

NEPONSET RIVER GREENWAY:  
TENEAN BEACH TO MORRISSEY BLVD.

**Massachusetts Department of Conservation and Recreation  
Notice of Intent**

**City of Boston  
Conservation Commission  
July 2021**

Prepared for:

Massachusetts Department of Conservation and Recreation (DCR)  
251 Causeway Street Suite 900  
Boston, MA 02114

BSC Project No. 89572.01







July 2021

Boston Conservation Commission  
Attn: Nicholas Moreno, Conservation Agent  
Boston City Hall Room 709  
Boston, MA 02201

33 Waldo Street  
Worcester, MA 01608

Tel: 508-792-4500  
800-288-8123

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

**RE: Notice of Intent  
Neponset River Greenway: Tenean Beach to Morrissey Blvd  
Boston, Massachusetts**

Dear Members of the Boston Conservation Commission:

On behalf of the Massachusetts Department of Conservation and Recreation (DCR), BSC Group, Inc. (BSC) is pleased to submit this Notice of Intent (NOI) for the extension of the Neponset River Greenway between Tenean Beach and Morrissey Boulevard in the Dorchester neighborhood of Boston, Massachusetts (the Project). DCR and MassDOT are working in collaboration to permit, fund, and build the multi-use trail and extensive design considerations, land negotiations, and interagency review have been required to reach this point in the permitting process. This NOI is being submitted in accordance with the Massachusetts Wetlands Protection Act (M.G.L. Ch.131, S.40) (WPA), its implementing regulations (310 CMR 10.00), and the City of Boston Wetlands Ordinance (Chapter 7-1.4) and Regulations.

The Project consists of constructing an approximately 3,620-foot long multi-use pathway, including a 10-foot by 670-foot pile-supported boardwalk portion, elevated over a small section of salt marsh and tidal flats in a cove within Dorchester Bay. This phase of the Neponset River Greenway includes a previously reviewed “northern section” from Victory Road to the William T. Morrissey Boulevard, and a new “southern section” connecting Victory Road to Teanen Beach off Conley Street. The project will contribute to DCR’s long term plan to connect the existing Lower Neponset River Trail Greenway from Tenean Beach to the Harbor Walk located approximately 1.5 miles to the north on Morrissey Boulevard near the campus of UMass Boston. Project activities will also include realignment, sidewalks, and resurfacing of short sections of Victory Road and Conley Street, installation of a new infiltration trench for stormwater management, improvements at DCR’s Victory Road Park, and the repair of an existing tide gate which manages stormwater to the Neponset River. Along with significant debris removal, approximately 2800 square feet of a manmade berm will be removed in order to restore salt marsh and intertidal habitat.

The project proposes impacts to Salt Marsh, Coastal Beach (including Tidal Flats), Coastal Bank, Land Subject to Coastal Storm Flowage (LSCSF), 100-ft Buffer Zone to resource areas, and the locally-regulated Waterfront Area. Most project impacts to resource areas will be within previously developed areas or are temporary (related to the use of construction matting for access). The project is not expected to reduce the capacity of the resource areas to provide the functions and values outlined in the WPA and Boston Wetlands Ordinance, and has been designed with climate resiliency measures in mind.

- Engineers
- Environmental Scientists
- Custom Software Developers
- Landscape Architects
- Planners
- Surveyors



An alternative design to the northern section and boardwalk was previously permitted with the Boston Conservation Commission under Order of Conditions (OOC) MassDEP #006-1443 issued on October 10, 2015. A three-year extension request was submitted in September of 2018. Since the alignment of the boardwalk has changed since the issuance of the OOC and the southern section of trail had not been previously reviewed, DCR determined filing a new Notice of Intent would be applicable.

We respectfully request that this matter be heard at the next scheduled Conservation Commission hearing. A check for \$237.50 has been mailed to the DEP Lockbox in Boston. A check made payable to the City of Boston in the amount of \$1,800 is enclosed to cover the local wetland fees (Fair Construction and Category 2) under the Boston Ordinance.

A copy of this application has also been sent to the Northeast Regional Office of the Department of Environmental Protection. Abutters within 300-feet of the Project have been notified of this filing.

If you have any questions regarding the enclosed information, please contact me at (617) 896-4529 or Stella Lensing of DCR at (617) 680-2466. Thank you for your consideration in this matter.

Sincerely,  
BSC Group, Inc.

Diana L. Walden  
Senior Ecological Scientist

cc: Stella Lensing, DCR  
Courtney Worhunsky, MassDOT  
MassDEP Northeast Regional Office  
Kellan Lewis, BSC Group

Enclosed:  
Check to City of Boston for \$1,800.00  
Local Extension Form  
Two copies of the Notice of Intent application including Forms, Figures, Plans, Supporting Narrative, and Local Ordinance Form

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Neponset River Greenway: Tenean Beach to Morrissey Blvd.  
Boston, Massachusetts  
Notice of Intent

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ATTACHMENT B	USGS SITE LOCUS MAP ENVIRONMENTAL RESOURCES MAP FEMA FIRM PREVIOUS DESIGN OVERLAY FIGURE
ATTACHMENT C	SITE PHOTOGRAPHS
ATTACHMENT D	ABUTTERS LIST ABUTTERS NOTIFICATION LETTER AFFIDAVIT OF SERVICE
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ATTACHMENT F	PROJECT PLANS
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**Massachusetts Department of Environmental Protection**  
Bureau of Resource Protection - Wetlands

**WPA Form 3 – Notice of Intent**

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

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**Important:**

When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Note:  
Before completing this form consult your local Conservation Commission regarding any municipal bylaw or ordinance.

**A. General Information**

1. Project Location (**Note:** electronic filers will click on button to locate project site):

Conley St., Victory Rd, Morrissey Blvd Boston 02122  
a. Street Address b. City/Town c. Zip Code  
Latitude and Longitude: 42.302093 to -71.048243 to -  
42.293353 71.044316  
Various - see attached list  
f. Assessors Map/Plat Number g. Parcel /Lot Number

2. Applicant:

Stella Lensing  
a. First Name b. Last Name  
Massachusetts Department of Conservation and Recreation (DCR)  
c. Organization  
251 Causeway Street - Suite 600  
d. Street Address  
Boston MA 02114  
e. City/Town f. State g. Zip Code  
617 680 2466 stella.lensing@mass.gov  
h. Phone Number i. Fax Number j. Email Address

3. Property owner (required if different from applicant):  Check if more than one owner

Priscilla Geigis, Deputy Commissioner MA DCR  
a. First Name b. Last Name  
DCR, MassDOT, National Grid (Boston Gas Company), City of Boston - see attached list  
c. Organization  
  
d. Street Address  
  
e. City/Town f. State g. Zip Code  
priscilla.geigis@mass.gov  
h. Phone Number i. Fax Number j. Email address

4. Representative (if any):

Diana Walden  
a. First Name b. Last Name  
BSC Group, Inc.  
c. Company  
33 Waldo Street  
d. Street Address  
Worcester MA 01608  
e. City/Town f. State g. Zip Code  
(617) 896-4529 DWalden@bscgroup.com  
h. Phone Number i. Fax Number j. Email address

5. Total WPA Fee Paid (from NOI Wetland Fee Transmittal Form):

\$237.50 \$1800 per local bylaw  
a. Total Fee Paid b. State Fee Paid c. City/Town Fee Paid



Massachusetts Department of Environmental Protection  
Bureau of Resource Protection - Wetlands

# WPA Form 3 – Notice of Intent

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## A. General Information (continued)

### 6. General Project Description:

DCR is proposing to construct a multi-use trail between Tenean Beach and Morrissey Blvd including a portion of elevated boardwalk. The project is part of DCR's long term plan to extend and connect the Lower Neponset River Greenway to the Harbor Walk. Impacts are proposed to Salt Marsh, Coastal Beach, Coastal Bank, and LSCSF.

### 7a. Project Type Checklist: (Limited Project Types see Section A. 7b.)

- 1.  Single Family Home
- 2.  Residential Subdivision
- 3.  Commercial/Industrial
- 4.  Dock/Pier
- 5.  Utilities
- 6.  Coastal engineering Structure
- 7.  Agriculture (e.g., cranberries, forestry)
- 8.  Transportation
- 9.  Other

### 7b. Is any portion of the proposed activity eligible to be treated as a limited project (including Ecological Restoration Limited Project) subject to 310 CMR 10.24 (coastal) or 310 CMR 10.53 (inland)?

- 1.  Yes  No      If yes, describe which limited project applies to this project. (See 310 CMR 10.24 and 10.53 for a complete list and description of limited project types)

#### 2. Limited Project Type

If the proposed activity is eligible to be treated as an Ecological Restoration Limited Project (310 CMR10.24(8), 310 CMR 10.53(4)), complete and attach Appendix A: Ecological Restoration Limited Project Checklist and Signed Certification.

### 8. Property recorded at the Registry of Deeds for:

Suffolk	
a. County	b. Certificate # (if registered land)
c. Book	d. Page Number

## B. Buffer Zone & Resource Area Impacts (temporary & permanent)

- 1.  Buffer Zone Only – Check if the project is located only in the Buffer Zone of a Bordering Vegetated Wetland, Inland Bank, or Coastal Resource Area.
- 2.  Inland Resource Areas (see 310 CMR 10.54-10.58; if not applicable, go to Section B.3, Coastal Resource Areas).

Check all that apply below. Attach narrative and any supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.



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**B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)**

For all projects affecting other Resource Areas, please attach a narrative explaining how the resource area was delineated.

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
a. <input type="checkbox"/> Bank	1. linear feet	2. linear feet
b. <input type="checkbox"/> Bordering Vegetated Wetland	1. square feet	2. square feet
c. <input type="checkbox"/> Land Under Waterbodies and Waterways	1. square feet	2. square feet
	3. cubic yards dredged	

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
d. <input type="checkbox"/> Bordering Land Subject to Flooding	1. square feet	2. square feet
	3. cubic feet of flood storage lost	4. cubic feet replaced
e. <input type="checkbox"/> Isolated Land Subject to Flooding	1. square feet	
	2. cubic feet of flood storage lost	3. cubic feet replaced
f. <input type="checkbox"/> Riverfront Area	1. Name of Waterway (if available) - <b>specify coastal or inland</b>	

2. Width of Riverfront Area (check one):

- 25 ft. - Designated Densely Developed Areas only
- 100 ft. - New agricultural projects only
- 200 ft. - All other projects

3. Total area of Riverfront Area on the site of the proposed project: \_\_\_\_\_ square feet

4. Proposed alteration of the Riverfront Area:

a. total square feet \_\_\_\_\_ b. square feet within 100 ft. \_\_\_\_\_ c. square feet between 100 ft. and 200 ft. \_\_\_\_\_

5. Has an alternatives analysis been done and is it attached to this NOI?  Yes  No

6. Was the lot where the activity is proposed created prior to August 1, 1996?  Yes  No

3.  Coastal Resource Areas: (See 310 CMR 10.25-10.35)

**Note:** for coastal riverfront areas, please complete **Section B.2.f.** above.



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**B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)**

Check all that apply below. Attach narrative and supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.

Online Users:  
 Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

<u>Resource Area</u>	<u>Size of Proposed Alteration</u>	<u>Proposed Replacement (if any)</u>
a. <input type="checkbox"/> Designated Port Areas	Indicate size under Land Under the Ocean, below	
b. <input type="checkbox"/> Land Under the Ocean	_____	
	1. square feet	
	_____	
	2. cubic yards dredged	
c. <input type="checkbox"/> Barrier Beach	Indicate size under Coastal Beaches and/or Coastal Dunes below	
d. <input checked="" type="checkbox"/> Coastal Beaches	18 (perm.), 2800 (conv), 855 (temp.)	~1500 sf rehab & restoration
	_____	2. cubic yards beach nourishment
e. <input type="checkbox"/> Coastal Dunes	_____	
	1. square feet	
	_____	2. cubic yards dune nourishment

	<u>Size of Proposed Alteration</u>	<u>Proposed Replacement (if any)</u>
f. <input checked="" type="checkbox"/> Coastal Banks	100	
	1. linear feet	
g. <input type="checkbox"/> Rocky Intertidal Shores	_____	
	1. square feet	
h. <input checked="" type="checkbox"/> Salt Marshes	18 (perm.), 3,170 (temp.)	~3800 sf rehab & restoration
	1. square feet	2. sq ft restoration, rehab., creation
i. <input type="checkbox"/> Land Under Salt Ponds	_____	
	1. square feet	
	_____	
	2. cubic yards dredged	
j. <input type="checkbox"/> Land Containing Shellfish	_____	
	1. square feet	
k. <input type="checkbox"/> Fish Runs	Indicate size under Coastal Banks, inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above	
	_____	
	1. cubic yards dredged	
l. <input checked="" type="checkbox"/> Land Subject to Coastal Storm Flowage	75,660 with ~40% prev. dev.	
	1. square feet	

4.  Restoration/Enhancement  
 If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.2.b or B.3.h above, please enter the additional amount here.

\_\_\_\_\_ a. square feet of BVW \_\_\_\_\_ b. square feet of Salt Marsh

5.  Project Involves Stream Crossings

\_\_\_\_\_ a. number of new stream crossings \_\_\_\_\_ b. number of replacement stream crossings





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### C. Other Applicable Standards and Requirements

- This is a proposal for an Ecological Restoration Limited Project. Skip Section C and complete Appendix A: Ecological Restoration Limited Project Checklists – Required Actions (310 CMR 10.11).

#### Streamlined Massachusetts Endangered Species Act/Wetlands Protection Act Review

1. Is any portion of the proposed project located in **Estimated Habitat of Rare Wildlife** as indicated on the most recent Estimated Habitat Map of State-Listed Rare Wetland Wildlife published by the Natural Heritage and Endangered Species Program (NHESP)? To view habitat maps, see the *Massachusetts Natural Heritage Atlas* or go to [http://maps.massgis.state.ma.us/PRI\\_EST\\_HAB/viewer.htm](http://maps.massgis.state.ma.us/PRI_EST_HAB/viewer.htm).

- a.  Yes  No **If yes, include proof of mailing or hand delivery of NOI to:**

**Natural Heritage and Endangered Species Program  
Division of Fisheries and Wildlife  
1 Rabbit Hill Road  
Westborough, MA 01581**

MassGIS 2020

b. Date of map

If yes, the project is also subject to Massachusetts Endangered Species Act (MESA) review (321 CMR 10.18). To qualify for a streamlined, 30-day, MESA/Wetlands Protection Act review, please complete Section C.1.c, and include requested materials with this Notice of Intent (NOI); *OR* complete Section C.2.f, if applicable. *If MESA supplemental information is not included with the NOI, by completing Section 1 of this form, the NHESP will require a separate MESA filing which may take up to 90 days to review (unless noted exceptions in Section 2 apply, see below).*

- c. Submit Supplemental Information for Endangered Species Review\*

1.  Percentage/acreage of property to be altered:
- (a) within wetland Resource Area \_\_\_\_\_ percentage/acreage
- (b) outside Resource Area \_\_\_\_\_ percentage/acreage
2.  Assessor's Map or right-of-way plan of site
2.  Project plans for entire project site, including wetland resource areas and areas outside of wetlands jurisdiction, showing existing and proposed conditions, existing and proposed tree/vegetation clearing line, and clearly demarcated limits of work \*\*
- (a)  Project description (including description of impacts outside of wetland resource area & buffer zone)
- (b)  Photographs representative of the site

\* Some projects **not** in Estimated Habitat may be located in Priority Habitat, and require NHESP review (see <http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/regulatory-review/>). Priority Habitat includes habitat for state-listed plants and strictly upland species not protected by the Wetlands Protection Act.

\*\* MESA projects may not be segmented (321 CMR 10.16). The applicant must disclose full development plans even if such plans are not required as part of the Notice of Intent process.



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### C. Other Applicable Standards and Requirements (cont'd)

- (c)  MESA filing fee (fee information available at [http://www.mass.gov/dfwele/dfw/nhesp/regulatory\\_review/ mesa/ mesa\\_fee\\_schedule.htm](http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/ mesa/ mesa_fee_schedule.htm)). Make check payable to "Commonwealth of Massachusetts - NHESP" and **mail to NHESP** at above address

*Projects altering 10 or more acres of land, also submit:*

- (d)  Vegetation cover type map of site
- (e)  Project plans showing Priority & Estimated Habitat boundaries
- (f) OR Check One of the Following
1.  Project is exempt from MESA review.  
Attach applicant letter indicating which MESA exemption applies. (See 321 CMR 10.14, [http://www.mass.gov/dfwele/dfw/nhesp/regulatory\\_review/ mesa/ mesa\\_exemptions.htm](http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/ mesa/ mesa_exemptions.htm); the NOI must still be sent to NHESP if the project is within estimated habitat pursuant to 310 CMR 10.37 and 10.59.)
  2.  Separate MESA review ongoing. a. NHESP Tracking # \_\_\_\_\_ b. Date submitted to NHESP \_\_\_\_\_
  3.  Separate MESA review completed.  
Include copy of NHESP "no Take" determination or valid Conservation & Management Permit with approved plan.
3. For coastal projects only, is any portion of the proposed project located below the mean high water line or in a fish run?
- a.  Not applicable – project is in inland resource area only      b.  Yes     No

If yes, include proof of mailing, hand delivery, or electronic delivery of NOI to either:

South Shore - Cohasset to Rhode Island border, and the Cape & Islands:

Division of Marine Fisheries -  
Southeast Marine Fisheries Station  
Attn: Environmental Reviewer  
836 South Rodney French Blvd.  
New Bedford, MA 02744  
Email: [DMF.EnvReview-South@state.ma.us](mailto:DMF.EnvReview-South@state.ma.us)

North Shore - Hull to New Hampshire border:

Division of Marine Fisheries -  
North Shore Office  
Attn: Environmental Reviewer  
30 Emerson Avenue  
Gloucester, MA 01930  
Email: [DMF.EnvReview-North@state.ma.us](mailto:DMF.EnvReview-North@state.ma.us)

Also if yes, the project may require a Chapter 91 license. For coastal towns in the Northeast Region, please contact MassDEP's Boston Office. For coastal towns in the Southeast Region, please contact MassDEP's Southeast Regional Office.



Massachusetts Department of Environmental Protection  
Bureau of Resource Protection - Wetlands

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**Online Users:**  
Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

**C. Other Applicable Standards and Requirements (cont'd)**

- 4. Is any portion of the proposed project within an Area of Critical Environmental Concern (ACEC)?  
 a.  Yes  No      If yes, provide name of ACEC (see instructions to WPA Form 3 or MassDEP Website for ACEC locations). **Note:** electronic filers click on Website.  
 Neponset River Estuary  
 b. ACEC
- 5. Is any portion of the proposed project within an area designated as an Outstanding Resource Water (ORW) as designated in the Massachusetts Surface Water Quality Standards, 314 CMR 4.00?  
 a.  Yes  No
- 6. Is any portion of the site subject to a Wetlands Restriction Order under the Inland Wetlands Restriction Act (M.G.L. c. 131, § 40A) or the Coastal Wetlands Restriction Act (M.G.L. c. 130, § 105)?  
 a.  Yes  No
- 7. Is this project subject to provisions of the MassDEP Stormwater Management Standards?  
 a.  Yes. Attach a copy of the Stormwater Report as required by the Stormwater Management Standards per 310 CMR 10.05(6)(k)-(q) and check if:
  - 1.  Applying for Low Impact Development (LID) site design credits (as described in Stormwater Management Handbook Vol. 2, Chapter 3)
  - 2.  A portion of the site constitutes redevelopment
  - 3.  Proprietary BMPs are included in the Stormwater Management System.
 b.  No. Check why the project is exempt:
  - 1.  Single-family house
  - 2.  Emergency road repair
  - 3.  Small Residential Subdivision (less than or equal to 4 single-family houses or less than or equal to 4 units in multi-family housing project) with no discharge to Critical Areas.

**D. Additional Information**

- This is a proposal for an Ecological Restoration Limited Project. Skip Section D and complete Appendix A: Ecological Restoration Notice of Intent – Minimum Required Documents (310 CMR 10.12).

Applicants must include the following with this Notice of Intent (NOI). See instructions for details.

**Online Users:** Attach the document transaction number (provided on your receipt page) for any of the following information you submit to the Department.

- 1.  USGS or other map of the area (along with a narrative description, if necessary) containing sufficient information for the Conservation Commission and the Department to locate the site. (Electronic filers may omit this item.)
- 2.  Plans identifying the location of proposed activities (including activities proposed to serve as a Bordering Vegetated Wetland [BVW] replication area or other mitigating measure) relative to the boundaries of each affected resource area.



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**D. Additional Information (cont'd)**

- 3.  Identify the method for BVW and other resource area boundary delineations (MassDEP BVW Field Data Form(s), Determination of Applicability, Order of Resource Area Delineation, etc.), and attach documentation of the methodology.
  
- 4.  List the titles and dates for all plans and other materials submitted with this NOI.
  - Neponset River Greenway, Victory Road, & Conley Street - Notice of Intent Plans (44 sheets)
  - a. Plan Title
  - BSC Group, Inc. Kellan Lewis P.E. on 7/6/2021
  - b. Prepared By c. Signed and Stamped by
  - July 2021 1" = 20'
  - d. Final Revision Date e. Scale
  - Neponset River Greenway Section 3 Environmental Resources Map
  - f. Additional Plan or Document Title g. Date
  
- 5.  If there is more than one property owner, please attach a list of these property owners not listed on this form.
  
- 6.  Attach proof of mailing for Natural Heritage and Endangered Species Program, if needed.
  
- 7.  Attach proof of mailing for Massachusetts Division of Marine Fisheries, if needed.
  
- 8.  Attach NOI Wetland Fee Transmittal Form
  
- 9.  Attach Stormwater Report, if needed.

**E. Fees**

- 1.  Fee Exempt: No filing fee shall be assessed for projects of any city, town, county, or district of the Commonwealth, federally recognized Indian tribe housing authority, municipal housing authority, or the Massachusetts Bay Transportation Authority.

Applicants must submit the following information (in addition to pages 1 and 2 of the NOI Wetland Fee Transmittal Form) to confirm fee payment:

<u>2579</u>	<u>6/22/2021</u>
2. Municipal Check Number	3. Check date
<u>2578</u>	<u>6/22/2021</u>
4. State Check Number	5. Check date
<u>BSC Companies Inc.</u>	
6. Payor name on check: First Name	7. Payor name on check: Last Name



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**F. Signatures and Submittal Requirements**

I hereby certify under the penalties of perjury that the foregoing Notice of Intent and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge. I understand that the Conservation Commission will place notification of this Notice in a local newspaper at the expense of the applicant in accordance with the wetlands regulations, 310 CMR 10.05(5)(a).

I further certify under penalties of perjury that all abutters were notified of this application, pursuant to the requirements of M.G.L. c. 131, § 40. Notice must be made by Certificate of Mailing or in writing by hand delivery or certified mail (return receipt requested) to all abutters within 100 feet of the property line of the project location.

<p>1. Signature of Applicant <u><i>[Signature]</i></u></p> <p>2. Date <u>5/21/2021</u></p>	<p>3. Signature of Property Owner (if different) <u><i>[Signature]</i></u></p> <p>4. Date <u>5/25/21</u></p>
<p>5. Signature of Representative (if any) <u><i>[Signature]</i></u></p>	<p>6. Date <u>5/19/21</u></p>

**For Conservation Commission:**

Two copies of the completed Notice of Intent (Form 3), including supporting plans and documents, two copies of the NOI Wetland Fee Transmittal Form, and the city/town fee payment, to the Conservation Commission by certified mail or hand delivery.

**For MassDEP:**

One copy of the completed Notice of Intent (Form 3), including supporting plans and documents, one copy of the NOI Wetland Fee Transmittal Form, and a **copy** of the state fee payment to the MassDEP Regional Office (see Instructions) by certified mail or hand delivery.

**Other:**

If the applicant has checked the "yes" box in any part of Section C, Item 3, above, refer to that section and the Instructions for additional submittal requirements.

The original and copies must be sent simultaneously. Failure by the applicant to send copies in a timely manner may result in dismissal of the Notice of Intent.



Neponset River Greenway: Tenean Beach to Morrissey Blvd.  
 Notice of Intent Application  
 Boston, MA

MassDEP WPA Form 3 Section A.1  
 Property/Parcel Information

Owner Name	Tax Assessor Map/Parcel	Latitude	Longitude	Street Address	Municipality	State
National Grid/ Boston Gas Company	1600230000	42.302	-71.0479	238 Victory Road	Boston	MA
MassDOT	1600232000	42.3029	-71.048	Adjacent Morrissey Blvd. Freeport Street	Boston	MA
MassDOT	1600231000	42.3009	-71.0483	Adjacent Victory Road	Boston	MA
MassDOT	1600225000	42.2988	-71.0469	Adjacent I-93 Exit Victory Rd/Freeport St.	Boston	MA
MassDOT	1600252001	42.2978	-71.0474	Adjacent/west of I-93 Victory Rd/Freeport St.	Boston	MA
MassDOT	1602569000	42.2591	-71.0461	Adjacent west of I-93 Tenean St.	Boston	MA
City of Boston	N/A	42.2987	-71.0472	Victory Road	Boston	MA
MassDCR	1600226000	42.2988	-71.0466	201 Victory Road	Boston	MA





Neponset River Greenway: Tenean Beach to Morrissey Blvd.  
Notice of Intent Application  
Boston, MA

MassDEP WPA Form 3 Section A.3, F  
Property Owner and Signatures

Massachusetts Department of Transportation  
Ten Park Plaza  
Suite 4160  
Boston, MA 02116

c/o Michael Trepanier, Project Manager  
[michael.trepanier@state.ma.us](mailto:michael.trepanier@state.ma.us)



**Massachusetts Department of Environmental Protection**  
Bureau of Resource Protection - Wetlands  
**WPA Form 3 – Notice of Intent**  
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File Number

Document Transaction Number

Boston

City/Town

## F. Signatures and Submittal Requirements

I hereby certify under the penalties of perjury that the foregoing Notice of Intent and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge. I understand that the Conservation Commission will place notification of this Notice in a local newspaper at the expense of the applicant in accordance with the wetlands regulations, 310 CMR 10.05(5)(a).

I further certify under penalties of perjury that all abutters were notified of this application, pursuant to the requirements of M.G.L. c. 131, § 40. Notice must be made by Certificate of Mailing or in writing by hand delivery or certified mail (return receipt requested) to all abutters within 100 feet of the property line of the project location.

1. Signature of Applicant



3. Signature of Property Owner (if different)

5. Signature of Representative (if any)

2. Date

6/24/2021

4. Date

6. Date



Neponset River Greenway: Tenean Beach to Morrissey Blvd.  
Notice of Intent Application  
Boston, MA

MassDEP WPA Form 3 Section A.3, F  
Property Owner and Signatures  
City of Boston

c/o Chris Osgood, Commissioner, Public Works Department  
1 City Hall Square, Room 603  
Boston, MA 02201

chris.osgood@boston.gov  
617-635-2854



**Massachusetts Department of Environmental Protection**  
Bureau of Resource Protection - Wetlands  
**WPA Form 3 – Notice of Intent**  
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40


Provided by MassDEP:

MassDEP File Number
Document Transaction Number
Boston
City/Town

**F. Signatures and Submittal Requirements**

I hereby certify under the penalties of perjury that the foregoing Notice of Intent and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge. I understand that the Conservation Commission will place notification of this Notice in a local newspaper at the expense of the applicant in accordance with the wetlands regulations, 310 CMR 10.05(5)(a).

I further certify under penalties of perjury that all abutters were notified of this application, pursuant to the requirements of M.G.L. c. 131, § 40. Notice must be made by Certificate of Mailing or in writing by hand delivery or certified mail (return receipt requested) to all abutters within 100 feet of the property line of the project location.

1. Signature of Applicant 	2. Date 6/1/2021
3. Signature of Property Owner (if different)	4. Date
5. Signature of Representative (if any)	6. Date





**Massachusetts Department of Environmental Protection**  
 Bureau of Resource Protection - Wetlands  
**NOI Wetland Fee Transmittal Form**  
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

**Important:** When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



**A. Applicant Information**

1. Location of Project:

Conley St., Victory Rd, Morrissey Blvd Boston  
 a. Street Address b. City/Town  
\$237.50  
 c. Check number d. Fee amount

2. Applicant Mailing Address:

Stella Lensing  
 a. First Name b. Last Name  
Massachusetts Department of Conservation and Recreation  
 c. Organization  
251 Causeway Street - Suite 900  
 d. Mailing Address  
Boston MA 02114  
 e. City/Town f. State g. Zip Code  
617 680 2466 stella.lensing@mass.gov  
 h. Phone Number i. Fax Number j. Email Address

3. Property Owner (if different):

Priscilla Geigis, Deputy Commissioner MA DCR  
 a. First Name b. Last Name  
See attached for Property Owners in addition to MA DCR  
 c. Organization  
 d. Mailing Address  
 e. City/Town f. State g. Zip Code  
 h. Phone Number i. Fax Number j. Email Address  
priscilla.geigis@mass.gov

To calculate filing fees, refer to the category fee list and examples in the instructions for filling out WPA Form 3 (Notice of Intent).

**B. Fees**

Fee should be calculated using the following process & worksheet. **Please see Instructions before filling out worksheet.**

**Step 1/Type of Activity:** Describe each type of activity that will occur in wetland resource area and buffer zone.

**Step 2/Number of Activities:** Identify the number of each type of activity.

**Step 3/Individual Activity Fee:** Identify each activity fee from the six project categories listed in the instructions.

**Step 4/Subtotal Activity Fee:** Multiply the number of activities (identified in Step 2) times the fee per category (identified in Step 3) to reach a subtotal fee amount. Note: If any of these activities are in a Riverfront Area in addition to another Resource Area or the Buffer Zone, the fee per activity should be multiplied by 1.5 and then added to the subtotal amount.

**Step 5/Total Project Fee:** Determine the total project fee by adding the subtotal amounts from Step 4.

**Step 6/Fee Payments:** To calculate the state share of the fee, divide the total fee in half and subtract \$12.50. To calculate the city/town share of the fee, divide the total fee in half and add \$12.50.



**Massachusetts Department of Environmental Protection**  
 Bureau of Resource Protection - Wetlands  
**NOI Wetland Fee Transmittal Form**  
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

**B. Fees** (continued)

Step 1/Type of Activity	Step 2/Number of Activities	Step 3/Individual Activity Fee	Step 4/Subtotal Activity Fee
2J	1	\$500.00	\$500.00
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

**Step 5/Total Project Fee:** \_\_\_\_\_

**Step 6/Fee Payments:**

Total Project Fee:	\$500.00
State share of filing Fee:	\$237.50
City/Town share of filing Fee:	\$1800 per bylaw
	a. Total Fee from Step 5
	b. 1/2 Total Fee <b>less</b> \$12.50
	c. 1/2 Total Fee <b>plus</b> \$12.50

**C. Submittal Requirements**

- a.) Complete pages 1 and 2 and send with a check or money order for the state share of the fee, payable to the Commonwealth of Massachusetts.

Department of Environmental Protection  
 Box 4062  
 Boston, MA 02211

- b.) **To the Conservation Commission:** Send the Notice of Intent or Abbreviated Notice of Intent; a **copy** of this form; and the city/town fee payment.

**To MassDEP Regional Office** (see Instructions): Send a copy of the Notice of Intent or Abbreviated Notice of Intent; a **copy** of this form; and a **copy** of the state fee payment. (E-filers of Notices of Intent may submit these electronically.)



**A. GENERAL INFORMATION**

1. Project Location

Conley St, Victory Rd, Morrissey Blvd	Boston	02122
a. Street Address	b. City/Town	c. Zip Code
Various - see attached list		
f. Assessors Map/Plat Number	g. Parcel /Lot Number	

2. Applicant

Stella	Lensing	Massachusetts Department of Conservation and Recreation (DCR)	
a. First Name	b. Last Name	c. Company	
251 Causeway Street, Suite 600			
d. Mailing Address			
Boston	MA	02114	
e. City/Town	f. State	g. Zip Code	
(617) 680-2466		stella.lensing@mass.gov	
h. Phone Number	i. Fax Number	j. Email address	

3. Property Owner

Priscilla	Geigis, Deputy Commissioner	Mass DCR
a. First Name	b. Last Name	c. Company
See attached list for additional owners with MassDCR; includes MassDOT, City of Boston, and National Grid		
d. Mailing Address		
_____ e. City/Town		
_____ f. State		
_____ g. Zip Code		
priscilla.geigis@mass.gov		
_____ h. Phone Number	_____ i. Fax Number	_____ j. Email address

Check if more than one owner

(If there is more than one property owner, please attach a list of these property owners to this form.)

4. Representative (if any)

Diana	Walden	BSC Group Inc.
a. First Name	b. Last Name	c. Company
33 Waldo Street		
d. Mailing Address		
Worcester	MA	01608
e. City/Town	f. State	g. Zip Code
(617) 896-4529		dwalden@bscgroup.com
h. Phone Number	i. Fax Number	j. Email address



5. Is any portion of the proposed project jurisdictional under the Massachusetts Wetlands Protection Act M.G.L. c. 131 §40?

- Yes  No

If yes, please file the WPA Form 3 - Notice of Intent with this form

6. General Information

DCR is proposing to construct a multi-use trail between Tenean Beach and Morrissey Blvd including a portion of elevated boardwalk. The project is part of DCR's long term plan to extend and connect the Lower Neponset River Greenway to the Harbor Walk. Impacts are proposed to Salt Marsh, Coastal Beach, Coastal Bank, LSCSF, 100-ft Buffer Zone, CFRZ and Waterfront Area (per the Ordinance).

7. Project Type Checklist

- |   |   |
|---|---|
| a. <input type="checkbox"/> Single Family Home                | b. <input type="checkbox"/> Residential Subdivision             |
| c. <input type="checkbox"/> Limited Project Driveway Crossing | d. <input type="checkbox"/> Commercial/Industrial               |
| e. <input type="checkbox"/> Dock/Pier                         | f. <input type="checkbox"/> Utilities                           |
| g. <input type="checkbox"/> Coastal Engineering Structure     | h. <input type="checkbox"/> Agriculture – cranberries, forestry |
| i. <input checked="" type="checkbox"/> Transportation         | j. <input type="checkbox"/> Other                               |

8. Property recorded at the Registry of Deeds

Suffolk

a. County

b. Page Number

c. Book

d. Certificate # (if registered land)

9. Total Fee Paid

\$2,037.50

\$237.50

\$1500.00 Fair Construction, \$300 Cat. 2

a. Total Fee Paid

b. State Fee Paid

c. City Fee Paid

**B. BUFFER ZONE & RESOURCE AREA IMPACTS**

Buffer Zone Only - Is the project located only in the Buffer Zone of a resource area protected by the Boston Wetlands Ordinance?

- Yes  No

1. Coastal Resource Areas





<u>Resource Area</u>	<u>Resource Area Size</u>	<u>Proposed Alteration*</u>	<u>Proposed Mitigation</u>
<input type="checkbox"/> Coastal Flood Resilience Zone	_____ Square feet	not established at this time	_____ Square feet
<input checked="" type="checkbox"/> 25-foot Waterfront Area	29,060 _____ Square feet	6,555 (overlaps other resources)	_____ Square feet
<input checked="" type="checkbox"/> 100-foot Salt Marsh Area	91,270 _____ Square feet	14,490 (overlaps other resources, sidewalk)	_____ Square feet
<input type="checkbox"/> Riverfront Area	_____ Square feet	_____ Square feet	_____ Square feet

2. Inland Resource Areas

<u>Resource Area</u>	<u>Resource Area Size</u>	<u>Proposed Alteration*</u>	<u>Proposed Mitigation</u>
<input type="checkbox"/> Inland Flood Resilience Zone	_____ Square feet	_____ Square feet	_____ Square feet
<input type="checkbox"/> Isolated Wetlands	_____ Square feet	_____ Square feet	_____ Square feet
<input type="checkbox"/> Vernal Pool	_____ Square feet	_____ Square feet	_____ Square feet
<input type="checkbox"/> Vernal Pool Habitat (vernal pool + 100 ft. upland area)	_____ Square feet	_____ Square feet	_____ Square feet
<input type="checkbox"/> 25-foot Waterfront Area	_____ Square feet	_____ Square feet	_____ Square feet
<input type="checkbox"/> Riverfront Area	_____ Square feet	_____ Square feet	_____ Square feet

**C. OTHER APPLICABLE STANDARDS & REQUIREMENTS**

1. What other permits, variances, or approvals are required for the proposed activity described herein and what is the status of such permits, variances, or approvals?

MEPA Notice of Project Change (NPC) - File June 2021 to update Final Certificate (No. 15286)

Chapter 91 Waterways License Application - File July 2021

401 WQC Application - File July 2021

Section 404 PreConstruction Notification with US Army Corps of Engineers - File July 2021  
Includes Coastal Zone Consistency Review with CZM, Essential Fish Habitat Assessment with NMFS  
Consultation w/ DMF, and MHC.



2. Is any portion of the proposed project located in Estimated Habitat of Rare Wildlife as indicated on the most recent Estimated Habitat Map of State-Listed Rare Wetland Wildlife published by the Natural Heritage and Endangered Species Program (NHESP)? To view habitat maps, see the Massachusetts Natural Heritage Atlas or go to <http://www.mass.gov/dfwele/dfw/nhosp/nhregmap.htm>.

- Yes  No

If yes, the project is subject to Massachusetts Endangered Species Act (MESA) review (321 CMR 10.18).

**A. Submit Supplemental Information for Endangered Species Review**

Percentage/acreage of property to be altered:

(1) within wetland Resource Area \_\_\_\_\_ percentage/acreage

(2) outside Resource Area \_\_\_\_\_ percentage/acreage

Assessor's Map or right-of-way plan of site

3. Is any portion of the proposed project within an Area of Critical Environmental Concern?

- Yes  No

If yes, provide the name of the ACEC: Neponset River Estuary\_\_\_\_\_

4. Is the proposed project subject to provisions of the Massachusetts Stormwater Management Standards?

Yes. Attach a copy of the Stormwater Checklist & Stormwater Report as required.

- Applying for a Low Impact Development (LID) site design credits
- A portion of the site constitutes redevelopment
- Proprietary BMPs are included in the Stormwater Management System

No. Check below & include a narrative as to why the project is exempt

- Single-family house
- Emergency road repair
- Small Residential Subdivision (less than or equal to 4 single family houses or less than or equal to 4 units in a multifamily housing projects) with no discharge to Critical Areas

5. Is the proposed project subject to Boston Water and Sewer Commission Review?

- Yes  No



**D. SIGNATURES AND SUBMITTAL REQUIREMENTS**

I hereby certify under the penalties of perjury that the foregoing Notice of Intent and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge. I understand that the Conservation Commission will place notification of this Notice in a local newspaper at the expense of the applicant in accordance with the Wetlands Protection Ordinance.

\_\_\_\_\_  
Signature of Applicant

5/21/2021  
\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of Property Owner (if different)

5/25/21  
\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of Representative (if any)

5/19/21  
\_\_\_\_\_  
Date



Neponset River Greenway: Tenean Beach to Morrissey Blvd.  
Notice of Intent Application  
Boston, MA

Boston Wetlands Ordinance NOI Form Section D  
Property Owner and Signatures

Massachusetts Department of Transportation  
Ten Park Plaza  
Suite 4160  
Boston, MA 02116

c/o Michael Trepanier, Project Manager  
[michael.trepanier@state.ma.us](mailto:michael.trepanier@state.ma.us)



City of Boston  
Environment

**NOTICE OF INTENT APPLICATION FORM**

Boston Wetlands Ordinance

City of Boston Code, Ordinances, Chapter 7-1.4

\_\_\_\_\_  
Boston File Number

\_\_\_\_\_  
MassDEP File Number

**D. SIGNATURES AND SUBMITTAL REQUIREMENTS**

I hereby certify under the penalties of perjury that the foregoing Notice of Intent and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge. I understand that the Conservation Commission will place notification of this Notice in a local newspaper at the expense of the applicant in accordance with the Wetlands Protection Ordinance.

\_\_\_\_\_  
Signature of Applicant

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

\_\_\_\_\_  
Date

5/25/2021

\_\_\_\_\_  
Signature of Property Owner (if different)

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of Representative (if any)

\_\_\_\_\_  
Date



Neponset River Greenway: Tenean Beach to Morrissey Blvd.  
Notice of Intent Application  
Boston, MA

Boston Wetlands Ordinance NOI Form Section D  
Property Owner and Signatures  
City of Boston

c/o Chris Osgood, Commissioner, Public Works Department  
1 City Hall Square, Room 603  
Boston, MA 02201

chris.osgood@boston.gov  
617-635-2854



City of Boston  
Environment

**NOTICE OF INTENT APPLICATION FORM**

Boston Wetlands Ordinance  
City of Boston Code, Ordinances, Chapter 7-1.4

Boston File Number

MassDEP File Number

**D. SIGNATURES AND SUBMITTAL REQUIREMENTS**

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Signature of Applicant

Handwritten signature of Chris Osgood in blue ink.

Signature of Property Owner (if different)

Date

6/1/2021

Date

Signature of Representative (if any)

Date







**EXTENSION FORM**

The undersigned hereby allows the **Boston Conservation Commission** an extension of time, beyond the statutory limit, to review an application or issue a final decision under the Massachusetts Wetlands Protection Act, M.G.L. Chapter 131, Section 40, and the Boston Wetlands Ordinance, Boston City Code, Ordinances, Chapter 7-1.4d during the state of emergency declared by the Governor on March 10, 2020.

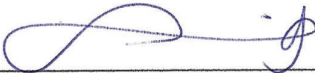
**Applicant:**

**Stella** **Lensing** **Massachusetts Department of Conservation and Recreation**  
a. First Name b. Last Name c. Company

**251 Causeway St. Suite 600**  
d. Mailing Address

**Boston** **MA** **02114**  
e. City/Town f. State g. Zip Code

**(617) 680-2466** **stella.lensing@mass.gov**  
h. Phone Number i. Fax Number j. Email address

 **5/21/2021**  
Signature of Applicant Date

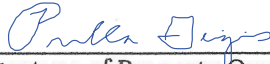
**Property Owner (if different):**

**Priscilla** **Geigis** **MA DCR**  
a. First Name b. Last Name c. Company

**See attached list for property owners in addition to MassDCR**  
d. Mailing Address

e. City/Town f. State g. Zip Code

h. Phone Number i. Fax Number j. Email address

 **5/25/21**  
Signature of Property Owner (if different) Date

**Applications will only be accepted when submitted with a properly executed Extension Form.**





City of Boston  
Environment



City of Boston  
Mayor Martin J. Walsh

**EXTENSION FORM**

The undersigned hereby allows the **Boston Conservation Commission** an extension of time, beyond the statutory limit, to review an application or issue a final decision under the Massachusetts Wetlands Protection Act, M.G.L. Chapter 131, Section 40, and the Boston Wetlands Ordinance, Boston City Code, Ordinances, Chapter 7-1.4d during the state of emergency declared by the Governor on March 10, 2020.

**Applicant:**

\_\_\_\_\_

a. First Name                      b. Last Name                      c. Company

\_\_\_\_\_

d. Mailing Address

\_\_\_\_\_

e. City/Town                      f. State                      g. Zip Code

\_\_\_\_\_

h. Phone Number                      i. Fax Number                      j. Email address

\_\_\_\_\_

Signature of Applicant                      Date

**Property Owner (if different):**

\_\_\_\_\_

a. First Name                      b. Last Name                      c. Company

\_\_\_\_\_

d. Mailing Address

\_\_\_\_\_

e. City/Town                      f. State                      g. Zip Code

\_\_\_\_\_

h. Phone Number                      i. Fax Number                      j. Email address

\_\_\_\_\_

Signature of Property Owner (if different)                      Date

***Applications will only be accepted when submitted with a properly executed Extension Form.***





City of Boston  
Environment



City of Boston  
Mayor Martin J. Walsh

**EXTENSION FORM**

The undersigned hereby allows the **Boston Conservation Commission** an extension of time, beyond the statutory limit, to review an application or issue a final decision under the Massachusetts Wetlands Protection Act, M.G.L. Chapter 131, Section 40, and the Boston Wetlands Ordinance, Boston City Code, Ordinances, Chapter 7-1.4d during the state of emergency declared by the Governor on March 10, 2020.

**Applicant:**

**Stella**

a. First Name

**Lensing**

b. Last Name

Massachusetts Department of Conservation and Recreation

c. Company

**251 Causeway St. Suite 600**

d. Mailing Address

**Boston**

e. City/Town

**MA**

f. State

**02114**

g. Zip Code

**(617) 680-2466**

h. Phone Number

**stella.lensing@mass.gov**

j. Email address

Signature of Applicant

Date

**Property Owner (if different):**

**Chris**

a. First Name

**Osgood**

b. Last Name

**City of Boston**

c. Company

**1 City Hall Square, Room 603**

d. Mailing Address

**Boston**

e. City/Town

**MA**

f. State

**02201**

g. Zip Code

**617-635-2854**

h. Phone Number

**chris.osgood@boston.gov**

j. Email address

*Chris Osgood*  
Signature of Property Owner (if different)

*6/1/2021*  
Date

***Applications will only be accepted when submitted with a properly executed Extension Form.***



# Attachment A

Neponset River Greenway: Tenean Beach to Morrissey Blvd.  
Boston, Massachusetts  
Notice of Intent

PROJECT NARRATIVE





## **1 Introduction**

On behalf of the Massachusetts Department of Conservation and Recreation (DCR), BSC Group, Inc. (BSC) is filing this Notice of Intent (NOI) to the Boston Conservation Commission (Commission). The NOI has been prepared in accordance with the Massachusetts Wetlands Protection Act (MGL c.131 §40) and regulations (310 CMR 10.00), and the City of Boston Wetlands Protection and Climate Adaptation Ordinance (Chapter 7-1.4, (Ordinance)). DCR and the Massachusetts Department of Transportation (MassDOT) are working in collaboration to permit, fund, and construct an extension of the Neponset River Greenway multi-use trail from Tenean Beach to Morrissey Boulevard in the Dorchester neighborhood of Boston, Massachusetts. This phase of the Neponset River Greenway includes a redesign to the previously proposed and approved “northern section” from Victory Road to the William T. Morrissey Boulevard (Order of Conditions (OOC) MassDEP #006-1443 issued on October 10, 2015), and a new “southern section” connecting Victory Road to Teanen Beach off Conley Street.

The proposed Project will contribute to DCR’s long term plan to connect the existing Lower Neponset River Trail Greenway from Tenean Beach to the Harbor Walk located approximately 1.5 miles to the north on Morrissey Boulevard near the campus of UMass Boston. The Project consists of constructing an approximately 3,620-foot long multi-use pathway, including a 10-foot by 670-foot pile-supported boardwalk portion, elevated over a small section of salt marsh and tidal flats in a cove within Dorchester Bay. A manmade berm consisting of approximately 2800 sf and 140 cubic yards of fill material will be removed to restore salt marsh and intertidal habitat. Project activities will also include realignment, sidewalks, and resurfacing of short sections of Victory Road and Conley Street, installation of a new infiltration trench for stormwater management, improvements at DCR’s Victory Road Park, and the repair of an existing tide gate which manages stormwater to the Neponset River. The approximately 950 linear feet of sidewalk/roadway realignment as well as 500 linear feet of sidewalk resurfacing along Morrissey Boulevard will improve overall connectivity.

The project proposes impacts to Salt Marsh, Coastal Beach (including Tidal Flats), Coastal Bank, Land Subject to Coastal Storm Flowage (LSCSF), 100-ft Buffer Zone to resource areas, and the locally-regulated Waterfront Area. A proportion of project impacts to resource areas will be within previously developed areas or are temporary (related to the use of construction matting for access). A small area of the Project is also located in the Neponset River Estuary Area of Critical Environmental Concern (ACEC). The project is not expected to reduce the capacity of the resource areas to provide the functions and values outlined in the WPA and Boston Wetlands Ordinance, and has been designed with climate resiliency measures in mind. The continued development and extension of the Greenway will contribute to accessible travel options for cyclists and pedestrians, and serves as an example of a sustainable transit alternative.

Throughout the Project, Best Management Practices (BMPs) including sediment and erosion controls, will be implemented during construction to minimize adverse impacts to resource areas. The Project has been designed to avoid and minimize impacts to wetland resource areas, while accessing marginal, underutilized areas, and improving the existing infrastructure. Therefore, this NOI serves as a request for an Order of Conditions from the Boston Conservation Commission, to allow the Project to proceed as described herein. This Project is also seeking a General Water-

Dependent Chapter 91 Waterways License with MassDEP Waterways Chapter 91, a Notice of Project Change with the Executive Office of Energy and Environmental Affairs (EOEEA), a 401 Water Quality Certificate with MassDEP, and a Pre-Construction Notification (PCN) from the U.S. Army Corps of Engineers (USACOE).

### ***1.1 Proposed Work***

This phase of the Neponset River Greenway includes a previously proposed “northern section” from Victory Road to the Morrissey Boulevard crossing over Dorchester Bay, and a “southern section” connecting Victory Road to Tenean Beach off Conley Street. The northern section was previously granted an OOC on October 21, 2015, and a request for extension was submitted in September of 2018. While the OOC is still valid, a new NOI is being submitted, covering both the portions of the project and taking into account the changes in scope to the permitted design and increase in proposed impacts to resource areas. Table 3 provides a comparison of the changes in impacts to resource areas between the original project and the proposed project. Please refer to **Attachment B** for a figure of the original boardwalk design overlay, for comparison to the proposed Project described herein.

Proposed project activities include:

- Re-alignment of approximately 950’ roadway (Sections of Victory Road and Conley St) to allow for sidewalk widening and improved connectivity;
- Construction of approximately 2,950’ of new 10-ft wide, multi-use paved pathway;
- Construction of approximately 670’ of new pile-supported, boardwalk in an inlet of Dorchester Bay;
- Removal of a manmade berm consisting of approximately 2800 sf and 140 cubic yards of fill material to restore salt marsh and intertidal habitat.
- Re-surfacing of approximately 500’ of existing sidewalk;
- Construction of a new stormwater management trench along the multi-use pathway; and
- Repair and modification of an existing tide gate.

With some design amendments, the northern section of the Project is now comprised of approximately 900 linear feet of a 10-foot wide, multi-use paved pathway with 2-foot shoulders. The pathway transitions to a 10’ by 670’ pile-supported boardwalk with hardwood decking and aluminum railings elevated over a small section of salt marsh and tidal flats in a cove in Dorchester Bay. Piles will be 20-inch diameter, concrete-filled steel pipe driven into the ground. A larger, central overlook and a northern overlook on piles will also be constructed. The boardwalk connects to the sidewalk at Morrissey Boulevard and ramps down to grade through two pile-supported wingwalls (35-ft and 40-ft long) and stub abutment with aluminum railing. At the southern extent, the boardwalk also returns to grade with two pile-supported wingwalls (40-ft and 11-ft long) and stub abutment. The project will include grading as well as construction of a 2-foot stormwater management infiltration trench along the pathway. An additional 500 linear feet of sidewalk along Morrissey Boulevard will be resurfaced to accommodate the transition from the proposed pile-supported boardwalk. Sidewalk will also be extended from Victory Road into DCR’s Victory Park with some parking, entrance and landscape improvements that enhance safe pedestrian access to the greenway. Removing the fill berm in order to restore intertidal habitat is also an additional proposed component.

The southern section has not been previously reviewed or licensed and consists of the construction of a 10' by 2,050' shared-use paved pathway with 2-foot shoulders that runs parallel to and to the west of the I-93 corridor between Victory Road and Conley Street. The Project area is generally a narrow, vegetated corridor at the base of an embankment between the interstate to the east and commercial development to the west. A 2-foot infiltration trench is also proposed for stormwater management along this section of the pathway. The southern section also includes repair and modification an existing tide gate vault owned by DCR that regulates stormwater flow and prevents tidal intrusion from the Neponset River. Connectivity improvements and roadway realignment are proposed at trail interfaces for approximately 500 ft along Conley Street and 450 ft along Victory Road. This allows for formalizing and widening the sidewalks to accommodate the pathway. Landscaping and ornamental elements such as wayfinding signs, benches, and granite posts are also proposed throughout this section of the Greenway.

The boardwalk piles will be located in Salt Marsh, Coastal Beach or LSCSF while abutments will impact Coastal Bank, LSCSF and/or 100-ft Buffer Zone. Portions of the structure are located just landward but in close proximity to the current Mean High Water (MHW) mark established at elevation 4.3 feet NAVD 88 in the cove within Dorchester Bay. The berm restoration includes removal of material delineated just upgradient of the salt marsh to an elevation level with the adjacent marsh. In the southern section, portions of the connectivity improvements, sidewalk formalization and roadway realignment proposed along Victory Road and Conley Street are located in LSCSF. This also includes the regrading and resurfacing of an existing gravel parking area in DCR's Victory Road Park in LSCSF and 100-ft Buffer Zone. Finally, almost half of the southern section of trail construction, including grading and the adjacent 2-foot infiltration trench is located in LSCSF. Up to 3,170 square feet of temporary construction mats will also be required in salt marsh in order for long-reach equipment to install the piles and boardwalk components. An additional 4,780 sf of construction mats will be used for access in coastal beach or LSCSF. Intermittent in-water work is limited to the construction mats and installation of piles and abutment for the boardwalk.

Please refer to the Environmental Resources Map in **Attachment B** for a depiction of the project footprint and associated resource areas and **Attachment F** for Project Plans.

## **1.2 Design Changes Since Previous OOC**

The previous OOC authorized a 400-ft boardwalk and 1000 feet of multi-use trail in the northern section. It was determined that the northern abutment would block the only pedestrian access at the I-93 exit ramp at Morrissey Boulevard. Abutments were also going to be taller, creating an impediment to the view shed at this location. A single central overlook didn't allow for the spacing to have trail users leave the travel lanes and pause here. The current design pushes the northern abutment further north and lengthens the southern boardwalk/abutment with an additional 270-feet of elevated boardwalk. This allows continuity of the sidewalk and pedestrian access to the crosswalk at Morrissey Blvd, while reducing the potentially obtrusive height of the wall at the coastal interface. A single central overlook didn't allow for the spacing to have trail users leave the travel lanes and pause here. The central overlook was expanded and a smaller northern overlook was added to accommodate boardwalk span spacing and boardwalk angle/direction change. The boardwalk decking and superstructure has also been raised several feet to a flat elevation of 18.4 feet (NAVD 88). Both abutment landings have also been raised fully above the established 100-

year floodplain VE breaking-wave height of 14'. The berm removal and restoration was not previously proposed. The components of the southern section of the Project have never been previously reviewed or licensed. A figure comparing the alignments of the previously permitted design with the current alignment is provided in Attachment B figures.

### **1.3 Project Need**

The current defined portion of the Neponset River Greenway ends at the existing multi-use path in the Port Norfolk neighborhood at Taylor Street. From Taylor Street to Tenean Beach users of the Greenway follow signage directing them along existing city streets and sidewalks. This proposed phase of the Project will contribute to DCR's long term plan to connect the existing Lower Neponset River Trail Greenway from Tenean Beach to the Harbor Walk located approximately 1.5 miles to the north on the campus of UMass Boston. The current routes from Tenean Beach to the Harbor Walk are not easily defined and none provides safe access. The Project phase proposed in this application addresses a portion of this "missing link" by constructing approximately 3,620 linear feet of new multi-use pathway across the areas noted above, along with 950 feet of formalized sidewalk/connectivity improvements to reach the sidewalk on Morrissey Boulevard.

This Project is an important link in the larger, multi-phase, 10.5-mile Neponset River Greenway that extends from the Blue Hills in Milton to Boston Harbor. It expands upon a heavily used bicycle/pedestrian network in the Boston area, creating healthy transportation options and connections between diverse communities and links to job centers, higher education institutions, and recreational opportunities. Uniting the communities of Dorchester, Hyde Park, Mattapan and Milton, the trail connects a series of parks and provides an opportunity to access and appreciate the outdoors in an otherwise urban area. The Neponset River Greenway is a valuable public resource with a substantial amount of interest and support from various planning and community groups.

## **2 Existing Conditions**

Areas surrounding the proposed Project are densely developed with transportation corridors, commercial, residential, industrial/energy uses. The southern-most section of the proposed phase begins at Tenean Beach, located at the tidal portion of the Neponset River near mouth of the river at Dorchester Bay. The route will follow a newly formalized sidewalk from Conley St and will then turn north to a narrow, vegetated corridor at the base of the embankment between Interstate-93 to the east and commercial development (dealerships, hotels etc.) to the west. Vegetation is mowed in some places as part of highway maintenance and classified as scrub-shrub communities with scattered low trees, shrubs, and successional species typical of disturbance. Portions of this area are mapped as filled tidelands located seaward of the original shoreline historic MHW and also seaward of the landlocked tideland limit. When the trail reaches Victory Rd, it will follow newly formalized sidewalks to the east and turn north again to access the National Grid Liquefied Natural Gas (LNG) and solar array property at Commercial Point. It is at this point that users could access existing parking at DCR's Victory Road Park, and small improvements to the park and formalized access will be made.

Existing vegetation is similarly successional in a narrow corridor between the I-93 exit ramp and the National Grid solar panel array and LNG storage facility. As the trail moves north, the grade drops into a small cove that leads to Dorchester Bay and the trail transitions to the boardwalk. The

boardwalk will traverse scrub vegetation including sumac (*Rhus*), *Rosa rugosa*, and invasive species such as black locust (*Robinia pseudoacacia*), Asiatic bittersweet (*Celastrus orbiculatus*), and multiflora rose (*Rosa multiflora*). The upland community transitions to a stand of hightide bush (*Iva frutescens*) and then a salt marsh community around the delineated highest high tide line at elevation 6.8' NAVD 88. The boardwalk follows a sparsely vegetated, manmade gravel/sand bar which raises the base elevation several feet out of the vegetated salt marsh community. This fill will be removed to meet existing elevations of the adjacent marsh and planted. Noticeable debris consisting of large timbers, wharf remnants, and general garbage dominate portions of the Project area due to wind driven deposition during major storm events. While higher tides appear to break through a low point in the berm and intermittently flood a salt marsh area to the west, topography indicates the components of the boardwalk do not impact areas seaward of the continuous MHW elevation 4.3' NAVD 88 contour<sup>1</sup>. Mean Low Water is recorded at elevation -5.2' NAVD 88 and is not present within the Project footprint. The boardwalk meets and runs parallel to the previously disturbed and armored Coastal Bank at Morrissey Blvd as it joins grade at the sidewalk before the causeway continues north over Dorchester Bay. All coastal resources are associated with the Dorchester Bay and the Neponset River. These waterbodies converge with Squantum Channel at the mouth of the river to the east of Commercial Point and continue east to larger Boston Harbor and the Atlantic Ocean. Site Photos for reference are included in **Attachment C**.

## **2.1 Resource Area Summary**

A desktop review of the Project area was conducted using available resources such as MassGIS data layers, USGS 7.5 Minute Quadrangle, aerial photography, and FEMA insurance maps. The Project is located within an area under the jurisdiction of the Coastal Zone Management Act. The desktop analysis was supplemented with field delineation for both inland and coastal wetland resource areas along the route. Wetlands along the southern section were delineated in December 2018, in accordance with the methodology described in the Massachusetts Department of Environmental Protection's (MassDEP) *Handbook on Delineating Bordering Vegetated Wetlands* (Published in March 1995). Coastal wetlands were delineated by others in accordance with field indicators of the highest high tide and with required slope analysis for Coastal Bank. Based on the desktop review and field investigations, portions of the Project are located within the following resource areas:

- FEMA Designated Flood Hazard Areas / Land Subject to Coastal Storm Flowage (LSCSF)
- Coastal Bank (Bank);
- Coastal Beach including Tidal Flats;
- Salt Marsh;
- 100-foot Buffer Zone to Coastal Resource Areas;
- Waterfront Area (Ordinance);

### **2.1.1 FEMA Designated Flood Hazard Areas / LSCSF**

According to FEMA Flood Insurance Rate Maps (FIRM No. 25025C0091J, dated March 16, 2016), portions of the coastal area are located within Special Flood Hazard ("SFH") Zone VE with a Base Flood Elevation ("BFE") of El. 14 feet (NAVD 88). SFH Zone VE is a coastal flood zone with wave action where the BFE has been determined and includes the breaking wave height. Other

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<sup>1</sup> MHW and MLW elevations were obtained from NOAA tides and currents records. <https://tidesandcurrents.noaa.gov/datums.html?id=8443970>

portions of the Project area are located in a coastal flood zone AE, ranging from Elevation 10 to 12 feet NAVD 88.

### *2.1.2 Coastal Bank*

According to 310 CMR 10.30, Coastal Bank is defined as “*the seaward face or side of any elevated landform, other than a coastal dune, which lies at the landward edge of a coastal beach, land subject to tidal action, or other wetland*”. The City of Boston Ordinance includes seawalls and bulkheads as Coastal Bank. Coastal Bank has a 100-foot Buffer Zone that extends from the top or upper boundary of the Bank.

Coastal Bank is present along the previously developed and armored embankment of I-93 and Morrissey Blvd to the west of the Project limits, along the outer limits of the solar field array to the northeast of the proposed boardwalk, as well as south of the Project limits east of the Victory Road parking lot (see Environmental Resources Map in **Attachment B**). An analysis was completed in accordance with MassDEP’s Wetland Program Policy Guide 92-1 and determined that Coastal Bank is not present within the southern Project limits as defined in the Guidance document due to the shallow slope.

### *2.1.3 Coastal Beach and Tidal Flats*

Coastal Beach and Tidal Flats are defined at 310 CMR 10.27. Coastal Beach means unconsolidated sediment subject to wave, tidal and coastal storm action, which forms the gently sloping shore of a body of salt water and includes Tidal Flats. Coastal Beaches extend from the mean low water line landward to the dune line, Coastal Bank line or the seaward edge of existing man-made structures, when these structures replace one of the above lines, whichever is closest to the ocean. Tidal Flat means any nearly level part of a coastal beach which usually extends from the mean low water line landward to the more steeply sloping face of the coastal beach or which may be separated from the beach by land under the ocean. Under the Act, Coastal Beach and Tidal Flats have a 100-foot Buffer Zone extending from their edge.

Coastal Beach (unconsolidated sand and gravel fill) is located to the north of the proposed boardwalk within Dorchester Bay and adjacent to Morrissey Blvd (see Environmental Resources Map in **Attachment B**). Additionally, Coastal Beach is present at Tenean Beach east of Conley Street.

### *2.1.4 Salt Marsh*

Salt Marsh is defined at 310 CMR 10.32 as “*a coastal wetland that extends landward up to the highest high tide line, that is, the highest spring tide of the year, and is characterized by plants that are well adapted to or prefer living in saline soils*”. Under the WPA and Boston Ordinance, Salt Marsh has a 100-foot Buffer Zone extending from its landward edge.

