE & BUILDING CO., INC.  
98 ROUTE 236, SUITE #3  
KITTERY, ME 03904

WETLAND SCIENTIST  
BAG LAND CONSULTANTS  
43 ROCKINGHAM STREET  
CONCORD, NH 03301

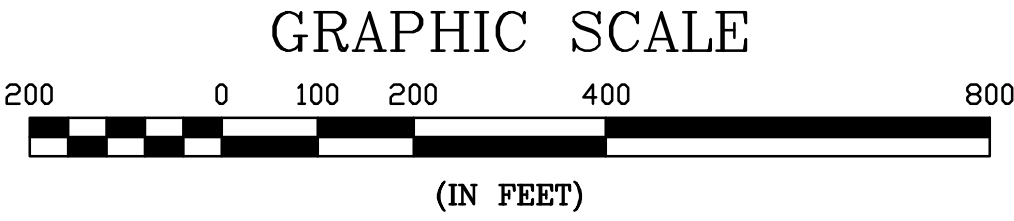
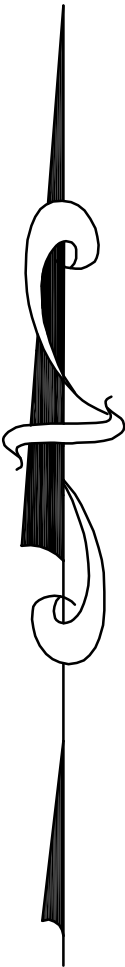
PERMIT SUMMARY/ WAIVER SUMMARY:

- THE FOLLOWING FEDERAL AND STATE PERMITS HAVE BEEN ISSUED FOR THE SUBJECT PROPERTY:  
  
EPA CONSTRUCTION GENERAL PERMIT (COPIES OF THE EPA CONSTRUCTION GENERAL PERMIT SHALL BE SUBMITTED TO THE PLANNING DEPARTMENT WHEN APPROVED): PENDING
- LIST ANY VARIANCES OR SPECIAL EXCEPTIONS GRANTED BY THE ZONING BOARD OF ADJUSTMENT OR CONDITIONAL USE PERMITS GRANTED BY THE PLANNING BOARD FOR THE PROPOSED USE OR STRUCTURE, INCLUDING THE CASE NUMBER AND DATE OF DECISION AND ANY CONDITIONS.  
  
SITE PLAN: PENDING  
  
CONDITIONAL USE PERMIT: PENDING
- WAIVERS REQUESTED: THE PLANNING BOARD HAS FOUND THE CRITERIA OF CHAPTER 153-21 HAVE BEEN MET AND HAVE APPROVED THE FOLLOWING WAIVERS:  
  
A WAIVER REQUEST FROM THE SITE REVIEW REGULATIONS 153-13.(12), TO ALLOW FOR THE LANDSCAPE PLAN NOT TO BE STAMPED BY A LLA. PENDING

| SHEET INDEX                                    | SHEET       |
|------------------------------------------------|-------------|
| COVER SHEET                                    | 1           |
| NEIGHBORHOOD PLAN                              | 2           |
| EXISTING CONDITIONS PLAN (BY MCENEANEY SURVEY) | 3           |
| NOTE SHEET                                     | 4           |
| DEMOLITION PLAN                                | 5           |
| SITE PLAN                                      | 6           |
| GRADING, DRAINAGE, & EROSION CONTROL PLAN      | 7           |
| UTILITY PLAN                                   | 8           |
| EROSION CONTROL NOTES                          | 9           |
| EROSION CONTROL DETAILS                        | 10 - 11     |
| DETAIL SHEETS                                  | 12 - 16     |
| LIGHTING PLAN                                  | 17          |
| LIGHTING DETAILS                               | 18          |
| DOVER LADDER TRUCK MOVEMENT PLAN               | 19          |
| WETLAND BUFFER IMPACT EXHIBIT                  | EX-1        |
| LANDSCAPE PLAN                                 | L-1         |
| ARCHITECTURAL PLANS                            |             |
| EXTERIOR ELEVATION VIEWS                       | A.01 - A.04 |





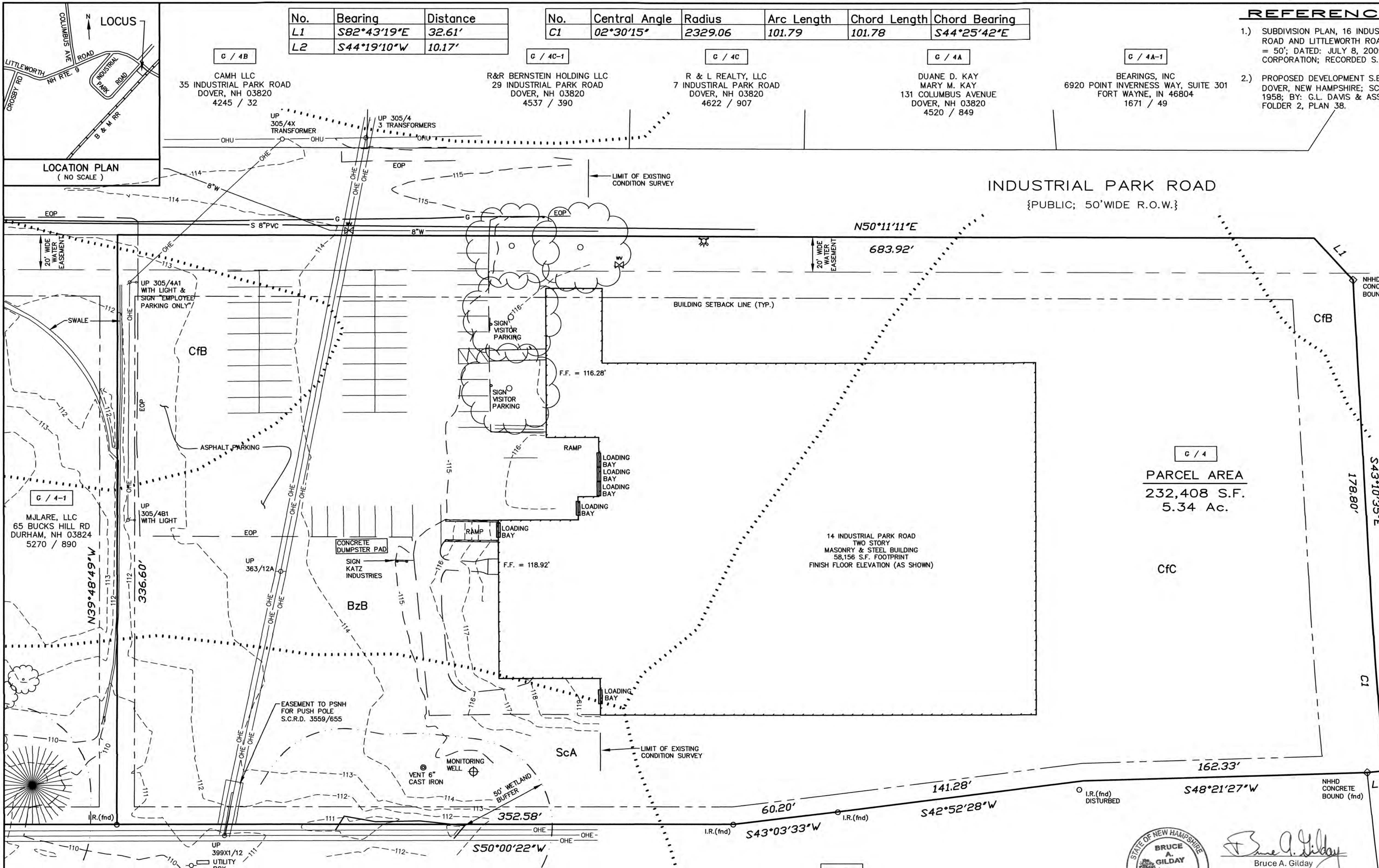


| ABUTTERS LIST<br>(WITHIN 200 FT) |          |                                                                                                  |
|----------------------------------|----------|--------------------------------------------------------------------------------------------------|
| TAX MAP                          | LOT NO.  | NAME & ADDRESS                                                                                   |
|                                  | G 4-1-0  | MJLARE, LLC<br>65 BUCKS HILL ROAD<br>DURHAM, NH 03824                                            |
|                                  | G 4-0-0  | 16 INDUSTRIAL PARK, LLC<br>340 CENTRAL AVE<br>SUITE 202<br>DOVER, NH 03820                       |
|                                  | G 4-C-1  | R&R BERSTEIN HOLDINGS LLC<br>29 INDUSTRIAL PARK ROAD<br>DOVER, NH 03820                          |
|                                  | G 4-B-0  | CAMH LLC<br>35 INDUSTRIAL PARK ROAD<br>DOVER, NH 03820                                           |
|                                  | G 4-B-1  | BOND ENTERPRISES LLC<br>174 ESTES ROAD<br>ROCHESTER, NH 03867                                    |
|                                  | G 3-B-0  | 85 INDUSTRIAL PARK II LLC<br>210 COMMERCE DRIVE<br>SUITE 300<br>PORTSMOUTH, NH 03801             |
|                                  | G 5-0-0  | BOSTON & MAINE RR<br>IRON HORSE PARK<br>500 WATER STREET J-910<br>JACKSONVILLE, FL 32202         |
|                                  | H 31-0-0 | SOUSANE RUTH K &<br>QUINIAN NANCY K<br>30 LITTLEWORTH ROAD<br>DOVER, NH 03820                    |
|                                  | G 4-C-0  | R&L REALTY, LLC<br>7 INDUSTRIAL PARK DRIVE<br>DOVER, NH 03820                                    |
|                                  | G 4-A-0  | KAY DUANE D & KAY MARY M<br>131 COLUMBUS AVENUE<br>DOVER, NH 03820                               |
|                                  | G 4-A-1  | BEARINGS INC<br>6920 POINT INVERNESS WAY STE 301<br>FORT WAYNE, IN 46804                         |
|                                  | G 6-0-0  | 29 LITTLEWORTH ROAD, LLC<br>C/O NORTHERN POOL & SPA<br>291 HAROLD DOW HIGHWAY<br>ELIOT, ME 03903 |

PLANNING FILE NO.: SITE-2025-XXXX

|                              |  |                                                                                                                     |  |                                                                               |  |                                                                                                             |  |  |  |  |  |
|------------------------------|--|---------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------|--|--|--|--|--|
| <div>NEIGHBORHOOD PLAN</div> |  | <div>15,000 SF WAREHOUSE &amp;<br/>6,200 SF BUILDING ADDITION<br/>14 INDUSTRIAL PARK ROAD<br/>DOVER, NH 03820</div> |  | <div>16 INDUSTRIAL PARK, LLC<br/>340 CENTRAL AVENUE<br/>DOVER, NH 03820</div> |  | NOT FOR CONSTRUCTION FOR PERMIT USE ONLY                                                                    |  |  |  |  |  |
|                              |  |                                                                                                                     |  |                                                                               |  |                                                                                                             |  |  |  |  |  |
| 2                            |  |                                                                                                                     |  |                                                                               |  | DATE: 10-2-25                                                                                               |  |  |  |  |  |
|                              |  |                                                                                                                     |  |                                                                               |  | SCALE: 1"=200'                                                                                              |  |  |  |  |  |
|                              |  |                                                                                                                     |  |                                                                               |  | DRAWN BY: WEJ                                                                                               |  |  |  |  |  |
|                              |  |                                                                                                                     |  |                                                                               |  | DESIGN BY: JRG                                                                                              |  |  |  |  |  |
|                              |  |                                                                                                                     |  |                                                                               |  | APPROVED BY: JH                                                                                             |  |  |  |  |  |
|                              |  |                                                                                                                     |  |                                                                               |  | PROJECT NO: 25114                                                                                           |  |  |  |  |  |
|                              |  |                                                                                                                     |  |                                                                               |  | FILE: SITE.dwg                                                                                              |  |  |  |  |  |
|                              |  |                                                                                                                     |  |                                                                               |  | NO.                                                                                                         |  |  |  |  |  |
|                              |  |                                                                                                                     |  |                                                                               |  | REVISION                                                                                                    |  |  |  |  |  |
|                              |  |                                                                                                                     |  |                                                                               |  | APP'D                                                                                                       |  |  |  |  |  |
|                              |  |                                                                                                                     |  |                                                                               |  | GNE<br>CIVILWORKS NEW ENGLAND<br>181 Watson Road, PO Box 1166<br>Dover, New Hampshire 03821<br>603.749.0443 |  |  |  |  |  |
|                              |  |                                                                                                                     |  |                                                                               |  |                                                                                                             |  |  |  |  |  |





REFERENCE PLANS:

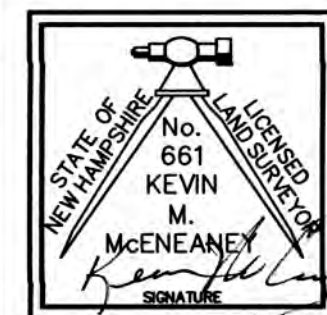
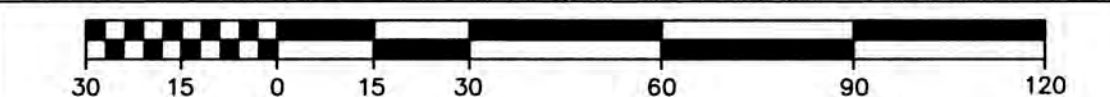
- 1.) SUBDIVISION PLAN, 16 INDUSTRIAL PARK, LLC., 16 INDUSTRIAL PARK ROAD AND LITTLEWORTH ROAD, DOVER, NEW HAMPSHIRE; SCALE: 1" = 50'; DATED: JULY 8, 2009; BY: TRITECH ENGINEERING CORPORATION; RECORDED S.C.R.D. PLAN 98-5.
- 2.) PROPOSED DEVELOPMENT S.E.N.H. INDUSTRIAL PARK PROPERTY LINES, DOVER, NEW HAMPSHIRE; SCALE: 1" = 100'; DATED: MARCH 31, 1958; BY: G.L. DAVIS & ASSOCIATES; RECORDED S.C.R.D. POCKET 6, FOLDER 2, PLAN 38.

NOTES:

- 1.) OWNER OF RECORD:  
16 INDUSTRIAL PARK, LLC  
340 CENTRAL AVENUE  
DOVER, NEW HAMPSHIRE 03820  
S.C.R.D. VOLUME 5190, PAGE 36  
S.C.R.D. VOLUME 5189, PAGE 1003
- 2.) C / 4 - DENOTES TAX MAP AND PARCEL NUMBER.
- 3.) PARCEL AREA = 232,408 S.F. / 5.34 Ac.
- 4.) THE INTENT OF THIS PLAN IS TO DEPICT THE PARCEL BOUNDARY AND EXISTING SITE CONDITIONS AS OF SEPTEMBER 4, 2025.
- 5.) ZONING DISTRICT: COMMERCIAL/MANUFACTURING (CM)  
DIMENSIONAL REQUIREMENTS:  
MINIMUM LOT SIZE = 20,000 S.F.  
MAXIMUM LOT COVERAGE = 50 PERCENT  
MINIMUM FRONTAGE = 100 FEET  
BUILDING SETBACK REQUIREMENTS:  
FRONT SETBACK = 35 FEET  
SIDE SETBACK = 10 FEET  
REAR SETBACK = 10 FEET  
MAXIMUM BUILDING HEIGHT = 50 FEET
- 6.) THE SUBJECT PARCEL IS NOT LOCATED WITHIN A SPECIAL FLOOD HAZARD ZONE AS SHOWN ON FLOOD INSURANCE RATE MAP 33017C0320E, EFFECTIVE DATE 9/30/2015.
- 7.) BASIS OF BEARING IS NH STATE PLANE (NAD83) AND VERTICAL DATUM IS NAVD88 BASED ON GPS OBSERVATION DATED OCTOBER 28, 2024.
- 8.) PROPERTY LINE INFORMATION HAS BEEN OBTAINED FROM A SURVEY PERFORMED BY MCENEANEY SURVEY ASSOCIATES OF NEW ENGLAND ON OCTOBER 28-31, 2024 WITH AN ERROR OF CLOSURE NOT GREATER THAN 1 IN 10,000.
- 9.) THE IMPROVEMENTS AND UTILITIES SHOWN ARE FROM OBSERVATIONS MADE IN THE FIELD OR REFERENCE PLANS. LOCATIONS OF UNDERGROUND UTILITIES NOT MARKED ON THE SURFACE WERE NOT LOCATED. ALL VISIBLE UTILITIES ARE SHOWN.
- 10.) ALL EXISTING UTILITY LOCATIONS ARE APPROXIMATE AS SHOWN. THE CONTRACTOR SHALL VERIFY THEIR EXACT LOCATIONS WITH THE RESPECTIVE UTILITY OWNERS PRIOR TO ANY WORK BEING PERFORMED. CALL DIGSAFE AT 1-888-344-7233.
- 11.) THIS PLAN SHOWS ONLY THOSE FEATURES THAT WERE VISUALLY APPARENT ON THE DATE OF THE SURVEY. THE ABSENCE OF SUBSURFACE STRUCTURES, UTILITIES, ETC. FROM THIS PLAN, BUT IN EXISTENCE, IS NOT INTENDED OR IMPLIED.
- 12.) THE SOIL TYPES ON THE SITE ARE:  
BzB BUXTON SILT LOAM, 3 TO 8 PERCENT SLOPES  
CfB CHARLTON FINE SANDY LOAM, 3 TO 8 PERCENT SLOPES  
CfC CHARLTON FINE SANDY LOAM, 8 TO 15 PERCENT SLOPES  
ScA SCANTIC SILT LOAM, 0 TO 3 PERCENT SLOPES  
THE SOURCE FOR THE SOIL TYPE DATA IS USDA NRCS WEB SOIL SURVEY  
<http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>
- 13.) WETLANDS SHOWN WERE DELINEATED BY BRUCE A. GILDAY, N.H.C.W.S. #086; N.H. C.S.S. #012 OF B A G LAND CONSULTANTS, ON AUGUST 14, 2025 IN ACCORDANCE WITH THE 1987 CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL AND LOCATED BY THIS OFFICE.

LIMITED EXISTING CONDITIONS PLAN  
PREPARED FOR  
16 INDUSTRIAL PARK, LLC  
TAX MAP G, LOT No. 4  
14 INDUSTRIAL PARK ROAD  
CITY of DOVER  
COUNTY of STRAFFORD  
STATE of NEW HAMPSHIRE

DRAWN BY: R/JM FILE: MSA\2654\0\24-2654 EC1  
SCALE: 1" = 30' DATE: SEPT. 16, 2025



Mceneaney  
Survey  
Associates  
of NEW ENGLAND

P.O. Box 1166 - 181 WATSON ROAD  
DOVER, NH 03820 (603) 742-0911

SURVEYING - PLANNING - CONSULTING

"I HEREBY CERTIFY THAT THIS PLAN IS BASED ON AN ACTUAL GROUND SURVEY PERFORMED WITH A TOTAL STATION, BY ME OR THOSE UNDER MY DIRECT SUPERVISION AND THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, SAID SURVEY MEETS OR EXCEEDS THE MINIMUM PRECISION REQUIREMENTS FOR SURVEY CLASSIFICATION "U" AS SET FORTH IN TABLE 500.1 OF THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES OF THE BOARD OF LICENSURE FOR LAND SURVEYORS."



DOVER NOTES:

1. OWNER OF RECORD:

16 INDUSTRIAL PARK, LLC  
340 CENTRAL AVENUE  
DOVER, NEW HAMPSHIRE 03820  
S.C.R.D. VOLUME 5190, PAGE 36  
S.C.R.D VOLUME 5189, PAGE 1003
2. 

C / 4

 – DENOTES TAX MAP AND PARCEL NUMBER.
3. PARCEL AREA = 232,408 S.F. / 5.34 Ac.
4. THE INTENT OF THE E/C PLAN IS TO DEPICT THE PARCEL BOUNDARY AND EXISTING SITE CONDITIONS AS OF SEPTEMBER 4, 2025.
5. ZONING DISTRICT: COMMERCIAL/MANUFACTURING (CM)

| DIMENSIONAL REQUIREMENTS: | REQUIRED   | EXISTING     | PROPOSED     |
|---------------------------|------------|--------------|--------------|
| MINIMUM LOT SIZE          | 20,000 S.F | 232,408 S.F. | 232,408 S.F. |
| MAXIMUM LOT COVERAGE      | 50%        | 25%          | 34%          |
| MINIMUM FRONTAGE          | 100 FEET   | 683.9 FEET   | 683.9 FEET   |

BUILDING SETBACK REQUIREMENTS:

|                         |         |            |            |
|-------------------------|---------|------------|------------|
| FRONT SETBACK           | 35 FEET | 29.83 FEET | 29.83 FEET |
| SIDE SETBACK            | 10 FEET | 183.8 FEET | 11.1 FEET  |
| REAR SETBACK            | 10 FEET | 40.7 FEET  | 12.6 FEET  |
| MAXIMUM BUILDING HEIGHT | 50 FEET | <50 FEET   | <50 FEET   |
6. THE SUBJECT PARCEL IS NOT LOCATED WITHIN A SPECIAL FLOOD HAZARD ZONE AS SHOWN ON FLOOD INSURANCE RATE MAP 33017C0320E, EFFECTIVE DATE 9/30/2015.
7. BASIS OF BEARING IS NH STATE PLANE (NAD83) AND VERTICAL DATUM IS NAVD88 BASED ON GPS OBSERVATION DATED OCTOBER 28, 2024.
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11. THIS PLAN SHOWS ONLY THOSE FEATURES THAT WERE VISUALLY APPARENT ON THE DATE OF THE SURVEY. THE ABSENCE OF SUBSURFACE STRUCTURES, UTILITIES, ETC. FROM THIS PLAN, BUT IN EXISTENCE, IS NOT INTENDED OR IMPLIED.
12. THE SOIL TYPES ON THE SITE ARE:

BzB BUXTON SILT LOAM, 3 TO 8 PERCENT SLOPES  
CfB CHARLTON FINE SANDY LOAM, 3 TO 8 PERCENT SLOPES.  
CfC CHARLTON FINE SANDY LOAM, 8 TO 15 PERCENT SLOPES.  
ScA SCANTING SILT LOAM, 0 TO 3 PERCENT SLOPES  
THE SOURCE FOR THE SOIL TYPE DATA IS USDA NRCS WEB SOIL SURVEY  
<http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>
13. WETLANDS SHOWN WERE DELINEATED BY BRUCE A. GILDAY, N.H.C.W.S. #088; N.H. C.S.S. #012 OF B A G LAND CONSULTANTS, ON AUGUST 14, 2025 IN ACCORDANCE WITH THE 1987 CORPS. OF ENGINEERS WETLANDS DELINEATION MANUAL AND LOCATED BY THIS OFFICE.
14. AS–BUILT PLANS OF THE SITE PLAN SHALL BE SUBMITTED ON PAPER AND IN DIGITAL FORMAT AUTOCAD DWG, AUTOCAD DXF OR ESRI FORMAT TO THE CITY OF DOVER ENGINEER’S OFFICE UPON COMPLETION OF PROJECT. AS–BUILT PLANS SHALL BE PREPARED AND CERTIFIED CORRECT BY A L.L.S. OR P.E. DIGITAL FILES SHALL BE GEO–REFERENCED TO NEW HAMPSHIRE STATE PLANE COORDINATES NAD83 AND SHALL BE EXPRESSED IN FEET.
15. THE INSTALLATION OF ELECTRIC POWER, CABLE TELEVISION AND TELEPHONE LINES SHALL BE UNDERGROUND THROUGHOUT THE SITE FOR WHICH DEVELOPMENT IS PROPOSED.
16. THE SUBJECT PARCEL IS SERVED BY MUNICIPAL WATER AND SEWER.
17. ALL CONSTRUCTION SHALL CONFORM WITH THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION (NHDOT) “STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION” AND WITH THE CITY OF DOVER COMMUNITY SERVICES REGULATIONS AND STANDARD SPECIFICATION FOR CONSTRUCTION. THE MORE STRINGENT SPECIFICATION SHALL APPLY.
18. EROSION CONTROL NOTES INCLUDE PROVISIONS FOR CONSTRUCTION SEQUENCING, TEMPORARY EROSION CONTROL MEASURES, AND PERMANENT STANDARDS SUCH AS LOAM SPREAD RATE FOR DISTURBED AREAS, RATES OF LIME, TYPE AND RATES FOR FERTILIZER, AND SEED AND MULCH MIXTURE WITH RATES OF APPLICATION.
19. THE LIMITS OF CONSTRUCTION DISTURBANCE THAT ARE LOCATED IN OR WITHIN 50 FT. OF CONSERVATION AND WETLAND DISTRICTS SHALL BE STAKED, FLAGGED AND CLEARLY IDENTIFIED PRIOR TO ANY EARTH DISTURBING ACTIVITY OCCURS.
20. ALL TREATMENT SWALES TO BE CONSTRUCTED SHALL HAVE SOD BOTTOMS.
21. A LETTER OF CREDIT FOR THE COST OF REVEGETATING ALL DISTURBED AREAS ON THE SITE SHALL BE SUBMITTED, AND THE APPROVED CONSTRUCTION SIGN INSTALLED PRIOR TO ANY EARTH DISTURBING ACTIVITY OCCURS.
22. A PRE–CONSTRUCTION CONFERENCE WITH THE DEVELOPER, THE DESIGN ENGINEER, THE EARTHWORK CONTRACTOR AND THE CITY ENGINEER SHALL OCCUR PRIOR TO ANY EARTH DISTURBING ACTIVITY.
23. SITE CONSTRUCTION HOURS SHALL BE LIMITED TO MONDAY–FRIDAY 7 AM–6 PM, SATURDAY 9 AM–4 PM. HOURS OF CONSTRUCTION MUST BE DOCUMENTED ON A SITE CONSTRUCTION SIGN ALONG WITH THE CONTACT INFORMATION FOR THE GENERAL CONTRACTOR. SAID SIGNAGE MUST BE LOCATED AND APPROVED BY THE CITY ENGINEER OR PLANNING DIRECTOR. WORK PRECLUDED ON SUNDAYS AND FEDERAL HOLIDAYS.
24. BUILDING ADDRESSES (INCLUDING APT/UNIT NUMBERS, IF APPLICABLE) SHALL BE ASSIGNED BY THE BUILDING OFFICIAL AT THE TIME OF ISSUANCE OF A BUILDING PERMIT.
25. THE PROPOSED USE FOR THE SITE IS A 15,000 S.F. WAREHOUSE BUILDING AND A 6,200 S.F. BUILDING ADDITION.
26. THE FOLLOWING FEDERAL AND STATE PERMITS HAVE BEEN ISSUED FOR THE SUBJECT PROPERTY: (SEE PROJECT VARIANCE/PERMIT SECTION)

DOVER NOTES CONTINUED:

27. COMMERCIAL VEHICLE ROUTE DURING CONSTRUCTION SHALL CONFORM TO DOVER CITY CODE OR BE COORDINATED WITH THE COMMUNITY SERVICES DIRECTOR.
28. ANY RETAINING WALL TALLER THAN FOUR FEET (4') REQUIRES THE ISSUANCE OF A BUILDING PERMIT FROM INSPECTION SERVICES.
29. ANY FENCE TALLER THAN SEVEN FEET (7') REQUIRES THE ISSUANCE OF A BUILDING PERMIT FROM INSPECTION SERVICES.
30. APPLICANT SHALL COMPLETE LAND USE DEVELOPMENT TRACKING FORM, MOST RECENTLY REVISED VERSION, UTILIZING THE ONLINE POLLUTION TRACKING AND ACCOUNTING PILOT PROJECT (PTAPP) PORTAL.

[HTTPS://PTAPP.UNH.EDU/](https://PTAPP.UNH.EDU/)
31. IF APPLICABLE, THE OWNER OF RECORD SHALL RECORD AT THE REGISTRY OF DEEDS DOCUMENTATION SUFFICIENT TO PROVIDE NOTICE TO ALL PERSONS/ENTITIES THAT MAY ACQUIRE ANY PROPERTY SUBJECT TO THE REQUIREMENTS AND RESPONSIBILITIES DESCRIBED IN THE APPROVED STORMWATER MANAGEMENT PLAN. THE NOTICE SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS FOR RECORDING CONTAINED IN RSA 477 AND 478. THE NOTICE NEED NOT SET FORTH THE REQUIREMENTS AT LENGTH, SO LONG AS IT IS SUFFICIENT TO PROVIDE NOTICE TO PROSPECTIVE PURCHASERS TO THE REQUIREMENTS FOR MAINTENANCE AND REPORTING.
32. FIRE DEPARTMENT ACCESS ROAD(S) SHALL BE INSTALLED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF FIRE APPARATUS IN ALL WEATHER CONDITIONS AT ALL TIMES.
33. THE MAXIMUM PARKING SPACE CALCULATION FOR THIS USE IS 20 SPACES. THE PROPOSED PROJECT PROVIDES 13 SPACES, INCLUDING 1 VAN ACCESSIBLE SPACE.
34. EXTERIOR LIGHTING SHALL BE CUT–OFF TYPE FIXTURES PER CHAPTER 153–14–E AND SHALL PROVIDE LIGHTING DIRECTED ON–SITE ONLY.
35. TOPOGRAPHIC SURVEY PERFORMED BY MCENEANEY SURVEY ASSOCIATE, OCTOBER 2024.
36. A SECURITY SYSTEM SHALL BE INSTALLED AS REQUIRED BY CHAPTER 45, ARTICLE I, SECTION 45–2 OF THE CODE OF THE CITY OF DOVER. (AS APPLICABLE)
37. APPROVED BACKFLOW PREVENTERS SHALL BE PROVIDED FOR BOTH FIRE AND DOMESTIC WATER LINES.
38. THE PROPOSED STRUCTURES SHALL BE SERVED BY A SPRINKLER SYSTEM AS REQUIRED BY CHAPTER 81– 30 OF THE CODE OF THE CITY OF DOVER AND THE ADOPTED STATE OF NH BUILDING AND FIRE CODES.
39. SPRINKLER CONNECTIONS MUST BE FLUSHED IN ACCORDANCE WITH NFPA 24 AND A CONTRACTOR’S MATERIAL AND TEST CERTIFICATE FOR UNDERGROUND PIPING FORM MUST BE COMPLETED AND APPROVED BY INSPECTION SERVICES PRIOR TO CONNECTION OF THE BACKFLOW DEVICE.
40. FIRE DEPARTMENT CONNECTION(S) SHALL BE LOCATED ON THE STREET SIDE OF THE BUILDING PER NFPA 13. ACCESS TO THE FDC SHALL MAINTAIN A CLEAR AND UNOBSTRUCTED PATH AT ALL TIMES.
41. THE SITE LAYOUT IS DESIGNED IN COMPLIANCE WITH APPLICABLE ACCESSIBILITY REGULATIONS. THE PROPOSED STRUCTURE WILL ALSO BE DESIGNED IN ACCORDANCE WITH APPLICABLE ACCESSIBILITY REGULATIONS. (I.E. IBC, ANSI–117.1) AND NH RSA 155–A:5.
42. DESIGN ENGINEER SHALL PROVIDE SIGNED LETTER TO CITY ENGINEER CERTIFYING THAT THE STORMWATER MANAGEMENT SYSTEM HAS BEEN INSTALLED IN ACCORDANCE WITH THE APPROVED PLANS.
43. ALL MANHOLE COVERS SHALL BE LIFTMATE R–1743–LM OR APPROVED EQUAL WITH 90 DEGREE HINGE.
44. REQUIRED BLASTING AND EXCAVATION – DOVER FIRE DEPARTMENT SHALL BE NOTIFIED PRIOR TO ANY BLASTING ACTIVITIES AND A BLASTING PERMIT FROM THE DOVER FIRE DEPARTMENT MUST BE OBTAINED.
45. THE WATER MAIN SHALL BE POLY WRAPPED IN ACCORDANCE WITH THE CITY OF DOVER STANDARDS.
46. ALL SEWER MAINS AND MANHOLES SHALL BE TESTED IN ACCORDANCE WITH NHDES ENV–WQ 700 REQUIREMENTS. COPIES OF TEST RESULTS SHALL BE PROVIDED TO THE CITY OF DOVER ENGINEERING DEPARTMENT.
47. WETLAND PLACARDS SHOULD IDENTIFY THE NO CUT WETLAND BUFFER AND SHOULD BE MAINTAINED THROUGHOUT CONSTRUCTION AND AFTER.
48. ALL FITTINGS MUST BE CLASS 140 WATER FITTINGS.
49. ALL GATE VALVES MUST BE MANUFACTURED BY MUELLER OR CLOW.

DEMOLITION NOTES:

1. COORDINATE REMOVAL, RELOCATION, DISPOSAL OR SALVAGE OF UTILITIES WITH THE OWNER AND APPROPRIATE UTILITY COMPANY.
2. ANY EXISTING WORK OR PROPERTY DAMAGED OR DISRUPTED BY CONSTRUCTION/DEMOLITION ACTIVITIES SHALL BE REPLACED OR REPAIRED TO MATCH ORIGINAL EXISTING CONDITIONS BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
3. THE CONTRACTOR SHALL NOTIFY "DIG SAFE" PRIOR TO ANY DEMOLITION/ CONSTRUCTION ACTIVITIES. (811).
4. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL EXISTING STRUCTURES, UTILITIES AND PAVEMENT ON THE SITE TO THE LIMITS SHOWN UNLESS SPECIFICALLY IDENTIFIED TO REMAIN.
5. IT IS THE CONTRACTORS RESPONSIBILITY TO FAMILIARIZE HIMSELF WITH THE CONDITIONS OF ALL OF THE PERMIT APPROVALS.
6. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS NOT ALREADY OBTAINED BY THE OWNER AND ARRANGE AND PAY FOR NECESSARY INSPECTIONS AND APPROVALS FROM THE AUTHORITIES HAVING JURISDICTION.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEMOLITION AND OFF–SITE DISPOSAL OF MATERIALS REQUIRED TO COMPLETE THE WORK, EXCEPT FOR WORK NOTED TO BE COMPLETED BY OTHERS.
8. STONES FROM REMOVED STONEWALLS SHALL REMAIN ON–SITE. STONES SHALL BE REPURPOSED ON–SITE AND SHALL NOT BE USED AS FILL.
9. THE LOCATION OF UNDERGROUND UTILITIES ARE APPROXIMATE AND THE LOCATION IS NOT GUARANTEED BY THE OWNER OR THE ENGINEER. IT IS THE CONTRACTOR’S RESPONSIBILITY TO LOCATE ALL UTILITIES, ANTICIPATE CONFLICTS, REPAIR EXISTING UTILITIES AND RELOCATE EXISTING UTILITIES REQUIRED TO COMPLETE THE WORK.
10. ALL MATERIALS SCHEDULED TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE SPECIFIED. THE CONTRACTOR SHALL DISPOSE OF ALL MATERIALS OFF–SITE IN ACCORDANCE WITH ALL FEDERAL, STATE AND LOCAL REGULATIONS, ORDINANCES, AND CODES.
11. LEDGE REMOVAL VOLUMES ARE ENGINEERS ESTIMATES. CONTRACTOR IS RESPONSIBLE FOR CONDUCTING ADDITIONAL SUBSURFACE INVESTIGATIONS IF NECESSARY TO DETERMINE ESTIMATED VOLUMES.

SITE NOTES

1. REVIEW DOVER NOTES FOR ALL APPLICABLE NOTES.
2. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO APPLICABLE CITY AND STATE CODES.
3. ALL CONSTRUCTION LAYOUT SHALL BE DONE BY A LICENSED SURVEYOR UNDER CONTRACT WITH THE CONTRACTOR.
4. SEE DETAILS FOR SIGN LEGENDS.
5. ALL PAVEMENT MARKINGS AND SIGNS SHALL CONFORM TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", THE "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS", AND THE AMERICAN WITH DISABILITIES ACT, LATEST EDITIONS. IT IS THE CONTRACTOR’S SOLE RESPONSIBILITY TO DETERMINE CONSTRUCTION PROCEDURES AND SEQUENCE TO ENSURE THE SAFETY OF THE FACILITIES AND THEIR COMPONENTS DURING DEMOLITION AND CONSTRUCTION UNLESS OTHERWISE DIRECTED BY THE OWNERS REPRESENTATIVE. THIS INCLUDES THE ADDITION OF NECESSARY SHORING, SHEETING, TEMPORARY BRACING, GUYS OR TIE–DOWNS. SUCH MATERIALS SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AT THE COMPLETION OF THE PROJECT.
7. METHODS OF DEMOLITION, CONSTRUCTION AND ERECTION ARE THE CONTRACTOR’S RESPONSIBILITY UNLESS OTHERWISE SPECIFIED. IT IS THE CONTRACTOR’S RESPONSIBILITY TO PROVIDE AND MAINTAIN ENVIRONMENTAL CONTROLS AS REQUIRED BY FEDERAL, STATE AND MUNICIPAL REGULATIONS AND PERMITS. ENVIRONMENTAL CONTROLS SHALL INCLUDE BUT SHALL NOT BE LIMITED TO DUST CONTROL AND SILT BARRIERS.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE DONE TO STRUCTURES OR UTILITIES OR INJURIES TO THE PUBLIC DURING THE CONSTRUCTION PHASE CAUSED BY HIMSELF, HIS EMPLOYEES, HIS SUBCONTRACTORS OR EMPLOYEES OF SAME. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL TEMPORARY FACILITIES FOR THE PROTECTION OF THE WORK, WORKERS AND PUBLIC SAFETY.
9. THE SITE SHALL BE MAINTAINED TO PROVIDE ACCESSIBILITY IN ALL WEATHER CONDITIONS.
10. REFUSE PICKUP WILL BE BY PRIVATE CONTRACTOR AND WILL BE VIA DUMPSTER ON–SITE.
11. SNOW STORAGE WILL BE ACCORDING TO THE OPERATION AND MAINTENANCE PLAN AND WITHIN AREAS AS INDICATED. ON–SITE SNOW STORAGE SHALL OCCUR ALONG THE EDGES OF PROPOSED PAVEMENT.
12. ALL EXTERIOR DOORS ARE MANUAL AND OPENED FROM THE INTERIOR BY PANIC HARDWARE. ALL EXTERIOR DOORS SHALL COMPLY WITH ADA AND ALL LOCAL BUILDING CODE REQUIREMENTS.
13. PROPOSED BUILDINGS TO BE SOLAR READY.

GRADING NOTES:

1. REVIEW DOVER NOTES FOR ALL APPLICABLE NOTES.
2. CONTRACTOR SHALL RETAIN A GEOTECHNICAL ENGINEERING CONSULTANT APPROVED BY THE OWNER, TO CONDUCT COMPACTION TESTING AND FILL GRADATION MONITORING.
3. SEE EROSION CONTROL NOTES & DETAIL SHEET FOR TEMPORARY AND PERMANENT EROSION CONTROL MEASURES.
4. ALL DRAINAGE PIPES SHALL BE HDPE OR APPROVED EQUAL UNLESS OTHERWISE NOTED.
4. ALL DISTURBED AREAS NOT OTHERWISE CALLED FOR SURFACE TREATMENT SHALL RECEIVE 6" OF HIGH QUALITY LOAM AND SHALL BE SEEDDED WITH GRASS.
6. ALL SITEWORK CONSTRUCTION SHALL BE ADVANCED USING "BEST MANAGEMENT PRACTICES" SANCTIONED BY THE USDA, SCS AND NHDES.
7. TEMPORARY CONSTRUCTION ENTRANCE SHALL BE INSTALLED, UTILIZED AND MAINTAINED UNTIL BASE MATERIALS ARE CONSTRUCTED.
8. CONTRACTOR SHALL PROVIDE A FINISH GRADED SURFACE FREE OF LOW SPOTS AND PONDING AREAS. CRITICAL AREAS INCLUDE BUILDING ENTRANCE AND UNDER RAISED STRUCTURES.
9. PROVIDE INLET PROTECTION BARRIERS AROUND ALL EXISTING AND PROPOSED STORM DRAINAGE INLETS WITHIN THE WORK LIMITS AND AS SHOWN ON PLAN. MAINTAIN FOR THE DURATION OF THE PROJECT UNTIL PAVEMENT HAS BEEN INSTALLED AND UPSTREAM AREAS HAVE BEEN STABILIZED.
10. INSPECT SILT BARRIERS AFTER EACH RAIN STORM OF 1/4 INCH OR GREATER. REPAIR/MODIFY PROTECTION AS NECESSARY TO MAXIMIZE EFFICIENCY OF THE FILTER. REPLACE ALL FILTERS WHEN SEDIMENT IS 1/3 THE STRUCTURE HEIGHT.
11. A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) IS REQUIRED FOR THIS PROJECT. THE SWPPP MUST INCLUDE THE APPROPRIATE BEST MANAGEMENT PRACTICES (BMP’S) TO MINIMIZE THE DISCHARGE OF POLLUTANTS FROM THE SITE. PARTIES RESPONSIBLE FOR DEVELOPING THE SWPPP SHOULD REFER TO THE EPA NPDES CONSTRUCTION GENERAL PERMITS NOTICE OF INTENT FOR A COMPLETE OUTLINE OF REQUIRED ELEMENTS. THESE PLANS AND THE STORMWATER MANAGEMENT SYSTEM INSPECTION & MAINTENANCE PLAN PREPARED FOR THIS PROJECT MAY BE UTILIZED IN FULFILLING THE REQUIREMENTS.
12. LIMIT TREE CLEARING TO ONLY THE EXTENT NECESSARY FOR CONSTRUCTION.
13. CONTRACTOR SHALL NOTIFY THE CITY OF DOVER AND THE DESIGN ENGINEER 48 HOURS PRIOR TO THE INSTALLATION OF PERMANENT STORMWATER BMP’S TO PROVIDE THE CITY AND THE ENGINEER THE OPPORTUNITY TO WITNESS THE CONSTRUCTION AND MATERIALS. THE DESIGN ENGINEER MUST CERTIFY THAT THE STORMWATER MANAGEMENT SYSTEM HAS BEEN INSTALLED IN ACCORDANCE WITH THE APPROVED PLANS.
14. DENSITY REQUIREMENTS:

| LOCATION                                          | MINIMUM DENSITY |
|---------------------------------------------------|-----------------|
| BELOW PAVED OR CONCRETE AREAS                     | 95%             |
| TRENCH BEDDING MATERIAL AND SAND BLANKET BACKFILL | 95%             |
| BELOW LOAM AND SEED AREA                          | 90%             |

\*ALL PERCENTAGES SHALL BE OF THE MAXIMUM DRY DENSITY AT THE OPTIMUM MOISTURE CONTENT AS DETERMINED AND CONTROLLED IN ACCORDANCE WITH AASHTO STANDARD 180, METHOD C. FIELD DENSITY TESTS SHALL BE MADE IN ACCORDANCE WITH AASHTO STANDARD T–191, T–204, OR T–238 AND T–239.

UTILITY CONTACTS

- NATURAL GAS: –

CONTACT: UNILIT CORPORATION  
DAVID MACLEAN  
325 WEST ROAD  
PORTSMOUTH, NH 03801  
TEL: (603)–294–5261  
EMAIL: MACLEAND@UNILIT.COM
- WATER & SEWER: –

CONTACT: CITY OF DOVER COMMUNITY SERVICES DEPARTMENT  
PUBLIC WORKS & UTILITIES  
KEN MAVROGEORGE, PE  
271 MAST ROAD  
DOVER, NH 03820  
TEL: (603)–516–6450  
EMAIL: K.MAVROGEORGE@DOVER.NH.GOV
- ELECTRIC: –

CONTACT: EVERSOURCE  
TREVER EMMONS  
4 OLD DOVER ROAD  
ROCHESTER, NH 03867  
TEL: (603)–332–7515  
EMAIL: TREVER.EMMONS@EVERSOURCE.COM

UTILITY NOTES

1. REVIEW DOVER NOTES FOR ALL APPLICABLE NOTES.
2. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE AND THE LOCATIONS ARE NOT GUARANTEED BY THE OWNER OR ENGINEER. IT IS THE CONTRACTOR’S RESPONSIBILITY TO LOCATE ALL UTILITIES, ANTICIPATE CONFLICTS, REPAIR EXISTING UTILITIES, AND RELOCATE EXISTING UTILITIES REQUIRED TO COMPLETE THE WORK AT NO ADDITIONAL COST TO THE OWNER.
3. SEE EXISTING CONDITIONS PLAN FOR BENCHMARK INFORMATION.
4. ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES TO FACILITATE PULLING CABLES.
5. SEE GRADING, DRAINAGE & EROSION CONTROL PLAN FOR PROPOSED GRADING AND EROSION CONTROL MEASURES.
6. ALL WATER MAIN INSTALLATIONS SHALL BE CLASS 52, DOUBLE CEMENT LINED DUCTILE IRON PIPE OR TYPE "K" COPPER, OR CITY APPROVED MATERIAL.
7. ALL WATER MAIN INSTALLATIONS SHALL BE PRESSURE TESTED AND CHLORINATED AFTER CONSTRUCTION PRIOR TO ACTIVATING THE SYSTEM. CONTRACTOR SHALL COORDINATE CHLORINATION AND TESTING WITH THE CITY OF DOVER WATER DEPARTMENT.
8. ALL GRAVITY SEWER PIPE SHALL BE PVC SDR 35 UNLESS OTHERWISE NOTED AND CONFORM TO THE REQUIREMENTS OF THE CITY OF DOVER SEWER DEPARTMENT STANDARDS.
9. EXISTING UTILITIES TO BE REMOVED SHALL BE CAPPED AT THE MAIN AND MEET THE CITY OF DOVER COMMUNITY SERVICES DEPARTMENT STANDARDS FOR CAPPING OF WATER AND SEWER SERVICES.
10. ALL ELECTRICAL MATERIAL WORKMANSHIP SHALL CONFORM TO THE NATIONAL ELECTRIC CODE, LATEST EDITION, AND ALL APPLICABLE STATE AND LOCAL CODES.
11. THE EXACT LOCATION OF NEW UTILITY SERVICES AND CONNECTIONS SHALL BE COORDINATED WITH THE BUILDING DRAWINGS AND THE UTILITY COMPANIES.
12. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.
13. THE CONTRACTOR SHALL OBTAIN, PAY FOR, AND COMPLY WITH ALL REQUIRED PERMITS, ARRANGE FOR ALL INSPECTIONS, AND SUBMIT COPIES OF ACCEPTANCE CERTIFICATES TO THE OWNER PRIOR TO THE COMPLETION OF THIS PROJECT.
14. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL MANHOLES, BOXES, FITTINGS, CONNECTORS, COVER PLATES, AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED ON THESE DRAWINGS TO RENDER INSTALLATION OF UTILITIES COMPLETE AND OPERATIONAL.
15. CONTRACTOR SHALL PROVIDE EXCAVATION, BEDDING, BACKFILL AND COMPACTION FOR NATURAL GAS SERVICES. COORDINATE WITH GAS COMPANY.
16. A 10–FOOT MINIMUM EDGE TO EDGE HORIZONTAL SEPARATION SHALL BE PROVIDED BETWEEN ALL WATER AND SANITARY SEWER LINES. AN 18–INCH MINIMUM OUTSIDE TO OUTSIDE VERTICAL SEPARATION SHALL BE PROVIDED AT ALL WATER/SANITARY SEWER CROSSINGS.
17. THE CONTRACTOR SHALL CONTACT "DIG–SAFE" 72 HOURS PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL HAVE THE "DIG–SAFE" NUMBER ON SITE AT ALL TIMES.
18. SAWCUT AND REMOVE PAVEMENT AND CONSTRUCT PAVEMENT TRENCH PATCH FOR ALL PROPOSED UTILITIES LOCATED IN EXISTING PAVEMENT AREAS TO REMAIN.
19. GATE VALVES, FITTINGS, ETC. SHALL MEET THE REQUIREMENTS OF THE CITY OF DOVER.
20. COORDINATE TESTING OF SEWER CONSTRUCTION WITH THE CITY OF DOVER.
21. CONTRACTOR SHALL COORDINATE ALL ELECTRIC WORK INCLUDING BUT NOT LIMITED TO: CONDUIT CONSTRUCTION, MANHOLE CONSTRUCTION, UTILITY POLE CONSTRUCTION, OVERHEAD WIRE RELOCATION, AND TRANSFORMER CONSTRUCTION WITH POWER COMPANY.
22. CONTRACTOR SHALL PHASE UTILITY CONSTRUCTION, PARTICULARLY WATER MAIN AND GAS MAIN CONSTRUCTION AS TO MAINTAIN CONTINUOUS SERVICE TO ABUTTING PROPERTIES. CONTRACTOR SHALL COORDINATE TEMPORARY SERVICES TO ABUTTERS WITH THE UTILITY COMPANY AND AFFECTED ABUTTER.
23. SITE LIGHTING SPECIFICATIONS, CONDUIT LAYOUT AND CIRCUITRY FOR PROPOSED SITE LIGHTING AND SIGN ILLUMINATION SHALL BE PREPARED BY THE PROJECT ELECTRICAL ENGINEER.
24. THE PROPOSED STRUCTURE SHALL COMPLY WITH CHAPTER 81, ARTICLE IV, SECTION 81–27 AND THE STATE BUILDING CODES OF THE CODE OF THE CITY OF DOVER.
25. FIRE SUPPRESSION PLANS SHALL BE PROVIDED TO THE FIRE/INSPECTION DEPARTMENT PRIOR TO INSTALLATION.
26. COORDINATE ALL UTILITY WORK WITH APPROPRIATE UTILITY COMPANY.
27. SEWAGE LOADING (PER NHDES ENV–WQ 1008.03)

BUILDING :

– OFFICE = 200 S.F. x 5 GPD/100 S.F. = 10 GPD

– WAREHOUSE: 4 EMPLOYEES x 20 GPD = 80 GPD

– TOTAL = 90 GPD
28. PUMP CHAMBERS AS APPLICABLE ARE UNNECESSARY.

LEGEND

|          |                                |
|----------|--------------------------------|
| S.F.     | SQUARE FEET                    |
| Ac.      | ACRE                           |
| ±        | MORE OR LESS                   |
| (TYP.)   | TYPICAL                        |
| S.C.R.D. | STRAFFORD REGISTRY OF DEEDS    |
| NHHD     | NEW HAMPSHIRE HIGHWAY DEPT.    |
| TBR      | TO BE REMOVED                  |
| ELEV.    | ELEVATION                      |
| INV.     | INVERT                         |
| VGC      | VERTICAL GRANITE CURB          |
| BCC      | BITUMINOUS CONCRETE CURB       |
| V.I.F    | VERIFY IN FIELD                |
| R.O.W.   | RIGHT–OF–WAY                   |
| FES      | FLARED END SECTION             |
|          | EXISTING UTILITY POLE          |
|          | EXISTING SIGN                  |
|          | EXISTING WATER SHUT–OFF        |
|          | OVERHEAD UTILITIES             |
|          | EXISTING ELECTRIC              |
|          | EXISTING WATER LINE            |
|          | EXISTING SEWER LINE            |
|          | EXISTING DRAINAGE LINE         |
|          | EXISTING UNDERGROUND TELEPHONE |
|          | EXISTING WATER VALVE           |
|          | EXISTING GAS VALVE             |
|          | EXISTING HYDRANT               |
|          | EXISTING LIGHT/SIGNAL POLE     |
|          | EXISTING SEWER MANHOLE         |
|          | EXISTING DRAINAGE MANHOLE      |
|          | EXISTING CATCHBASIN            |
|          | PAVEMENT RADIUS                |
|          | EXISTING SPOT GRADE            |
|          | EXISTING GRADE                 |
|          | PROPOSED FINISH GRADE          |
|          | PROPOSED SPOT GRADE            |
|          | PAVEMENT WITH CURB             |
|          | SILT BARRIER                   |
|          | PROPOSED SEWER                 |
|          | PROPOSED WATER                 |
|          | PROPOSED UNDERGROUND UTILITIES |
|          | PROPOSED GAS                   |

NOTE SHEET

15,000 SF WAREHOUSE &  
6,200 SF BUILDING ADDITION  
14 INDUSTRIAL PARK ROAD  
DOVER, NH 03820

16 INDUSTRIAL PARK, LLC  
340 CENTRAL AVENUE  
DOVER, NH 03820

DATE: 10–2–25

SCALE: NO SCALE

DRAWN BY: WEJ

DESIGN BY: JRG

APPROVED BY: SJH

PROJECT NO: 25114

FILE: SITE.dwg

NO.

REVISION

APPD

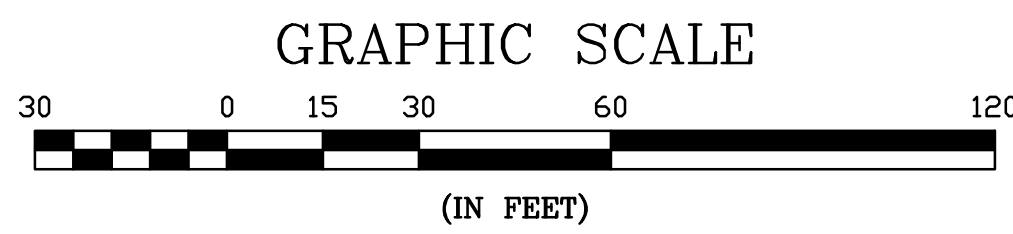
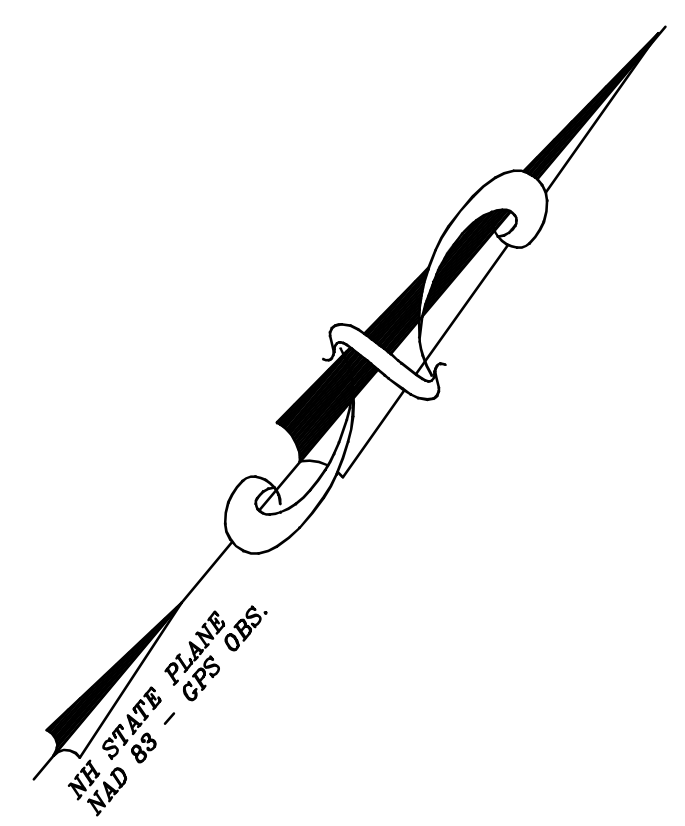
DATE

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY



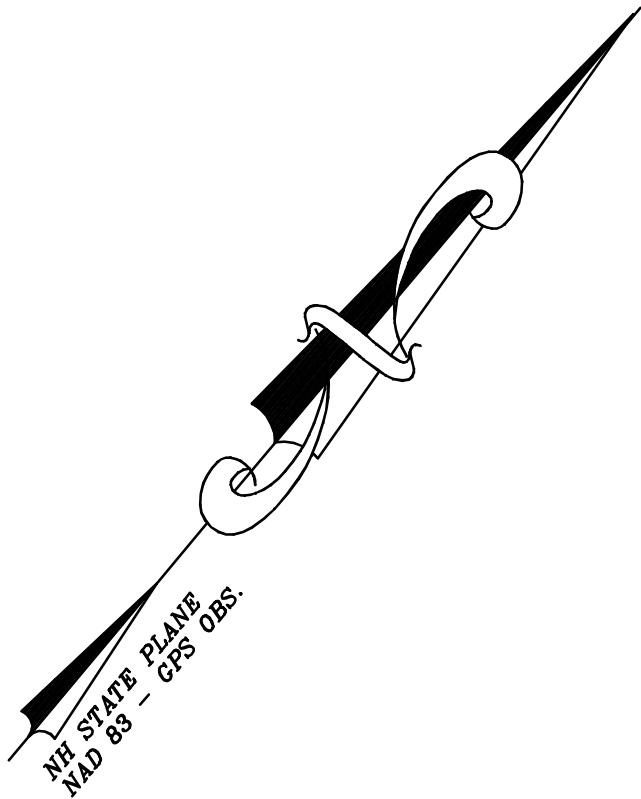
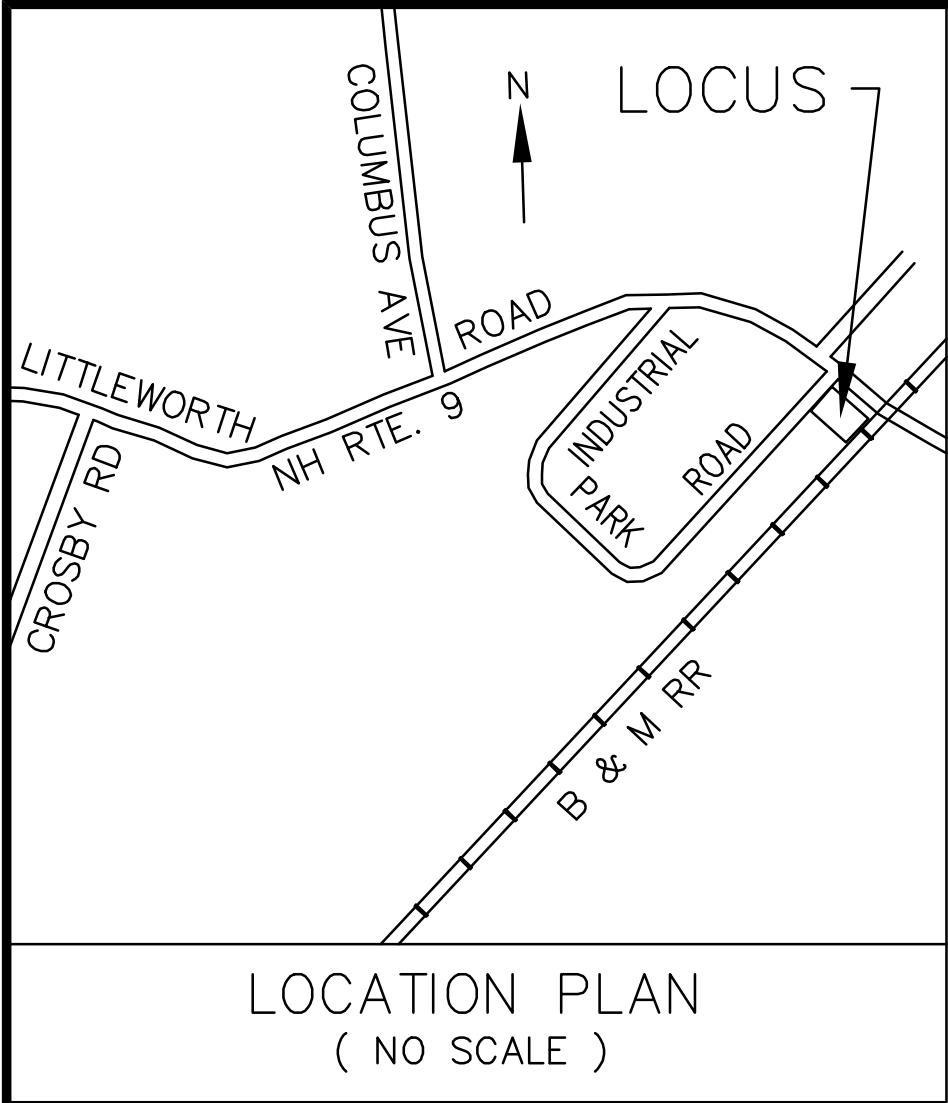
181 Watson Road, PO Box 1166  
Dover, New Hampshire 03821  
603.749.0443





|                 |                                                                                                   |  |  |  |  |                                                                  |  |  |  |                                          |                   |  |  |  |     |  |          |  |       |      |  |
|-----------------|---------------------------------------------------------------------------------------------------|--|--|--|--|------------------------------------------------------------------|--|--|--|------------------------------------------|-------------------|--|--|--|-----|--|----------|--|-------|------|--|
| DEMOLITION PLAN |                                                                                                   |  |  |  |  |                                                                  |  |  |  | NOT FOR CONSTRUCTION FOR PERMIT USE ONLY |                   |  |  |  |     |  |          |  |       |      |  |
| <div>5</div>    | 15,000 SF WAREHOUSE &<br>6,200 SF BUILDING ADDITION<br>14 INDUSTRIAL PARK ROAD<br>DOVER, NH 03820 |  |  |  |  | 16 INDUSTRIAL PARK, LLC<br>340 CENTRAL AVENUE<br>DOVER, NH 03820 |  |  |  |                                          |                   |  |  |  |     |  |          |  |       |      |  |
|                 |                                                                                                   |  |  |  |  |                                                                  |  |  |  |                                          | DATE: 10-2-25     |  |  |  |     |  |          |  |       |      |  |
|                 |                                                                                                   |  |  |  |  |                                                                  |  |  |  |                                          | SCALE: 1" = 30'   |  |  |  |     |  |          |  |       |      |  |
|                 |                                                                                                   |  |  |  |  |                                                                  |  |  |  |                                          | DRAWN BY: WEJ     |  |  |  |     |  |          |  |       |      |  |
|                 |                                                                                                   |  |  |  |  |                                                                  |  |  |  |                                          | DESIGN BY: JRG    |  |  |  |     |  |          |  |       |      |  |
|                 |                                                                                                   |  |  |  |  |                                                                  |  |  |  |                                          | APPROVED BY: SJH  |  |  |  |     |  |          |  |       |      |  |
|                 |                                                                                                   |  |  |  |  |                                                                  |  |  |  |                                          | PROJECT NO: 25114 |  |  |  |     |  |          |  |       |      |  |
|                 |                                                                                                   |  |  |  |  |                                                                  |  |  |  | FILE: SITE.dwg                           |                   |  |  |  | NO. |  | REVISION |  | APP'D | DATE |  |



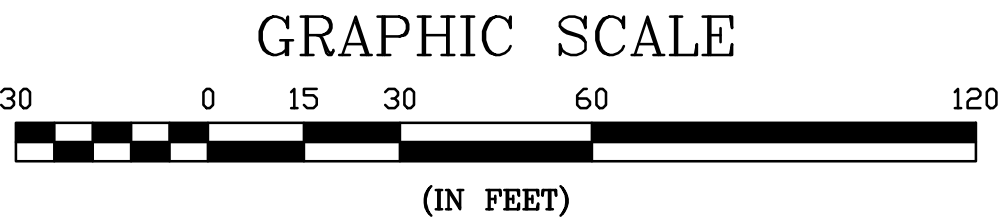
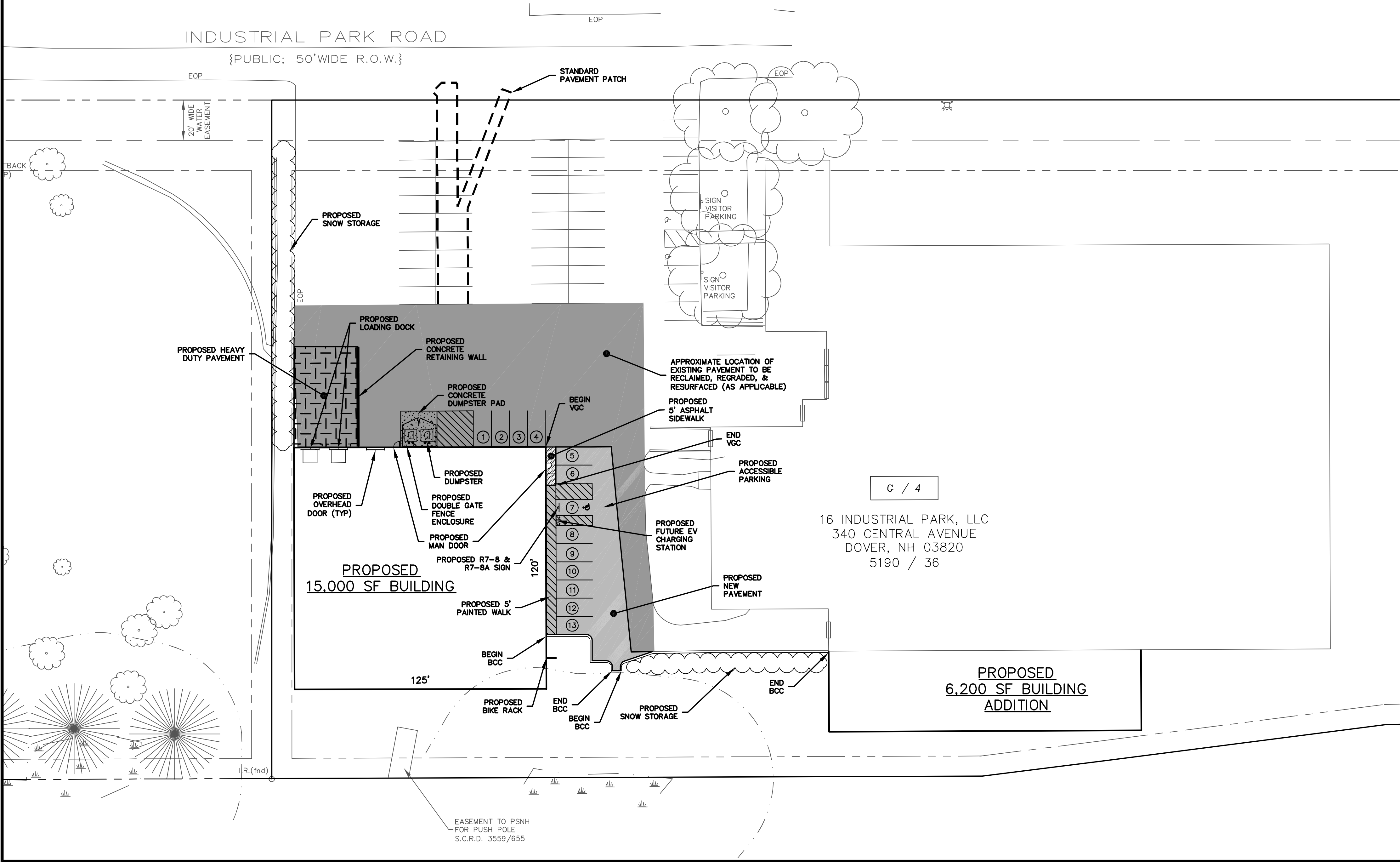


**SITE PARKING CALCULATIONS**  
COMMERCIAL MANUFACTURING (CM) DISTRICT

| USES:                                                          | MAXIMUM | PROPOSED |
|----------------------------------------------------------------|---------|----------|
| OFFICE: 1 SPACE/300 S.F.<br>300 S.F. x 1 / 200 S.F.=0.67       | 20      | 1        |
| WAREHOUSE: 1 SPACE/800 S.F.<br>300 S.F. x 1 / 14,800 S.F.=18.5 | 20      | 12       |
| TOTAL                                                          | 20      | 13       |
| ACCESSIBLE PARKING                                             | 1 (VAN) | 1 (VAN)  |

**SNOW STORAGE CALCULATIONS**  
3,710 S.F. PAVEMENT  $\frac{1 \text{ S.F. STORAGE}}{10 \text{ S.F. PAVEMENT}} = \pm 371 \text{ S.F.}$   
  
SNOW STORAGE AREA PROVIDED  $\pm 2,366.14 \text{ S.F.}$

RIM = 112.78  
CB



PLANNING FILE NO.: SITE-2025-XXXX

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CIVILWORKS NEW ENGLAND  
181 Watson Road, PO Box 1166  
Dover, NH 03820

| DATE    | SCALE    | DRAWN BY | DESIGN BY | APPROVED BY | PROJECT NO. | FILE     | NO. | REVISION | APP'D | DATE |
|---------|----------|----------|-----------|-------------|-------------|----------|-----|----------|-------|------|
| 10-2-25 | 1" = 30' | WEJ      | JRG       | BYSH        | 25114       | SITE.dwg |     |          |       |      |

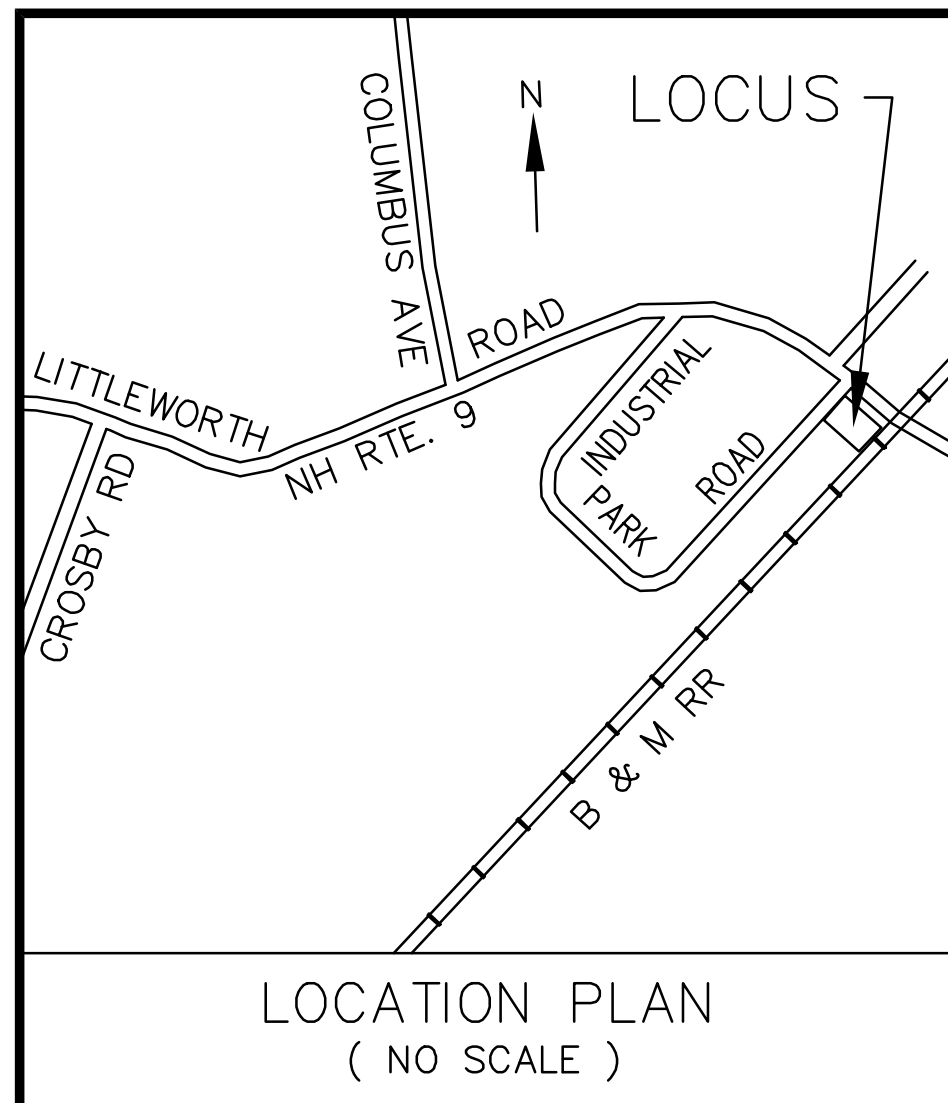
SITE PLAN

16 INDUSTRIAL PARK, LLC  
340 CENTRAL AVENUE  
DOVER, NH 03820

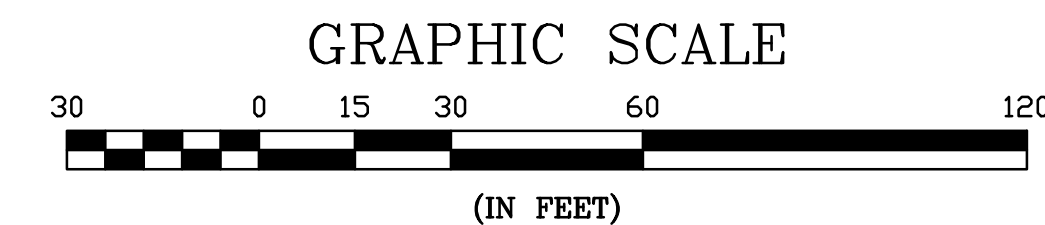
15,000 SF WAREHOUSE &  
6,200 SF BUILDING ADDITION  
14 INDUSTRIAL PARK ROAD  
DOVER, NH 03820