Within the Project area, salt marsh is located parallel to the Morrissey Blvd. embankment at the northern extent. An existing sand/gravel bar divides the salt marsh generally in the location of the proposed elevated boardwalk. The salt marsh is sparsely vegetated and contains a significant amount of debris. The salt marsh transitions from a stand of hightide bush to a community

comprised primarily of cord grass (*Spartina patens*), salt marsh cord grass (*Spartina alterniflora*), sea lavender (*Limonium*), and seaside goldenrod (*Solidago sempervirens*) from the delineated highest high tide line. The large debris driven by wind and storm events likely contributes to the sparse vegetation cover in the deposition area.

#### 2.1.5 Locally-regulated Waterfront Area

Waterfront Area is defined in the Boston Ordinance as “*the portion of the buffer zone which extends twenty-five (25) feet horizontally from the edge of the following resource areas: and coastal beach, dune, bank, tidal flats, rocky intertidal shores, salt marshes...*”. Within the Project area, Waterfront Area is associated with the coastal areas to the east of Morrissey Blvd and is incorporated and overlaps with the 100-foot Buffer Zone to salt marsh and other resources.

#### 2.1.6 Other Resource Areas

In addition to wetland resource areas jurisdictional under the WPA and Boston Ordinance, portions of the project are located within Chapter 91 Waterways jurisdiction as defined by 310 CMR 9.04 within filled and flowed tidelands located seaward of the original shoreline Historic High Water Mark.

A small portion of the Project footprint coincides with the boundary of the Neponset River Estuary ACEC. The ACEC Designation Document (March 1995) defines the boundary of the ACEC as being based on the wetland resource areas of the Neponset River marshes and estuary, as defined by the Wetlands Protection Act Regulations. The boundary generally follows the edge of the resource area and a 100-foot buffer zone. This includes portions of Conley Street as it reaches Tenean Beach and the southern terminus of the Project and Victory Road Park/Victory Road. The work within the ACEC is limited to the reconstruction of the existing roadway and sidewalk area, and park improvements. It is a project compatible with the public enjoyment and access of the area.

A report generated by the NOAA Essential Fish Habitat mapper was reviewed.<sup>2</sup> In addition, Time of Year (TOY) Restrictions associated with Winter Flounder are established for Dorchester Bay by the Mass. Division of Marine Fisheries (DMF)<sup>3</sup>. This generally restricts sediment-producing in-water work from occurring between Feb 15 and Nov 15. However, consultation with DMF during the previous MEPA process did not result in any TOY restrictions. The previously issued OOC did include a TOY restriction between Feb 15 and June 30. According to the MassGIS Shellfish Suitability Areas (*last updated May 2011*), suitable habitat for softshell clam (*Mya arenaria*), and blue mussel (*Mytilus edulis*) are located in the vicinity of the proposed boardwalk. These species have a collective recommended TOY restriction for May 1 through September 30, but mapped locations are present beyond the limits of the Project.

The proposed Project includes work within areas protected in perpetuity under Article 97 and identified as part of DCR’s Dorchester Shores Reservation. Since DCR is a project proponent and the proposed project enhances the public use and enjoyment of natural resources, the land continues to be held in accordance with Article 97.

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<sup>2</sup> <https://www.habitat.noaa.gov/protection/efh/efhmapper/>

<sup>3</sup> Division of Marine Fisheries (DMF) Technical Report for Recommended Time of Year Restrictions for Coastal Alteration Projects to Protect Marine Fisheries Resources in Massachusetts (TR-47 Appendix B)

No other sensitive resource areas such as Natural Heritage and Endangered Species Habitat (NHESP), or Outstanding Resource Waters (ORW), were identified within the Project area.

As requested in the Boston filing requirements, please refer to the following table for a list of all permits and approvals to be obtained as part of this project.

**Table 1: Summary Of Permits Required**

Agency	Permit/Approval/Consultation	Jurisdiction
<b>Federal</b>		
U.S. Army Corps of Engineers (USACE)	Section 404 Permit Pre-Construction Notification under the Massachusetts General Permit	Work in Waters of the U.S., but landward of the Mean High Water mark for Navigable Waters reviewable under Section 10 of Rivers and Harbors Act of 1899. New filing required due to the expiration of the previous version of the Section 404 General Permits;
US Environmental Protection Agency (USEPA)	National Pollutant Discharge Elimination System (NPDES) Construction General Permit for Stormwater Discharges and Construction Dewatering Activities	The Project involves greater than one acre of land disturbance.
Massachusetts Office of Coastal Zone Management (CZM)	Federal Consistency Review	Work within the Coastal Zone.
<b>State</b>		
Massachusetts Executive Office of Energy and Environmental Affairs (EEA)	MEPA Notice of Project Change (NPC) 301 CMR 11.00	A Final Certificate (No. 15286) finding that the Project did not require the preparation of an Environmental Impact Report was issued by the Secretary on December 24, 2014. Due to lapse of time, changes to alignment and addition of the southern section, EEA has advised a NPC.
Massachusetts Department of Environmental Protection (MassDEP)	Section 401 of the federal Clean Water Act (Water Quality Certificate); 314 CMR 9.00	Work in waters of the U.S., including wetlands, exceeding certain review thresholds (salt marsh). New filing required due to the expiration of the previous version of the Section 404 General Permits;
MassDEP	Chapter 91 Waterways License (310 CMR 9.00)	Chapter 91 Waterways License #14395 was issued July 21, 2017 for the previous design of the 400-ft boardwalk and multi-use trail in the northern section. Since changes to the northern alignment are greater than 10% of the original design and the southern section has not been licensed, a new Chapter 91 License will be obtained for work in filled and flowed tidelands.
Massachusetts Executive Office of Energy and Environmental Affairs (EEA)	MEPA Notice of Project Change (NPC) 301 CMR 11.00	A Final Certificate (No. 15286) finding that the Project did not require the preparation of an Environmental Impact Report was issued by the Secretary on December 24, 2014. Due to lapse of time, changes to alignment and addition of the southern section, EEA has advised a NPC. Copies of the Final Certificate issued for the ENF are included in Attachment C and a NPC will be submitted.



Agency	Permit/Approval/Consultation	Jurisdiction
Massachusetts Historical Commission (MHC)/ Massachusetts Board of Underwater Archeological Resources (MBUAR)	Determination of effect on historic and archaeological properties (MGL c.9 § 27C)	The MHC previously determined, by letter dated April 12, 2012 that borings for the boardwalk were “unlikely to affect significant historic or archaeological resources” and the MBUAR indicated by letter dated December 1, 2014 that “the Project is unlikely to affect submerged archeological resources”.

### **3 Description of Proposed Activities and Anticipated Impacts**

As previously noted, the Northern Section of the Greenway will traverse salt marsh, Land Subject to Coastal Storm Flowage, Coastal Bank, Coastal Beach/Tidal Flats; and the 100-foot Buffer Zone associated with coastal resources. The Southern Section will not result in direct impacts to bordering vegetated wetlands, salt marsh or waterbodies. The Project footprint will be located in LSCSF, the 100-foot buffer zone to Coastal Beach at Tenean Beach and the 100-foot to buffer zone to Coastal Bank at Victory Rd. Park.

#### **3.1 *Construction Phasing***

While means and methods will dictate activities, the likely sequence of construction for this Project is as follows:

1. Installation of erosion and sediment control measures and construction fencing.
2. Installation of the Victory Rd. construction entrance and contractor laydown area.
3. Clear vegetation and install fencing for temporary construction access road.
4. Rough grade areas along paved portion of the northern trail corridor.
5. Remove existing pavement for proposed boardwalk ramp.
6. Install timber construction mats as needed.
7. Remove garbage and large debris from coastal inlet.
8. Construct southern boardwalk entrance drive supporting piles and build concrete wingwalls and abutment.
9. Drive steel boardwalk support piles and northern abutment/wingwall support piles with crane from the access road or Morrissey Blvd as applicable.
10. Construct pile caps and northern boardwalk concrete wingwalls and abutment.
11. Install prefabricated truss structures and overlooks with crane from access road
12. Remove temporary access road and install landscaping and restoration measures (including fill berm removal) in areas adjacent to boardwalk and debris removal.
13. Road realignment work at Victory Rd. and Conley St., sidewalk improvements at Morrissey Blvd, connectivity, landscaping, and parking improvements at Victory Road Park.
14. Clear and rough grade southern section of multi-use trail.
15. Tide gate vault reconstruction and repair.
16. Final grade for southern section pavement, shoulders, and stormwater management infiltration trench; install gravel and base components.
17. Pave asphalt path from Conley Rd. to Victory Road
18. Final grade for northern section pavement, shoulders, and stormwater management infiltration trench; install gravel and base components.
19. Pave asphalt path from south abutment to Victory Road.

20. Install remainder of landscaping, fencing and signage.

### **3.2 Boardwalk Construction**

The entire 10-foot wide, 670-foot long boardwalk section between the National Grid energy facility parcel and Morrissey Blvd will extend over land located in coastal resources. At the approximate center of the boardwalk crossing, a 750-sf outlook with seating is proposed. A second 240-sf overlook is proposed near the northern-most extent of the trail. The boardwalk will be built with prefabricated 50-foot long aluminum trusses and a hardwood deck. The proposed design was selected to reduce impacts to wetland resource areas and provide a longer anticipated service life and lower construction cost in a better combined benefit than other alternatives that were considered. The majority of the elevated boardwalk decking will be located at approximate elevation 18.4' NAVD 88, fully above the established 100-year floodplain VE breaking-wave height of 14'. There will be almost 12 feet of clearance between the bottom of the boardwalk deck and the highest high tide elevation, which allows for adequate water circulation and sunlight to sustain the underlying salt marsh vegetation. Direct impacts will result from installation of 20-inch diameter concrete-filled steel pipe piles providing foundational support to the boardwalk structure. The number of spans and piles that are necessary to support the structure in jurisdictional and resource areas has been reduced where feasible. The decision to drive the piles will also eliminate drilling spoils. Approximately 39 piles are proposed to support the piers at the boardwalk and overlooks. The number and size of the piles located directly in salt marsh has increased slightly since the original OOC. Permanent impacts to salt marsh are estimated at 18 SF due to the installation of eight piles supporting the elevated boardwalk. An additional 18 SF of permanent pilings will be required in the narrow boundary between the delineated salt marsh and the highest high tide (astronomical high tide) at elevation 6.8' NAVD 88. The remaining 23 piles (50 sf) of piles supporting the elevated boardwalk will be located in LSCSF and downgradient from the coastal bank.

The boardwalk will parallel the riprap fill embankment carrying Morrissey Boulevard and ramps down to meet the sidewalk through two pile-supported wingwalls (35-ft and 40-ft long) and a stub abutment with aluminum railing. At the southern extent, the boardwalk also returns to grade with two pile-supported wingwalls (40-ft and 11-ft long) and stub abutment. The concrete abutment structures will provide grade breaks, and are capable of withstanding the anticipated wave action. Scour protection will be installed at the base of the structures through excavating to appropriate depth and backfilling with riprap. An accessible code-compliant landing will be provided at the entrance to the boardwalk. The northern extent of the boardwalk will meet from the entrance of the ramp structure at El. 15.5 feet (NAVD88), completely above the established VE elevation, while the southern section will alight at El. 15.05 feet (NAVD88). A total of 19 additional piles are required to support the abutments and wingwalls. Entry pillars and a wayfinding sign will be located at the entrance of the boardwalk at Morrissey Blvd. Approximately 100 linear feet of the previously reinforced coastal bank located at the northernmost point of the pathway, will be altered through the addition of the concrete abutments and ramps as the elevated boardwalk makes landfall at Morrissey Boulevard.

Long reach equipment will be used to drive piles and to install the boardwalk superstructure itself. A minimum 20-foot wide path for temporary placement of construction mats will be necessary for access to install the driven piles, pile caps and the boardwalk structure. Approximately 3,170 SF of temporary salt marsh impacts are required for the equipment access and construction matting. An additional 855 SF of temporary mats are proposed within coastal beaches/flats with approximately 3,925 sf more in LSCSF. While means and methods will dictate timing of mat placement, efforts

will be made to reduce the time mats are in place over the existing vegetation and root stock. Mats may also need to be temporarily anchored for excessive tidal or storm events. Anticipated duration of construction of the boardwalk is expected to be approximately four months, weather permitting.

### ***3.3 Debris and Fill Removal***

Restoration measures designed to enhance the existing degraded salt marsh and coastal areas are proposed as part of this Project. Due to the shape of the cove and wind-driven tidal action, major storm events over the years have deposited debris consisting of large timbers, wharf remnants and general garbage into portions of the Project area. Debris removal within coastal wetland resource areas is proposed to be conducted by personnel on-foot with hand tools to the maximum extent practicable. Heavy machinery will be required to remove larger pieces of debris (e.g. timbers, wharf remnants). If necessary, machinery will be staged in adjacent upland areas where feasible and the construction mat access can also provide a means to remove these larger pieces. These temporary restoration activities will have no change to elevation or use and are anticipated to result in an improvement to existing conditions and functions of the salt marsh habitat. Debris removal will enhance or restore approximately 3,000 sf of salt marsh and/or coastal beach. Contractors and Project managers may determine through means and methods that debris removal will be the first item completed.

A manmade berm consisting of approximately 140 cy of unconsolidated fill, will be removed from the intertidal area near the northern approach to Morrissey Boulevard. Portions of the berm are located above the highest high tide elevation and bringing it down to meet adjacent grades will enhance and restore the salt marsh habitat. This will allow for replanting and restoration of approximately 2800 sf.

### ***3.4 Roadway Realignment and Connectivity Improvements***

Roadway realignment will be completed at two locations where the trail intersects with Boston city streets. This allows for formalizing and widening the sidewalks to accommodate the pathway and will help trail users navigate safely between the cross-country portions of the route. The connectivity and intersection improvements are proposed for approximately 500 ft along Conley Street and 450 ft along Victory Road. All of Conley St. and small portions of the Victory Road improvements will be located in LSCSF with little change to existing cross sections. Improvements include all subsequent utility work, signaling, drainage, and repaving. Sidewalks will be extended to DCR's Victory Rd Park where an existing gravel parking lot will be graded and resurfaced. The lot will not be paved and some areas will be reclaimed with seed and loam. These minor activities are also located within LSCSF and Buffer Zone to Coastal Bank, but allows users to park and more easily access the trail system. Approximately 500 feet of sidewalk will also be improved and resurfaced at Morrissey Blvd. at the intersection with the northern extent of the trail.

### ***3.5 Multi-Use Trail Construction***

It is anticipated that the southern portion of the multi-use trail may be constructed first with some overlap to the timing of the boardwalk construction. DCR does not want to encourage users to access the boardwalk before it is complete, which means the northern trail section will likely be one of the last pieces completed. Just under half of the southern section of the multi-use trail is located within LSCSF, including grading and adjacent impacts. In both sections, the existing

successional vegetation will be cleared from the limits of work as noted on Project plans. Minor grading and fill will be performed where needed to prepare a base corridor for the trail, shoulders and infiltration swale. In LSCSF in a location approaching Conley Street, 400 linear feet of fill is proposed to raise the base elevation by 2 to 2.5 feet in order to eliminate a low spot that is likely to flood intermittently. The paved, asphalt trail will be 10 feet wide with a 2-foot wide stabilized gravel shoulder on each side. As discussed in the stormwater management section, a 2-foot infiltration trench will also be located immediately adjacent to the trail shoulder, or may serve as a shoulder when space is constrained.

### **3.6 *Stormwater Management***

The proposed stormwater management system has been designed to comply with MassDEP's stormwater management standards that were incorporated into the Regulations on January 2, 2008 (see 310 CMR 10.05(6)(k)). As a pedestrian path project per 310 (CMR 10.05(6)(m)(6), the proposed activities are required to meet the stormwater management standards to the maximum extent practicable. The proposed stormwater system consists of a 2-foot wide subsurface infiltration trench to be constructed parallel to both sections of the multi-use trail. The pathway will be graded to direct stormwater from the trail into the proposed infiltration trench. The trench will include 2 feet of subsurface washed stone, overtopped with 6 inches of seeded/sod loam. No stormwater management measures are being proposed for the boardwalk portion of the path; boardwalk plank spacing is sufficient to allow for passage of rainfall. Two new drop inlets in this area will also direct stormwater inputs from the trail to the DCR-owned tide gate vault. Please see the Stormwater Management Report and Checklist provided in **Attachment E**. Best Management Practices (BMPs), including sediment and erosion controls, will be utilized during construction.

### **3.7 *Repair and Reconstruction of the Existing Tide Gate Vault***

The southern section also includes the replacement of a broken flap valve on a drain line located within an existing concrete tide gate vault that measures 6' x 8' x 13' deep. The concrete vault is located within the limits of the Project, to the west of the I-93 embankment near the Boston Bowl property in LSCSF. The drain line is 54" in diameter and drains a significant area west of I-93 comprised primarily of businesses. The 54" pipe runs in an east-west alignment through the Boston Bowl property and discharges into the ocean on the east side of I-93. Currently at extreme high tides (approximately five to ten times a year) the ocean flows up the pipe, past the broken flap valve and floods many of the businesses. This repair component was added to the Greenway project because the vault and flap valve are DCR-owned. During construction, crews will demolish the roof of the vault to allow replacement of the broken flap valve. Shoring will be installed inside the vault to support the walls while the roof is removed. The 54" flap valve will be removed and replaced with a new one. Two 12" drains that discharge runoff from the sides of the trail will also penetrate the vault walls and have flap valves installed to stop the flow of high tides up the drain lines. Once all work is complete within the vault, a new roof will be constructed and a manhole frame and cover will be installed in the roof to allow future cleaning/maintenance of the vault.

### **3.8 *Landscaping and Fencing***

Landscaping and ornamental elements such as wayfinding signs, benches, guardrails, and granite posts are proposed throughout the new sections of the Greenway. This includes a new gate, benches, and plantings at Victory Road Park. Select trees and shrubs will be planted along the

Project corridor to exceed the number of trees being removed. Northern bayberry (*Myrica pensylvanica*) will be planted throughout, and was selected for tolerance to both shore and road salt conditions. A native coastal salt tolerant grass mix will be used to restore tidal habitat after construction mats and debris is removed in the vicinity of the boardwalk. The remainder of the corridor will receive a native roadside matrix upland seed mix.

Security fencing will be maintained or relocated as necessary along the perimeter of the National Grid/Boston Gas facility. This 8-foot fence serves as the eastern limits of work for the northern trail and will remain in place for the duration of the Project as noted on the Project plans. The existing 6-foot chain link fence located along the toe of slope of the I-93 embankment will be removed and replaced with new fencing.

### 3.9 Summary of Impacts

Overall, the Project has been designed to avoid adverse impacts while still meeting the purpose of extending the Greenway through a constrained area. Many of the Project activities will occur within previously disturbed areas of paved roadways and sidewalks, or managed road margins. Permanent impacts to salt marsh and tidal flats have been minimized to direct pile placement from the elevated boardwalk, and will be mitigated through the debris removal and revegetation. Other intertidal impacts are temporary, and associated with the placement of temporary construction matting to provide access for constructing the new boardwalk. Tables 2 and 3 (below) summarize the proposed project impacts in jurisdictional areas.

**Table 2: Summary of Proposed Impacts to Resource Areas Associated with the Project**

Resource area	Impacts		Work
	Permanent	Temporary	
Salt Marsh*	18 sf	3,170 sf	Permanent pilings and temporary construction matting for access.
Coastal Bank*	100 lf	--	Boardwalk & abutment (coastal bank has previously been altered and reinforced).
Coastal Beach/Flats	18 sf 2800 sf	855 sf	Permanent pilings and temporary construction matting for access. The additional
LSCSF*	45,395 sf and 30,265 sf	3,925 sf mats	Includes 50 sf pilings, abutments, portions of new southern trail Previously developed; roadway realignments, parking
ACEC	8,235 sf	All previously developed	Roadway/sidewalk realignment at Conley Street near Tenean Beach (4,463sf); Victory Road Park sidewalk extension, regrading existing parking lot (3,772sf)

**Table 3: Comparison of previously permitted impacts to proposed impacts**

Resource Area Impact*	Previously Reviewed	Currently Proposed Design
Salt Marsh	3,732 sf matting/pilings	3,188 sf matting/pilings
Coastal Beach/Tidal Flat	0**	873 sf matting/pilings
Coastal Bank	50 lf	100 lf
Land Subject to Coastal Storm Flowage (LSCSF)	18,423 sf (include temporary access)	75,660 sf

\*Local Ordinance was not in place at the time of original OOC issuance.

\*\*Previously all other piles not located within salt marsh were considered LSCSF impacts, but this does not seem to account for the unconsolidated material located between the salt marsh and Coastal Bank.

#### **4 Alternatives Analysis**

Alternatives for the project include the “No-Build Alternative”. Under the No-Build Alternative, the goals of a Neponset River Reservation Master Plan (with over 20 years of development and implementation), cannot be realized. As mentioned, there are currently missing sections of formalized or safe access in the overall goal to create a Neponset River Greenway between Blue Hills to Boston Harbor. Trail system users would continue to use city streets without sufficient space to travel between existing sections. Construction of the proposed sections of the Greenway closes a significant gap in the continuous corridor. Constructing either the northern or southern section of the Greenway alone contributes to the trail system, but does not provide the greater continuity that completion of both provide.

Extensive alternative analyses were performed in order to select the optimal alignment, support-type, and materials for the boardwalk over the salt marsh and tidal area. Helical piles, micropiles, and driven piles (including concrete-filled steel pipe piles, concrete-filled fiberglass-reinforced pipe piles, and timber piles) were all evaluated for supporting the boardwalk. Support types were reviewed for durability in the marine environment, load carrying capacity, constructability, and environmental impact. Alignment alternatives considered placing the top of boardwalk decking at Base Flood Elevation (BFE); placing the majority above BFE with one foot of freeboard to the supporting structure, or placing the entire structure above BFE, requiring a longer boardwalk and concrete abutment to ramp down to grade. Finally, various combinations of materials were evaluated for the boardwalk superstructure. This included tropical hardwood, pressure treated pine, aluminum, and reinforced concrete.

The selected superstructure is comprised of an aluminum truss with tropical hardwood decking, supported by concrete-filled steel pipe pilings. This reduces potentially damaging and unacceptable wave action on the structure during large storms and selects the most optimal combination of

affordability with expected life span of materials. Helical piles could not be used due to the soft clays and organics found in the substrate soil borings which are incompatible with the necessary load-bearing capacity. The structure will be elevated entirely above BFE and requires the longer boardwalk and two pile-supported concrete abutments to meet grade. This was an alternative rejected by the previously licensed design but it was discovered that alignment blocked pedestrian access to the sidewalk between Morrissey Blvd and the Southeast Expressway/I-93 ramp. The current design pushes the northern abutment seaward and lengthens the southern boardwalk/abutment to allow continuity of the sidewalk while reducing the potentially obtrusive height of the wall at the coastal interface.

Several routes were considered for the Southern Section including an ocean boardwalk or cantilever east of I-93 from Tenean Beach to Victory Road Park or routing along Freeport Street. The ocean alternative increased expense, coastal impacts, and complicated construction and durability requirements. Freeport Street doesn't reduce the user conflicts or have an option for separating a shared-use path. The preferred alternative for the Southern Section was chosen based upon its lower risk of storm damage, limited temporary and permanent impacts to coastal wetland resource areas, accessibility, service life, constructability, aesthetics and construction costs. Moreover, the preferred alternative maximizes access to marginal, underutilized spaces, while reducing some of the conflicting uses from city streets.

Coastal resource impacts are minimized to the extent practicable, but the purpose of the project is to bring trail users along the river and coast, accessing existing public spaces. Resources and buffer zones are commonly encountered in this coastal zone and difficult to avoid. By taking advantage of the natural valley adjacent to the western embankment of I-93, significant changes in grade or storage volumes are not proposed as only relatively minor earthwork is necessary in most locations. However, elevation changes and fill were proposed in the vicinity of the tide gate due to low lying areas which could regularly become flooded. Asphalt was selected for the trail surface to reduce the overall maintenance needs associated with stone dust.

## **5 Conformance with WPA and Boston Wetlands Ordinance**

Many of the proposed Project activities within jurisdictional resource areas will occur largely along existing paved roads and sidewalks, and their managed margins. Impacts to salt marsh and coastal beach are limited to the installation of pilings to support the new boardwalk, and the temporary placement of construction matting for access. Permanent impacts to the interests of the WPA or the Boston Ordinance are not anticipated.

### ***5.1 Land Subject to Coastal Storm Flowage***

While there are no specific performance standards for LSCSF, impacts from the proposed Project to the surrounding area are minimized to the extent practicable. The boardwalk decking and superstructure has been designed to be above the BFE and will not displace or constrict floodwater. Since flooding of the Project site from a coastal storm can involve storm surge overtopping Morrissey Boulevard, the Project is not anticipated to have any detrimental effect on flood velocity or flow, nor increase the magnitude of erosion or sedimentation that could occur during a coastal storm. Many impacts to LSCSF will occur as road and sidewalk realignment without changes to the profile of the area. Trail construction in LSCSF will remain at grade where feasible with the

exception of raising the profile 2 to 2.5 feet for 400 linear feet near Conley St. and the tide gate vault. This is intended as a climate resiliency measure to prevent future flooding on the trail. It is anticipated that the associated repairs to the tide gate vault will improve the current tidal flooding on properties to the west.

## **5.2 Coastal Beach and Tidal Flats**

In accordance with the performance standards of the WPA for Coastal Beach [310 CMR 10.27] and tidal flats [310 CMR 10.28] which are determined to be significant to storm damage prevention, flood control, or protection of wildlife habitat:

*310 CMR 10.27(3): Any project on a coastal beach, except any project permitted under 310 CMR 10.30(3)(a), shall not have an adverse effect by increasing erosion, decreasing the volume or changing the form of any such coastal beach or an adjacent or downdrift coastal beach.*

Impacts to Coastal Beach will be limited to the piles supporting the boardwalk and temporary construction mats. The Project is located in a heavily disturbed area of beach between the Boston Gas Company Easement and the I-93 exit ramp, which collects large amounts of debris and trash. Overall, the pathway will not increase erosion or decrease the volume of coastal beach. Restoration and enhancement is proposed through removal of the debris.

*310 CMR 10.27(4): Any groin, jetty, solid pier, or other such solid fill structure which will interfere with littoral drift, in addition to complying with 310 CMR 10.27(3), shall be constructed as follows:*

- (a) It shall be the minimum length and height demonstrated to be necessary to maintain beach form and volume. In evaluating necessity, coastal engineering, physical oceanographic and/or coastal geologic information shall be considered.*
- (b) Immediately after construction any groin shall be filled to entrapment capacity in height and length with sediment of grain size compatible with that of the adjacent beach.*
- (c) Jetties trapping littoral drift material shall contain a sand by-pass system to transfer sediments to the downdrift side of the inlet or shall be periodically redredged to provide beach nourishment to ensure that downdrift or adjacent beaches are not starved of sediments.*

A groin, jetty, or solid fill structure is not proposed in this resource area.

*310 CMR 10.27(5): Notwithstanding 310 CMR 10.27(3), beach nourishment with clean sediment of a grain size compatible with that on the existing beach may be permitted.*

Not applicable; no beach nourishment is proposed.

*310 CMR 10.27(6): In addition to complying with the requirements of 310 CMR 10.27(3) and (4), a project on a tidal flat shall if water-dependent be designed and constructed, using best available measures, so as to minimize adverse effects, and if non-water-dependent, have no adverse effects, on marine fisheries and wildlife habitat caused by:*

- (a) alterations in water circulation;*
- (b) alterations in the distribution of sediment grain size; and*



*(c) changes in water quality, including, but not limited to, other than natural fluctuations in the levels of dissolved oxygen, temperature or turbidity, or the addition of pollutants.*

The piles located within tidal flats will not have any adverse effects on marine fish or wildlife habitat, through compliance with any timing restrictions. The piles are not anticipated to significantly impact water circulation, the distribution of sediment, or water quality.

*310 CMR 10.27(7): Notwithstanding the provisions of 310 CMR 10.27(3) through (6), no project may be permitted which will have any adverse effect on specified habitat sites or rare vertebrate or invertebrate species, as identified by procedures established under 310 CMR 10.37.*

Not applicable; the Project is not located within any NHESP Priority or Estimated habitats for rare species.

### **5.3 Coastal Bank**

Project activities resulting in impacts to coastal bank are limited to the redevelopment of existing armored fill embankments through the addition of the concrete abutments and wingwalls on piles, and ramps where the elevated boardwalk makes landfall. Scour protection is proposed around the structures and above the highest high tide line. Activities will not impact the storm damage protection provided by the bank, and will not have an adverse effect due to wave action on the movement of sediment from the coastal bank to coastal beaches or land subject to tidal action.

In accordance with 310 CMR 10.30, when a coastal bank is determined to be significant to the storm damage prevention or flood control because it supplies sediment to coastal beaches, coastal dunes or barrier beaches, 310 CMR 10.30(3) through (5) shall apply. In this case, it is unlikely that the coastal bank supplies sediment to other coastal resources because the bank is previously armored with large granite and riprap. However, each condition is addressed here:

*310 CMR 10.30(3): No new bulkhead, revetment, seawall, groin or other coastal engineering structure shall be permitted on such a coastal bank except that such a coastal engineering structure shall be permitted when required to prevent storm damage to buildings constructed prior to the effective date of 310 CMR 10.21 through 10.37 or constructed pursuant to a Notice of Intent filed prior to the effective date of 310 CMR 10.21 through 10.37 (August 10, 1978), including reconstructions of such buildings subsequent to the effective date of 310 CMR 10.21 through 10.37...*

New bulkheads, revetments, seawalls, groins, or coastal engineering structures meant to alter wave, tidal, sediment transport processes are not proposed in this resource area.

*310 CMR 10.30(4): Any project on a coastal bank or within 100 feet landward of the top of a coastal bank, other than a structure permitted by 310 CMR 10.30(3), shall not have an adverse effect due to wave action on the movement of sediment from the coastal bank to coastal beaches or land subject to tidal action.*

As noted, it is unlikely that the coastal bank supplies sediment to other coastal resources because the bank is previously armored with large granite and riprap.

*310 CMR 10.30(5): The Order of Conditions and the Certificate of Compliance for any new building within 100 feet landward of the top of a coastal bank permitted by the issuing authority under M.G.L. c. 131, § 40 shall contain the specific condition: 310 CMR 10.30(3), promulgated under M.G.L. c. 131, § 40, requires that no coastal engineering structure, such as a bulkhead, revetment, or seawall shall be permitted on an eroding bank at any time in the future to protect the project allowed by this Order of Conditions*

The project does not include construction of a building and erosion does not appear to be an issue on the previously armored coastal bank.

In accordance with 310 CMR 10.30, when a coastal bank is determined to be significant to the storm damage prevention or flood control because it is a vertical buffer to storm waters, 310 CMR 10.30(6) through (8) shall apply.

*310 CMR 10.30(6): Any project on such a coastal bank or within 100 feet landward of the top of such coastal bank shall have no adverse effects on the stability of the coastal bank.*

Appropriate geotechnical information was obtained and structural engineers provided the design for the pile supported abutments and wingwalls to be built along the previously armored coastal bank. Scour protection will be added to protect the structures and the bank from storm events and wave action above the highest high tide elevation. This will consist of excavation to an appropriate depth at the base of the structures and backfilling with riprap.

*310 CMR 10.30(7): Bulkheads, revetments, seawalls, groins or other coastal engineering structures may be permitted on such a coastal bank except when such bank is significant to storm damage prevention or flood control because it supplies sediment to coastal beaches, coastal dunes, and barrier beaches.*

New bulkheads, revetments, seawalls, groins, or coastal engineering structures meant to alter wave, tidal, sediment transport processes are not proposed in this resource area.

*310 CMR 10.30(8): Notwithstanding the provisions of 310 CMR 10.30(3) through (7), no project may be permitted which will have any adverse effect on specified habitat sites of rare vertebrate or invertebrate species, as identified by procedures established under 310 CMR 10.37.*

Not applicable; the Project is not located within any NHESP Priority or Estimated habitats for rare species.

#### **5.4 Salt marsh**

Project activities resulting in impacts to salt marsh include the temporary placement of construction mats for equipment access (~3,170 s.f.). Permanent impacts are associated with the placement of eight piles in salt marsh resulting in direct permanent impacts of 18 s.f.

In accordance with 310 CMR 10.32, when a salt marsh is determined to be significant to the protection of marine fisheries, the prevention of pollution, storm damage prevention or ground water supply, 310 CMR 10.32(3) through (6) shall apply:

*310 CMR 10.32(3): A proposed project in a salt marsh, on lands within 100 feet of a salt marsh, or in a body of water adjacent to a salt marsh shall not destroy any portion of the salt marsh and shall not have an adverse effect on the productivity of the salt marsh. Alterations in growth, distribution and composition of salt marsh vegetation shall be considered in evaluating adverse effects on productivity. This section shall not be construed to prohibit the harvesting of salt hay.*

and

*310 CMR 10.32(4): Notwithstanding the provisions of 310 CMR 10.32(3), a small project within a salt marsh, such as an elevated walkway or other structure which has no adverse effects other than blocking sunlight from the underlying vegetation for a portion of each day, may be permitted if such a project complies with all other applicable requirements of 310 CMR 10.21 through 10.37.*

This Project is an elevated 10-foot wide boardwalk that has been designed to let the maximum amount of sunlight reach the underlying vegetation with almost 12 feet of clearance to the highest high tide elevation. Piles were increased to 20 inches in diameter to withstand tidal action and direct impacts could not be fully avoided. The number of piles was limited through spans to the extent feasible. A similar boardwalk alignment and impact type was previously permitted in this location due to the benefits to the public and the restoration proposed. Several thousand square feet of debris removal will restore the adjacent marsh and tidal flats, allowing for revegetation and enhancement.

*310 CMR 10.32(5): Notwithstanding the provisions of 310 CMR 10.32(3), a project which will restore or rehabilitate a salt marsh, or create a salt marsh, may be permitted.*

The temporary impacted marsh areas will be restored in kind after the removal of the construction mats. It is assumed root systems will be preserved and allowed to revegetate once mats are removed and the areas will be enhanced with coastal seed mix. Proposed mitigation also included cleaning up the large debris, timbers, and trash along the coast and in the currently degraded areas of salt marsh in the vicinity of the Greenway for almost 3,000 sf of restoration. Any salt marsh grasses and root systems directly affected/displaced by the pilings will be transplanted to bare or sparsely vegetated areas in the appropriate tidal elevations. Appropriate seed mixes will be used in restoration and invasive species (as identified per Massachusetts Invasive Plant Advisory Group (MIPAG) and within the project footprint) will be managed during construction.

*310 CMR 10.32(6): Notwithstanding the provisions of 310 CMR 10.32(3) through (5), no project may be permitted which will have any adverse effect on specified habitat sites of rare vertebrate or invertebrate species, as identified by procedures established under 310 CMR 10.37.*

Not applicable; the Project is not located within any NHESP Priority or Estimated habitats for rare species.

## **5.5 Conformance with the Boston Wetlands Ordinance**

### *Climate Resiliency*

In addition to complying with the performance standards of the WPA, the proposed project has taken into consideration the requirement of the Boston Ordinance to consider the consequences of climate change in relation to the project. These may include the effect of projected sea level rise, changes in storm intensity and frequency, and other consequences. Portions of the Project are located in current LSCSF.

The Dorchester waterfront is projected to experience 9 inches of sea-level rise by 2030 and 40 inches by 2070, according to Climate Ready Boston (2016). The neighborhood-scale Coastal Resilience Solutions for Dorchester report (2020), identifies a specific flood pathway at Morrissey Boulevard South near the location of the raised boardwalk (Dorchester report, pp. 61). Water entering through this pathway could flood a large portion of land from the waterfront, inland to McMorro Playground and south to Garvey Playground. According to the Boston-Harbor Flood Risk Model, the project site is vulnerable to increasing levels of coastal flooding over time. Morrissey Boulevard, at the northern extent of the project site, is vulnerable to a 10-year coastal flood event as early as 2030 with the open space around the road at risk of being inundated during high-tides. Victory Road is vulnerable to a 100-year coastal flood event in the near term (2030). Victory Road's flood risk increases over time. By 2050, the area is vulnerable to a 10-year coastal flood event and by 2070 it may experience flooding during high-tides. The borders of the project at Victory Road and Morrissey Boulevard sit within the 1% annual chance flood zone in the near and medium term though, Morrissey Boulevard South may be impacted by monthly tidal floods by 2030 and the Victory Road side by 2070. Portions of the lower Neponset River Greenway, Tenean Beach, and Morrissey Blvd currently flood during astronomical high tides as water backs up through drainage systems.

Flood depths at the project site will be as high as five feet during a 1% annual chance flood with 40 inches of sea-level rise. The Dorchester report establishes a design flood elevation of 16.0' NAVD88 at Victory Road and 16.1' NAVD88 at Morrissey Boulevard. This design flood elevation includes site-specific wave information plus one foot of freeboard. DCR's Neponset River Greenway is identified in the Dorchester report and flood resilience solutions for this area are detailed in the Clam Point & Tenean Beach chapter (pp. 101) and fits into the community-developed goals for safe access to the waterfront by foot and bike, social equity and quality of life. As a long-term project (2050), the report proposes a raised harborwalk on a landscape berm (DFE 16.1' NAVD88) around Morrissey Boulevard to close the flood pathway, maintain waterfront access, and to maintain this uninterrupted transportation pathway. Living shoreline elements are also recommended expand habitat and prevent erosion around the berm.

With an elevation of 18.4' (NAVD 88), the flat surface of the elevated boardwalk has been raised several feet in comparison to the original design, and is located above the projected design flood elevation even accounting for sea level rise. Other portions of the trail are below current 1% annual chance flooding elevations and some fill is proposed to raise the area in the vicinity of the tide gate vault. This will raise the area profile between 2 to 2.5 feet over approximately 400 linear feet.

### *Waterfront Area and Buffer Zone to Salt Marsh*

Portions of the proposed project are located within the locally-regulated Waterfront Area and 100-ft buffer zone to Salt Marsh, as defined in the Boston Ordinance. These areas largely overlap LSCSF and other resources described under the WPA. As the purpose of the project is to bring trail users along the river and coast, accessing existing public spaces, it is not possible to entirely avoid these resource areas. Impacts to the flood storage capacity, resilience to storm events, and habitat value of these resource areas have been minimized to the extent practicable, and Best Management Practices (BMPs) will be employed during construction to minimize impacts to neighboring resource areas.

## **6 Project Mitigation**

MassDOT will be performing the construction work on behalf of DCR, in compliance with their established procedures, guidelines and Best Management Practices (BMPs). These will include consideration of soil erosion and sediment controls; project work access; spill prevention and response plan; dewatering and concrete washout area; and restoration.

### **6.1 *Soil Erosion and Sediment Controls***

Siltation barriers composed of Filtrexx™ silt sock (or approved equivalent) along the limits of work proximate to tidal resources by Morrissey Blvd will be installed prior to the initiation of proposed work. These siltation barriers will demarcate limits of work and provide additional assurance that construction equipment will stay within the area proposed. All barriers will remain in place until disturbed areas are stabilized. Since most work is landward of mean higher high water and typical high tide, sediment and silt producing activities can be timed to avoid most in-water work. Catch basins and other drainage inlets will be protected. Erosion and sediment controls will be inspected on a regular basis and maintained in working order until all disturbed areas are stabilized. An adequate stockpile of erosion control materials will be onsite at all times for emergency or routine replacement.

### **6.2 *Temporary Work Access***

The proposed work will be accessed via existing paved roadways where possible. A 20-foot wide path for temporary construction access will be required, along the alignment of the proposed boardwalk, to facilitate the driving of the piles and erection of the proposed superstructure. This will be achieved through almost 8,000 sf of temporary timber construction matting in the area of the coastal inlet. While deployment of mats during the dormant season would have the least potential impact on salt marsh vegetation, TOY restrictions for marine species and contractor safety must also be considered.

Mats used in snow and ice become slippery and potentially hazardous and the potential for coastal storms should also be considered. For these reasons, boardwalk construction may be best completed in spring and early summer. This also accommodates transplanting any vegetation from the direct pile impact areas. Because of the weight and size of the mats, once they are deployed, it may be difficult to move them until work is completed in a section. However, contractors will be advised not to lay down mats in areas until needed and to pick them up as soon as feasible to reduce the

time they are deployed over vegetation. Storm events, forecast, and astronomical tides will be regularly considered and mats will be temporarily anchored as necessary or removed when required. Upon the completion of this boardwalk construction phase, the temporary access road will be removed and the area restored to preexisting conditions.

If necessary, temporary crushed stone aprons (anti-sediment tracking pads) shall be constructed at upland site entrances for access to the work sites. Anti-sediment tracking pads clean the tires of construction vehicles and minimize the tracking of soil onto the adjacent roadways. The last crew to leave the site is responsible for regularly sweeping the roadways where sediment and/or rock have been tracked onto the street.

### **6.3 Restoration**

All areas that are temporarily impacted by project construction activities will be restored to pre-construction conditions as far as practicable. Restoration will also focus on quickly stabilizing the beach and salt marsh following installation of the boardwalk. Any salt marsh grasses and root systems affected by the pilings will be transplanted to bare areas in the vicinity. Appropriate seed mixes will be used in restoration, native plantings are proposed as per the landscape plans, and invasive species will be directly managed in the project footprint.

Restoration measures designed to enhance the existing degraded salt marsh and coastal resource areas are proposed as part of this Project. Due to the shape of the cove and wind-driven tidal action, major storm events over the years have deposited debris consisting of large timbers, wharf remnants and general garbage into portions of the Project area. Debris removal within coastal wetland resource areas is proposed to be conducted by personnel on-foot with hand tools to the maximum extent practicable. Heavy machinery will be required to remove larger pieces of debris (e.g. timbers, wharf remnants). If necessary, machinery will be staged in adjacent upland areas where feasible and the construction mat access can also provide a means to remove these larger pieces. These temporary restoration activities will have no change to elevation or use and are anticipated to result in an improvement to existing conditions and functions of the Salt Marsh habitat. Contractors and Project managers may determine through means and methods that debris removal will be the first item completed.

## **7 CONCLUSION**

Although the Project will be conducted within LSCSF, Coastal Bank, Coastal Beach/Tidal Flat, Salt Marsh, 100-ft Buffer Zone, and locally regulated Waterfront Area, the proposed Project will:

- Minimize disturbance by using existing developed and marginal sites, roadways and sidewalks to the greatest extent practicable;
- Restore and enhance up to 3,000 sf of salt marsh and tidal flats;
- Use appropriate construction BMPs to protect resource areas from sedimentation and soil disturbance during construction;
- Enhance public access to the shore and provide sustainable transit options and recreational activities.

This Project will serve to enhance access to Victory Road Park, the Neponset River Estuary, and the Lower Neponset River Greenway. As such, it is compatible with the public enjoyment and access of the area and furthers a goal of protecting, enhancing, and increasing publicly-owned open space and public access. Therefore, DCR requests that the City of Boston Conservation Commission find this project in compliance with the interests identified in the Massachusetts Wetlands Protection Act and associated regulations, and the City of Boston Wetlands Protection Ordinance. DCR respectfully requests that the Commission issue an Order of Conditions allowing the Project to proceed as described in this Notice of Intent.





Neponset River Greenway: Tenean Beach to Morrissey Blvd.  
Notice of Intent Application  
Boston, MA

MassDEP WPA Form 3 Section A.3, F  
Property Owner and Signatures

Massachusetts Department of Transportation  
Ten Park Plaza  
Suite 4160  
Boston, MA 02116

c/o Michael Trepanier, Project Manager  
[michael.trepanier@state.ma.us](mailto:michael.trepanier@state.ma.us)



**Massachusetts Department of Environmental Protection**  
Bureau of Resource Protection - Wetlands  
**WPA Form 3 – Notice of Intent**  
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File Number

Document Transaction Number

Boston

City/Town

## F. Signatures and Submittal Requirements

I hereby certify under the penalties of perjury that the foregoing Notice of Intent and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge. I understand that the Conservation Commission will place notification of this Notice in a local newspaper at the expense of the applicant in accordance with the wetlands regulations, 310 CMR 10.05(5)(a).

I further certify under penalties of perjury that all abutters were notified of this application, pursuant to the requirements of M.G.L. c. 131, § 40. Notice must be made by Certificate of Mailing or in writing by hand delivery or certified mail (return receipt requested) to all abutters within 100 feet of the property line of the project location.

1. Signature of Applicant



3. Signature of Property Owner (if different)

5. Signature of Representative (if any)

2. Date

6/24/2021

4. Date

6. Date

July 8, 2021

Boston Conservation Commission  
Boston City Hall, Room 805  
Boston, Massachusetts 02201

Re: Notice of Intent  
City of Boston  
MA Department of Conservation and Recreation  
Neponset Greenway, Dorchester, Massachusetts

To Whom It May Concern:

Boston Gas Company (“BGC”) is the fee owner of a certain parcel of land (the “Parcel”) located at 238 Victory Road in Dorchester, Massachusetts, by virtue of deeds recorded with the Suffolk County Registry of Deeds in Book 3050, Page 367; Book 3254, Page 367, Book 4586, Page 553; Book 4683, Page 599; and Certificates of Title No. 13807 and 13968 issued by the Land Registration Office of the Suffolk County Registry District. Massachusetts Department of Conservation and Recreation (“MA DCR”) intends to make improvements to the Parcel in connection with its proposed extension of the Neponset River Greenway between Tenean Beach and Morrissey Boulevard in Dorchester, Massachusetts.

BGC hereby acknowledges and confirms that, in accordance with 310 CMR 10.05 (4), it has granted MA DCR permission to file the NOI subject to BGC carrying no responsibility for any or liability for any non-compliance by MA DCR with any subsequently issued permit conditions.

Besides this acknowledgment and confirmation of its consent, BGC makes no representation or warranty with respect to any other aspect of the NOI as to (i) its truth, completeness, or accuracy, or (ii) compliance with applicable laws and regulations.

Very truly yours,

BOSTON GAS COMPANY

By: 

Name: *Andrea Agostino*

Title: Authorized Representative

cc: Stella Lensing, MA DCR  
Diana Walden, BSC Group  
Steven Towle, National Grid  
Andrea Agostino, National Grid

# Attachment B

Neponset River Greenway: Tenean Beach to Morrissey Blvd.  
Boston, Massachusetts  
Notice of Intent

USGS SITE LOCUS MAP  
ENVIRONMENTAL RESOURCES MAP  
FEMA FIRM  
PREVIOUS DESIGN OVERLAY FIGURE







Scale:  
1 inch = 2,000 feet  
0 1,000 2,000  
Feet  
(Page Size 8.5 x 11)

**NEPONSET RIVER GREENWAY: TENEAN BEACH TO MORRISSEY BLVD**

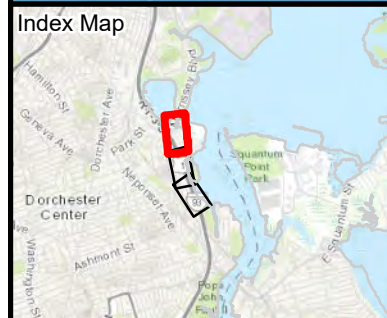
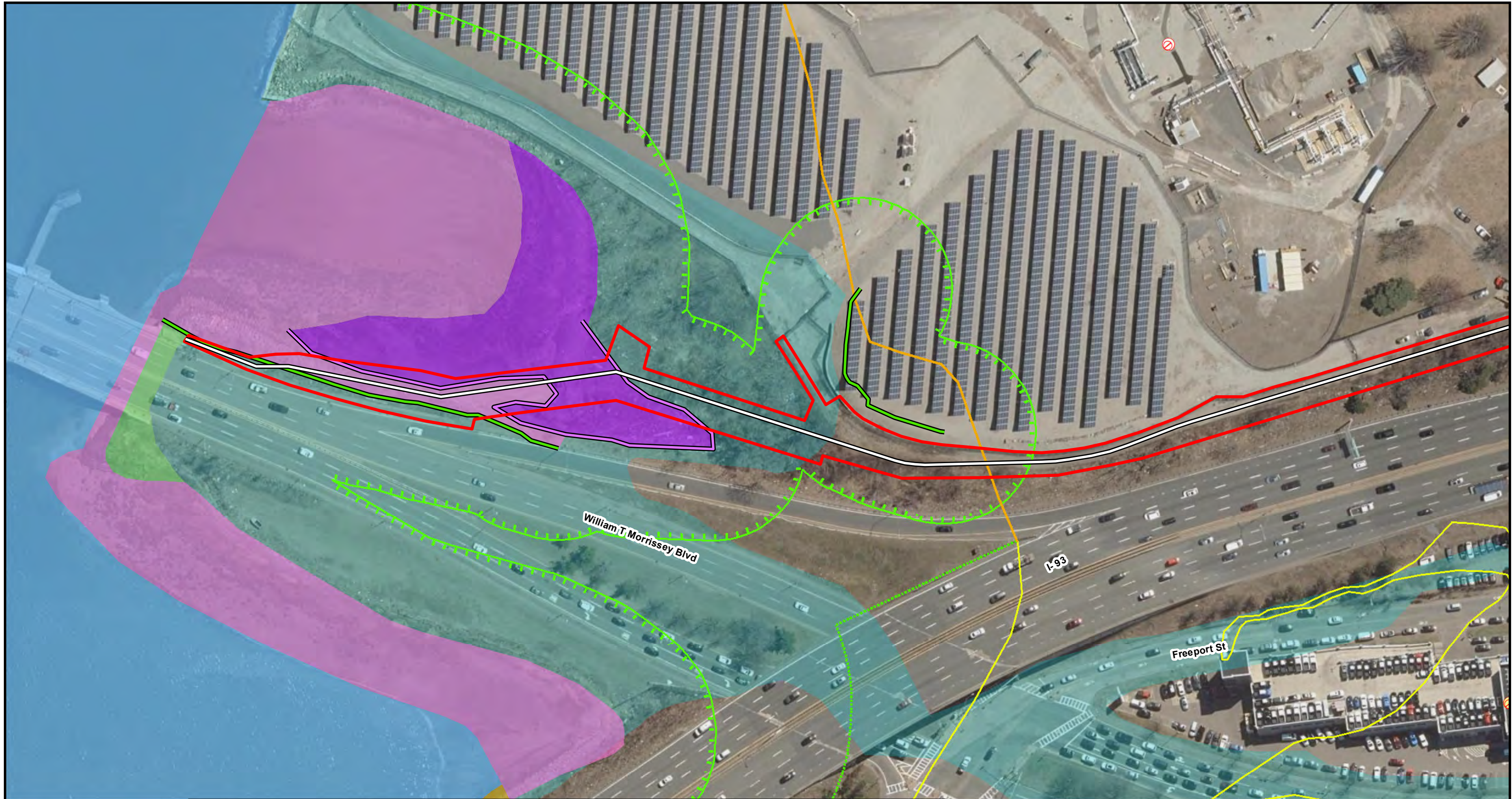
**USGS Site Location Map  
Boston, MA**

Source: Copyright ©  
2013 National  
Geographic Society, i-  
cubed









**Legend**

— Neponset River Greenway	— Surveyed Coastal Bank	■ Salt Marsh	⊙ MADEP 21E Site
— Limit of Work	— Surveyed Saltmarsh	■ Shallow Marsh Meadow or Fen	⊙ MADEP PAUL Site
— Ch. 91 Jurisdiction	— MADEP Hydrologic Connections	■ Tidal Flat	
— Historic High Water	■ Open Water	■ 25ft Riverfront Area	
— Landlocked Tidelands	■ Coastal Bank Bluff or Sea Cliff	■ 100ft Buffer to Wetlands & Streams	
— Contemporary High Water	■ Coastal Beach	■ FEMA 100yr Floodplain*	
— Inferred Historic High Water	■ Rocky Intertidal Shore	■ Areas of Critical Environmental Concern	

\*Indicates Layers Set to Transparency  
 1 inch = 100 feet  
 0 50 100 Feet

**NEPONSET RIVER GREENWAY:  
 TENEAN BEACH TO MORRISSEY BLVD**

**Environmental Resources Map**

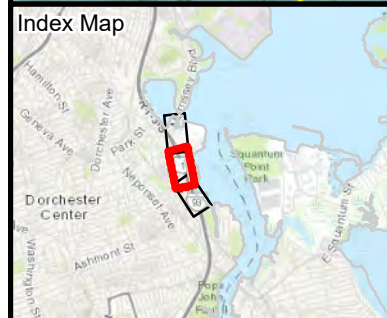
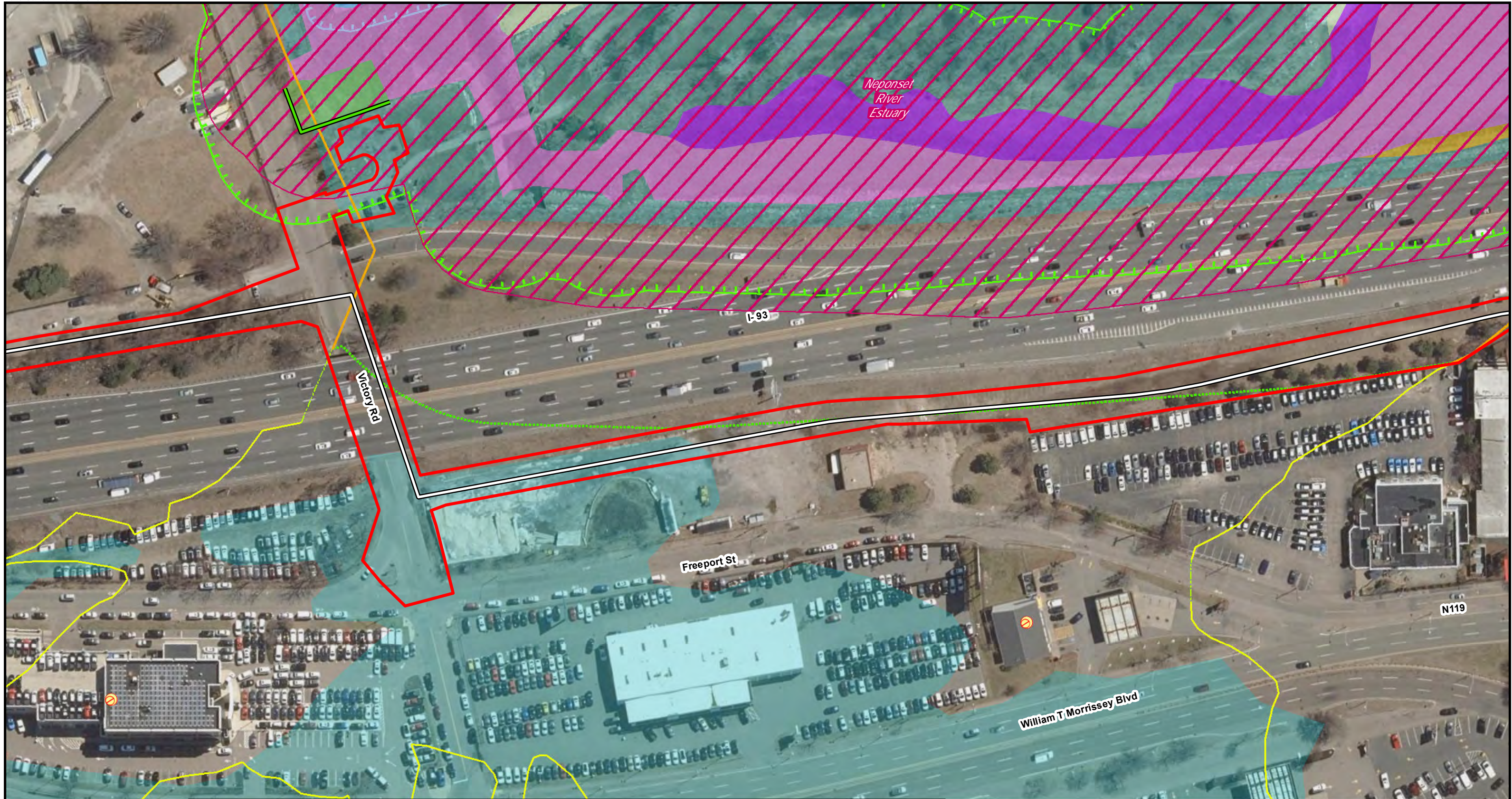
Boston, MA  
 Page 1 of 3

Source: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community









**Legend**

— Neponset River Greenway	— Surveyed Coastal Bank	■ Salt Marsh	⊙ MADEP 21E Site
— Limit of Work	— Surveyed Saltmarsh	■ Shallow Marsh Meadow or Fen	⊙ MADEP AUL Site
— Ch. 91 Jurisdiction	— MADEP Hydrologic Connections	■ Tidal Flat	
— Historic High Water	— Open Water	■ 25ft Riverfront Area	
— Landlocked Tidelands	— Coastal Bank Bluff or Sea Cliff	■ 100ft Buffer to Wetlands & Streams	
— Contemporary High Water	— Coastal Beach	■ FEMA 100yr Floodplain*	
— Inferred Historic High Water	— Rocky Intertidal Shore	■ Areas of Critical Environmental Concern	

\*Indicates Layers Set to Transparency

0 50 100 Feet

**NEPONSET RIVER GREENWAY:  
 TENEAN BEACH TO MORRISSEY BLVD**

**Environmental Resources Map**

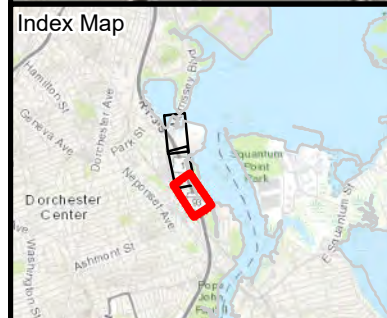
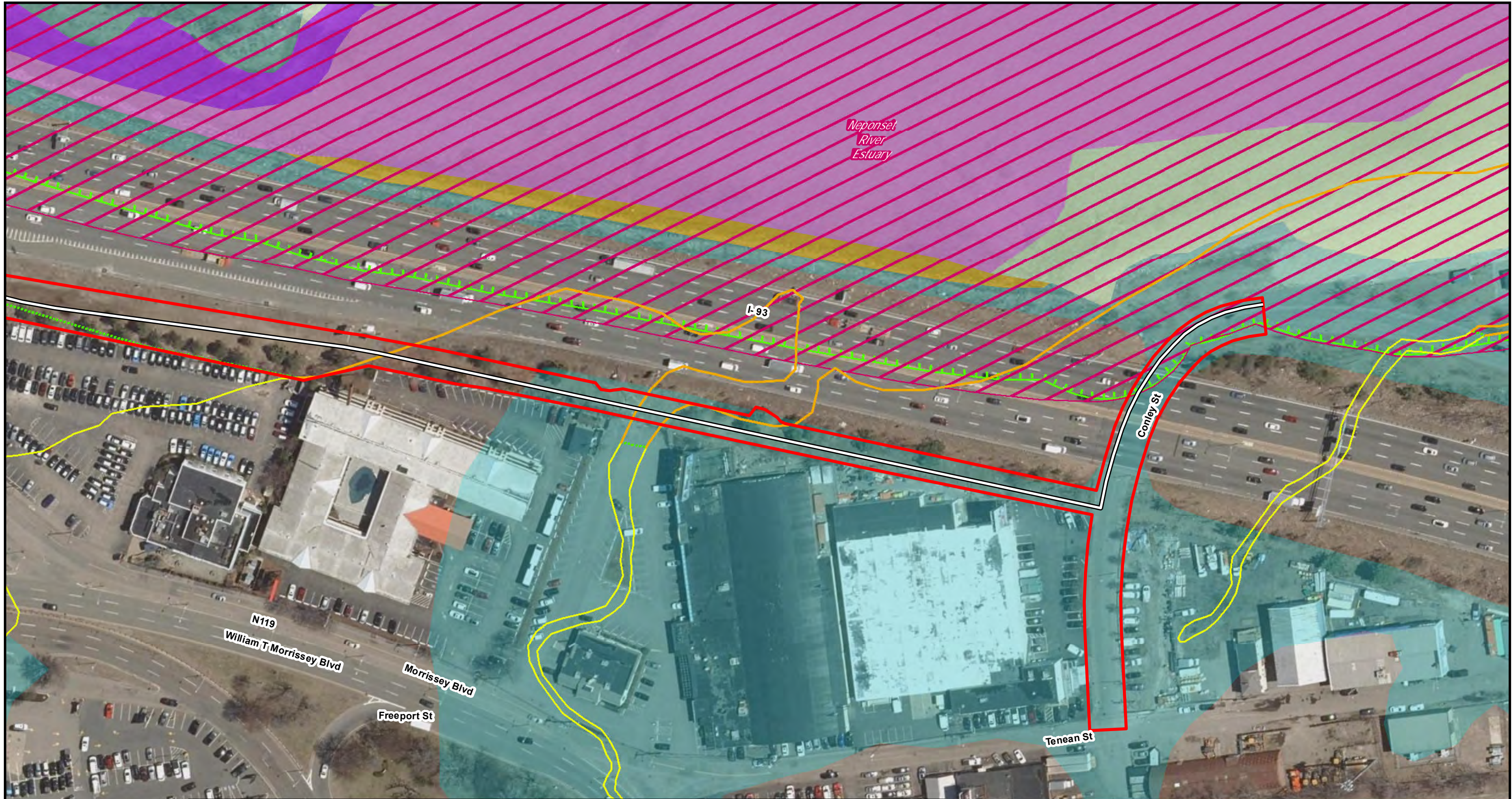
Boston, MA  
 Page 2 of 3

Source: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community





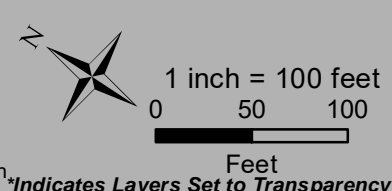




**Legend**

Neponset River Greenway	Surveyed Coastal Bank	Salt Marsh	MADEP 21E Site
Limit of Work	Surveyed Saltmarsh	Shallow Marsh Meadow or Fen	MADEPAUL Site
Ch. 91 Jurisdiction	MADEP Hydrologic Connections	Tidal Flat	
Historic High Water	Open Water	25ft Riverfront Area	
Landlocked Tidelands	Coastal Bank Bluff or Sea Cliff	100ft Buffer to Wetlands & Streams	
Contemporary High Water	Coastal Beach	FEMA 100yr Floodplain*	
Inferred Historic High Water	Rocky Intertidal Shore	Areas of Critical Environmental Concern	

\*Indicates Layers Set to Transparency



**NEPONSET RIVER GREENWAY:  
TENEAN BEACH TO MORRISSEY BLVD**

**Environmental Resources Map**

Boston, MA  
Page 3 of 3

Source: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community







# National Flood Hazard Layer FIRMette



42°18'19.83"N



## Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) Zone A, V, A99	With BFE or Depth Zone AE, AO, AH, VE, AR
	Regulatory Floodway	

OTHER AREAS OF FLOOD HAZARD	Zone X
	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile
	Future Conditions 1% Annual Chance Flood Hazard
	Area with Reduced Flood Risk due to Levee. See Notes.
	Area with Flood Risk due to Levee

OTHER AREAS	Zone X
	Area of Minimal Flood Hazard
	Effective LOMRs
	Area of Undetermined Flood Hazard

GENERAL STRUCTURES	Zone X
	Channel, Culvert, or Storm Sewer
	Levee, Dike, or Floodwall

OTHER FEATURES	Zone X
	Cross Sections with 1% Annual Chance Water Surface Elevation
	Coastal Transect
	Base Flood Elevation Line (BFE)
	Limit of Study
	Jurisdiction Boundary
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature

MAP PANELS	Zone X
	Digital Data Available
	No Digital Data Available
	Unmapped

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/30/2020 at 5:37:56 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



# National Flood Hazard Layer FIRMMette



42°17'54.65"N



## Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D

OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
		Area of Undetermined Flood Hazard Zone D

GENERAL STRUCTURES		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall

OTHER FEATURES		Cross Sections with 1% Annual Chance Water Surface Elevation
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature

MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/30/2020 at 5:39:33 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

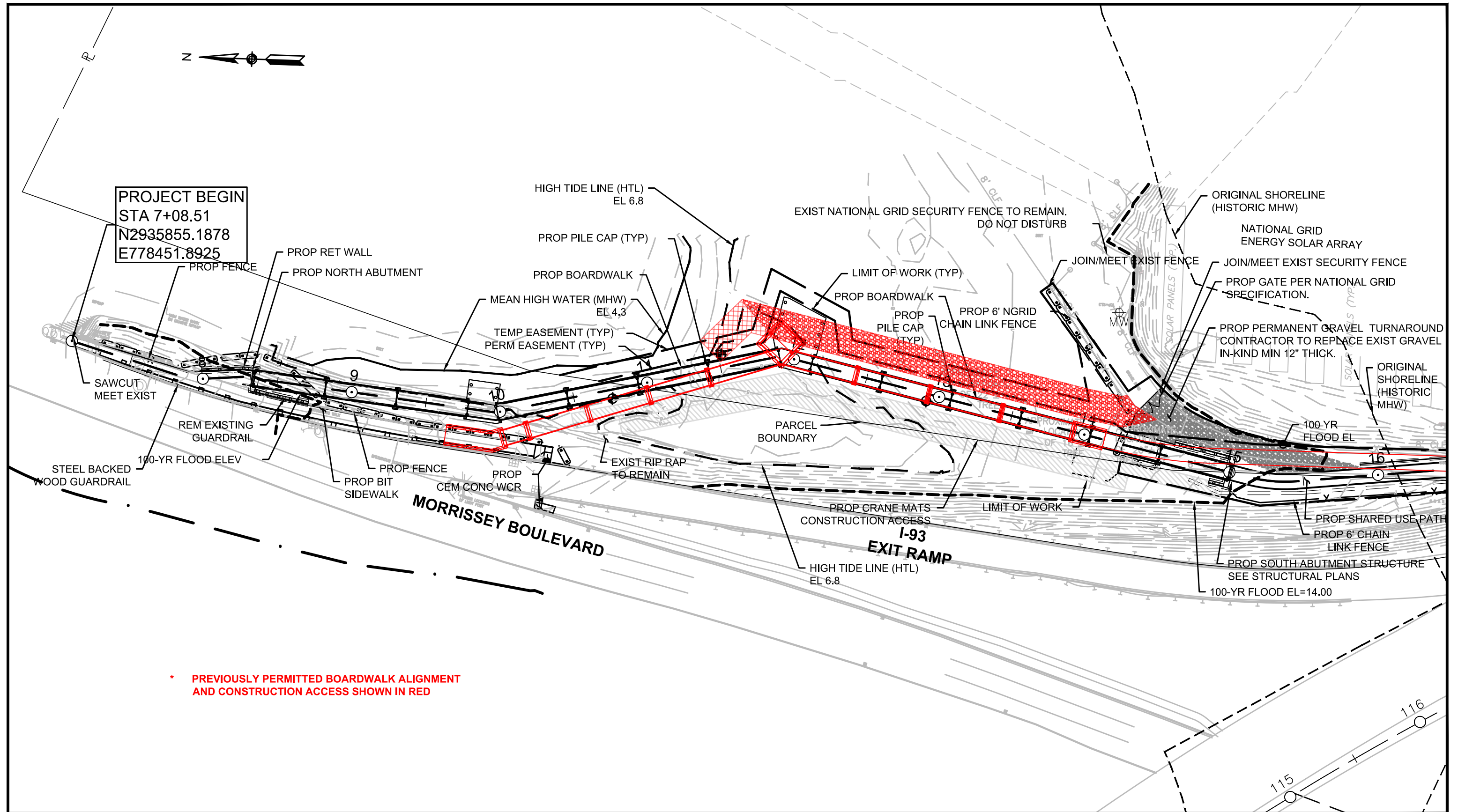
This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

0 250 500 1,000 1,500 2,000 Feet 1:6,000

USGS The National Map: Orthoimagery, Data refreshed April, 2019.