6





NOTES:



PLANNING FILE NO.: SITE-2025-XXXX

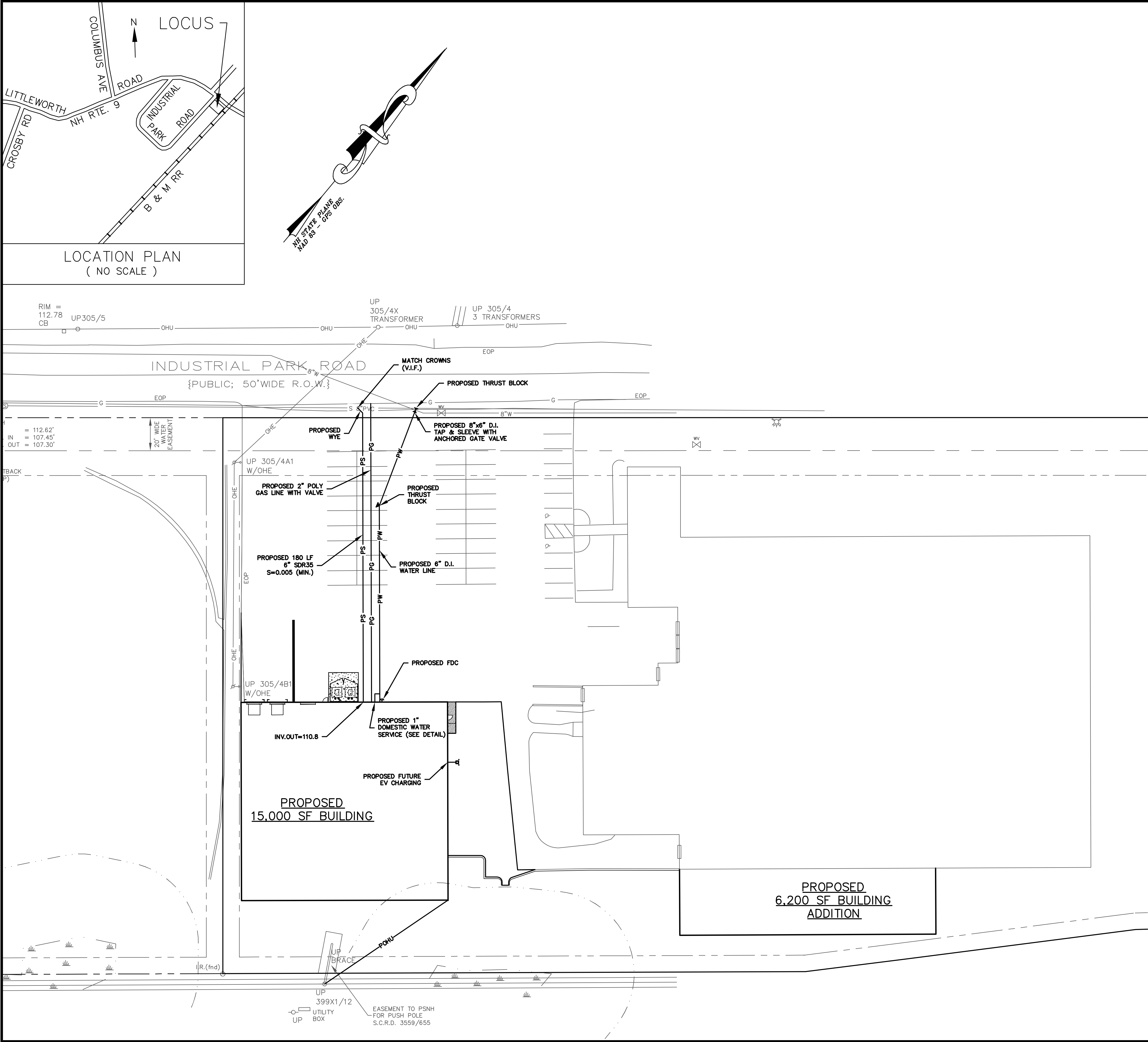
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## ***GRADING, DRAINAGE, & EROSION CONTROL PLAN***

15,000 SF WAREHOUSE &  
6,200 SF BUILDING ADDITION  
14 INDUSTRIAL PARK ROAD  
DOVER, NH 03820

7





PLANNING FILE NO.: SITE-2025-XXXX

UTILITY PLAN

15,000 SF WAREHOUSE &  
6,200 SF BUILDING ADDITION  
14 INDUSTRIAL PARK ROAD  
DOVER, NH 03820

16 INDUSTRIAL PARK, LLC  
340 CENTRAL AVENUE  
DOVER, NH 03820

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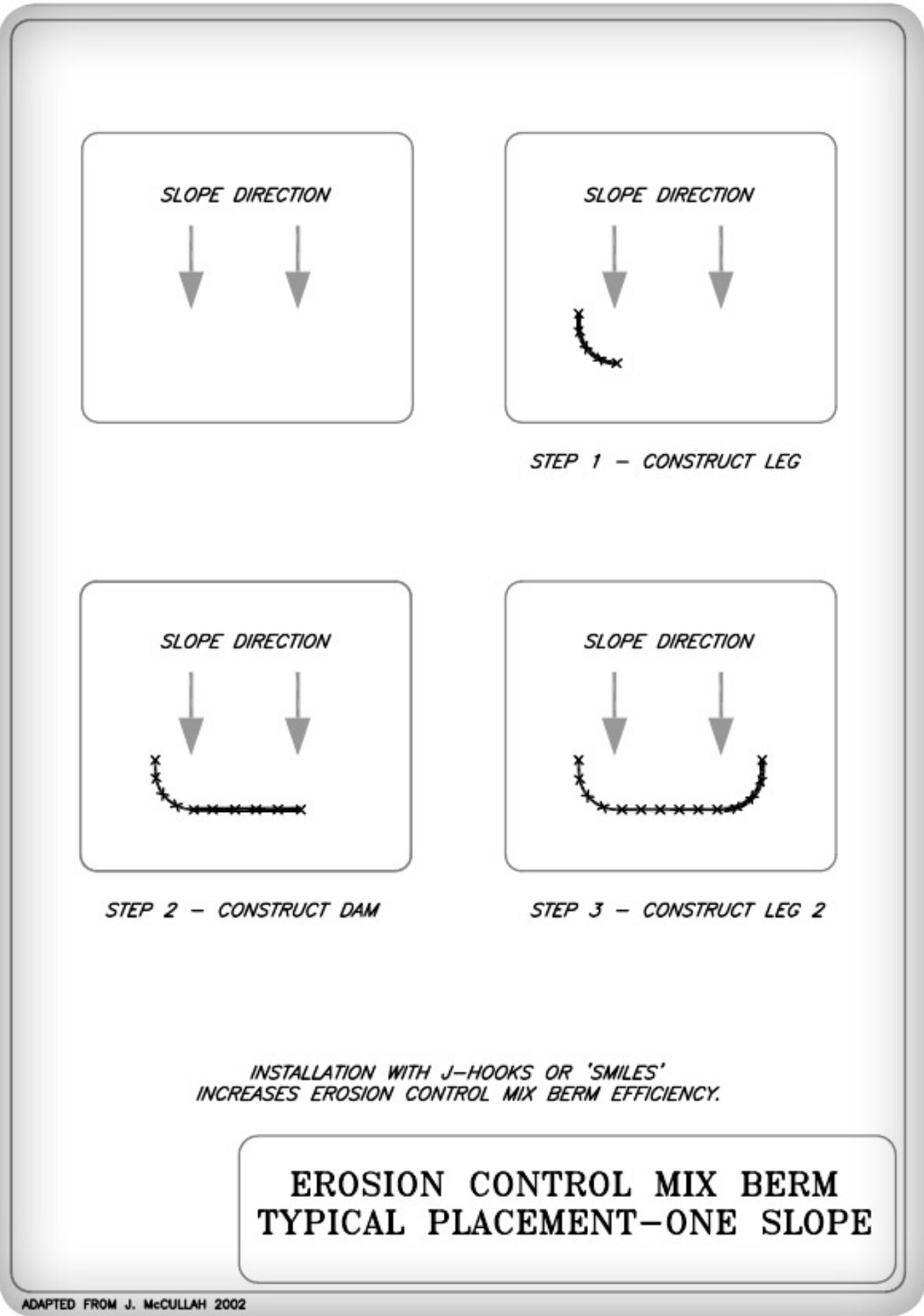
**GNE**  
CIVILWORKS NEW ENGLAND  
CIVIL & WATERWORKS ENGINEERING  
181 Watson Road, PO Box 1166  
Dover, NH 03820  
603.749.0443

| DATE    | SCALE    | DRAWN BY | DESIGN BY | APPROVED BY | PROJECT NO. | FILE     | NO. | REVISION | APP'D | DATE |
|---------|----------|----------|-----------|-------------|-------------|----------|-----|----------|-------|------|
| 10-2-25 | 1" = 30' | WEJ      | JRG       | BY: JRG     | 25114       | SITE.dwg |     |          |       |      |

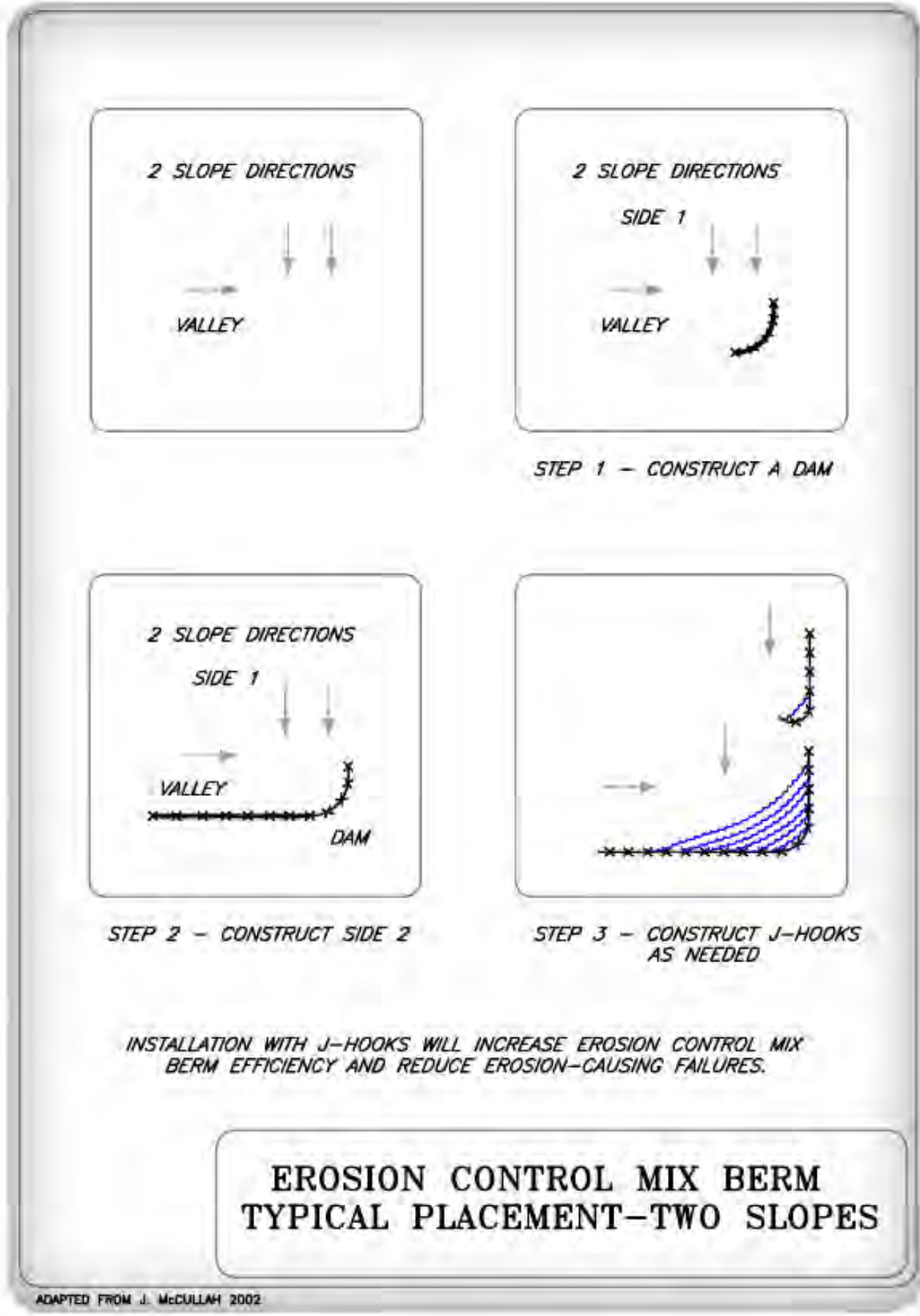




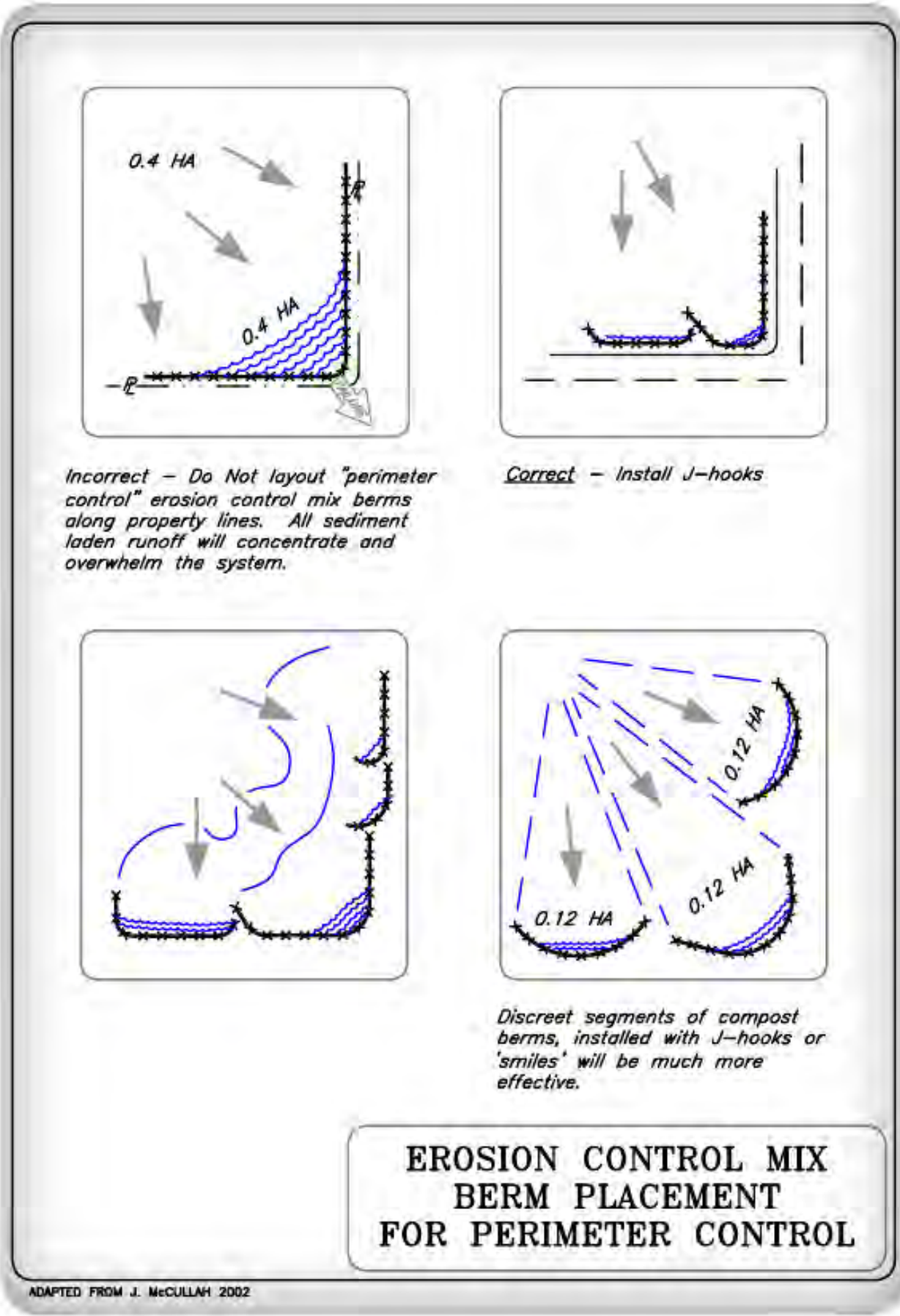




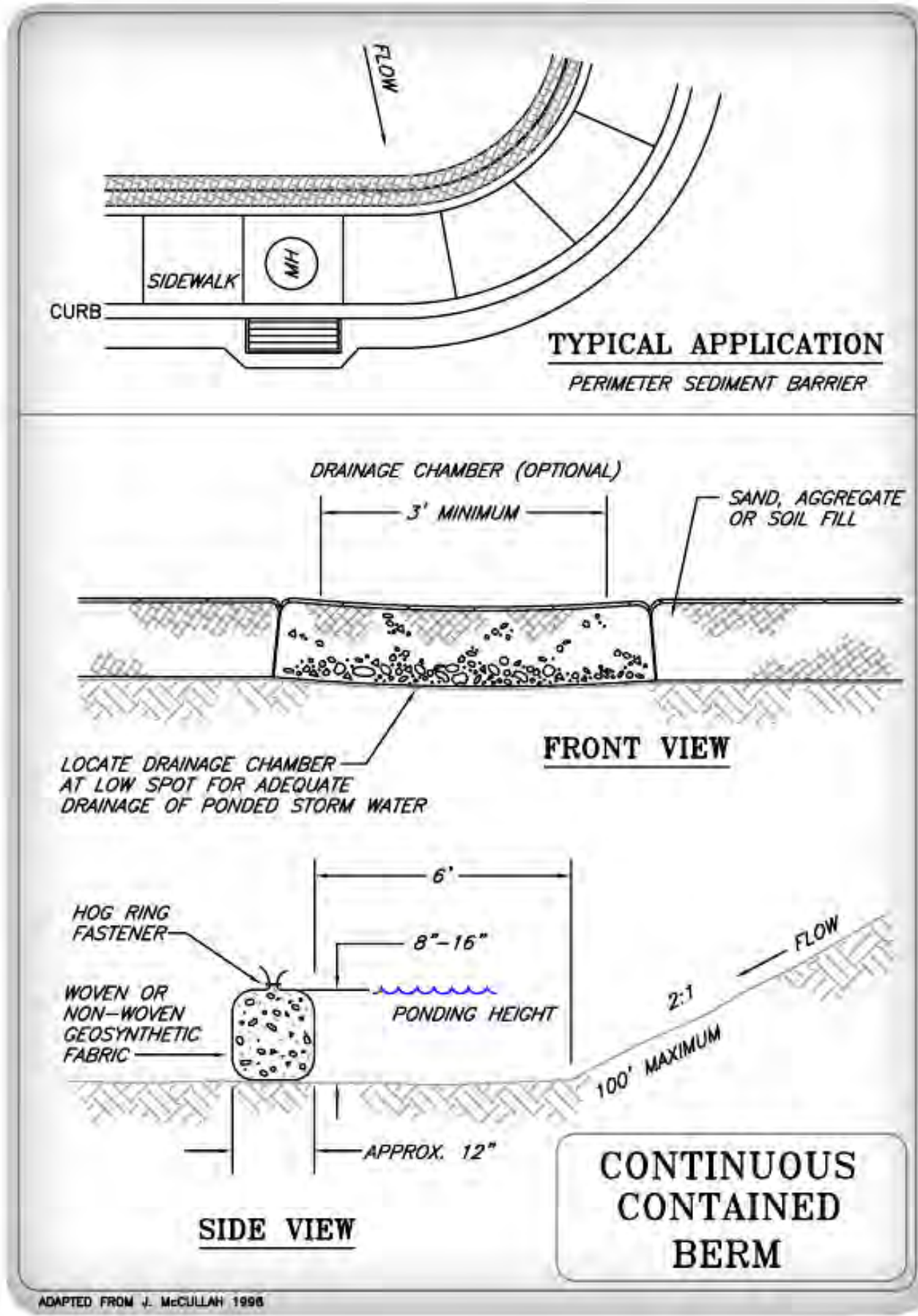
DETAIL FROM NHDES STORMWATER MANUAL VOLUME 3



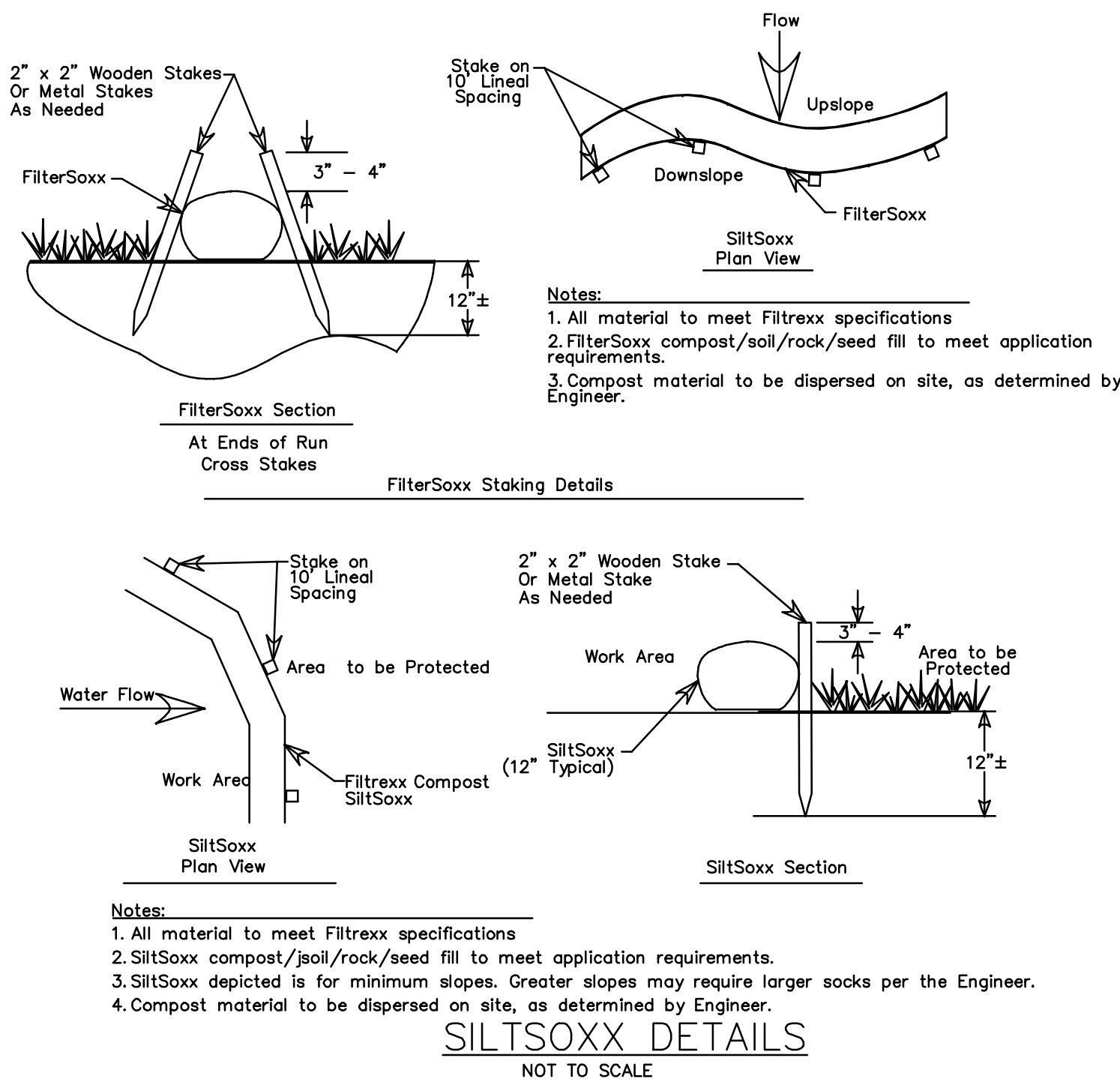
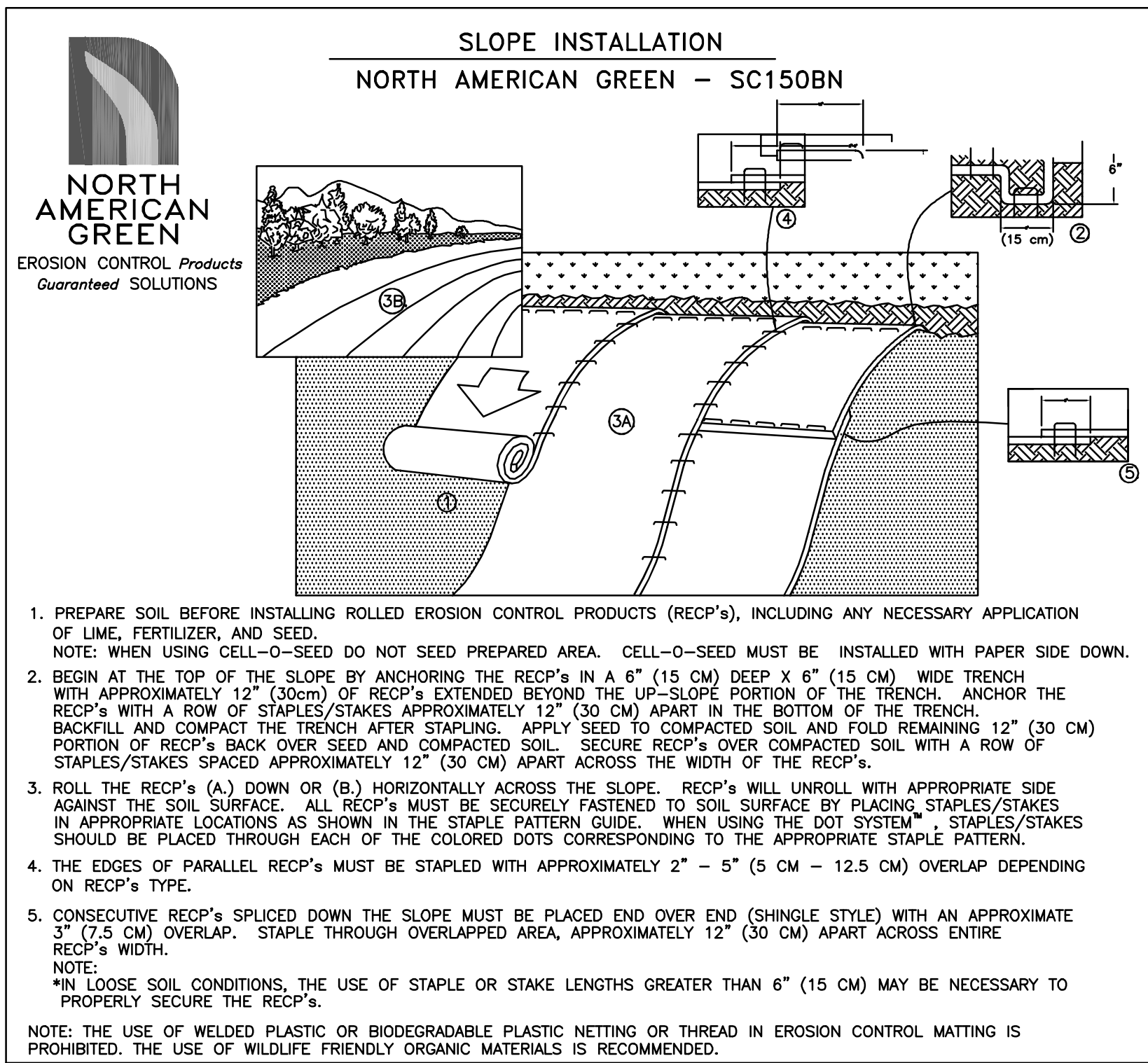
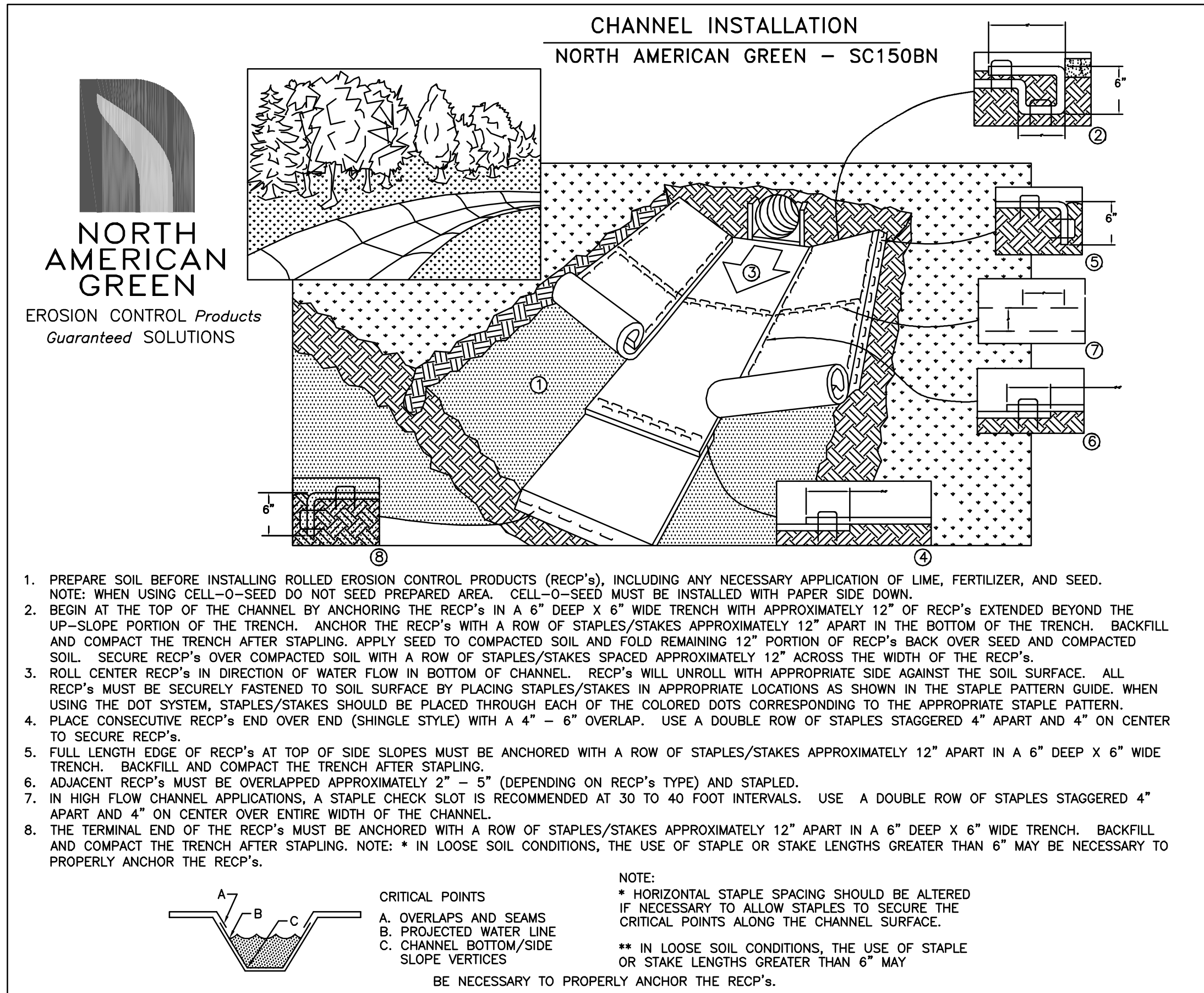
DETAIL FROM NHDES STORMWATER MANUAL VOLUME 3



DETAIL FROM NHDES STORMWATER MANUAL VOLUME 3



DETAIL FROM NHDES STORMWATER MANUAL VOLUME 3



PLANNING FILE NO.: SITE-2025-XXXX

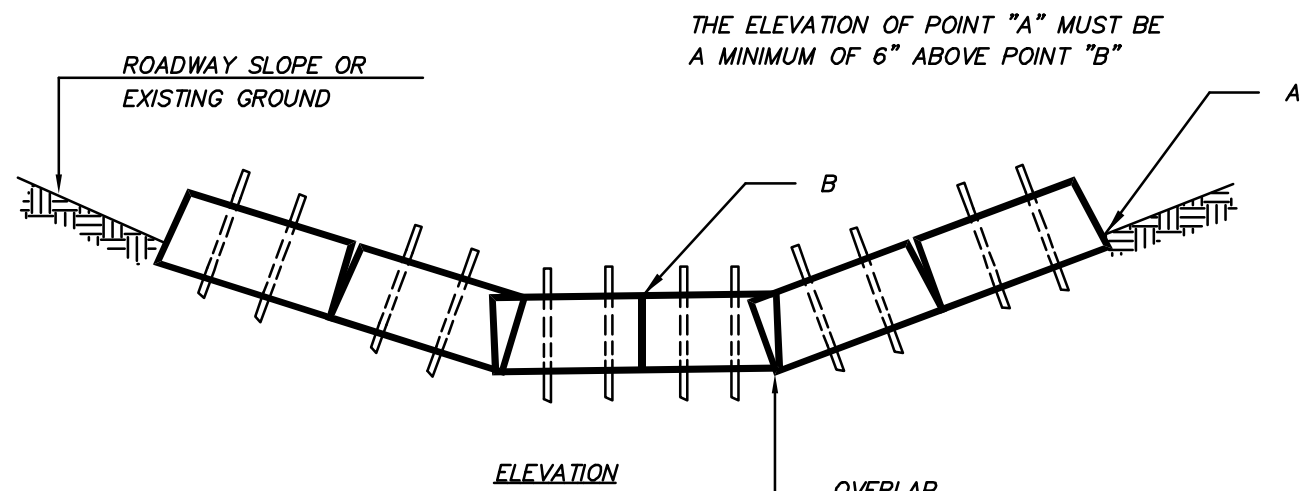
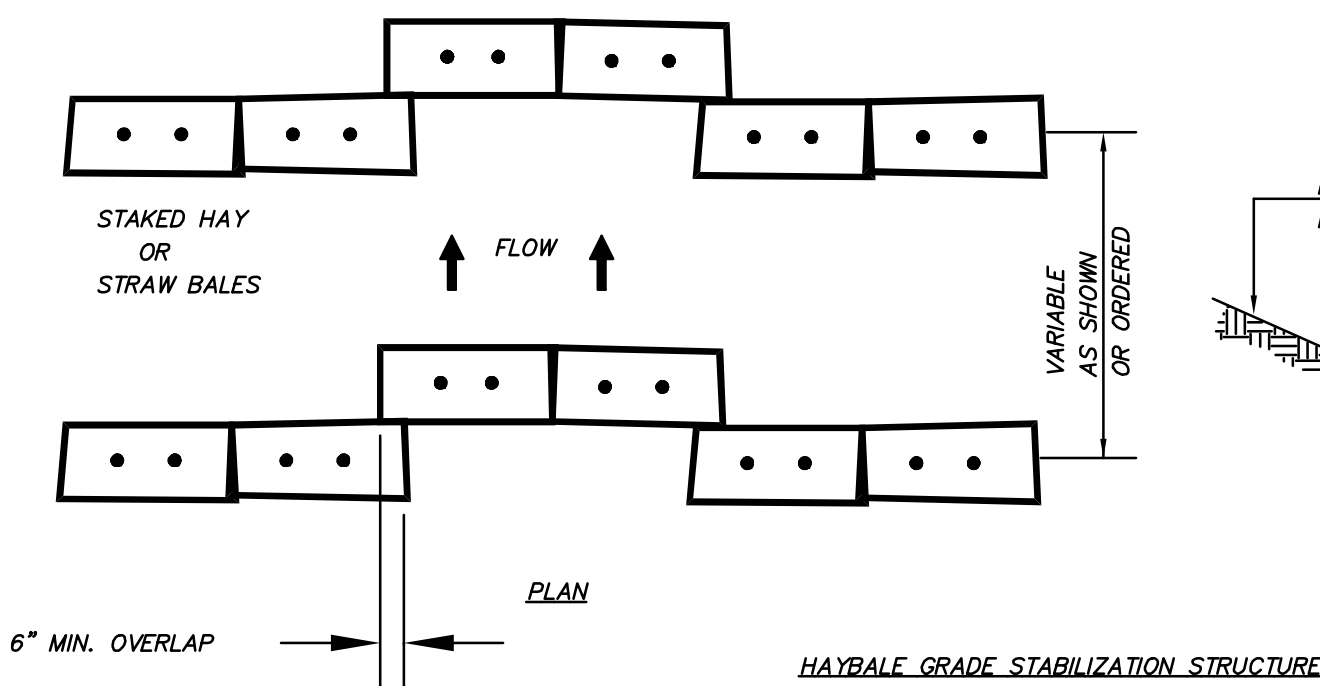
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|---------|----------|----------|-----------|-------------|-------------|----------|-----|----------|-------|------|
| 10-2-25 | NO SCALE | WEJ      | JRG       | BYSH        | 2514        | SITE.dwg |     |          |       |      |