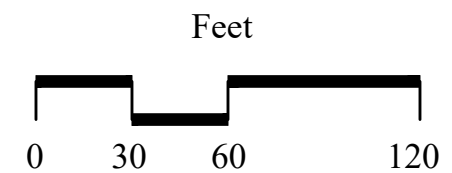
42°17'28.04"N

71°22'26.09"W



\* PREVIOUSLY PERMITTED BOARDWALK ALIGNMENT AND CONSTRUCTION ACCESS SHOWN IN RED

Proposed Design vs. Previously Permitted Layout  
 Neponset River Greenway  
 Department of Conservation & Recreation







# Attachment C

Neponset River Greenway: Tenean Beach to Morrissey Blvd.  
Boston, Massachusetts  
Notice of Intent

SITE PHOTOGRAPHS





**Photo #1:** Overview of the salt marsh, beach/tidal flat and coastal bank in the location of the proposed elevated boardwalk in Dorchester Bay. The Morrissey Blvd Beades Bridge is seen in the distance. *Facing northwest.*



**Photo #2:** View facing south along the exit ramp from the Southeast expressway to Morrissey Blvd. The existing curb cut and pedestrian crossing is seen in the foreground. *Facing south.*





**Photo #3:** View of Dorchester Bay from the exit ramp embankment at the overall boardwalk location. Large debris caught in the sandbar which will be removed as part of the project mitigation to enhance salt marsh and to improve the trail experience. *Facing northeast.*



**Photo #4:** View towards the National Grid energy facility and LNG storage tank from the exit ramp embankment, in the area of the proposed boardwalk. *Facing southeast.*





**Image #5:** A rendered view of the proposed boardwalk as it runs parallel to the exit ramp over the coastal resources and joins Morrissey Blvd. *Facing north.*



**Photo #6:** View of the eastern embankment of I-93 in the location of the proposed multi-use trail, at the interface of Victory Road with the National Grid property. *Facing north.*



**Photo #7:** View of Victory Rd from the intersection with Freeport Street, looking east. A new road cross section/realignment is proposed here. *Facing east.*





**Photo #8:** View of the western embankment of I-93 from Victory Road. The southern section of the multi-use path is proposed parallel to the expressway in LSCSF. *Facing south*



**Photo #9:** Additional view of conditions along the western embankment of the expressway, in the vicinity of the proposed pathway. *Facing north*





**Photo #10:** View of the manhole and location of the vault for the existing 54” tide gate, located along the pathway footprint and owned by DCR. *Facing west.*



**Photo #11:** View into the open vault of the 54” tide gate. Vault repair and two new drain lines are proposed.





**Photo #12:** View of an existing stormwater catch basin and catchment area in the vicinity of the proposed path. A *Phragmites* stand is present but hydric soil was not encountered.



**Photo #13:** View of the proposed pathway location along the western embankment of the expressway, as seen from Conley Street and in LSCSF. *Facing north*





**Photo #14:** View of the expressway overpass crossing Conley Street. A new roadway cross section is proposed in this area to accommodate the trail and improve connectivity in LSCSF. *Facing generally east.*



**Photo #15:** View of Conley Street as it connects to Tenean Beach and the southern terminus of the Project. *Facing southeast*





**Photo #16:** View of Victory Road Park which will be more easily accessible to trail users as a result of the proposed project. Parking improvements are proposed in the existing lot in LSCSF and buffer zone to Coastal Bank. *Facing north.*



**Photo #17:** Final overview of the Neponset River and confluence with Dorchester Bay from Tenean Beach. The embankment to I-93 is seen to the west. *Facing north*



# Attachment D

Neponset River Greenway: Tenean Beach to Morrissey Blvd.  
Boston, Massachusetts  
Notice of Intent

LIST OF ABUTTERS  
ABUTTER NOTIFICATION LETTER  
AFFIDAVIT OF SERVICE





**NOTIFICATION TO ABUTTERS  
BOSTON CONSERVATION COMMISSION**

In accordance with the Massachusetts Wetlands Protection Act, Massachusetts General Laws Chapter 131, Section 40, and the Boston Wetlands Ordinance, you are hereby notified as an abutter to a project filed with the Boston Conservation Commission.

A. **The Massachusetts Department of Conservation and Recreation (DCR)** has filed a Notice of Intent with the Boston Conservation Commission seeking permission to alter an Area Subject to Protection under the Wetlands Protection Act (General Laws Chapter 131, section 40) and Boston Wetlands Ordinance.

B. The address of the lot where the activity is proposed is **Morrissey Blvd, Victory Rd. & Conley St.**

C. The project involves **the extension of the Neponset River Greenway multi-use trail from Tenean Beach to Morrissey Blvd. and connectivity improvements at Victory Rd, Conley St. and Victory Road Park.**

D. Copies of the Notice of Intent may be obtained by contacting the Boston Conservation Commission at [CC@boston.gov](mailto:CC@boston.gov).

E. Copies of the Notice of Intent may be obtained from **Diana Walden, BSC Group 617-896-4529** between the hours of **9 AM to 5 PM, Monday through Friday.**

F. In accordance with the Commonwealth of Massachusetts Executive Order Suspending Certain Provisions of the Open Meeting Law, the public hearing will take place **virtually** at <https://zoom.us/j/6864582044>. If you are unable to access the internet, you can call

1-929-205-6099, enter Meeting ID 686 458 2044 # and use # as your participant ID.

G. Information regarding the date and time of the public hearing may be obtained from the **Boston Conservation Commission** by emailing [CC@boston.gov](mailto:CC@boston.gov) or calling **(617) 635-3850** between the hours of **9 AM to 5 PM, Monday through Friday.**

NOTE: Notice of the public hearing, including its date, time, and place, will be published at least five (5) days in advance in the **Boston Herald**.

NOTE: Notice of the public hearing, including its date, time, and place, will be posted on [www.boston.gov/public-notices](http://www.boston.gov/public-notices) and in Boston City Hall not less than forty-eight (48) hours in advance.

NOTE: If you would like to provide comments, you may attend the public hearing or send written comments to [CC@boston.gov](mailto:CC@boston.gov) or Boston City Hall, Environment Department, Room 709, 1 City Hall Square, Boston, MA 02201

NOTE: You also may contact the Boston Conservation Commission or the Department of Environmental Protection Northeast Regional Office for more information about this application or the Wetlands Protection Act. To contact DEP, call: the Northeast Region: (978) 694-3200.







**AFFIDAVIT OF SERVICE  
FOR ABUTTER NOTIFICATION**

**Under the Massachusetts Wetlands Protection Act  
and Boston Wetlands Ordinance**

I, \_\_\_\_\_, hereby certify under pains and penalties of perjury that that at least one week prior to the public hearing, I gave notice to abutters in compliance with the second paragraph of Massachusetts General Laws Chapter 131, section 40, and the DEP Guide to Abutter Notification dated April 8, 1994, in connection with the following matter:

A \_\_\_\_\_ was filed under the Massachusetts Wetlands Protection Act and/or the Boston Wetlands Ordinance by \_\_\_\_\_ for \_\_\_\_\_ located at \_\_\_\_\_.

The Abutter Notification For, the list of abutters to whom it was given, and their addresses are attached to this Affidavit of Service.

\_\_\_\_\_  
Name

\_\_\_\_\_  
Date

# LANGUAGE BANK



INTERPRETATION  
SERVICES

E-mail: [info@thelanguagebank.org](mailto:info@thelanguagebank.org) [www.thelanguagebank.org](http://www.thelanguagebank.org)  
Phone: (774) 243-3022; Fax: 508-519-5625

STATE OF NEW HAMPSHIRE

COUNTY OF HILLSBOROUGH

To Whom It May Concern:

The attached document was translated by a Language Bank translator.

The attached translation was translated from the annexed document into English and we hereby confirm that the same is a true and complete translation.

**Smeraldina Becirovic**  
Recruitment and Business Development Specialist  
Language Bank

Subscribed and sworn before me this 2nd day of July 2021, at Manchester,  
New Hampshire. My commission expires: *April 21, 2026*

*Patricia M. Grebert*, Notary Public





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**NOTIFICACIÓN PARA VECINOS COLINDANTES  
COMISIÓN DE CONSERVACIÓN DE BOSTON**

De conformidad con la Ley de Protección de los Humedales de Massachusetts, capítulo 131, sección 40 de las Leyes Generales de Massachusetts y la Ordenanza sobre los Humedales de Boston, por la presente queda usted notificado como vecino colindante de un proyecto presentado ante la Comisión de Conservación de Boston.

A. El **Departamento de Conservación y Recreación de Massachusetts (DCR)** ha presentado una Notificación de intención ante la Comisión de Conservación de Boston pidiendo permiso para modificar una zona sujeta a protección en virtud de la Ley de Protección de los Humedales (Leyes Generales, capítulo 131, sección 40) y la Ordenanza sobre los Humedales de Boston.

B. La dirección del lote donde se propone la actividad es **Morrissey Blvd, Victory Rd. y Conley St.**

C. El proyecto consiste en la **ampliación del sendero multiuso Neponset River Greenway desde Tenean Beach hasta Morrissey Blvd.** y mejoras en la conectividad en **Victory Rd, Conley St. y Victory Road Park.**

D. Se pueden obtener copias de la Notificación de intención comunicándose con la Comisión de Conservación de Boston a [CC@boston.gov](mailto:CC@boston.gov).

E. Se pueden obtener copias de la Notificación de intención contactando a **Diana Walden, BSC Group**, al **617-896-4529** entre las **9 a. m. y las 5 p. m., de lunes a viernes.**

F. De conformidad con la Orden Ejecutiva de la Mancomunidad de Massachusetts que suspende ciertas disposiciones de la Ley de Reuniones Abiertas, la audiencia pública se celebrará **virtualmente** en <https://zoom.us/j/6864582044>. Si no puede acceder a internet, puede llamar al **1-929-205-6099**, ingresar el ID de la reunión **686 458 2044 #** y usar **#** como su ID de participante.

G. La información relativa a la fecha y hora de la audiencia pública puede solicitarse a la **Comisión de Conservación de Boston** por correo electrónico a [CC@boston.gov](mailto:CC@boston.gov) o llamando al **(617) 635-3850** entre las **9 a. m. y las 5 p. m., de lunes a viernes.**

**AVISO:** la notificación de la audiencia pública, incluida la fecha, la hora y el lugar, se publicará en el **Boston Herald** con al menos cinco (cinco) días de antelación.

**AVISO:** la notificación de la audiencia pública, incluida la fecha, la hora y el lugar, se publicará en [www.boston.gov/public-notice](http://www.boston.gov/public-notice) y en el Ayuntamiento de Boston con no menos de cuarenta y ocho (48) horas de antelación.

**AVISO:** si desea formular comentarios, puede asistir a la audiencia pública o enviarlos por escrito a [CC@boston.gov](mailto:CC@boston.gov) o al Ayuntamiento de Boston a: Boston City Hall, Environment Department, Room 709, 1 City Hall Square, Boston, MA 02201

**AVISO:** también puede comunicarse con la Comisión de Conservación de Boston o con la Oficina Regional del Noreste del Departamento de Protección Ambiental para obtener más información sobre esta solicitud o la Ley de Protección de Humedales. Para comunicarse con el Departamento de Protección Ambiental (DEP), llame a la Región Noreste: (978) 694-3200.



**NOTIFICACIÓN PARA VECINOS COLINDANTES  
COMISIÓN DE CONSERVACIÓN DE BOSTON**

De conformidad con la Ley de Protección de los Humedales de Massachusetts, capítulo 131, sección 40 de las Leyes Generales de Massachusetts y la Ordenanza sobre los Humedales de Boston, por la presente queda usted notificado como vecino colindante de un proyecto presentado ante la Comisión de Conservación de Boston.

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B. La dirección del lote donde se propone la actividad es **Morrissey Blvd, Victory Rd. y Conley St.**

C. El proyecto consiste en **la ampliación del sendero multiuso Neponset River Greenway** desde Tenean Beach hasta Morrissey Blvd. y mejoras en la conectividad en Victory Rd, Conley St. y Victory Road Park.

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E. Se pueden obtener copias de la Notificación de intención contactando a **Diana Walden, BSC Group**, al 617-896-4529 entre las 9 a. m. y las 5 p. m., de lunes a viernes.

F. **De conformidad con la Orden Ejecutiva de la Mancomunidad de Massachusetts** que suspende ciertas disposiciones de la Ley de Reuniones Abiertas, la audiencia pública se celebrará **virtualmente** en <https://zoom.us/j/6864582044>. Si no puede acceder a internet, puede llamar al 1-929-205-6099, ingresar el ID de la reunión 686 458 2044 # y usar # como su ID de participante.

G. La información relativa a la fecha y hora de la audiencia pública puede solicitarse a la **Comisión de Conservación de Boston** por correo electrónico a [CC@boston.gov](mailto:CC@boston.gov) o llamando al (617) 635-3850 entre las 9 a. m. y las 5 p. m., de lunes a viernes.

AVISO: la notificación de la audiencia pública, incluida la fecha, la hora y el lugar, se publicará en el **Boston Herald** con al menos cinco (cinco) días de antelación.

AVISO: la notificación de la audiencia pública, incluida la fecha, la hora y el lugar, se publicará en [www.boston.gov/public-notice](http://www.boston.gov/public-notice) y en el Ayuntamiento de Boston con no menos de cuarenta y ocho (48) horas de antelación.

AVISO: si desea formular comentarios, puede asistir a la audiencia pública o enviarlos por escrito a [CC@boston.gov](mailto:CC@boston.gov) o al Ayuntamiento de Boston a: Boston City Hall, Environment Department, Room 709, 1 City Hall Square, Boston, MA 02201

AVISO: también puede comunicarse con la Comisión de Conservación de Boston o con la Oficina Regional del Noreste del Departamento de Protección Ambiental para obtener más información sobre esta solicitud o la Ley de Protección de Humedales. Para comunicarse con el Departamento de Protección Ambiental (DEP), llame a la Región Noreste: (978) 694-3200.





PID	OWNER	ADDRESSEE	MLG_ADDRESS	MLG_CITYSTATE	MLG_ZIPCODE	LOC_ADDRESS	LOC_CITY	LOC_ZIPCODE
1600002000	COMMWLTH OF MASS	COMMWLTH OF MASS	WM T MORRISSEY BLVD	DORCHESTER MA	02122	WM T MORRISSEY BL	DORCHESTER	02122
1600003000	CITY OF BOSTON	CITY OF BOSTON	100 FEDERAL	BOSTON MA	02110	FREEPORT ST	DORCHESTER	02122
1600004000	CITY OF BOSTON BY FCL	CITY OF BOSTON BY FCL	FREEPORT ST	DORCHESTER MA	02122	FREEPORT ST	DORCHESTER	02122
1600189000	LE NHUT MINH	LE NHUT MINH	325 FREEPORT ST	DORCHESTER MA	02122	325 327 FREEPORT ST	DORCHESTER	02122
1600190000	FROMM WALTER F JR	FROMM WALTER F JR	329 FREEPORT ST	DORCHESTER MA	02122	329 331 FREEPORT ST	DORCHESTER	02122
1600191000	FREEPORT REALTY II LLC	FREEPORT REALTY II LLC	337 FREEPORT ST	DORCHESTER MA	02122	333 FREEPORT ST	DORCHESTER	02122
1600192000	CHAU HA K	CHAU HA K	7 EVERDEAN ST	DORCHESTER MA	02122	7 EVERDEAN ST	DORCHESTER	02122
1600193000	MEDINA HERNANE	MEDINA HERNANE	11 EVERDEAN ST	DORCHESTER MA	02122	11 EVERDEAN ST	DORCHESTER	02122
1600194000	SALAS FRANCISCO	SALAS FRANCISCO	15 EVERDEAN	DORCHESTER MA	02122	15 EVERDEAN ST	DORCHESTER	02122
1600210000	CONNOLLY THOMAS F JR	CONNOLLY THOMAS F JR	20 EVERDEAN ST	DORCHESTER MA	02122	20 EVERDEAN ST	BOSTON	02122
1600211000	DO LAM K	DO LAM K	16 EVERDEAN ST	DORCHESTER MA	02122	16 EVERDEAN ST	BOSTON	02122
1600212000	LABORERS LOCAL UNION 223	LABORERS LOCAL UNION 223	12A EVERDEAN	DORCHESTER MA	02122	12A EVERDEAN ST	BOSTON	02122
1600212010	12 EVERDEAN STREET	12 EVERDEAN STREET	12 EVERDEAN ST	DORCHESTER MA	02122	12 EVERDEAN ST	DORCHESTER	02122
1600212012	WASH ALLISON	WASH ALLISON	12 EVERDEAN ST #1	DORCHESTER MA	02122	12 EVERDEAN ST #1	DORCHESTER	02122
1600212014	STANGARONE JESSICA	STANGARONE JESSICA	12 EVERDEAN ST #2	DORCHESTER MA	02122	12 EVERDEAN ST #2	DORCHESTER	02122
1600213000	DANG TAI V	DANG TAI V	8 EVERDEAN ST	DORCHESTER MA	02122	8 EVERDEAN ST	BOSTON	02122
1600214000	FREEPORT REALTY LLC	FREEPORT REALTY LLC	337 FREEPORT ST	DORCHESTER MA	02122	4 EVERDEAN ST	BOSTON	02122
1600215000	RASO CHARLES TS	RASO CHARLES TS	339 FREEPORT ST	DORCHESTER MA	02122	339 341 FREEPORT ST	BOSTON	02122
1600216000	RASO CHARLES TS	RASO CHARLES TS	645 MORRISSEY BLVD	BOSTON MA	02122	343 343H FREEPORT ST	DORCHESTER	02122
1600217000	RASO CHARLES TS	RASO CHARLES TS	645 MORRISSEY BLVD	BOSTON MA	02122	345 347 FREEPORT ST	BOSTON	02122
1600218000	RASO CHARLES TS	RASO CHARLES TS	645 WM T MORRISSEY BLVD	DORCHESTER MA	02122	645 WM T MORRISSEY BL	BOSTON	02122
1600218025	RASO CHARLES TS	RASO CHARLES TS	645 WM T MORRISSEY BLVD	DORCHESTER MA	02122	WM T MORRISSEY BL	DORCHESTER	02122
1600219000	COLBEA ENTERPRISES LLC	COLBEA ENTERPRISES LLC	2050 PLAINFIELD PIKE	CRANSTON RI	02921	655 WM T MORRISSEY BL	DORCHESTER	02122
1600220000	COMMONWLTH OF MASS	COMMONWLTH OF MASS	FREEPORT ST	DORCHESTER MA	02122	FREEPORT ST	BOSTON	02122
1600222000	EXPRESSWAY MOTORS LLC	EXPRESSWAY MOTORS LLC	700 MORRISSEY BLVD	DORCHESTER MA	02122	650 700 WM T MORRISSEY B	DORCHESTER	02122
1600225000	COMMONWLTH OF MASS	COMMONWLTH OF MASS	FREEPORT	DORCHESTER MA	02122	FREEPORT ST	DORCHESTER	02122
1600226000	COMM OF MASS MDC	COMM OF MASS MDC	201 VICTORY RD	DORCHESTER MA	02122	201 VICTORY RD	DORCHESTER	02122
1600227000	CITY OF BOSTON	CITY OF BOSTON	229 VICTORY RD	DORCHESTER MA	02122	229 VICTORY RD	DORCHESTER	02122
1600228000	OLD COLONY YACHT CLUB THE	OLD COLONY YACHT CLUB THE	235 VICTORY RD	DORCHESTER MA	02122	235 VICTORY RD	DORCHESTER	02122
1600230000	NATIONAL GRID ENERGY SERVICE	NATIONAL GRID ENERGY SERVICE	40 SYLVAN RD	WALTHAM MA	02451	238 220 VICTORY RD	DORCHESTER	02122
1600231000	COMM OF MASS DPW	COMM OF MASS DPW	VICTORY RD	DORCHESTER MA	02122	VICTORY RD	DORCHESTER	02122
1600232000	COMMWLTH OF MASS	COMMWLTH OF MASS	FREEPORT	DORCHESTER MA	02122	FREEPORT ST	DORCHESTER	02122
1600251000	COMMWLTH OF MASS	COMMWLTH OF MASS	WM T MORRISSEY BLVD	DORCHESTER MA	02122	WM T MORRISSEY BL	DORCHESTER	02122
1600251001	BLOOM HENRY	BLOOM HENRY	47 EASTERN BLVD	GLASTONBURY CT	06033	710 720 WM T MORRISSEY B	DORCHESTER	02122
1600251002	SEVEN-ELEVEN INC	SEVEN-ELEVEN INC	PO BOX 711	DALLAS TX	75221	730 WM T MORRISSEY BL	DORCHESTER	02122
1600252000	CITY OF BOSTON	CITY OF BOSTON	FREEPORT	DORCHESTER MA	02122	FREEPORT ST	DORCHESTER	02122
1600252001	COMMWLTH OF MASS	COMMWLTH OF MASS	FREEPORT	DORCHESTER MA	02122	FREEPORT ST	DORCHESTER	02122
1602407010	THIRTY ONE-39 NORWOOD ST LLC	THIRTY ONE-39 NORWOOD ST LLC	277 HUMPHREY ST	SWAMPSCOTT MA	01907	31 39 NORWOOD ST	DORCHESTER	02122
1602410015	THIRTY ONE-39 NORWOOD ST LLC	THIRTY ONE-39 NORWOOD ST LLC	277 HUMPHREY ST	SWAMPSCOTT MA	01907	NORWOOD ST	DORCHESTER	02122
1602410020	THIRTY ONE-39 NORWOOD ST LLC	THIRTY ONE-39 NORWOOD ST LLC	277 HUMPHREY ST	SWAMPSCOTT MA	01907	19 - 39 NORWOOD ST	DORCHESTER	02122
1602411000	GNAZZO JANE S	GNAZZO JANE S	169 COMMONWEALTH AV	BOSTON MA	02116	NORWOOD ST	DORCHESTER	02122
1602411001	3 NORWOOD STREET LLC	3 NORWOOD STREET LLC	51 SAXON RD	WESTWOOD MA	02090	3 NORWOOD ST	DORCHESTER	02122
1602412000	COMMWLTH OF MASS	COMMWLTH OF MASS	TOLMAN	DORCHESTER MA	02122	TOLMAN ST	DORCHESTER	02122
1602413000	GNAZZO JANE S	GNAZZO JANE S	169 COMMONWEALTH AV	BOSTON MA	02116	1030 WM T MORRISSEY BL	DORCHESTER	02122
1602416000	COMMWLTH OF MASS	COMMWLTH OF MASS	WM T MORRISSEY BLVD	DORCHESTER MA	02122	WM T MORRISSEY BL	DORCHESTER	02122
1602417000	COMMWLTH OF MASS	COMMWLTH OF MASS	WM T MORRISSEY BLVD	DORCHESTER MA	02122	WM T MORRISSEY BL	DORCHESTER	02122
1602559000	35 TENEAN STREET LLC	35 TENEAN STREET LLC	35 TENEAN STREET	DORCHESTER MA	02122	TENEAN ST	DORCHESTER	02122
1602559001	FREEMAN PROPERTIES LLC	FREEMAN PROPERTIES LLC	65 TENEAN ST	DORCHESTER MA	02122	65 TENEAN ST	DORCHESTER	02122
1602560000	FREEMAN ESTELLE	FREEMAN ESTELLE	65 TENEAN	DORCHESTER MA	02122	TENEAN ST	DORCHESTER	02122

1602560001	WILLIAM KELLY SQUARE LLC	WILLIAM KELLY SQUARE LLC	103 CLAYTON ST	DORCHESTER MA	02122	69 TENEAN ST	DORCHESTER	02122
1602561000	MASS BAY TRANSPN AUTHOR	MASS BAY TRANSPN AUTHOR	TENEAN	DORCHESTER MA	02122	TENEAN ST	DORCHESTER	02122
1602561100	BRONSKI KEVIN	BRONSKI KEVIN	262 EAST ST	DEDHAM MA	02026	TENEAN ST	DORCHESTER	02122
1602562000	COMMWLTH OF MASS	COMMWLTH OF MASS	TENEAN	DORCHESTER MA	02122	TENEAN ST	DORCHESTER	02122
1602563000	MASSACHUSETTS BAY TRANSIT	MASSACHUSETTS BAY TRANSIT	TENEAN	DORCHESTER MA	02122	TENEAN ST	DORCHESTER	02122
1602563003	OUTFRONT MEDIA LLC (LESSEE)	OUTFRONT MEDIA LLC (LESSEE)	405 LEXINGTON AVE	NEW YORK NY	10174	TENEAN ST	DORCHESTER	02122
1602566000	COMMWLTH OF MASS	COMMWLTH OF MASS	TENEAN	DORCHESTER MA	02122	TENEAN ST	BOSTON	02122
1602566001	COMMONWEALTH OF MASS	COMMONWEALTH OF MASS	TENEAN	DORCHESTER MA	02122	TENEAN ST	BOSTON	02122
1602567000	COMMONWEALTH OF MASS	COMMONWEALTH OF MASS	170 TENEAN	DORCHESTER MA	02122	170 162 TENEAN ST	BOSTON	02122
1602568000	COMMWLTH OF MASS	COMMWLTH OF MASS	TENEAN	DORCHESTER MA	02122	TENEAN ST	DORCHESTER	02122
1602568001	COMMONWEALTH OF MASS	COMMONWEALTH OF MASS	CONLEY	DORCHESTER MA	02122	CONLEY ST	BOSTON	02122
1602569000	COMMONWEALTH OF MA	COMMONWEALTH OF MA	TENEAN	DORCHESTER MA	02122	TENEAN ST	DORCHESTER	02122
1602569001	COMMONWEALTH OF MASS	COMMONWEALTH OF MASS	CONLEY	DORCHESTER MA	02122	CONLEY ST	DORCHESTER	02122
1602570000	KCON REALTY TRUST	KCON REALTY TRUST	15 BANTON ST	DORCHESTER MA	02124	TENEAN ST	DORCHESTER	02122
1602571000	JAGIELLO WALTRAUD TS	JAGIELLO WALTRAUD TS	100 TENEAN ST	DORCHESTER MA	02122	90 102 TENEAN ST	DORCHESTER	02122
1602575010	EIGHTY TENEAN LLC	EIGHTY TENEAN LLC	74 LAWLEY ST	DORCHESTER MA	02122	84 84R TENEAN ST	DORCHESTER	02122
1602578000	COMMONWEALTH OF MASS	COMMONWEALTH OF MASS	74 LAWLEY ST	DORCHESTER MA	02122	TENEAN ST	DORCHESTER	02122
1602578002	COMMWLTH OF MASS	COMMWLTH OF MASS	TENEAN	DORCHESTER MA	02122	TENEAN ST	DORCHESTER	02122
1602580000	TENEAN PROPERTIES LLC	TENEAN PROPERTIES LLC	74 LAWLEY ST	DORCHESTER MA	02122	60 TENEAN ST	DORCHESTER	02125
1602582000	SAMMARTINO JOSEPH A SR TS	SAMMARTINO JOSEPH A SR TS	820 WM T MORRISSEY BLVD	DORCHESTER MA	02122	820 WM T MORRISSEY BL	DORCHESTER	02125
1602585000	STRAZZULA MATTHEW J TRSTS	STRAZZULA MATTHEW J TRSTS	818 WM T MORRISEY	DORCHESTER MA	02122	818 WM T MORRISSEY BL	DORCHESTER	02125
1602586000	STRAZZULA PHILIP A III TS	STRAZZULA PHILIP A III TS	820 WM T MORRISSEY BLVD	DORCHESTER MA	02122	WM T MORRISSEY BL	DORCHESTER	02125
1602587000	STRAZZULA MATTHEW J ETAL	STRAZZULA MATTHEW J ETAL	818 WM T MORRISSEY BLVD	DORCHESTER MA	02122	WM T MORRISSEY BL	DORCHESTER	02125
1602588000	STRAZZULA MATTHEW J TRSTS	STRAZZULA MATTHEW J TRSTS	800 W T MORRISSEY BLVD	DORCHESTER MA	02122	800 WM T MORRISSEY BL	DORCHESTER	02125
1602589000	STRAZZULA MATTHEW J	STRAZZULA MATTHEW J	780 WM T MORRISSEY BLVD	DORCHESTER MA	02122	WM T MORRISSEY BL	DORCHESTER	02125
1602590001	COMMWLTH OF MASS	COMMWLTH OF MASS	MORRISSEY BLVD	DORCHESTER MA	02122	WM T MORRISSEY BL	DORCHESTER	02125
1602590010	STRAZZULA PHILLIP A JR TS	STRAZZULA PHILLIP A JR TS	780 MORRISSEY BLVD	DORCHESTER MA	02122	FREEPORT ST	DORCHESTER	02122
1602591000	STRAZZULA MATTHEW J	STRAZZULA MATTHEW J	780 WM T MORRISSEY BLVD	DORCHESTER MA	02122	780 WM T MORRISSEY BL	DORCHESTER	02125
1602592000	STRAZZULA MATTHEW J	STRAZZULA MATTHEW J	780 WM T MORRISSEY BLVD	DORCHESTER MA	02122	FREEPORT ST	DORCHESTER	02125
1602592000	STRAZZULA MATTHEW J	STRAZZULA MATTHEW J	780 WM T MORRISSEY BLVD	DORCHESTER MA	02122	FREEPORT ST	DORCHESTER	02125
1602617010	CPC ERICSSON STREET LLC	CPC ERICSSON STREET LLC	546 EAST BROADWAY	BOSTON MA	02127	8 R ERICSSON ST	BOSTON	02122

12 EVERDEAN STREET  
12 EVERDEAN ST  
DORCHESTER MA 02122

HENRY BLOOM  
47 EASTERN BLVD  
GLASTONBURY CT 06033

CITY OF BOSTON  
1 CITY HALL SQ, RM 601  
BOSTON MA 02201-2014

MASS DCR  
251 CAUSEWAY STREET 9TH FLOOR  
BOSTON, MA 02114

TAI V DANG  
8 EVERDEAN ST  
DORCHESTER MA 02122

EXPRESSWAY MOTORS LLC  
700 MORRISSEY BLVD  
DORCHESTER MA 02122

WALTER F FROMM JR  
329 FREEPORT ST  
DORCHESTER MA 02122

KCON REALTY TRUST  
15 BANTON ST  
DORCHESTER MA 02124

MBTA OFFICE OF REAL ESTATE  
20 Park Plaza, Suite 1120  
BOSTON MA 02116

THE OLD COLONY YACHT CLUB  
235 VICTORY RD  
DORCHESTER MA 02122

3 NORWOOD STREET LLC  
51 SAXON RD  
WESTWOOD MA 02090

KEVIN BRONSKI  
262 EAST ST  
DEDHAM MA 02026

COLBEA ENTERPRISES LLC  
2050 PLAINFIELD PIKE  
CRANSTON RI 02921

THOMAS F CONNOLLY JR  
20 EVERDEAN ST  
DORCHESTER MA 02122

LAM K DO  
16 EVERDEAN ST  
DORCHESTER MA 02122

FREEMAN PROPERTIES LLC  
65 TENEAN ST  
DORCHESTER MA 02122

JANE S GNAZZO  
169 COMMONWEALTH AV  
BOSTON MA 02116

LABORERS LOCAL UNION 223  
12A EVERDEAN  
DORCHESTER MA 02122

HERNANE MEDINA  
11 EVERDEAN ST  
DORCHESTER MA 02122

OUTFRONT MEDIA LLC (LESSEE)  
405 LEXINGTON AVE  
NEW YORK NY 10174

35 TENEAN STREET LLC  
35 TENEAN STREET  
DORCHESTER MA 02122

HA K CHAU  
7 EVERDEAN ST  
DORCHESTER MA 02122

MASSDOT  
PUBLIC/PRIVATE DEVELOPMENT UNIT  
10 PARK PLAZA  
BOSTON MA 02116

CPC ERICSSON STREET LLC  
546 EAST BROADWAY  
BOSTON MA 02127

EIGHTY TENEAN LLC  
74 LAWLEY ST  
DORCHESTER MA 02122

FREEPORT REALTY II LLC  
337 FREEPORT ST  
DORCHESTER MA 02122

WALTRAUD JAGIELLO TS  
100 TENEAN ST  
DORCHESTER MA 02122

NHUT MINH LE  
325 FREEPORT ST  
DORCHESTER MA 02122

NATIONAL GRID ENERGY SERVICE  
40 SYLVAN RD  
WALTHAM MA 02451

CHARLES RASO TS  
339 FREEPORT ST  
DORCHESTER MA 02122

CHARLES RASO TS  
645 WM T MORRISSEY BLVD  
DORCHESTER MA 02122

MATTHEW J & PHILLIP A JR STRAZZULA TS  
780 WM T MORRISSEY BLVD  
DORCHESTER MA 02122

JOSEPH A SAMMARTINO SR TS  
820 WM T MORRISSEY BLVD  
DORCHESTER MA 02122

FRANCISCO SALAS  
15 EVERDEAN  
DORCHESTER MA 02122

MATTHEW J STRAZZULA TRSTS  
800 W T MORRISSEY BLVD  
DORCHESTER MA 02122

TENEAN PROPERTIES LLC  
74 LAWLEY ST  
DORCHESTER MA 02122

SEVEN-ELEVEN INC  
PO BOX 711  
DALLAS TX 75221

MATTHEW J STRAZZULA TRSTS  
818 WM T MORRISSEY BLVD  
DORCHESTER MA 02122

THIRTY ONE-39 NORWOOD ST LLC  
277 HUMPHREY ST  
SWAMPSCOTT, MA 01907

JESSICA STANGARONE  
12 EVERDEAN ST #2  
DORCHESTER MA 02122

PHILIP A STRAZZULA III TS  
820 WM T MORRISSEY BLVD  
DORCHESTER MA 02122

ALLISON WALSH  
12 EVERDEAN ST #1  
DORCHESTER MA 02122

WILLIAM KELLY SQUARE LLC  
103 CLAYTON ST  
DORCHESTER MA 02122

# Attachment E

Neponset River Greenway: Tenean Beach to Morrissey Blvd.  
Boston, Massachusetts  
Notice of Intent

STORMWATER MANAGEMENT CHECKLIST  
STORMWATER MANAGEMENT REPORT  
ATTACHED SEPARATELY





# Attachment F

Neponset River Greenway: Tenean Beach to Morrissey Blvd.  
Boston, Massachusetts  
Notice of Intent

PROJECT PLANS



# Attachment G

Neponset River Greenway: Tenean Beach to Morrissey Blvd.  
Boston, Massachusetts  
Notice of Intent

PREVIOUS PERMIT (OOC #006-1443)







**Massachusetts Department of Environmental Protection**  
 Bureau of Resource Protection - Wetlands  
**WPA Form 5 - Order of Conditions**  
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:  
 MassDEP File #:006-1443  
 eDEP Transaction #:781916  
 City/Town:BOSTON

**A. General Information**

1. Conservation Commission BOSTON

2. Issuance a.  OOC b.  Amended OOC

3. Applicant Details

a. First Name	MATTHEW	b. Last Name	SISK
c. Organization	MASSACHUSETTS DCR		
d. Mailing Address	251 CAUSEWAY STREET, SUITE 900		
e. City/Town	BOSTON	f. State	MA
		g. Zip Code	02114

4. Property Owner

a. First Name		b. Last Name	
c. Organization	MASS DOT HIGHWAY/ NATIONAL GRID PROP TAX DEPT		
d. Mailing Address	10 PARK PLAZA, SUITE 4160/ 40 SYLVAN RD		
e. City/Town	BOSTON/ WALTHAM	f. State	MA
		g. Zip Code	02116/0245

5. Project Location

a. Street Address	238 VICTORY ROAD - NEPONSET RIVER GREENWAY		
b. City/Town	BOSTON	c. Zip Code	02122
d. Assessors Map/Plat#	1600230000/1600231000/1600232000		
f. Latitude	42.30256N	e. Parcel/Lot#	00000000
		g. Longitude	71.04781W

6. Property recorded at the Registry of Deed for:

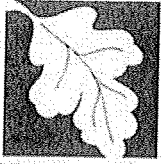
a. County	b. Certificate	c. Book	d. Page
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7. Dates

a. Date NOI Filed:	9/3/2015	b. Date Public Hearing Closed:	9/30/2015	c. Date Of Issuance:	10/21/2015
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8. Final Approved Plans and Other Documents

a. Plan Title:	b. Plan Prepared by:	c. Plan Signed/Stamped by:	d. Revised Final Date:	e. Scale:
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NEPONSET RIVER GREENWAY SEGMENT 3 MORRISSEY BOULEVARD TO VICTORY ROAD (SECTION A) NOTES AND ABBREVIATIONS G-1 TOPOGRAPHIC PLAN OF LAND NEPONSET RIVER GREENWAY, BOSTON, MA EX-1, EX-2, EX-3 AND EX-4	SIMPSON GUMPERTZ & HEGER	AARON R. LEWIS	09/02/2015	NONE
NEPONSET RIVER GREENWAY SEGMENT 3- MORRISSEY BOULEVARD TO VICTORY ROAD (SECTION A) CIVIL LOCUS AND KEY PLAN C-0	NITSCH ENGINEERING	JAMIE G. GAYTON	06/01/2015	1"=20'
NEPONSET RIVER GREENWAY SEGMENT 3- MORRISSEY BOULEVARD TO VICTORY ROAD (SECTION A) CIVIL LOCUS AND KEY PLAN C-0	SIMPSON GUMPERTZ & HEGER	AARON R. LEWIS	09/02/2015	1"=60'
NEPONSET RIVER GREENWAY SEGMENT 3- MORRISSEY BOULEVARD TO VICTORY ROAD (SECTION A) PHASING PLAN C- 1	SIMPSON GUMPERTZ & HEGER	AARON R. LEWIS	09/02/2015	1"=50'
NEPONSET RIVER GREENWAY SEGMENT 3- MORRISSEY BOULEVARD TO VICTORY ROAD (SECTION A) DEMO & SITE PREP PLAN SHEET 1 & 2 C-2 & C-3	SIMPSON GUMPERTZ & HEGER	AARON R. LEWIS	09/02/2015	1"=20'



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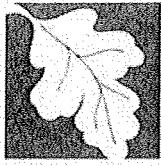
NEPONSET RIVER GREENWAY SEGMENT 3- MORRISSEY BOULEVARD TO VICTORY ROAD (SECTION A) SITE PLAN SHEET 1 & 2 C-4 & C-5	SIMPSON GUMPERTZ & HEGER	AARON R. LEWIS	09/02/2015	1"=20'
NEPONSET RIVER GREENWAY SEGMENT 3- MORRISSEY BOULEVARD TO VICTORY ROAD (SECTION A) GRADING PLAN & PROFILE SHEET 1, 2, 3 C-8, C-9 AND C-10	SIMPSON GUMPERTZ & HEGER	AARON R. LEWIS	09/02/2015	VARIES
NEPONSET RIVER GREENWAY SEGMENT 3- MORRISSEY BOULEVARD TO VICTORY ROAD (SECTION A) SECTIONS SHEET 1 & 2 C-20 & C-21	SIMPSON GUMPERTZ & HEGER	AARON R. LEWIS	09/02/2015	1"=10'
NEPONSET RIVER GREENWAY SEGMENT 3- MORRISSEY BOULEVARD TO VICTORY ROAD (SECTION A) E&S DETAILS C-30	SIMPSON GUMPERTZ & HEGER	AARON R. LEWIS	09/02/2015	AS NOTED
NEPONSET RIVER GREENWAY SEGMENT 3- MORRISSEY BOULEVARD TO VICTORY ROAD (SECTION A) GRADING DETAILS C-31	SIMPSON GUMPERTZ & HEGER	AARON R. LEWIS	09/02/2015	AS NOTED



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NEPONSET RIVER GREENWAY SEGMENT 3- MORRISSEY BOULEVARD TO VICTORY ROAD (SECTION A) LANDSCAPE KEY PLAN L-1	SIMPSON GUMPERTZ & HEGER	ROBERT E. WEIDKNECHT	09/02/2015	AS NOTED
NEPONSET RIVER GREENWAY SEGMENT 3- MORRISSEY BOULEVARD TO VICTORY ROAD (SECTION A) LANDSCAPE PLAN L-2, L-3, L-4	SIMPSON GUMPERTZ & HEGER	ROBERT E. WEIDKNECHT	09/02/2015	AS NOTED
NEPONSET RIVER GREENWAY SEGMENT 3- MORRISSEY BOULEVARD TO VICTORY ROAD (SECTION A) LANDSCAPE DETAILS L-6	SIMPSON GUMPERTZ & HEGER	ROBERT E. WEIDKNECHT	09/02/2015	AS NOTED
NEPONSET RIVER GREENWAY SEGMENT 3- MORRISSEY BOULEVARD TO VICTORY ROAD (SECTION A) STRUCTURAL LOCUS PLAN AND NOTES S-1, S-2	SIMPSON GUMPERTZ & HEGER	GREGORY R. IMBARO	09/02/2015	AS NOTED
NEPONSET RIVER GREENWAY SEGMENT 3- MORRISSEY BOULEVARD TO VICTORY ROAD (SECTION A) BORING LOGS S-3	SIMPSON GUMPERTZ & HEGER	GREGORY R. IMBARO	09/02/2015	AS NOTED

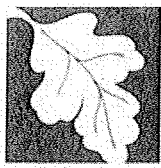


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NEPONSET RIVER GREENWAY SEGMENT 3- MORRISSEY BOULEVARD TO VICTORY ROAD (SECTION A) FOUNDATION PLAN S-4	SIMPSON GUMPERTZ & HEGER	GREGORY R. IMBARO	09/02/2015	AS NOTED
NEPONSET RIVER GREENWAY SEGMENT 3- MORRISSEY BOULEVARD TO VICTORY ROAD (SECTION A) PLAN AND ELEVATION SHEET 1& 2 S-5, S-6	SIMPSON GUMPERTZ & HEGER	GREGORY R. IMBARO	09/02/2015	AS NOTED
NEPONSET RIVER GREENWAY SEGMENT 3- MORRISSEY BOULEVARD TO VICTORY ROAD (SECTION A) ABUTMENT DETAILS SHEET 1 & 2 S-7, AND S-8	SIMPSON GUMPERTZ & HEGER	GREGORY R. IMBARO	09/02/2015	AS NOTED
NEPONSET RIVER GREENWAY SEGMENT 3- MORRISSEY BOULEVARD TO VICTORY ROAD (SECTION A) TYPICAL SECTIONS S-9	SIMPSON GUMPERTZ & HEGER	GREGORY R. IMBARO	09/02/2015	AS NOTED
NEPONSET RIVER GREENWAY SEGMENT 3- MORRISSEY BOULEVARD TO VICTORY ROAD (SECTION A) FOUNDATION DETAILS S-10	SIMPSON GUMPERTZ & HEGER	GREGORY R. IMBARO	09/02/2015	AS NOTED





**Massachusetts Department of Environmental Protection**  
 Bureau of Resource Protection - Wetlands  
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NEPONSET RIVER  
 GREENWAY  
 SEGMENT 3-  
 MORRISSEY  
 BOULEVARD TO  
 VICTORY ROAD  
 (SECTION A) PIER  
 DETAILS S-11

SIMPSON GUMPERTZ & HEGER GREGORY R. IMBARO 09/02/2015 AS NOTED

**B. Findings**

1. Findings pursuant to the Massachusetts Wetlands Protection Act

Following the review of the the above-referenced Notice of Intent and based on the information provided in this application and presented at the public hearing, this Commission finds that the areas in which work is proposed is significant to the following interests of the Wetlands Protection Act.

Check all that apply:

- |   |  |   |
|---|--|---|
| a. <input checked="" type="checkbox"/> Public Water Supply  | b. <input checked="" type="checkbox"/> Land Containing Shellfish | c. <input checked="" type="checkbox"/> Prevention of Pollution        |
| d. <input checked="" type="checkbox"/> Private Water Supply | e. <input checked="" type="checkbox"/> Fisheries                 | f. <input checked="" type="checkbox"/> Protection of Wildlife Habitat |
| g. <input type="checkbox"/> Ground Water Supply             | h. <input checked="" type="checkbox"/> Storm Damage Prevention   | i. <input checked="" type="checkbox"/> Flood Control                  |

2. Commission hereby finds the project, as proposed, is:

Approved subject to:

- a.  The following conditions which are necessary in accordance with the performance standards set forth in the wetlands regulations. This Commission orders that all work shall be performed in accordance with the Notice of Intent referenced above, the following General Conditions, and any other special conditions attached to this Order. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, these conditions shall control.

Denied because:

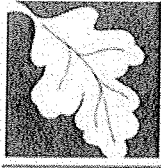
- b.  The proposed work cannot be conditioned to meet the performance standards set forth in the wetland regulations. Therefore, work on this project may not go forward unless and until a new Notice of Intent is submitted which provides measures which are adequate to protect interests of the Act, and a final Order of Conditions is issued. **A description of the performance standards which the proposed work cannot meet is attached to this Order.**
- c.  The information submitted by the applicant is not sufficient to describe the site, the work or the effect of the work on the interests identified in the Wetlands Protection Act. Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides sufficient information and includes measures which are adequate to protect the interests of the Act, and a final Order of Conditions is issued. **A description of the specific information which is lacking and why it is necessary is attached to this Order as per 310 CMR 10.05(6)(c).**

3.  Buffer Zone Impacts: Shortest distance between limit of project disturbance and the wetland resource area specified in 310CMR10.02(1)(a).

\_\_\_\_\_ a. linear feet

**Inland Resource Area Impacts:(For Approvals Only):**

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
---------------	---------------------	----------------------	----------------------	-----------------------



**Massachusetts Department of Environmental Protection**  
 Bureau of Resource Protection - Wetlands  
**WPA Form 5 - Order of Conditions**  
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:  
 MassDEP File #006-1443  
 eDEP Transaction #:781916  
 City/Town: BOSTON

4. <input type="checkbox"/> Bank	<u>                    </u> a. linear feet	<u>                    </u> b. linear feet	<u>                    </u> c. linear feet	<u>                    </u> d. linear feet
5. <input type="checkbox"/> Bordering Vegetated Wetland	<u>                    </u> a. square feet	<u>                    </u> b. square feet	<u>                    </u> c. square feet	<u>                    </u> d. square feet
6. <input type="checkbox"/> Land under Waterbodies and Waterways	<u>                    </u> a. square feet	<u>                    </u> b. square feet	<u>                    </u> c. square feet	<u>                    </u> d. square feet
	<u>                    </u> e. c/y dredged	<u>                    </u> f. c/y dredged		
7. <input type="checkbox"/> Bordering Land Subject to Flooding	<u>                    </u> a. square feet	<u>                    </u> b. square feet	<u>                    </u> c. square feet	<u>                    </u> d. square feet
Cubic Feet Flood Storage	<u>                    </u> e. cubic feet	<u>                    </u> f. cubic feet	<u>                    </u> g. cubic feet	<u>                    </u> h. cubic feet
8. <input type="checkbox"/> Isolated Land Subject to Flooding	<u>                    </u> a. square feet	<u>                    </u> b. square feet		
Cubic Feet Flood Storage	<u>                    </u> c. cubic feet	<u>                    </u> d. cubic feet	<u>                    </u> e. cubic feet	<u>                    </u> f. cubic feet
9. <input type="checkbox"/> Riverfront Area	<u>                    </u> a. total sq. feet	<u>                    </u> b. total sq. feet		
Sq ft within 100 ft	<u>                    </u> c. square feet	<u>                    </u> d. square feet	<u>                    </u> e. square feet	<u>                    </u> f. square feet
Sq ft between 100-200 ft	<u>                    </u> g. square feet	<u>                    </u> h. square feet	<u>                    </u> i. square feet	<u>                    </u> j. square feet

**Coastal Resource Area Impacts:**

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
10. <input type="checkbox"/> Designated Port Areas	Indicate size under Land Under the Ocean, below			
11. <input type="checkbox"/> Land Under the Ocean	<u>                    </u> a. square feet	<u>                    </u> b. square feet		
	<u>                    </u> c. c/y dredged	<u>                    </u> d. c/y dredged		
12. <input type="checkbox"/> Barrier Beaches	Indicate size under Coastal Beaches and/or Coastal Dunes below			
13. <input type="checkbox"/> Coastal Beaches	<u>                    </u> a. square feet	<u>                    </u> b. square feet	<u>                    </u> c. c/y nourishment	<u>                    </u> d. c/y nourishment
14. <input type="checkbox"/> Coastal Dunes	<u>                    </u> a. square feet	<u>                    </u> b. square feet	<u>                    </u> c. c/y nourishment	<u>                    </u> d. c/y nourishment
15. <input checked="" type="checkbox"/> Coastal Banks	50 <u>                    </u> a. linear feet	50 <u>                    </u> b. linear feet		
16. <input type="checkbox"/> Rocky Intertidal Shores	<u>                    </u>	<u>                    </u>		



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17. <input checked="" type="checkbox"/> Salt Marshes	a. square feet	b. square feet	c. square feet	d. square feet
	3732	3732	10000	10000
18. <input type="checkbox"/> Land Under Salt Ponds	a. square feet	b. square feet		
	c. c/y dredged	d. c/y dredged		
19. <input type="checkbox"/> Land Containing Shellfish	a. square feet	b. square feet	c. square feet	d. square feet
20. <input type="checkbox"/> Fish Runs	Indicate size under Coastal Banks, inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above			
	c. c/y dredged	d. c/y dredged		
21. <input checked="" type="checkbox"/> Land Subject to Coastal Storm Flowage	18423	18423		
	a. square feet	b. square feet		

22.  Restoration/Enhancement (For Approvals Only)

If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.5.c & d or B.17.c & d above, please entered the additional amount here.

a. square feet of BVW \_\_\_\_\_ b. square feet of Salt Marsh \_\_\_\_\_

23.  Streams Crossing(s)

If the project involves Stream Crossings, please enter the number of new stream crossings/number of replacement stream crossings.

a. number of new stream crossings \_\_\_\_\_ b. number of replacement stream crossings \_\_\_\_\_

**C. General Conditions Under Massachusetts Wetlands Protection Act**

The following conditions are only applicable to Approved projects

1. Failure to comply with all conditions stated herein, and with all related statutes and other regulatory measures, shall be deemed cause to revoke or modify this Order.
2. The Order does not grant any property rights or any exclusive privileges; it does not authorize any injury to private property or invasion of private rights.
3. This Order does not relieve the permittee or any other person of the necessity of complying with all other applicable federal, state, or local statutes, ordinances, bylaws, or regulations.
4. The work authorized hereunder shall be completed within three years from the date of this Order unless either of the following apply:
  - a. the work is a maintenance dredging project as provided for in the Act; or
  - b. the time for completion has been extended to a specified date more than three years, but less than five years, from the date of issuance. If this Order is intended to be valid for more than three years, the extension date and the special circumstances warranting the extended time period are set forth as a special condition in this Order.
5. This Order may be extended by the issuing authority for one or more periods of up to three years each upon application to the



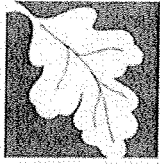
Massachusetts Department of Environmental Protection  
Bureau of Resource Protection - Wetlands  
**WPA Form 5 - Order of Conditions**  
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:  
MassDEP File #006-1443  
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- issuing authority at least 30 days prior to the expiration date of the Order.
6. If this Order constitutes an Amended Order of Conditions, this Amended Order of Conditions does not exceed the issuance date of the original Final Order of Conditions.
  7. Any fill used in connection with this project shall be clean fill. Any fill shall contain no trash, refuse, rubbish, or debris, including but not limited to lumber, bricks, plaster, wire, lath, paper, cardboard, pipe, tires, ashes, refrigerators, motor vehicles, or parts of any of the foregoing.
  8. This Order is not final until all administrative appeal periods from this Order have elapsed, or if such an appeal has been taken, until all proceedings before the Department have been completed.
  9. No work shall be undertaken until the Order has become final and then has been recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land upon which the proposed work is to be done. In the case of the registered land, the Final Order shall also be noted on the Land Court Certificate of Title of the owner of the land upon which the proposed work is done. The recording information shall be submitted to the Conservation Commission on the form at the end of this Order, which form must be stamped by the Registry of Deeds, prior to the commencement of work.
  10. A sign shall be displayed at the site not less than two square feet or more than three square feet in size bearing the words,  
"Massachusetts Department of Environmental Protection"  
[or "MassDEP"]  
File Number "006-1443"
  11. Where the Department of Environmental Protection is requested to issue a Superseding Order, the Conservation Commission shall be a party to all agency proceedings and hearings before Mass DEP.
  12. Upon completion of the work described herein, the applicant shall submit a Request for Certificate of Compliance (WPA Form 8A) to the Conservation Commission.
  13. The work shall conform to the plans and special conditions referenced in this order.
  14. Any change to the plans identified in Condition #13 above shall require the applicant to inquire of the Conservation Commission in writing whether the change is significant enough to require the filing of a new Notice of Intent.
  15. The Agent or members of the Conservation Commission and the Department of Environmental Protection shall have the right to enter and inspect the area subject to this Order at reasonable hours to evaluate compliance with the conditions stated in this Order, and may require the submittal of any data deemed necessary by the Conservation Commission or Department for that evaluation.
  16. This Order of Conditions shall apply to any successor in interest or successor in control of the property subject to this Order and to any contractor or other person performing work conditioned by this Order.
  17. Prior to the start of work, and if the project involves work adjacent to a Bordering Vegetated Wetland, the boundary of the wetland in the vicinity of the proposed work area shall be marked by wooden stakes or flagging. Once in place, the wetland boundary markers shall be maintained until a Certificate of Compliance has been issued by the Conservation Commission.
  18. All sedimentation barriers shall be maintained in good repair until all disturbed areas have been fully stabilized with vegetation or other means. At no time shall sediments be deposited in a wetland or water body. During construction, the applicant or his/her designee shall inspect the erosion controls on a daily basis and shall remove accumulated sediments as needed. The applicant shall immediately control any erosion problems that occur at the site and shall also immediately notify the Conservation Commission, which reserves the right to require additional erosion and/or damage prevention controls it may deem necessary. Sedimentation barriers shall serve as the limit of work unless another limit of work line has been approved by this Order.

**NOTICE OF STORMWATER CONTROL AND MAINTENANCE REQUIREMENTS**

19. The work associated with this Order (the "Project") is (1)  is not (2)  subject to the Massachusetts Stormwater Standards. If the work is subject to Stormwater Standards, then the project is subject to the following conditions:
  - a) All work, including site preparation, land disturbance, construction and redevelopment, shall be implemented in accordance with the construction period pollution prevention and erosion and sedimentation control plan and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollutant Discharge Elimination System Construction General

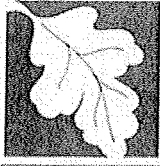


Massachusetts Department of Environmental Protection  
Bureau of Resource Protection - Wetlands  
**WPA Form 5 - Order of Conditions**  
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:  
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City/Town:BOSTON

- Stormwater Pollution Prevention Plan required by the National Pollutant Discharge Elimination System Construction General Permit as required by Stormwater Standard 8. Construction period erosion, sedimentation and pollution control measures and best management practices (BMPs) shall remain in place until the site is fully stabilized.
- b) No stormwater runoff may be discharged to the post-construction stormwater BMPs unless and until a Registered Professional Engineer provides a Certification that: i. all construction period BMPs have been removed or will be removed by a date certain specified in the Certification. For any construction period BMPs intended to be converted to post construction operation for stormwater attenuation, recharge, and/or treatment, the conversion is allowed by the MassDEP Stormwater Handbook BMP specifications and that the BMP has been properly cleaned or prepared for post construction operation, including removal of all construction period sediment trapped in inlet and outlet control structures; ii. as-built final construction BMP plans are included, signed and stamped by a Registered Professional Engineer, certifying the site is fully stabilized; iii. any illicit discharges to the stormwater management system have been removed, as per the requirements of Stormwater Standard 10; iv. all post-construction stormwater BMPs are installed in accordance with the plans (including all planting plans) approved by the issuing authority, and have been inspected to ensure that they are not damaged and that they are in proper working condition; v. any vegetation associated with post-construction BMPs is suitably established to withstand erosion.
  - c) The landowner is responsible for BMP maintenance until the issuing authority is notified that another party has legally assumed responsibility for BMP maintenance. Prior to requesting a Certificate of Compliance, or Partial Certificate of Compliance, the responsible party (defined in General Condition 19(e)) shall execute and submit to the issuing authority an Operation and Maintenance Compliance Statement ("O&M Statement") for the Stormwater BMPs identifying the party responsible for implementing the stormwater BMP Operation and Maintenance Plan ("O&M Plan") and certifying the following: i.) the O&M Plan is complete and will be implemented upon receipt of the Certificate of Compliance, and ii.) the future responsible parties shall be notified in writing of their ongoing legal responsibility to operate and maintain the stormwater management BMPs and implement the Stormwater Pollution Prevention Plan.
  - d) Post-construction pollution prevention and source control shall be implemented in accordance with the long-term pollution prevention plan section of the approved Stormwater Report and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollutant Discharge Elimination System Multi-Sector General Permit.
  - e) Unless and until another party accepts responsibility, the landowner, or owner of any drainage easement, assumes responsibility for maintaining each BMP. To overcome this presumption, the landowner of the property must submit to the issuing authority a legally binding agreement of record, acceptable to the issuing authority, evidencing that another entity has accepted responsibility for maintaining the BMP, and that the proposed responsible party shall be treated as a permittee for purposes of implementing the requirements of Conditions 19(f) through 19(k) with respect to that BMP. Any failure of the proposed responsible party to implement the requirements of Conditions 19(f) through 19(k) with respect to that BMP shall be a violation of the Order of Conditions or Certificate of Compliance. In the case of stormwater BMPs that are serving more than one lot, the legally binding agreement shall also identify the lots that will be serviced by the stormwater BMPs. A plan and easement deed that grants the responsible party access to perform the required operation and maintenance must be submitted along with the legally binding agreement.
  - f) The responsible party shall operate and maintain all stormwater BMPs in accordance with the design plans, the O&M Plan, and the requirements of the Massachusetts Stormwater Handbook.
  - g) The responsible party shall:
    1. Maintain an operation and maintenance log for the last three (3) consecutive calendar years of inspections, repairs, maintenance and/or replacement of the stormwater management system or any part thereof, and disposal (for disposal the log shall indicate the type of material and the disposal location);
    2. Make the maintenance log available to MassDEP and the Conservation Commission ("Commission") upon request; and
    3. Allow members and agents of the MassDEP and the Commission to enter and inspect the site to evaluate and ensure that the responsible party is in compliance with the requirements for each BMP established in the O&M Plan approved by the issuing authority.
  - h) All sediment or other contaminants removed from stormwater BMPs shall be disposed of in accordance with all applicable federal, state, and local laws and regulations.
  - i) Illicit discharges to the stormwater management system as defined in 310 CMR 10.04 are prohibited.





- j) The stormwater management system approved in the Order of Conditions shall not be changed without the prior written approval of the issuing authority.
- k) Areas designated as qualifying pervious areas for the purpose of the Low Impact Site Design Credit (as defined in the MassDEP Stormwater Handbook, Volume 3, Chapter 1, Low Impact Development Site Design Credits) shall not be altered without the prior written approval of the issuing authority.
- l) Access for maintenance, repair, and/or replacement of BMPs shall not be withheld. Any fencing constructed around stormwater BMPs shall include access gates and shall be at least six inches above grade to allow for wildlife passage.

**Special Conditions:**

**D. Findings Under Municipal Wetlands Bylaw or Ordinance**

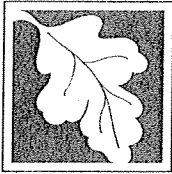
1. Is a municipal wetlands bylaw or ordinance applicable?  Yes  No
2. The Conservation Commission hereby(check one that applies):
  - a.  DENIES the proposed work which cannot be conditioned to meet the standards set forth in a municipal ordinance or bylaw specifically.
 

1. Municipal Ordinance or Bylaw _____	2. Citation _____
---------------------------------------	-------------------

Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides measures which are adequate to meet these standards, and a final Order or Conditions is issued. Which are necessary to comply with a municipal ordinance or bylaw:
  - b.  APPROVES the proposed work, subject to the following additional conditions.
 

1. Municipal Ordinance or Bylaw _____	2. Citation _____
---------------------------------------	-------------------
3. The Commission orders that all work shall be performed in accordance with the following conditions and with the Notice of Intent referenced above. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, the conditions shall control.

The special conditions relating to municipal ordinance or bylaw are as follows:



Massachusetts Department of Environmental Protection  
Bureau of Resource Protection - Wetlands

**WPA Form 5 – Order of Conditions**

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

006-1443

MassDEP File #

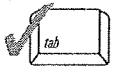
eDEP Transaction #

Boston

City/Town

**E. Signatures**

**Important:** When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



This Order is valid for three years, unless otherwise specified as a special condition pursuant to General Conditions #4, from the date of issuance.

Please indicate the number of members who will sign this form.

This Order must be signed by a majority of the Conservation Commission.

The Order must be mailed by certified mail (return receipt requested) or hand delivered to the applicant. A copy must be mailed, hand delivered or filed electronically at the same time with the appropriate MassDEP Regional Office.

October 10 2015

1. Date of Issuance

4

2. Number of Signers

Signatures:

[Handwritten Signature]  
[Handwritten Signature]  
[Handwritten Signature]

[Handwritten Signature]

by hand delivery on

Date

by certified mail, return receipt requested, on

October 10 2015

Date

**F. Appeals**

The applicant, the owner, any person aggrieved by this Order, any owner of land abutting the land subject to this Order, or any ten residents of the city or town in which such land is located, are hereby notified of their right to request the appropriate MassDEP Regional Office to issue a Superseding Order of Conditions. The request must be made by certified mail or hand delivery to the Department, with the appropriate filing fee and a completed Request for Departmental Action Fee Transmittal Form, as provided in 310 CMR 10.03(7) within ten business days from the date of issuance of this Order. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant.

Any appellants seeking to appeal the Department's Superseding Order associated with this appeal will be required to demonstrate prior participation in the review of this project. Previous participation in the permit proceeding means the submission of written information to the Conservation Commission prior to the close of the public hearing, requesting a Superseding Order, or providing written information to the Department prior to issuance of a Superseding Order.

The request shall state clearly and concisely the objections to the Order which is being appealed and how the Order does not contribute to the protection of the interests identified in the Massachusetts Wetlands Protection Act (M.G.L. c. 131, § 40), and is inconsistent with the wetlands regulations (310 CMR 10.00). To the extent that the Order is based on a municipal ordinance or bylaw, and not on the Massachusetts Wetlands Protection Act or regulations, the Department has no appellate jurisdiction.



### G. Recording Information

This Order of Conditions must be recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land subject to the Order. In the case of registered land, this Order shall also be noted on the Land Court Certificate of Title of the owner of the land subject to the Order of Conditions. The recording information on this page shall be submitted to the Conservation Commission listed below.

BOSTON  
 Conservation Commission

Detach on dotted line, have stamped by the Registry of Deeds and submit to the Conservation Commission.

To:  
BOSTON  
 Conservation Commission

Please be advised that the Order of Conditions for the Project at:

238 VICTORY ROAD - NEPONSET RIVER GREENWAY  
 Project Location

006-1443  
 MassDEP File Number

Has been recorded at the Registry of Deeds of:

County	Book	Page
--------	------	------

for:  
Property Owner

and has been noted in the chain of title of the affected property in:

Book	Page
------	------

In accordance with the Order of Conditions issued on:

Date

If recorded land, the instrument number identifying this transaction is:

Instrument Number

If registered land, the document number identifying this transaction is:

Document Number

Signature of Applicant

September 30 BCC PUBLIC HEARING  
Attachment – Special Conditions

Massachusetts Department of Conservation and Recreation, Neponset River Greenway Segment 3, 238 Victory Road, Dorchester Bay (Coastal Banks, saltmarshes, LSCSF)

DEP File No. 006-1443

20. The term "Applicant" as used in this Order of Conditions refers to the owner, any successor in interest or successor in control of the property referenced in the Notice of Intent, supporting documents and this Order of Conditions. The Commission must be notified in writing within 30 days of all transfers of title of any portion of property that take place prior to the issuance of the Certificate of Compliance.
21. The property that is the subject of this Order and upon which the project is located will be referred hereinafter as "the subject property" or the "project site".
22. A member of the Conservation Commission or its agent may enter and inspect the property and the activities that are the subjects of this Order of Conditions (OOC) at all reasonable times, with or without probable cause or prior notice, and until a Certificate of Compliance (COC) is issued, for the limited purpose of evaluating compliance with this OOC.
23. The Applicant is hereby instructed to review such conditions with all contractors and workers involved in on site operations prior to the commencement of construction on this project. Any contractors and workers arriving after construction commences must also be apprised of these conditions.
24. The Applicant must attach a copy of this Final Order of Conditions (hereinafter "the Order") to the contract documents associated with this project.
25. The Commission reserves the right to impose additional conditions or require the submittal of additional information as necessary to protect the interests of the Act.
26. If at any time during the implementation of the project a fish kill or significant water quality problem occurs in the vicinity of the project, all site related activities impacting the water must cease until the source of the problem is identified and adequate mitigating measures employed to the satisfaction of the Boston Conservation Commission (hereinafter "the Commission").
27. Where relevant, all facilities and equipment will be continually operated and maintained so as to comply with the conditions and the Massachusetts Wetlands Protection Act (hereinafter "the Act"). The Applicant, owner, successor or assigns will be responsible for maintaining all on-site drainage structures and outfalls, assuring the lasting integrity of the surface cover on the site and site activities so as to prevent erosion, siltation, sedimentation, chemical contamination or other detrimental impact to the on-site and/or off-site wetland resource areas. This condition is a **maintenance** condition, and will not expire upon the issuance of a Certificate of Compliance.
28. A copy of the Order, including all referenced documents and plans, and all other subsequent approvals and directives issued by the Commission, must be available for inspection at the work area.
29. All project generated discharges, including stormwater, authorized by a NPDES permit, will be subject to the terms of the NPDES permit which is incorporated herein by reference pursuant to 310 CMR 10.03 (4). The Applicant must submit the NPDES permit to the Commission.
30. There may be no discharge or spillage of fuel, oil, or any other pollutant from this project into adjacent wetland resource areas or 100-foot Buffer Zone (hereinafter "buffer zone") associated with those resource areas. Any equipment used in any wetland resource area or buffer zone that uses fuel, oil or hydraulic fluid must be inspected daily for leakage. Any equipment that requires repair must be repaired outside of any wetland resource area or buffer zone. Any equipment that uses fuel, oil and/or hydraulic fluid must be staffed at all times while operational within wetland resource areas or buffer zone. Equipment must not be re-fueled within any wetland resource areas.
31. The Applicant and/or their contractor will develop a spill management plan for any hazardous materials that may be employed during work in the buffer zone or over the water. Specifically, the Applicant should prepare to effectively deal with spillage of fuel or hydraulic fluids from equipment. A quick-absorbent material, such as "Speedy Dry" or equivalent, must be stored in a dry readily available area at the work site, and on any project related vessels, for use in the event petroleum-based fluids are spilled or leaked. The contractor must have an oil sorbent boom at the project site

## September 30 BCC PUBLIC HEARING

## Attachment – Special Conditions

Massachusetts Department of Conservation and Recreation, Neponset River Greenway Segment 3, 238 Victory Road, Dorchester Bay (Coastal Banks, saltmarshes, LSCSF)

**DEP File No. 006-1443**

and deploy the boom immediately upon observing any petroleum sheen on the watersheet. The spent material should be containerized and disposed of properly.

32. The Applicant must inform the Commission of any violation of this Order and any other project related spill or accident that may impact wetland resource areas as soon as possible and at least by the end of the business day, and must take appropriate action to mitigate impacts from such spill or accident. The Applicant or site supervisor must notify the City of any emergency by calling Commission staff at 617-635-3850 from 9:00 AM - 5:00 PM, Monday - Friday and, at all other times, by calling the Mayor's Office's 24-hour Hotline at 617-635-4500. On the date of the issuance of this Order, the appropriate contact is Charlotte Moffat, Executive Secretary: [cc@boston.gov](mailto:cc@boston.gov)
33. Anti-degradation provisions of the Massachusetts Surface Water Quality Standards protect all waters including wetlands. The contractor must take all steps necessary to assure that the proposed activities will be conducted in a manner which will avoid violations of said standards.
34. Any mitigation measures required by federal, state, or other local agencies that may impact wetlands resource areas must be submitted to Commission staff for review to determine what level of permitting or authorization will be necessary.
35. All project related correspondence and submittals to the Boston Conservation Commission regarding this Final Order must indicate the DEP File number: 006-1443.

#### Prior To Construction

36. Prior to construction start up, the Applicant must submit final plans stamped by a registered professional engineer to Commission staff. Commission staff will determine if there have been significant revisions made to the plans referenced in this Order that may require further Commission review.
37. In advance of construction start-up on any section of this project, the Applicant must notify the Commission and, at the request of the Commission, may arrange an on-site conference of representatives of the Commission, the contractor, the project engineer and the Applicant to ensure that all the conditions of this Order are understood. The Commission must be notified at least 48 hours in advance of the date upon which construction activities on the site are to proceed. All appropriate construction impact mitigation measures must be in place prior to initiation of work on the project site.
38. The Applicant and/or their contractor must provide to the Commission written notification of the name, title, address and telephone numbers of the person or persons designated by the project proponent to be responsible for compliance with the Order on site. An emergency telephone number must be provided in the event that action is required during non-working hours.
39. The project supervisor overseeing daily operations at the site must read this Order and sign a copy of each page, indicating that each condition has been read and understood. These signed pages must be submitted to Commission staff.
40. Before work at this site commences, the Applicant or their contractor must submit a final erosion and sediment control plan for review and approval by Commission staff. Final plans showing the points of discharge, wheel wash stations, sedimentation tanks and basins, oil separating equipment and other engineering structures should be provided to the Commission with a certified engineer's stamp and signature. To satisfy this condition the Applicant may submit a Storm Water Pollution Prevention Plan (SWPPP) required under the NPDES Construction General Permit for Storm Water Discharges for Construction Activities. The approved plan will be a condition of this Order by reference herein.
41. Prior to the commencement of construction and site clearing, an erosion and sediment control barrier must be installed along the limit of activity between all work areas and wetland resource areas. Hay bales or straw bales should be double staked (where possible) with bales butted against each other. If straw wattles or filter sox are used, they should be anchored in place. If specified, geotextile siltation fence should be installed no further than twelve (12) inches from the down-gradient side of



## September 30 BCC PUBLIC HEARING

## Attachment – Special Conditions

Massachusetts Department of Conservation and Recreation, Neponset River Greenway Segment 3, 238 Victory Road, Dorchester Bay (Coastal Banks, saltmarshes, LSCSF)

**DEP File No. 006-1443**

the barrier. These barriers must be inspected daily and after significant rain events (greater than 0.5 inches of precipitation) and maintained as necessary, including the removal of accumulated sediments. The contractor will ensure that additional erosion and sediment control materials are available for immediate installation to replace those that are damaged or degraded. Erosion control measures should be removed upon completion of work and after disturbed areas are stabilized. The geotextile fence will constitute a limit-of-work line, beyond which no work or clearing of vegetation may occur.

42. The contractor must submit a construction materials and equipment staging plan 30 days prior to construction for Commission staff review and approval. Project related staging areas will be subject to all conditions herein. Staging areas located outside the project footprint, as indicated on the approved project plan of record, and within wetland resource areas and the buffer zone may be subject to further Commission review.
43. Before construction commences, the Applicant must submit to Commission staff evidence of notification of this proposed project to the Boston Parks and Recreation Commission, to determine if the city ordinance requiring review and approval by the Park Commission of projects within 100 feet of any park within the City of Boston applies to this proposed project.
44. The Applicant must submit a construction and post-construction snow management plan for Commission staff review and approval. Snow from landside areas may not be plowed or otherwise deposited into the waters of Dorchester Bay or adjacent coastal beaches or banks. Ploughed snow must be stockpiled on paved surfaces that direct melted snow water to catch basins. Deicing material and sand must be stored and contained in areas that will not allow for their migration into wetland resource areas. Prior to April 1<sup>st</sup>, all sand and salt from winter application must be removed from the site. The approved snow management plan will be a perpetual maintenance condition that will not expire upon issuance of a Certificate of Compliance.

#### During Construction

45. The Applicant, owner, successor or assigns must regularly remove and dispose of debris on all wetland resources areas on the project site. This is a perpetual **maintenance** condition that will not expire upon issuance of a Certificate of Compliance.
46. The Applicant must maintain the project site free of trash and debris during any down time or hiatus in the project during the term of this Order.
47. The Applicant and/or their contractor must clean the work area at the end of each workday to prevent wind deposition of fugitive dust and accumulation of debris in the buffer zone or wetland resource areas. All stored excavate or fill must be contained with appropriate best management practices when not in use. Special attention should be given by the contractor to securing covers on stored excavate, fill, dumpsters and roll-off containers over the weekend or during down time.
48. Except when necessary for final fitting or precision cutting and during demolition, no timber or construction materials may be cut within the buffer zone. All sawdust and debris must be collected and disposed of properly. Wood treated with creosote or cuprinol may not be placed in the waters of the Dorchester Bay.
49. Disposal of all construction materials, demolition debris and excess fill must be done in accordance with applicable federal, state, and local laws. Proof of proper disposal must be provided in the form of copies of bills of lading, disposal receipts or manifests to Commission staff upon request.
50. Trucks entering and leaving the site must have their loads completely covered in compliance with M.G.L. Chapter 85 § 36. Vehicles that accumulate soil or any unconsolidated material on their tires due to exposed ground conditions at the site must be thoroughly washed to avoid tracking of material onto the public way.
51. Excavation equipment may access the inter-tidal area only during periods of low tide and utilize rubber-tired vehicles.

## September 30 BCC PUBLIC HEARING

## Attachment – Special Conditions

Massachusetts Department of Conservation and Recreation, Neponset River Greenway Segment 3, 238 Victory Road, Dorchester Bay (Coastal Banks, saltmarshes. LSCSF)

**DEP File No. 006-1443**

52. There may be no parking of contractor or laborer vehicles in any resource area or associated buffer zone without proper stormwater controls or best management practices installed.
53. Construction activity will be confined within the limits of work as represented on the final plan of record. There may be no staging of construction materials, storage of construction equipment, clearing or disturbance to land beyond the limit of work.
54. There may be no overnight stockpiling or storage of construction material including unconsolidated material, piles, debris, petroleum products or hydraulic fluids (or equipment containing these products or fluids) within the buffer zone, 25 feet of the coastal bank, or the 100-year flood plain. Erosion and sediment control containment measures must be installed and maintained between wetland resource areas and any stored construction materials or staged construction equipment. Under no circumstances may the project contractor store, stage or locate unconsolidated material or construction equipment not directly associated with the project and subject site within resource areas or the buffer zone. At the request of the Applicant, Commission staff may authorize construction lay-down areas within the buffer zone for storage of equipment *during the construction period only*.
55. All land-side areas disturbed during construction must be stabilized as soon as possible upon completion of construction. Loaming and seeding should occur within (5 - 30) days of final grading. Disturbed resource areas landward of the high water line and buffer zone mark should be secured by a biodegradable erosion control mats while vegetation establishes. Barren areas should be stabilized with a temporary cover of rye or other grass if work on the project is interrupted for more than 30 days. If the season is not appropriate for plant growth, then exposed surfaces may be stabilized by straw, snow fence, or other U.S. Natural Resources Conservation Service - recommended methods. The Applicant or their contractor will ensure a mature cover of vegetation is established on previously disturbed or exposed areas.
56. The contractor will conduct construction sequencing such that areas cleared of ground vegetation and earth materials are exposed for a minimum of time before they are covered, seeded, or otherwise stabilized to prevent erosion.
57. There may be no dumping of leaves, grass clippings, brush, fill or other debris into wetland resource areas. This condition is perpetual and will not expire upon issuance of a certificate of compliance.
58. All equipment and unconsolidated materials must be removed from Special Flood Hazard Areas) in advance of significant rainfall that will exceed the volume of a 2-year storm event.
59. All equipment and unconsolidated materials must be removed from the buffer zone and Land Subject to Coastal Storm Flowage (Special Flood Hazard Areas)) in advance of any forecasted coastal flooding event.

## Additional Conditions

60. Exterior trash receptacles must be secured to the ground and must be covered or designed to prevent pollution of adjacent resource areas by vandalism or wind-blown litter. Trash receptacles will be emptied daily from Memorial Day to Columbus Day, and at least weekly during all other months. This is a perpetual maintenance condition that will not expire upon issuance of a Certificate of Compliance.
61. In the interest of prevention of pollution and storm damage prevention, the Applicant should give consideration to future sea level rise over the design life of the project in determining the elevation of the pathway.
62. The useful life of storm water management infrastructure places currently conceived systems well within the time period when climate change impacts will manifest. The applicant must demonstrate how the project has been prepared for forecasted changes to rainfall intensity and watershed runoff.
63. *Boston Harbor, Fort Point Channel, Dorchester Bay (& Chelsea Creek as LUWW)*: The Land Under Ocean in the project area underlies an anadromous fish run and provides important spawning habitat for the winter flounder. Unless otherwise allowed by the Massachusetts Division of Marine Fisheries

September 30 BCC PUBLIC HEARING  
Attachment – Special Conditions

Massachusetts Department of Conservation and Recreation, Neponset River Greenway Segment 3, 238 Victory Road, Dorchester Bay (Coastal Banks, saltmarshes, LSCSF)  
**DEP File No. 006-1443**

pursuant to M.G.L. c. 130 § 19, water-based construction activity that will directly disturb sediments on the harbor bottom, i.e. pile driving or extraction or dredging, is prohibited in the fish run between February 15<sup>th</sup> and June 30<sup>th</sup> in any year in which the Final Order of Conditions for this project is valid.

64. Disturbed wetland resource areas should be replaced with wetland soils, re-graded to pre-project elevations and contours, and re-planted with native wetland species. Disturbed buffer zone areas should be replanted with native salt tolerant vegetation. This is a perpetual maintenance condition.
65. Construction of a structure in an A-Zone Special Flood Hazard Area and the placement of appurtenant facilities must be in compliance with the provisions of the state Board of Building Regulations and Standards' Design Requirements for Construction in Floodplains (780 CMR 3107). Prior to construction above the foundation an elevation certificate, as required by 780 CMR 3107 must be submitted to the Commission.
66. Native saltmarsh vegetation should be cut out of the area where the piles are being located, and placed in other areas of the marsh to ensure they are not destroyed.
67. The Applicant should complete the work in the winter where possible when the plants are dormant and there will be less damage to the saltmarsh.
68. Interpretive signage at an appropriate location along the segment will be put in place that will provide information on the ecological dynamics of the wetland systems.
69. Work within the salt marsh should be done during low tide events.

***Project Description from NOI:***

The Applicant proposes to construct an approximately 1,400 foot-long multi-use pathway (the "Project") located in the Squantum Point area of Boston (see Figures 1 and 2). The pathway begins at Victory Road in Dorchester and extending northward across the Boston Gas Company, d/b/a Boston Gas ("Boston Gas") liquefied gas ("LNG") storage facility property and Massachusetts Department of Transportation ("MassDOT") roadway right-of way, where it will connect with the existing sidewalk on Morrissey Boulevard. The proposed pathway is an extension of DCR's existing Neponset River Greenway trail system. The current defined portion of the Neponset River Greenway ends at the existing multi-use path in the Port Norfolk neighborhood at Taylor Street. From Taylor Street to Tenean Beach users of the Greenway follow signage directing them along existing city streets – there is no defined pathway along this stretch other than the existing sidewalks. DCR's long term plan proposes to connect the Greenway from Tenean Beach to the HarborWalk located approximately 1.5 miles to the north on the campus of UMass Boston. Currently in order to reach the HarborWalk one must navigate several difficult routes, none of which provides safe access to the HarborWalk. The Project described herein proposes to address a portion of this "missing link" (i.e., "Segment A") by constructing approximately 1,400 linear feet of new multi-use pathway across the areas noted above to reach the sidewalk on Morrissey Boulevard



3938/Neponset/Extension

**PRINCIPALS**

September 5, 2018

Theodore A Barten, PE  
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Maria B. Hartnett

Boston Conservation Commission  
Room 709  
Boston City Hall  
Boston, MA 02201

**Subject: DEP File No 006-1443 Order of Conditions Extension Request Neponset River Greenway Segment 3**

Dear Commissioners:

On behalf of Massachusetts Department of Conservation and Recreation (the "Applicant"), Epsilon Associates, Inc ("Epsilon") is submitting this request for a three-year extension for the above-referenced Order of Conditions in accordance with General Condition 5 of the original Order which currently expires October 21, 2018. Funding is being secured for this Project.

**ASSOCIATES**

The Applicant asks that the Commission consider this request at its next regularly scheduled public hearing and looks forward to presenting the request at that time.

Richard M. Lampeter, INCE  
Geoff Starsiak, LEED AP BD+C  
Marc Bergeron, PWS, CWS

If you have any questions regarding this request, please do not hesitate to contact me at 978.461.6271 or via email at [ajacobs@epsilonassociates.com](mailto:ajacobs@epsilonassociates.com).

Sincerely,

EPSILON ASSOCIATES, INC.

A handwritten signature in blue ink that reads "Alyssa Jacobs".

Alyssa Jacobs, PWS  
Senior Consultant & Manager, Ecological Sciences Group

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Cc: Sean Donlon, SGH, Inc.  
Stella Lensing, DCR

**STORMWATER REPORT**

**NEPONSET RIVER GREENWAY  
TENEAN BEACH TO MORRISSEY BOULEVARD  
BOSTON, MASSACHUSETTS**

June 21, 2021

dcr  
*Massachusetts*



Department of Conservation and Recreation  
251 Causeway Street, 9<sup>th</sup> Floor  
Boston, MA, 02114

BSC Job Number: 89572.01

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Prepared by:

 **BSC GROUP**

803 Summer Street  
Boston, MA 02127





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**SECTION 1.0**

**PROJECT NARRATIVE**





## **1.01 PROJECT DESCRIPTION**

The Department of Conservation and Recreation (DCR), the “Applicant”, is proposing to construct the Tenean Beach to Morrissey Blvd phase of the Neponset River Greenway trail system in Dorchester in the City of Boston, Massachusetts. The proposed asphalt pavement trail is bounded by commercial properties, city streets, a salt marsh, and Interstate 93. The total area of the proposed project is approximately 3.9 acres.

The proposed project will result in impacts to Salt Marsh, Coastal Beach (including Tidal Flats), Coastal Bank, Land Subject to Coastal Storm Flowage (LSCSF), 100-ft Buffer Zone to resource areas, and the locally regulated Waterfront Area and Coastal Flood Resilience Zone (CFRZ). However, most of the project impacts are either temporary in nature (related to the use of construction matting for access during construction of the boardwalk) or will be within previously impacted areas.

The proposed project has been designed to comply with the Massachusetts Wetland Protection Act (310 CMR 10.00) regulations, the Departments of Environmental Protection’s Stormwater Management Standards as well as local standards and By Laws.

## **1.02 PRE-DEVELOPMENT DRAINAGE CONDITIONS**

The existing site topography is comprised of Urban Development and the major transportation corridor of I-93. Uses include the Liquefied Natural Gas Facility and adjacent solar energy generation facility built by the Massachusetts Electric Company, d/b/a National Grid. Car dealerships, hotels, and other commercial development, along with MassDOT storage yards are also present along the corridor. The greenway crosses several open space parcels owned by DCR and protected in perpetuity under Article 97. The parcels are identified as part of the Dorchester Shores Reservation.

Most of the stormwater runoff generated on the developed parcels flows to existing closed drainage systems. While the runoff generated from the open space parcels primarily flow via country drainage.

## **1.03 POST-DEVELOPMENT DRAINAGE CONDITIONS**

The stormwater management system has been designed in accordance with the DEP Stormwater Handbook. Runoff from the trail will be collected in infiltration trenches adjacent to the shoulder of the trail. The infiltration trenches will attenuate and partially infiltrate runoff into the ground. There are drop inlets or leaching basins at the low points in the trail/infiltration trenches that will convey excess runoff to existing drainage systems within the project limits. The runoff that is captured by the drop inlets and leaching basins and conveyed to the existing drainage system will outfall to the tide gate vault. Within the project limits, catch basins on Victory Road and Conley Street we will converted to drain manholes and new catch basins will be installed along the new gutter line.

**Specifics of the proposed site stormwater management are as follows:**

### *Standard 1 - New Stormwater Conveyances*

Per Massachusetts Stormwater Management Standard #1, no new outfalls may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth. This standard has been met, as all runoff from the new trail drains first to an infiltration trench.

Standard 2 - Stormwater Runoff Rates

As a bike path project, this standard is not applicable, however, the proposed design meets the standard to maximum extent practicable. The stormwater management system has been designed such that the post-development conditions result in a decrease in the peak runoff rates for the entire site. The reduction in peak runoff rates is achieved by the infiltration trenches along the trail.

Table 1.1 – Peak Flow Rates Summary

	Existing Conditions (cfs)	Proposed Improvements (cfs)	Peak Runoff Decrease (cfs)
2-year Peak Runoff	6.19	4.68	-1.51
10-year Peak Runoff	14.87	13.35	-1.52
100-year Peak Runoff	39.61	28.97	-10.64

Standard 3 - Groundwater Recharge

As a bike path project, this standard is not applicable, however, the proposed design meets the standard to maximum extent practicable. The existing ground water recharge is estimated based on the Massachusetts Stormwater Management Standards #3, as follows:

$$R_v = F \times \text{impervious area}$$

$R_v$  = Required Recharge Volume, expressed in Ft<sup>3</sup>, cubic yards, or acre-feet

$F$  = Target Depth Factor associated with each Hydrologic Soil Group

Impervious Area = pavement and rooftop area on site

NRCS HYDROLOGIC SOIL TYPE	APPROX. SOIL TEXTURE	TARGET DEPTH FACTOR (F)
A	sand	<b>0.6-inch</b>
B	loam	<b>0.35-inch</b>
C	silty loam	<b>0.25-inch</b>
D	clay	<b>0.1-inch</b>

Table: Recharge Target Depth by Hydrologic Soil Group

The Natural Resources Conservation Service (NRCS) classified the site primarily under Urban land, wet substratum, 0 to 3 percent slopes and Udorthents, wet substratum. Boring logs performed in 2016 for the MassDOT District 6 Maintenance Facility confirm the NRCS soil classifications are accurate. The upper soil profile consists of granular fill, characterized by medium dense sand and fine gravel. Based on this information, a hydrologic group “B”, Sandy Loam, has been used in the drainage calculations for of the site.

Based on the above, the following table summarizes the prescribed stormwater runoff volume required to be recharged to the groundwater based on the existing site soil conditions determined from current soils maps of the area along with the boring logs for the site;

Hydrologic Group	Proposed Impervious Area	Inches of Recharge Required	Total Prescribed Stormwater Runoff Volume to Recharge
A	0 acres	0.60	0 acre-feet
B	0.735 acres	0.35	0.021 acre-feet, 914.8 cubic feet
C	0 acres	0.25	0 acre-feet
D	0 acres	0.10	0 acre-feet
<b>Totals</b>	<b>0.75 acres</b>	<b>-</b>	<b>0.021 acre-feet, 914.8 cubic feet</b>

Since a portion of the impervious surfaces, primarily on Victory Road and Conley Street, on site are not being directed to an infiltration BMP, the total site required recharge volume was adjusted in accordance with the requirements of Standard #3 in the Handbook. The total adjusted required recharge volume for the site is 0.052 ac-ft (2,265 cu.ft.).

To meet/exceed the prescribed stormwater runoff volume to be recharged to the groundwater, the Project proposes the construction of to Area per the *Static* Method as outlined in the Massachusetts Stormwater Handbook as follows;

Static Method

Infiltration Trenches

Note: Volume based on 40% void ratio.

Area	Length (ft)	Depth (ft)	Bottom Width (ft)	Area (sf)	Volume (cf)
3P	384	2	2	4.00	614
4P	234	2	2	4.00	374
5aP	471	2	2	4.00	754
5bP	234	2	2	4.00	374
7P	217	2	2	4.00	347
8aP	692	2	2	4.00	1107
8bP	357	2	2	4.00	571
8cP	704	2	2	4.00	1126

Total Recharge Volume Provided = 5,269 cubic feet, 2,265 cubic feet required

Draw Down Calculation

$$Time_{drawdown} = \frac{Rv}{(K)(Bottom\ Area)}$$

Where:

*Rv* = Storage Volume

*K* = Saturated Hydraulic Conductivity For “Static” and “Simple Dynamic” Methods, use Rawls Rate (see Table 2.3.3).

*Bottom Area* = Bottom Area of Recharge Structure

Table: 1982 Rawls Rates (Rawls, Brakensiek and Saxton, 1982\_

Texture Class	NRCS Hydrologic Soil Group (HSG)	Infiltration Rate Inches/Hour
Sand	A	8.27
Loamy Sand	A	2.41
<b>Sandy Loam</b>	<b>B</b>	<b>1.02</b>
Loam	B	0.52
Silt Loam	C	0.27
Sandy Clay Loam	C	0.17
Clay Loam	D	0.09
Silty Clay Loam	D	0.06
Sandy Clay	D	0.05
Silty Clay	D	0.04
Clay	D	0.02

Infiltration Trenches – Drawdown Time

Area	Length (ft)	Bottom Width (ft)	Bottom Area (sf)	Rv (cf)	K	Drawdown Time (hours)
3P	384	2	768	614	1.02	9.41
4P	234	2	468	374	1.02	9.41
5aP	471	2	942	754	1.02	9.41
5bP	234	2	468	374	1.02	9.41
7P	217	2	434	347	1.02	9.41
8aP	692	2	1,384	1,107	1.02	9.41
8bP	357	2	714	571	1.02	9.41
8cP	704	2	1,408	1,126	1.02	9.41

Standard 4 - Water Quality

As a bike path project, this standard is not applicable, however, the proposed design meets the standard to maximum extent practicable. The stormwater management system has been designed to provide treatment for stormwater runoff from the new paved multi-use trail. Infiltration trenches along the edge of the trail will provide treatment of runoff.

$$V_{WQ} = (D_{WQ}/12 \text{ inches/foot}) * (A_{IMP} * 43,560 \text{ square feet/acre})$$

$$V_{WQ} = \text{Required Water Quality Volume (in cubic feet)}$$

$$D_{WQ} = \text{Water Quality Depth: 0.5-inch.}$$

$$A_{IMP} = \text{Impervious Area (in acres)}$$

$$V_{WQ} = (0.5 \text{ inches}/12 \text{ inches/foot}) * (75,452 \text{ sf})$$

$$V_{WQ} = 3,144 \text{ cubic feet, required volume}$$

Total Volume Provided = 5,269 cubic feet

The proposed stormwater management system has been designed to meet the Massachusetts Stormwater Handbook Standard #4 for the removal of a minimum of 80% Total Suspended Solids (TSS) This is achieved by the following Best Management Practices (BMP's):

- Infiltration Trench (80%)

*Standard 5 – Land Uses with Higher Potential Pollutant Loads (LUHPPL)*

This project is not a land use with higher potential pollutant loads.

*Standard 6 – Stormwater Discharges to a Critical Area*

As a bike path project, this standard is not applicable, however, the proposed design meets the standard to maximum extent practicable. As a bathing beach, Tenean Beach is considered a critical area. There is an existing outfall just north of Tenean Beach that discharges runoff from the project area. Under proposed conditions, there is a de minimis increase in impervious area discharging to this outfall. Therefore, this standard has been met to the maximum extent practicable.

*Standard 7 – Redevelopment Projects*

This project is a redevelopment project. In accordance with the DEP Stormwater Management Handbook, standards 1, 8, 9 and 10 have been fully met. In addition, the project has met all other standards (Standards 2, 3, 4, 5, 6, and 7) to the maximum extent practicable

*Standard 8 – Sedimentation and Erosion Control Plan*

Erosion control measures, including compost filter tubes and sediment control barriers will be placed at the bottom of proposed slopes and limits of work.

*Standard 9 – Long Term Operation and Maintenance Plan*

A long-term operation and maintenance plan is included in Section 3.0 of this Report

*Standard 10 – Illicit Discharges to the Stormwater Management System are Prohibited*

There are no known illicit discharges to the proposed Stormwater Management System, and none are proposed.

*Conclusions*

The project has been designed to meet, and in some cases exceed, the applicable provisions of the Massachusetts Wetland Protection Act (MGL Ch. 131, S. 40) and associated regulations (310 CMR 10.00), as well as the Department of Environmental Protection's (DEP's) Stormwater Handbook. The project has incorporated LID design features into the overall Stormwater Management, including the use of infiltration trenches along the trail. The stormwater management system provides attenuation of the peak runoff rates from the 2,10, and 100-year, 24-hour storm events, maximizes infiltration to groundwater, and provides 80% TSS removal prior to discharge.





**SECTION 2.0**

**MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION  
CHECKLIST FOR STORMWATER REPORT**





**Massachusetts Department of Environmental Protection**  
Bureau of Resource Protection - Wetlands Program  
**Checklist for Stormwater Report**

---

**A. Introduction**

**Important:**  
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the [Massachusetts Stormwater Handbook](#). The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.<sup>1</sup> This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8<sup>2</sup>
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted the

---

<sup>1</sup> The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

<sup>2</sup> For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing



**Massachusetts Department of Environmental Protection**  
Bureau of Resource Protection - Wetlands Program  
**Checklist for Stormwater Report**

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**B. Stormwater Checklist and Certification**

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

*Note:* Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

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**Registered Professional Engineer's Certification**

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature



*Kath Eagan*

6/21/21

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Signature and Date



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**Checklist for Stormwater Report**

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**Checklist**

**Project Type:** Is the application for new development, redevelopment, or a mix of new and redevelopment?

- New development
- Redevelopment
- Mix of New Development and Redevelopment

**LID Measures:** Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

- No disturbance to any Wetland Resource Areas
- Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- Reduced Impervious Area (Redevelopment Only)
- Minimizing disturbance to existing trees and shrubs
- LID Site Design Credit Requested:
  - Credit 1
  - Credit 2
  - Credit 3
- Use of “country drainage” versus curb and gutter conveyance and pipe
- Bioretention Cells (includes Rain Gardens)
- Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- Treebox Filter
- Water Quality Swale
- Grass Channel
- Green Roof
- Other (describe): Infiltration Trench



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Checklist (continued)

**Standard 1: No New Untreated Discharges**

- No new untreated discharges
- Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.

**Standard 2: Peak Rate Attenuation**

- Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.
- Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.
- Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

**Standard 3: Recharge**

- Soil Analysis provided.
- Required Recharge Volume calculation provided.
- Required Recharge volume reduced through use of the LID site Design Credits.
- Sizing the infiltration, BMPs is based on the following method: Check the method used.
  - Static
  - Simple Dynamic
  - Dynamic Field<sup>1</sup>

<sup>1</sup> 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.

- Runoff from all impervious areas at the site discharging to the infiltration BMP.
- Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.
- Recharge BMPs have been sized to infiltrate the Required Recharge Volume.
- Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:
  - Site is comprised solely of C and D soils and/or bedrock at the land surface
  - M.G.L. c. 21E sites pursuant to 310 CMR 40.0000





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Checklist (continued)

**Standard 3: Recharge** (continued)

- Solid Waste Landfill pursuant to 310 CMR 19.000
- Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.
- Calculations showing that the infiltration BMPs will drain in 72 hours are provided.
- Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.
- The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.
- Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

**Standard 4: Water Quality**

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
  - Provisions for storing materials and waste products inside or under cover;
  - Vehicle washing controls;
  - Requirements for routine inspections and maintenance of stormwater BMPs;
  - Spill prevention and response plans;
  - Provisions for maintenance of lawns, gardens, and other landscaped areas;
  - Requirements for storage and use of fertilizers, herbicides, and pesticides;
  - Pet waste management provisions;
  - Provisions for operation and management of septic systems;
  - Provisions for solid waste management;
  - Snow disposal and plowing plans relative to Wetland Resource Areas;
  - Winter Road Salt and/or Sand Use and Storage restrictions;
  - Street sweeping schedules;
  - Provisions for prevention of illicit discharges to the stormwater management system;
  - Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.
  - Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:
    - is within the Zone II or Interim Wellhead Protection Area
    - is near or to other critical areas
    - is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)



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Checklist (continued)

**Standard 4: Water Quality** (continued)

- involves runoff from land uses with higher potential pollutant loads.
- The Required Water Quality Volume is reduced through use of the LID site Design Credits.
- Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.
- The BMP is sized (and calculations provided) based on:
  - The  $\frac{1}{2}$ " or 1" Water Quality Volume or
  - The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.
- The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the proprietary BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.
- A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

**Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)**

- The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.
- The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted *prior to* the discharge of stormwater to the post-construction stormwater BMPs.
- The NPDES Multi-Sector General Permit does *not* cover the land use.
- LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.
- All exposure has been eliminated.
- All exposure has *not* been eliminated and all BMPs selected are on MassDEP LUHPPL list.
- The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

**Standard 6: Critical Areas**

- The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.
- Critical areas and BMPs are identified in the Stormwater Report.



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**Checklist (continued)**

**Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable**

- The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:
- Limited Project
  - Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
  - Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
  - Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
  - Bike Path and/or Foot Path
  - Redevelopment Project
  - Redevelopment portion of mix of new and redevelopment.
- Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.
- The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

**Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control**

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
  - Construction Period Operation and Maintenance Plan;
  - Names of Persons or Entity Responsible for Plan Compliance;
  - Construction Period Pollution Prevention Measures;
  - Erosion and Sedimentation Control Plan Drawings;
  - Detail drawings and specifications for erosion control BMPs, including sizing calculations;
  - Vegetation Planning;
  - Site Development Plan;
  - Construction Sequencing Plan;
  - Sequencing of Erosion and Sedimentation Controls;
  - Operation and Maintenance of Erosion and Sedimentation Controls;
  - Inspection Schedule;
  - Maintenance Schedule;
- A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.



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**Checklist** (continued)

**Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control**  
(continued)

- The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has *not* been included in the Stormwater Report but will be submitted *before* land disturbance begins.
- The project is *not* covered by a NPDES Construction General Permit.
- The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.
- The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

**Standard 9: Operation and Maintenance Plan**

- The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:
  - Name of the stormwater management system owners;
  - Party responsible for operation and maintenance;
  - Schedule for implementation of routine and non-routine maintenance tasks;
  - Plan showing the location of all stormwater BMPs maintenance access areas;
  - Description and delineation of public safety features;
  - Estimated operation and maintenance budget; and
  - Operation and Maintenance Log Form.
- The responsible party is *not* the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:
  - A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
  - A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

**Standard 10: Prohibition of Illicit Discharges**

- The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;
- An Illicit Discharge Compliance Statement is attached;
- NO Illicit Discharge Compliance Statement is attached but will be submitted *prior to* the discharge of any stormwater to post-construction BMPs.

**SECTION 3.0**

**LONG-TERM POLLUTION PREVENTION PLAN**





## **LONG-TERM POLLUTION PREVENTION PLAN**

As required by Standard 4 of the Massachusetts Stormwater Handbook, this Long-Term Pollution Prevention Plan has been developed for source control and pollution prevention at the site after construction.

### **MAINTENANCE RESPONSIBILITY**

The enforcement of the Long-Term Operation and Maintenance Plan will be the responsibility of the Owner, the Department of Conservation and Recreation.

### **GOOD HOUSEKEEPING PRACTICES**

The site is to be kept clean of trash and debris at all times. Trash, junk, etc. is not to be left outside and will be subject to removal at the owner's expense.

### **VEHICLE WASHING CONTROLS**

No vehicle washing shall occur on the Neponset Greenway. All equipment and vehicle washing will be performed off-site.

## **REQUIREMENTS FOR ROUTINE INSPECTIONS AND MAINTENANCE OF STORMWATER BEST MANAGEMENT PRACTICES**

All stormwater Best Management Practices (BMP's) are to be inspected and maintain as follows:

### ***Infiltration Trenches***

Because infiltration trenches are prone to failure due to clogging, it is imperative that they be aggressively maintained on a regular schedule. Using pretreatment BMPs will significantly reduce the maintenance requirements for the trench itself. Removing accumulated sediment from a deep sump catch basin or a vegetated filter strip is considerably less difficult and less costly than rehabilitating a trench. Eventually, the infiltration trench will have to be rehabilitated, but regular maintenance will prolong its operational life and delay the day when rehabilitation is needed. With appropriate design and aggressive maintenance, rehabilitation can be delayed for a decade or more. Perform preventive maintenance at least twice a year.

Inspect and clean pretreatment BMPs every six months and after every major storm event (2-year return frequency). Check inlet and outlet pipes to determine if they are clogged. Remove accumulated sediment, trash, debris, leaves and grass clippings from mowing. Remove tree seedlings, before they become firmly established.

Inspect the infiltration trench after the first several rainfall events, after all major storms, and on regularly scheduled dates every six months. If the top of the trench is grassed, it must be mowed on a seasonal basis. Grass height must be maintained to be no more than four inches. Routinely remove grass clippings leaves and accumulated sediment from the surface of the trench.

Inspect the trench 24 hours or several days after a rain event, to look for ponded water. If there is ponded water at the surface of the trench, it is likely that the trench surface is clogged. To address surface clogging, remove and replace the topsoil or first layer of stone aggregate and the filter fabric. If water is ponded inside the trench, it may indicate that the bottom of the trench has failed. To rehabilitate a failed trench, all accumulated sediment must be stripped from the bottom, the bottom of the trench must be scarified and tilled to induce infiltration, and all of the stone aggregate and filter fabric or media must be removed and replaced.

### ***Leaching Catch Basins***

- Inspect annually or more frequently as indicated by structure performance
- Remove sediment when the basin is 50% filled.
- Rehabilitate the basin if it fails due to clogging

## **PROVISIONS FOR MAINTENANCE OF LAWNS, GARDENS AND OTHER LANDSCAPE AREAS**

### *1.0 Level of Maintenance Required*

All site areas are to be well maintained at all times. The most visible landscape areas require the highest level of landscape maintenance and should receive constant attention. The less visible and/or less formal areas of the site require a slightly lower level of landscape maintenance

The areas requiring slightly lower landscape maintenance are not to acquire an un-kept appearance. They need to be kept neat and well maintained. The lower required maintenance level simply means that the maintenance of these areas is less labor intensive due to the type of plant materials, the informal planting concept, the level of visibility, and/or the environmental conditions.

### *2.0 Maintenance Operations & Schedules*

More specific information regarding the Maintenance Operations is organized by landscape feature. There is a section for Trees & Shrubs; Planting Beds; Turf Areas; Rain Gardens, Vegetated Filter Strips, and Groundcovers / Annuals & Perennials. These sections explain the Landscape Maintenance Operation for the specific landscape features throughout all the Landscape Maintenance Zones.

### *3.0 Qualifications of the Landscape Maintenance Contractor*

The Landscape Maintenance Contractor shall be experienced in all aspects of landscape installation and maintenance. A minimum of five years experience in Landscape Maintenance is required. The Landscape Maintenance Contractor shall furnish the names of at least five current or previous Landscape Maintenance Clients along with a description of the size of the site and the nature and duration of the services provided.

The Landscape Maintenance Contractor shall have on staff or list current qualified sub consultants (sub consultant shall be a person or firm the contractor has worked with within the last five years, sub consultant references must be supplied) in the following fields: a licensed Arborist, a Turf Specialist, and a Pesticide Applicator.

All applicable licenses required for the performance of the maintenance activities shall be current. All Landscape Maintenance personnel shall be qualified and able to perform to the standards stated in this guideline.

### *4.0 Performance Standards*

A Landscape Maintenance Supervisor with overall responsibility for all daily operations shall be designated. This Supervisor shall be on site at all times during Landscape Maintenance operations and shall remain on site until all Landscape Maintenance crews have left the site. The Supervisor is responsible for any necessary coordination with the University. The University shall be immediately informed if a new Landscape Maintenance Supervisor is designated on a permanent or temporary basis.

All work outlined in this Guideline shall be performed under the appropriate environmental conditions for the specific work task.

Work requiring a license shall be directly supervised or actually performed by the individual holding the applicable license.

The contractor shall perform any incidental work which constitutes good Landscape Maintenance (example: planting of replacement plant material) that will contribute to the health and appearance of the landscape. This work is to be included even if not specifically stated in these guidelines.

Plant material inspections shall be performed monthly by the Landscape Maintenance Contractor. In particular an inspection shall be performed immediately following severe wind, rain, or ice conditions. Plant materials severely damaged in a winter storm shall be scheduled for spring replacement.

#### 5.0 *Safety Issues*

Safety of people and protection of property is critical. The landscape maintenance work shall be performed in such a manner as to not jeopardize either.

At no time shall the landscape maintenance activities obstruct entry to any building. Maintenance activities near building entrances shall be coordinated with appropriate site manager.

When applying pesticides other safety measures may be required (respirators, special clothing, etc.) Providing the proper safety measures, for the landscape maintenance crews, will be the responsibility of the Landscape Maintenance Contractor.

#### 6.0 *Maintenance Operations*

##### **A. *Trees and Shrubs***

**Disease and Pest Management** - Prevention of disease or infestation is the first step of pest management. A plant that is in overall good health is far less susceptible to disease. Good general landscape maintenance can reduce problems from disease.

Inspections of plant materials for signs of disease or infestation are to be performed monthly by the Landscape Maintenance Contractor's Certified Arborist. This is a critical step for early diagnosis. Trees and shrubs that have been diagnosed to have a plant disease or an infestation of insect pests are to be treated promptly with an appropriate material by a licensed applicator.

**Fertilization** - Trees and shrubs live outside their natural environment and should be given proper care to maintain health and vigor. Fertilizing trees and shrubs provides the plants with nutrients needed to resist insect attack, to resist drought and to grow thicker foliage. Fertilizing of new and old trees may be done in one of three ways, in either the early spring or the late fall.

- Systemic Injection of new and existing trees on trees 2-inches or greater in diameter. You must be licensed to apply this method.
- Soil Injection – a liquid fertilizer with a product such as Arbor Green or Rapid Grow injected into the soil under the drip zone of a tree or shrub. Material must be used according to manufacturers' specifications to be effective. Outside contracting is recommended.
- Punch Bar Method – a dry fertilizer such as 10-10-10, may be used by punched holes in the drip zone of the tree 12 to 18-inches deep, two feet apart around the circumference, to the edge of the drip line. Three pounds of fertilizer should be used per diameter inch for trees with trunks six inches or more in diameter.
- Fertilizer of shrubs – use a fertilizer such as 10-10-10, broadcast over the planting area according to the manufacturers' rate and water in.
- All fertilization must be noted on daily maintenance log.

**Watering** - Trees and shrubs will need supplemental watering to remain in vigorous health. All new plants need to be watered once a week in cool weather, twice a week during warm weather, and up to three times in a week during periods of extreme heat and drought. Trees and shrubs should be watered in such a manner as to totally saturate the soil in the root zone area. Over-watering or constant saturation of the soil must be avoided as this could lead to root rot and other disease problems. The use of a soil moisture meter can help you monitor the soil's water intake.

**Plant Replacement** - Unhealthy plants that may cause widespread infestation of other nearby plants shall be immediately removed from the site. Any vegetation removed from the site must be recorded and submitted with the daily maintenance log. The area shall be treated to prevent further infestation. The plant shall then be replaced with a healthy specimen of the same species and size.

A spring inspection of all plant materials shall be performed to identify those plant materials that are not in vigorously healthy condition. Unhealthy plant materials shall be evaluated. If the problem is determined to be minor the plant material shall be given appropriate restorative care in accordance with this maintenance guideline until it is restored to a vigorously healthy condition. Unhealthy plant materials that do not respond to restorative care or are determined to be beyond saving shall be replaced with a healthy specimen of the same species and size. In the case of the necessity of replacing extremely large plant materials the Landscape Architect and the University shall determine the size of the replacement plant.

**Pruning** - Proper pruning is the selective removal of branches without changing the plant's natural appearance, or habit of growth. All tree pruning is to be performed by a licensed Arborist. All branches that are dead, broken, scared or crossing should be removed. All cuts should be made at the collar and not cut flush with the base. Pruning shall be done for the following purposes;

- To maintain or reduce the size of a tree or shrub
- To remove dead, diseased or damaged branches
- To rejuvenate old shrubs and encourage new growth
- To stimulate future flower and fruit development
- To maximize the visibility of twig color
- To prevent damage and reduce hazards to people and properties

All shrubs are to be pruned on an annual basis to prevent the shrub from becoming overgrown and eliminate the need for drastic pruning. There are several types of pruning for deciduous shrubs. Hand snips should be used to maintain a more natural look or hand shears can be used for a more formal appearance.

**Winter Protection** - All trees and shrubs are to be watered, fertilized, and mulched before the first frost. All stakes should be checked, and ties adjusted. Damaged branches should be pruned.

Broadleaf and Coniferous Evergreen plant materials are to be sprayed with an anti-desiccant product to prevent winter burn. The application shall be repeated during a suitable mid-winter thaw.

Shrubs located in areas likely to be piled with snow during snow removal (but not designated as Snow Storage Areas) shall be marked by six-foot high poles with bright green banner flags. These areas are to be reviewed with the University. Stockpiles of snow are not to be located in these areas due to potential damage to the plant materials from both the weight of the snow and the snow melting chemicals.

**Seasonal Clean Up** - A thorough spring cleanup is to be performed. This includes the removal and replacement of dead or unhealthy plant materials and the cleanup of plant debris and any general debris that has accumulated over the winter season.

Mulch is to be lightly raked to clean debris from the surface without removing any mulch. Twigs and debris are to be removed from the planting beds throughout the growing season.

**Mulching** - Planting beds shall be mulched with treated shredded hardwood mulch free from dirt, debris, and insects. A sample of this mulch shall be given to the University for approval prior to installation.

Maintain a 2 to 3-inches maximum depth and keep free of weeds either by hand weeding or by the use of a pre-emergent weed control such as Treflan or Serfian. Seasonal re-mulching shall occur as necessary in the spring and the fall to maintain this minimum depth. When new mulch is added to the planting bed it shall be spread to create a total depth of no more than three inches. Edges should be maintained in a cleanly edged fashion.

Mulch shall not be placed directly against the trunk of any tree or shrub.

**B. Groundcover and Perennials**

**Disease and Pest Management** – Pesticides and herbicides should be applied only as problems occur, with the proper chemical applied only by a trained professional or in the case of pesticide, a Certified Pesticide Applicator. Plants should be monitored weekly and treated accordingly.

**Fertilizer** – The health of the plants can be maintained or improved, and their growth encouraged by an application of complete fertilizer. Apply a fertilizer such as 4-12-4 as growth becomes apparent and before mulching. Apply to all groundcover and perennial planting areas by hand and avoid letting the fertilizer come in contact with the foliage or use a liquid fertilizer and apply by soaking the soil. Apply according to the manufacturers' specifications.

Fertilization shall stop at the end of July.

**Water** – Groundcovers and Perennials will need supplemental watering in order to become established, healthy plants. All new plants need to be watered once a week in cool weather, twice a week during warm weather, and up to three times in a week during periods of extreme heat and drought. Until established, groundcovers and perennials should be watered in such a manner as to totally saturate the soil in the root zone area, to a depth of 6-inches. Once established, perennials shall continue to be watered as necessary to maintain them in a vigorous healthy condition. Over-watering or constant saturation of the soil must be avoided as this could lead to root rot and other disease problems. The use of a soil moisture meter can help you monitor the soil's water intake.

On-site water shall be furnished by the University. Hose and other watering equipment shall be furnished by the Landscape Maintenance Contractor.

**Replacement** – Any unhealthy plant/s that may cause widespread infestation of other nearby plants shall be immediately removed from the site. Any vegetation removed from the site must be recorded and submitted with the landscape maintenance log. The area shall be treated to prevent further infestation. The plant/s shall then be replaced with healthy specimen/s of the same species and size.

**Deadheading** – Perennials shall be checked on a weekly basis and dead-headed once flowers have faded or as necessary based on plant type and duration of flower. Spent flowers can be pinched off with the thumb and forefinger. Continue to remove all faded flowers until Fall. All associated debris shall be removed from site daily.

**Staking** – Upright-growing perennials need support especially when in flower. Use of bamboo stakes, galvanized wire hoops or mesh may be necessary for their support. Supports should be put in place before they have become too difficult to handle. The supports should not be taller than the mature height of the perennial plant.

**Division of Perennials** – Two- or three-year-old perennials are easily divided in the spring if more plants are needed. To divide, cut out the entire section of plant to be divided, including roots. The larger divisions (those with three or more shoots) can be set out immediately in their permanent location, where they can be expected to bloom the same season. Smaller divisions are best planted in an out-of-the-way planting bed until the following autumn or spring, when they can be moved to their permanent location.

**Weeding** – All planting beds should be kept weed-free. Weed either by hand or with a pre-emergent herbicide such as Treflan used according to manufacturers' specifications. Manual weeding is to be used in combination with the use of spot applications of herbicides. Both live and dead weeds are to be pulled and removed from the site.

All herbicide applications shall be documented in the Landscape Maintenance Log. The actual product label or the manufacturers product specification sheet for the specific product shall also be included in the Log.

Only personnel with appropriate applicator licenses shall supervise and/or perform the application of pesticide products requiring a license.

**Winterizing** – Perennial gardens should be cleaned-up when growth ceases in the fall. Remove foliage of plants that normally die down to the ground. Divide and replant over-grown clumps.

### **C. Lawn Areas - Turf Systems**

**Mowing** – Proper mowing is an integral part of any good turf maintenance program. Without it, fertilization, watering and other vital maintenance practices would be completely ineffective. Proper mowing will help control dicot weeds; help the turf survive during periods of extreme heat, and gain strength and vigor to resist disease and other infestations.

1. **Mowing height** – The proper mowing height will vary somewhat according to the type of grass. The most common type of seed & sod lawns contains a mixture of bluegrass, fine fescue and perennial rye, which should be mowed at 2 to 3-inches.
2. **Mowing frequency** – The basic rule of thumb for mowing frequency is to never remove more than 1/3 of the grass blade in one mowing. Example: if you want to mow your turf at 2-inches, you should cut it when it reaches 3-inches. Removing more than ½ of the grass plant at a time can put the plant into shock, thus making it more susceptible to stress, disease and weed infestation.

Mowing frequency will vary with the growing season and should be set by the plant height and not a set date. It will often be necessary to mow twice a week during periods of surge growth to help maintain plant health and color. Mowing should be cut back during periods of stress.

Grass clippings should be removed whenever they are thick enough to layer the turf. The return of clippings to the soil actually adds nutrients and helps retain moisture. Heavily clumped grass clippings are a sign of infrequent moving, calling for an adjustment in the mowing schedule.

When mowing any area, try to alternate mowing patterns. This tends to keep grass blades more erect and assures an even cut. A dull mower will cause color loss due to tearing of the turf plant, and since mowing will ultimately determine the appearance of any turf area there is an absolute necessity for a clean sharp cut.

**Weed & Pest Control and Fertilizing-** In order to maintain turf grass health, vigor and color, nutrients, by way of fertilizer, must be added to the soil. Recommendations for fertilization of lawn areas are as follows; fertilize at the rate of one (1) pound of nitrogen per thousand square feet, per year is optimum. Fertilizer should be a balanced slow release, sulfur coated type fertilizer.

- **Weed Control** - All turf areas will require some weed control, for both weed grasses and dicot weeds. Weeds should be treated at the appropriate time and with a material labeled for the target weed. Please refer to the fertilizer weed and pest schedule for timing.
- **Pest Control** - All turf areas will require some pest control. Pests should be treated at the appropriate time with a material labeled for the target pest. Please refer to the fertilizer, weed and pest schedule for timing.
- **Lime** - A common cause for an unhealthy lawn is acidic soil. When the PH is below the neutral range (between 6-7) vital plant nutrients become fixed in the soil and cannot be absorbed by the grass plant. Lime corrects an acid soil condition, supplies calcium for plant growth and improves air and water circulation. Limestone applied at the rate of 50 lbs. per thousand square feet will adjust the soil PH one point over a period of 6-9 months.



**D. Maintenance Schedules**

***Fertilizer, Weed & Pest Control Schedule – Turf Systems***

<u>Spring</u> - (April)	Fertilize one (1) pound of nitrogen per 1,000 square feet Pre-emergent weed grass control Broadleaf weed control
<u>Late Spring</u> - (June)	Fertilize one (1) pound of nitrogen per 1,000 square feet Pre-emergent weed grass control Broadleaf weed control Insect Control (if needed)
<u>*Summer</u> - (August)	Fertilize one (1) pound of nitrogen per 1,000 square feet Broadleaf weed control (if needed) Insect Control (if needed)
<u>Fall</u> - (September)	Fertilize one (1) pound of nitrogen per 1,000 square feet

\*Omit if area is not to be irrigated

***Lawn Maintenance Task Schedule***

**MARCH** (Weather permitting)

- Clean up winter debris, sand, leaves, trash etc.
- Re-edge mulch beds, maintain at 2-3” maximum.
- Fertilize plants
- Aerate and thatch turf (conditions permitting)

**APRIL**

- Reseed or sod all areas needing attention.
- Fertilize and weed control
- Lime
- Start mowing when grass reaches 2-1/2”, mow to 2”

**MAY**

- Mow turf to 2-2-1/2”
- Weed as necessary.
- Check for disease and pest problems in both turf and plants.

**JUNE**

- Mow turf to 2-1/2” – 3”
- Fertilize and weed control.
- Weed
- Check for disease and pest problems in both turf and plants, treat as necessary.

**SNOW DISPOSAL AND PLOWING PLANS**

The purpose of the snow and snowmelt management plan is to provide guidelines regarding snow disposal site selection, site preparation and maintenance that are acceptable to the Department of Environmental Protection, Bureau

of Resource Protection. For the areas that require snow removal, snow storage onsite will largely be accomplished by using pervious upland areas away from wetlands as designated on the Site Plans. There are adequate snow storage areas located within parking lot islands and edges of paved areas away from the wetland resource areas for small frequent snowfall events. For larger snowfall events or for additional snow storage space, snowfall will be required to be hauled offsite to a snow stockpile area meeting DEP requirements.

Snow disposal areas have been identified on the Site Plans. The key to selecting effective snow disposal sites is to locate them adjacent to or on pervious surfaces in upland areas away from water resources and wells. At these locations, the snow meltwater can filter into the soil, leaving behind sand and debris, which can be removed in the springtime. The following areas should be avoided:

- Avoid dumping of snow into any waterbody, including rivers, the ocean, reservoirs, ponds, or wetlands. In addition to water quality impacts and flooding, snow disposed of in open water can cause navigational hazards when it freezes into ice blocks.
- Avoid disposing of snow on top of storm drain catch basins or in stormwater drainage swales or ditches. Snow combined with sand and debris may block a storm drainage system, causing localized flooding. A high volume of sand, sediment, and litter released from melting snow also may be quickly transported through the system into surface water.

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#### **WINTER ROAD SALT AND/OR SAND USE AND STORAGE RESTRICTIONS**

Road salt and sand is prohibited from being stored onsite.

#### **STREET SWEEPING SCHEDULES**

Effective sweeping requires access to the areas to be swept. It is essential that applicants or those responsible for stormwater maintenance have the ability to impose parking regulations to facilitate proper sweeping, particularly in densely populated or heavily traveled areas, so that sweepers can get as close to curbs as possible. Residents are to be notified prior to street sweeping operations so that paved areas can be clear of vehicles and any other items.

There are three types of sweepers: Mechanical, Regenerative Air, and Vacuum Filter. Each has a different ability to remove TSS.

- 1) Mechanical: Mechanical sweepers use brooms or rotary brushes to scour the pavement. Although most of the sweepers currently in use in Massachusetts are mechanical sweepers, they are not effective at removing TSS (from 0% to 20% removal). Mechanical sweepers are especially ineffective at picking up fine particles (“fines”) (less than 100 microns).
- 2) Regenerative Air: These sweepers blow air onto the road or parking lot surface, causing fines to rise where they are vacuumed. Regenerative air sweepers may blow fines off the vacuumed portion of the roadway or parking lot, where they contaminate stormwater when it rains.
- 3) Vacuum filter: These sweepers remove fines along roads. Two general types of vacuum filter sweepers are available - wet and dry. The dry type uses a broom in combination with the vacuum. The wet type uses water for dust suppression. Research indicates vacuum sweepers are highly effective in removing TSS. The best ones (in terms of pollutant removal efficiencies) typically cost about \$240,000 to \$310,000.

Regardless of the type chosen, the efficiency of street sweeping is increased when sweepers are operated in tandem. DCR Parking Lots, Morrissey Boulevard, and other DCR Parkways shall be swept at least 4 times per year. The Neponset Greenway surface will not be swept.