EROSION CONTROL DETAILS

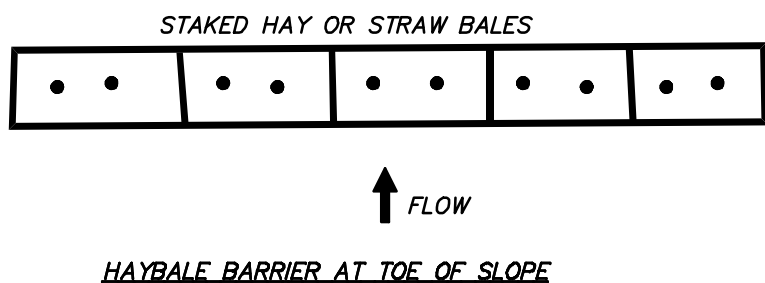
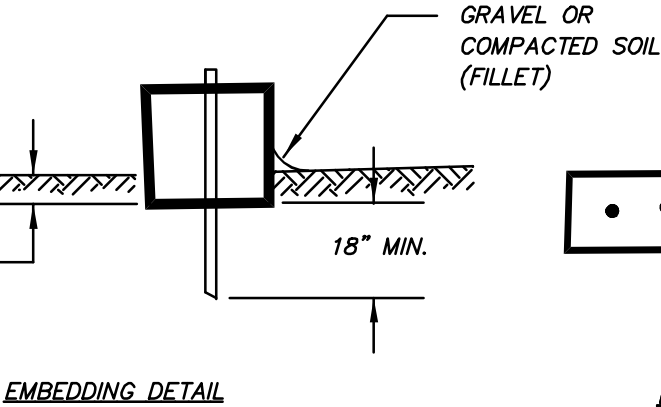
15,000 SF WAREHOUSE &  
6,200 SF BUILDING ADDITION  
14 INDUSTRIAL PARK ROAD  
DOVER, NH 03820

16 INDUSTRIAL PARK, LLC  
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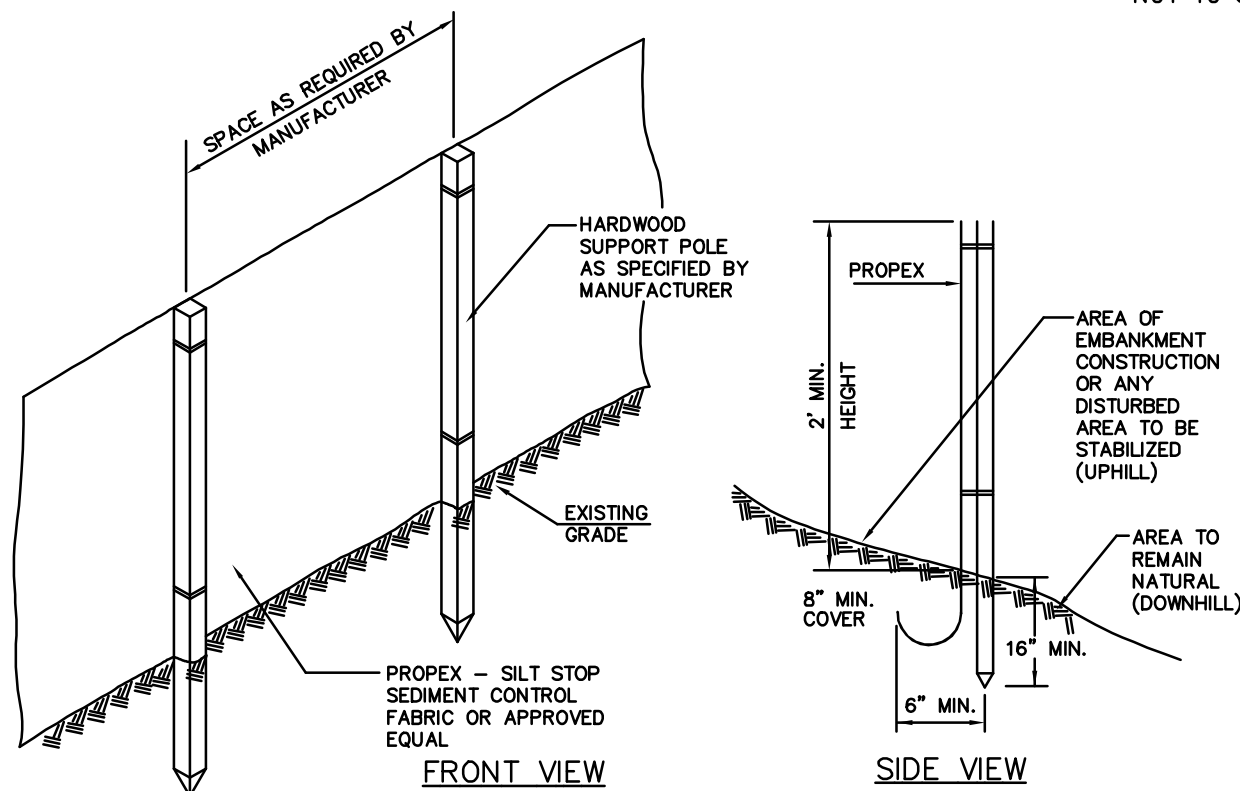


- CONSTRUCTION SPECIFICATIONS
- BALES SHALL BE PLACED IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
  - EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF 4".
  - BALES SHALL BE SECURELY ANCHORED IN PLACE BY 2" x 2" STAKES OR RE-BARS DRIVEN THROUGH THE BALES. THE FIRST STAKE IN EACH BALE SHALL BE ANGLED TOWARD PREVIOUSLY LAID BALE TO FORCE BALES TOGETHER.
  - INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
  - BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
  - REMOVE AND PROPERLY DISPOSE OF ALL SEDIMENT PRIOR TO REMOVING HAYBALES.



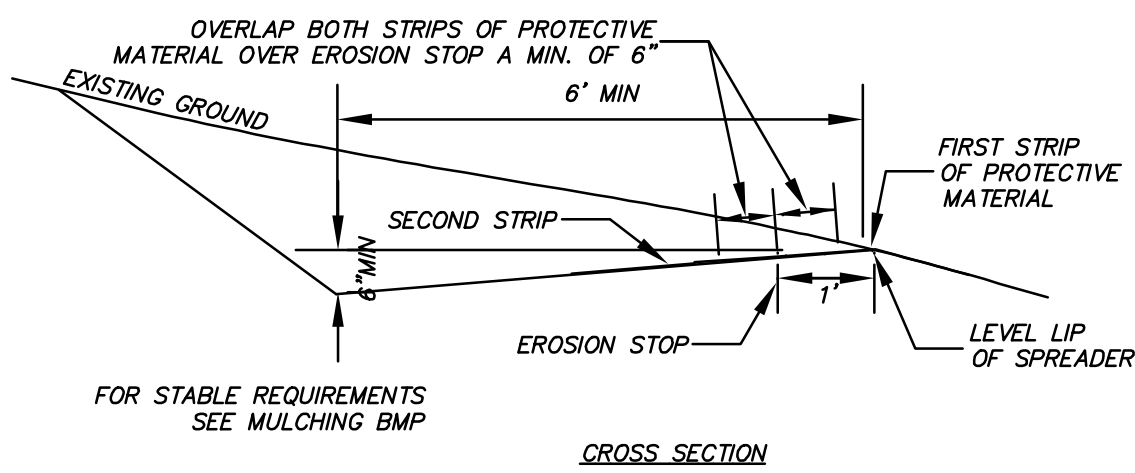
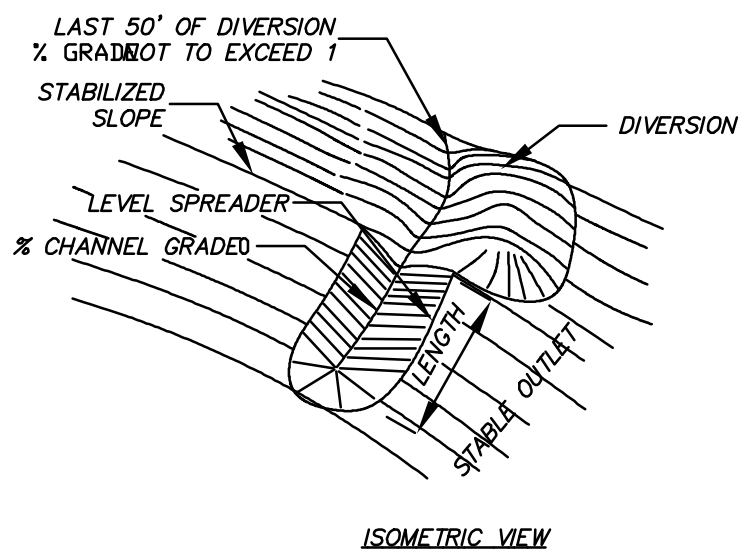
### HAYBALE NOTES AND DETAILS

NOT TO SCALE



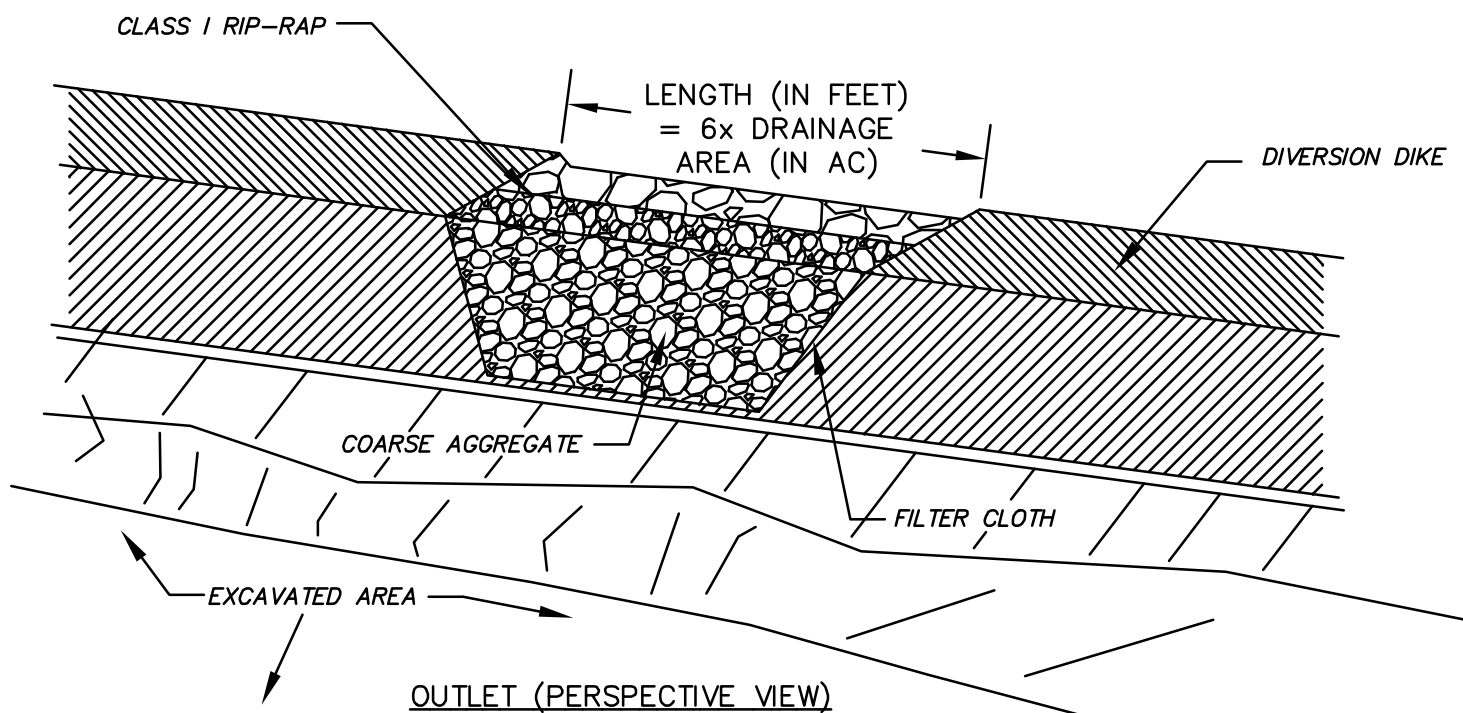
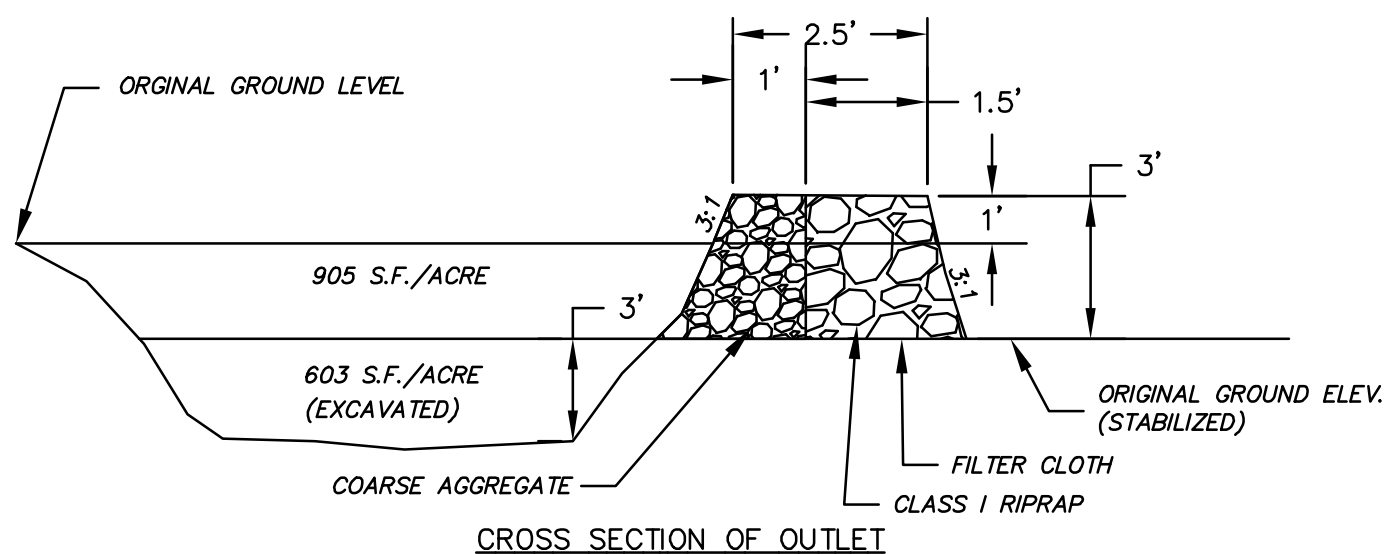
### SILT FENCE DETAIL

NOT TO SCALE



### LEVEL SPREADER DETAIL

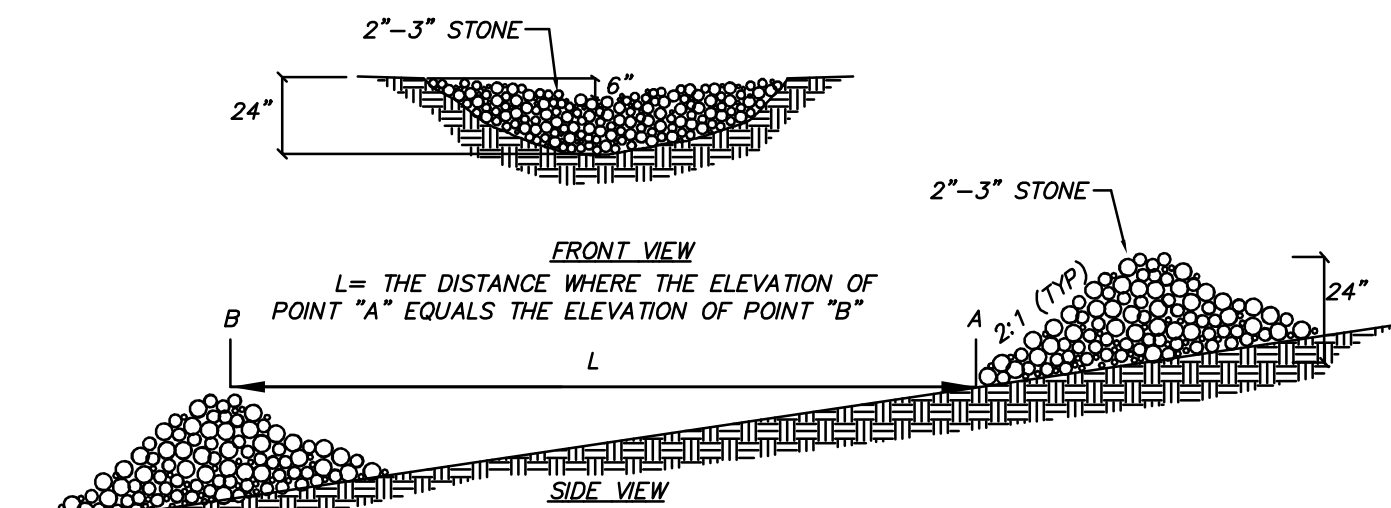
NOT TO SCALE



- NOTES:
- COARSE AGGREGATE SHALL MEET NHDOT 304.5 SPECIFICATIONS AND SHALL NOT CONTAIN MORE THAN 5% FINES PASSING THE #200 SIEVE.
  - FILTER CLOTH SHALL BE MIRAFI 700X OR APPROVED EQUAL.
  - CLASS I RIPRAP SHALL MEET NHDOT 583 SS SPECIFICATIONS.
  - THE MAXIMUM CONTRIBUTING AREA TO THE TRAP SHALL BE LESS THAN 5 AC.
  - THE TRAP SHALL BE CLEANED WHEN 50% OF THE ORIGINAL VOLUME IS FILLED.
  - MATERIALS REMOVED FROM THE TRAP SHALL BE PROPERLY DISPOSED OF AND STABILIZED.

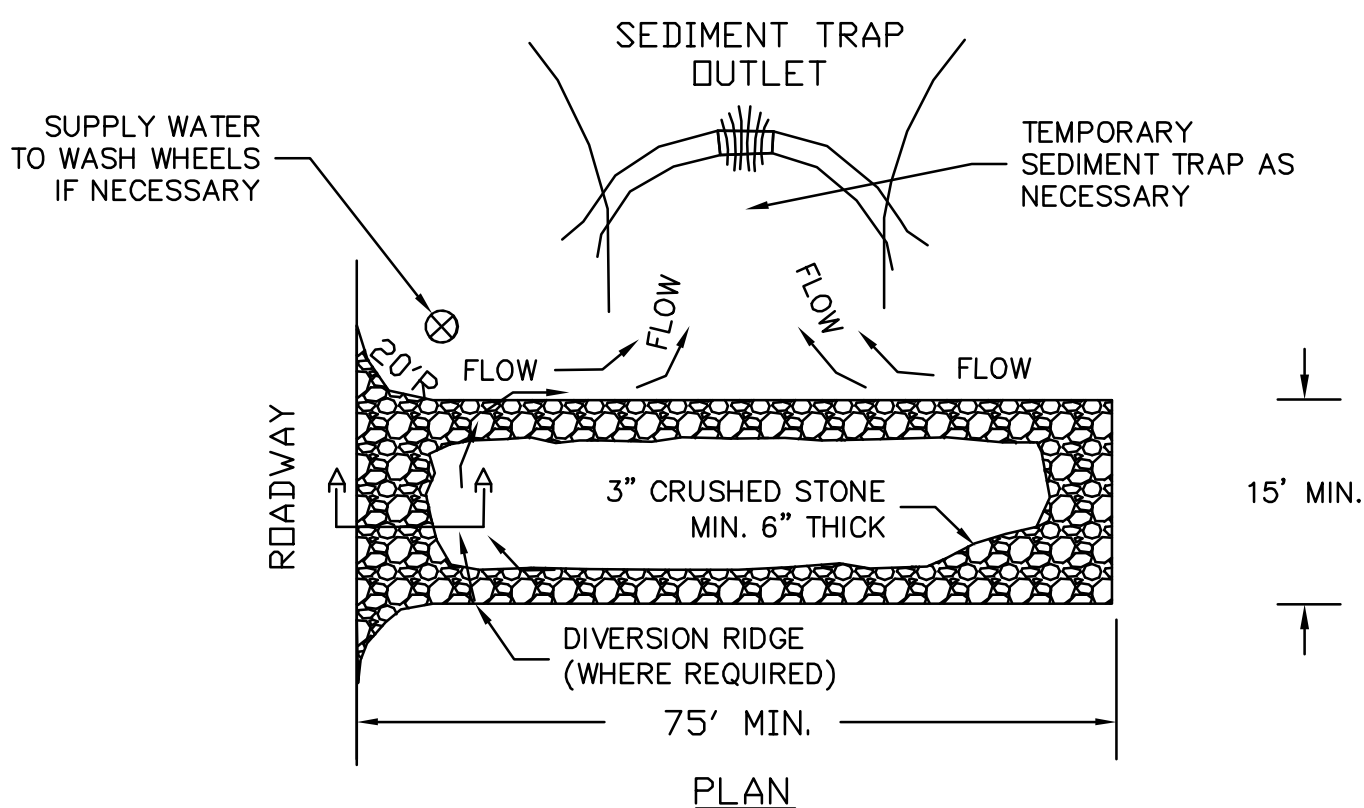
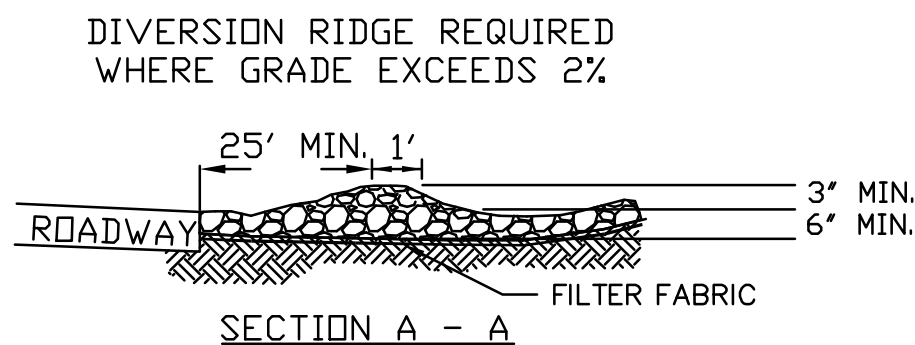
### TEMPORARY SEDIMENT TRAP

NOT TO SCALE



### STONE CHECK DAM

NOT TO SCALE



#### A. GENERAL NOTES:

- A STABILIZED CONSTRUCTION ENTRANCE/EXIT CONSISTS OF A PAD OF STONE AGGREGATE PLACED ON A GEOTEXTILE FILTER FABRIC, LOCATED AT ANY POINT WHERE TRAFFIC WILL BE LEAVING A CONSTRUCTION SITE TO AN EXISTING ACCESS ROAD WAY OR OTHER PAVED SURFACE. ITS PURPOSE IS TO REDUCE OR ELIMINATE THE TRACKING OF SEDIMENT ONTO PUBLIC ROADS BY CONSTRUCTION VEHICLES. THIS HELPS PROTECT RECEIVING WATERS FROM SEDIMENT CARRIED BY STORM WATER RUNOFF FROM ROADS.
- ONLY CONSTRUCTION TRAFFIC LEAVING THE SITE IS REQUIRED TO USE THE TEMPORARY STABILIZED EXIT. CONSIDER PROVIDING A SEPARATE, UNPROTECTED ENTRANCE FOR TRAFFIC ENTERING THE SITE. THIS WILL INCREASE THE LONGEVITY OF THE STABILIZED EXIT BY ELIMINATING HEAVY LOADS ENTERING THE SITE AND REDUCING THE TOTAL TRAFFIC OVER THE DEVICE.
- LOCATE THE CONSTRUCTION ENTRANCES AND EXITS, A MINIMUM OF 100 FEET FROM INTERSECTIONS, TO LIMIT SEDIMENT LEAVING THE SITE AND TO PROVIDE FOR MAXIMUM UTILITY BY ALL CONSTRUCTION VEHICLES. AVOID ENTRANCES THAT HAVE STEEP GRADES AND ENTRANCES AT CURVES IN ROADS.
- THE ENTRANCE SHOULD BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AND REPAIR AND/OR MAINTENANCE OF ANY MEASURES USED TO TRAP SEDIMENT.

#### B. SPECIFICATIONS (TEMPORARY CONSTRUCTION ENTRANCE/EXITS SHOULD MEET THE FOLLOWING REQUIREMENTS).

- STONE SIZE MINIMUM: USE SHOULD BE 3" CRUSHED STONE.
- THE MINIMUM LENGTH OF THE PAD SHOULD BE 75 FEET.
- THE MINIMUM WIDTH OF THE PAD SHOULD BE 15 FEET OR THE WIDTH OF THE ENTRANCE, WHICHEVER IS GREATER.
- THE PAD SHOULD SLOPE AWAY FROM THE EXISTING ROADWAY.
- THE PAD SHOULD BE AT LEAST 6" THICK.
- A GEOTEXTILE FILTER FABRIC SHOULD BE PLACED BETWEEN THE STONE PAD AND THE EARTH SURFACE BELOW THE PAD.
- THE PAD SHOULD BE MAINTAINED OR REPLACED WHEN MUD AND SOIL PARTICLES CLOG THE VOIDS IN THE STONE SUCH THAT MUD AND SOIL PARTICLES ARE TRACKED OFF-SITE.
- NATURAL DRAINAGE THAT CROSSES THE LOCATION OF THE STONE PAD SHOULD BE INTERCEPTED AND PIPED BENEATH THE PAD, AS NECESSARY, WITH SUITABLE OUTLET PROTECTION.

- C. MAINTENANCE REQUIREMENTS (THE ENTRANCE/EXIT SHOULD BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT).
- WHEN THE CONTROL PAD BECOMES INEFFECTIVE, THE STONE SHOULD BE REMOVED ALONG WITH THE COLLECTED SOIL MATERIAL, REGRADED ON SITE, AND STABILIZED. THE ENTRANCE SHOULD THEN BE RECONSTRUCTED.
  - THE CONTRACTOR SHOULD SWEEP THE PAVEMENT AT EXITS WHENEVER SOIL MATERIALS ARE TRACKED ONTO THE ADJACENT PAVEMENT OR TRAVELED WAY.
  - WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY. WHEN WHEEL WASHING IS REQUIRED, IT SHOULD BE CONDUCTED ON AN AREA STABILIZED WITH AGGREGATE, WHICH DRAINS INTO AN APPROVED SEDIMENT-TRAPPING DEVICE. ALL SEDIMENT SHOULD BE PREVENTED FROM ENTERING STORM DRAINS, DITCHES OR WATERWAYS.

### TEMPORARY CONSTRUCTION ENTRANCE/EXIT

NOT TO SCALE

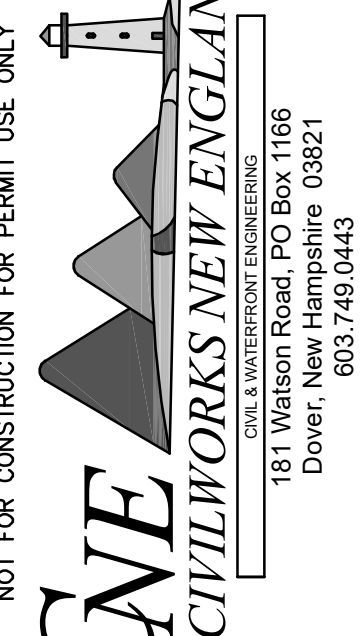
PLANNING FILE NO.: SITE-2025-XXXX

EROSION CONTROL DETAILS

15,000 SF WAREHOUSE &  
6,200 SF BUILDING ADDITION  
14 INDUSTRIAL PARK ROAD  
DOVER, NH 03820

16 INDUSTRIAL PARK, LLC  
340 CENTRAL AVENUE  
DOVER, NH 03820

11



NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

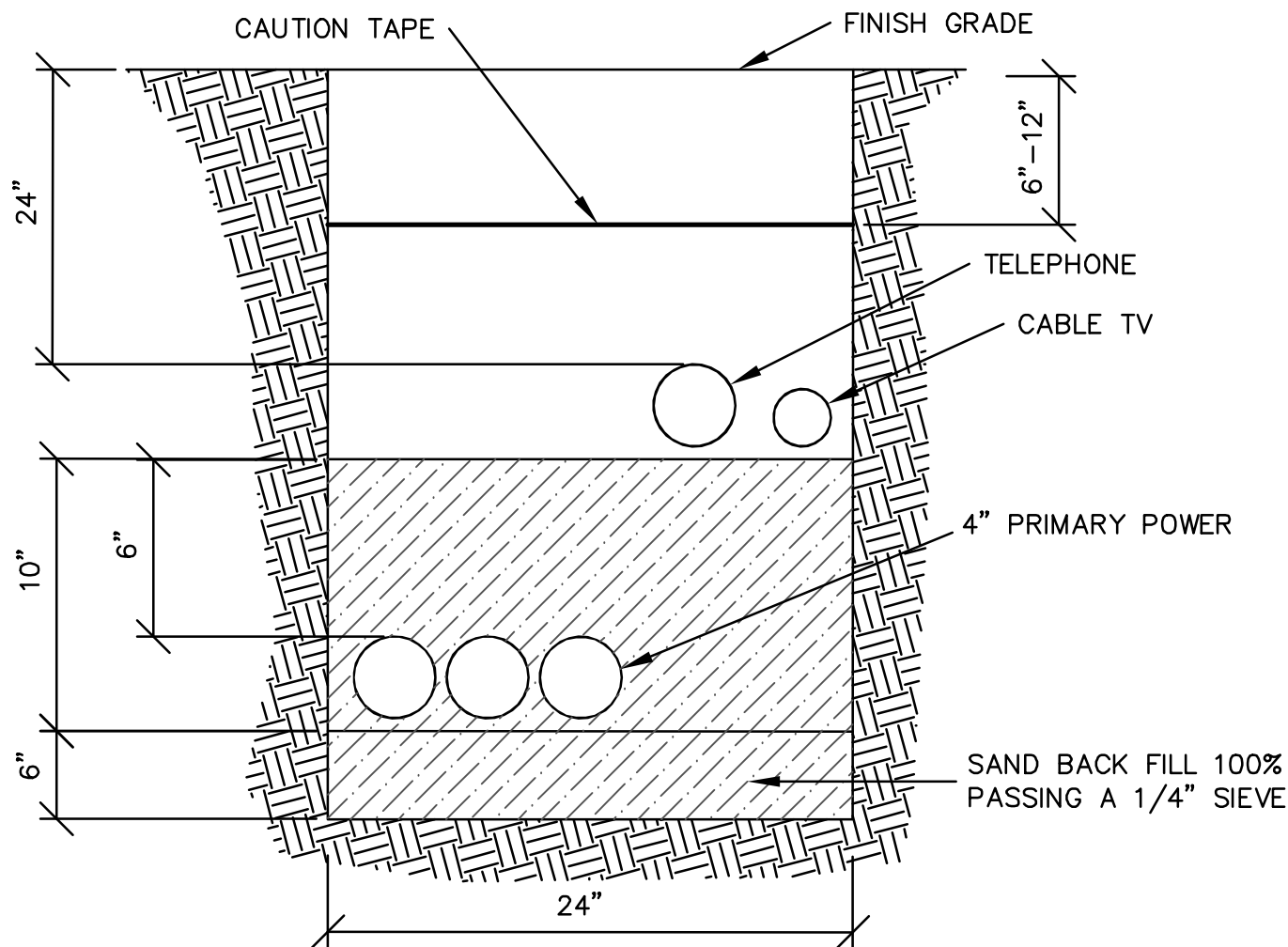


| RADIUS    | MAX LENGTH      |
|-----------|-----------------|
| < 21'     | USE CURVED CURB |
| 12' - 28' | 3'              |
| 29' - 35' | 4'              |
| 36' - 42' | 5'              |
| 43' - 49' | 6'              |
| 50' - 56' | 7'              |
| 57' - 60' | 8'              |
| OVER 60'  | 9'              |
|           | 10'             |

- NOTES:
1. LOAM AND SEED SHOULD BE IN COMPLIANCE WITH NH DOT 641, 642, 643, 644 AND 645.
  2. CONCRETE CURB SUPPORT SHOULD BE SET 1/2" BELOW THE TOP OF THE PAVEMENT BASE COURSE.