### Reuse and Disposal of Street Sweepings

Once removed from paved surfaces, the sweeping must be handled and disposed of properly. MassDEP's Bureau of Waste Prevention has issued a written policy regarding the reuse and disposal of street sweepings. These sweepings are regulated as a solid waste, and can be used in three ways:

- In one of the ways already approved by MassDEP (e.g., daily cover in a landfill, additive to compost, fill in a public way)
- If approved under a Beneficial Use Determination
- Disposed in a landfill

### **TRAINING OF STAFF OR PERSONNEL INVOLVED WITH IMPLEMENTING LONG-TERM POLLUTION PREVENTION PLAN**

The Long-Term Pollution Prevention Plan is to be implemented by property owner of the site. Trained and, if required, licensed Professionals are to be hired by the owner as applicable to implement the Long-Term Pollution Prevention Plan.

### **LIST OF EMERGENCY CONTACTS FOR IMPLEMENTING LONG-TERM POLLUTION PREVENTION PLAN**

The Owner along with the Lease holder will be required to maintain an updated list of Emergency Contacts for the site.



**SECTION 4.0**

**CONSTRUCTION PERIOD POLLUTION PREVENTION AND EROSION AND SEDIMENTATION CONTROL PLAN  
(STORM WATER POLLUTION PREVENTION PLAN - SWPPP)**





**CONSTRUCTION PERIOD POLLUTION PREVENTION AND EROSION AND SEDIMENTATION CONTROL PLAN  
(STORM WATER POLLUTION PREVENTION PLAN - SWPPP)**

This Section specifies requirements and suggestions for implementation of a Storm Water Pollution Prevention Plan (SWPPP) for the development of Neponset River Greenway – Tenean Beach to Morrissey Boulevard in **Boston, Massachusetts**.

The storm water pollution prevention measures contained in this SWPPP shall be at least the minimum required by Local Regulations. A filing of a Notice of Intent for protection under the National Pollution Discharge Elimination System (NPDES) for this Construction is required for this project.

The Contractor shall NOT begin construction prior to submitting a NPDES Notice of Intent (NOI) governing the discharge of storm water from the construction site for the entire construction period. It shall be filed at least 14 days prior to construction. It is the Contractor's responsibility to complete and file the NOI.

The cost of any fines, construction delays and remedial actions resulting from the Contractor's failure to comply with all provisions of local regulations and Federal NPDES permit requirements shall be paid for by the Contractor at no additional cost to the Owner.

As a requirement of the EPA's NPDES permitting program, each Contractor and Subcontractor responsible for implementing and maintaining stormwater Best Management Practices shall execute a Contractor's Certification form.

The SWPPP shall include provisions for, but not be limited to, the following:

1. Construction Trailers
2. Lay-down Areas
3. Equipment Storage Areas
4. Stockpile Areas
5. Disturbed Areas

**1.0 Erosion and Sedimentation Control**

The Contractor shall be solely responsible for erosion and sedimentation control at the site. The Contractor shall utilize a system of operations and all necessary erosion and sedimentation control measures, even if not specified herein or elsewhere, to minimize erosion damage at the site to prevent the migration of sediment into environmentally sensitive areas. Environmentally sensitive areas include all wetland resource areas within, and downstream of, the site, and those areas of the site that are not being altered.

Erosion and sedimentation control shall be in accordance with this Section, the design drawings, and the following:

- ❑ "Storm Water Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices" (EPA 832-R92-005, Sept. 1992).
- ❑ "Storm Water Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices – Summary Guidance" (EPA 833-R92-001, Oct. 1992).
- ❑ Massachusetts Stormwater Management Policy Handbook (Volume I) and Technical Handbook (Volume II) issued by the Massachusetts Department of Environmental Protection, March 1997.
- ❑ Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas, A Guide for Planners, Designers and Municipal Officials, March 1997.

The BMP's presented herein should be used as a guide for erosion and sedimentation control and are not intended to be considered specifications for construction. The most important BMP is maintaining a rapid construction process, resulting in prompt stabilization of surfaces, thereby reducing erosion potential. Given the primacy of rapid construction, these guidelines have been designed to allow construction to progress with essentially no hindrance by

the erosion control methods prescribed. These guidelines have also been designed with sufficient flexibility to allow the contractor to modify the suggested methods as required to suit seasonal, atmospheric, and site-specific physical constraints.

Another important BMP is the prevention of concentrated water flow. Sheet flow does not have the erosive potential of a concentrated rivulet. These guidelines recommend construction methods that allow localized erosion control and a system of construction, which inhibits the development of shallow concentrated flow. These BMP's shall be maintained throughout the construction process.

## **2.0 CONTACT INFORMATION AND RESPONSIBLE PARTIES**

The following is a list of all project-associated parties:

### **Owner/Applicant**

Department of Conservation and Recreation  
251 Causeway Street  
Boston, Massachusetts, 02114

Contact: To Be Determined During Construction

### **Contractor**

To Be Determined

### **Environmental Consultant**

BSC Group  
803 Summer Street  
Boston, MA 02127

Contact: Kellan Lewis  
Phone: (617) 896 – 4300  
Email: [klewis@bscgroup.com](mailto:klewis@bscgroup.com)

## **3.0 Procedural Conditions of the Construction General Permit (CGP)**

The following list outlines the Storm Water responsibilities for all construction operators working on the Project. The operators below agree through a cooperative agreement to abide by the following conditions throughout the duration of the construction project, effective the date of signature of the required SWPPP. These conditions apply to all operators on the project site.

## **4.0 Project Description and Intended Construction Sequence**

The new and redevelopment activities will include the following major components:

- Re-alignment of approximately 950' roadway to allow for sidewalk widening and improved connectivity;
- Construction of approximately 3,050' of new 10-ft wide, multi-use paved pathway;
- Construction of approximately 670' of new pile-supported aluminum boardwalk over Dorchester Bay;
- Re-surfacing of approximately 300' of existing sidewalk;
- Construction of a new stormwater management trench along the new pathway; and
- Repair and modification of an existing tide gate.

Soil disturbing activities will include site demolition, installing stabilized construction exits, installation of erosion and sedimentation controls, grading, storm drain inlets, utilities, construction of roadways and preparation for final seeding, mulching and landscaping. To the extent practicable, the infiltration trenches should be installed in the later phases of construction to reduce trench soil compaction or sediment impacts to the trench during constructions. Please refer to Table 1 for the projects anticipated construction timetable. A description of BMP's associated with project timetable and construction-phasing elements is provided in section 4.2 of this SWPPP.

**Table 1 – Anticipated Construction Timetable**

Construction Phasing Activity	Anticipated Timetable
Demolition, Grubbing and Stripping of Limits of Construction Phase	To be determined
Site Grading and Site Utilities	To be determined
Pile-Supported Aluminum Boardwalk	To be determined
Re-alignment of Roadways	To be determined
Construction of Multi-Use Path & Drainage	To be determined
Sidewalk Re-Surfacing	To be determined
Landscaping	To be determined
Final Clean-up	To be determined

**5.0 Potential Sources of Pollution**

Any project site activities that have the potential to add pollutants to runoff are subject to the requirements of this sample SWPPP. Listed below is a description of potential sources of pollution from both sedimentation to Storm Water runoff, and pollutants from sources other than sedimentation.

**Table 2 – Potential Sources of Sediment to Storm Water Runoff**

Potential Source	Activities/Comments
Construction Site Entrance and Site Vehicles	Vehicles leaving the site can track soils onto public roadways. Site Vehicles can readily transport exposed soils throughout the site and off-site areas.
Grading Operations	Exposed soils have the potential for erosion and discharge of sediment to off-site areas.
Material Excavation, Relocation, and Stockpiling	Stockpiling of materials during excavation and relocation of soils can contribute to erosion and sedimentation. In addition, fugitive dust from stockpiled material, vehicle transport and site grading can be deposited in wetlands and waterway.
Landscaping Operations	Landscaping operations specifically associated with exposed soils can contribute to erosion and sedimentation. Hydroseeding if not properly applied can runoff to adjacent wetlands and waterways.

**Table 4 – Potential Pollutants and Sources, other than Sediment to Storm Water Runoff**

Potential Source	Activities/Comments
Staging Areas and Construction Vehicles	Vehicle refueling, minor equipment maintenance, sanitary facilities and hazardous waste storage
Materials Storage Area	General building materials, solvents, adhesives, paving materials, paints, aggregates, trash, etc.
Construction Activities	Construction, paving, curb/gutter installation, concrete

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pouring/mortar/stucco

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## **6.0 Erosion and Sedimentation Control Best Management Practices**

The project site is characterized by primarily impervious surface. All construction activities will implement Best Management Practices (BMP's) in order to minimize overall site disturbance and impacts to the sites natural features. Please refer to the following sections for a detailed description of site-specific BMP's.

## **7.0 Timetable and Construction Phasing**

This section provides the Owner and Contractor with a suggested order of construction that shall minimize erosion and the transport of sediments. The individual objectives of the construction techniques described herein shall be considered an integral component of the project design intent of each project phase. The construction sequence is not intended to prescribe definitive construction methods and should not be interpreted as a construction specification document. However, the Contractor shall follow the general construction phase principles provided below:

- Protect and maintain existing vegetation wherever possible.
- Minimize the area of disturbance.
- To the extent possible, route unpolluted flows around disturbed areas.
- Install mitigation devices as early as possible.
- Minimize the time disturbed areas are left unstabilized.
- Maintain siltation control devices in proper condition.
- The contractor should use the suggested sequence and techniques as a general guide and modify the suggested methods and procedures as required to best suit seasonal, atmospheric, and site-specific physical constraints for the purpose of minimizing the environmental impact of construction.

### Demolition, Grubbing and Stripping of Limits of Construction Phase

- Install TEC devices as required to prevent sediment transport into resource areas.
- Place a ring of silt socks and/or hay bales around stockpiles.
- Stabilize all exposed surfaces that will not be under immediate construction.
- Store and/or dispose all pavement and building demolition debris as indicated in accordance with all applicable local, state, and federal regulations.
- Compact gravel as work progresses to control erosion potential.
- Apply water to control air suspension of dust.
- Avoid creating an erosive condition due to over-watering.
- Install piped utility systems as required as work progresses, keeping all inlets sealed until all downstream drainage system components are functional.
- Compact pavement base as work progresses.
- Install pavement binder coat starting from the downhill end of the site and work toward the top.
- Repair and stabilize damaged side slopes.
- Clean inverts of drainage structures.
- Install final top coat of pavement.
- Clean inverts of culverts and catch basins.
- Remove sediment and debris from rip-rap outlet areas.
- Remove TEC devices only after permanent vegetation and erosion control has been fully established.

## **8.0 Site Stabilization**

### Grubbing Stripping and Grading

- Erosion control devices shall be in place as shown on the design plans before grading commences.

- Stripping shall be done in a manner, which will not concentrate runoff. If precipitation is expected, earthen berms shall be constructed around the area being stripped, with a silt sock, silt fence or hay bale dike situated in an arc at the low point of the berm.
- If intense precipitation is anticipated, silt socks, hay bales, dikes and /or silt fences shall be used as required to prevent erosion and sediment transport. The materials required shall be stored on site at all time.
- If water is required for soil compaction, it shall be added in a uniform manner that does not allow excess water to flow off the area being compacted.
- Dust shall be held at a minimum by sprinkling exposed soil with an appropriate amount of water.

#### Maintenance of Disturbed Surfaces

- Runoff shall be diverted from disturbed side slopes in both cut and fill.
- Mulching may be used for temporary stabilization.
- Silt sock, hay bale or silt fences shall be set where required to trap products of erosion and shall be maintained on a continuing basis during the construction process.

#### Loaming and Seeding

- Loam shall not be placed unless it is to be seeded directly thereafter.
- All disturbed areas shall have a minimum of 4" of loam placed before seeded and mulched.
- Consideration shall be given to hydro-mulching, especially on slopes in excess of 3 to 1.
- Loamed and seeded slopes shall be protected from washout by mulching or other acceptable slope protection until vegetation begins to grow.

#### Storm Water Collection System Installation

- The Storm Water drainage system shall be installed from the downstream end up and in a manner which will not allow runoff from disturbed areas to enter pipes.
- Excavation for the drainage system shall not be left open when rainfall is expected overnight. If left open under other circumstances, pipe ends shall be closed by a staked board or by an equivalent method.
- All catch basin openings shall be covered by a silt bag between the grate and the frame or protected from sediment by silt fence surrounding the catch basin grate.

#### Completion of Paved Areas

- During the placement of sub-base and pavement, the entrance to the Storm Water drainage systems shall be sealed when rain is expected. When these entrances are closed, consideration must be given to the direction of run-off and measures shall be undertaken to minimize erosion and to provide for the collection of sediment.
- In some situations, it may be necessary to keep catch basins open.
- Appropriate arrangements shall be made downstream to remove all sediment deposition.

#### Stabilization of Surfaces

- Stabilization of surfaces includes the placement of pavement, rip-rap, wood bark mulch and the establishment of vegetated surfaces.
- Upon completion of construction, all surfaces shall be stabilized even though it is apparent that future construction efforts will cause their disturbance.
- Vegetated cover shall be established during the proper growing season and shall be enhanced by soil adjustment for proper pH, nutrients and moisture content.
- Surfaces that are disturbed by erosion processes or vandalism shall be stabilized as soon as possible.
- Areas where construction activities have permanently or temporarily ceased shall be stabilized within 14 days from the last construction activity, except when construction activity will resume within 21 days (e.g., the total time period that construction activity is temporarily ceased is less than 21 days).

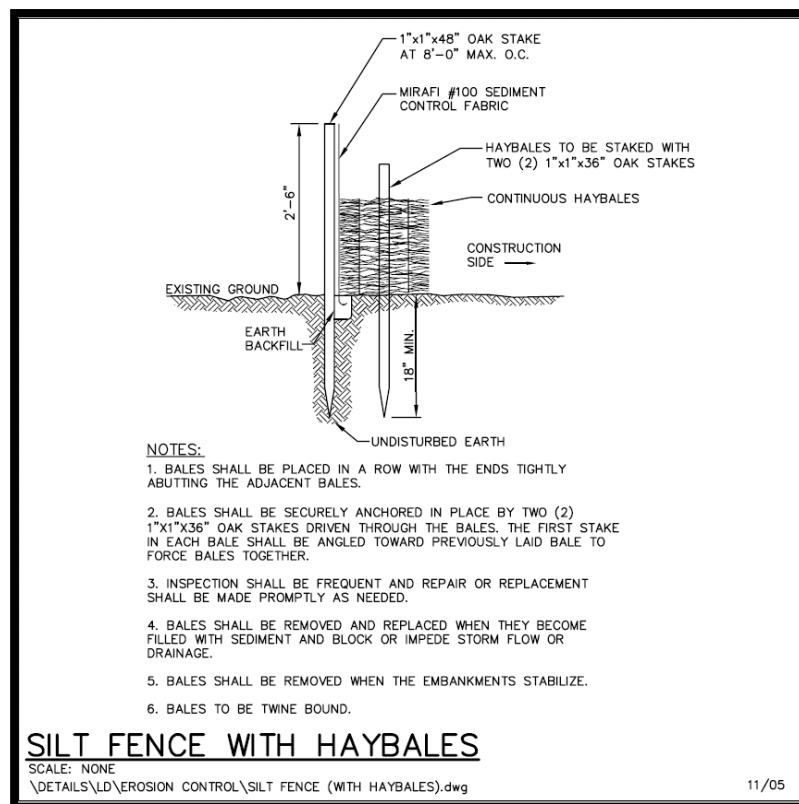
- Hydro-mulching of grass surfaces is recommended, especially if seeding of the surfaces is required outside the normal growing season.
- Hay mulch is an effective method of temporarily stabilizing surfaces, but only if it is properly secured by branches, weighted snow fences or weighted chicken wire.

## **9.0 Temporary Structural Erosion Control Measures**

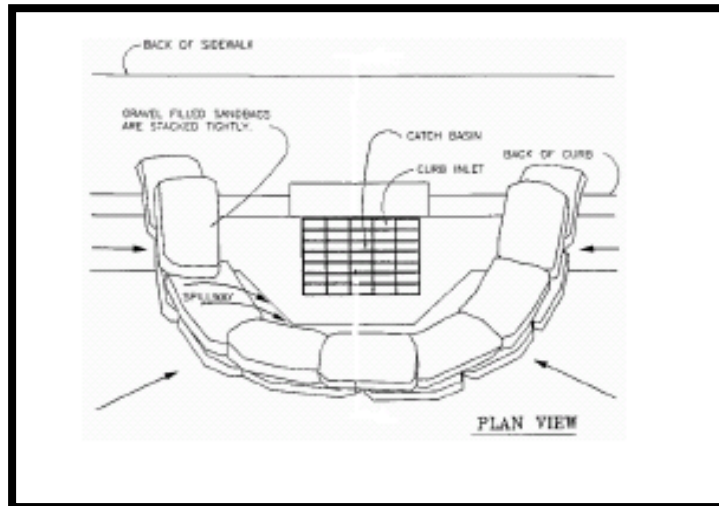
Temporary erosion control measures serve to minimize construction-associated impacts to wetland resource and undisturbed areas. Please refer to the following sections for a description of temporary erosion control measures implemented as part of the project and this sample SWPPP.

### **9.01 Silt Socks, Haybales, and Silt Fencing**

Siltation barriers composed of silt socks and double-staked hay bales and trenched silt fence will be installed within the 100-foot buffer zone along the upland side of delineated wetland resources. The siltation barriers will demarcate the limit of work, form a work envelope and provide additional assurance that construction equipment will not enter the adjacent wetlands or undisturbed portions of the site. All barriers will remain in place until disturbed areas are stabilized.

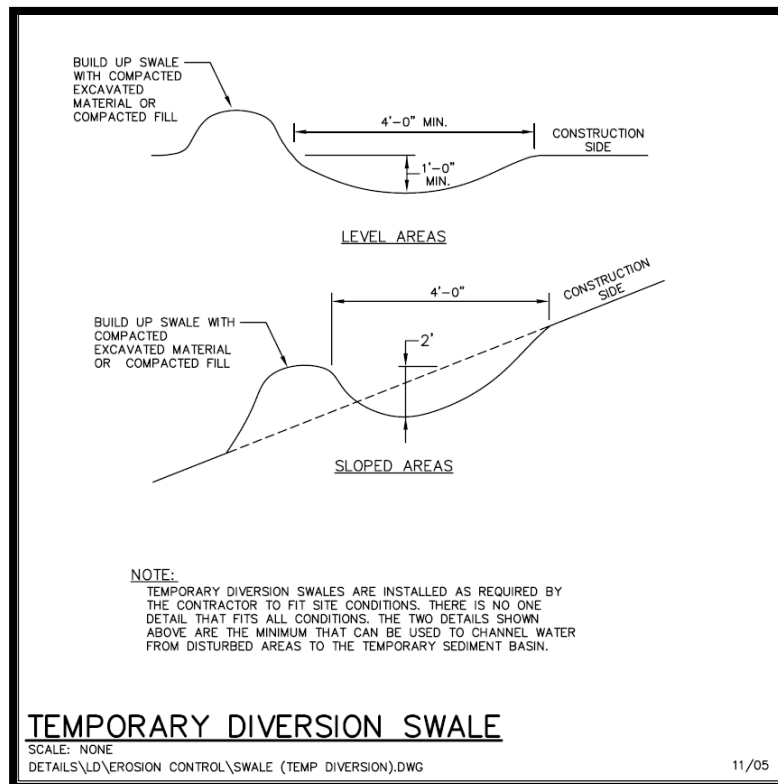






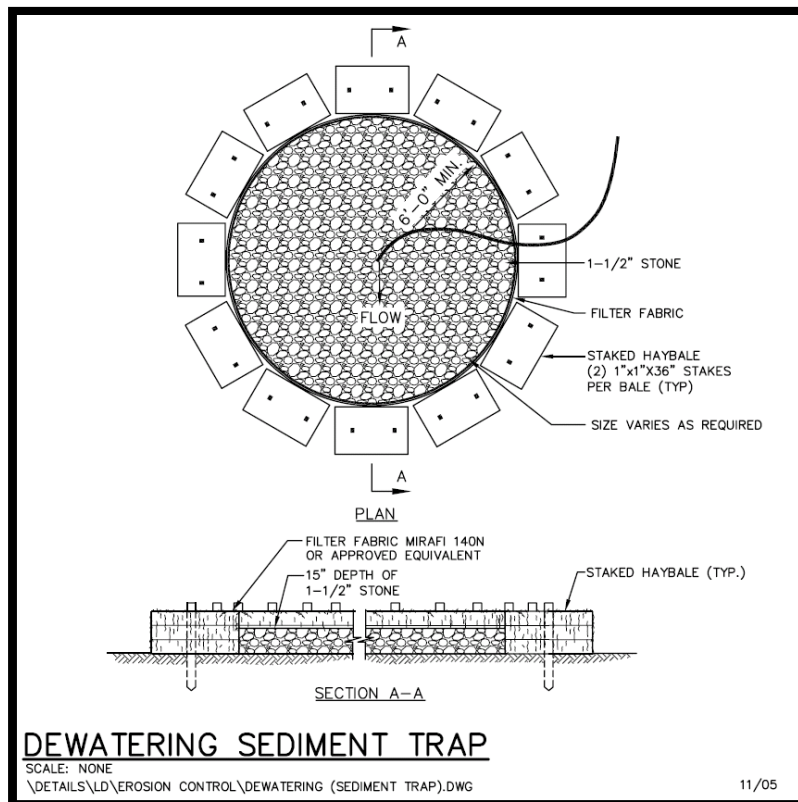
### 9.02 Temporary Storm Water Diversion Swale

A temporary diversion swale is an effective practice for temporarily diverting Storm Water flows and to reduce Storm Water runoff velocities during storm events. The swale channel can be installed before infrastructure construction begins at the site, or as needed throughout the construction process. The diversion swale should be routinely compacted or seeded to minimize the amount of exposed soil.



### 9.03 Dewatering Basins

Dewatering may be required during Storm Water system, foundation construction and utility installation. Should the need for dewatering arise, groundwater will be pumped directly into a temporary settling basin, which will act as a sediment trap during construction. All temporary settling basins will be located within close proximity of daily work activities. Prior to discharge, all groundwater will be treated by means of the settling basin or acceptable substitute. Discharges from sediment basins will be free of visible floating, suspended and settleable solids that would impair the functions of a wetland or degrade the chemical composition of the wetland resource area receiving ground or surface water flows and will be to the combined system.



### 9.04 Material Stockpiling Locations

There will be no storage of soil, gravel or construction debris within the 100-foot buffer zone to wetland resource areas. It is anticipated that all excavated material will be placed in a dump truck and stockpiled outside the 100-foot buffer zone during construction activities. Piping and trench excavate associated with the subsurface utility work will be contained with a single row of silt socks and/or hay bales.

## **10.0 Permanent Structural Erosion Control Measures**

Permanent erosion control measures serve to minimize post-construction impacts to wetland resource areas and undisturbed areas. Please refer to the following sections for a description of permanent erosion control measures implemented as part of the project and this SWPPP.

### **10.01 Infiltration Trenches**

Runoff from the trail will be directed to infiltration trenches. The trenches will be installed prior to the paving of the trail which and will be installed from the downstream end up. The infiltration trenches will be inspected and cleaned as necessary at least two times per year. The optimum time for cleaning is during the period just after the snowmelt of late winter and prior to the onset of heavy spring precipitation. All sediments and hydrocarbons will be properly handled and disposed of in accordance with local state and federal guidelines and regulations.

### **10.02 Leaching Basin**

Runoff from a small portion of the trail will be directed to a leaching basin. The leaching basin will be installed in conjunction with the infiltration trenches. The leaching basin will be inspected and cleaned as necessary at least once per year. The optimum time for cleaning is during the period just after the snowmelt of late winter and prior to the onset of heavy spring precipitation. All sediments and hydrocarbons will be properly handled and disposed of in accordance with local state and federal guidelines and regulations.

## **11.0 Good Housekeeping Best Management Practices**

### **11.01 Material Handling and Waste Management**

Solid waste generation during the construction period will be primarily construction debris. The debris will include scrap lumber (used forming and shoring pallets and other shipping containers), waste packaging materials (plastic sheeting and cardboard), scrap cable and wire, roll-off containers (or dumpsters) and will be removed by a contract hauler to a properly licensed landfill. The roll-off containers will be covered with a properly secured tarp before the hauler exits the site. In addition to construction debris, the construction work force will generate some amount of household-type wastes (food packing, soft drink containers, and other paper). Trash containers for these wastes will be located around the site and will be emptied regularly so as to prevent wind-blown litter. This waste will also be removed by a contract hauler.

All hazardous waste material such as oil filters, petroleum products, paint and equipment maintenance fluids will be stored in structurally sound and sealed shipping containers in the hazardous-materials storage area and segregated from other non-waste materials. Secondary containment will be provided for all materials in the hazardous materials storage area and will consist of commercially available spill pallets. Additionally, all hazardous materials will be disposed of in accordance with federal, state and municipal regulations.

Two temporary sanitary facilities (portable toilets) will be provided at the site in the combined staging area. The toilets will be away from a concentrated flow path and traffic flow and will have collection pans underneath as secondary treatment. All sanitary waste will be collected from an approved party at a minimum of three times per week.

### **11.02 Material Staging Areas**

Construction equipment and maintenance materials will be stored at the combined staging area and materials storage areas. Silt fence will be installed around the perimeter to designate the staging and materials storage area. A watertight shipping container will be used to store hand tools, small parts and other construction materials.

Non-hazardous building materials such as packaging material (wood, plastic and glass) and construction scrap material (brick, wood, steel, metal scraps, and pine cuttings) will be stored in a separate covered storage facility adjacent other stored materials. All hazardous-waste materials such as oil filters, petroleum products, paint and equipment maintenance fluids will be stored in structurally sound and sealed containers under cover within the hazardous materials storage area.

Large items such as stockpiled boardwalk materials will be stored in the open storage area. Such materials will be elevated on wood blocks to minimize contact with runoff. The combined storage areas are expected to remain clean, well organized and equipped with ample cleaning supplies as appropriate for the materials being stored. Perimeter controls such as containment structures, covers and liners will be repaired or replaced as necessary to maintain proper function.

### **11.03 Designated Washout Areas**

Designated temporary, below-ground concrete washout areas will be constructed, as required, to minimize the pollution potential associated with concrete, paint, stucco, mixers etc. Signs will, if required, be posted marking the location of the washout area to ensure that concrete equipment operators use the proper facility. Concrete pours will not be conducted during or before an anticipated precipitation event. All excess concrete and concrete washout slurries from the concrete mixer trucks and chutes will be discharged to the washout area or hauled off-site for disposal.

### **11.04 Equipment/Vehicle Maintenance and Fueling Areas**

Several types of vehicles and equipment will be used on-site throughout the project including graders, scrapers, excavators, loaders, paving equipment, rollers, trucks and trailers, backhoes and forklifts. All major equipment/vehicle fueling and maintenance will be performed off-site. A small, 20-gallon pickup bed fuel tank will be kept on-site in the combined staging area. When vehicle fueling must occur on-site, the fueling activity will occur in the staging area. Only minor equipment maintenance will occur on-site. All equipment fluids generated from maintenance activities will be disposed of into designated drums stored on spill pallets. Absorbent, spill-cleanup materials and spill kits will be available at the combined staging and materials storage area. Drip pans will be placed under all equipment receiving maintenance and vehicles and equipment parked overnight.

### **11.05 Equipment/Vehicle Wash down Area**

All equipment and vehicle washing will be performed off-site.

### **11.06 Spill Prevention Plan**

A spill containment kit will be kept on-site in the Contractors trailer and/or the designated staging area throughout the duration of construction. Should there be an accidental release of petroleum product into a wetland (or within 100-feet of a wetland), the appropriate agencies will be immediately notified.

## **12.0 Inspections**

Maintenance of existing and proposed BMP's to address Storm Water management facilities during construction is an on-going process. The purpose of the inspections is to observe all sources of Storm Water or non-Storm Water discharge as identified in the SWPPP as well as the status of the receiving waters and fulfill the requirements of the Order of Conditions. The following sections describe the appropriate inspection measures to adequately implement the projects SWPPP. A blank inspection form is provided at the end of this section. Completed inspection forms are to be maintained on site.

### **12.01 Inspection Personnel**

The owners appointed representative will be responsible for performing regular inspections of erosion controls and ordering repairs as necessary.

### **12.02 Inspection Frequency**

Inspections will be performed by qualified personnel once every 7 days and within 24-hours after a storm event of greater than one-half inch, in accordance with the CGP and as required by the OOC. The inspections must be documented on the inspection form provided at the end of this section and completed forms will be provided to the on-site supervisor and maintained at the Owners office throughout the entire duration of construction.

### **12.03 Inspection Reporting**

Each inspection report will summarize the scope of the inspection, name(s) and qualifications of personnel making the inspection, and major observations relating to the implementation of the SWPPP, including compliance and non-compliance items. Completed inspection reports will remain with the completed SWPPP on site.

**SWPPP INSPECTION AND MAINTENANCE REPORT**

**Neponset River Greenway – Tenean Beach to Morrissey Boulevard  
 Boston, Massachusetts**

TO BE COMPLETED AT LEAST EVERY 7 DAYS AND WITHIN 24 HOURS OF A STORM EVENT OF AT LEAST 0.5 INCHES. AFTER SITE STABILIZATION, TO BE COMPLETED AT LEAST ONCE PER MONTH FOR THREE YEARS OR UNTIL A NOTICE OF TERMINATION IS FILED.

**INSPECTOR NAME /TITLE:** \_\_\_\_\_ **DATE:** \_\_\_\_\_  
**START/END TIME:** \_\_\_\_\_

**Type of Inspection**

Regular     Pre-storm event     During storm event     Post-storm event (inches \_\_\_\_\_)

**Construction Activities:**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Weather at Time of Inspection:**

\_\_\_\_\_

\_\_\_\_\_

**Has it rained since the last inspection?**

Yes     No

**If yes, provide:**

**Storm Start Date & Time:** \_\_\_\_\_ **Storm Duration (hrs):** \_\_\_\_\_ **Approximate Rainfall (in):** \_\_\_\_\_

**Do you suspect that discharges may have occurred since the last inspection?**

Yes     No

**Are there any discharges at the time of inspection?**

Yes     No

BMP Description	In Conformance	Effective	Notes
<b>Construction Entrance</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
<b>Haybales and Silt Fencing</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
<b>Storage/Disposal Areas</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
<b>Subsurface Infiltration System</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	

<b>Catch Basins</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
<b>Other</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
<u>Other</u>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	

**SITE STABILIZATION STATUS:**

<b>BMP/Activity</b>	<b>Implemented</b>	<b>Maintained</b>	<b>Status/Actions Required</b>
<b>All Slopes and disturbed areas not actively being worked properly stabilized?</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<i>Are natural resource areas e.g., stream, wetlands, mature trees, etc.) protected with barriers or similar BMP's?</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Are perimeter controls and sediment barriers adequately installed and maintained?</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Are discharge points and receiving waters free of sediment deposits?</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Are Storm drain inlets properly protected?</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Is there evidence of sediment being tracked into the street?</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Is trash/littler from work areas collected and placed in covered dumpsters?</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Are washout facilities available, clearly marked, and maintained?</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Are vehicle and equipment fueling, cleaning and maintenance areas free of spills, leaks or any other deleterious material?</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Are materials that are potential stormwater contaminants stored inside or under cover?</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Are non-stormwater</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes	



<b>discharges (e.g., wash water, dewatering) properly controlled?</b>	<input type="checkbox"/> No	<input type="checkbox"/> No	
<b>Other - specify:</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Other - specify:</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	

**ADDITIONAL OBSERVATIONS:** \_\_\_\_\_

**NEXT INSPECTON TO BE PERFORMED BY:** \_\_\_\_\_ **ON OR BEFORE:** \_\_\_\_\_

**Certification statement:**  
 “I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

Print name: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**SECTION 5.0**

**OPERATION AND MAINTENANCE PLAN**



## **OPERATION AND MAINTENANCE PLAN**

A Stormwater Pollution Prevention Plan (SWPPP) has been designed for the construction and operation of the proposed development (see previous section). The SWPPP provides Best Management Practices (BMP's) that include temporary erosion control devices and a permanent stormwater management system. The erosion control devices will serve to minimize construction impacts to wetland resource areas and impacts to undisturbed areas. The stormwater management system is designed to minimize impacts to wetland areas and to maintain compliance with Massachusetts Surface Water Quality Standards during the operation of the proposed development.

### **Maintenance Responsibility**

Enactment of the Operation and Maintenance Plan will be the responsibility of the Applicant.

The following is a list of temporary and permanent structural erosion control devices that are included within the Stormwater Pollution Prevention Plan:

- Temporary:* Silt Fence  
Silt Fence w/ Haybale Support  
Earth Dikes for Stormwater Diversion  
Storm Drain Inlet Protection  
hay bale check dams
  
- Permanent:* Street Sweeping (no credit claimed)  
Catch basins with deep sumps  
Infiltration Trench  
Leaching Basin

The temporary measures will be installed prior to any construction. They will be removed only after slopes are fully stabilized with permanent vegetation and erosion control has been fully established. The permanent measures will be put into operation upon the completion of the system construction. The following is a brief description of the installation, operation, and maintenance of the BMP's.

All erosion control and drainage structures on site will be the responsibility of the owner to maintain.

### **Haybales, Silt Fences, and Other Temporary Measures**

The temporary erosion control measures will be installed up gradient of any wetland resource area where any disturbance or alteration might otherwise allow for erosion or sedimentation. They will be regularly inspected to ensure that they are functioning adequately. Additional supplies of these temporary measures will be stockpiled on site for any immediate needs or routine replacement. Accumulated sediment shall be removed when it reaches a depth of half the height of the TEC measure or one foot, which ever is less.

### **Street Sweeping**

Street sweeping of parking lots, driveways and streets will occur following the winter snowmelt and during the late spring, summer, and early fall months to ensure that sand and litter is removed from the catchment area and does not enter into the stormwater collection system. There will be a minimum of four street sweepings per year.

### ***Construction Entrance***

Stone used for the construction entrance should be large enough so that it does not get picked up and tracked off of the site by the vehicle traffic. Sharp edged stone should not be used to avoid puncturing tires. Additional stone may have to be added to maintain effectiveness.

If vehicles will be turning onto paved road or drive from the stabilized construction entrance, then an apron should be provided so that vehicles do not go off of the stabilized construction entrance before they leave the site.

The temporary construction entrance may be provided with a vehicle wash rack which drains to a temporary sediment trap or other sediment removing measure. This will allow vehicle tires to be washed prior to leaving the site and ensure that wash water sediments are removed and can be properly disposed of.

### **Infiltration Trenches**

Runoff from the trail will be directed to infiltration trenches. The trenches will be installed prior to the paving of the trail which and will be installed from the downstream end up. The infiltration trenches will be inspected and cleaned as necessary at least two times per year. The optimum time for cleaning is during the period just after the snowmelt of late winter and prior to the onset of heavy spring precipitation. All sediments and hydrocarbons will be properly handled and disposed of in accordance with local state and federal guidelines and regulations. Infiltration trenches will be kept free of debris and trash and periodic mowing and landscape maintenance may be required.

### **Drop Inlets/Leaching Basins**

Runoff from the trail will be directed to drop inlets or leaching basins at the low points in the trail. The structures will be installed in conjunction with the infiltration trenches. The structures will be inspected and cleaned as necessary at least once per year. The optimum time for cleaning is during the period just after the snowmelt of late winter and prior to the onset of heavy spring precipitation. All sediments and hydrocarbons will be properly handled and disposed of in accordance with local state and federal guidelines and regulations.

### **Snow Management**

The purpose of the snow and snowmelt management plan is to provide guidelines regarding snow disposal site selection, site preparation and maintenance that are acceptable to the Department of Environmental Protection, Bureau of Resource Protection. For the driveways and parking areas that require snow removal, snow storage onsite will largely be accomplished by using pervious upland areas away from wetlands. The raised retaining wall along the back portion of the site will limit the amount of snow disposal within the 100 ft wetland buffer. There are adequate snow storage areas located within parking lot islands and edges of paved areas away from the wetland resource areas for small frequent snowfall events. For larger snowfall events or for additional snow storage space, snowfall will be required to be hauled offsite to a snow stockpile area meeting the following DEP requirements:

#### ***Off-Site Snow Storage Criteria***

##### **Site Selection (Off-Site Snow Disposal)**

The snow disposal site is to be located on pervious surfaces in upland areas away from the water resources that surround the site. At these locations, the snow melt water can filter into the soil, leaving behind sand and debris, which can be removed in the springtime. In addition, designated paved surface areas will be used for snow storage. The areas will be identified by the property management prior to the snow season and proper signage will be provided directing plow operators to these areas.

The following areas should be avoided:

- Dumping of snow into open water, or wetlands.
- Avoid disposing of snow on top of storm drain catch basins or in stormwater drainage swales or ditches. Snow combined with sand and debris may block a storm drainage system, causing localized flooding. A high volume of sand, sediment, and litter released from melting snow also may be quickly transported through the system into surface waters.

Site Preparation and Maintenance (Off site snow disposal)

In addition to carefully selecting disposal sites before the winter begins, it is important to prepare and maintain these sites to maximize their effectiveness. The following maintenance measures should be undertaken for all snow disposal sites:

- A silt fence or equivalent barrier should be placed securely on the down gradient side of the snow disposal site.
- To filter pollutants out of the meltwater, a 50-foot vegetative buffer strip should be maintained during the growth season between the disposal site and adjacent water bodies.
- Snow storage areas on impervious surfaces should be set back 25-feet from any catch basins to prevent spring flooding problems based upon blockage of the drainage system.
- Debris should be cleared from the site prior to using the site for snow disposal.
- Debris should be cleared from the site and properly disposed of at the end of the snow season and no later than May 15.

**CONSTRUCTION PHASE INSPECTION SCHEDULE AND EVALUATION CHECKLIST**

<b>Inspection Date</b>	<b>Inspector</b>	<b>BMP Inspected</b>	<b>Inspection Frequency Requirements</b>	<b>Comments</b>	<b>Recommendation</b>	<b>Follow-up Inspection Required (yes/no)</b>
		Haybale & Silt Fence	Weekly and After Major Storm Events			
		Construction Entrance	Weekly and After Major Storm Events			
		Catch Basins	Weekly and After Major Storm Events			
		Leaching Basin	Weekly and After Major Storm Events			
		Infiltration Trenches	Weekly and After Major Storm Events			
		Soil Stockpiles Areas	Weekly and After Major Storm Events			

1. Refer to the Massachusetts Stormwater Handbook Volume Two: Stormwater Technical Handbook (February 2008) for recommendations regarding frequency for inspections and maintenance of specific BMP's
2. Inspections to be conducted by a qualified professional such as an environmental scientist or civil engineer.
3. Limited or no use of sodium chloride salts, fertilizers or pesticides recommended.

Other Notes: (Include deviations form Conservation Commission Orders of Conditions, Planning Board Approvals and Approved Plans



**POST CONSTRUCTION PHASE INSPECTION SCHEDULE AND EVALUATION CHECKLIST**

<b>Inspection Date</b>	<b>Inspector</b>	<b>BMP Inspected</b>	<b>Inspection Frequency Requirements</b>	<b>Comments</b>	<b>Recommendation</b>	<b>Follow-up Inspection Required (yes/no)</b>
		Catch Basins	Annually per DCR NPDES MS4 Permit			
		Leaching Basin	Annually per DCR NPDES MS4 Permit			
		Infiltration Trenches	At a minimum, Twice per Year (more frequently as needed) and After Major Storm Events			

4. Refer to the Massachusetts Stormwater Handbook Volume Two: Stormwater Technical Handbook (February 2008) for recommendations regarding frequency for inspections and maintenance of specific BMP's
5. Inspections to be conducted by a qualified professional such as an environmental scientist or civil engineer.
6. Limited or no use of sodium chloride salts, fertilizers or pesticides recommended.

Other Notes: (Include deviations form Conservation Commission Orders of Conditions, Planning Board Approvals and Approved Plans

**SECTION 6.0**

**PEAK RUNOFF RATE CALCULATIONS**

6.01 PRE-DEVELOPMENT HYDROLOGY WATERSHED PLAN

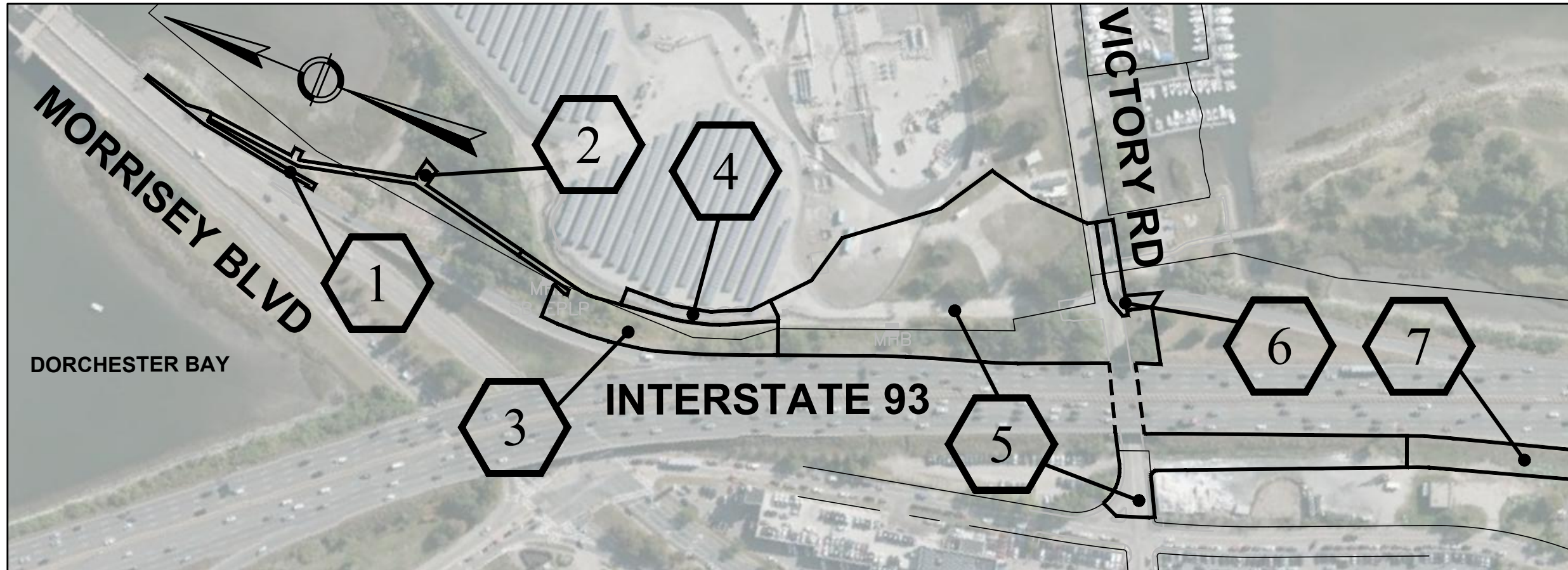
6.02 PRE-DEVELOPMENT HYDROLOGY CALCULATIONS  
(HYDROCAD PRINTOUTS)

6.03 POST DEVELOPMENT HYDROLOGY WATERSHED PLAN

6.04 POST DEVELOPMENT HYDROLOGY CALCULATIONS  
(HYDROCAD PRINTOUTS)

**6.01 PRE-DEVELOPMENT HYDROLOGY WATERSHED PLAN**





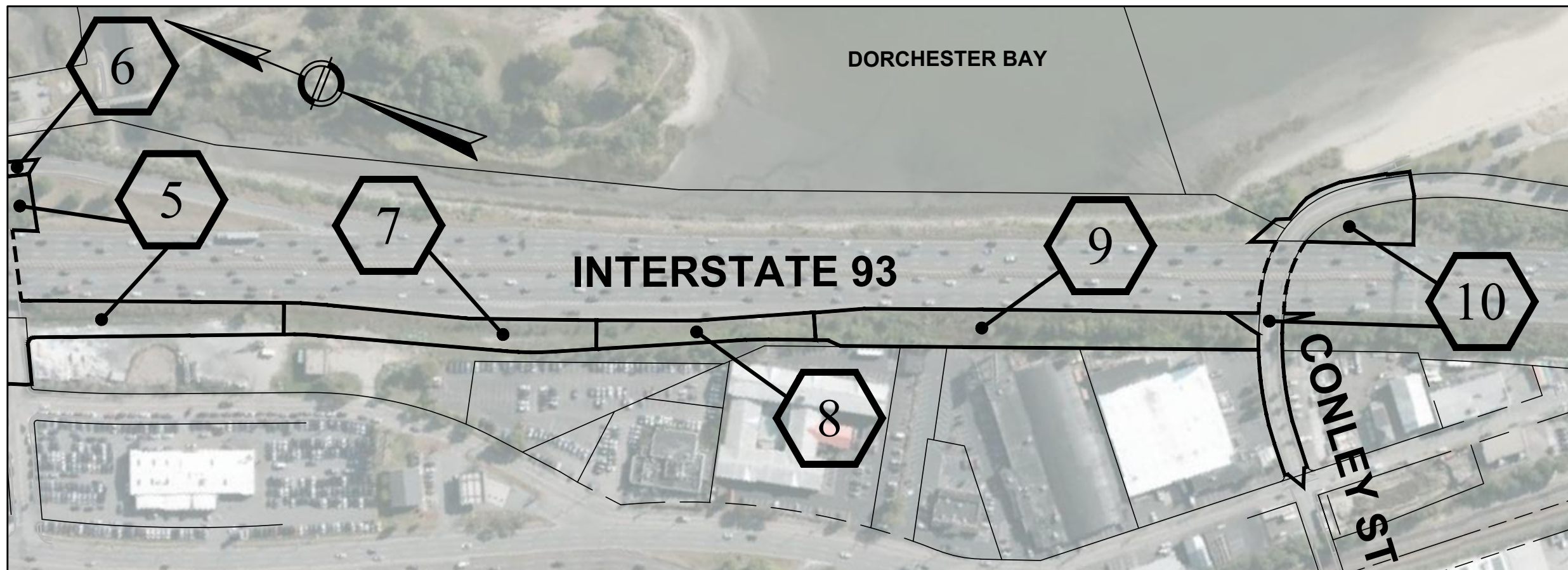
**NEPONSET RIVER  
GREENWAY**

TENEAN BEACH TO  
MORISSEY BLVD

BOSTON  
MASSACHUSETTS  
(SUFFOLK COUNTY)

**EXISTING WATERSHED  
PLAN**

JANUARY 2021



PREPARED FOR:

DCR  
251 CAUSEWAY ST  
BOSTON, MA

**BSC GROUP**

803 Summer Street  
Boston, Massachusetts  
02127

617 896 4300

Job No.: 608943 Date: 1/7/21

Scale: 1" = 200' Revised: \_\_\_\_\_

Dwg No: 1 OF 1

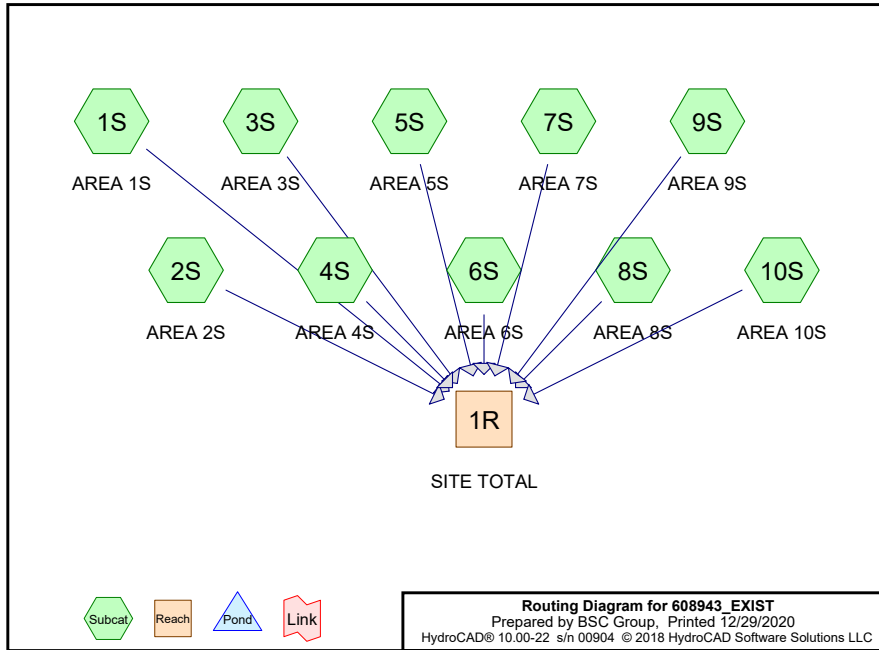
File: 89572.01\Tran\Drainage Design\



**6.02 PRE-DEVELOPMENT HYDROLOGY WATERSHED CALCULATIONS**  
(HYDROCAD PRINTOUTS)







Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
5.489	61	>75% Grass cover, Good, HSG B (1S, 2S, 3S, 4S, 5S, 7S, 8S, 9S, 10S)
0.900	85	Gravel roads, HSG B (2S, 3S, 4S, 5S)
0.522	98	Paved parking, HSG B (1S, 5S, 6S)
0.475	98	Paved roads w/curbs & sewers, HSG B (10S)
<b>7.386</b>	<b>69</b>	<b>TOTAL AREA</b>

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
7.386	HSG B	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S
0.000	HSG C	
0.000	HSG D	
0.000	Other	
<b>7.386</b>		<b>TOTAL AREA</b>

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	5.489	0.000	0.000	0.000	5.489	>75% Grass cover, Good	1S, 2S, 3S, 4S, 5S, 7S, 8S, 9S, 10S
0.000	0.900	0.000	0.000	0.000	0.900	Gravel roads	2S, 3S, 4S, 5S
0.000	0.522	0.000	0.000	0.000	0.522	Paved parking	1S, 5S, 6S
0.000	0.475	0.000	0.000	0.000	0.475	Paved roads w/curbs & sewers	10S
<b>0.000</b>	<b>7.386</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>7.386</b>	<b>TOTAL AREA</b>	

**Summary for Subcatchment 1S: AREA 1S**

Runoff = 0.12 cfs @ 12.13 hrs, Volume= 0.009 af, Depth> 1.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 NRCC 24-hr D 2-Year Rainfall=3.26"

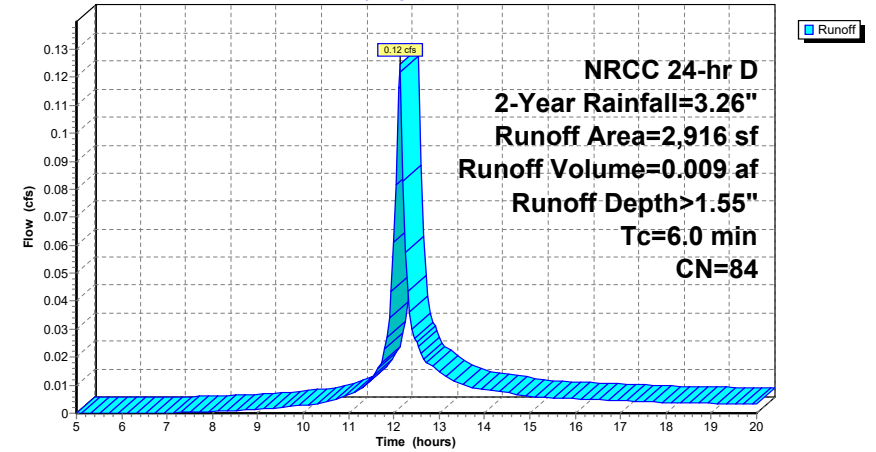
Area (sf)	CN	Description
1,123	61	>75% Grass cover, Good, HSG B
1,793	98	Paved parking, HSG B
2,916	84	Weighted Average
1,123		38.51% Pervious Area
1,793		61.49% Impervious Area

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

**Subcatchment 1S: AREA 1S**

**Hydrograph**



**Summary for Subcatchment 2S: AREA 2S**

Runoff = 0.09 cfs @ 12.14 hrs, Volume= 0.007 af, Depth> 0.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 NRCC 24-hr D 2-Year Rainfall=3.26"

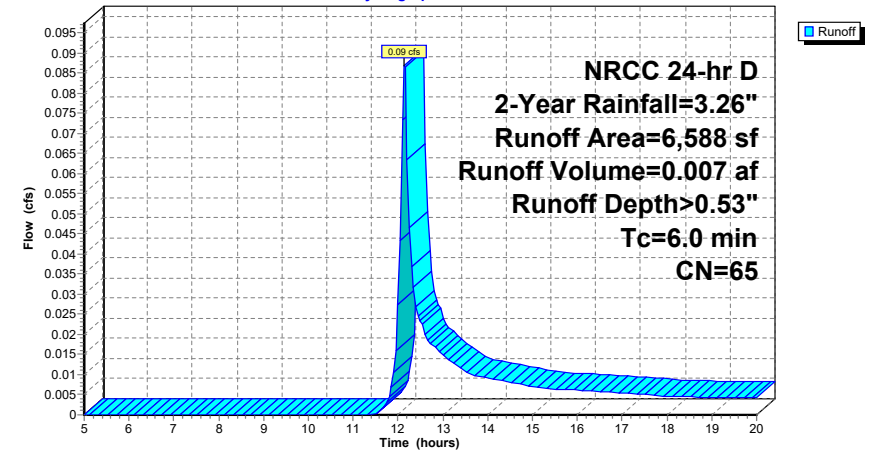
Area (sf)	CN	Description
5,469	61	>75% Grass cover, Good, HSG B
1,119	85	Gravel roads, HSG B
6,588	65	Weighted Average
6,588		100.00% Pervious Area

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

**Subcatchment 2S: AREA 2S**

**Hydrograph**



**Summary for Subcatchment 3S: AREA 3S**

Runoff = 0.24 cfs @ 12.15 hrs, Volume= 0.020 af, Depth> 0.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 NRCC 24-hr D 2-Year Rainfall=3.26"

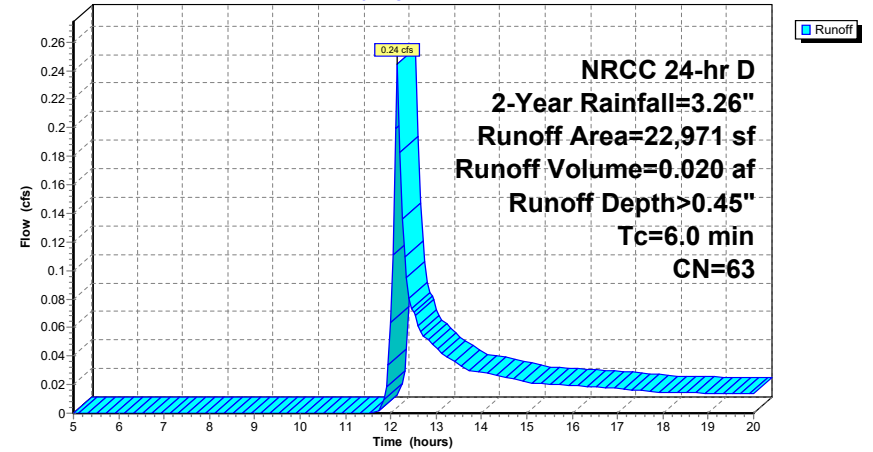
Area (sf)	CN	Description
21,076	61	>75% Grass cover, Good, HSG B
1,895	85	Gravel roads, HSG B
22,971	63	Weighted Average
22,971		100.00% Pervious Area

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

**Subcatchment 3S: AREA 3S**

**Hydrograph**



**Summary for Subcatchment 4S: AREA 4S**

Runoff = 0.07 cfs @ 12.14 hrs, Volume= 0.006 af, Depth> 0.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 NRCC 24-hr D 2-Year Rainfall=3.26"

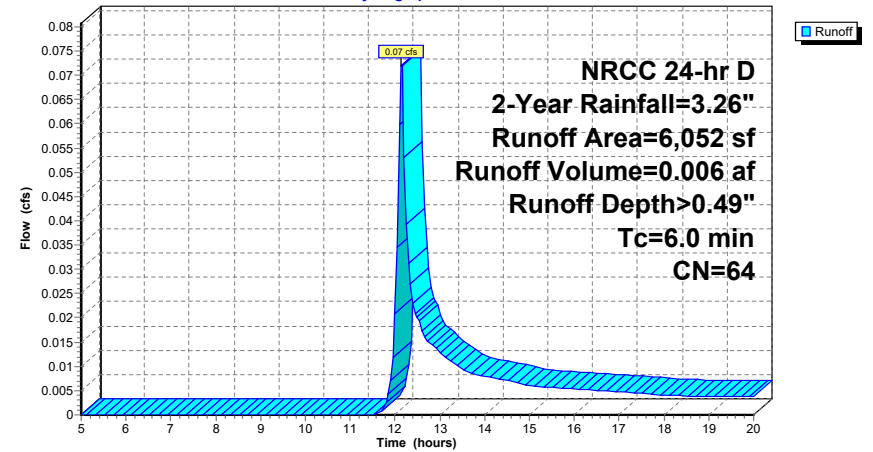
Area (sf)	CN	Description
5,267	61	>75% Grass cover, Good, HSG B
785	85	Gravel roads, HSG B
6,052	64	Weighted Average
6,052		100.00% Pervious Area

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

**Subcatchment 4S: AREA 4S**

**Hydrograph**



**Summary for Subcatchment 5S: AREA 5S**

Runoff = 3.22 cfs @ 12.14 hrs, Volume= 0.228 af, Depth> 0.74"

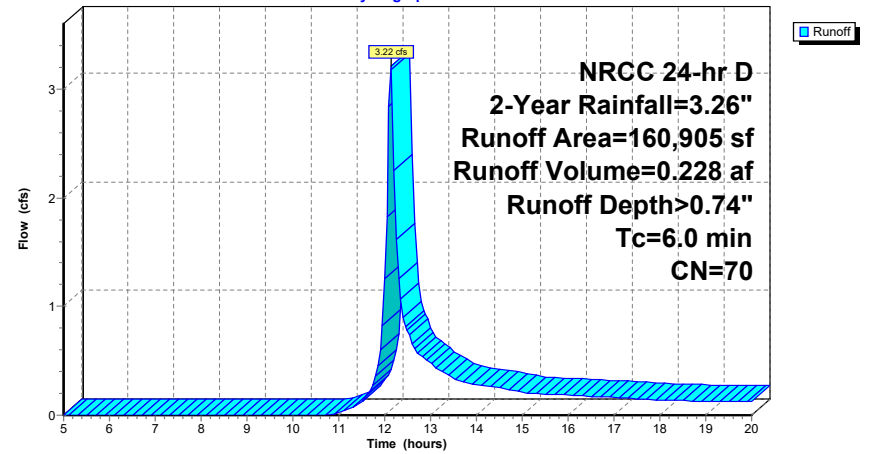
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 NRCC 24-hr D 2-Year Rainfall=3.26"

Area (sf)	CN	Description
15,626	98	Paved parking, HSG B
109,880	61	>75% Grass cover, Good, HSG B
35,399	85	Gravel roads, HSG B
160,905	70	Weighted Average
145,279		90.29% Pervious Area
15,626		9.71% Impervious Area

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

**Subcatchment 5S: AREA 5S**

**Hydrograph**



**Summary for Subcatchment 6S: AREA 6S**

Runoff = 0.35 cfs @ 12.13 hrs, Volume= 0.028 af, Depth> 2.70"

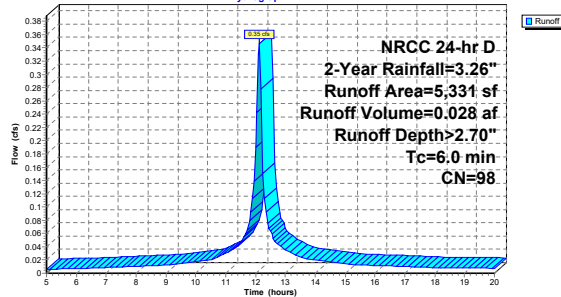
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 NRCC 24-hr D 2-Year Rainfall=3.26"

Area (sf)	CN	Description
5,331	98	Paved parking, HSG B
5,331		100.00% Impervious Area

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

**Subcatchment 6S: AREA 6S**

**Hydrograph**



**Summary for Subcatchment 7S: AREA 7S**

Runoff = 0.21 cfs @ 12.15 hrs, Volume= 0.019 af, Depth> 0.38"

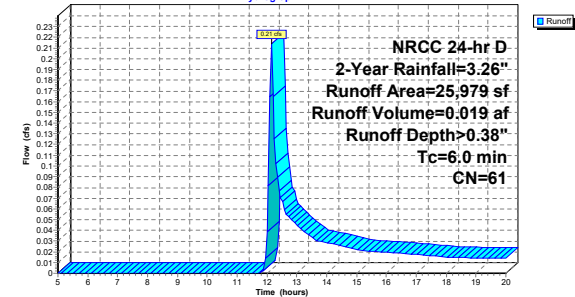
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 NRCC 24-hr D 2-Year Rainfall=3.26"

Area (sf)	CN	Description
25,979	61	>75% Grass cover, Good, HSG B
25,979		100.00% Pervious Area

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

**Subcatchment 7S: AREA 7S**

**Hydrograph**



**Summary for Subcatchment 8S: AREA 8S**

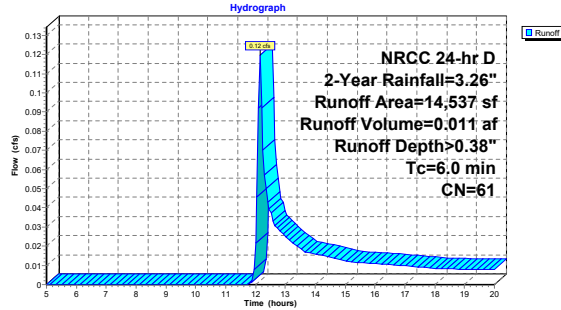
Runoff = 0.12 cfs @ 12.15 hrs, Volume= 0.011 af, Depth> 0.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 NRCC 24-hr D 2-Year Rainfall=3.26"

Area (sf)	CN	Description
14,537	61	>75% Grass cover, Good, HSG B
14,537		100.00% Pervious Area

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

**Subcatchment 8S: AREA 8S**



**Summary for Subcatchment 9S: AREA 9S**

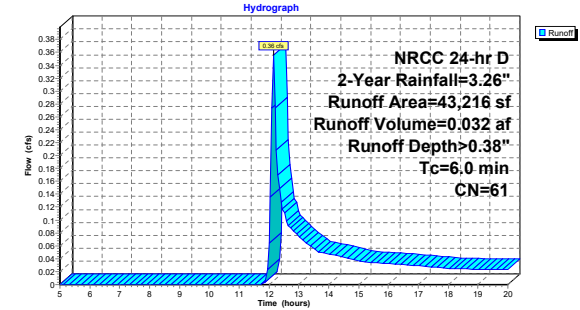
Runoff = 0.36 cfs @ 12.15 hrs, Volume= 0.032 af, Depth> 0.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 NRCC 24-hr D 2-Year Rainfall=3.26"

Area (sf)	CN	Description
43,216	61	>75% Grass cover, Good, HSG B
43,216		100.00% Pervious Area

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

**Subcatchment 9S: AREA 9S**



**Summary for Subcatchment 10S: AREA 10S**

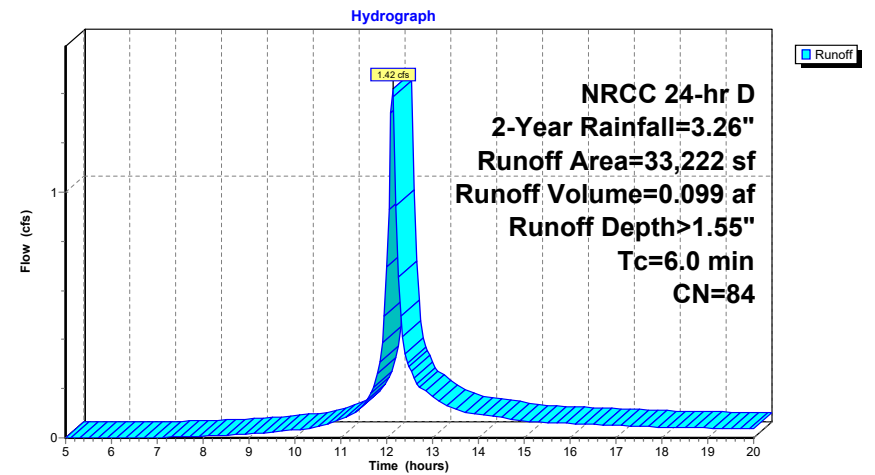
Runoff = 1.42 cfs @ 12.13 hrs, Volume= 0.099 af, Depth> 1.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 NRCC 24-hr D 2-Year Rainfall=3.26"

Area (sf)	CN	Description
20,687	98	Paved roads w/curbs & sewers, HSG B
12,535	61	>75% Grass cover, Good, HSG B
33,222	84	Weighted Average
12,535		37.73% Pervious Area
20,687		62.27% Impervious Area

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

**Subcatchment 10S: AREA 10S**



**Summary for Reach 1R: SITE TOTAL**

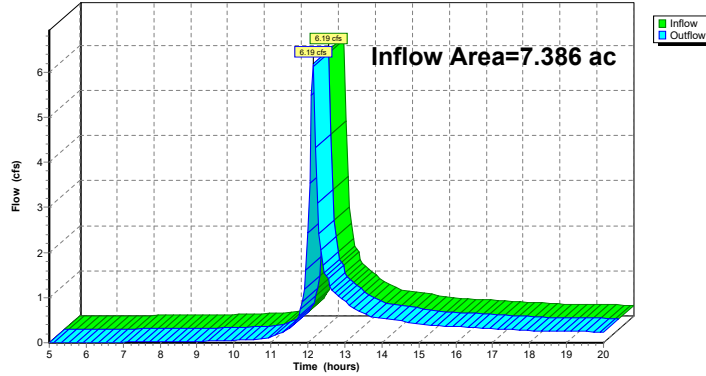
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 7.386 ac, 13.50% Impervious, Inflow Depth > 0.74" for 2-Year event  
 Inflow = 6.19 cfs @ 12.14 hrs, Volume= 0.456 af  
 Outflow = 6.19 cfs @ 12.14 hrs, Volume= 0.456 af, Atten= 0%, Lag= 0.0 min

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

**Reach 1R: SITE TOTAL**

Hydrograph



**Summary for Subcatchment 1S: AREA 1S**

Runoff = 0.23 cfs @ 12.13 hrs, Volume= 0.016 af, Depth> 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 NRCC 24-hr D 10-Year Rainfall=4.90"

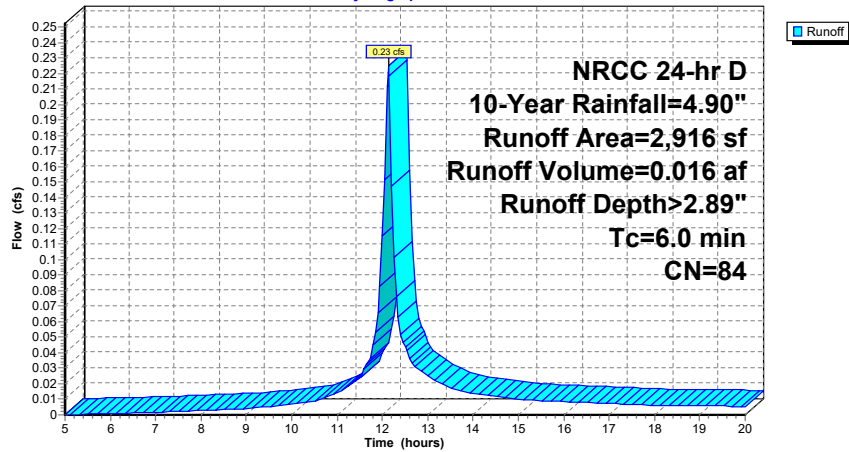
Area (sf)	CN	Description
1,123	61	>75% Grass cover, Good, HSG B
1,793	98	Paved parking, HSG B
2,916	84	Weighted Average
1,123		38.51% Pervious Area
1,793		61.49% Impervious Area

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

**Subcatchment 1S: AREA 1S**

Hydrograph



**Summary for Subcatchment 2S: AREA 2S**

Runoff = 0.25 cfs @ 12.14 hrs, Volume= 0.017 af, Depth> 1.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 NRCC 24-hr D 10-Year Rainfall=4.90"

Area (sf)	CN	Description
5,469	61	>75% Grass cover, Good, HSG B
1,119	85	Gravel roads, HSG B
6,588	65	Weighted Average
6,588		100.00% Pervious Area

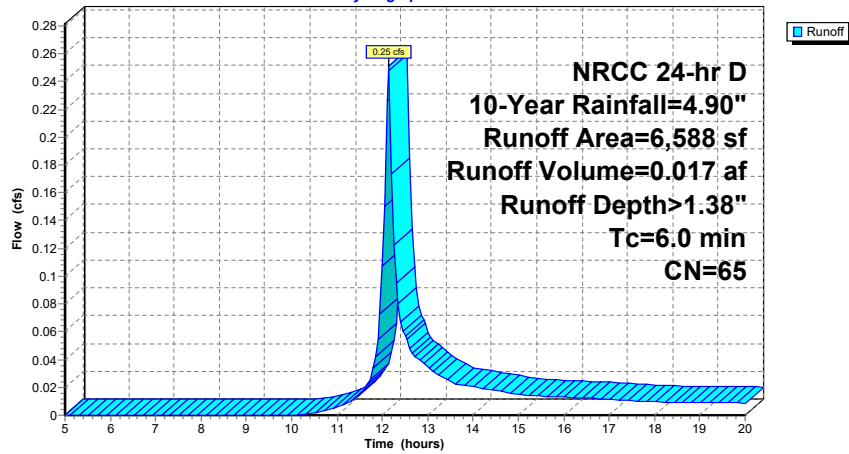
  

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,



Subcatchment 2S: AREA 2S

Hydrograph



Summary for Subcatchment 3S: AREA 3S

Runoff = 0.79 cfs @ 12.14 hrs, Volume= 0.055 af, Depth> 1.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 NRCC 24-hr D 10-Year Rainfall=4.90"

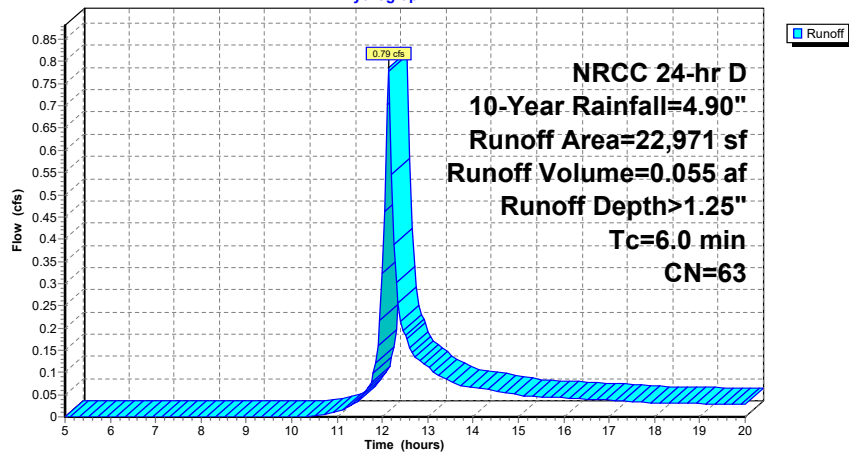
Area (sf)	CN	Description
21,076	61	>75% Grass cover, Good, HSG B
1,895	85	Gravel roads, HSG B
22,971	63	Weighted Average
22,971		100.00% Pervious Area

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

Subcatchment 3S: AREA 3S

Hydrograph



Summary for Subcatchment 4S: AREA 4S

Runoff = 0.22 cfs @ 12.14 hrs, Volume= 0.015 af, Depth> 1.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 NRCC 24-hr D 10-Year Rainfall=4.90"

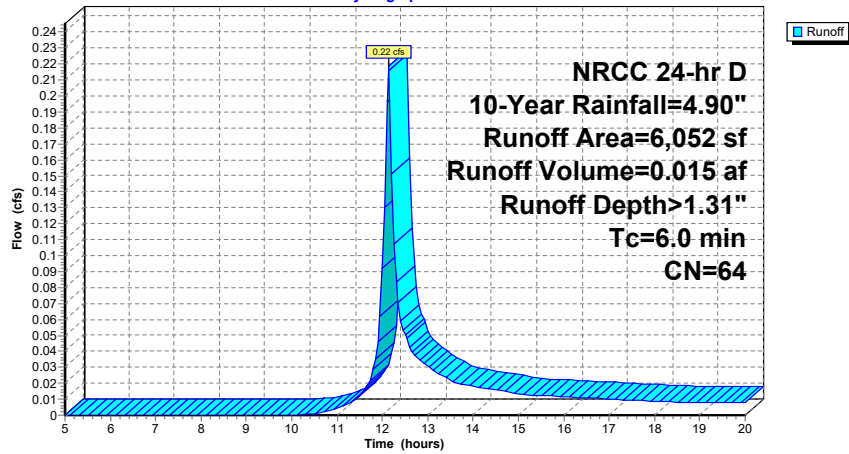
Area (sf)	CN	Description
5,267	61	>75% Grass cover, Good, HSG B
785	85	Gravel roads, HSG B
6,052	64	Weighted Average
6,052		100.00% Pervious Area

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

Subcatchment 4S: AREA 4S

Hydrograph



Summary for Subcatchment 5S: AREA 5S

Runoff = 7.76 cfs @ 12.13 hrs, Volume= 0.532 af, Depth> 1.73"

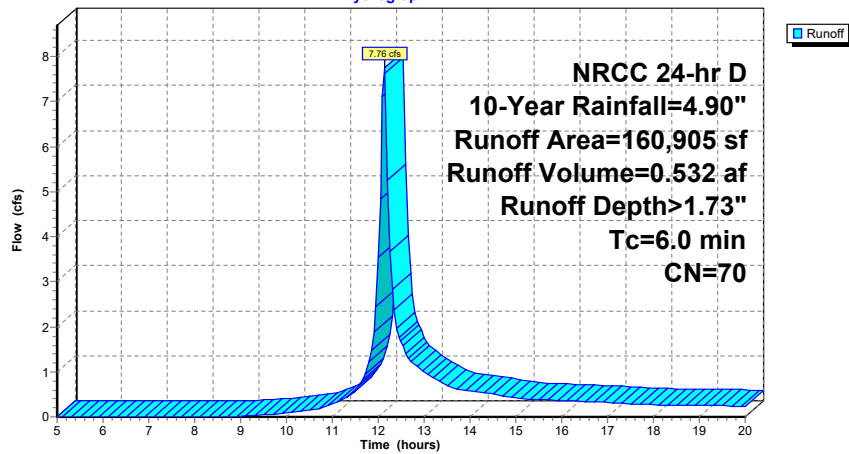
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 NRCC 24-hr D 10-Year Rainfall=4.90"

Area (sf)	CN	Description
15,626	98	Paved parking, HSG B
109,880	61	>75% Grass cover, Good, HSG B
35,399	85	Gravel roads, HSG B
160,905	70	Weighted Average
145,279		90.29% Pervious Area
15,626		9.71% Impervious Area

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

Subcatchment 5S: AREA 5S

Hydrograph



Summary for Subcatchment 6S: AREA 6S

Runoff = 0.52 cfs @ 12.13 hrs, Volume= 0.042 af, Depth> 4.12"

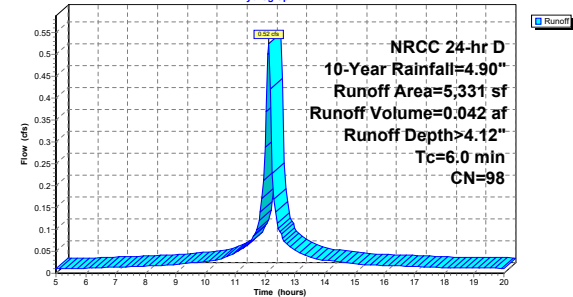
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 NRCC 24-hr D 10-Year Rainfall=4.90"

Area (sf)	CN	Description
5,331	98	Paved parking, HSG B
5,331		100.00% Impervious Area

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

Subcatchment 6S: AREA 6S

Hydrograph



**Summary for Subcatchment 7S: AREA 7S**

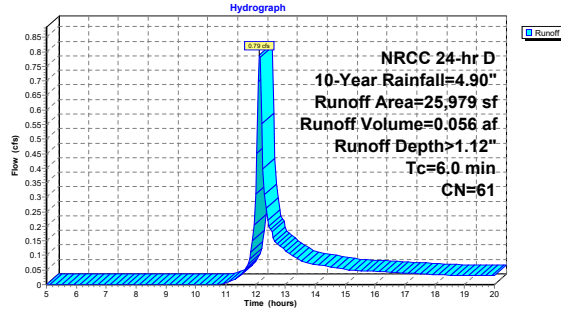
Runoff = 0.79 cfs @ 12.14 hrs, Volume= 0.056 af, Depth> 1.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 NRCC 24-hr D 10-Year Rainfall=4.90"

Area (sf)	CN	Description
25,979	61	>75% Grass cover, Good, HSG B
25,979		100.00% Pervious Area

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

**Subcatchment 7S: AREA 7S**



**Summary for Subcatchment 8S: AREA 8S**

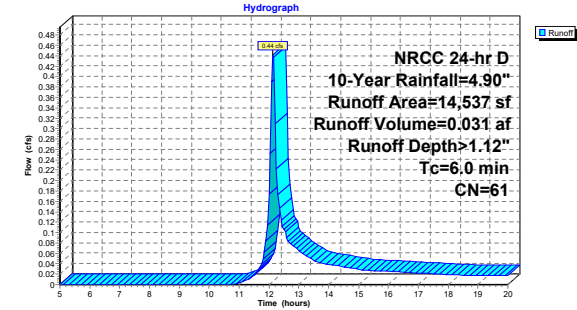
Runoff = 0.44 cfs @ 12.14 hrs, Volume= 0.031 af, Depth> 1.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 NRCC 24-hr D 10-Year Rainfall=4.90"

Area (sf)	CN	Description
14,537	61	>75% Grass cover, Good, HSG B
14,537		100.00% Pervious Area

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

**Subcatchment 8S: AREA 8S**



**Summary for Subcatchment 9S: AREA 9S**

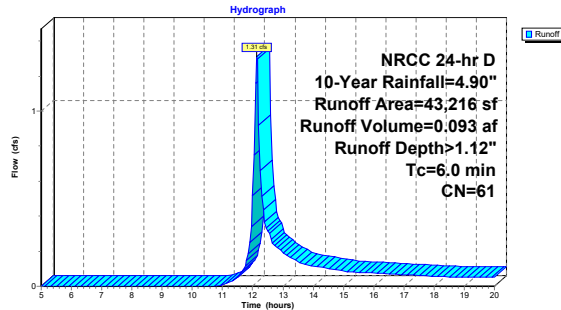
Runoff = 1.31 cfs @ 12.14 hrs, Volume= 0.093 af, Depth> 1.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 NRCC 24-hr D 10-Year Rainfall=4.90"

Area (sf)	CN	Description
43,216	61	>75% Grass cover, Good, HSG B
43,216		100.00% Pervious Area

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

**Subcatchment 9S: AREA 9S**



**Summary for Subcatchment 10S: AREA 10S**

Runoff = 2.57 cfs @ 12.13 hrs, Volume= 0.183 af, Depth> 2.89"

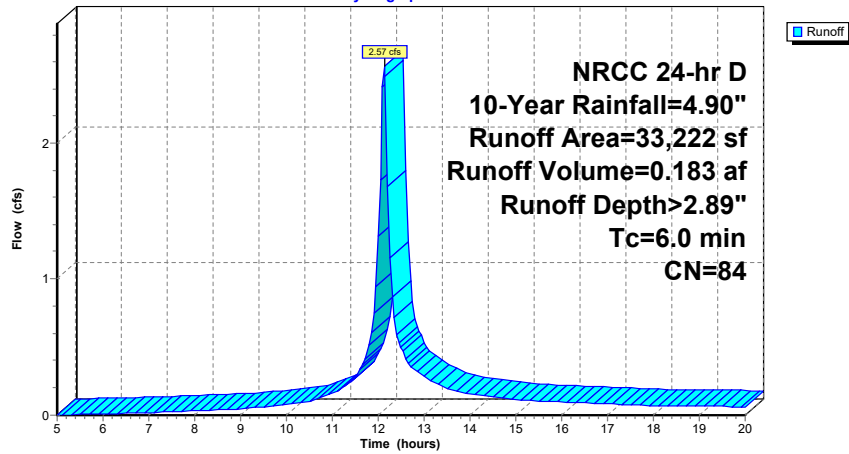
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 NRCC 24-hr D 10-Year Rainfall=4.90"

Area (sf)	CN	Description
20,687	98	Paved roads w/curbs & sewers, HSG B
12,535	61	>75% Grass cover, Good, HSG B
33,222	84	Weighted Average
12,535		37.73% Pervious Area
20,687		62.27% Impervious Area

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

Subcatchment 10S: AREA 10S

Hydrograph



Summary for Reach 1R: SITE TOTAL

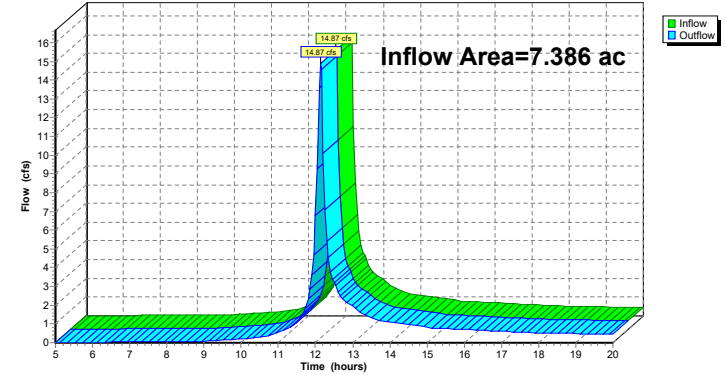
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 7.386 ac, 13.50% Impervious, Inflow Depth > 1.69" for 10-Year event  
 Inflow = 14.87 cfs @ 12.13 hrs, Volume= 1.041 af  
 Outflow = 14.87 cfs @ 12.13 hrs, Volume= 1.041 af, Atten= 0%, Lag= 0.0 min

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

Reach 1R: SITE TOTAL

Hydrograph



Summary for Subcatchment 1S: AREA 1S

Runoff = 0.47 cfs @ 12.13 hrs, Volume= 0.035 af, Depth> 6.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 NRCC 24-hr D 100-Year Rainfall=8.83"

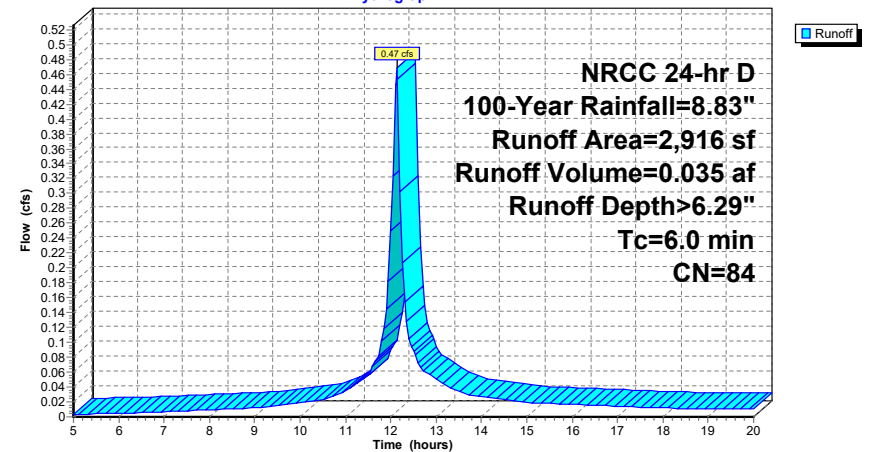
Area (sf)	CN	Description
1,123	61	>75% Grass cover, Good, HSG B
1,793	98	Paved parking, HSG B
2,916	84	Weighted Average
1,123		38.51% Pervious Area
1,793		61.49% Impervious Area

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

Subcatchment 1S: AREA 1S

Hydrograph



**Summary for Subcatchment 2S: AREA 2S**

Runoff = 0.75 cfs @ 12.13 hrs, Volume= 0.052 af, Depth> 4.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 NRCC 24-hr D 100-Year Rainfall=8.83"

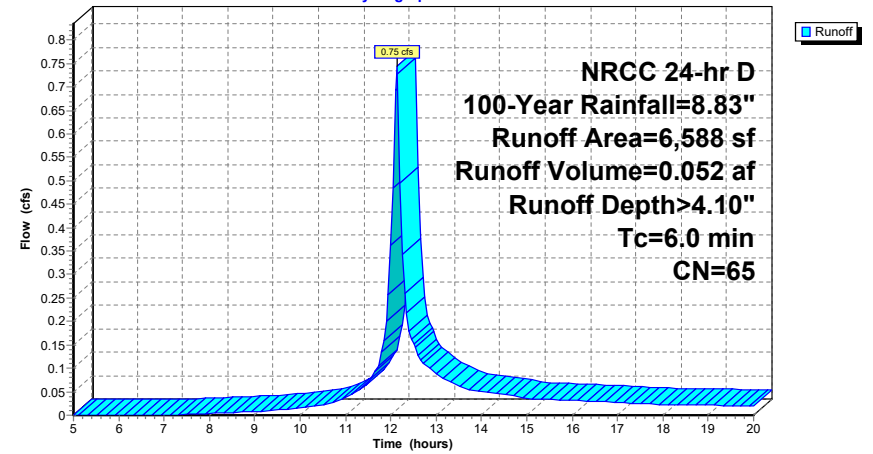
Area (sf)	CN	Description
5,469	61	>75% Grass cover, Good, HSG B
1,119	85	Gravel roads, HSG B
6,588	65	Weighted Average
6,588		100.00% Pervious Area

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

**Subcatchment 2S: AREA 2S**

Hydrograph



**Summary for Subcatchment 3S: AREA 3S**

Runoff = 2.46 cfs @ 12.13 hrs, Volume= 0.170 af, Depth> 3.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 NRCC 24-hr D 100-Year Rainfall=8.83"

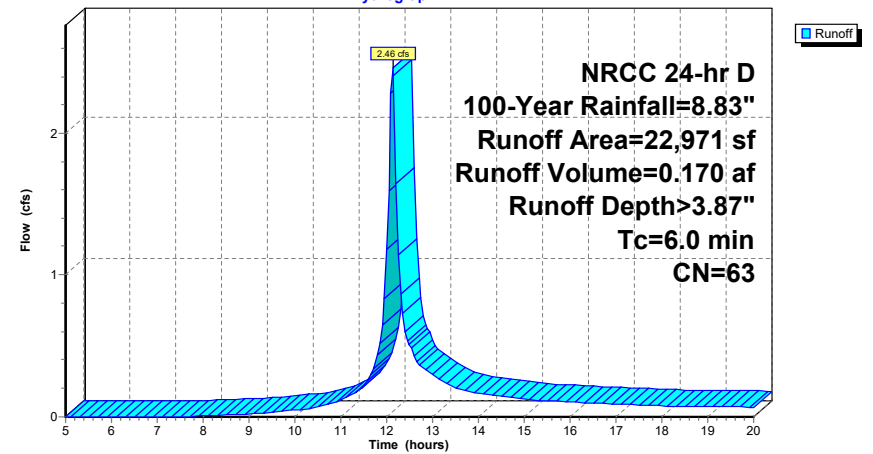
Area (sf)	CN	Description
21,076	61	>75% Grass cover, Good, HSG B
1,895	85	Gravel roads, HSG B
22,971	63	Weighted Average
22,971		100.00% Pervious Area

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

**Subcatchment 3S: AREA 3S**

Hydrograph



**Summary for Subcatchment 4S: AREA 4S**

Runoff = 0.67 cfs @ 12.13 hrs, Volume= 0.046 af, Depth> 3.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 NRCC 24-hr D 100-Year Rainfall=8.83"

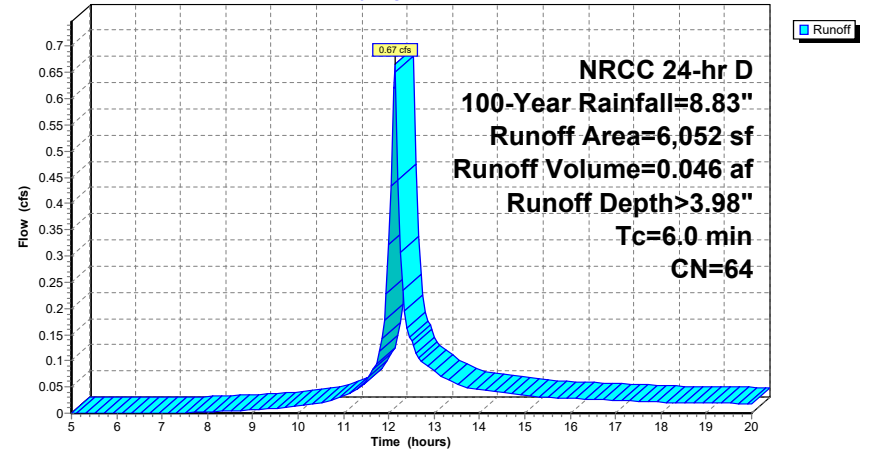
Area (sf)	CN	Description
5,267	61	>75% Grass cover, Good, HSG B
785	85	Gravel roads, HSG B
6,052	64	Weighted Average
6,052		100.00% Pervious Area

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

**Subcatchment 4S: AREA 4S**

**Hydrograph**



**Summary for Subcatchment 5S: AREA 5S**

Runoff = 20.51 cfs @ 12.13 hrs, Volume= 1.441 af, Depth> 4.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 NRCC 24-hr D 100-Year Rainfall=8.83"

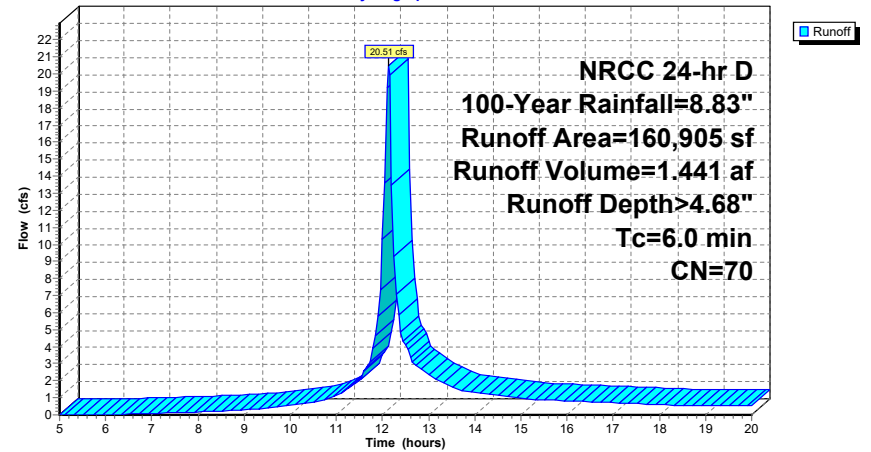
Area (sf)	CN	Description
15,626	98	Paved parking, HSG B
109,880	61	>75% Grass cover, Good, HSG B
35,399	85	Gravel roads, HSG B
160,905	70	Weighted Average
145,279		90.29% Pervious Area
15,626		9.71% Impervious Area

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

**Subcatchment 5S: AREA 5S**

**Hydrograph**



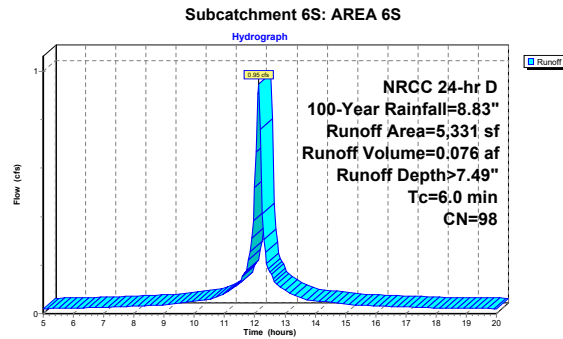
**Summary for Subcatchment 6S: AREA 6S**

Runoff = 0.95 cfs @ 12.13 hrs, Volume= 0.076 af, Depth> 7.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 NRCC 24-hr D 100-Year Rainfall=8.83"

Area (sf)	CN	Description
5,331	98	Paved parking, HSG B
5,331		100.00% Impervious Area

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



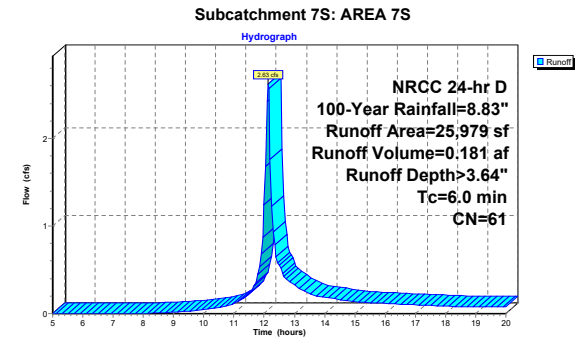
**Summary for Subcatchment 7S: AREA 7S**

Runoff = 2.63 cfs @ 12.13 hrs, Volume= 0.181 af, Depth> 3.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 NRCC 24-hr D 100-Year Rainfall=8.83"

Area (sf)	CN	Description
25,979	61	>75% Grass cover, Good, HSG B
25,979		100.00% Pervious Area

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



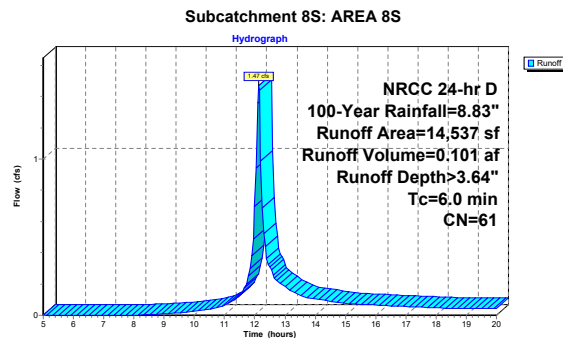
**Summary for Subcatchment 8S: AREA 8S**

Runoff = 1.47 cfs @ 12.13 hrs, Volume= 0.101 af, Depth> 3.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 NRCC 24-hr D 100-Year Rainfall=8.83"

Area (sf)	CN	Description
14,537	61	>75% Grass cover, Good, HSG B
14,537		100.00% Pervious Area

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



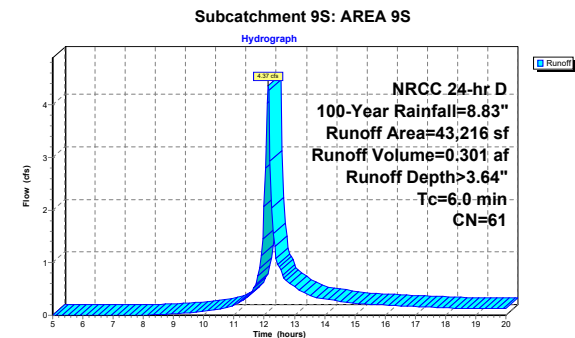
**Summary for Subcatchment 9S: AREA 9S**

Runoff = 4.37 cfs @ 12.13 hrs, Volume= 0.301 af, Depth> 3.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 NRCC 24-hr D 100-Year Rainfall=8.83"

Area (sf)	CN	Description
43,216	61	>75% Grass cover, Good, HSG B
43,216		100.00% Pervious Area

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





**Summary for Subcatchment 10S: AREA 10S**

Runoff = 5.35 cfs @ 12.13 hrs, Volume= 0.399 af, Depth> 6.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 NRCC 24-hr D 100-Year Rainfall=8.83"

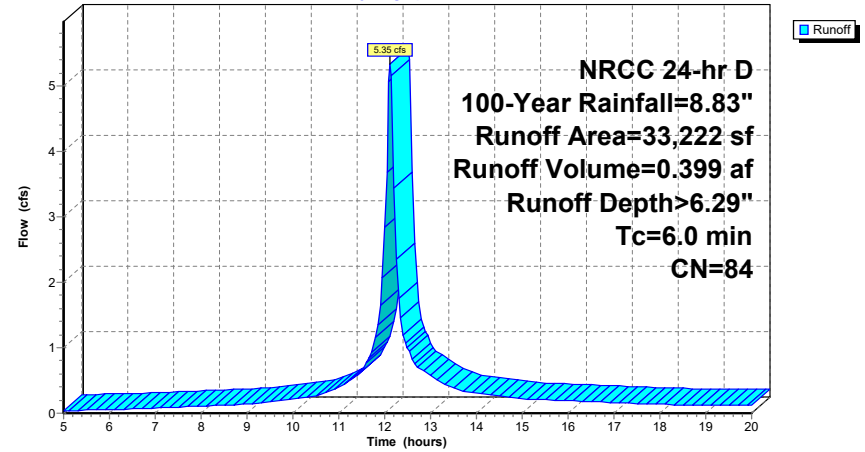
Area (sf)	CN	Description
20,687	98	Paved roads w/curbs & sewers, HSG B
12,535	61	>75% Grass cover, Good, HSG B
33,222	84	Weighted Average
12,535		37.73% Pervious Area
20,687		62.27% Impervious Area

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

**Subcatchment 10S: AREA 10S**

Hydrograph



**Summary for Reach 1R: SITE TOTAL**

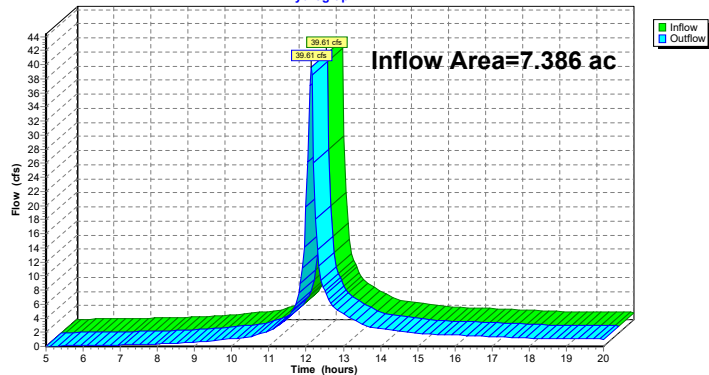
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 7.386 ac, 13.50% Impervious, Inflow Depth > 4.55" for 100-Year event  
 Inflow = 39.61 cfs @ 12.13 hrs, Volume= 2.802 af  
 Outflow = 39.61 cfs @ 12.13 hrs, Volume= 2.802 af, Atten= 0%, Lag= 0.0 min

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

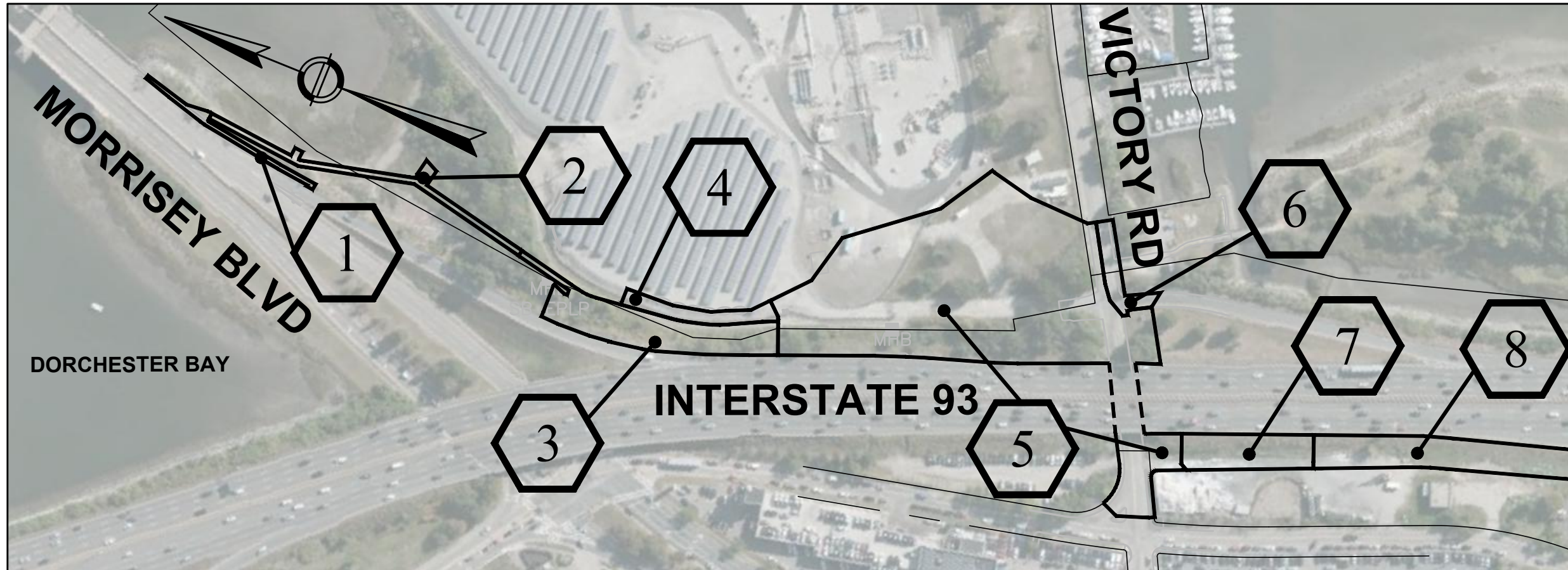
**Reach 1R: SITE TOTAL**

Hydrograph



**6.03 POST-DEVELOPMENT HYDROLOGY WATERSHED PLAN**





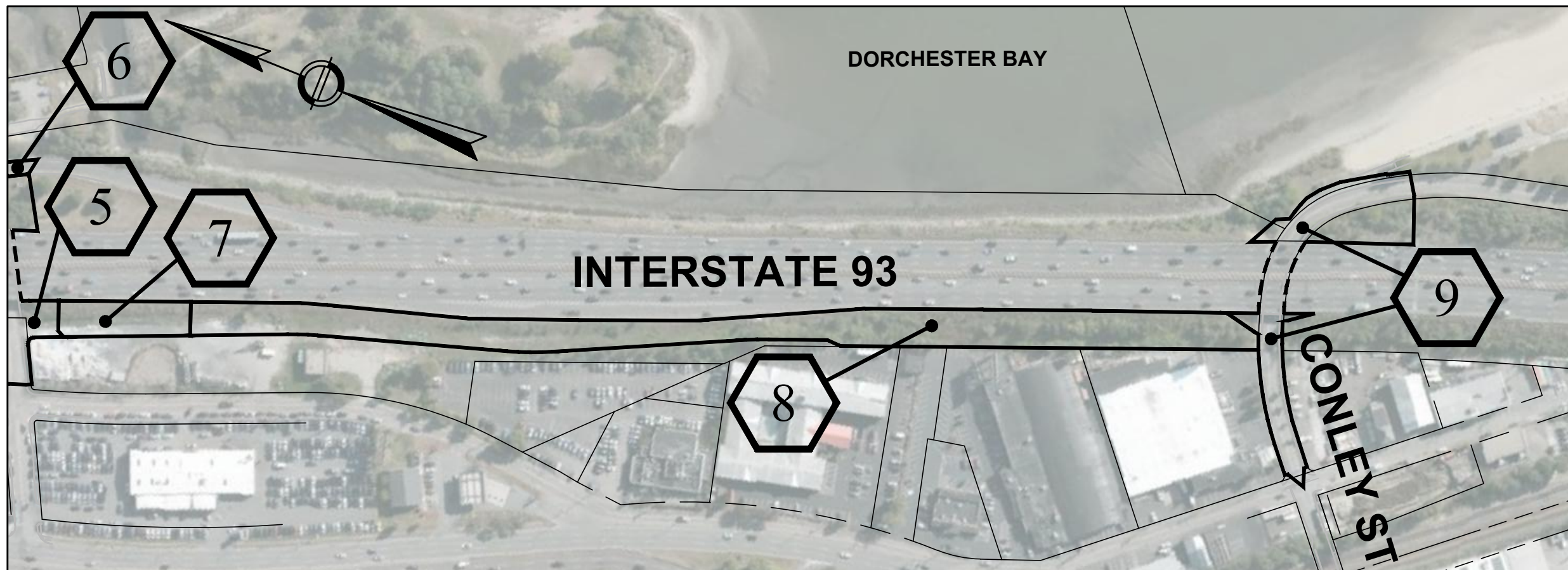
**NEPONSET RIVER  
GREENWAY**

TENEAN BEACH TO  
MORRISSEY BLVD

BOSTON  
MASSACHUSETTS  
(SUFFOLK COUNTY)

**PROPOSED WATERSHED  
PLAN**

JANUARY 2021



PREPARED FOR:

DCR  
251 CAUSEWAY ST  
BOSTON, MA



803 Summer Street  
Boston, Massachusetts  
02127

617 896 4300

Job No.: 608943 Date: 1/7/21

Scale: 1" = 200' Revised: \_\_\_\_\_

Dwg No: 1 OF 1

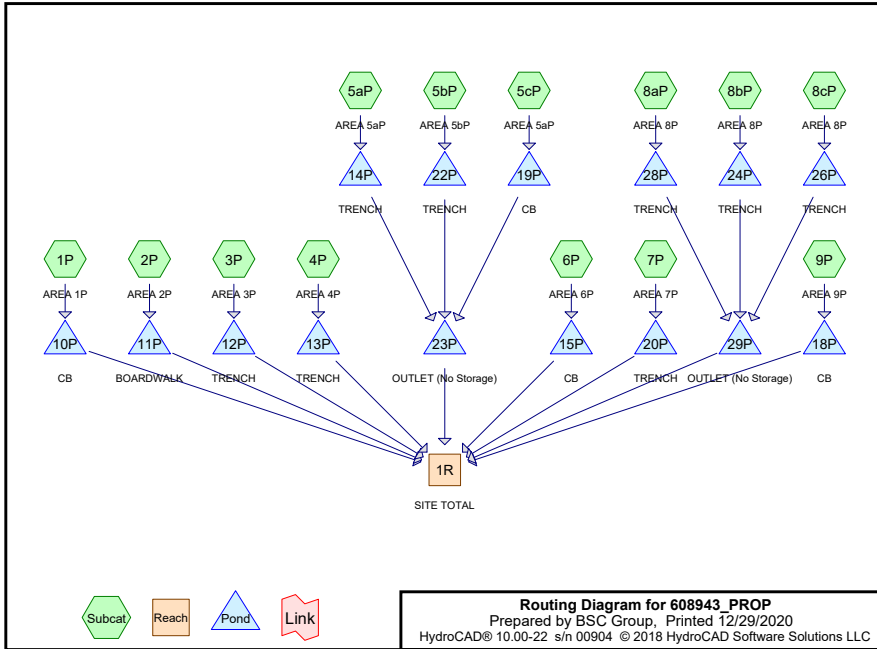
File: 89572.01\Tran\Drainage Design\



**6.04 POST-DEVELOPMENT HYDROLOGY WATERSHED CALCULATIONS**  
(HYDROCAD PRINTOUTS)







**Area Listing (all nodes)**

Area (acres)	CN	Description (subcatchment-numbers)
4.809	61	>75% Grass cover, Good, HSG B (2P, 3P, 4P, 5aP, 5bP, 5cP, 7P, 8aP, 8bP, 8cP, 9P)
0.845	85	Gravel roads, HSG B (2P, 4P, 5bP)
1.732	98	Paved parking, HSG B (1P, 3P, 5aP, 5bP, 5cP, 6P, 7P, 8aP, 8bP, 8cP, 9P)
<b>7.386</b>	<b>72</b>	<b>TOTAL AREA</b>

**Soil Listing (all nodes)**

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
7.386	HSG B	1P, 2P, 3P, 4P, 5aP, 5bP, 5cP, 6P, 7P, 8aP, 8bP, 8cP, 9P
0.000	HSG C	
0.000	HSG D	
0.000	Other	
<b>7.386</b>	<b>TOTAL AREA</b>	

**Ground Covers (all nodes)**

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	4.809	0.000	0.000	0.000	4.809	>75% Grass cover, Good	2P, 3P, 4P, 5aP, 5bP, 5cP, 7P, 8aP, 8bP, 8cP, 9P
0.000	0.845	0.000	0.000	0.000	0.845	Gravel roads	2P, 4P, 5bP
0.000	1.732	0.000	0.000	0.000	1.732	Paved parking	1P, 3P, 5aP, 5bP, 5cP, 6P, 7P, 8aP, 8bP, 8cP, 9P
<b>0.000</b>	<b>7.386</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>7.386</b>	<b>TOTAL AREA</b>	

**Summary for Subcatchment 1P: AREA 1P**

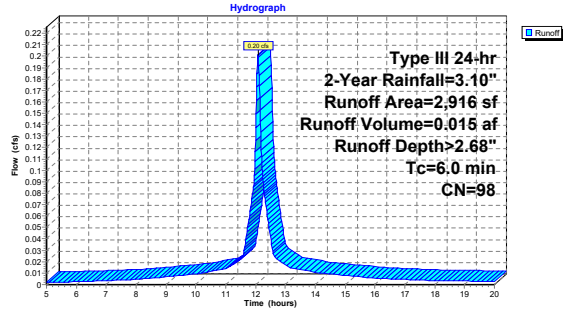
Runoff = 0.20 cfs @ 12.08 hrs, Volume= 0.015 af, Depth> 2.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2-Year Rainfall=3.10"

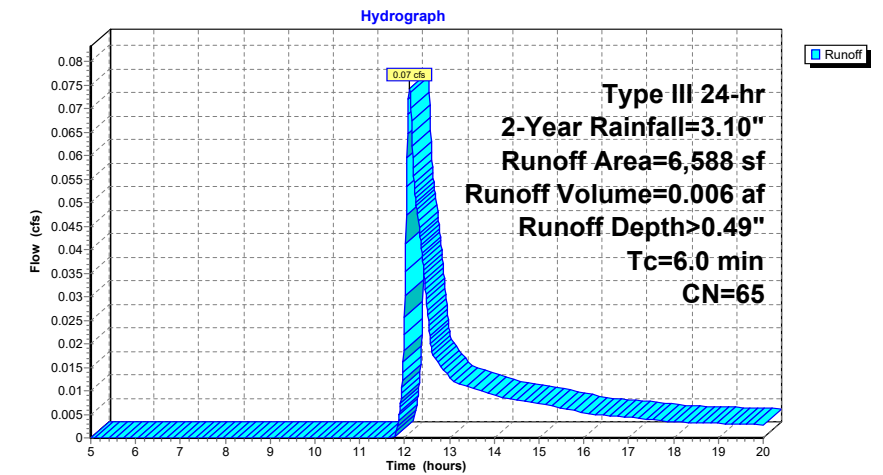
Area (sf)	CN	Description
2,916	98	Paved parking, HSG B
2,916		100.00% Impervious Area

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

**Subcatchment 1P: AREA 1P**



**Subcatchment 2P: AREA 2P**



**Summary for Subcatchment 2P: AREA 2P**

Runoff = 0.07 cfs @ 12.11 hrs, Volume= 0.006 af, Depth> 0.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
5,469	61	>75% Grass cover, Good, HSG B
1,119	85	Gravel roads, HSG B
6,588	65	Weighted Average
6,588		100.00% Pervious Area

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

**Summary for Subcatchment 3P: AREA 3P**

Runoff = 0.32 cfs @ 12.11 hrs, Volume= 0.025 af, Depth> 0.57"

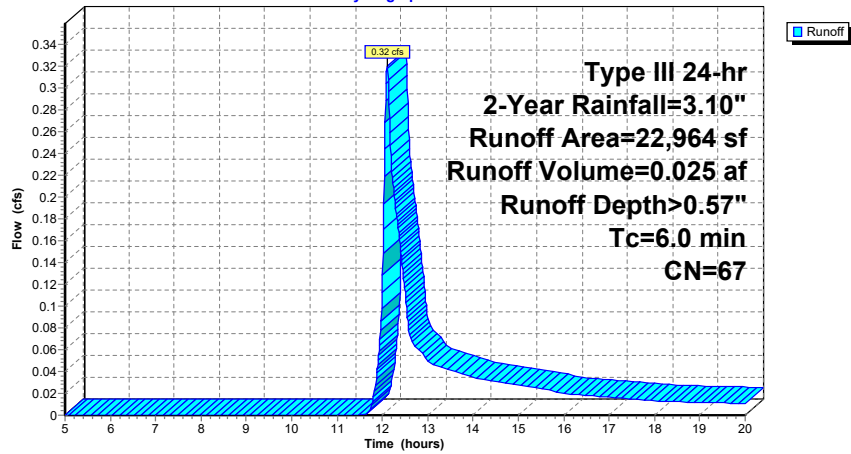
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
3,519	98	Paved parking, HSG B
19,445	61	>75% Grass cover, Good, HSG B
22,964	67	Weighted Average
19,445		84.68% Pervious Area
3,519		15.32% Impervious Area

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

Subcatchment 3P: AREA 3P

Hydrograph



Summary for Subcatchment 4P: AREA 4P

Runoff = 0.22 cfs @ 12.09 hrs, Volume= 0.015 af, Depth> 1.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2-Year Rainfall=3.10"

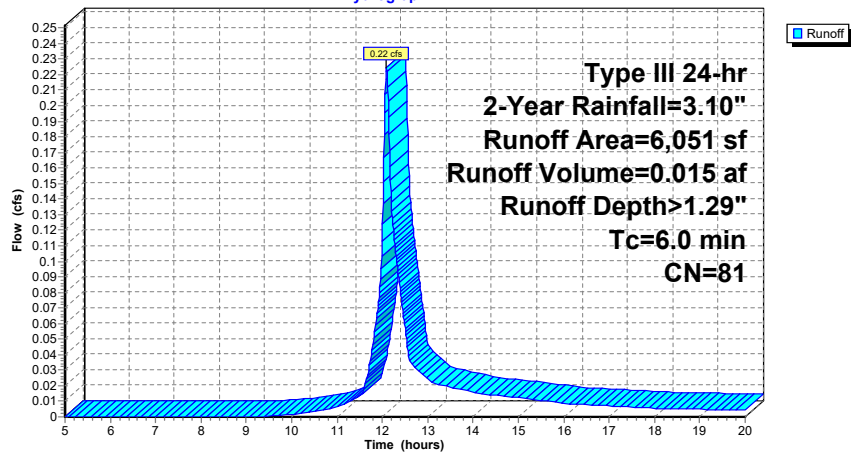
Area (sf)	CN	Description
1,050	61	>75% Grass cover, Good, HSG B
5,001	85	Gravel roads, HSG B
6,051	81	Weighted Average
6,051		100.00% Pervious Area

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

Subcatchment 4P: AREA 4P

Hydrograph



Summary for Subcatchment 5aP: AREA 5aP

Runoff = 0.45 cfs @ 12.11 hrs, Volume= 0.035 af, Depth> 0.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2-Year Rainfall=3.10"

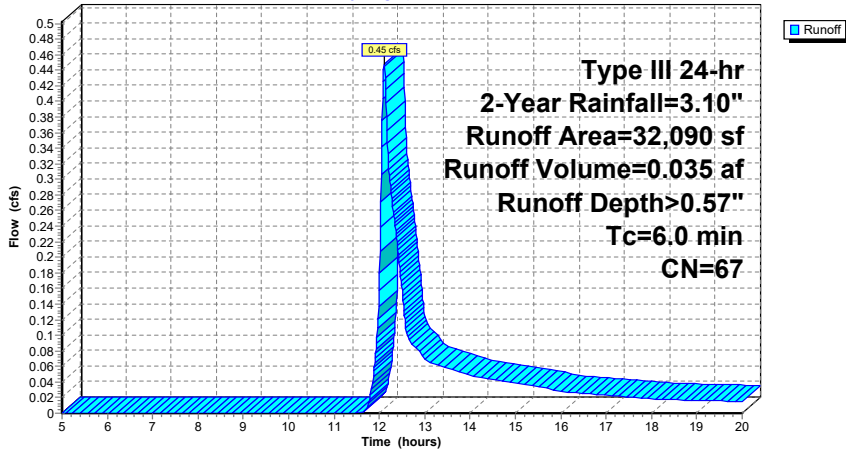
Area (sf)	CN	Description
5,552	98	Paved parking, HSG B
26,538	61	>75% Grass cover, Good, HSG B
32,090	67	Weighted Average
26,538		82.70% Pervious Area
5,552		17.30% Impervious Area

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

Subcatchment 5aP: AREA 5aP

Hydrograph



Summary for Subcatchment 5bP: AREA 5bP

Runoff = 1.58 cfs @ 12.10 hrs, Volume= 0.115 af, Depth> 0.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2-Year Rainfall=3.10"

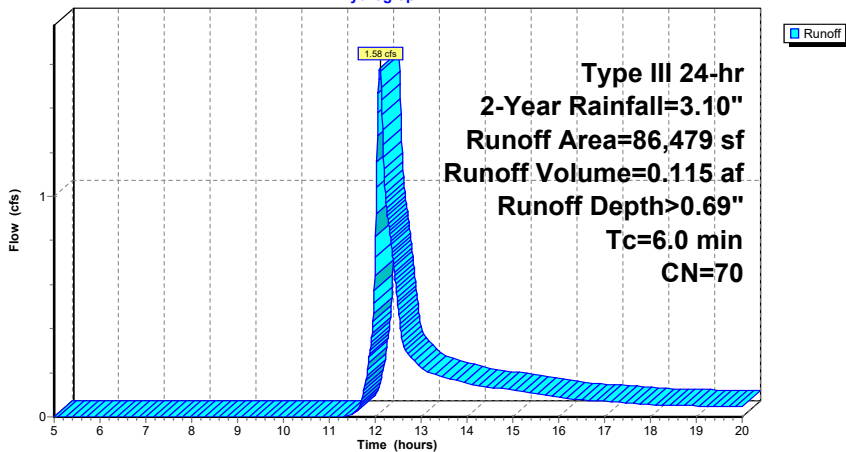
Area (sf)	CN	Description
2,173	98	Paved parking, HSG B
53,633	61	>75% Grass cover, Good, HSG B
30,673	85	Gravel roads, HSG B
86,479	70	Weighted Average
84,306		97.49% Pervious Area
2,173		2.51% Impervious Area

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

Subcatchment 5bP: AREA 5bP

Hydrograph



Summary for Subcatchment 5cP: AREA 5aP

Runoff = 1.07 cfs @ 12.09 hrs, Volume= 0.071 af, Depth> 1.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2-Year Rainfall=3.10"

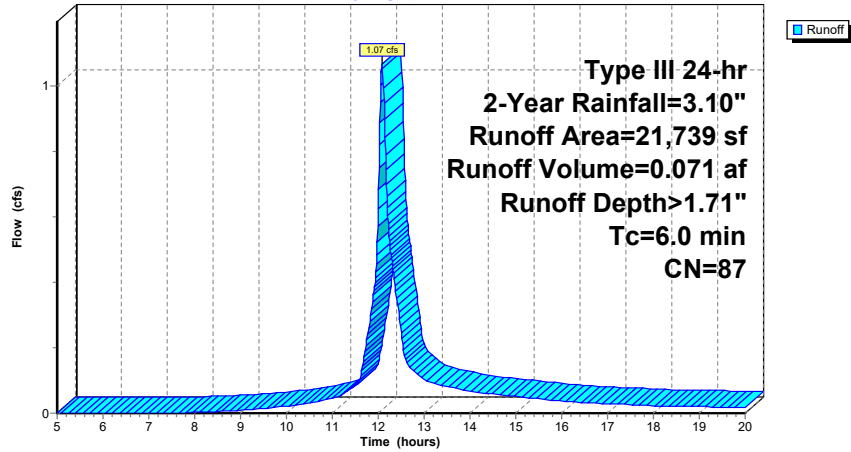
Area (sf)	CN	Description
15,554	98	Paved parking, HSG B
6,185	61	>75% Grass cover, Good, HSG B
21,739	87	Weighted Average
6,185		28.45% Pervious Area
15,554		71.55% Impervious Area

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

Subcatchment 5cP: AREA 5aP

Hydrograph



Summary for Subcatchment 6P: AREA 6P

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.027 af, Depth> 2.68"

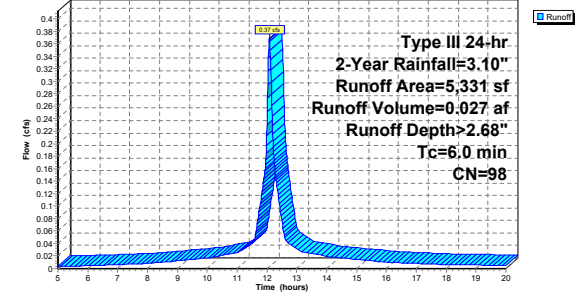
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
5,331	98	Paved parking, HSG B
5,331		100.00% Impervious Area

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

Subcatchment 6P: AREA 6P

Hydrograph



Summary for Subcatchment 7P: AREA 7P

Runoff = 0.17 cfs @ 12.11 hrs, Volume= 0.013 af, Depth> 0.57"

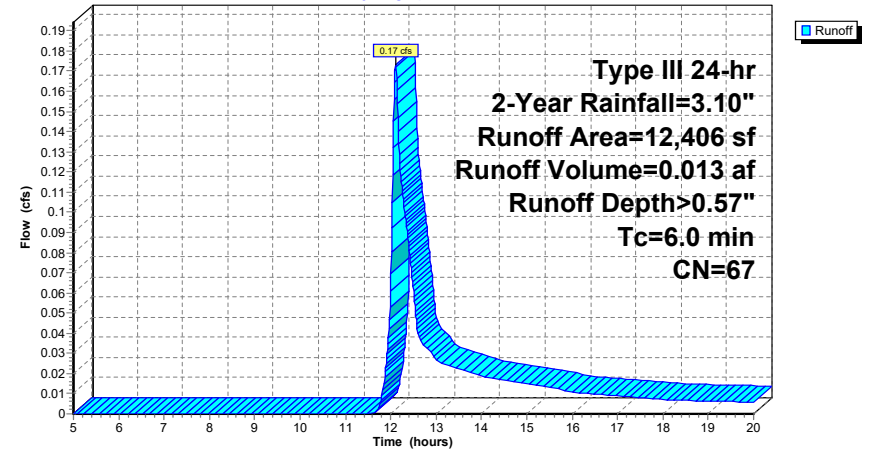
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
2,125	98	Paved parking, HSG B
10,281	61	>75% Grass cover, Good, HSG B
12,406	67	Weighted Average
10,281		82.87% Pervious Area
2,125		17.13% Impervious Area

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

Subcatchment 7P: AREA 7P

Hydrograph



Summary for Subcatchment 8aP: AREA 8P

Runoff = 0.54 cfs @ 12.10 hrs, Volume= 0.041 af, Depth> 0.61"

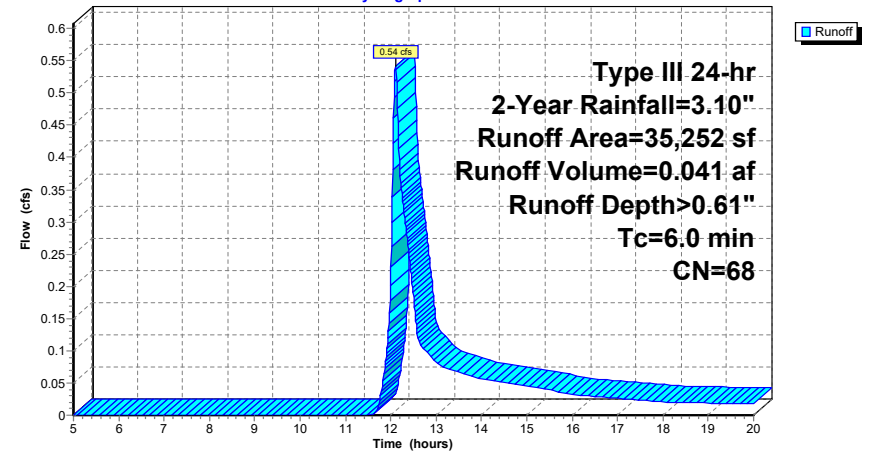
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
6,915	98	Paved parking, HSG B
28,337	61	>75% Grass cover, Good, HSG B
35,252	68	Weighted Average
28,337		80.38% Pervious Area
6,915		19.62% Impervious Area

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

Subcatchment 8aP: AREA 8P

Hydrograph



Summary for Subcatchment 8bP: AREA 8P

Runoff = 0.26 cfs @ 12.10 hrs, Volume= 0.019 af, Depth> 0.69"

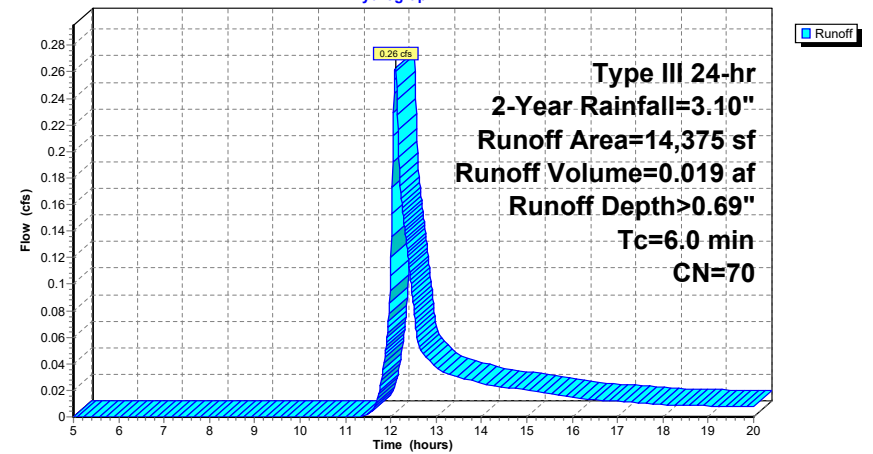
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
3,571	98	Paved parking, HSG B
10,804	61	>75% Grass cover, Good, HSG B
14,375	70	Weighted Average
10,804		75.16% Pervious Area
3,571		24.84% Impervious Area