### CITY OF DOVER D-8 GRANITE CURB DETAIL

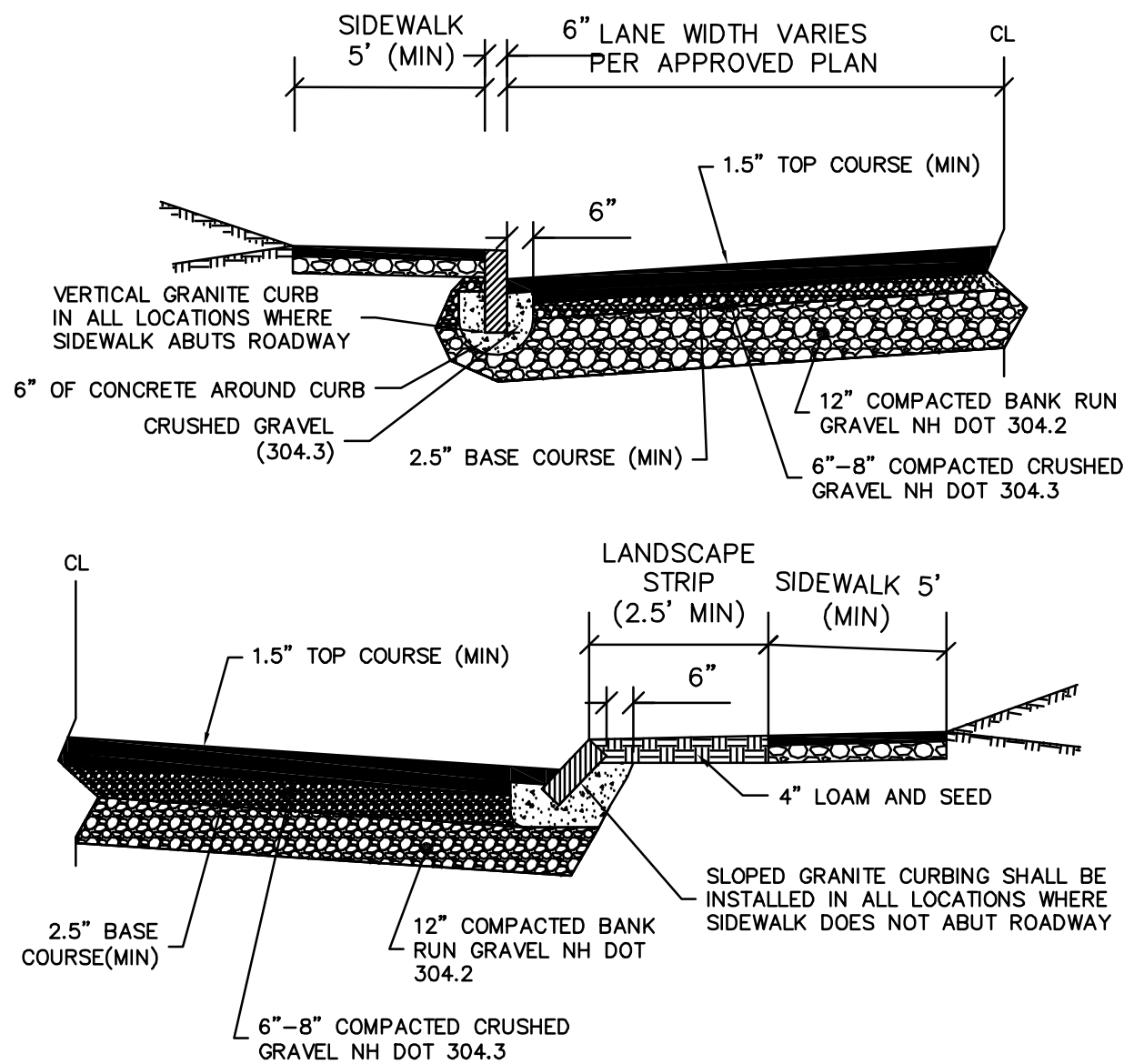
NOT TO SCALE



- NOTES:
1. TELEPHONE CONDUIT SHALL BE 3" SCHEDULE 40 PVC, WITH STEEL SWEEPS AT RISER POLE, 90° BENDS AND AT BUILDING.
  2. LEAVE PULL ROPE IN ALL CONDUITS FOR CABLE INSTALLATION.
  3. FOR COMPLETE SPECIFICATIONS SEE "REQUIREMENTS FOR ELECTRIC SERVICE CONNECTIONS - INFORMATIONS AND REQUIREMENTS FOR ELECTRIC SUPPLY BY EVERSOURCE ENERGY".
  4. CONTRACTOR SHOULD VERIFY THE NUMBER & SIZE OF CONDUIT WITH THE APPROPRIATE UTILITIES PROVIDERS.

### UTILITY TRENCH

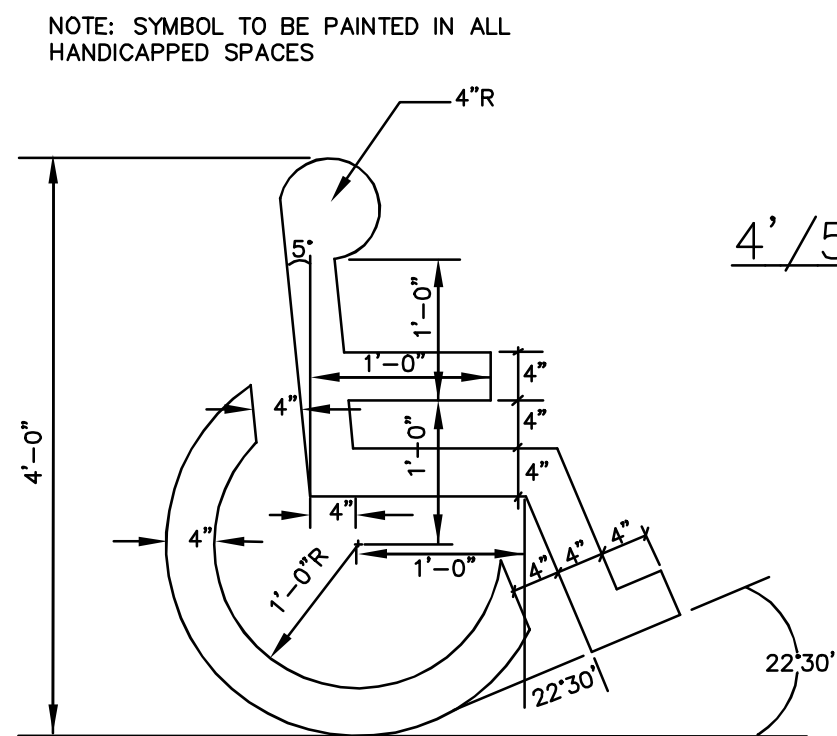
NOT TO SCALE



- NOTES:
1. THIS DETAIL IS FOR GENERAL REVIEW PURPOSES ONLY. FINAL DESIGN SHALL BE BASED ON SPECIFIC SITE CONDITIONS AND APPROVED PLANS.
  2. SIDEWALK LOCATION AND MATERIAL SHALL BE AS APPROVED BY THE CITY OF DOVER.

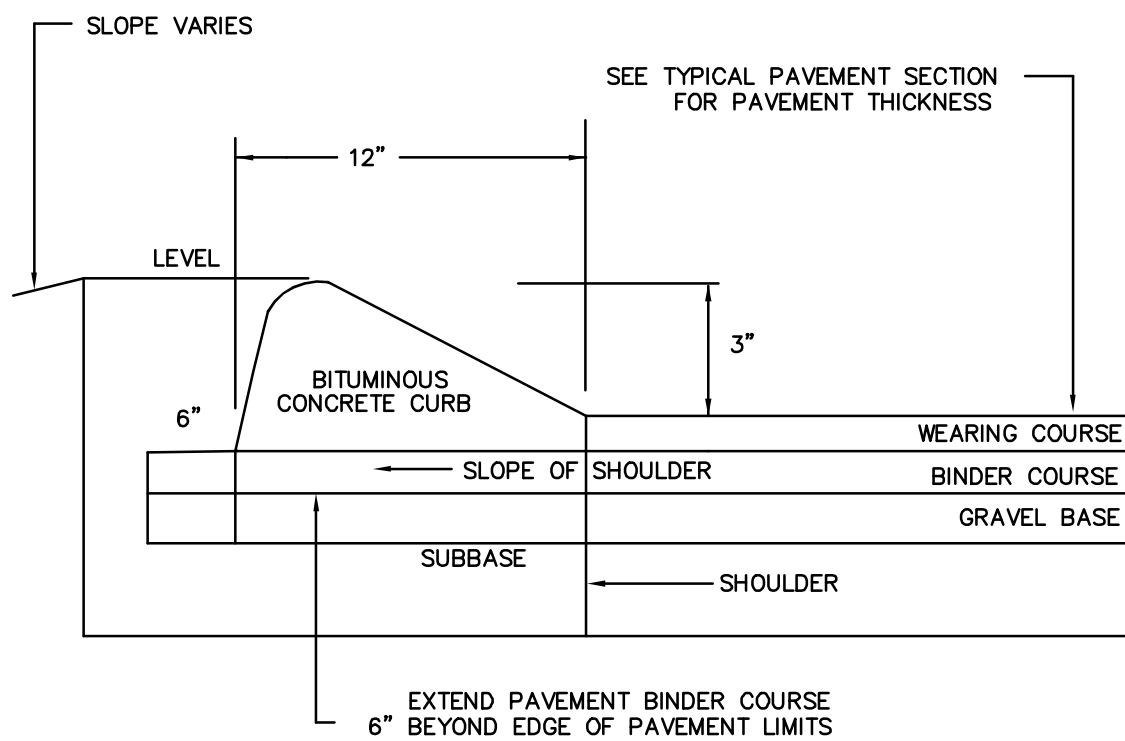
### (FOR WORK IN R.O.W.) CITY OF DOVER D-5 ROADWAY CROSS SECTION DETAIL

NOT TO SCALE



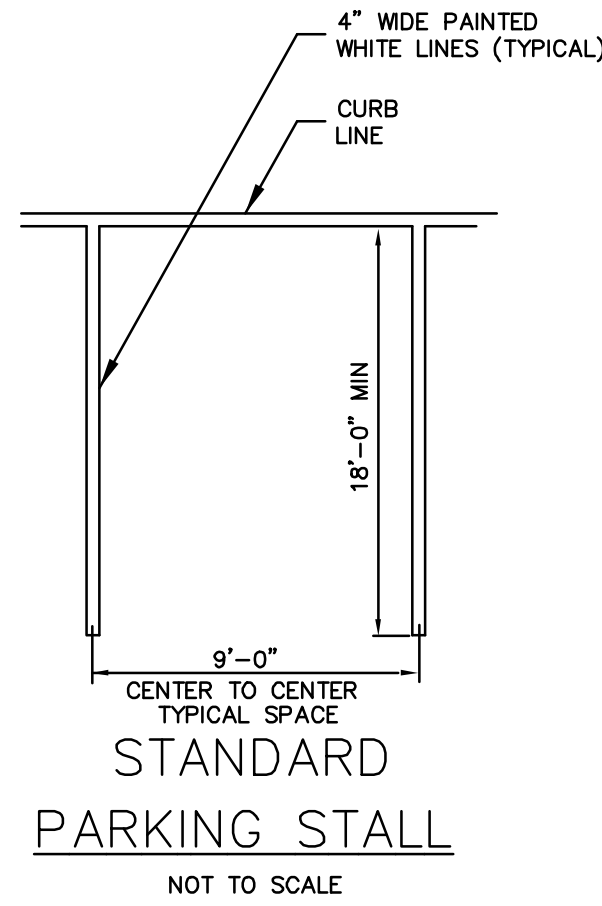
### PAINTED ACCESSIBLE PARKING SYMBOL

NOT TO SCALE



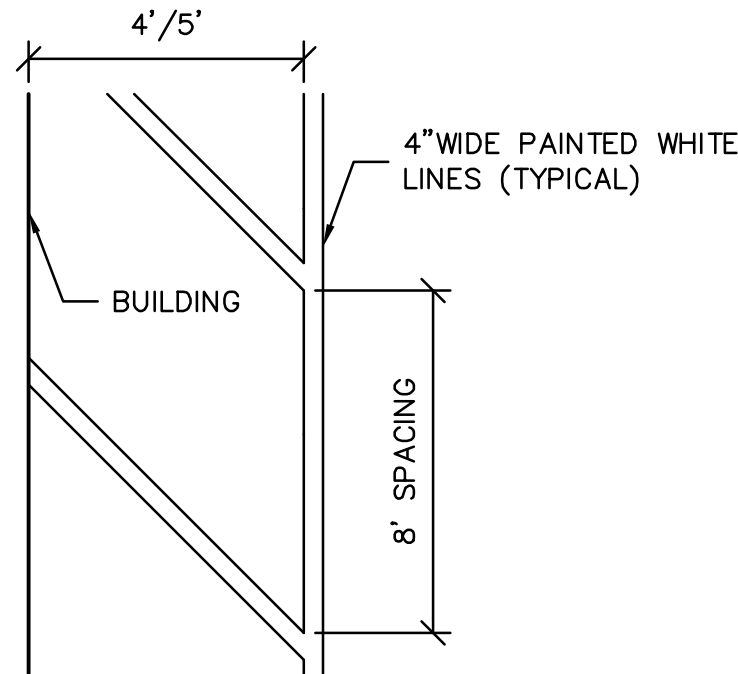
### BITUMINOUS CONCRETE CURB (BCC)

NOT TO SCALE



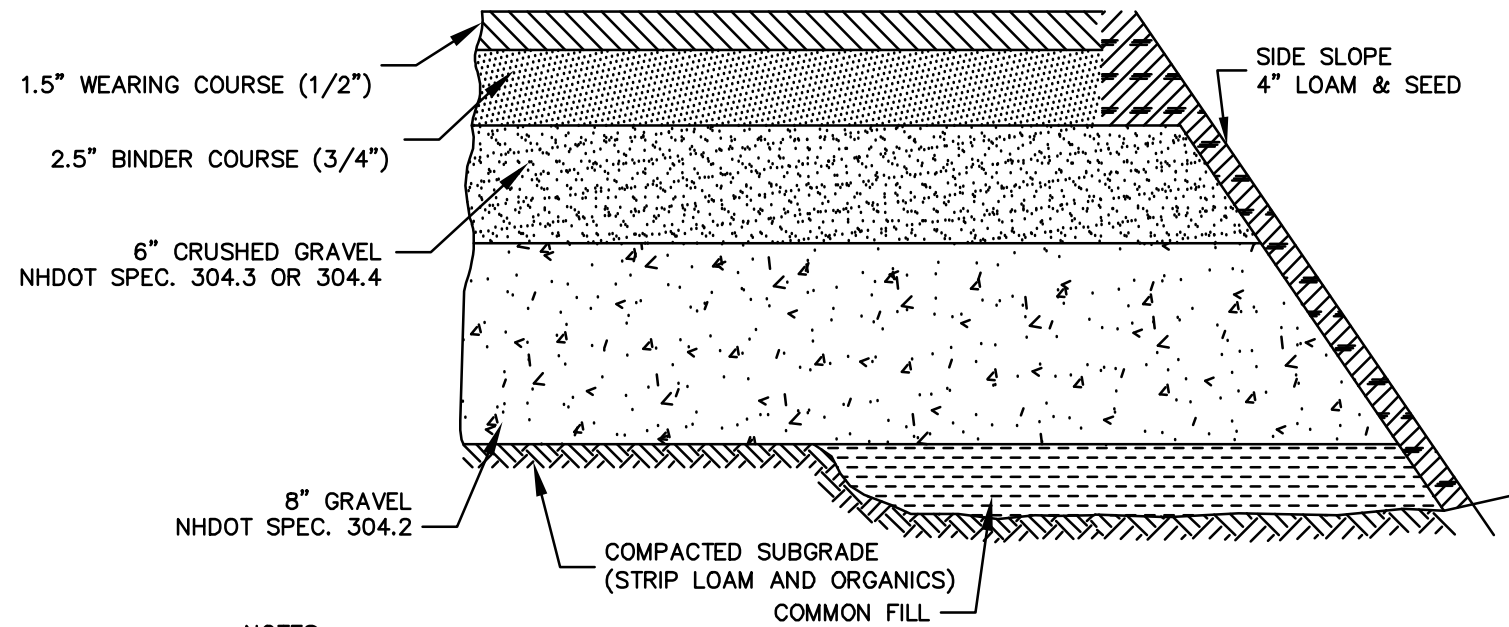
### STANDARD PARKING STALL

NOT TO SCALE



### 4'/5' WIDE PAINTED PEDESTRIAN LANE

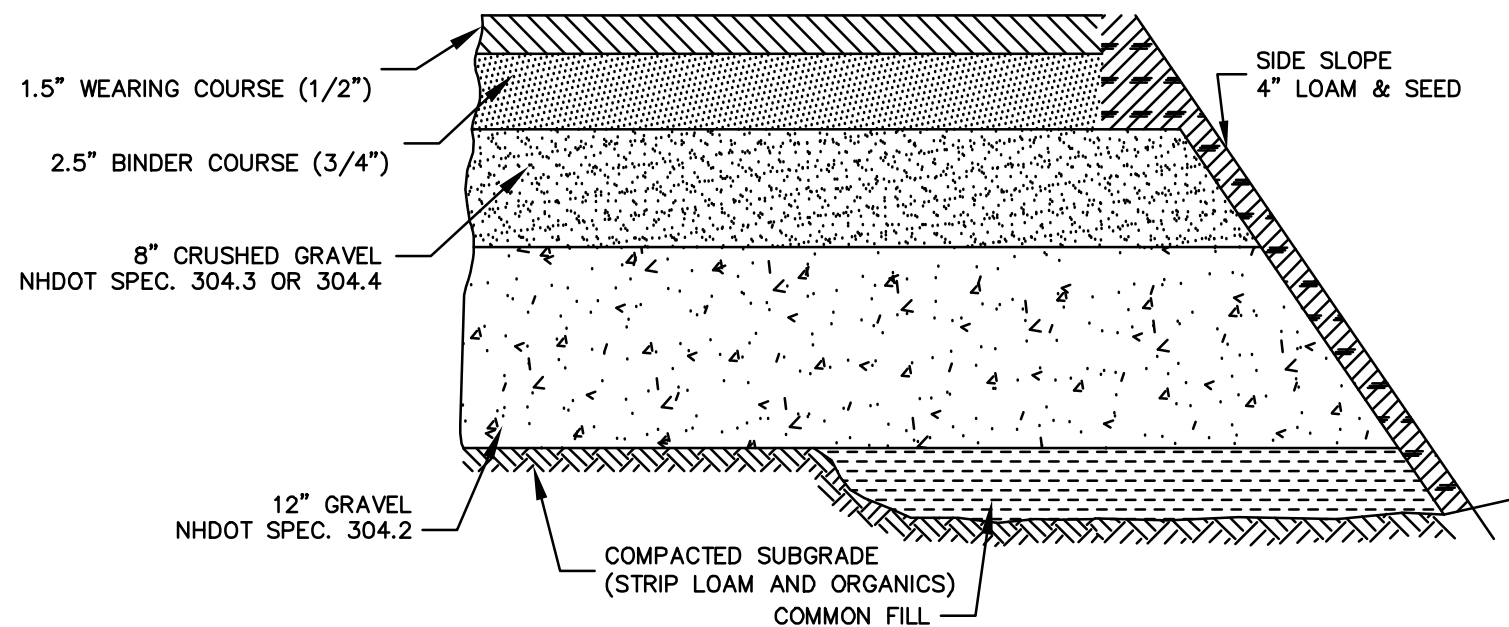
NOT TO SCALE  
SEE SITE PLAN FOR LOCATIONS



- NOTES:
1. SEE SITE PLAN FOR PAVEMENT WIDTH AND LOCATION.
  2. SEE GRADING, DRAINAGE AND EROSION CONTROL PLAN FOR PAVEMENT SLOPE AND CROSS-SLOPE.
  3. GEOTEXTILE FABRIC MAYBE REQUIRED UNDER THE ROADWAY AND /OR THE PARKING AREAS AS REQUIRED BY THE ENGINEER BASED UPON SITE CONDITIONS.

### TYPICAL STANDARD PAVEMENT SECTION

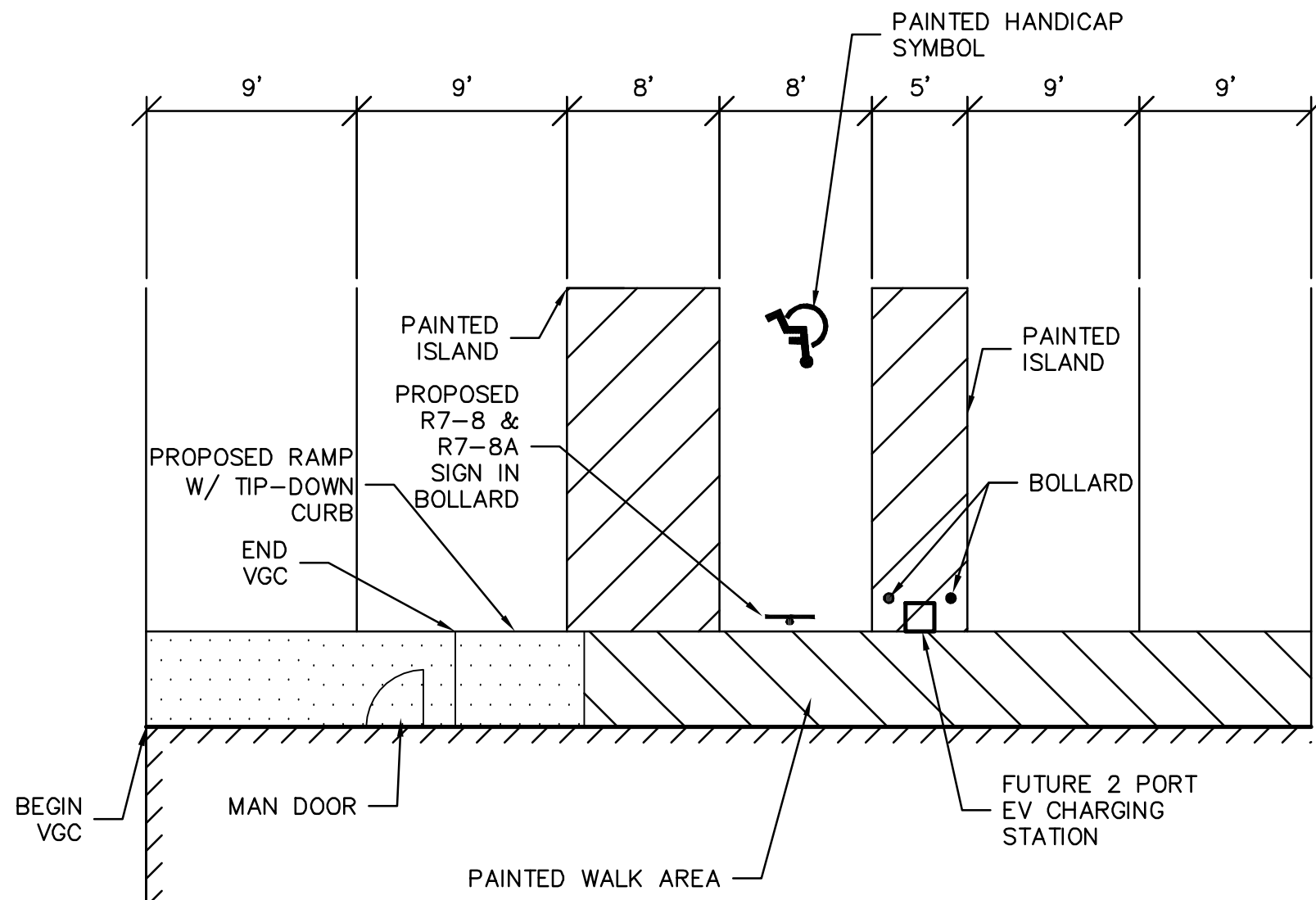
NOT TO SCALE



- NOTES:
1. SEE SITE PLAN FOR PAVEMENT WIDTH AND LOCATION.
  2. SEE GRADING, DRAINAGE AND EROSION CONTROL PLAN FOR PAVEMENT SLOPE AND CROSS-SLOPE.
  3. GEOTEXTILE FABRIC MAYBE REQUIRED UNDER THE ROADWAY AND /OR THE PARKING AREAS AS REQUIRED BY THE ENGINEER BASED UPON SITE CONDITIONS.

### HEAVY DUTY TYPICAL PAVEMENT SECTION

NOT TO SCALE



### ACCESSIBLE PARKING LAYOUT

NOT TO SCALE

PLANNING FILE NO.: SITE-2025-XXXX

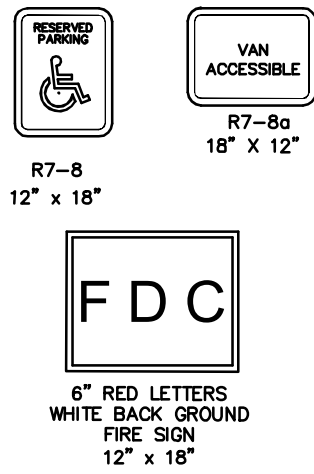
DETAIL SHEET

15,000 SF WAREHOUSE &  
6,200 SF BUILDING ADDITION  
14 INDUSTRIAL PARK ROAD  
DOVER, NH 03820

16 INDUSTRIAL PARK, LLC  
340 CENTRAL AVENUE  
DOVER, NH 03820

| DATE    | SCALE    | DRAWN BY | DESIGN BY | APPROVED BY | PROJECT NO. | FILE     | NO. | REVISION | APP'D | DATE |
|---------|----------|----------|-----------|-------------|-------------|----------|-----|----------|-------|------|
| 10-2-25 | NO SCALE | WEJ      | JRG       | BYSH        | 25114       | SITE.dwg |     |          |       |      |



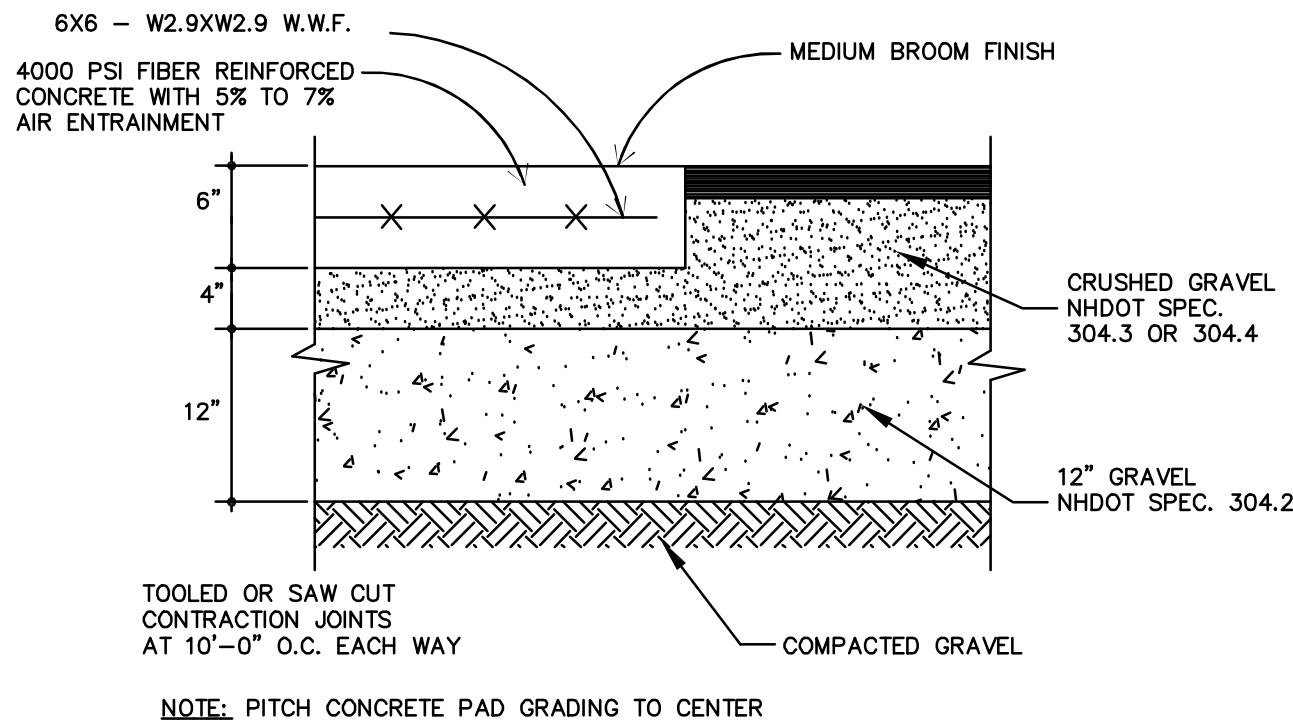
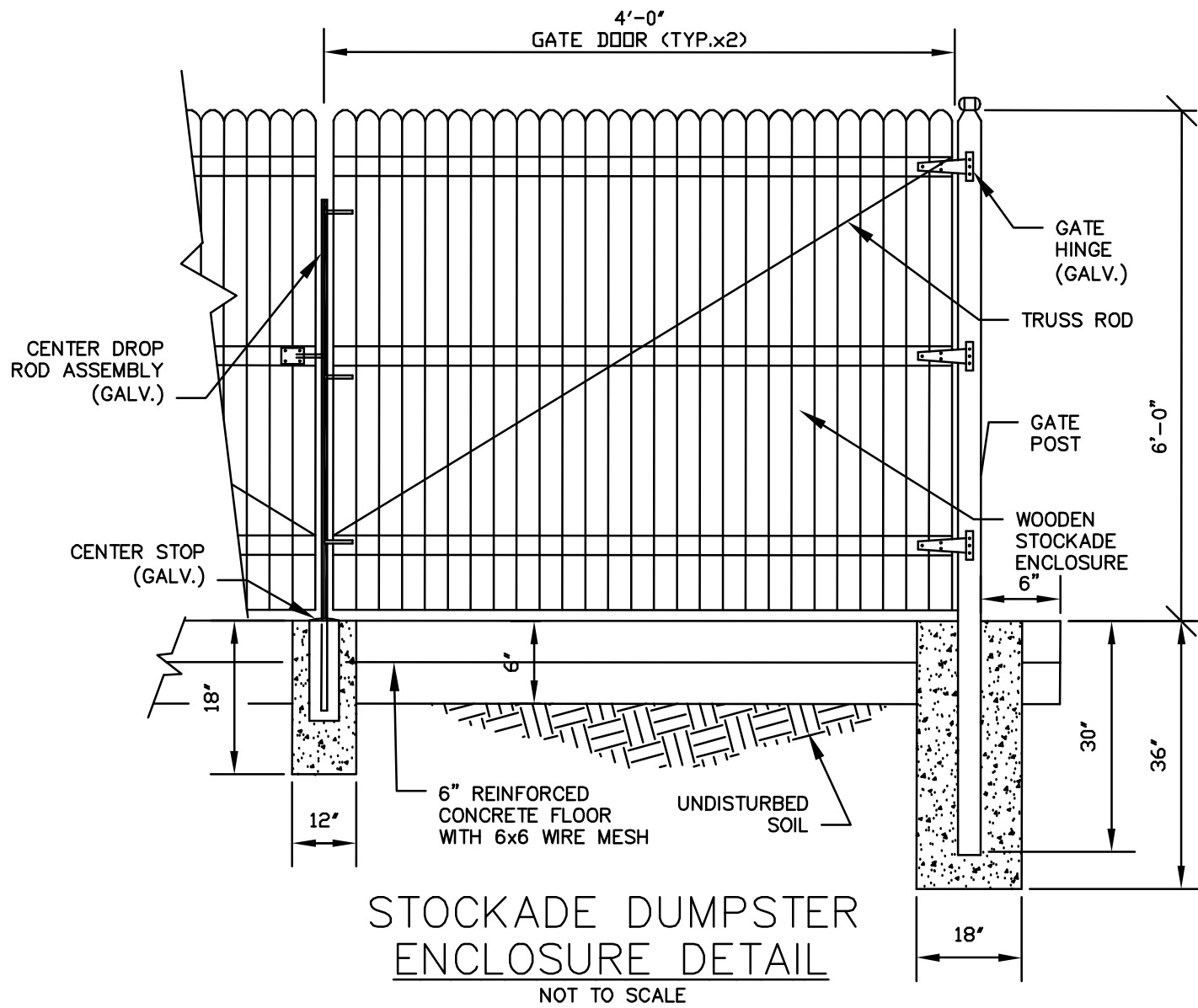
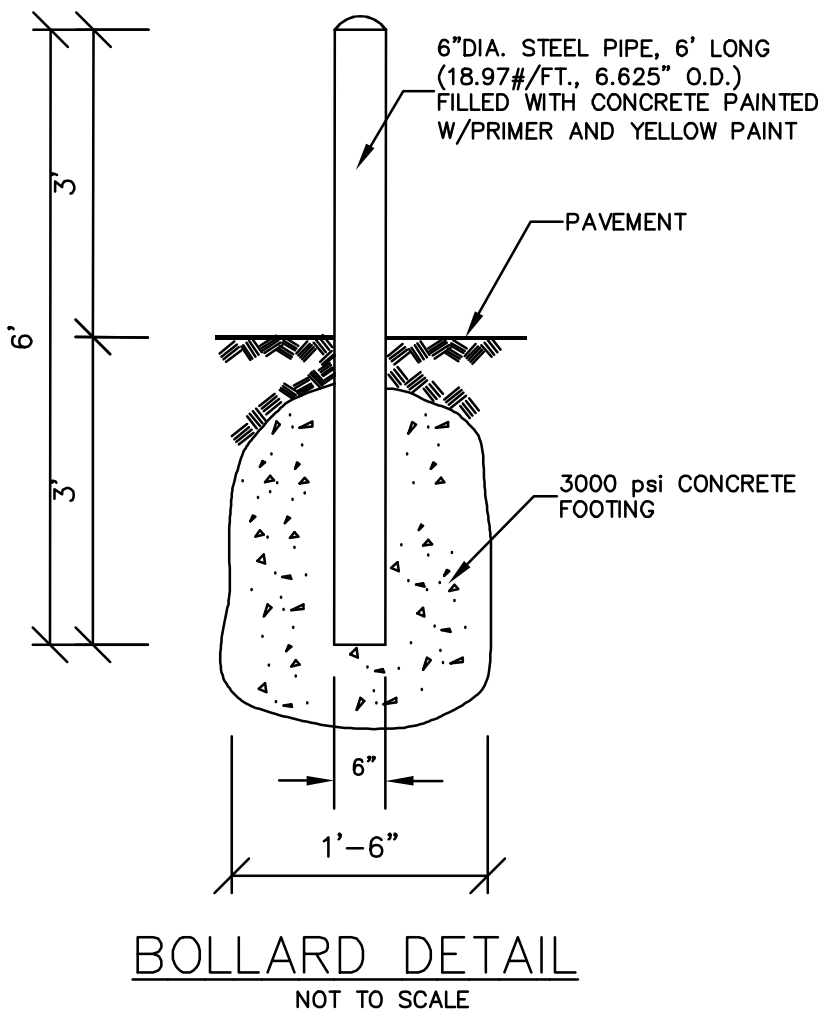
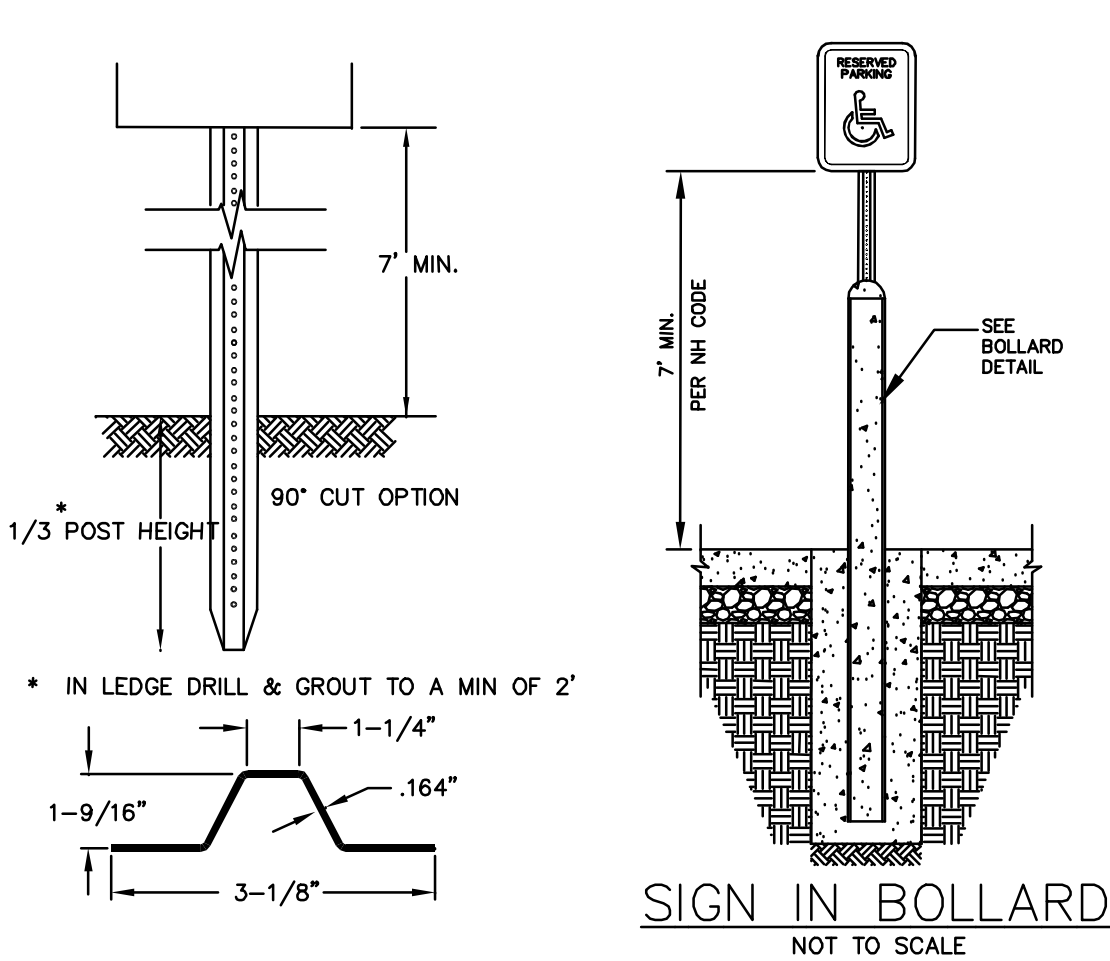


NOTE:  
1. ALL SIGNS TO BE INSTALLED AS INDICATED  
IN THE MANUAL ON UNIFORM TRAFFIC CONTROL  
DEVICES, LATEST EDITION.

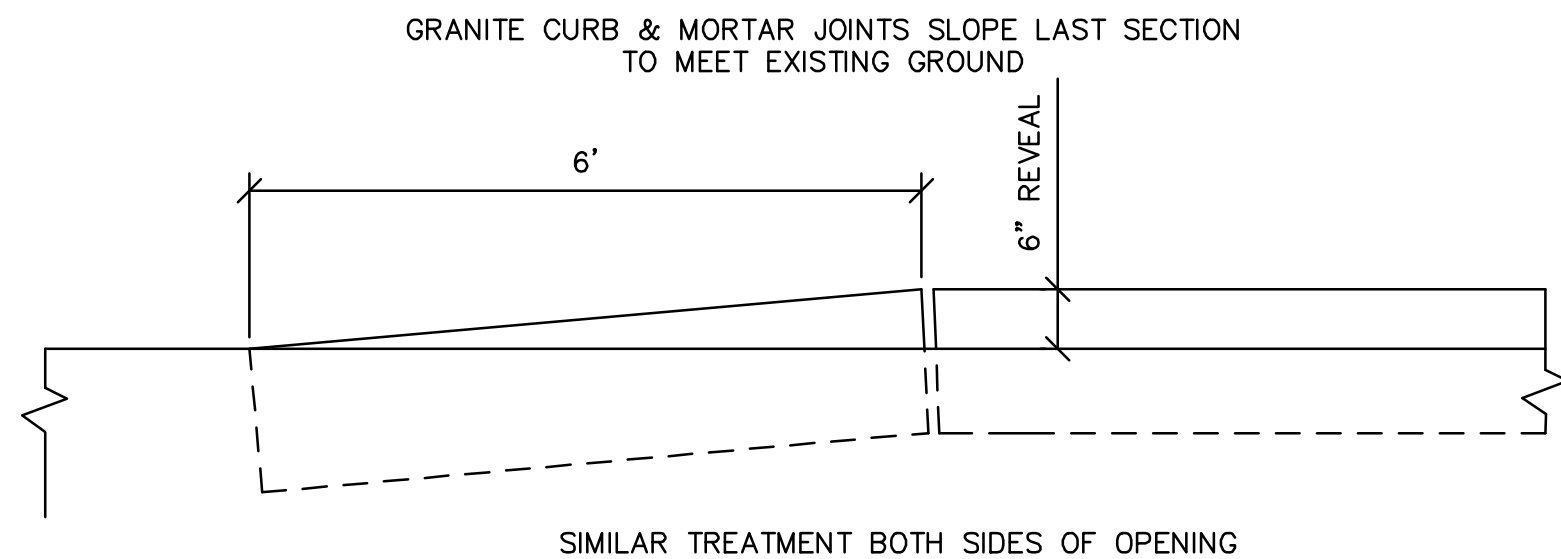
LENGTH: AS REQUIRED  
WEIGHT PER LINEAR FOOT: 2.50 LBS (MIN.)  
HOLES: 3/8" DIAMETER, 1" C-C FULL LENGTH  
STEEL: SHALL CONFORM TO ASTM A-499 (GRADE 60) OR  
ASTM A-576 (GRADE 1070 - 1080)  
FINISH: SHALL BE PAINTED WITH TWO COATS OF AN APPROVED  
MEDIUM GREEN

BAKED ON OR AIR DRIED, PAINT OF WEATHER RESISTANT QUALITY.  
ALL FABRICATION SHALL BE COMPLETE BEFORE PAINTING.

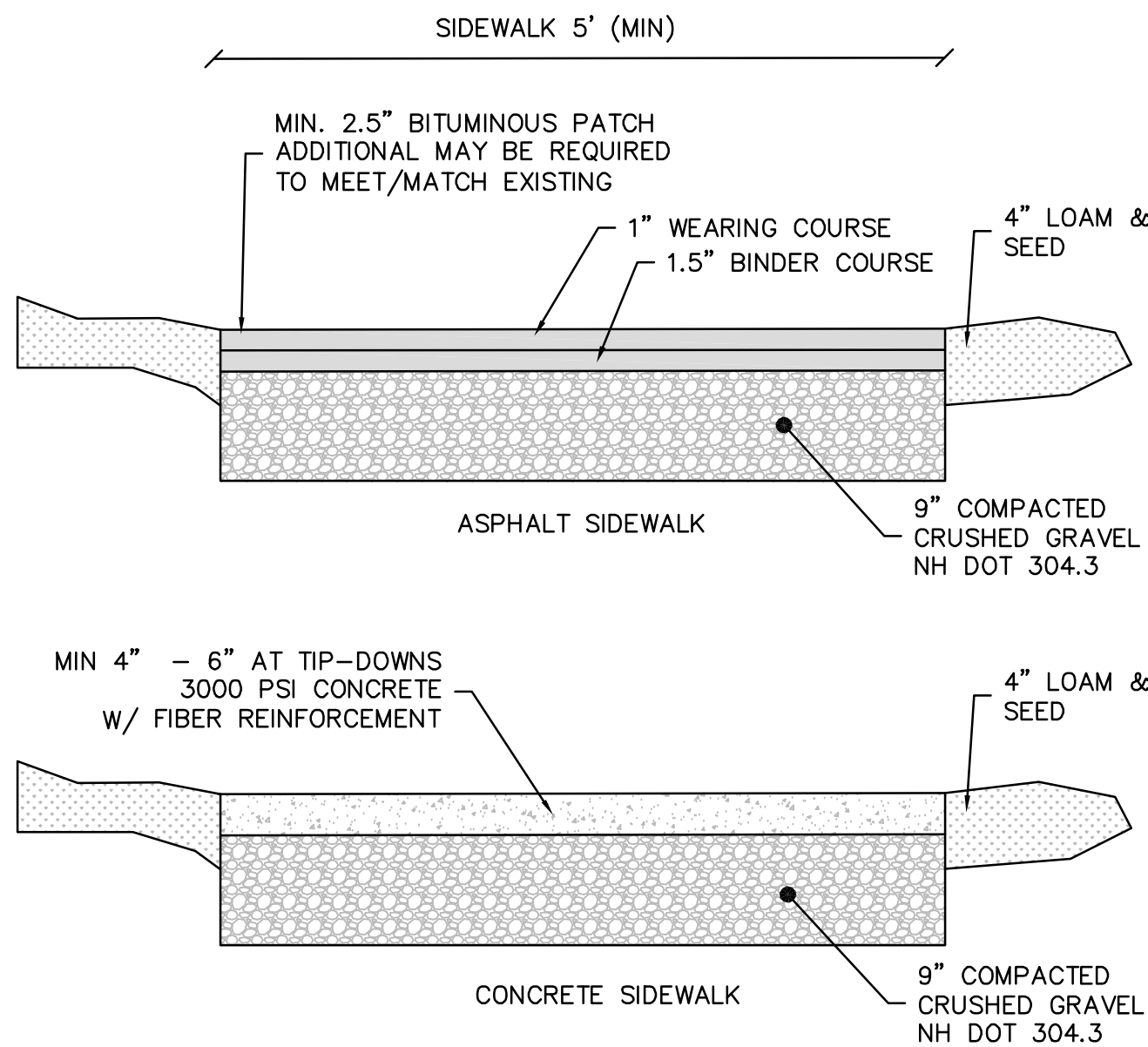
SIGN LEGEND & SIGN POST  
NOT TO SCALE



DUMPSTER PAD DETAIL  
NOT TO SCALE



"TIP-DOWN" CURB DETAIL  
NOT TO SCALE



- NOTES:
1. MATERIALS SHALL BE IN ACCORDANCE WITH THE CITY OF DOVER STANDARDS SPECIFICATIONS.
  2. SIDEWALK AND DRIVEWAY WIDTHS SHALL BE EQUAL TO EXISTING WIDTHS OR AS APPROVED AND SHALL SLOPE TO MATCH EXISTING ELEVATIONS.
  3. BASE FOR THE SIDEWALKS AND DRIVEWAYS SHALL BE 9-INCHES OF CRUSHED GRAVEL.

CITY OF DOVER D-6  
ASPHALT & CONCRETE SIDEWALK  
NOT TO SCALE

## CT4000 Family

ChargePoint® Level 2 Commercial Charging Stations

The CT4000 family is the latest generation of ChargePoint commercial charging stations. Refined yet rugged, these stations set the industry standard for functionality and aesthetics.

The CT4000 full motion color LCD display instructs drivers and supports dynamic updates of custom branded videos and advertisements.

Intelligent power management options double the number of parking spaces served by allowing two charging ports to share a single circuit. Sites with single port EV stations can upgrade to dual port stations without requiring additional electrical services.

The CT4000 is the first ENERGY STAR® certified EV charger because it charges efficiently and conserves power when not charging. As an ENERGY STAR certified EV charger, the CT4000 uses significantly less energy than a standard EV charger when in standby mode to help you save money on your utility bill.

All CT4000 models offer one or two standard SAE J1772™ Level 2 charging ports with locking holsters, each port supplying up to 7.2kW. With this standard connector, ChargePoint level 2 stations can charge any EV.

Stations are available in bollard and wall mount configurations for easy installation anywhere. All stations are fully software upgradeable remotely over the air.

Stations come in both 6' and 8' tall models with 18' and 23' cords, respectively. With multiple options for size and cord reach, your station can service up to four parking spaces, reach all car models regardless of parking style or car sizes and increase the usability of your EV spots.

### Driver Friendly User Interface

- \* Instructional video shows how to use the station
- \* Multi-language: English, French, Spanish
- \* Touch button interface; works in rain, ice and with gloves
- \* Backed by ChargePoint's world class 24/7 driver phone support

### Easily Communicate with Your Drivers

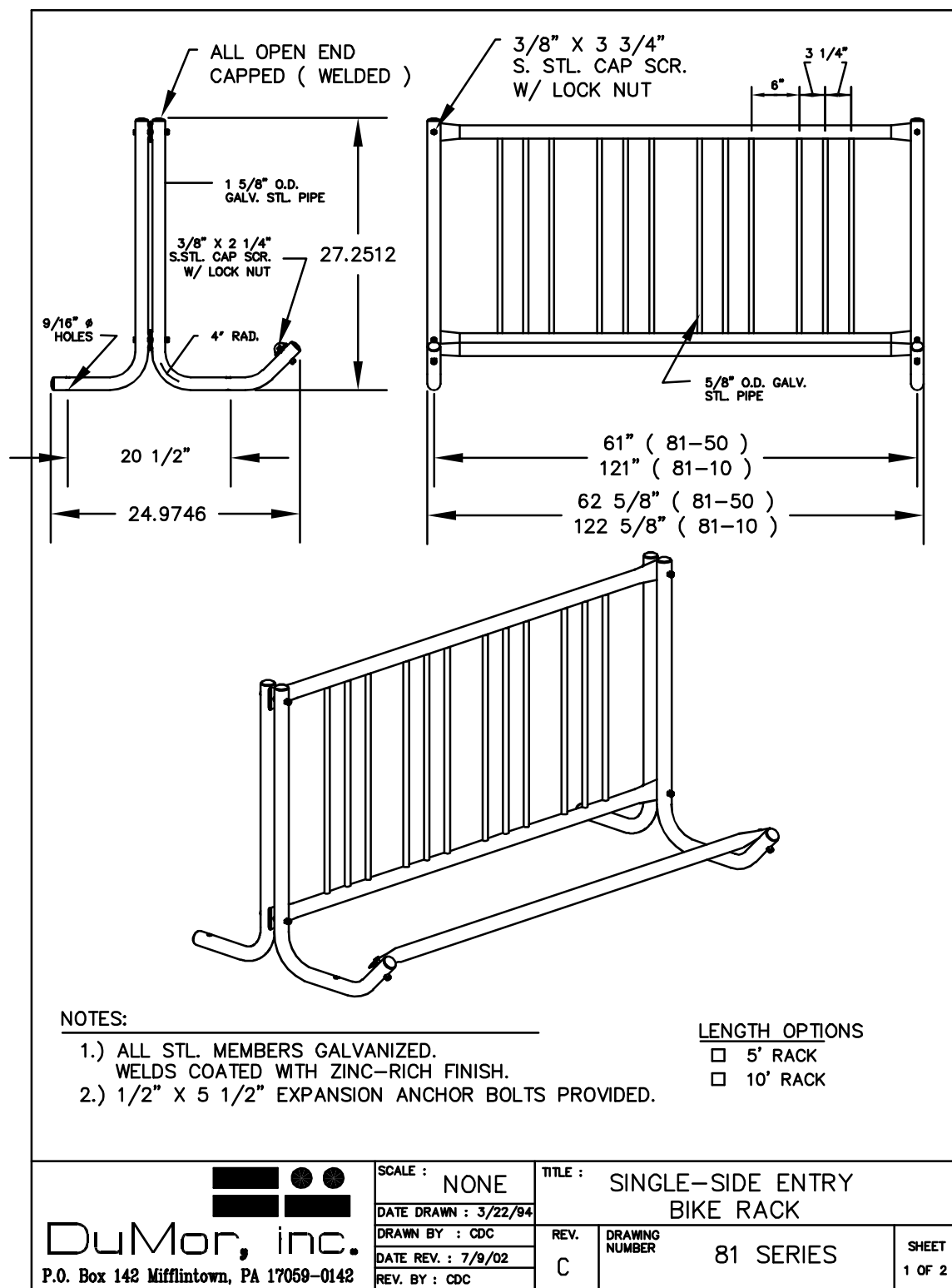
Whether you're a retail establishment wanting to advertise your latest product, a workplace looking to communicate with employees or a municipality wanting to welcome visitors, ChargePoint's prominent LCD screen makes it easy to reach EV drivers:

- \* Daylight readable, with auto brightness control
- \* 640 X 480 resolution active matrix
- \* Full motion 30fps video support
- \* Upload up to 60 seconds of high quality video on a color LCD screen to individual stations as often as desired
- \* Brand your charging stations to communicate with drivers
- \* Instructional video in English, Spanish or French



The First  
ENERGY STAR®  
Certified EV Charger

FOR FUTURE  
EV CHARGING STATION DETAIL (OR EQUAL)  
NOT TO SCALE



BIKE RACK DETAIL  
NOT TO SCALE

PLANNING FILE NO.: SITE-2025-XXXX

DETAIL SHEET

15,000 SF WAREHOUSE &  
6,200 SF BUILDING ADDITION  
14 INDUSTRIAL PARK ROAD  
DOVER, NH 03820

16 INDUSTRIAL PARK, LLC  
340 CENTRAL AVENUE  
DOVER, NH 03820

13

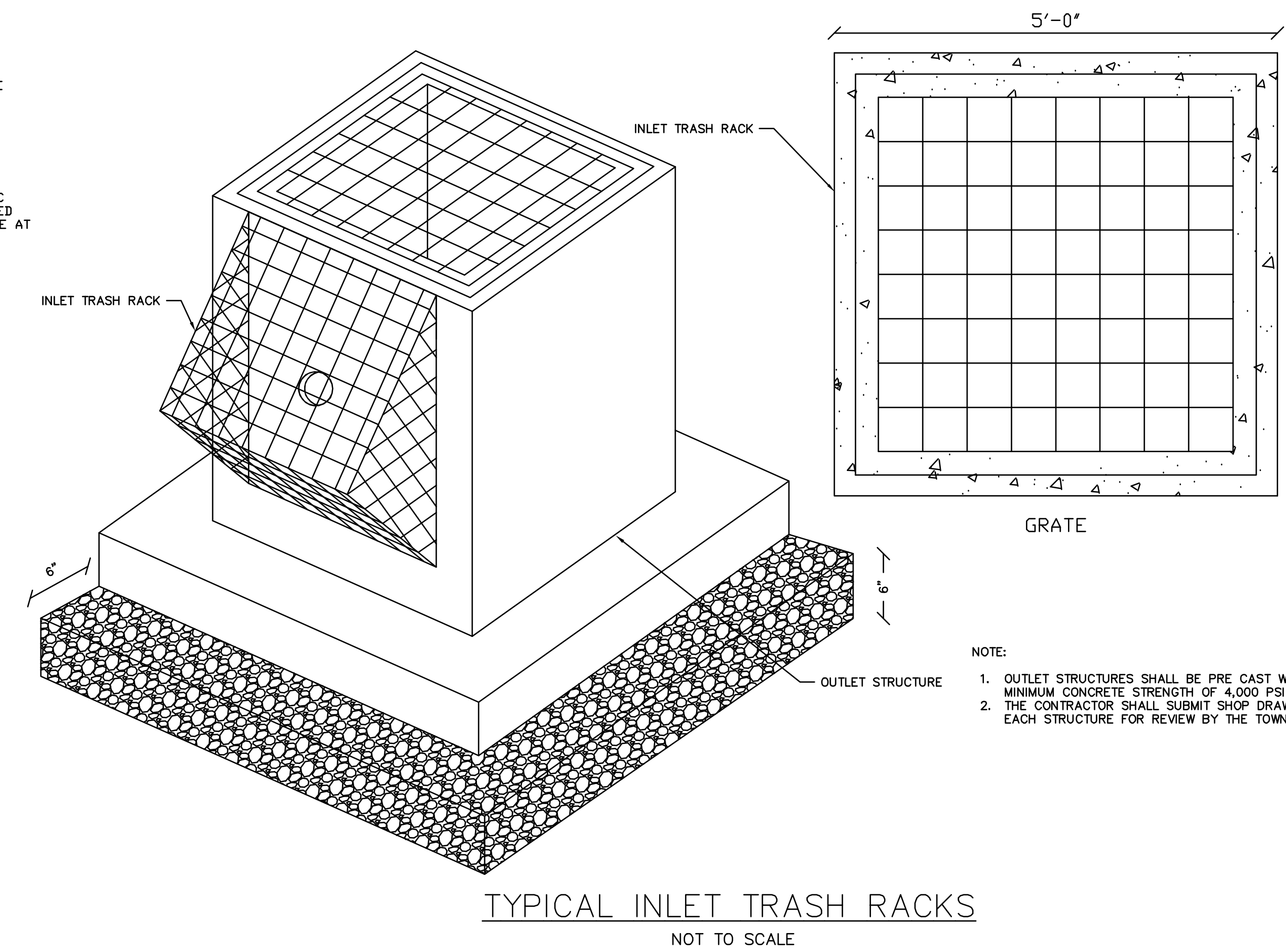
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|---------|----------|----------|-----------|-------------|-------------|----------|-----|----------|-------|------|
| 10-2-25 | NO SCALE | WEJ      | JRG       | BYJH        | 25114       | SITE.dwg |     |          |       |      |

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

**CNE**  
CIVILWORKS NEW ENGLAND

181 Watson Road, PO Box 1166  
Dover, NH 03820  
603.749.0443





| OUTLET FROM  | W(Ψt) | W(Ψt) | L(Ψt) | D (Ψt) | DS0(IN) | CHANNEL TYPE |
|--------------|-------|-------|-------|--------|---------|--------------|
| BID W/ISR    | 3     | 18    | 15    | 1      | 6       | NON-DEFINED  |
| RD1          | 3     | 8     | 13    | 1      | 6       | NON-DEFINED  |
| RD2          | 3     | 9     | 14    | 1      | 6       | NON-DEFINED  |
| RAINGUARDIAN | 5     | 5     | 10    | 1      | 6       | NON-DEFINED  |

The image contains two technical drawings of a stone filter bed. The left drawing is a 'PLAN' view, showing a trapezoidal stone bed. It is labeled 'STONE' at the top and 'END SECTION OR MORTAR RUBBLE MASONRY WALL' on the left. The width at the top is labeled 'W1' and the width at the bottom is labeled 'W2'. The right drawing is a 'SECTION' view, showing a cross-section of the filter bed. It is labeled 'END SECTION OR MORTAR RUBBLE MASONRY WALL' at the top, 'STONE' on the left, and 'FILTER FABRIC MIRAFI 700X OR APPROVED EQUAL' at the bottom. The length of the stone bed is labeled 'L', the slope is labeled 'SLOPE = 0%', and the depth is labeled 'DEPTH = D'.

| STONE GRADATION                                    |                          |
|----------------------------------------------------|--------------------------|
| <u>% OF WEIGHT SMALLER<br/>THAN THE GIVEN SIZE</u> | <u>SIZE OF<br/>STONE</u> |
| 100                                                | 1.5 TO 2.0 D50           |
| 85                                                 | 1.3 TO 1.8 D50           |
| 50                                                 | 1.0 TO 1.5 D50           |
| 15                                                 | 0.3 TO 0.5 D50           |

**RAIN GUARDIAN FORTRESS - SECTION VIEW**

**PROVISIONS**

- STEEL REINFORCED, COLD JOINT SECURED MONOLITHIC CONCRETE STRUCTURE (3,1202 CF CONCRETE, 478 LBS, 1,4205 CF STORAGE VOLUME), CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 5,000 PSI AT 28 DAYS, CONCRETE AIR ENTRAINED (4% TO 8% BY VOLUME), MANUFACTURED AND DESIGNED TO ASTM C858
- TWO-POINT PICK (EMBEDDED LIFTING CABLES)
- INTERNAL GRATE - STEEL GRATE (25 LBS/PIECE, 1" THICK), 351 LB CONCENTRATED LOAD OR 206 LB/SQ-FT UNIFORM LOAD
- TOP LID - STEEL GRATE (27 LBS/PIECE, 1" THICK), 351 LB CONCENTRATED LOAD OR 206 LB/SQ-FT UNIFORM LOAD
- STEEL FACE PLATE (INLET AND OUTLET) - A36 1/4" THICKNESS
- REMOVABLE FILTER ASSEMBLY (FIBERGLASS GRATE WITH FILTER AND ALUMINUM CHANNEL)

**INSTALLATION NOTES**

- INSTALL THE CLASS 5 BASE (COMPACTED TO 95% STANDARD PROCTOR). THE DISTANCE FROM THE BACK OF THE CURB MAY VARY BASED ON SITE CONDITIONS, BUT CONSIDERATIONS SHOULD INCLUDE SLOPE OF THE INLET AN BASIN SIDE SLOPES ADJACENT TO THE RAIN GUARDIAN FORTRESS. POSITION RAIN GUARDIAN FORTRESS SO PRIMARY OUTLET ALIGNS WITH TOE OF BASIN SIDE SLOPE.
- SET RAIN GUARDIAN FORTRESS ON THE PREPARED CLASS 5 BASE.
- SIDE CURBS OF THE POURED INLET MUST HAVE AN INSURMOUNTABLE PROFILE TO PREVENT WATER FLOW FROM OVERTOPPING THE DOWNSTREAM SIDE OF THE INLET.
- REMOVABLE FILTER WALL SHOULD BE INSTALLED WITH FILTER FABRIC ON THE INTERIOR SIDE OF THE RAIN GUARDIAN TURRET.

**PLAN VIEW**

**ELEVATION VIEW - INLET**

**ELEVATION VIEW - OUTLET**

**INV. ELEV.=114.50**

**INV. ELEV.=113.87**

**RAIN GUARDIAN FORTRESS**

**RAIN GUARDIAN FORTRESS PRETREATMENT CHAMBER BIORETENTION PONDING DEPTH: 9" TYPICAL DETAIL**

DEVELOPED BY:

U.S. PATENT NO(S): 8,501,016 AND 8,858,804

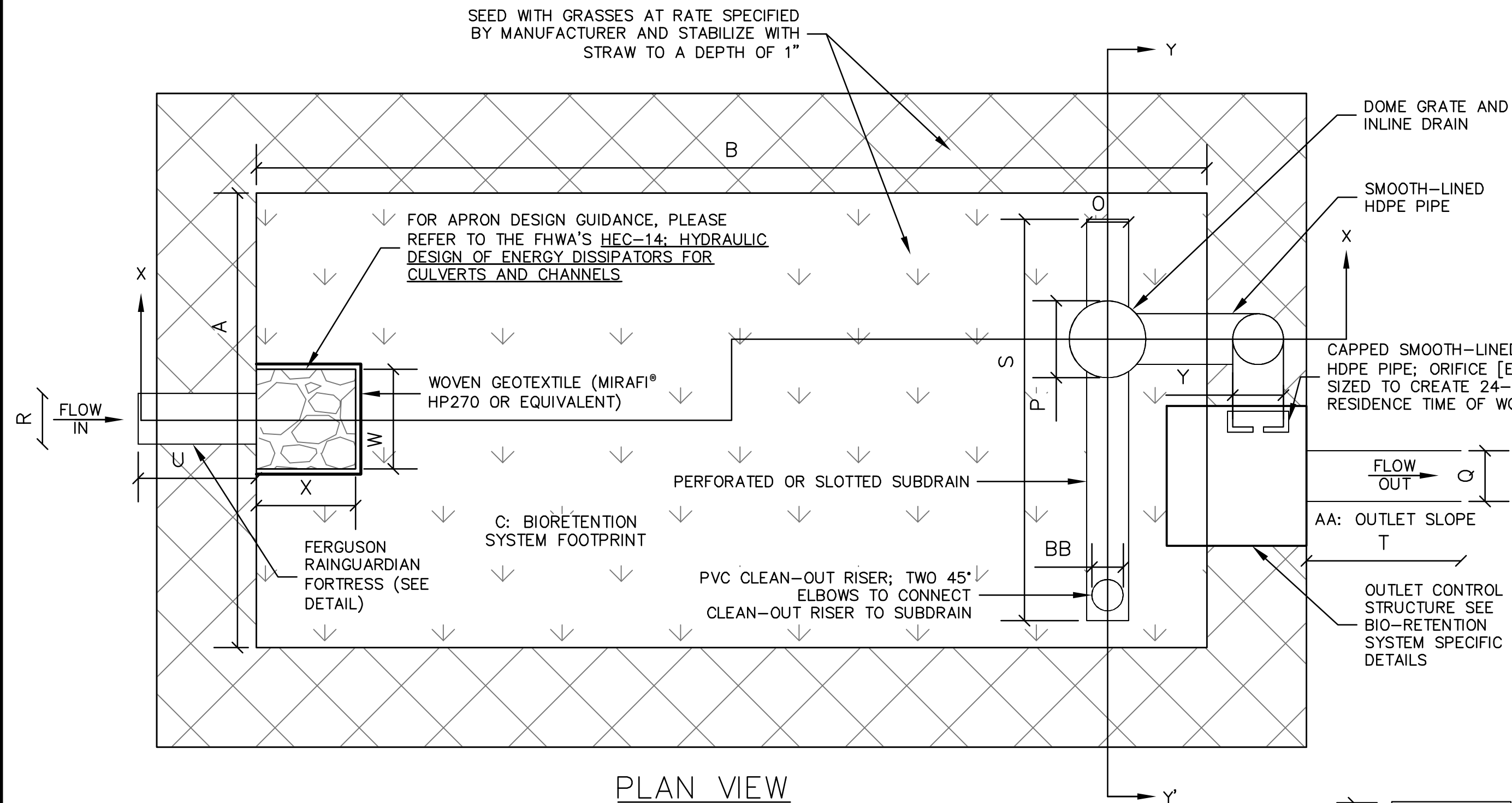
DESIGNED BY: JKB

DATE: 6/22/2022

SHEET NO:

1 of 1





NOTE 1: BOTTOM PERMEABILITY AND LINER  
IF A NATIVE, LOW HYDRAULIC CONDUCTIVITY SOIL ( $k \leq 0.03 \text{ ft/day}$ ) IS NOT PRESENT BELOW THE PEA GRAVEL ELEVATION, A LOW PERMEABILITY LINER OR SOIL SHOULD BE USED TO MINIMIZE INFILTRATION AND PRESERVE HORIZONTAL FLOW IN THE STONE. THIS LINER EXTENDS FROM THE BASE OF THE EXCAVATION TO ABOVE THE TOP OF THE BIORETENTION SOIL MEDIA LAYER. IF GEOTECHNICAL TESTS CONFIRM THE NEED FOR A LINER, ACCEPTABLE OPTIONS INCLUDE:

a. A 40 mil PVC LINER WITH SAND BEDDING AND/OR NON-WOVEN GEOTEXTILE. PVC LINER SEAMS MAY BE WELDED, TAPED (WATERPROOF ROOFING TAPE), OR OVERLAPPED (MINIMUM ONE FOOT). THE PERFORMANCE OBJECTIVE IS TO CREATE AND MAINTAIN AN ANAEROBIC ZONE IN THE STONE\* OR AN OTHERWISE PREPARED DESIGN BY A PROFESSIONAL ENGINEER

b. \*IF ENGINEER BELIEVES THE PVC LINER IS AT RISK OF PUNCTURE, THE LINER MAY BE SANDWICHED BETWEEN NON-WOVEN GEOTEXTILE OR SAND (3 in THICKNESS)

#### NOTES:

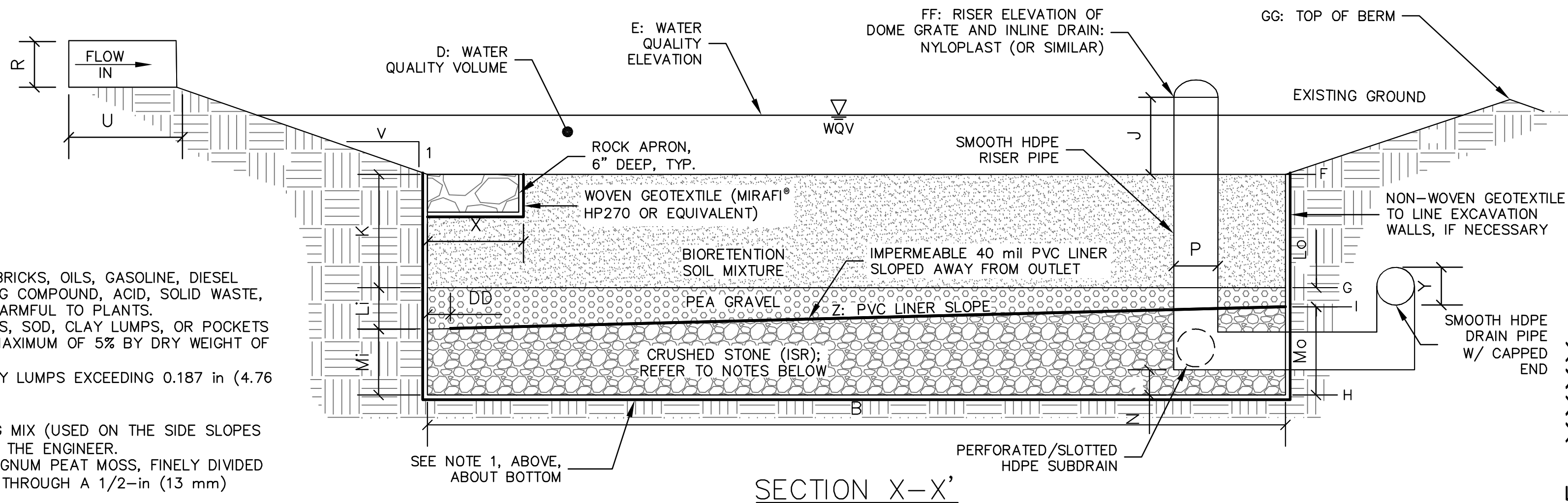
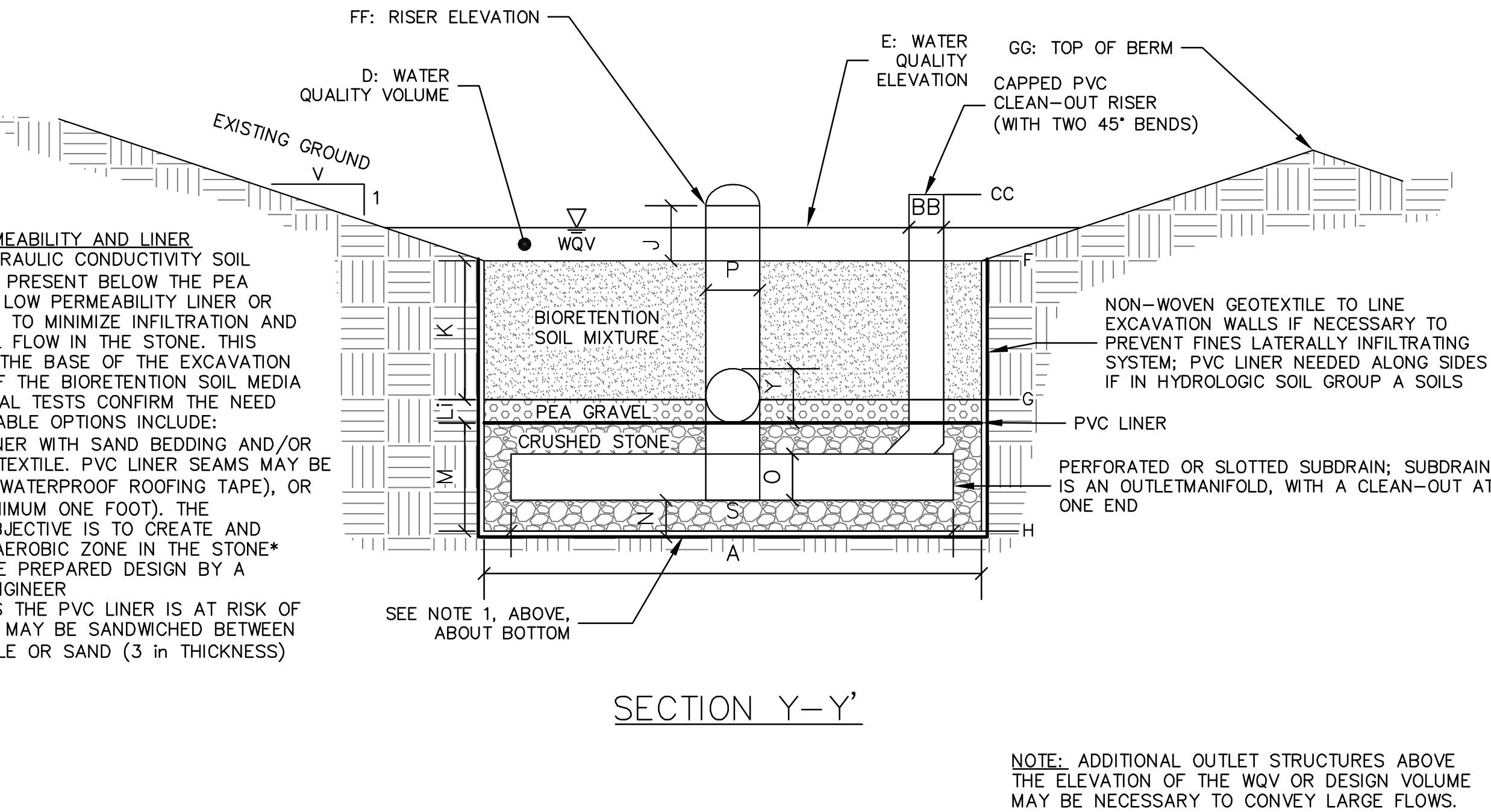
- FOR FULL BIORETENTION STORMWATER SYSTEM SPECIFICATIONS, PLEASE REFER TO THE UNH STORMWATER CENTER'S BIORETENTION SPECIFICATIONS PUBLICATION, DATED FEBRUARY 2017, FOUND AT:  
[https://www.unh.edu/unhsc/sites/default/files/media/unhsc\\_bsm\\_spec\\_2-28-17\\_0.pdf](https://www.unh.edu/unhsc/sites/default/files/media/unhsc_bsm_spec_2-28-17_0.pdf)
- SYSTEM FOOTPRINT NEED NOT BE RECTANGULAR, ANY SHAPE IS POSSIBLE. THESE DETAILS USE THE RECTANGULAR SHAPE AS AN EXAMPLE.
- THESE DETAILS ARE NOT TO SCALE; FOR DIMENSIONS AND SPECIFICATIONS, REFERENCE EACH LETTER TO THE TABLE OF METRICS.
- BIORETENTION SOIL MIX SHALL NOT BE PLACED UNTIL AFTER ENGINEERING APPROVAL AND INSPECTION OF SUBGRADE.
- BIORETENTION SYSTEM IS RECOMMENDED TO HAVE PRETREATMENT (FOREBAY, SWALE, OR OTHER APPROVED STRUCTURE). PRETREATMENT IS REQUIRED FOR PROJECTS REQUIRING ALTERATION OF TERRAIN (AOT) PERMITTING.
- PLANT THE SYSTEM AS SPECIFIED; AT A MINIMUM, SEED THE SYSTEM FLOOR AND SIDE SLOPES WITH RYE GRASS MIXTURE CONTAINING PERENNIAL AND WINTER RYES, AT A RATE SPECIFIED BY THE MANUFACTURER. STABILIZE THE SLOPES WITH STRAW TO A DEPTH OF 1".
- GENERAL CONSTRUCTION GUIDELINES:
  - VERIFY THAT NO FOREIGN OR DELETERIOUS MATERIAL OR LIQUID SUCH AS PAINT, PAINT WASHOUT, CONCRETE SLURRY, ASPHALT/CONCRETE LAYERS OR CHUNKS. CEMENT, PLASTER, OILS, GASOLINE, DIESEL FUEL, PAINT THINNER, TURPENTINE, TAR, ROOFING COMPOUND, SOLID WASTE, OR ACID HAS BEEN DEPOSITED IN PLANTING SOIL (BIORETENTION MEDIA OR LOAM ON SIDE SLOPES).
  - PROCEED WITH PLACEMENT OF ANY SUBSURFACE MATERIALS ONLY AFTER UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.
  - COMPACT EACH BLENDED LIFT OF BIORETENTION SOIL MEDIA TO 75% OF MAXIMUM STANDARD PROCTOR DENSITY ACCORDING TO ASTM D698.
  - GRADE SOIL MEDIA TO A SMOOTH, UNIFORM SURFACE PLANE WITH LOOSE, UNIFORMLY FINE TEXTURE. ROLL AND RAKE, REMOVE RIDGES, AND FILL DEPRESSIONS TO MEET FINISH GRADES.
  - LIGHTLY COMPACT FINISHED FLOOR ELEVATION AND FINISHED SLOPES USING THE BUCKET OF AN EXCAVATOR, NON-MOTORIZED ROLLER, HAND TAMP, OR OTHER MEANS, THEN ROUGHEN SURFACE WITH A RAKE TO LOOSEN SOILS BEFORE SEEDING.
  - DO NOT COMPACT THE SUBGRADE AT THE BOTTOM OF EXCAVATION UNLESS PERMEABILITY EXCEEDS  $1 \times 10^{-5} \text{ cm/s}$
- BIORETENTION SOIL MEDIA (BSM) MIXTURE SPECIFICATIONS:
  - STICKS AND ROOTS SHOULD BE MINIMIZED IN THE BSM MIXTURE, AND PREFERABLY LIMITED TO NOTHING LARGER THAN 4.76 mm (0.187 in).
  - DEBRIS AND OTHER FOREIGN MATERIALS SHOULD BE MINIMIZED.
  - ORGANIC MATTER SHOULD MAKE UP A MINIMUM OF 3% BY VOLUME AND A MAXIMUM 8% BY VOLUME OF THE BSM.
  - BSM MIXTURE SHOULD HAVE A SOIL REACTION pH OF 6 TO 7.
  - CATION EXCHANGE CAPACITY (CEC) OF BSM SHOULD BE A MINIMUM OF 10 meq PFR 100 ml AT A pH OF 7.0.
- IF BSM IS PURCHASED FROM A MANUFACTURER, BSM MIXTURE SHALL NOT CONTAIN THE FOLLOWING:
  - UNACCEPTABLE MATERIALS: CONCRETE SLURRY, CONCRETE LAYERS OR CHUNKS,