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

Subcatchment 8bP: AREA 8P

Hydrograph



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Type III 24-hr 2-Year Rainfall=3.10"

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**Summary for Subcatchment 8cP: AREA 8P**

Runoff = 0.59 cfs @ 12.11 hrs, Volume= 0.046 af, Depth> 0.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
7,101	98	Paved parking, HSG B
35,203	61	>75% Grass cover, Good, HSG B
42,304	67	Weighted Average
35,203		83.21% Pervious Area
7,101		16.79% Impervious Area

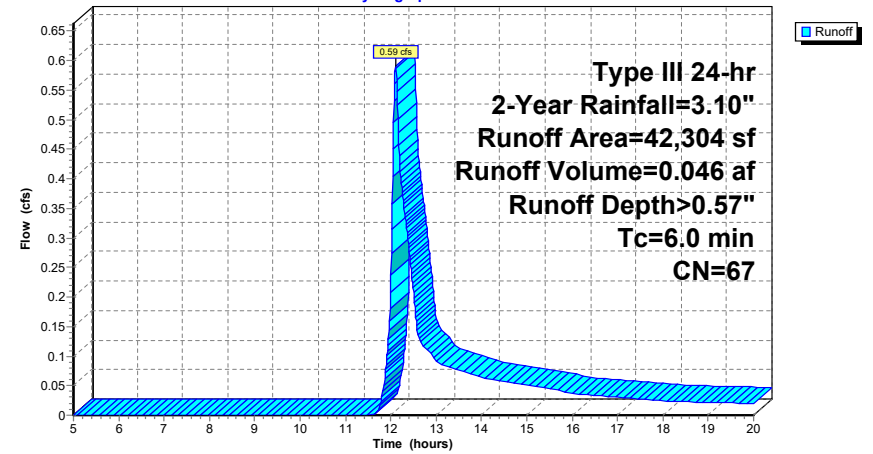
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

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Type III 24-hr 2-Year Rainfall=3.10"

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**Subcatchment 8cP: AREA 8P****Hydrograph****608943\_PROP**

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Type III 24-hr 2-Year Rainfall=3.10"

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**Summary for Subcatchment 9P: AREA 9P**

Runoff = 1.43 cfs @ 12.09 hrs, Volume= 0.094 af, Depth> 1.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
20,895	98	Paved parking, HSG B
12,527	61	>75% Grass cover, Good, HSG B
33,222	84	Weighted Average
12,527		37.71% Pervious Area
20,895		62.29% Impervious Area

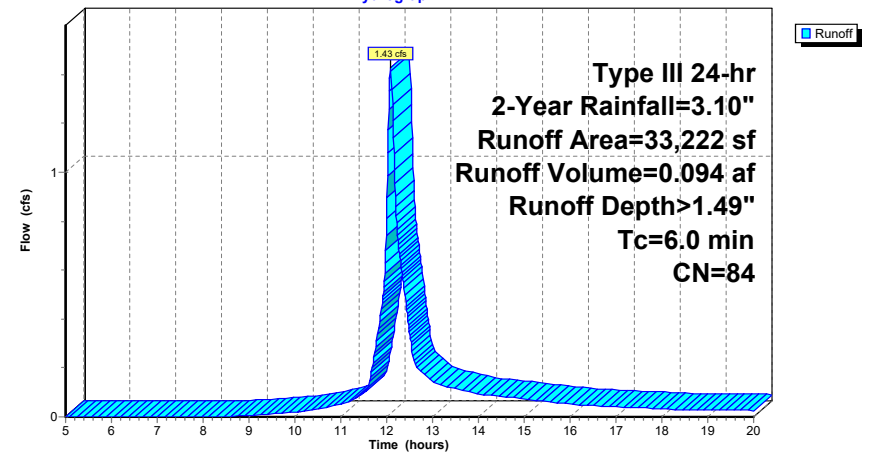
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**608943\_PROP**

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Type III 24-hr 2-Year Rainfall=3.10"

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**Subcatchment 9P: AREA 9P****Hydrograph**



Summary for Reach 1R: SITE TOTAL

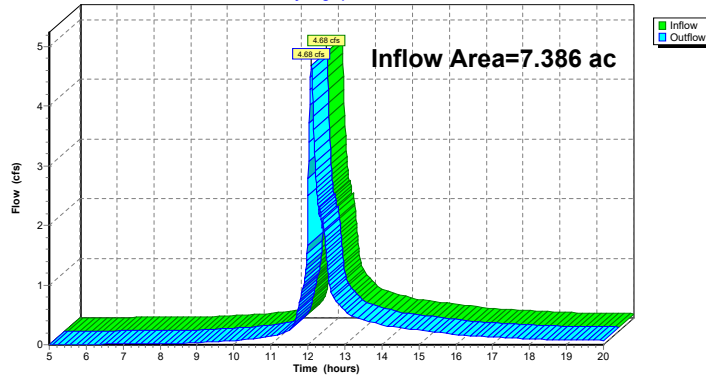
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 7.386 ac, 23.45% Impervious, Inflow Depth > 0.51" for 2-Year event  
 Inflow = 4.68 cfs @ 12.09 hrs, Volume= 0.315 af  
 Outflow = 4.68 cfs @ 12.09 hrs, Volume= 0.315 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs

Reach 1R: SITE TOTAL

Hydrograph



Summary for Pond 10P: CB

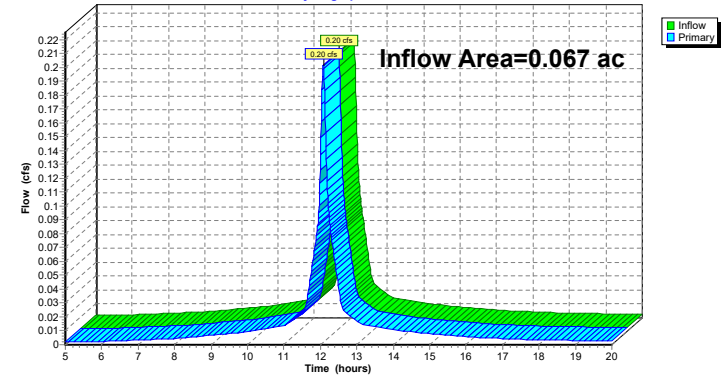
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.067 ac, 100.00% Impervious, Inflow Depth > 2.68" for 2-Year event  
 Inflow = 0.20 cfs @ 12.08 hrs, Volume= 0.015 af  
 Primary = 0.20 cfs @ 12.08 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs / 2

Pond 10P: CB

Hydrograph



Summary for Pond 11P: BOARDWALK

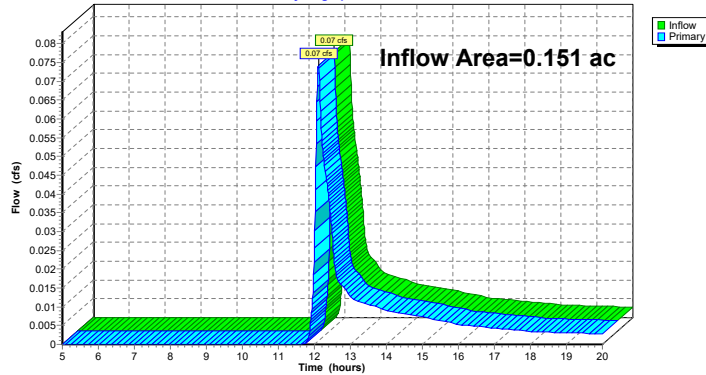
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.151 ac, 0.00% Impervious, Inflow Depth > 0.49" for 2-Year event  
 Inflow = 0.07 cfs @ 12.11 hrs, Volume= 0.006 af  
 Primary = 0.07 cfs @ 12.11 hrs, Volume= 0.006 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs / 2

Pond 11P: BOARDWALK

Hydrograph



Summary for Pond 12P: TRENCH

Inflow Area = 0.527 ac, 15.32% Impervious, Inflow Depth > 0.57" for 2-Year event  
 Inflow = 0.32 cfs @ 12.11 hrs, Volume= 0.025 af  
 Outflow = 0.04 cfs @ 13.48 hrs, Volume= 0.023 af, Atten= 87%, Lag= 82.7 min  
 Discarded = 0.04 cfs @ 13.48 hrs, Volume= 0.023 af  
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs / 4

Peak Elev= 13.27' @ 13.48 hrs Surf.Area= 768 sf Storage= 397 cf

Plug-Flow detention time= 125.2 min calculated for 0.023 af (92% of inflow)  
 Center-of-Mass det. time= 99.5 min ( 938.0 - 838.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	11.98'	614 cf	2.00'W x 384.00'L x 2.00'H Prismatic 1,536 cf Overall x 40.0% Voids

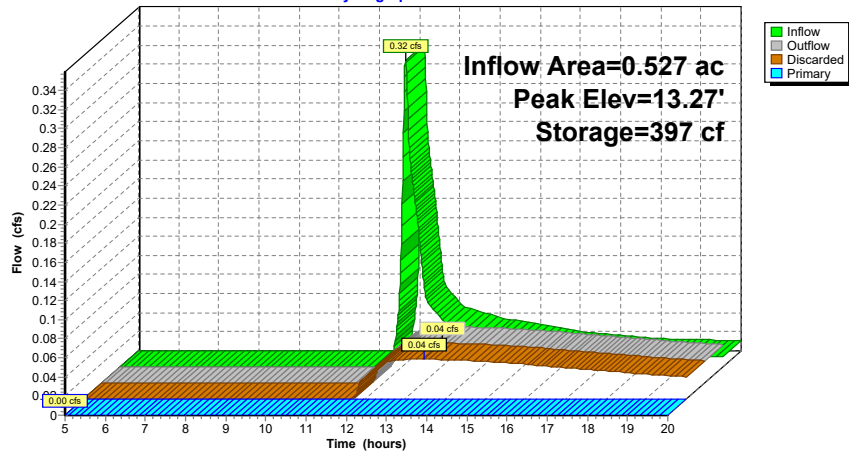
Device	Routing	Invert	Outlet Devices
#1	Discarded	11.98'	1.020 in/hr Exfiltration over Wetted area
#2	Primary	13.48'	100.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.04 cfs @ 13.48 hrs HW=13.27' (Free Discharge)  
 1=Exfiltration (Exfiltration Controls 0.04 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=11.98' (Free Discharge)  
 2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

Pond 12P: TRENCH

Hydrograph



Summary for Pond 13P: TRENCH

Inflow Area = 0.139 ac, 0.00% Impervious, Inflow Depth > 1.29" for 2-Year event  
 Inflow = 0.22 cfs @ 12.09 hrs, Volume= 0.015 af  
 Outflow = 0.03 cfs @ 12.89 hrs, Volume= 0.015 af, Atten= 88%, Lag= 48.2 min  
 Discarded = 0.03 cfs @ 12.89 hrs, Volume= 0.015 af  
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs / 4  
 Peak Elev= 14.13' @ 12.89 hrs Surf.Area= 468 sf Storage= 268 cf

Plug-Flow detention time= 116.9 min calculated for 0.014 af (97% of inflow)  
 Center-of-Mass det. time= 107.3 min ( 909.5 - 802.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	12.70'	374 cf	2.00'W x 234.00'L x 2.00'H Prismatic 936 cf Overall x 40.0% Voids

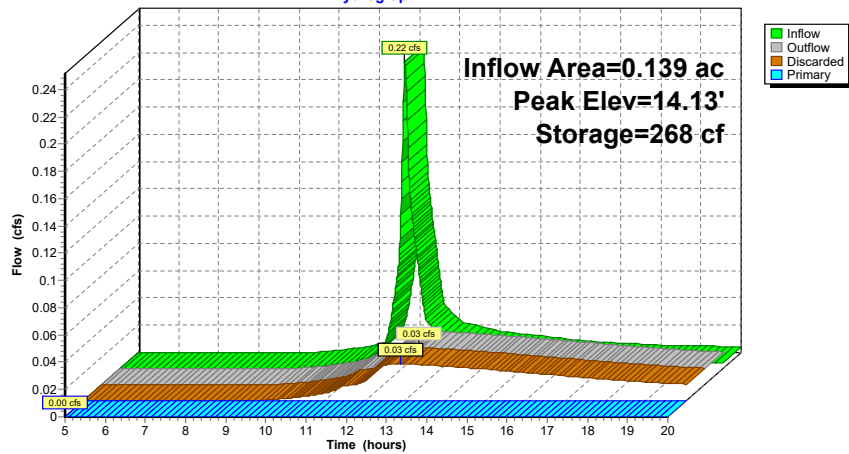
Device	Routing	Invert	Outlet Devices
#1	Discarded	12.70'	1.020 in/hr Exfiltration over Wetted area
#2	Primary	14.20'	100.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.03 cfs @ 12.89 hrs HW=14.13' (Free Discharge)  
 1=Exfiltration (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=12.70' (Free Discharge)  
 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 13P: TRENCH

Hydrograph



Summary for Pond 14P: TRENCH

Inflow Area = 0.737 ac, 17.30% Impervious, Inflow Depth > 0.57" for 2-Year event  
 Inflow = 0.45 cfs @ 12.11 hrs, Volume= 0.035 af  
 Outflow = 0.25 cfs @ 12.32 hrs, Volume= 0.032 af, Atten= 43%, Lag= 12.9 min  
 Discarded = 0.04 cfs @ 12.32 hrs, Volume= 0.026 af  
 Primary = 0.21 cfs @ 12.32 hrs, Volume= 0.006 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs / 2  
 Peak Elev= 9.65' @ 12.32 hrs Surf.Area= 942 sf Storage= 379 cf

Plug-Flow detention time= 95.5 min calculated for 0.032 af (93% of inflow)  
 Center-of-Mass det. time= 71.4 min ( 909.9 - 838.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	8.64'	754 cf	2.00'W x 471.00'L x 2.00'H Prismatic 1,884 cf Overall x 40.0% Voids

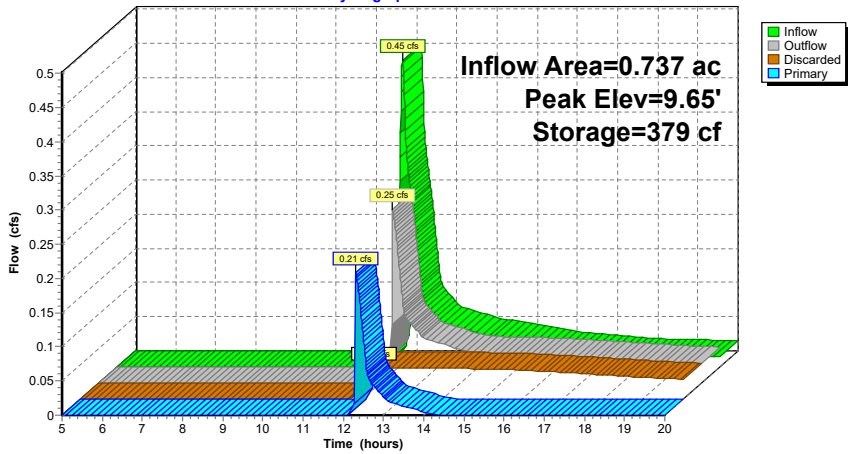
Device	Routing	Invert	Outlet Devices
#1	Discarded	8.64'	1.020 in/hr Exfiltration over Wetted area
#2	Primary	9.64'	100.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.04 cfs @ 12.32 hrs HW=9.65' (Free Discharge)  
 1=Exfiltration (Exfiltration Controls 0.04 cfs)

Primary OutFlow Max=0.11 cfs @ 12.32 hrs HW=9.65' (Free Discharge)  
 2=Broad-Crested Rectangular Weir (Weir Controls 0.11 cfs @ 0.20 fps)

**Pond 14P: TRENCH**

Hydrograph



**Summary for Pond 15P: CB**

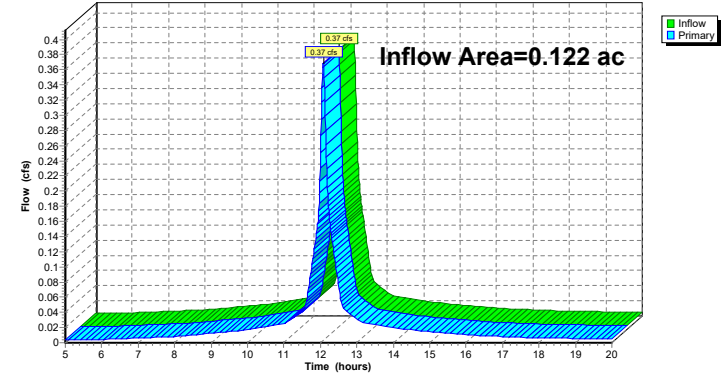
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.122 ac, 100.00% Impervious, Inflow Depth > 2.68" for 2-Year event  
 Inflow = 0.37 cfs @ 12.08 hrs, Volume= 0.027 af  
 Primary = 0.37 cfs @ 12.08 hrs, Volume= 0.027 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs / 4

**Pond 15P: CB**

Hydrograph



**Summary for Pond 18P: CB**

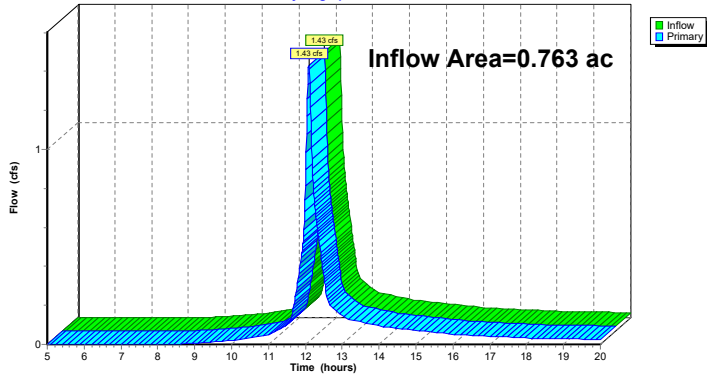
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.763 ac, 62.29% Impervious, Inflow Depth > 1.49" for 2-Year event  
 Inflow = 1.43 cfs @ 12.09 hrs, Volume= 0.094 af  
 Primary = 1.43 cfs @ 12.09 hrs, Volume= 0.094 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs

**Pond 18P: CB**

Hydrograph



**Summary for Pond 19P: CB**

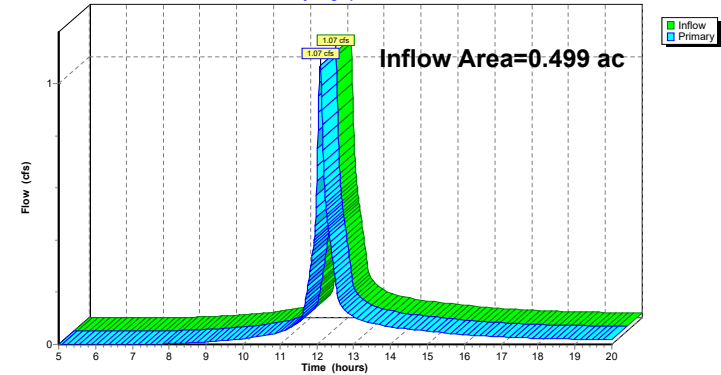
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.499 ac, 71.55% Impervious, Inflow Depth > 1.71" for 2-Year event  
 Inflow = 1.07 cfs @ 12.09 hrs, Volume= 0.071 af  
 Primary = 1.07 cfs @ 12.09 hrs, Volume= 0.071 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs

**Pond 19P: CB**

Hydrograph



**Summary for Pond 20P: TRENCH**

Inflow Area = 0.285 ac, 17.13% Impervious, Inflow Depth > 0.57" for 2-Year event  
 Inflow = 0.17 cfs @ 12.11 hrs, Volume= 0.013 af  
 Outflow = 0.08 cfs @ 12.44 hrs, Volume= 0.013 af, Atten= 53%, Lag= 20.3 min  
 Discarded = 0.02 cfs @ 12.44 hrs, Volume= 0.012 af  
 Primary = 0.06 cfs @ 12.44 hrs, Volume= 0.001 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 8.91' @ 12.44 hrs Surf.Area= 0.010 ac Storage= 0.004 af

Plug-Flow detention time= 102.1 min calculated for 0.013 af (95% of inflow)  
 Center-of-Mass det. time= 84.9 min ( 923.4 - 838.5 )

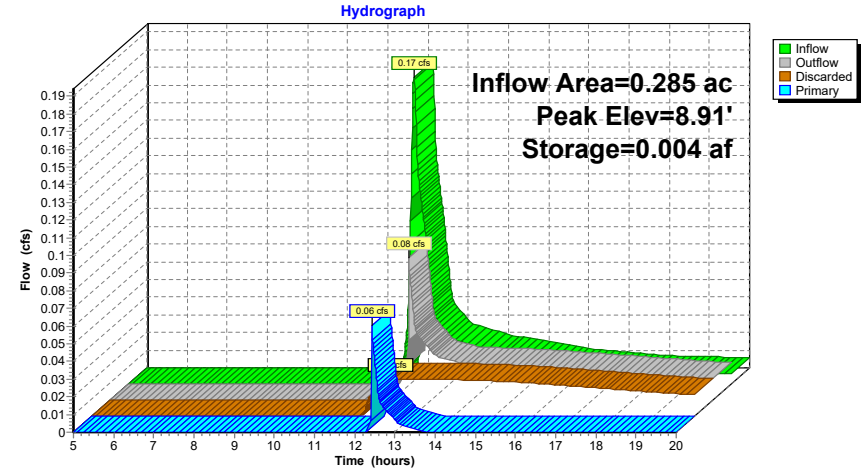
Volume	Invert	Avail.Storage	Storage Description
#1	7.91'	0.008 af	2.00'W x 217.00'L x 2.00'H Prismatoid 0.020 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	7.91'	1.020 in/hr Exfiltration over Wetted area
#2	Primary	8.91'	100.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.02 cfs @ 12.44 hrs HW=8.91' (Free Discharge)  
 1=Exfiltration (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.01 cfs @ 12.44 hrs HW=8.91' (Free Discharge)  
 2=Broad-Crested Rectangular Weir(Weir Controls 0.01 cfs @ 0.10 fps)

**Pond 20P: TRENCH**



**Summary for Pond 22P: TRENCH**

Inflow Area = 1.985 ac, 2.51% Impervious, Inflow Depth > 0.69" for 2-Year event  
 Inflow = 1.58 cfs @ 12.10 hrs, Volume= 0.115 af  
 Outflow = 1.58 cfs @ 12.10 hrs, Volume= 0.108 af, Atten= 0%, Lag= 0.0 min  
 Discarded = 0.03 cfs @ 12.10 hrs, Volume= 0.019 af  
 Primary = 1.56 cfs @ 12.10 hrs, Volume= 0.089 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs / 4  
 Peak Elev= 14.23' @ 12.10 hrs Surf.Area= 0.011 ac Storage= 0.007 af

Plug-Flow detention time= 26.0 min calculated for 0.108 af (94% of inflow)  
 Center-of-Mass det. time= 7.0 min ( 837.0 - 829.9 )

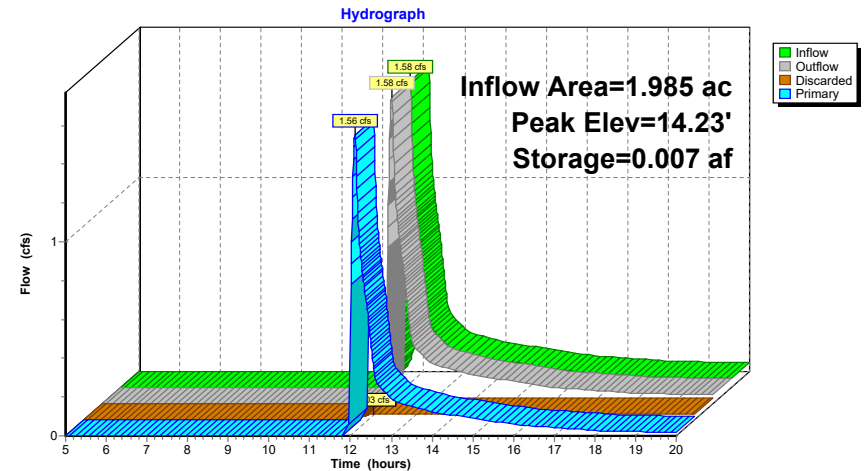
Volume	Invert	Avail.Storage	Storage Description
#1	12.70'	0.009 af	2.00'W x 234.00'L x 2.00'H Prismatoid 0.021 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	12.70'	1.020 in/hr Exfiltration over Wetted area
#2	Primary	14.20'	100.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.03 cfs @ 12.10 hrs HW=14.23' (Free Discharge)  
 1=Exfiltration (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=1.50 cfs @ 12.10 hrs HW=14.23' (Free Discharge)  
 2=Broad-Crested Rectangular Weir(Weir Controls 1.50 cfs @ 0.48 fps)

**Pond 22P: TRENCH**



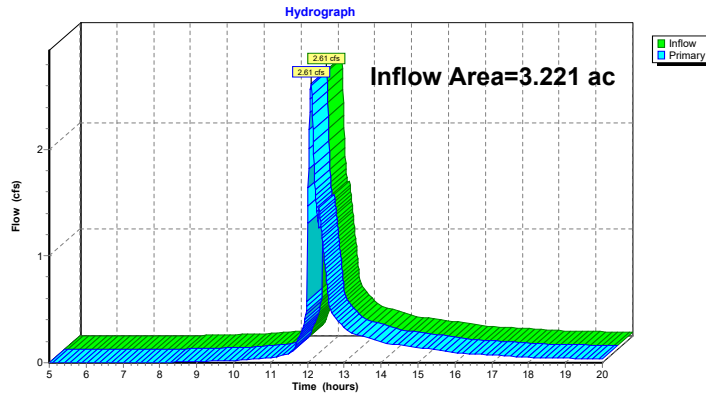
**Summary for Pond 23P: OUTLET (No Storage)**

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 3.221 ac, 16.59% Impervious, Inflow Depth > 0.62" for 2-Year event  
 Inflow = 2.61 cfs @ 12.10 hrs, Volume= 0.166 af  
 Primary = 2.61 cfs @ 12.10 hrs, Volume= 0.166 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs

**Pond 23P: OUTLET (No Storage)**



**Summary for Pond 24P: TRENCH**

Inflow Area = 0.330 ac, 24.84% Impervious, Inflow Depth > 0.69" for 2-Year event  
 Inflow = 0.26 cfs @ 12.10 hrs, Volume= 0.019 af  
 Outflow = 0.04 cfs @ 13.06 hrs, Volume= 0.019 af, Atten= 87%, Lag= 57.3 min  
 Discarded = 0.04 cfs @ 13.06 hrs, Volume= 0.019 af  
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs / 2  
 Peak Elev= 6.57' @ 13.06 hrs Surf.Area= 714 sf Storage= 306 cf

Plug-Flow detention time= 107.1 min calculated for 0.019 af (98% of inflow)  
 Center-of-Mass det. time= 100.5 min ( 930.4 - 829.9 )

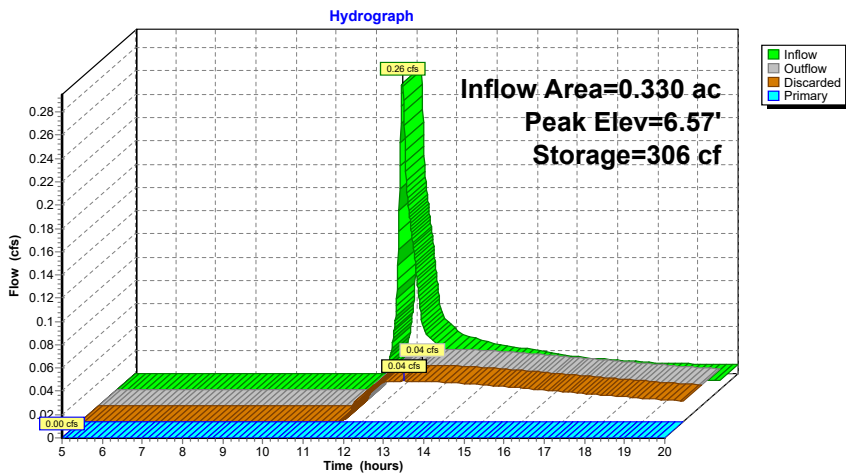
Volume	Invert	Avail.Storage	Storage Description
#1	5.50'	571 cf	2.00'W x 357.00'L x 2.00'H Prismatoid 1,428 cf Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	5.50'	1.020 in/hr Exfiltration over Wetted area
#2	Primary	7.00'	100.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.04 cfs @ 13.06 hrs HW=6.57' (Free Discharge)  
 1=Exfiltration (Exfiltration Controls 0.04 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=5.50' (Free Discharge)  
 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

**Pond 24P: TRENCH**



**Summary for Pond 26P: TRENCH**

Inflow Area = 0.971 ac, 16.79% Impervious, Inflow Depth > 0.57" for 2-Year event  
 Inflow = 0.59 cfs @ 12.11 hrs, Volume= 0.046 af  
 Outflow = 0.28 cfs @ 12.41 hrs, Volume= 0.043 af, Atten= 53%, Lag= 18.3 min  
 Discarded = 0.07 cfs @ 12.41 hrs, Volume= 0.038 af  
 Primary = 0.21 cfs @ 12.41 hrs, Volume= 0.005 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs / 2  
 Peak Elev= 6.22' @ 12.41 hrs Surf.Area= 1,408 sf Storage= 566 cf

Plug-Flow detention time= 100.8 min calculated for 0.043 af (94% of inflow)  
 Center-of-Mass det. time= 81.2 min ( 919.7 - 838.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	5.21'	1,126 cf	2.00'W x 704.00'L x 2.00'H Prismatoid 2,816 cf Overall x 40.0% Voids

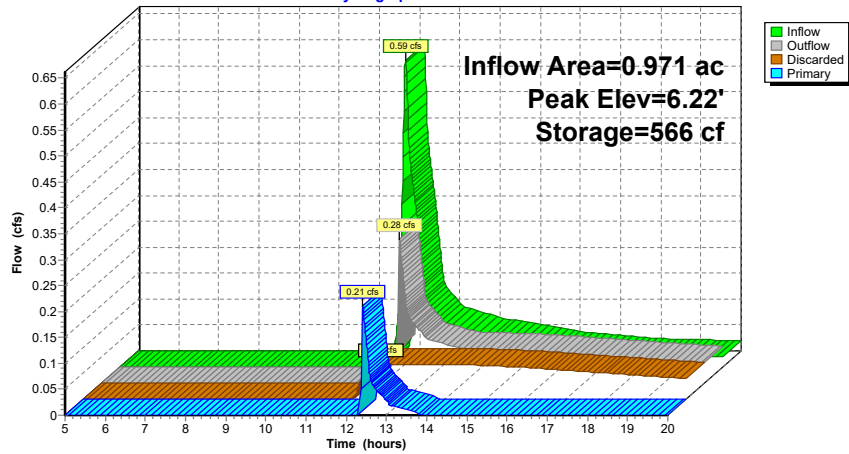
Device	Routing	Invert	Outlet Devices
#1	Discarded	5.21'	1.020 in/hr Exfiltration over Wetted area
#2	Primary	6.21'	100.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.07 cfs @ 12.41 hrs HW=6.22' (Free Discharge)  
 1=Exfiltration (Exfiltration Controls 0.07 cfs)

Primary OutFlow Max=0.11 cfs @ 12.41 hrs HW=6.22' (Free Discharge)  
 2=Broad-Crested Rectangular Weir (Weir Controls 0.11 cfs @ 0.20 fps)

Pond 26P: TRENCH

Hydrograph



Summary for Pond 28P: TRENCH

Inflow Area = 0.809 ac, 19.62% Impervious, Inflow Depth > 0.61" for 2-Year event  
 Inflow = 0.54 cfs @ 12.10 hrs, Volume= 0.041 af  
 Outflow = 0.07 cfs @ 13.28 hrs, Volume= 0.039 af, Atten= 87%, Lag= 70.4 min  
 Discarded = 0.07 cfs @ 13.28 hrs, Volume= 0.039 af  
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs / 2  
 Peak Elev= 6.68' @ 13.28 hrs Surf.Area= 1,384 sf Storage= 652 cf

Plug-Flow detention time= 117.8 min calculated for 0.039 af (95% of inflow)  
 Center-of-Mass det. time= 99.7 min ( 935.2 - 835.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	5.50'	1,107 cf	2.00'W x 692.00'L x 2.00'H Prismatoid 2,768 cf Overall x 40.0% Voids

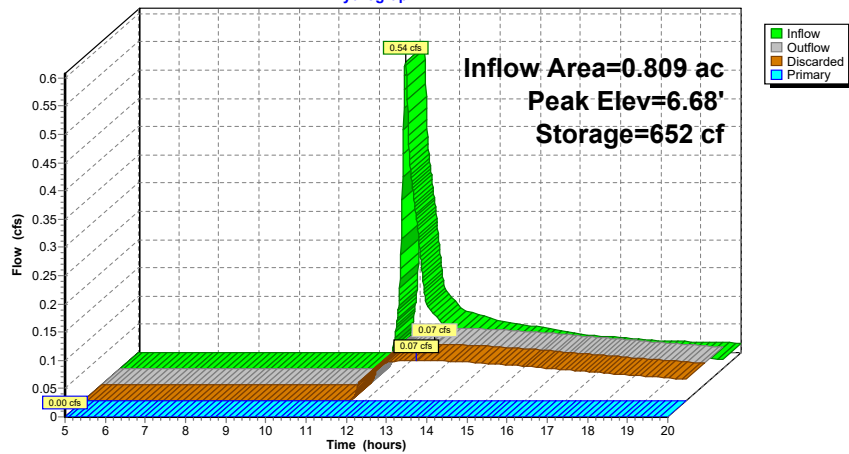
Device	Routing	Invert	Outlet Devices
#1	Discarded	5.50'	1.020 in/hr Exfiltration over Wetted area
#2	Primary	7.00'	100.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.07 cfs @ 13.28 hrs HW=6.68' (Free Discharge)  
 1=Exfiltration (Exfiltration Controls 0.07 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=5.50' (Free Discharge)  
 2=Broad-Crested Rectangular Weir( Controls 0.00 cfs)

Pond 28P: TRENCH

Hydrograph



Summary for Pond 29P: OUTLET (No Storage)

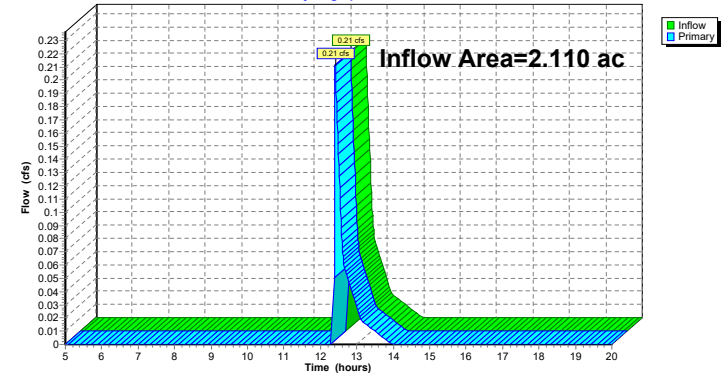
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 2.110 ac, 19.13% Impervious, Inflow Depth = 0.03" for 2-Year event  
 Inflow = 0.21 cfs @ 12.41 hrs, Volume= 0.005 af  
 Primary = 0.21 cfs @ 12.41 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs

Pond 29P: OUTLET (No Storage)

Hydrograph





**Summary for Subcatchment 1P: AREA 1P**

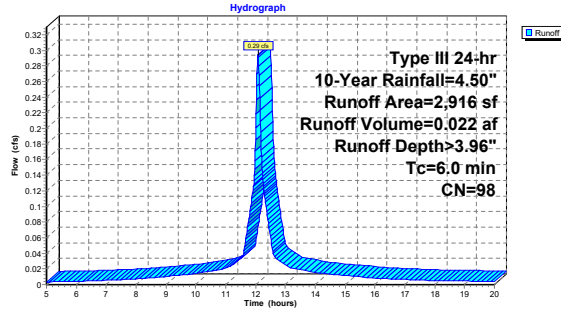
Runoff = 0.29 cfs @ 12.08 hrs, Volume= 0.022 af, Depth> 3.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-Year Rainfall=4.50"

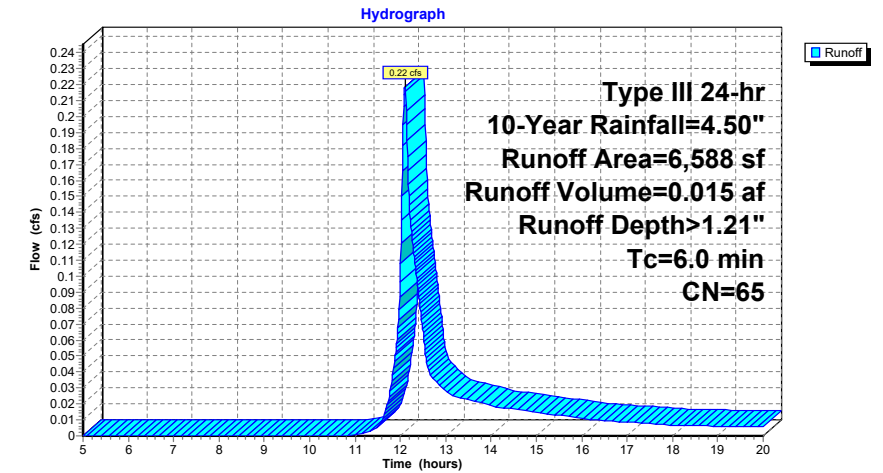
Area (sf)	CN	Description
2,916	98	Paved parking, HSG B
2,916		100.00% Impervious Area

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

**Subcatchment 1P: AREA 1P**



**Subcatchment 2P: AREA 2P**



**Summary for Subcatchment 2P: AREA 2P**

Runoff = 0.22 cfs @ 12.10 hrs, Volume= 0.015 af, Depth> 1.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-Year Rainfall=4.50"

Area (sf)	CN	Description
5,469	61	>75% Grass cover, Good, HSG B
1,119	85	Gravel roads, HSG B
6,588	65	Weighted Average
6,588		100.00% Pervious Area

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

**Summary for Subcatchment 3P: AREA 3P**

Runoff = 0.86 cfs @ 12.10 hrs, Volume= 0.059 af, Depth> 1.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-Year Rainfall=4.50"

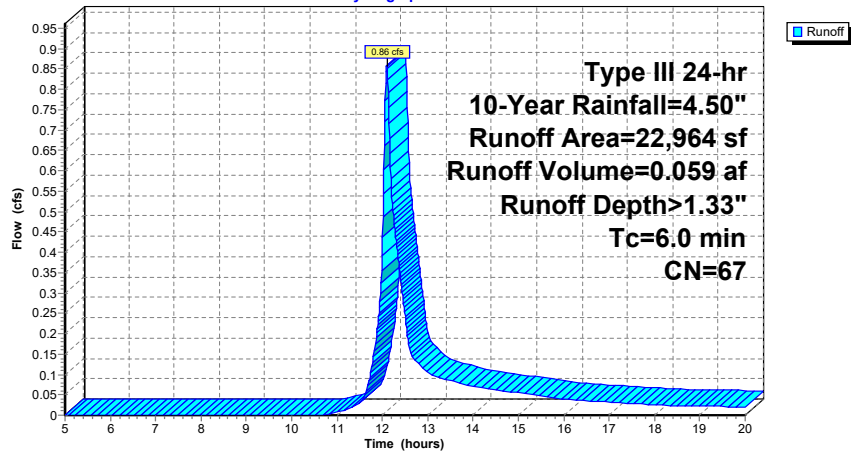
Area (sf)	CN	Description
3,519	98	Paved parking, HSG B
19,445	61	>75% Grass cover, Good, HSG B
22,964	67	Weighted Average
19,445		84.68% Pervious Area
3,519		15.32% Impervious Area

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



Subcatchment 3P: AREA 3P

Hydrograph



Summary for Subcatchment 4P: AREA 4P

Runoff = 0.42 cfs @ 12.09 hrs, Volume= 0.028 af, Depth> 2.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-Year Rainfall=4.50"

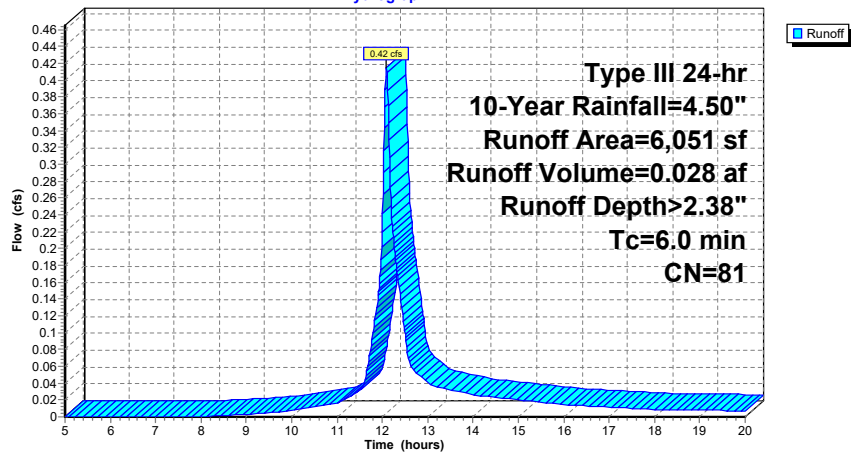
Area (sf)	CN	Description
1,050	61	>75% Grass cover, Good, HSG B
5,001	85	Gravel roads, HSG B
6,051	81	Weighted Average
6,051		100.00% Pervious Area

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

Subcatchment 4P: AREA 4P

Hydrograph



Summary for Subcatchment 5aP: AREA 5aP

Runoff = 1.20 cfs @ 12.10 hrs, Volume= 0.082 af, Depth> 1.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-Year Rainfall=4.50"

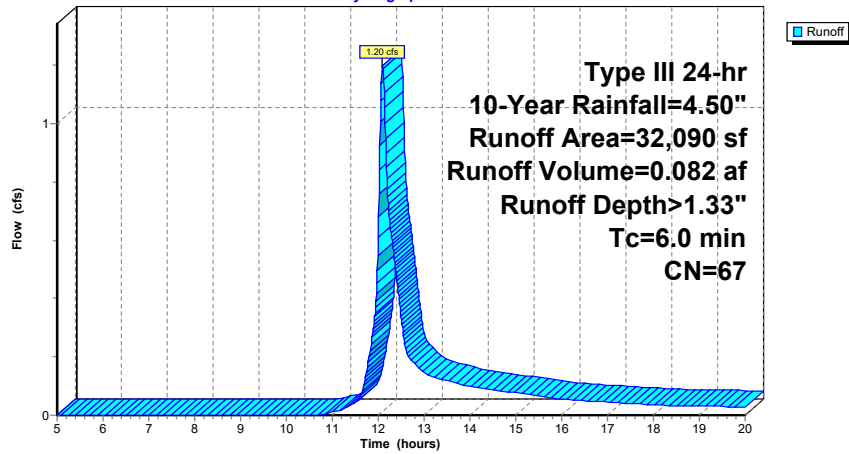
Area (sf)	CN	Description
5,552	98	Paved parking, HSG B
26,538	61	>75% Grass cover, Good, HSG B
32,090	67	Weighted Average
26,538		82.70% Pervious Area
5,552		17.30% Impervious Area

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

Subcatchment 5aP: AREA 5aP

Hydrograph



Summary for Subcatchment 5bP: AREA 5bP

Runoff = 3.78 cfs @ 12.09 hrs, Volume= 0.254 af, Depth> 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-Year Rainfall=4.50"

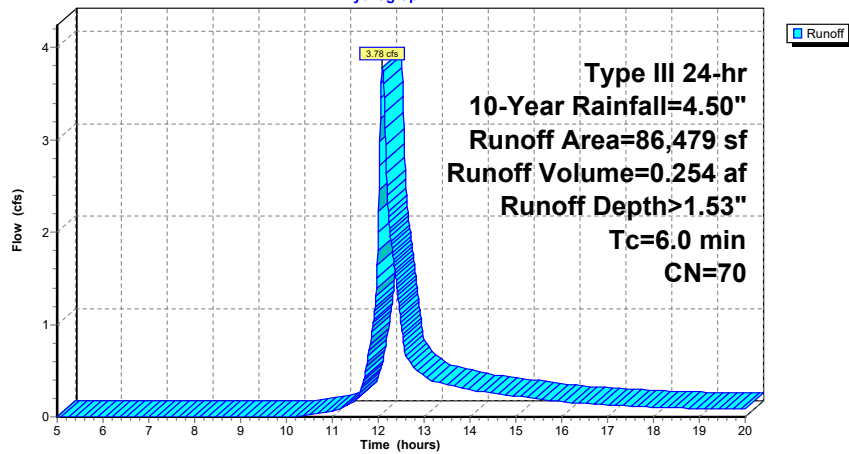
Area (sf)	CN	Description
2,173	98	Paved parking, HSG B
53,633	61	>75% Grass cover, Good, HSG B
30,673	85	Gravel roads, HSG B
86,479	70	Weighted Average
84,306		97.49% Pervious Area
2,173		2.51% Impervious Area

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

Subcatchment 5bP: AREA 5bP

Hydrograph



Summary for Subcatchment 5cP: AREA 5aP

Runoff = 1.79 cfs @ 12.09 hrs, Volume= 0.121 af, Depth> 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-Year Rainfall=4.50"

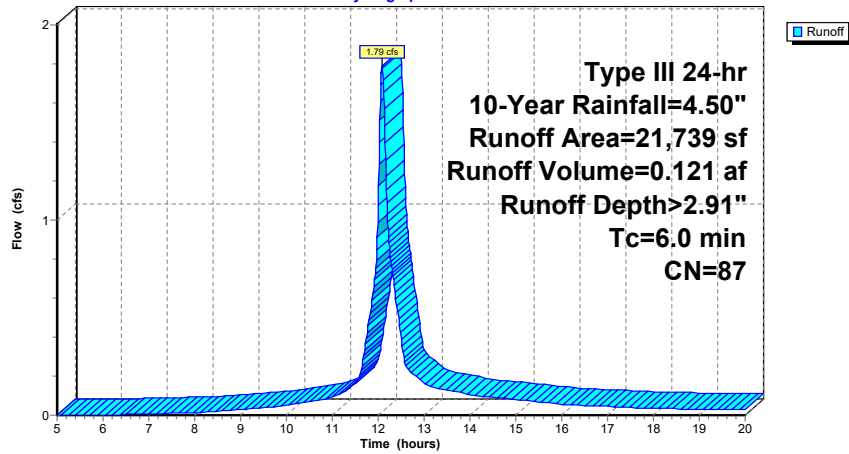
Area (sf)	CN	Description
15,554	98	Paved parking, HSG B
6,185	61	>75% Grass cover, Good, HSG B
21,739	87	Weighted Average
6,185		28.45% Pervious Area
15,554		71.55% Impervious Area

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

Subcatchment 5cP: AREA 5aP

Hydrograph



Summary for Subcatchment 6P: AREA 6P

Runoff = 0.54 cfs @ 12.08 hrs, Volume= 0.040 af, Depth> 3.96"

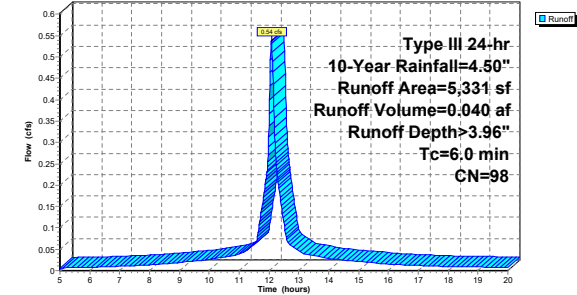
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-Year Rainfall=4.50"

Area (sf)	CN	Description
5,331	98	Paved parking, HSG B
5,331		100.00% Impervious Area

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

Subcatchment 6P: AREA 6P

Hydrograph



Summary for Subcatchment 7P: AREA 7P

Runoff = 0.46 cfs @ 12.10 hrs, Volume= 0.032 af, Depth> 1.33"

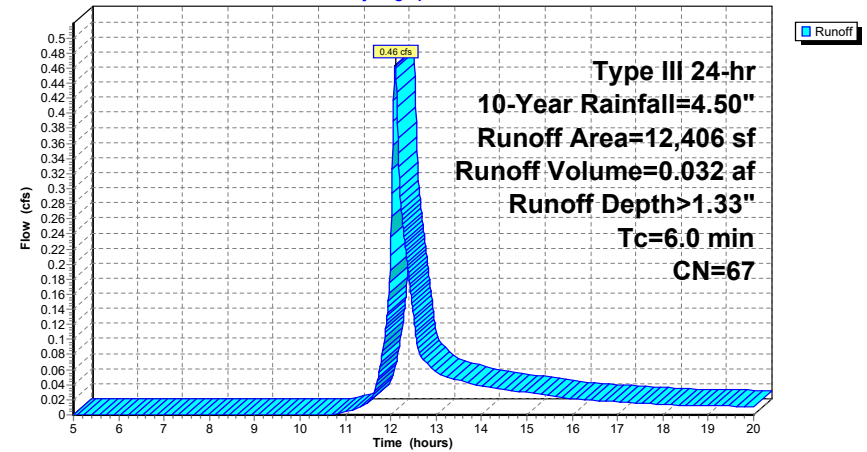
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-Year Rainfall=4.50"

Area (sf)	CN	Description
2,125	98	Paved parking, HSG B
10,281	61	>75% Grass cover, Good, HSG B
12,406	67	Weighted Average
10,281		82.87% Pervious Area
2,125		17.13% Impervious Area

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

Subcatchment 7P: AREA 7P

Hydrograph



**Summary for Subcatchment 8aP: AREA 8P**

Runoff = 1.39 cfs @ 12.09 hrs, Volume= 0.094 af, Depth> 1.40"

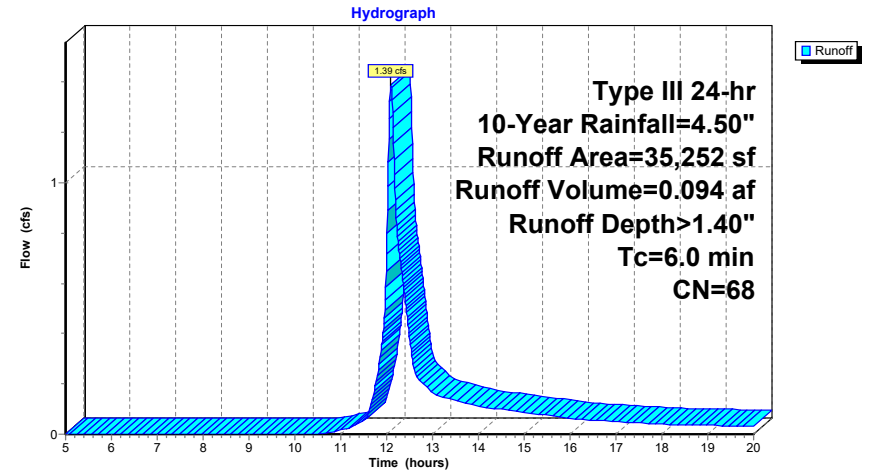
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-Year Rainfall=4.50"

Area (sf)	CN	Description
6,915	98	Paved parking, HSG B
28,337	61	>75% Grass cover, Good, HSG B
35,252	68	Weighted Average
28,337		80.38% Pervious Area
6,915		19.62% Impervious Area

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

**Subcatchment 8aP: AREA 8P**



**Summary for Subcatchment 8bP: AREA 8P**

Runoff = 0.63 cfs @ 12.09 hrs, Volume= 0.042 af, Depth> 1.53"

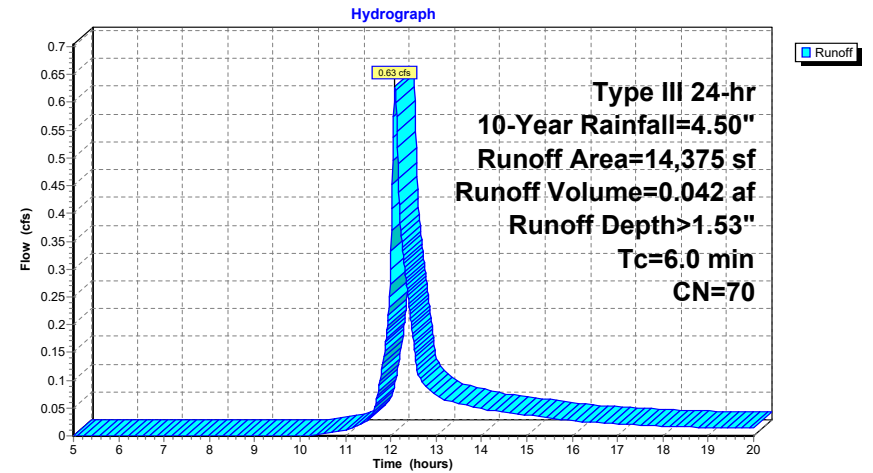
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-Year Rainfall=4.50"

Area (sf)	CN	Description
3,571	98	Paved parking, HSG B
10,804	61	>75% Grass cover, Good, HSG B
14,375	70	Weighted Average
10,804		75.16% Pervious Area
3,571		24.84% Impervious Area

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

**Subcatchment 8bP: AREA 8P**



**Summary for Subcatchment 8cP: AREA 8P**

Runoff = 1.58 cfs @ 12.10 hrs, Volume= 0.108 af, Depth> 1.33"

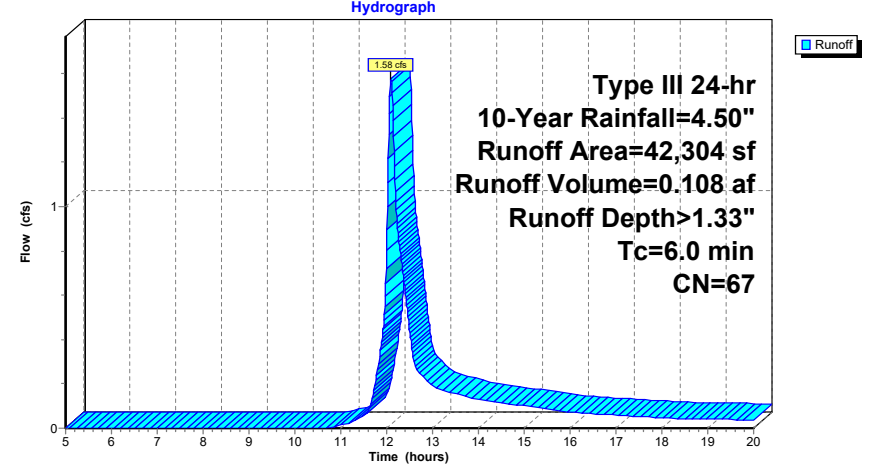
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-Year Rainfall=4.50"

Area (sf)	CN	Description
7,101	98	Paved parking, HSG B
35,203	61	>75% Grass cover, Good, HSG B
42,304	67	Weighted Average
35,203		83.21% Pervious Area
7,101		16.79% Impervious Area

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

**Subcatchment 8cP: AREA 8P**



**Summary for Subcatchment 9P: AREA 9P**

Runoff = 2.51 cfs @ 12.09 hrs, Volume= 0.168 af, Depth> 2.64"

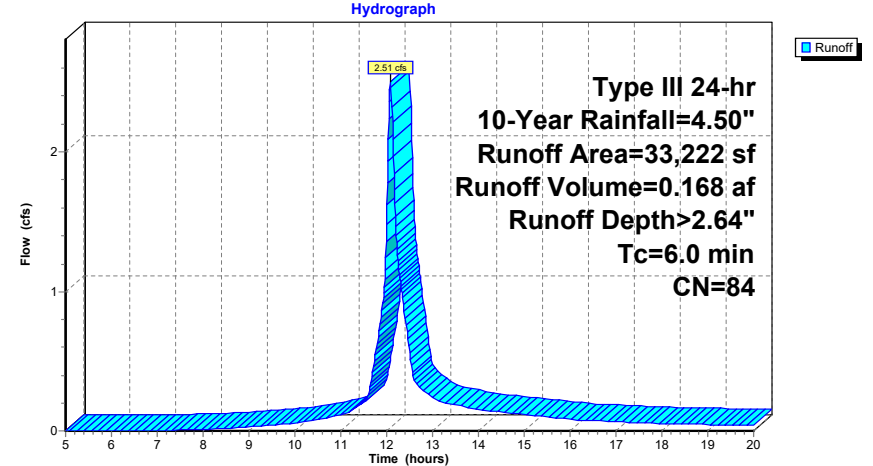
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 10-Year Rainfall=4.50"

Area (sf)	CN	Description
20,895	98	Paved parking, HSG B
12,527	61	>75% Grass cover, Good, HSG B
33,222	84	Weighted Average
12,527		37.71% Pervious Area
20,895		62.29% Impervious Area

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

**Subcatchment 9P: AREA 9P**



Summary for Reach 1R: SITE TOTAL

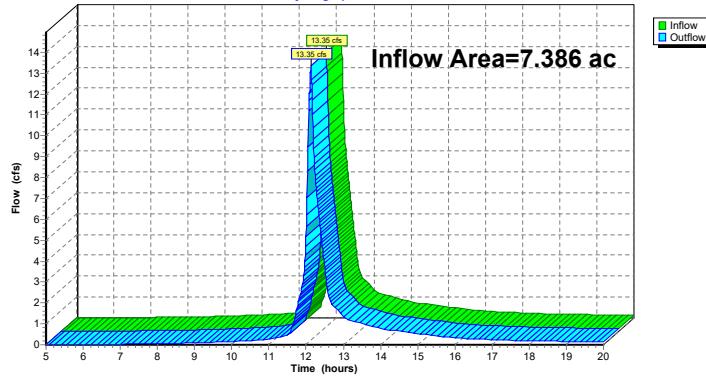
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 7.386 ac, 23.45% Impervious, Inflow Depth > 1.27" for 10-Year event  
 Inflow = 13.35 cfs @ 12.13 hrs, Volume= 0.780 af  
 Outflow = 13.35 cfs @ 12.13 hrs, Volume= 0.780 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs

Reach 1R: SITE TOTAL

Hydrograph



Summary for Pond 10P: CB

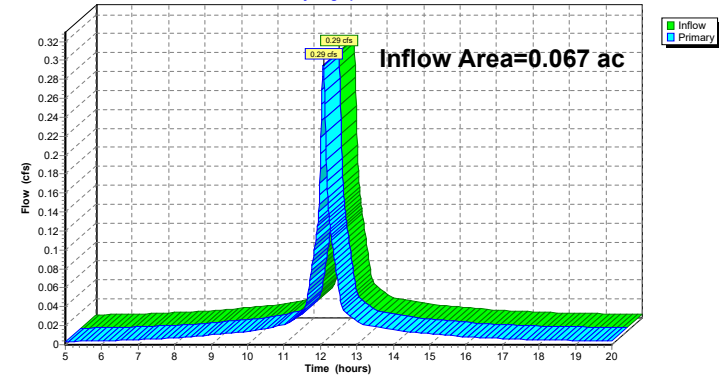
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.067 ac, 100.00% Impervious, Inflow Depth > 3.96" for 10-Year event  
 Inflow = 0.29 cfs @ 12.08 hrs, Volume= 0.022 af  
 Primary = 0.29 cfs @ 12.08 hrs, Volume= 0.022 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs / 2

Pond 10P: CB

Hydrograph



Summary for Pond 11P: BOARDWALK

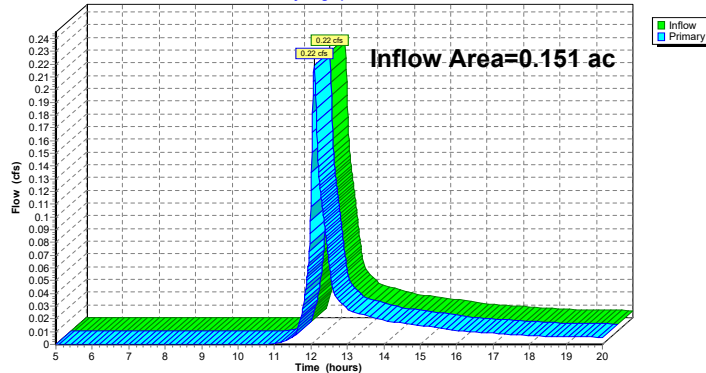
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.151 ac, 0.00% Impervious, Inflow Depth > 1.21" for 10-Year event  
 Inflow = 0.22 cfs @ 12.10 hrs, Volume= 0.015 af  
 Primary = 0.22 cfs @ 12.10 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs / 2

Pond 11P: BOARDWALK

Hydrograph



Summary for Pond 12P: TRENCH

Inflow Area = 0.527 ac, 15.32% Impervious, Inflow Depth > 1.33" for 10-Year event  
 Inflow = 0.86 cfs @ 12.10 hrs, Volume= 0.059 af  
 Outflow = 0.83 cfs @ 12.12 hrs, Volume= 0.052 af, Atten= 4%, Lag= 1.2 min  
 Discarded = 0.05 cfs @ 12.12 hrs, Volume= 0.030 af  
 Primary = 0.78 cfs @ 12.12 hrs, Volume= 0.023 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs / 4

Peak Elev= 13.50' @ 12.12 hrs Surf.Area= 768 sf Storage= 467 cf  
 Plug-Flow detention time= 76.4 min calculated for 0.052 af (89% of inflow)  
 Center-of-Mass det. time= 43.1 min ( 861.1 - 818.0 )

Volume	Invert	Avail. Storage	Storage Description
#1	11.98'	614 cf	2.00'W x 384.00'L x 2.00'H Prismatic 1,536 cf Overall x 40.0% Voids

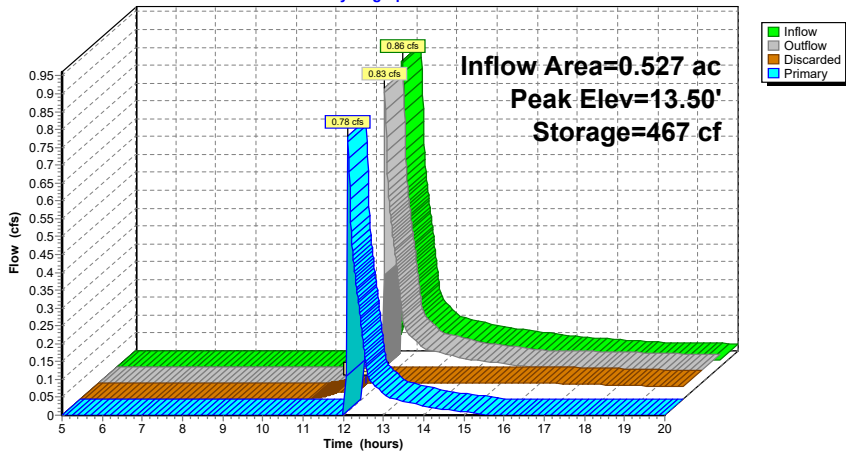
Device	Routing	Invert	Outlet Devices
#1	Discarded	11.98'	1.020 in/hr Exfiltration over Wetted area
#2	Primary	13.48'	100.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.05 cfs @ 12.12 hrs HW=13.50' (Free Discharge)  
 1=Exfiltration (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=0.78 cfs @ 12.12 hrs HW=13.50' (Free Discharge)  
 2=Broad-Crested Rectangular Weir (Weir Controls 0.78 cfs @ 0.38 fps)