- CEMENT, PLASTER, BUILDING DEBRIS, ASPHALT, BRICKS, OILS, GASOLINE, DIESEL FUEL, PAINT THINNER, TURPENTINE, TAR, ROOFING COMPOUND, ACID, SOLID WASTE, OR OTHER EXTRANEOUS MATERIALS THAT ARE HARMFUL TO PLANTS.
- 9.2. UNSUITABLE MATERIALS: STONES, ROOTS, PLANTS, SOD, CLAY LUMPS, OR POCKETS OF COARSE SAND THAT EXCEEDS A COMBINED MAXIMUM OF 5% BY DRY WEIGHT OF THE MANUFACTURED SOIL.
- 9.3. LARGE MATERIALS: STONES, CLODS, ROOTS, CLAY LUMPS EXCEEDING 0.187 in (4.76 mm) IN ANY DIMENSION.
10. ORGANIC SOIL AMENDMENTS:
- 10.1. NO COMPOST SHOULD BE USED IN THE PLANTING MIX (USED ON THE SIDE SLOPES AND SURROUNDING AREA) UNLESS SPECIFIED BY THE ENGINEER.
- 10.1. SPHAGNUM PEAT: PARTIALLY DECOMPOSED SPHAGNUM PEAT MOSS, FINELY DIVIDED OR OF GRANULAR TEXTURE WITH 100% PASSING THROUGH A 1/2-in (13 mm) SIEVE, WITH A pH OF 3.4 TO 4.8.
- 10.2. WOOD DERIVATIVES: SHREDDED WOOD, WOOD CHIPS, GROUND BARK, OR WOOD WASTE; OF UNIFORM TEXTURE AND FREE OF STONES, STICKS, SOIL, OR TOXIC MATERIAL.
11. THE CRUSHED STONE LAYER SHOULD CONSIST OF AASHTO #5 STONE (3/4-in).
12. THE VOLUME OF WATER CONTAINED ABOVE THE BSM ELEVATION AND BELOW THE HIGH FLOW SPILLWAY IS STATISTICALLY DESIGNED TO HOLD A SPECIFIC RUNOFF VOLUME.

| BIORETENTION SYSTEM DESIGN METRICS |                                   |     |        |       |
|------------------------------------|-----------------------------------|-----|--------|-------|
| ID                                 | DESIGN PARAMETER                  | MIN | BIO 1  | UNITS |
| A                                  | SYSTEM FLOOR WIDTH                |     | 10     | FT    |
| B                                  | SYSTEM FLOOR LENGTH               |     | 175    | FT    |
| C                                  | BIORETENTION FOOTPRINT AREA       |     | 2,110  | SF    |
| D                                  | WATER QUALITY VOLUME              |     | 3,894  | CF    |
| E                                  | WQV ELEVATION                     |     | 114.17 | FT    |
| F                                  | SYSTEM FLOOR ELEVATION            |     | 113.00 | FT    |
| G                                  | BOTTOM BSM ELEVATION              |     | 111.5  | FT    |
| H                                  | BOTTOM STONE ELEVATION            |     | 110.0  | FT    |
| I                                  | TOP STONE/OUTLET INVERT ELEVATION |     | 111.25 | FT    |
| J                                  | PONDING DEPTH BELOW LOWEST INV.   |     | 1.20   | FT    |
| K                                  | BSM MEDIA DEPTH                   | 18  | 18     | IN    |
| Li                                 | INLET END PEA GRAVEL DEPTH        |     | 6      | IN    |
| Lo                                 | OUTLET END PEA GRAVEL DEPTH       | 3   | 3      | IN    |
| Mi                                 | INLET END CRUSHED STONE DEPTH     |     | 12     | IN    |
| Mo                                 | OUTLET END CRUSHED STONE DEPTH    | 14  | 15     | IN    |
| N                                  | SUBDRAIN DEPTH ABOVE BOTTOM       | 4   | 4      | IN    |
| O                                  | PERFORATED SUBDRAIN DIAMETER      | 6   | 6      | IN    |

| BIORETENTION SYSTEM DESIGN METRICS |                                 |      |        |       |
|------------------------------------|---------------------------------|------|--------|-------|
| ID                                 | DESIGN PARAMETER                | MIN  | BIO 1  | UNITS |
| P                                  | RISER PIPE DIAMETER             | 6    | 12     | IN    |
| Q                                  | OUTLET PIPE DIAMETER            | 6    | 12     | IN    |
| R                                  | INFLOW PIPE DIAMETER            |      | N/A    | IN    |
| S                                  | PERFORATED SUBDRAIN LENGTH      |      | 8      | FT    |
| T                                  | OUTLET PIPE LENGTH              |      | 40     | FT    |
| U                                  | INFLOW PIPE LENGTH              |      | N/A    | FT    |
| V                                  | SLOPE GRADE (RUN PER 1ft RISE)  |      | 3      | FT    |
| W                                  | ROCK APRON WIDTH                |      | 5      | FT    |
| X                                  | ROCK APRON LENGTH               |      | 10     | FT    |
| Y                                  | SMOOTH LINED HDPE PIPE DIAMETER |      | 6      | IN    |
| Z                                  | PVC LINER SLOPE                 |      | 0.32   | %     |
| AA                                 | OUTLET PIPE SLOPE               |      | 0.63   | %     |
| BB                                 | CLEAN-OUT RISER DIAMETER        |      | 6      | IN    |
| CC                                 | CLEAN-OUT RISER ELEVATION       |      | 114.25 | FT    |
| DD                                 | PVC LINER GAP                   | 0.1" | 17.5   | FT    |
| EE                                 | OUTLET PIPE ORIFICE DIAMETER    |      | 1.25   | IN    |
| FF                                 | RISER ELEVATION                 |      | 114.20 | FT    |
| GG                                 | TOP OF BERM                     |      | 115.10 | FT    |

BIORETENTION BASIN W/ISR  
NOT TO SCALE



#### PARTICLE SIZE DISTRIBUTION OF IRON FILINGS

| SIEVE # | % PASSING |
|---------|-----------|
| 50      | 100       |
| 100     | 85        |
| 200     | 15        |
| <200    | 0-5       |

#### ACCEPTABLE PARTICLE SIZE DISTRIBUTION OF FINAL BIORETENTION SOIL MIX

| MEDIA TYPE  | SIEVE # | SIZE (in) | SIZE (mm) | % PASSING |
|-------------|---------|-----------|-----------|-----------|
| COARSE SAND | 4       | 0.187     | 4.76      | 100       |
| MEDIUM SAND | 10      | 0.079     | 2.00      | 95        |
| FINE SAND   | 40      | 0.017     | 0.42      | 40-15     |
| SILTS       | 200     | 0.003     | 0.075     | 10-20     |
| CLAYS       | <200    | PAN       | PAN       | 0-5       |

#### BIORETENTION SOIL MEDIA COMPONENTS:

- AMOUNTS MIXED BY TOTAL VOLUME
- 60-85% - SAND (0.5 TO 2.0 mm) (SEE SPECS ABOVE)
- 15-25% - LOAM OR TOPSOIL
- 3-8% - ORGANIC MATTER
- 0-5% - WATER TREATMENT RESIDUALS OR IRON FILINGS\*

\*THE FILTER MEDIA MUST BE AMENDED WITH 0.5% IRON FILINGS OR 5% WATER TREATMENT RESIDUALS. AS WELL THE IRON FILINGS SHALL NOT BE MIXED INTO THE TOP 4". THE AMENDED MATERIAL SHALL BE SIZED ACCORDING TO USACE FILTER CRITERIA FOR STABILITY. SEE IRON FILING PARTICLE SIZE DISTRIBUTION

#### INTERNAL STORAGE RESERVOIR (ISR) NOTES:

- THE HYBRID BIORETENTION SYSTEM HARBORS AN ANAEROBIC INTERNAL STORAGE RESERVOIR FOR NITROGEN REMOVAL.
- THE ISR IS SEPARATED BY AN IMPERMEABLE PVC LINER BETWEEN THE PEA GRAVEL AND CRUSHED STONE LAYERS.
- THE PVC LINER SLOPES FROM THE OUTLET TOWARDS THE INLET TO MAXIMIZE STORAGE RETENTION AND PROVIDE EXTRA TREATMENT/FILTER TIME VIA PLUG FLOW THROUGH CRUSHED STONE.
- DESIGN GUIDELINES FOR THE SUBSURFACE GRAVEL WETLAND SPECIFICATIONS (UNHSC, 2016) IDENTIFIED THAT THE WATER VOLUME IN THE ISR BE AT LEAST 0.26\*WQV [WATER QUALITY VOLUME], OR 26% OF THE WQV.
- PVC LINER THICKNESS OF 40 TO 60 MIL, PREFERABLY SEAMLESS. IF SEAMS ARE UNAVOIDABLE, THE SEAMS SHOULD BE SEALED.

PLANNING FILE NO.: SITE-2025-XXXX

#### DETAIL SHEET

15,000 SF WAREHOUSE &  
6,200 SF BUILDING ADDITION  
14 INDUSTRIAL PARK ROAD  
DOVER, NH 03820

16 INDUSTRIAL PARK, LLC  
340 CENTRAL AVENUE  
DOVER, NH 03820

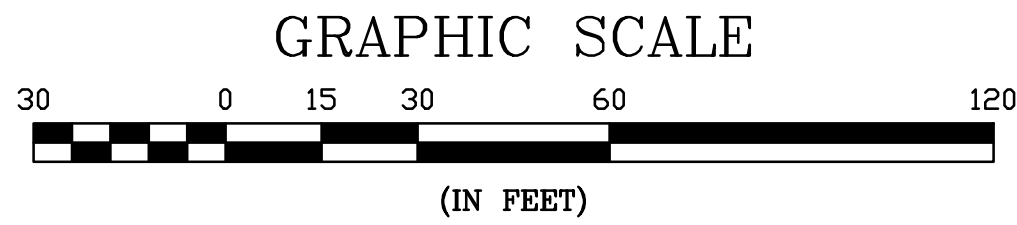
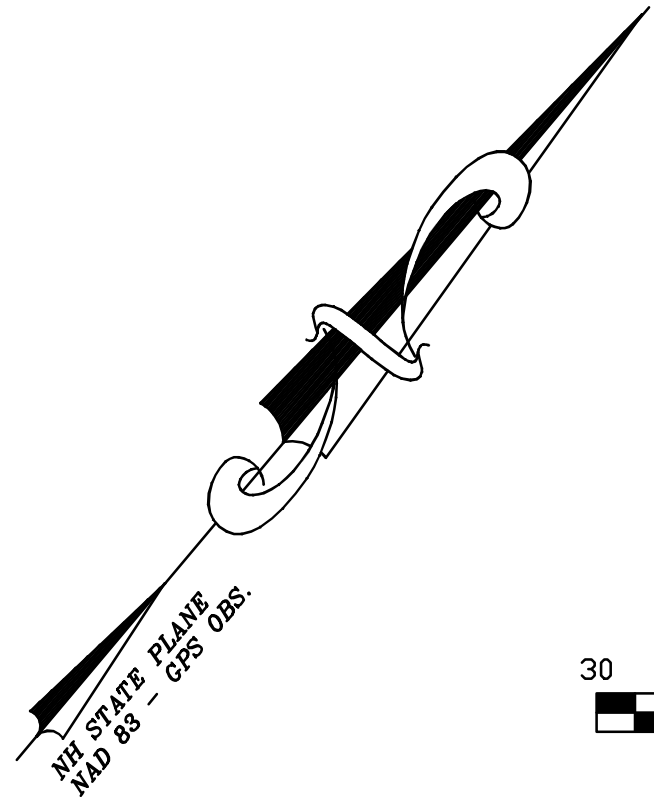
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| DATE    | SCALE    | DRAWN BY | DESIGN BY | APPROVED BY | PROJECT NO. | FILE SITE.dwg | NO. | REVISION | APP'D | DATE |
|---------|----------|----------|-----------|-------------|-------------|---------------|-----|----------|-------|------|
| 10-2-25 | NO SCALE | WEJ      | JRG       | BYSH        | 25114       |               |     |          |       |      |

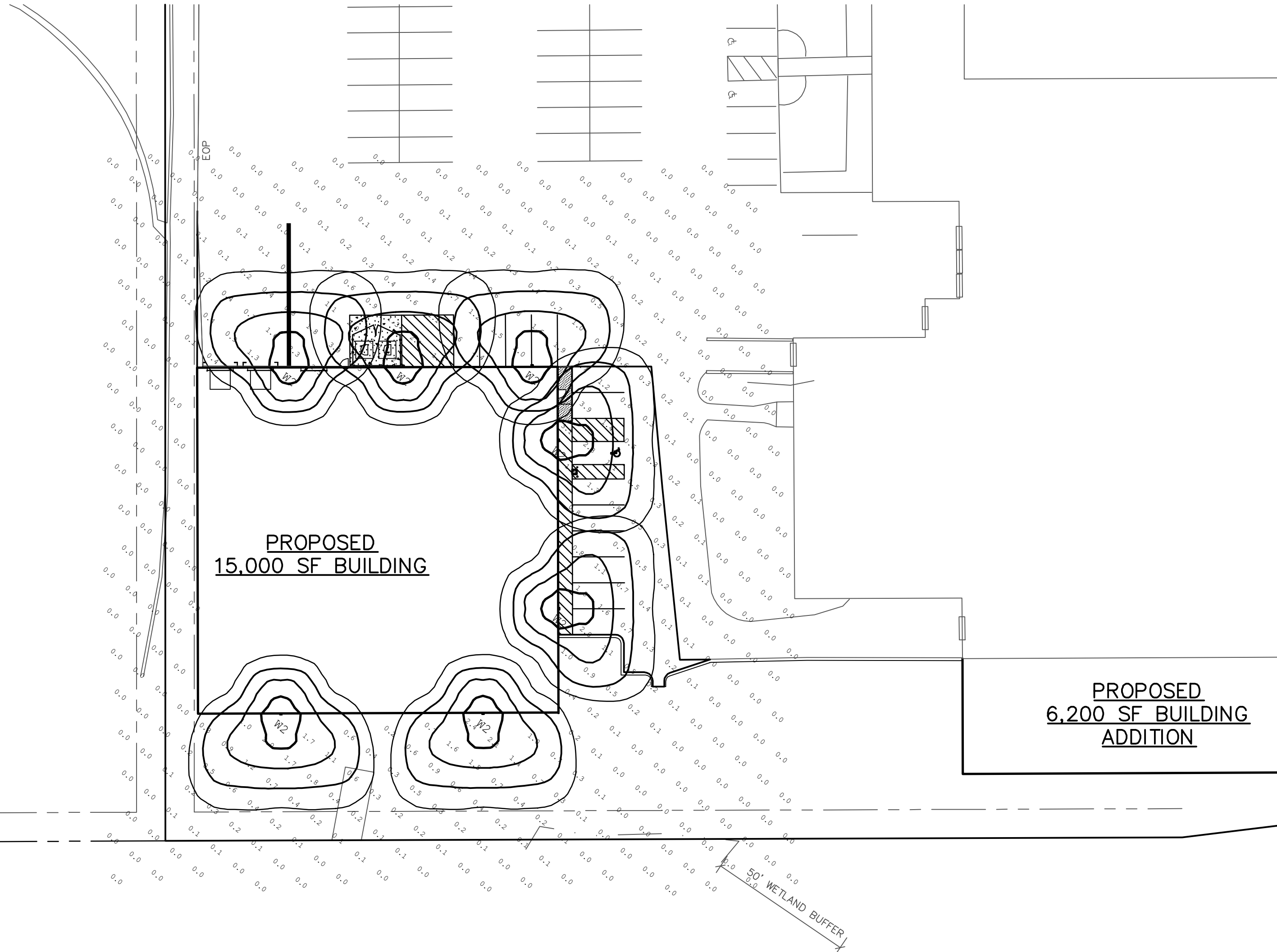








PHOTOMETRIC PLAN PREPARED BY  
KEN SWEENEY  
KSWEENEY@EXPOSURE2LIGHTING.COM  
FOR PRICING PLEASE CONTRACT OUR OFFICE IN  
NEW HAMPSHIRE  
603-601-8080  
WWW.EXPOSURE2LIGHTING.COM



PARKING SPACES

Illuminance (Fc)  
Average = 1.38  
Maximum = 3.9  
Minimum = 0.6  
Avg/Min Ratio = 2.30  
Max/Min Ratio = 6.50

| Luminaire Schedule |     |       |             |                                    |                       |                      |
|--------------------|-----|-------|-------------|------------------------------------|-----------------------|----------------------|
| Symbol             | Qty | Label | Arrangement | Description                        | Tag                   | [MANUFAC]            |
| W1                 | 2   | W1    | Single      | WPSLS-1L-30-CXX                    | WALL MOUNTED 8.5' AFG | LSI INDUSTRIES, INC. |
| W2                 | 7   | W2    | Single      | XWS-LED-3L-SIL-FT-UNV-30-70CRI-CXX | WALL MOUNTED 12' AFG  | LSI INDUSTRIES, INC. |

PLANNING FILE NO.: SITE-2025-XXXX

| DATE    | SCALE    | DRAWN BY | DESIGN BY | APPROVED BY | PROJECT NO. | FILE     | NO. | REVISION | APP'D | DATE |
|---------|----------|----------|-----------|-------------|-------------|----------|-----|----------|-------|------|
| 10-2-25 | 1" = 30' | WEJ      | JRG       | BYSJH       | 25114       | SITE.dwg |     |          |       |      |

LIGHTING PLAN

15,000 SF WAREHOUSE & 6,200 SF BUILDING ADDITION  
14 INDUSTRIAL PARK ROAD  
DOVER, NH 03820

16 INDUSTRIAL PARK, LLC  
340 CENTRAL AVENUE  
DOVER, NH 03820

17

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

CIVILWORKS NEW ENGLAND  
181 Watson Road, PO Box 1166  
Dover, New Hampshire 03821  
603.749.0443





| OVERVIEW             |                      |
|----------------------|----------------------|
| Lumen Package (lm)   | 1,000 - 8,000        |
| Wattage Range (W)    | 10 - 61              |
| Efficacy Range (LPW) | 126 - 162            |
| Weight lbs (kg)      | 10 (4.5)             |
| Control Options      | IMSET, ALB, ALS, PCI |

## QUICK LINKS

Ordering Guide Performance Photometrics Dimensions

- Rugged die-cast aluminum housing.
- Fixtures are finished with LSI's DuraGrip® polyester powder coat finishing process. The DuraGrip finish withstands extreme weather changes without cracking or peeling. Other standard LSI finishes available. Consult factory.
- Extended housing available with 1/2" threaded hubs for surface conduit and rated wire.
- Standard luminaire shipping weight: TBD lbs in carton.
- Max luminaire shipping weight: 12 lbs in carton (20 lbs w/EH option)

- State-of-the-Art one piece silicone optic provides industry leading optical control while also acting as an integrated gasket reducing system complexity and improving fixture reliability.

- Proprietary silicone refractor optics provide exceptional coverage and uniformity in distribution types 2, 3, and FT.
- Silicone optical material does not yellow or crack with age and provides a typical light transmittance of 93%.
- Zero uplight.
- 5000K, 4000K, 3500K, 3000K, and 2700K color temperatures per ANSI C78.377. Also available in Phosphor Converted Amber with peak intensity at 610nm.
- 70 or 80CRI Minimum.

- High-performance programmable driver features over-voltage, under-voltage, short circuit and over temperature protection. Custom lumen and wattage packages available.

- 0-10V dimming (10% - 100%) standard.

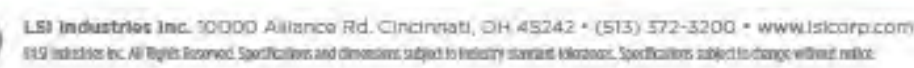
- Standard Universal Voltage (120-227 VAC)  
Input 50/60 Hz or optional High Voltage (347-480 VAC).
- L80 Cauterized life >100k Hours
- Total harmonic distortion (THD): <20%
- Operating temperature: -40°C to 40°C  
(-40°F to 104°F)
- Power factor (PF): >90
- Input power stays constant over life.
- Optional 10kV surge protection device meets a minimum Category C Low protection (per ANSI/IEC 62412).
- High-efficiency LEDs mounted to metal-core circuit board maximize heat dissipation.
- Components are fully encased in potting material for moisture resistance. Driver complies with FCC standards. Driver and key electronic components can easily be accessed via hinged door.
- The optional emergency battery pack provides 90-minutes of constant power to the LED system, ensuring code compliance. A test switch/indicator button is installed on the housing for ease of maintenance.
- The LEDs deliver 1500 lumens during emergency mode.

- **Integral passive Infrared Bluetooth™** motion sensor options. Fixtures operate independently and can be commissioned via an iOS or Android configuration app. Updates and modifications to the control strategy are easily implemented via an intuitive app.
- The **ALBMRxLR** utilizing an external antenna for long range communications allows for Bluetooth Mesh wireless up to 100' from node to node. Ensures reliable wireless communications for applications where only wall-mount fixture product is being utilized.

- Universal wall mounting plate easily mounts directly to 4" octagonal or square junction box.
- 2 fasteners secure the hinged door underneath the housing and provide quick & easy access to the electrical compartment for installing/servicing.
- Optional terminal block accepts up to 12 ga wire.

- LSI luminaires carry a 5-year **limited warranty**. Refer to <https://www.isicorp.com/resources/terms-conditions-warranty/> for more information.

- Listed to UL 1598 and UL 8750.
- Meets Bay American Act requirements.
- ICA compliant, with 3000K color temperature selection.
- Title 24 Compliant; see local ordinance for qualification information.
- Suitable for wet locations.
- IP65 rated luminaire per IEC 60598-1.
- 3G rated for ANSI C136.3 high vibration applications when pole mounted (using optional XPMAB bracket) or wall mounted.
- IK08 rated luminaire per IEC 60626 mechanical impact code.
- DesignLights Consortium® (DLC) Premium qualified product. Not all versions of this product may be DLC Premium qualified. Please check the DLC Qualified Products List at [www.designlights.org/DLP](http://www.designlights.org/DLP) to confirm which versions are qualified.

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SPEC 3021.C.0625

| OVERVIEW             |               |
|----------------------|---------------|
| Lumen Package (lm)   | 1,000 - 4,000 |
| Wattage Range (W)    | 12 - 40       |
| Efficacy Range (LPW) | 98 - 122      |
| Weight lbs (kg)      | 3.8 (1.7)     |

## QUICK LINKS

Ordering Guide Performance Photometrics Dimensions

### Construction

- Rigid Precision Die cast-aluminum housing for durability and consistency.
- Vertical fins serve as a heat sink and resist accumulation of dust and debris.
- The Patent Pending thermal stacking heat removal technology extracts heat from within the housing moving it away from LEDs and integral components.
- Luminaire hinges open from the bottom to prevent leakage.
- Luminaire is proudly manufactured and tested in the U.S.
- Fixtures are finished with LSI's DuraGrip® polyester powder coat finishing process. The DuraGrip finish withstands extreme weathering without cracking or peeling. Other standard LSI finishes available. Consult factory.

- High-performance Chip On Board (COB) LEDs behind clear tempered glass for maximum light output.
- 3000K | 4000K | 5000K color temperatures.
- Minimum CRI of 71.
- Zero uplight.

- High-performance driver features over-voltage, under voltage, short-circuit and over temperature protection.
- 0-10 volt dimming (10% - 100% standard.
- Standard Universal Voltage (120-277 Vac) Input 50/60 Hz
- L70 Calculated Life: >300K Hours
- Total harmonic distortion: <20%
- Power factor: >.85
- Input power stays constant over life.
- Driver Off-State Power Is 0 watts.
- Chip On Board (COB) LEDs with integrated circuit board mounted directly to the housing to maximize heat dissipation and promote long life.

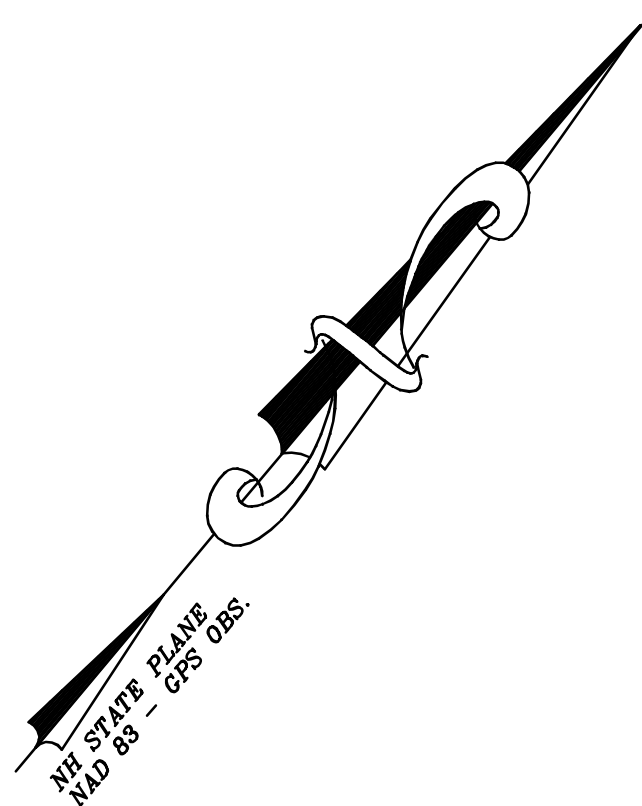
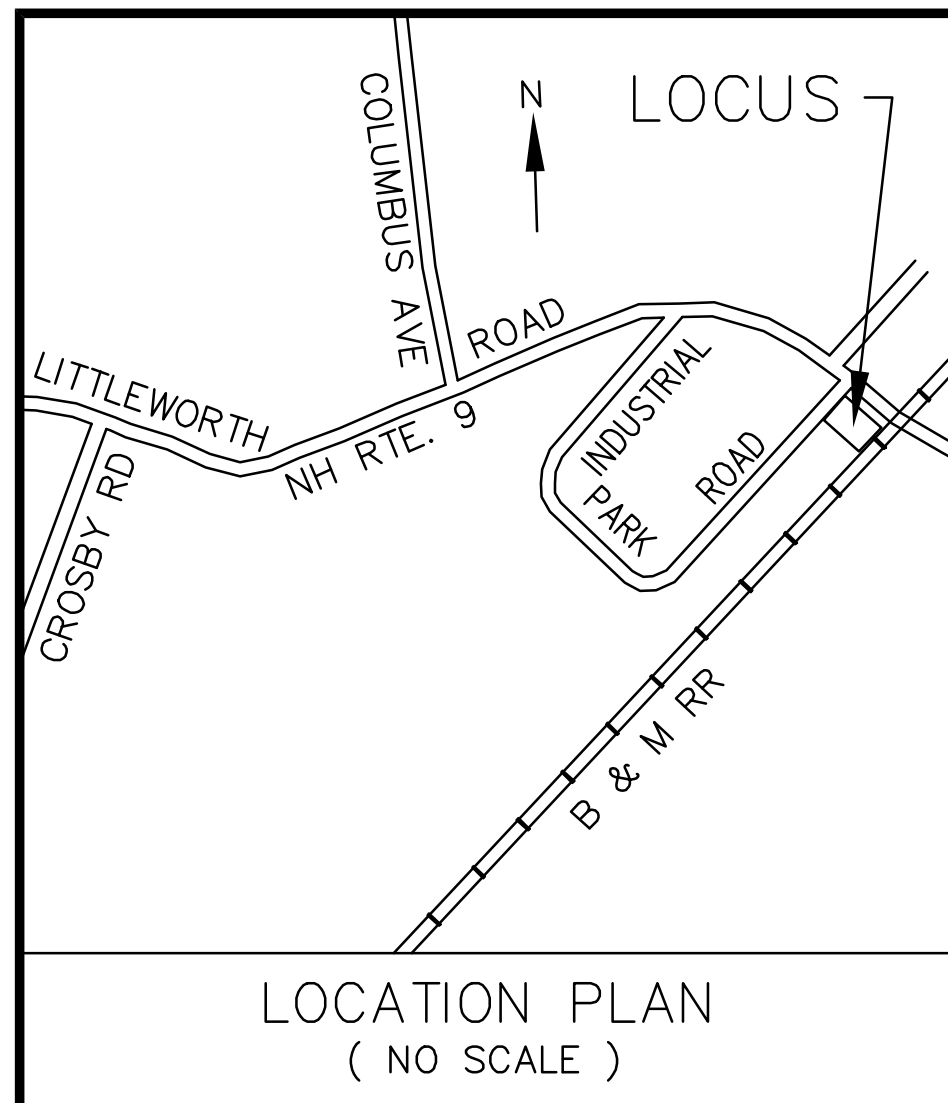
- Optional 120V electronic button Photocontrol.
- Apertures for field or factory installed photocontrol.

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SPEC.1025.A.0424







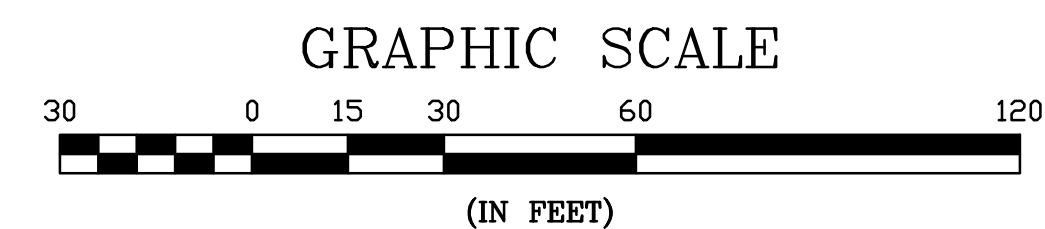
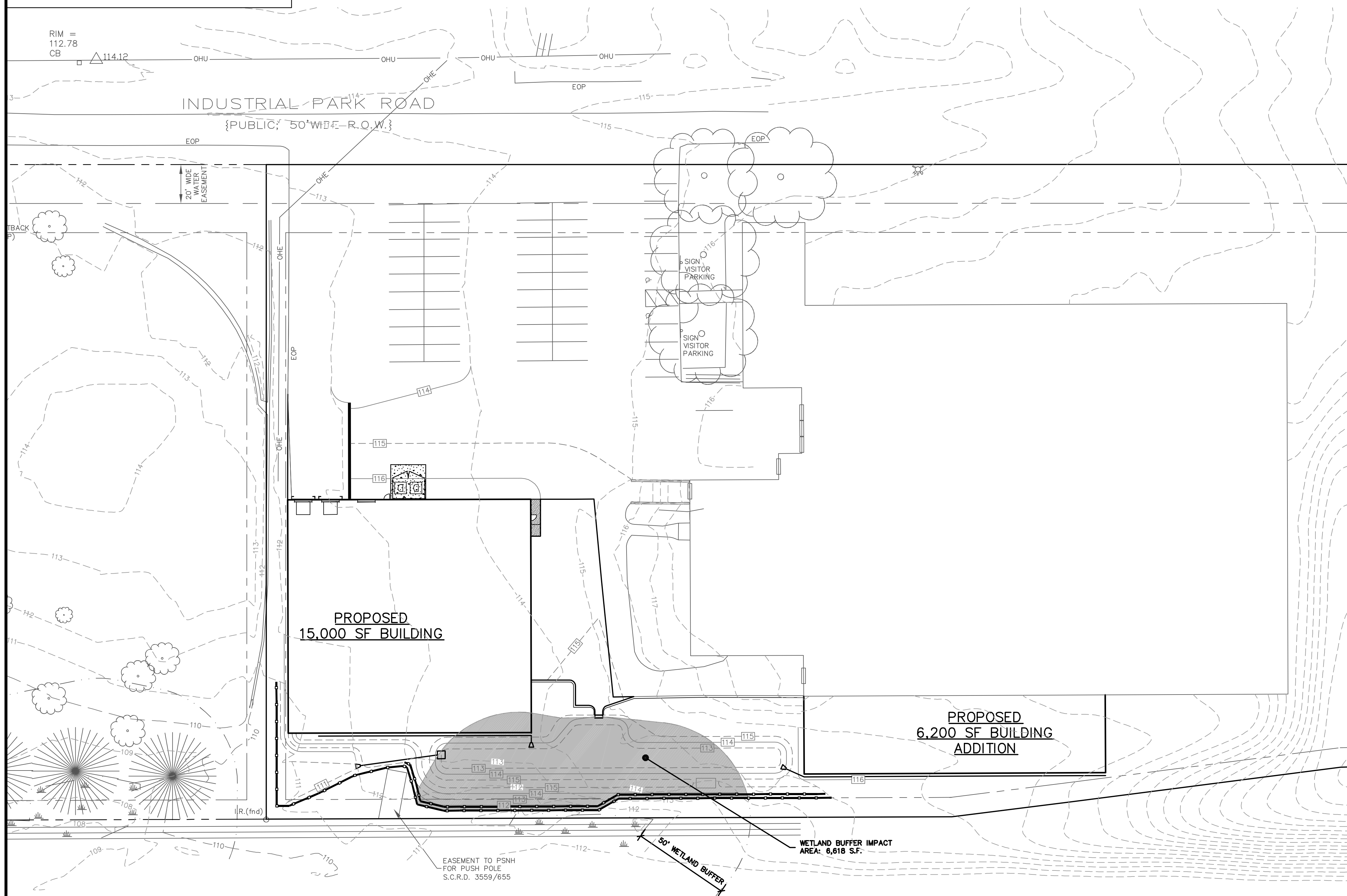


PROPOSED WETLAND BUFFER IMPACT AREA

PROPOSED IMPACT AREA  
TOTAL WETLAND IMPACT AREA = 6,618 S.F.

TOTAL DISTURBANCE ON SITE = 53,717.4 S.F.

- \* ALTERATION OF TERRAIN PERMIT: NOT REQUIRED
- \* EPA CONSTRUCTION GENERAL PERMIT: REQUIRED  
TO BE FILED PRIOR TO THE START OF CONSTRUCTION
- \* TOTAL DISTURBANCE AREA INCLUDES APPROXIMATE EXISTING PAVED AREAS TO BE RECLAIMED, RESURFACED AND REGRADED



PLANNING FILE NO.: SITE-2025-XXXX

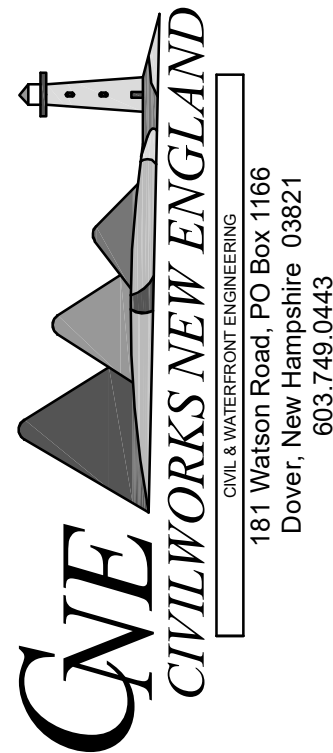
**WETLAND BUFFER IMPACT EXHIBIT**

**15,000 SF WAREHOUSE &  
6,200 SF BUILDING ADDITION  
14 INDUSTRIAL PARK ROAD  
DOVER, NH 03820**

**16 INDUSTRIAL PARK, LLC  
340 CENTRAL AVENUE  
DOVER, NH 03820**

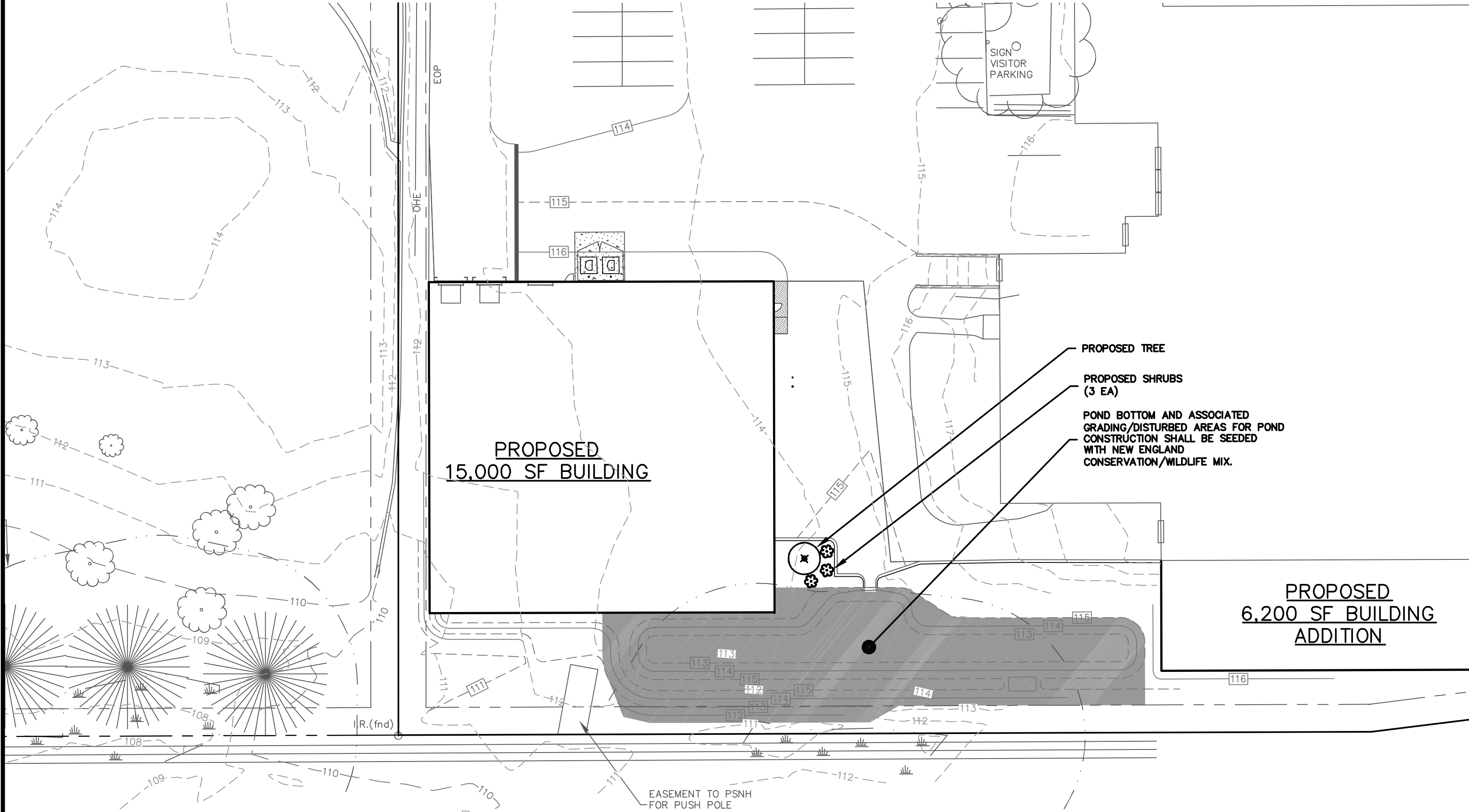
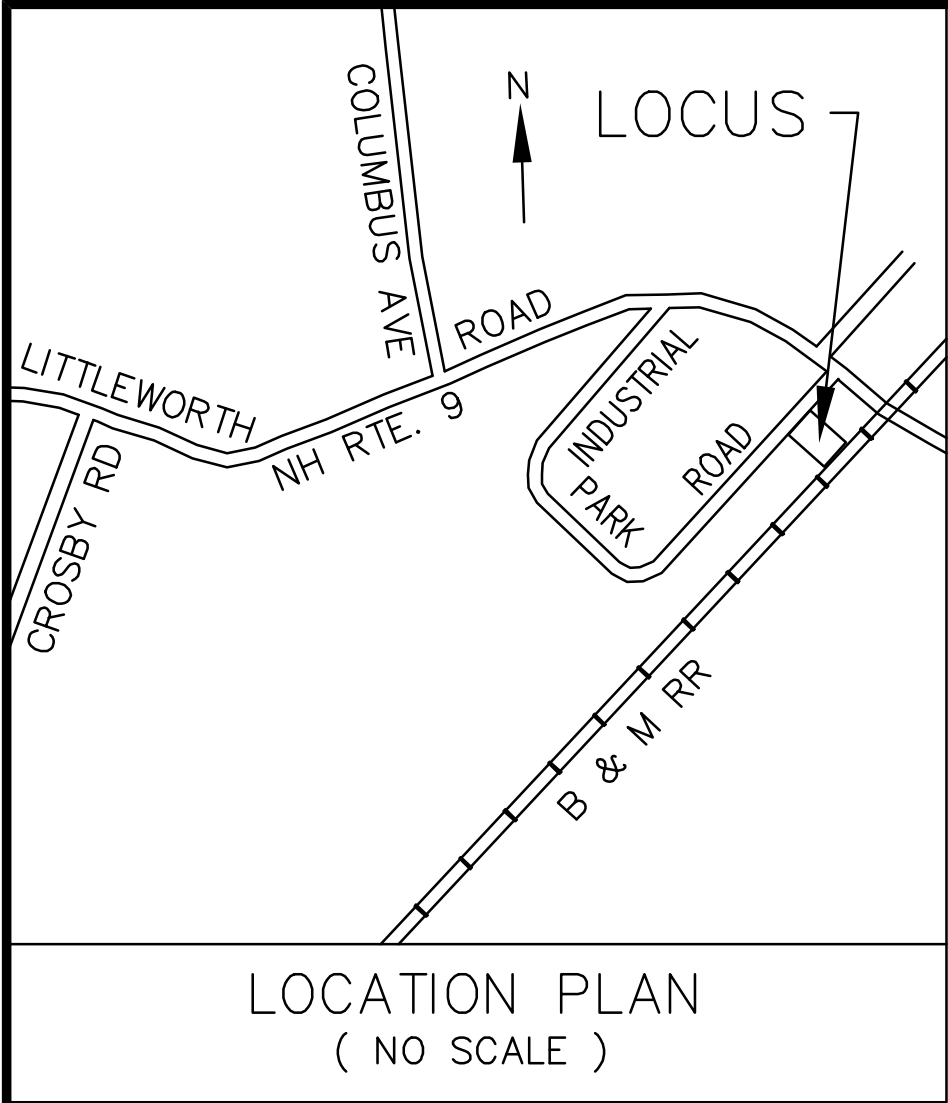
**EX-1**

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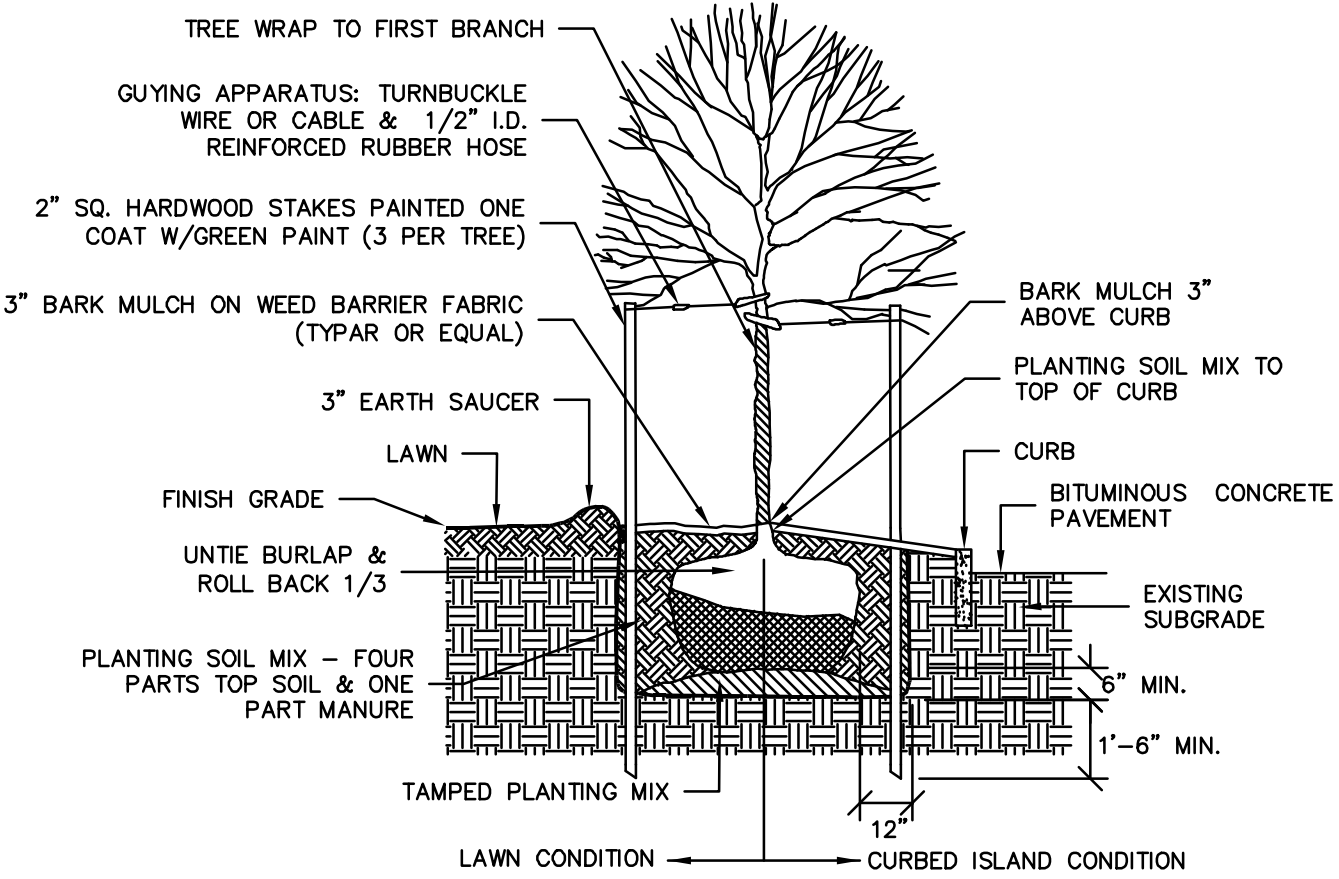
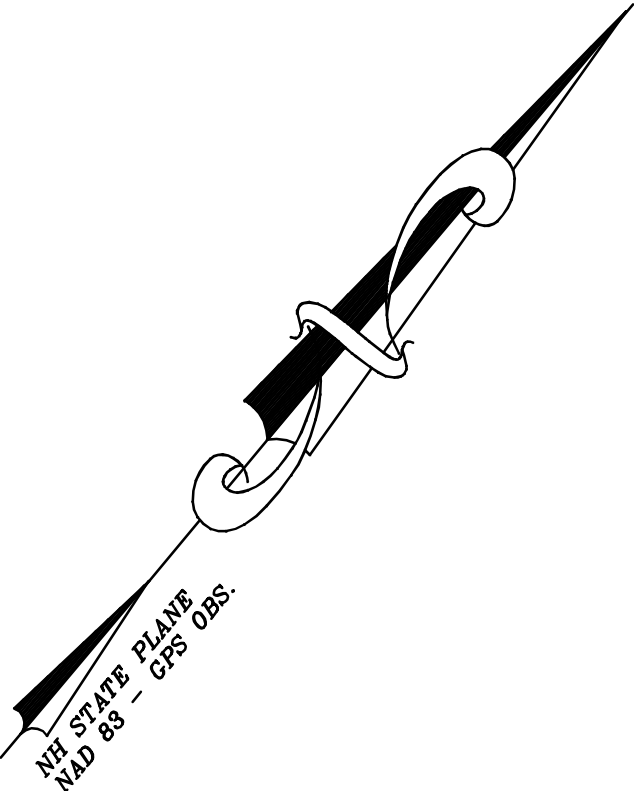
81 Watson Road, PO Box 1166  
Dover, New Hampshire 03821  
603.749.0443



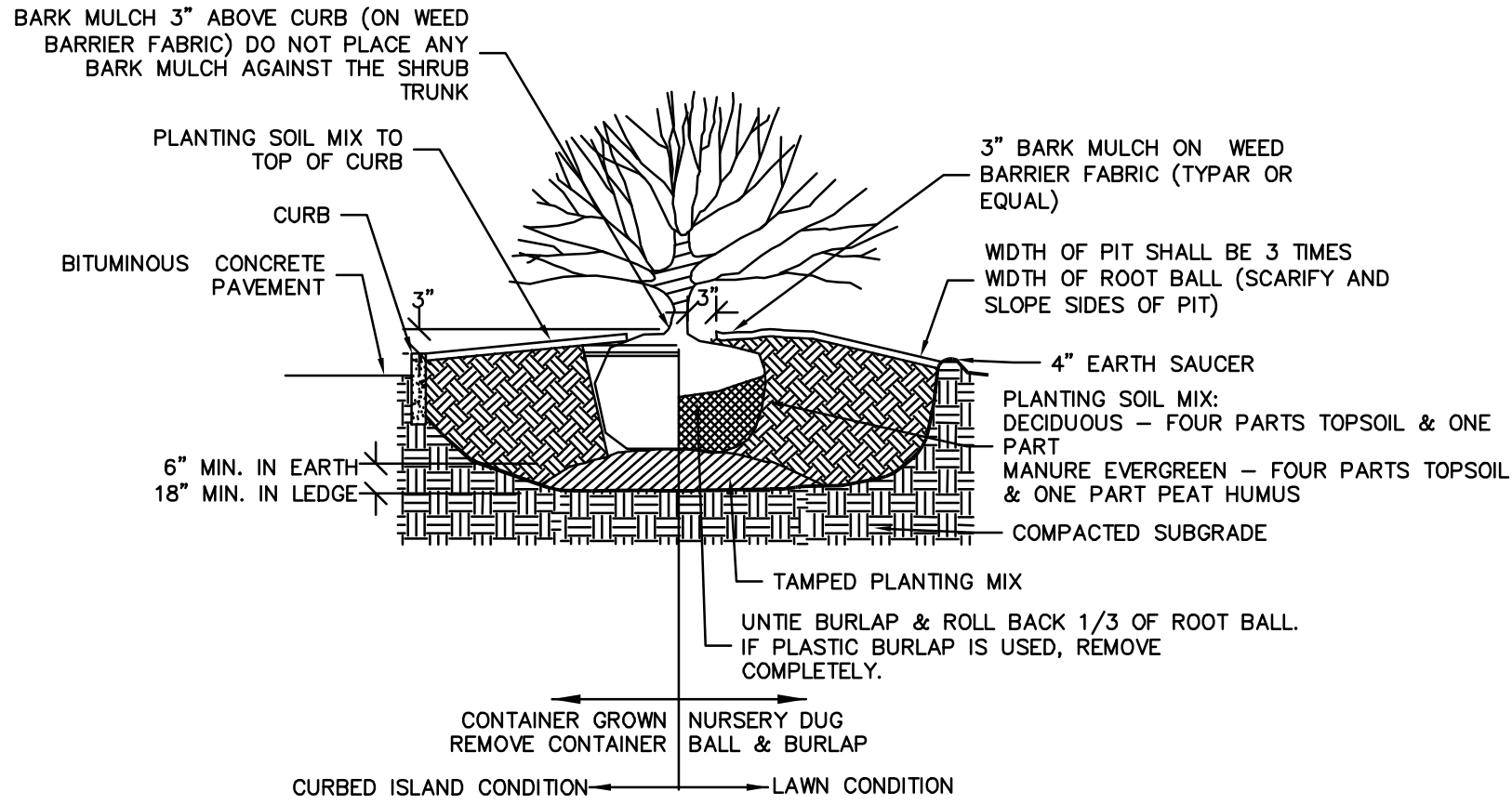


- PLANTING NOTES:**
- ALONG PERIMETER OF PARKING LOT TREES SHALL BE PLANTED AT 35 FEET ON CENTER WITHIN THE BUFFER AREA REQUIRED BY §153-17C.
    - TREES MUST BE TOLERANT TO CLIMATIC WEATHER CONDITIONS OF DOVER AND SHALL BE A MINIMUM CALIPER OF 2.5-3 INCHES (MEASURED AT FOUR FEET ABOVE GRADE LEVEL).
    - TREES SHALL CONSIST OF DECIDUOUS AND/OR EVERGREEN SHADE TREES.
    - TREES SHALL BE SALT- AND DROUGHT-TOLERANT, NATIVE OR NONINVASIVE SPECIES, AND HAVE A STRUCTURE AND GROWTH FROM WHICH PREVENTS THEM FROM OBSTRUCTING SIDEWALKS AND WALKWAYS. FLOOD-TOLERANT PLANTS SHALL BE USED IN DRAINAGE SWALES.
  - SHRUBS SHALL BE PLANTED BETWEEN THE TREES AT FIVE FEET ON CENTER.
    - SHRUBS SHALL BE A MIX OF DECIDUOUS AND EVERGREEN SPECIES TOLERANT TO CLIMATIC CONDITIONS OF DOVER.
    - SHRUBS SHALL HAVE A MINIMUM HEIGHT OF TWO FEET AT TIME OF PLANTING.
  - TREES PLANTED ALONG STREET SHALL USE THE 10-20-30 RULE (NO MORE THAN 10% OF TREES SHALL BE OF SAME SPECIES, NO MORE THAN 20% OF TREES IN THE SAME GENUS, AND NO MORE THAN 30% IN THE SAME FAMILY).

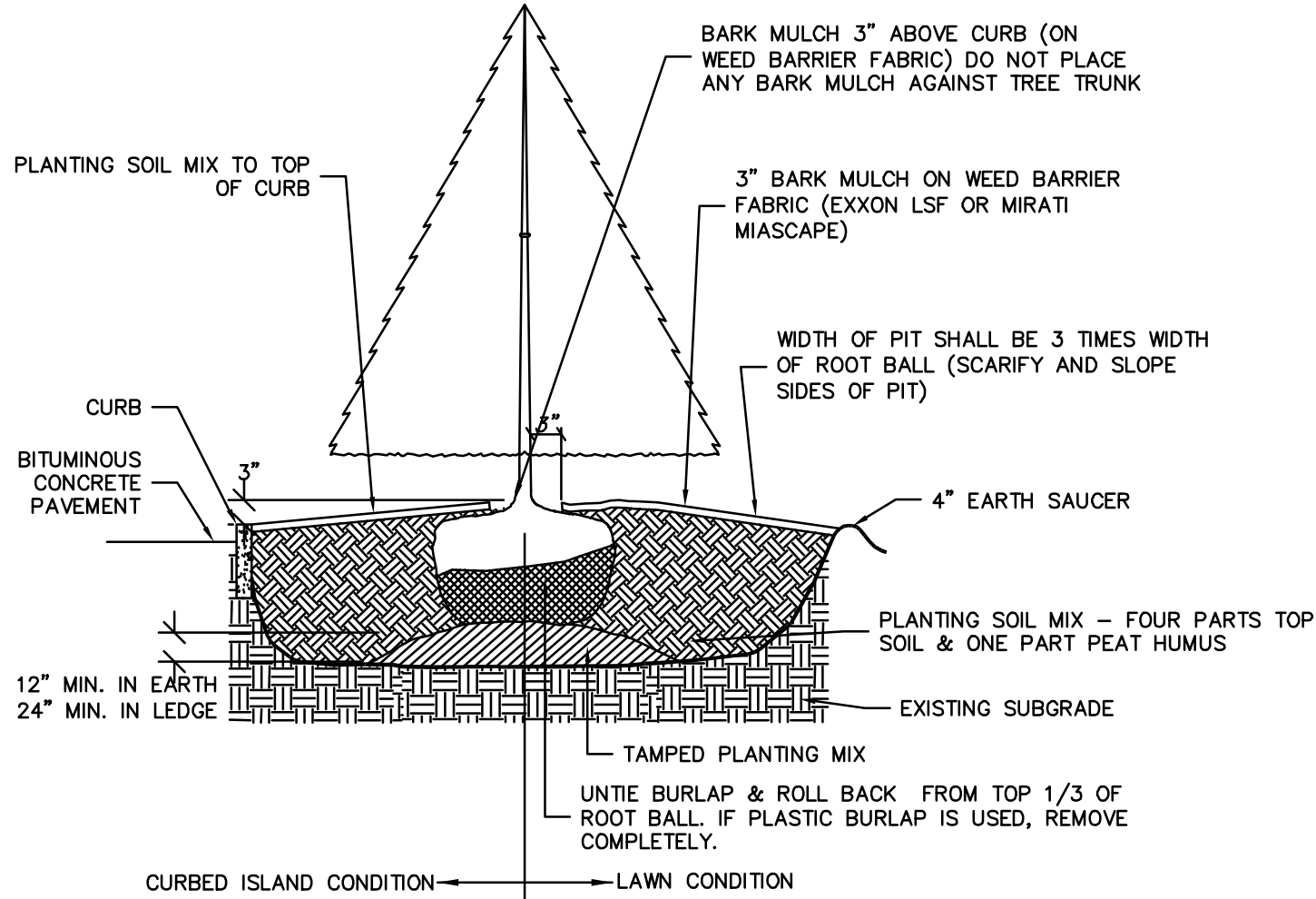
- NOTES:**
- THE SITE SHALL RECEIVE 6" LOAM & SEED ON ALL DISTURBED AREAS UNLESS NOTED.



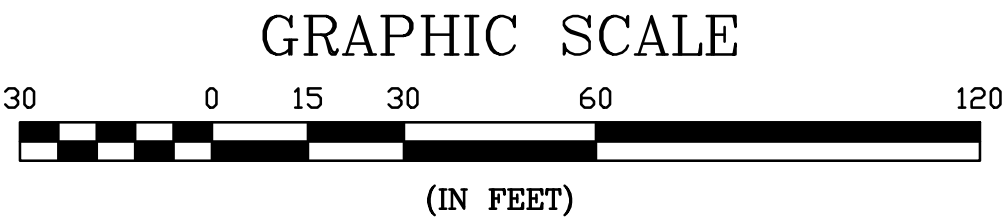
NOTE: PLANT AT SAME DEPTH AS PREVIOUSLY PLANTED OR WITHIN 2" ABOVE.  
**DECIDUOUS TREE PLANTING DETAIL**  
NOT TO SCALE



NOTE: PLANT AT SAME DEPTH AS PREVIOUSLY PLANTED, OR WITHIN 2" ABOVE.  
**SHRUB PLANTING**  
NOT TO SCALE



NOTE: PLANT AT SAME DEPTH AS PREVIOUSLY PLANTED, OR WITHIN 2" ABOVE.  
**EVERGREEN TREE PLANTING**  
NOT TO SCALE



PLANNING FILE NO.: SITE-2025-XXXX

LANDSCAPE PLAN

15,000 SF WAREHOUSE &  
6,200 SF BUILDING ADDITION  
14 INDUSTRIAL PARK ROAD  
DOVER, NH 03820

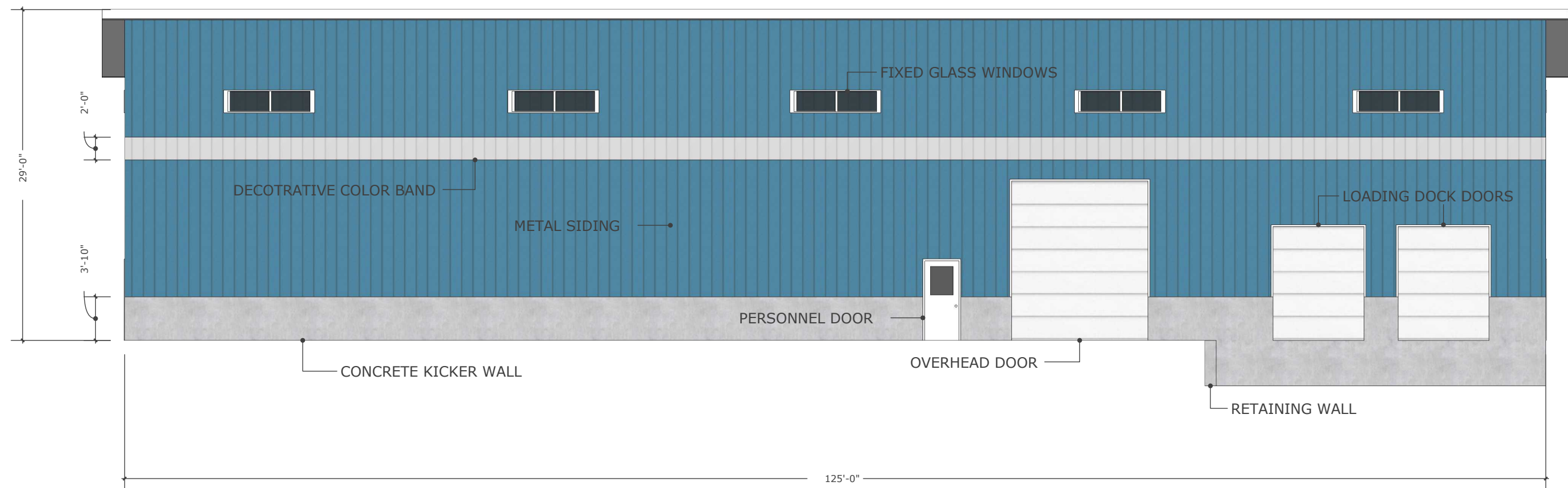
16 INDUSTRIAL PARK, LLC  
340 CENTRAL AVENUE  
DOVER, NH 03820

L-1

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

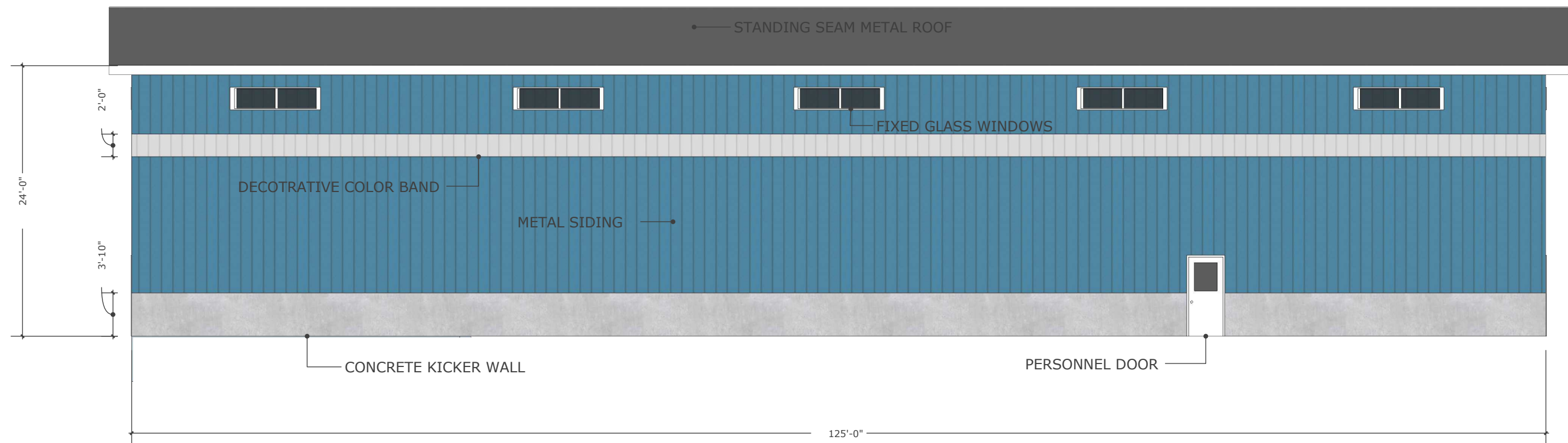
CIVILWORKS NEW ENGLAND  
CIVIL & WATERCRAFT ENGINEERING  
181 Watson Road, PO Box 1166  
Dover, NH 03820  
603.749.0443

| DATE    | SCALE    | DRAWN BY | DESIGN BY | APPROVED BY | PROJECT NO. | FILE     | NO. | REVISION | APP'D | DATE |
|---------|----------|----------|-----------|-------------|-------------|----------|-----|----------|-------|------|
| 10-2-25 | 1" = 30' | WEJ      | JRG       | BYJH        | 25114       | SITE.dwg |     |          |       |      |



Front Sidewall Elevations

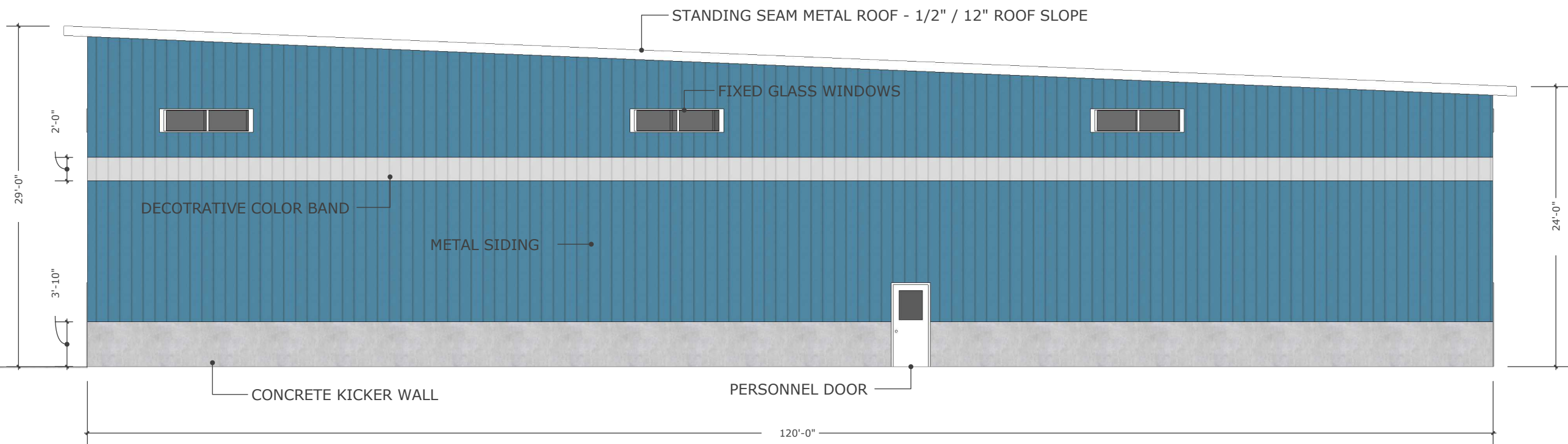
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01



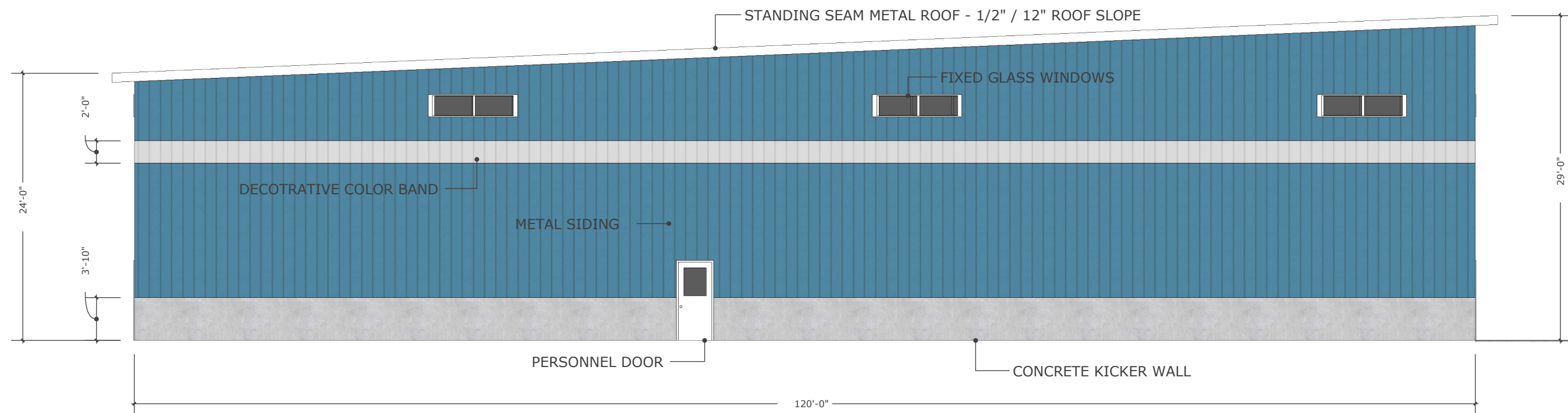
Back Sidewall Elevations

A  
02





Right Endwall Elevations



Left Endwall Elevations

A  
04