Pond 12P: TRENCH

Hydrograph



Summary for Pond 13P: TRENCH

Inflow Area = 0.139 ac, 0.00% Impervious, Inflow Depth > 2.38" for 10-Year event  
 Inflow = 0.42 cfs @ 12.09 hrs, Volume= 0.028 af  
 Outflow = 0.41 cfs @ 12.10 hrs, Volume= 0.026 af, Atten=2%, Lag= 0.7 min  
 Discarded = 0.03 cfs @ 12.10 hrs, Volume= 0.018 af  
 Primary = 0.38 cfs @ 12.10 hrs, Volume= 0.008 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs / 4  
 Peak Elev= 14.21' @ 12.10 hrs Surf.Area= 468 sf Storage= 283 cf

Plug-Flow detention time= 86.8 min calculated for 0.026 af (93% of inflow)  
 Center-of-Mass det. time= 63.9 min ( 852.2 - 788.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	12.70'	374 cf	<b>2.00'W x 234.00'L x 2.00'H Prismatic</b> 936 cf Overall x 40.0% Voids

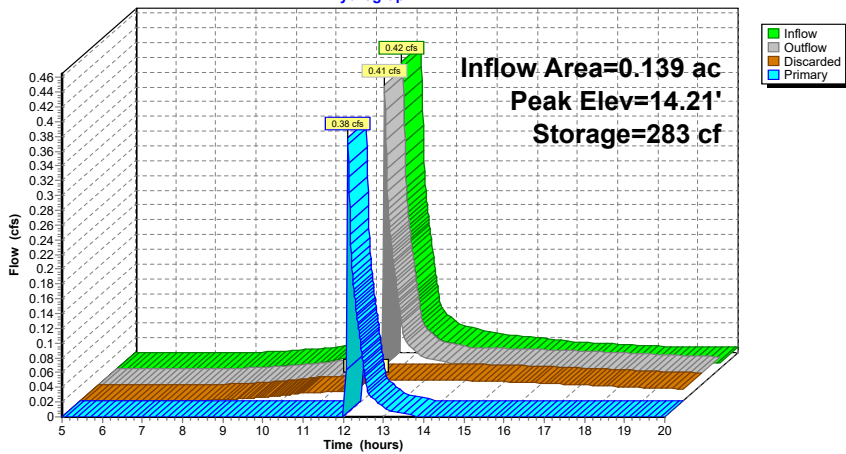
Device	Routing	Invert	Outlet Devices
#1	Discarded	12.70'	<b>1.020 in/hr Exfiltration over Wetted area</b>
#2	Primary	14.20'	<b>100.0' long x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

**Discarded OutFlow** Max=0.03 cfs @ 12.10 hrs HW=14.21' (Free Discharge)  
 1=Exfiltration (Exfiltration Controls 0.03 cfs)

**Primary OutFlow** Max=0.27 cfs @ 12.10 hrs HW=14.21' (Free Discharge)  
 2=Broad-Crested Rectangular Weir(Weir Controls 0.27 cfs @ 0.27 fps)

Pond 13P: TRENCH

Hydrograph



Summary for Pond 14P: TRENCH

Inflow Area = 0.737 ac, 17.30% Impervious, Inflow Depth > 1.33" for 10-Year event  
 Inflow = 1.20 cfs @ 12.10 hrs, Volume= 0.082 af  
 Outflow = 1.20 cfs @ 12.10 hrs, Volume= 0.075 af, Atten= 0%, Lag= 0.1 min  
 Discarded = 0.05 cfs @ 12.10 hrs, Volume= 0.031 af  
 Primary = 1.15 cfs @ 12.10 hrs, Volume= 0.044 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs / 2  
 Peak Elev= 9.67' @ 12.10 hrs Surf.Area= 942 sf Storage= 386 cf

Plug-Flow detention time= 47.7 min calculated for 0.075 af (92% of inflow)  
 Center-of-Mass det. time= 20.9 min ( 838.9 - 818.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	8.64'	754 cf	<b>2.00'W x 471.00'L x 2.00'H Prismatic</b> 1,884 cf Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	8.64'	<b>1.020 in/hr Exfiltration over Wetted area</b>
#2	Primary	9.64'	<b>100.0' long x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

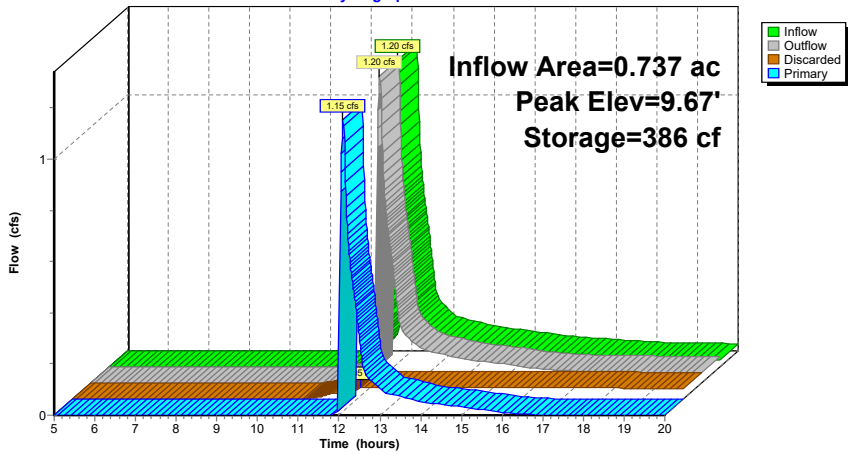
**Discarded OutFlow** Max=0.05 cfs @ 12.10 hrs HW=9.67' (Free Discharge)  
 1=Exfiltration (Exfiltration Controls 0.05 cfs)

**Primary OutFlow** Max=1.10 cfs @ 12.10 hrs HW=9.67' (Free Discharge)  
 2=Broad-Crested Rectangular Weir(Weir Controls 1.10 cfs @ 0.43 fps)



**Pond 14P: TRENCH**

**Hydrograph**



**Summary for Pond 15P: CB**

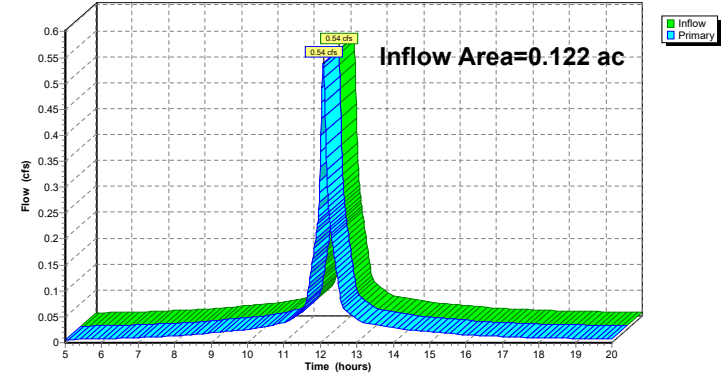
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.122 ac, 100.00% Impervious, Inflow Depth > 3.96" for 10-Year event  
 Inflow = 0.54 cfs @ 12.08 hrs, Volume= 0.040 af  
 Primary = 0.54 cfs @ 12.08 hrs, Volume= 0.040 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs / 4

**Pond 15P: CB**

**Hydrograph**



**Summary for Pond 18P: CB**

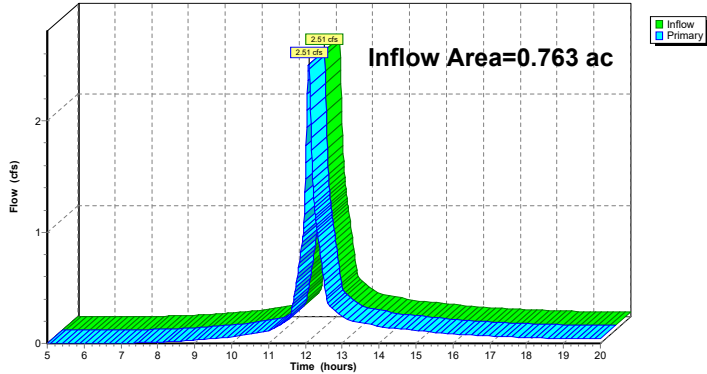
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.763 ac, 62.29% Impervious, Inflow Depth > 2.64" for 10-Year event  
 Inflow = 2.51 cfs @ 12.09 hrs, Volume= 0.168 af  
 Primary = 2.51 cfs @ 12.09 hrs, Volume= 0.168 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs

**Pond 18P: CB**

**Hydrograph**



**Summary for Pond 19P: CB**

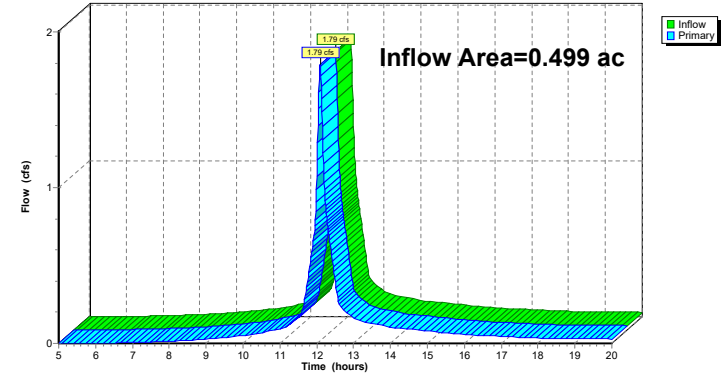
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.499 ac, 71.55% Impervious, Inflow Depth > 2.91" for 10-Year event  
 Inflow = 1.79 cfs @ 12.09 hrs, Volume= 0.121 af  
 Primary = 1.79 cfs @ 12.09 hrs, Volume= 0.121 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs

**Pond 19P: CB**

**Hydrograph**



**Summary for Pond 20P: TRENCH**

Inflow Area = 0.285 ac, 17.13% Impervious, Inflow Depth > 1.33" for 10-Year event  
 Inflow = 0.46 cfs @ 12.10 hrs, Volume= 0.032 af  
 Outflow = 0.46 cfs @ 12.10 hrs, Volume= 0.029 af, Atten= 0%, Lag= 0.1 min  
 Discarded = 0.02 cfs @ 12.10 hrs, Volume= 0.014 af  
 Primary = 0.44 cfs @ 12.10 hrs, Volume= 0.015 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 8.92' @ 12.10 hrs Surf.Area= 0.010 ac Storage= 0.004 af

Plug-Flow detention time= 54.8 min calculated for 0.029 af (92% of inflow)  
 Center-of-Mass det. time= 28.8 min ( 846.7 - 818.0 )

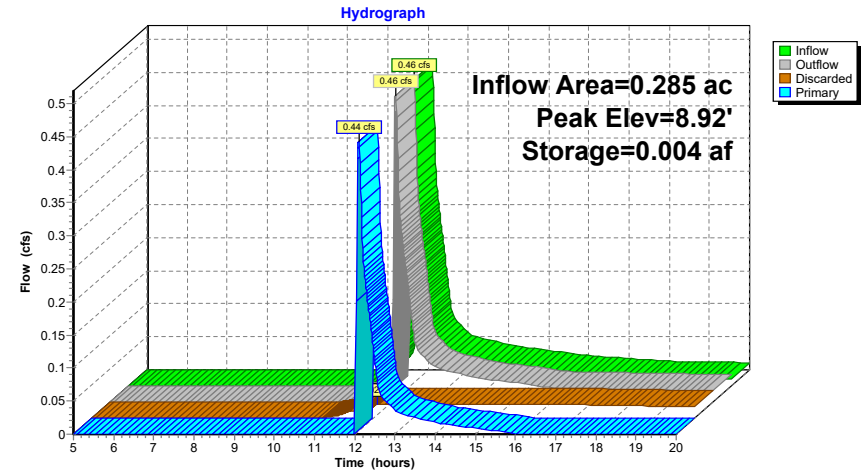
Volume	Invert	Avail.Storage	Storage Description
#1	7.91'	0.008 af	2.00'W x 217.00'L x 2.00'H Prismatic 0.020 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	7.91'	1.020 in/hr Exfiltration over Wetted area
#2	Primary	8.91'	100.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.02 cfs @ 12.10 hrs HW=8.92' (Free Discharge)  
 1=Exfiltration (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.34 cfs @ 12.10 hrs HW=8.92' (Free Discharge)  
 2=Broad-Crested Rectangular Weir(Weir Controls 0.34 cfs @ 0.29 fps)

**Pond 20P: TRENCH**



**Summary for Pond 22P: TRENCH**

Inflow Area = 1.985 ac, 2.51% Impervious, Inflow Depth > 1.53" for 10-Year event  
 Inflow = 3.78 cfs @ 12.09 hrs, Volume= 0.254 af  
 Outflow = 3.78 cfs @ 12.09 hrs, Volume= 0.247 af, Atten= 0%, Lag= 0.0 min  
 Discarded = 0.03 cfs @ 12.09 hrs, Volume= 0.021 af  
 Primary = 3.75 cfs @ 12.09 hrs, Volume= 0.226 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs / 4  
 Peak Elev= 14.26' @ 12.09 hrs Surf.Area= 0.011 ac Storage= 0.007 af

Plug-Flow detention time= 13.1 min calculated for 0.247 af (97% of inflow)  
 Center-of-Mass det. time= 3.7 min ( 815.4 - 811.7 )

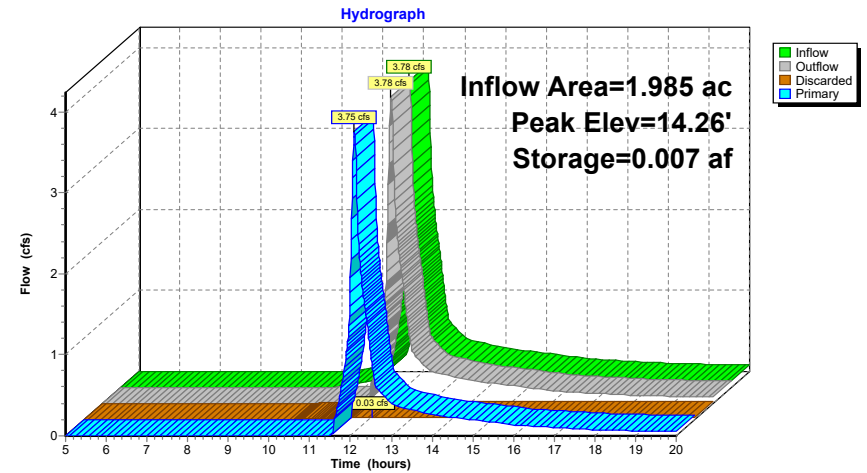
Volume	Invert	Avail.Storage	Storage Description
#1	12.70'	0.009 af	2.00'W x 234.00'L x 2.00'H Prismatic 0.021 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	12.70'	1.020 in/hr Exfiltration over Wetted area
#2	Primary	14.20'	100.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.03 cfs @ 12.09 hrs HW=14.26' (Free Discharge)  
 1=Exfiltration (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=3.73 cfs @ 12.09 hrs HW=14.26' (Free Discharge)  
 2=Broad-Crested Rectangular Weir(Weir Controls 3.73 cfs @ 0.65 fps)

**Pond 22P: TRENCH**



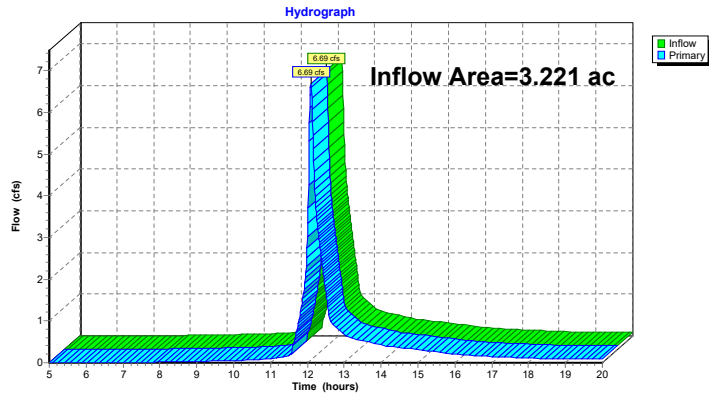
**Summary for Pond 23P: OUTLET (No Storage)**

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 3.221 ac, 16.59% Impervious, Inflow Depth > 1.46" for 10-Year event  
 Inflow = 6.69 cfs @ 12.09 hrs, Volume= 0.392 af  
 Primary = 6.69 cfs @ 12.09 hrs, Volume= 0.392 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs

**Pond 23P: OUTLET (No Storage)**



**Summary for Pond 24P: TRENCH**

Inflow Area = 0.330 ac, 24.84% Impervious, Inflow Depth > 1.53" for 10-Year event  
 Inflow = 0.63 cfs @ 12.09 hrs, Volume= 0.042 af  
 Outflow = 0.57 cfs @ 12.15 hrs, Volume= 0.038 af, Atten= 9%, Lag= 3.6 min  
 Discarded = 0.04 cfs @ 12.15 hrs, Volume= 0.027 af  
 Primary = 0.53 cfs @ 12.15 hrs, Volume= 0.011 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs / 2  
 Peak Elev= 7.01' @ 12.15 hrs Surf.Area= 714 sf Storage= 432 cf

Plug-Flow detention time= 93.7 min calculated for 0.038 af (90% of inflow)  
 Center-of-Mass det. time= 62.5 min ( 874.2 - 811.7 )

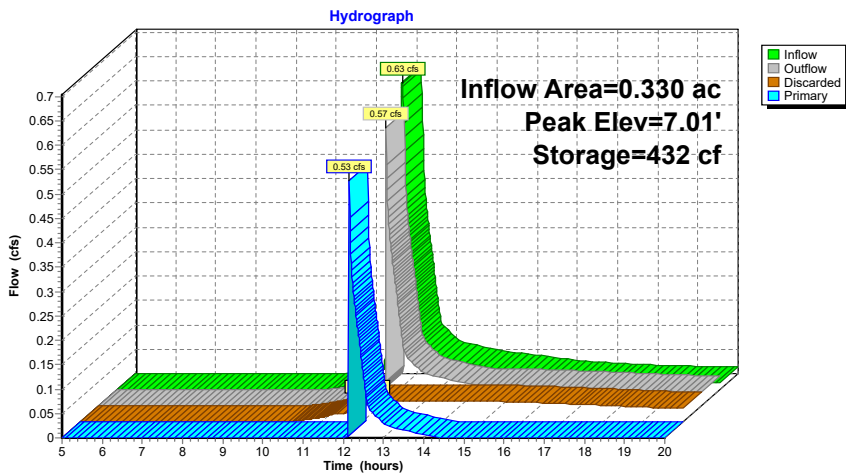
Volume	Invert	Avail.Storage	Storage Description
#1	5.50'	571 cf	2.00'W x 357.00'L x 2.00'H Prismatoid 1,428 cf Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	5.50'	1.020 in/hr Exfiltration over Wetted area
#2	Primary	7.00'	100.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.04 cfs @ 12.15 hrs HW=7.01' (Free Discharge)  
 1=Exfiltration (Exfiltration Controls 0.04 cfs)

Primary OutFlow Max=0.37 cfs @ 12.15 hrs HW=7.01' (Free Discharge)  
 2=Broad-Crested Rectangular Weir(Weir Controls 0.37 cfs @ 0.30 fps)

**Pond 24P: TRENCH**



**Summary for Pond 26P: TRENCH**

Inflow Area = 0.971 ac, 16.79% Impervious, Inflow Depth > 1.33" for 10-Year event  
 Inflow = 1.58 cfs @ 12.10 hrs, Volume= 0.108 af  
 Outflow = 1.58 cfs @ 12.10 hrs, Volume= 0.099 af, Atten= 0%, Lag= 0.1 min  
 Discarded = 0.07 cfs @ 12.10 hrs, Volume= 0.046 af  
 Primary = 1.51 cfs @ 12.10 hrs, Volume= 0.054 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs / 2  
 Peak Elev= 6.24' @ 12.10 hrs Surf.Area= 1,408 sf Storage= 581 cf

Plug-Flow detention time= 53.1 min calculated for 0.099 af (92% of inflow)  
 Center-of-Mass det. time= 26.4 min ( 844.4 - 818.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	5.21'	1,126 cf	2.00'W x 704.00'L x 2.00'H Prismatoid 2,816 cf Overall x 40.0% Voids

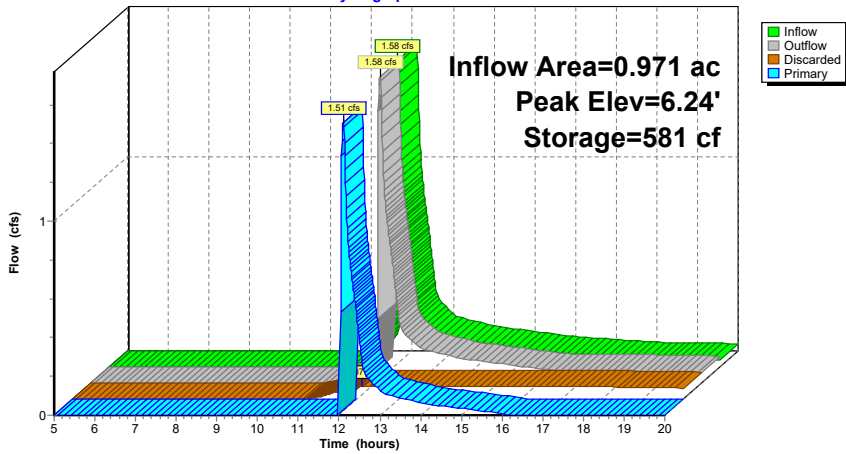
Device	Routing	Invert	Outlet Devices
#1	Discarded	5.21'	1.020 in/hr Exfiltration over Wetted area
#2	Primary	6.21'	100.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.07 cfs @ 12.10 hrs HW=6.24' (Free Discharge)  
 1=Exfiltration (Exfiltration Controls 0.07 cfs)

Primary OutFlow Max=1.45 cfs @ 12.10 hrs HW=6.24' (Free Discharge)  
 2=Broad-Crested Rectangular Weir(Weir Controls 1.45 cfs @ 0.47 fps)

Pond 26P: TRENCH

Hydrograph



Summary for Pond 28P: TRENCH

Inflow Area = 0.809 ac, 19.62% Impervious, Inflow Depth > 1.40" for 10-Year event  
 Inflow = 1.39 cfs @ 12.09 hrs, Volume= 0.094 af  
 Outflow = 1.39 cfs @ 12.13 hrs, Volume= 0.085 af, Atten=0%, Lag=2.4 min  
 Discarded = 0.08 cfs @ 12.13 hrs, Volume= 0.053 af  
 Primary = 1.31 cfs @ 12.13 hrs, Volume= 0.032 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs / 2  
 Peak Elev= 7.03' @ 12.13 hrs Surf.Area= 1,384 sf Storage= 845 cf

Plug-Flow detention time= 84.1 min calculated for 0.085 af (90% of inflow)  
 Center-of-Mass det. time= 51.2 min ( 867.0 - 815.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	5.50'	1,107 cf	2.00'W x 692.00'L x 2.00'H Prismatoid 2,768 cf Overall x 40.0% Voids

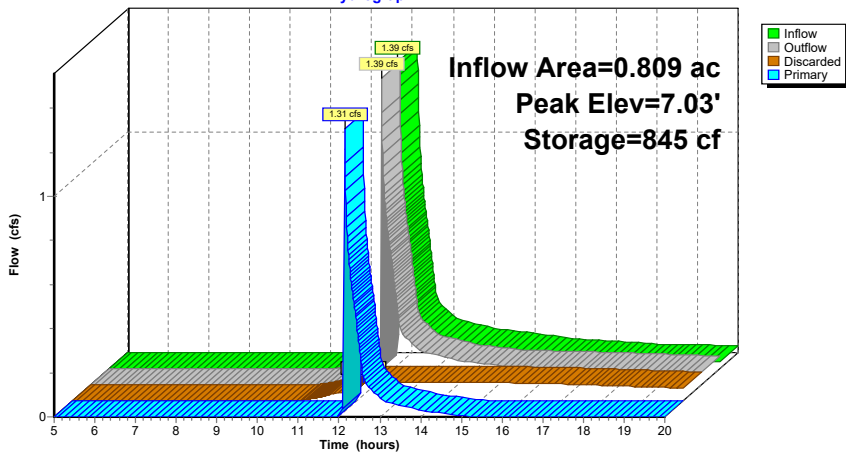
Device	Routing	Invert	Outlet Devices
#1	Discarded	5.50'	1.020 in/hr Exfiltration over Wetted area
#2	Primary	7.00'	100.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.08 cfs @ 12.13 hrs HW=7.03' (Free Discharge)  
 1=Exfiltration (Exfiltration Controls 0.08 cfs)

Primary OutFlow Max=1.14 cfs @ 12.13 hrs HW=7.03' (Free Discharge)  
 2=Broad-Crested Rectangular Weir(Weir Controls 1.14 cfs @ 0.43 fps)

Pond 28P: TRENCH

Hydrograph



Summary for Pond 29P: OUTLET (No Storage)

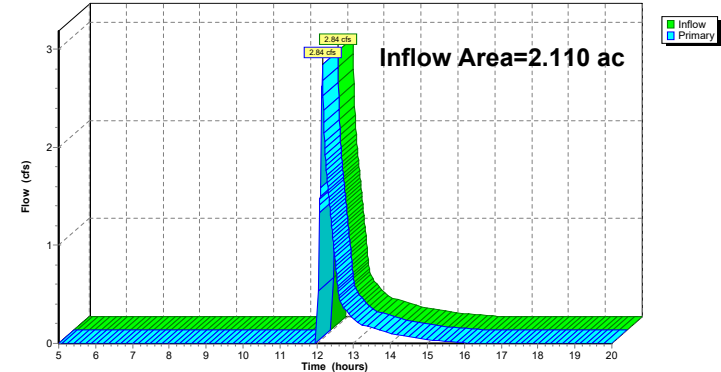
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 2.110 ac, 19.13% Impervious, Inflow Depth = 0.55" for 10-Year event  
 Inflow = 2.84 cfs @ 12.15 hrs, Volume= 0.097 af  
 Primary = 2.84 cfs @ 12.15 hrs, Volume= 0.097 af, Atten=0%, Lag=0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs

Pond 29P: OUTLET (No Storage)

Hydrograph



**Summary for Subcatchment 1P: AREA 1P**

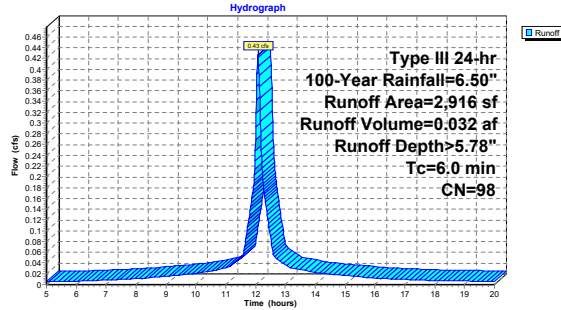
Runoff = 0.43 cfs @ 12.08 hrs, Volume= 0.032 af, Depth> 5.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100-Year Rainfall=6.50"

Area (sf)	CN	Description
2,916	98	Paved parking, HSG B
2,916		100.00% Impervious Area

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

**Subcatchment 1P: AREA 1P**



**Summary for Subcatchment 2P: AREA 2P**

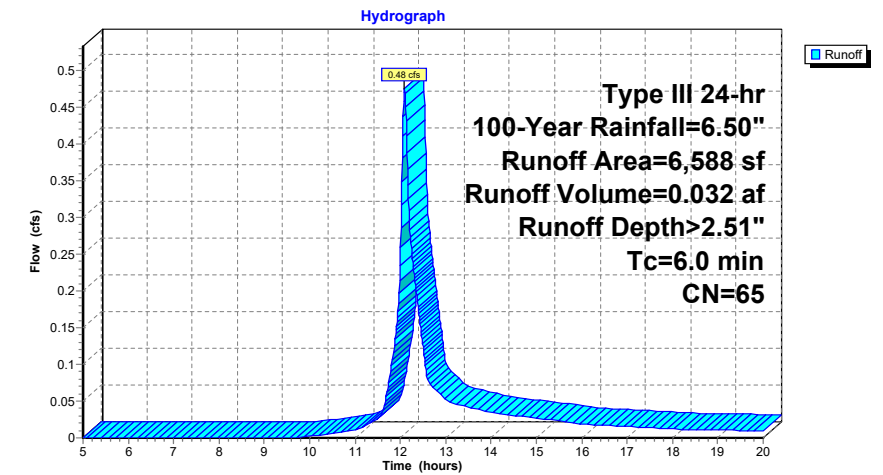
Runoff = 0.48 cfs @ 12.09 hrs, Volume= 0.032 af, Depth> 2.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100-Year Rainfall=6.50"

Area (sf)	CN	Description
5,469	61	>75% Grass cover, Good, HSG B
1,119	85	Gravel roads, HSG B
6,588	65	Weighted Average
6,588		100.00% Pervious Area

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

**Subcatchment 2P: AREA 2P**



**Summary for Subcatchment 3P: AREA 3P**

Runoff = 1.79 cfs @ 12.09 hrs, Volume= 0.118 af, Depth> 2.69"

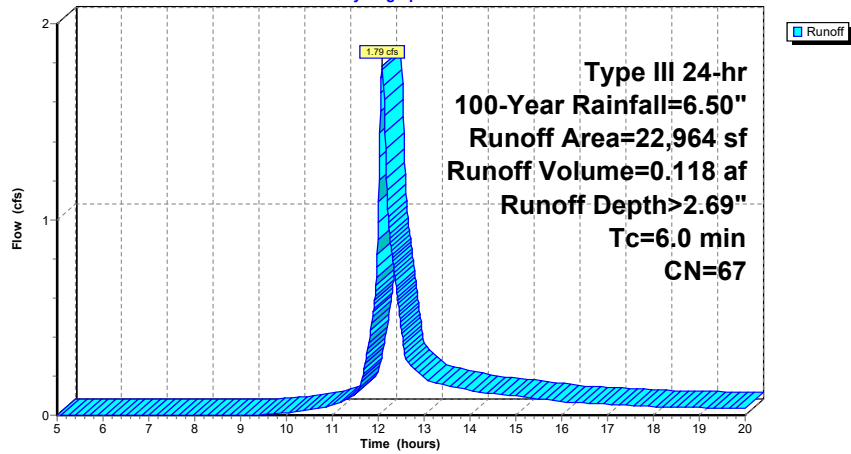
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100-Year Rainfall=6.50"

Area (sf)	CN	Description
3,519	98	Paved parking, HSG B
19,445	61	>75% Grass cover, Good, HSG B
22,964	67	Weighted Average
19,445		84.68% Pervious Area
3,519		15.32% Impervious Area

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

Subcatchment 3P: AREA 3P

Hydrograph



Summary for Subcatchment 4P: AREA 4P

Runoff = 0.70 cfs @ 12.09 hrs, Volume= 0.047 af, Depth> 4.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100-Year Rainfall=6.50"

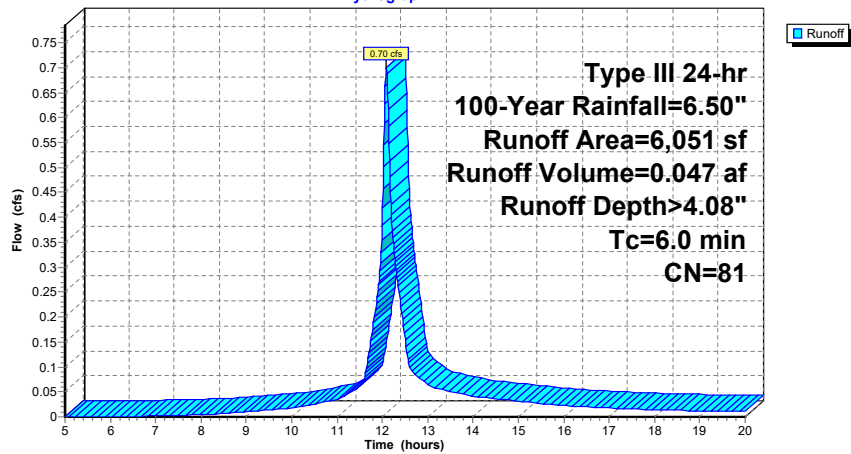
Area (sf)	CN	Description
1,050	61	>75% Grass cover, Good, HSG B
5,001	85	Gravel roads, HSG B
6,051	81	Weighted Average
6,051		100.00% Pervious Area

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

Subcatchment 4P: AREA 4P

Hydrograph



Summary for Subcatchment 5aP: AREA 5aP

Runoff = 2.50 cfs @ 12.09 hrs, Volume= 0.165 af, Depth> 2.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100-Year Rainfall=6.50"

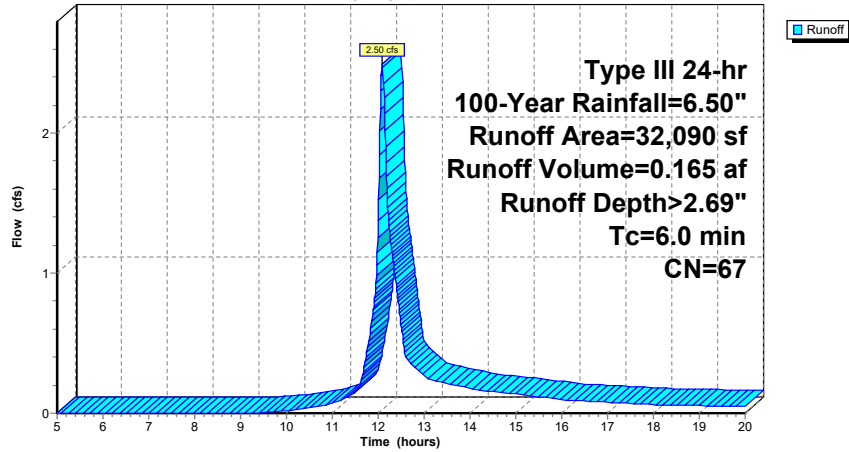
Area (sf)	CN	Description
5,552	98	Paved parking, HSG B
26,538	61	>75% Grass cover, Good, HSG B
32,090	67	Weighted Average
26,538		82.70% Pervious Area
5,552		17.30% Impervious Area

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

Subcatchment 5aP: AREA 5aP

Hydrograph



Summary for Subcatchment 5bP: AREA 5bP

Runoff = 7.45 cfs @ 12.09 hrs, Volume= 0.492 af, Depth> 2.98"

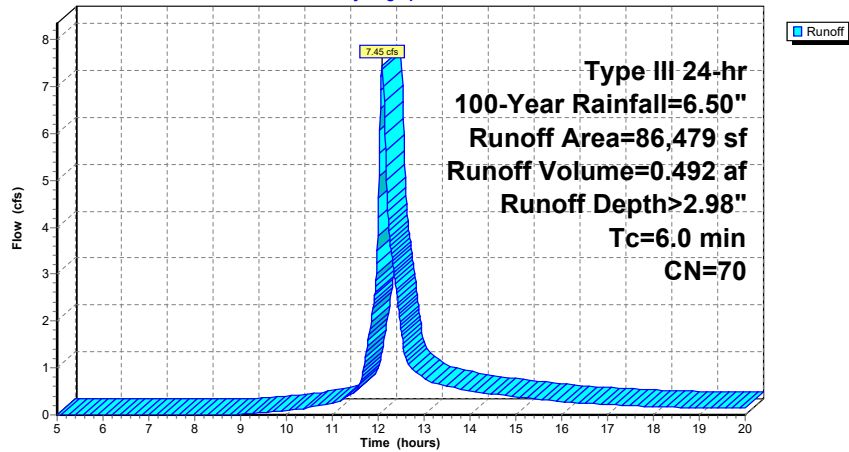
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100-Year Rainfall=6.50"

Area (sf)	CN	Description
2,173	98	Paved parking, HSG B
53,633	61	>75% Grass cover, Good, HSG B
30,673	85	Gravel roads, HSG B
86,479	70	Weighted Average
84,306		97.49% Pervious Area
2,173		2.51% Impervious Area

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

Subcatchment 5bP: AREA 5bP

Hydrograph



Summary for Subcatchment 5cP: AREA 5aP

Runoff = 2.83 cfs @ 12.09 hrs, Volume= 0.196 af, Depth> 4.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100-Year Rainfall=6.50"

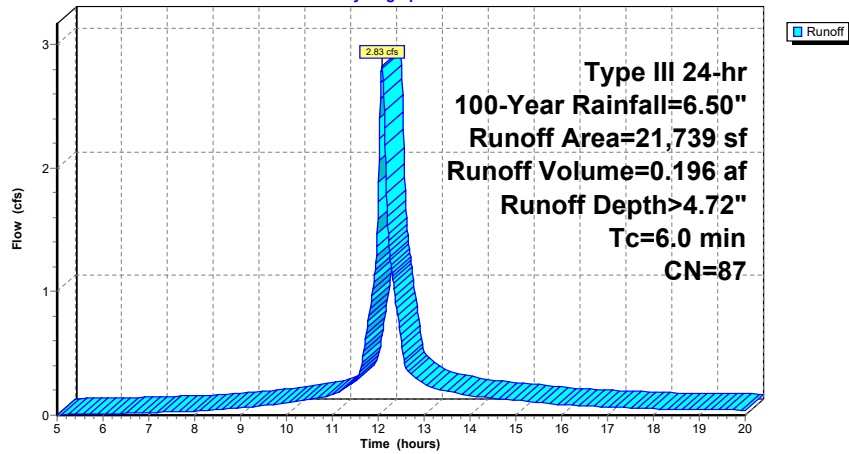
Area (sf)	CN	Description
15,554	98	Paved parking, HSG B
6,185	61	>75% Grass cover, Good, HSG B
21,739	87	Weighted Average
6,185		28.45% Pervious Area
15,554		71.55% Impervious Area

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



Subcatchment 5cP: AREA 5aP

Hydrograph



Runoff

Summary for Subcatchment 6P: AREA 6P

Runoff = 0.78 cfs @ 12.08 hrs, Volume= 0.059 af, Depth> 5.78"

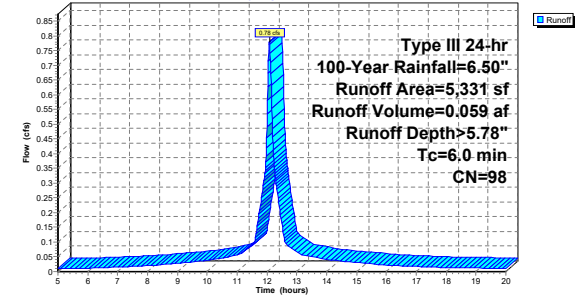
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100-Year Rainfall=6.50"

Area (sf)	CN	Description
5,331	98	Paved parking, HSG B
5,331		100.00% Impervious Area

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

Subcatchment 6P: AREA 6P

Hydrograph



Runoff

Summary for Subcatchment 7P: AREA 7P

Runoff = 0.96 cfs @ 12.09 hrs, Volume= 0.064 af, Depth> 2.69"

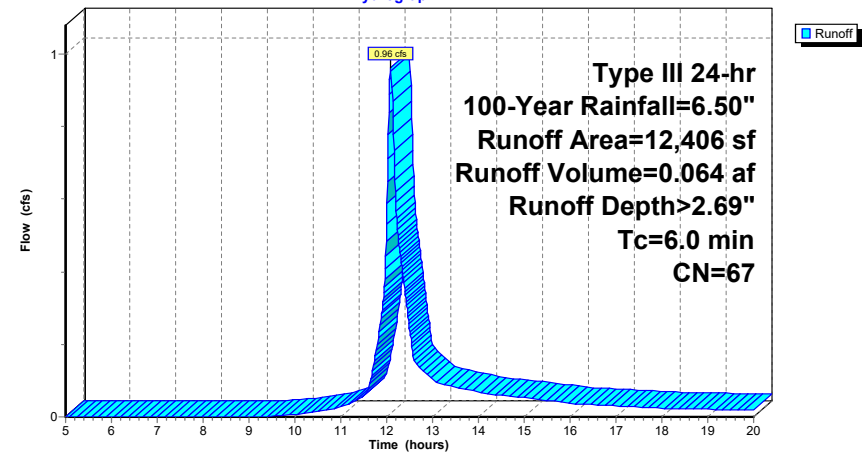
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100-Year Rainfall=6.50"

Area (sf)	CN	Description
2,125	98	Paved parking, HSG B
10,281	61	>75% Grass cover, Good, HSG B
12,406	67	Weighted Average
10,281		82.87% Pervious Area
2,125		17.13% Impervious Area

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

Subcatchment 7P: AREA 7P

Hydrograph



Runoff

**Summary for Subcatchment 8aP: AREA 8P**

Runoff = 2.84 cfs @ 12.09 hrs, Volume= 0.188 af, Depth> 2.79"

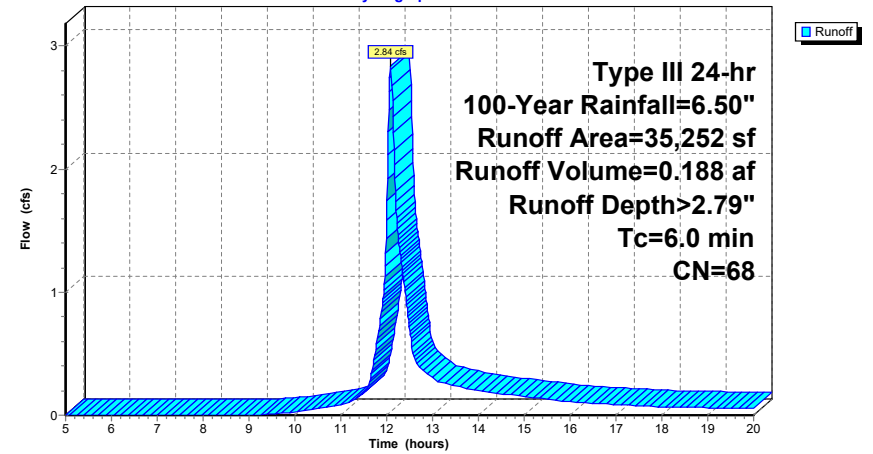
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100-Year Rainfall=6.50"

Area (sf)	CN	Description
6,915	98	Paved parking, HSG B
28,337	61	>75% Grass cover, Good, HSG B
35,252	68	Weighted Average
28,337		80.38% Pervious Area
6,915		19.62% Impervious Area

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

**Subcatchment 8aP: AREA 8P**

**Hydrograph**



**Summary for Subcatchment 8bP: AREA 8P**

Runoff = 1.24 cfs @ 12.09 hrs, Volume= 0.082 af, Depth> 2.98"

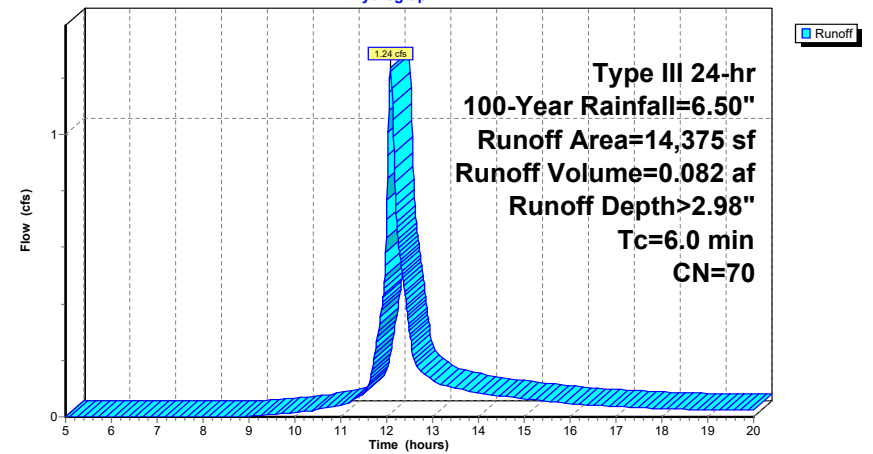
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100-Year Rainfall=6.50"

Area (sf)	CN	Description
3,571	98	Paved parking, HSG B
10,804	61	>75% Grass cover, Good, HSG B
14,375	70	Weighted Average
10,804		75.16% Pervious Area
3,571		24.84% Impervious Area

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

**Subcatchment 8bP: AREA 8P**

**Hydrograph**



**Summary for Subcatchment 8cP: AREA 8P**

Runoff = 3.29 cfs @ 12.09 hrs, Volume= 0.218 af, Depth> 2.69"

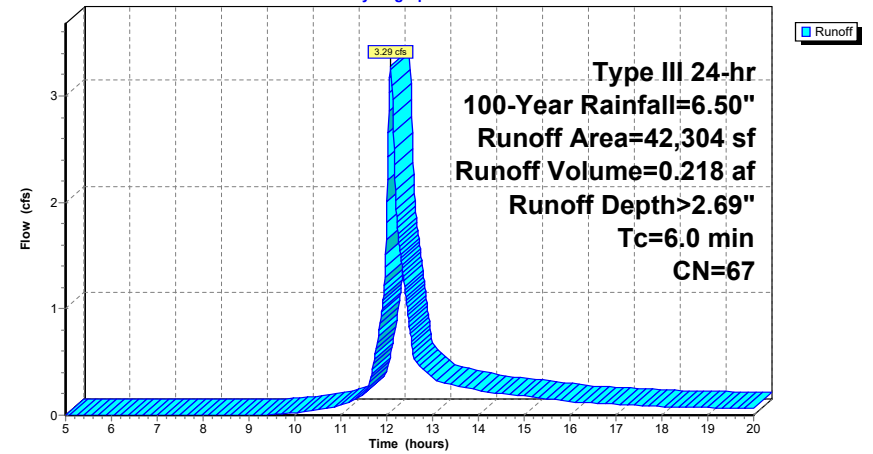
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100-Year Rainfall=6.50"

Area (sf)	CN	Description
7,101	98	Paved parking, HSG B
35,203	61	>75% Grass cover, Good, HSG B
42,304	67	Weighted Average
35,203		83.21% Pervious Area
7,101		16.79% Impervious Area

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

**Subcatchment 8cP: AREA 8P**

**Hydrograph**



**Summary for Subcatchment 9P: AREA 9P**

Runoff = 4.09 cfs @ 12.09 hrs, Volume= 0.279 af, Depth> 4.40"

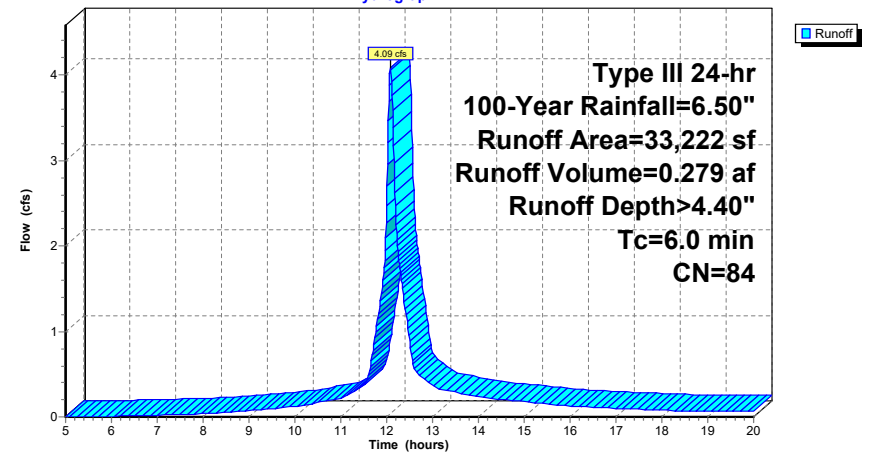
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs  
 Type III 24-hr 100-Year Rainfall=6.50"

Area (sf)	CN	Description
20,895	98	Paved parking, HSG B
12,527	61	>75% Grass cover, Good, HSG B
33,222	84	Weighted Average
12,527		37.71% Pervious Area
20,895		62.29% Impervious Area

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

**Subcatchment 9P: AREA 9P**

**Hydrograph**



**Summary for Reach 1R: SITE TOTAL**

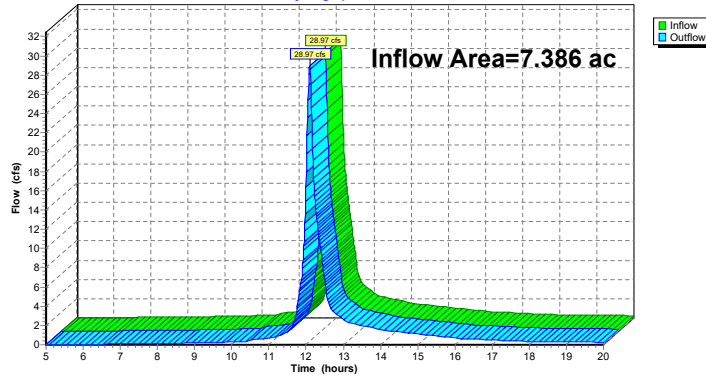
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 7.386 ac, 23.45% Impervious, Inflow Depth > 2.65" for 100-Year event  
 Inflow = 28.97 cfs @ 12.09 hrs, Volume= 1.631 af  
 Outflow = 28.97 cfs @ 12.09 hrs, Volume= 1.631 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs

**Reach 1R: SITE TOTAL**

Hydrograph



**Summary for Pond 10P: CB**

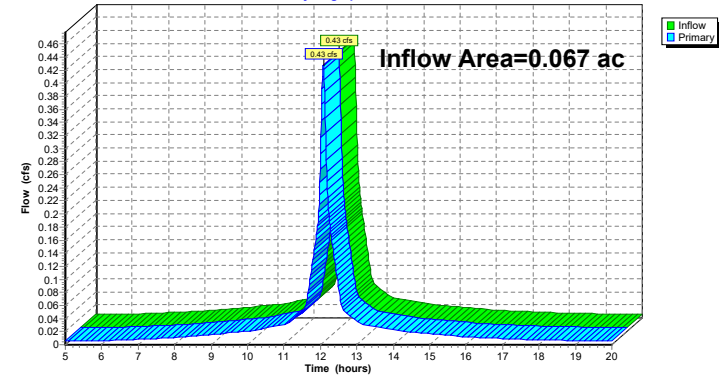
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.067 ac, 100.00% Impervious, Inflow Depth > 5.78" for 100-Year event  
 Inflow = 0.43 cfs @ 12.08 hrs, Volume= 0.032 af  
 Primary = 0.43 cfs @ 12.08 hrs, Volume= 0.032 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs / 2

**Pond 10P: CB**

Hydrograph



**Summary for Pond 11P: BOARDWALK**

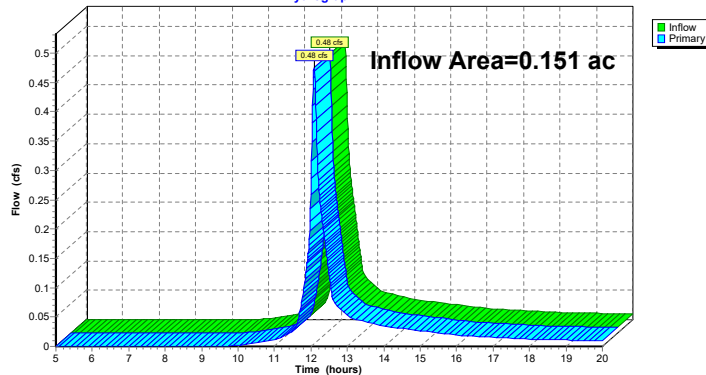
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.151 ac, 0.00% Impervious, Inflow Depth > 2.51" for 100-Year event  
 Inflow = 0.48 cfs @ 12.09 hrs, Volume= 0.032 af  
 Primary = 0.48 cfs @ 12.09 hrs, Volume= 0.032 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs / 2

**Pond 11P: BOARDWALK**

Hydrograph



**Summary for Pond 12P: TRENCH**

Inflow Area = 0.527 ac, 15.32% Impervious, Inflow Depth > 2.69" for 100-Year event  
 Inflow = 1.79 cfs @ 12.09 hrs, Volume= 0.118 af  
 Outflow = 1.78 cfs @ 12.09 hrs, Volume= 0.109 af, Atten= 0%, Lag= 0.1 min  
 Discarded = 0.05 cfs @ 12.09 hrs, Volume= 0.034 af  
 Primary = 1.74 cfs @ 12.09 hrs, Volume= 0.074 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs / 4

Peak Elev= 13.51' @ 12.09 hrs Surf.Area= 768 sf Storage= 471 cf  
 Plug-Flow detention time= 41.2 min calculated for 0.109 af (92% of inflow)  
 Center-of-Mass det. time= 14.0 min ( 816.2 - 802.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	11.98'	614 cf	2.00'W x 384.00'L x 2.00'H Prismatic 1,536 cf Overall x 40.0% Voids

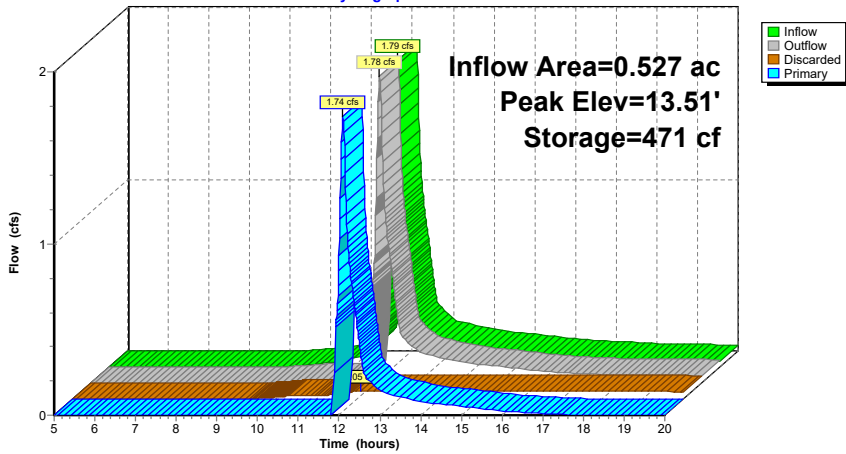
Device	Routing	Invert	Outlet Devices
#1	Discarded	11.98'	1.020 in/hr Exfiltration over Wetted area
#2	Primary	13.48'	100.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.05 cfs @ 12.09 hrs HW=13.51' (Free Discharge)  
 1=Exfiltration (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=1.69 cfs @ 12.09 hrs HW=13.51' (Free Discharge)  
 2=Broad-Crested Rectangular Weir(Weir Controls 1.69 cfs @ 0.50 fps)

Pond 12P: TRENCH

Hydrograph



Summary for Pond 13P: TRENCH

Inflow Area = 0.139 ac, 0.00% Impervious, Inflow Depth > 4.08" for 100-Year event  
 Inflow = 0.70 cfs @ 12.09 hrs, Volume= 0.047 af  
 Outflow = 0.70 cfs @ 12.09 hrs, Volume= 0.044 af, Atten=0%, Lag= 0.1 min  
 Discarded = 0.03 cfs @ 12.09 hrs, Volume= 0.021 af  
 Primary = 0.67 cfs @ 12.09 hrs, Volume= 0.022 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs / 4  
 Peak Elev= 14.22' @ 12.09 hrs Surf.Area= 468 sf Storage= 284 cf

Plug-Flow detention time= 60.2 min calculated for 0.044 af (93% of inflow)  
 Center-of-Mass det. time= 35.2 min ( 810.9 - 775.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	12.70'	374 cf	<b>2.00'W x 234.00'L x 2.00'H Prismatic</b> 936 cf Overall x 40.0% Voids

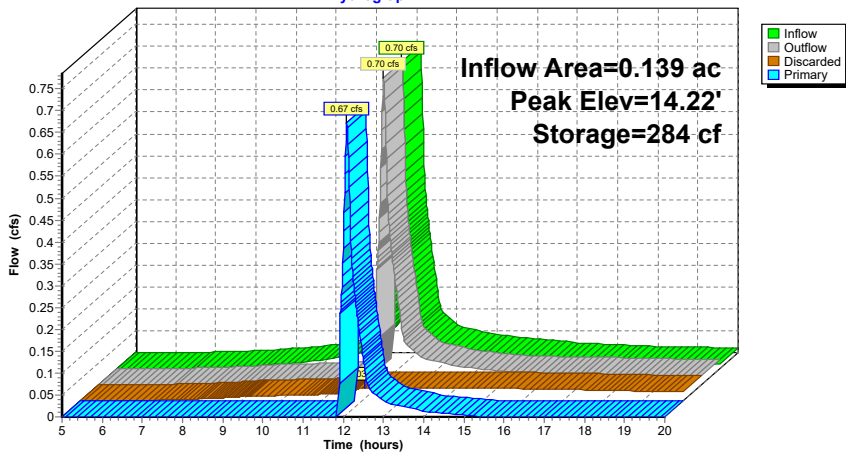
Device	Routing	Invert	Outlet Devices
#1	Discarded	12.70'	<b>1.020 in/hr Exfiltration over Wetted area</b>
#2	Primary	14.20'	<b>100.0' long x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.03 cfs @ 12.09 hrs HW=14.22' (Free Discharge)  
 1=Exfiltration (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=0.63 cfs @ 12.09 hrs HW=14.22' (Free Discharge)  
 2=Broad-Crested Rectangular Weir(Weir Controls 0.63 cfs @ 0.36 fps)

Pond 13P: TRENCH

Hydrograph



Summary for Pond 14P: TRENCH

Inflow Area = 0.737 ac, 17.30% Impervious, Inflow Depth > 2.69" for 100-Year event  
 Inflow = 2.50 cfs @ 12.09 hrs, Volume= 0.165 af  
 Outflow = 2.49 cfs @ 12.09 hrs, Volume= 0.157 af, Atten=0%, Lag= 0.1 min  
 Discarded = 0.05 cfs @ 12.09 hrs, Volume= 0.035 af  
 Primary = 2.45 cfs @ 12.09 hrs, Volume= 0.122 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs / 2  
 Peak Elev= 9.68' @ 12.09 hrs Surf.Area= 942 sf Storage= 393 cf

Plug-Flow detention time= 25.5 min calculated for 0.157 af (95% of inflow)  
 Center-of-Mass det. time= 6.9 min ( 809.2 - 802.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	8.64'	754 cf	<b>2.00'W x 471.00'L x 2.00'H Prismatic</b> 1,884 cf Overall x 40.0% Voids

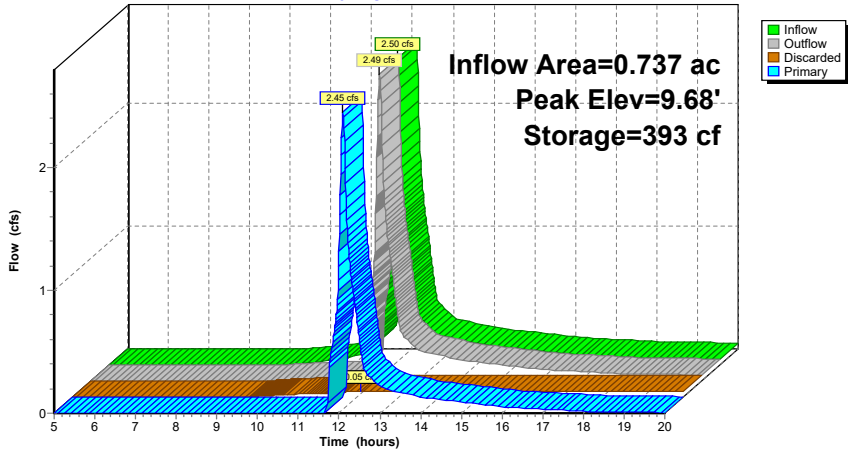
Device	Routing	Invert	Outlet Devices
#1	Discarded	8.64'	<b>1.020 in/hr Exfiltration over Wetted area</b>
#2	Primary	9.64'	<b>100.0' long x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.05 cfs @ 12.09 hrs HW=9.68' (Free Discharge)  
 1=Exfiltration (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=2.42 cfs @ 12.09 hrs HW=9.68' (Free Discharge)  
 2=Broad-Crested Rectangular Weir(Weir Controls 2.42 cfs @ 0.56 fps)

**Pond 14P: TRENCH**

Hydrograph



**Summary for Pond 15P: CB**

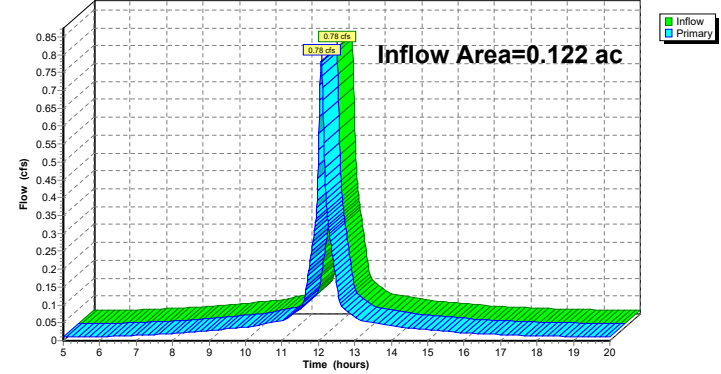
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.122 ac, 100.00% Impervious, Inflow Depth > 5.78" for 100-Year event  
 Inflow = 0.78 cfs @ 12.08 hrs, Volume= 0.059 af  
 Primary = 0.78 cfs @ 12.08 hrs, Volume= 0.059 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs / 4

**Pond 15P: CB**

Hydrograph



**Summary for Pond 18P: CB**

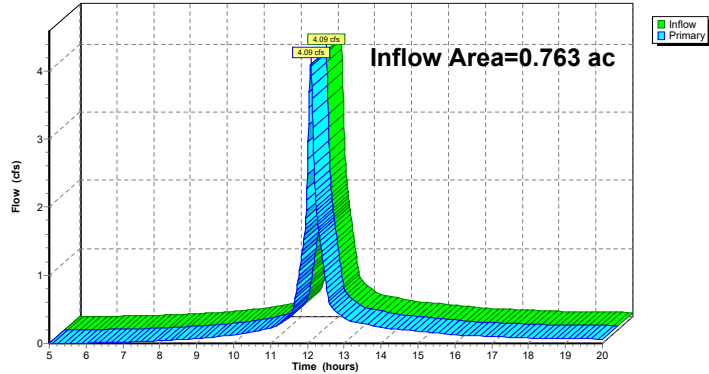
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.763 ac, 62.29% Impervious, Inflow Depth > 4.40" for 100-Year event  
 Inflow = 4.09 cfs @ 12.09 hrs, Volume= 0.279 af  
 Primary = 4.09 cfs @ 12.09 hrs, Volume= 0.279 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs

**Pond 18P: CB**

Hydrograph



**Summary for Pond 19P: CB**

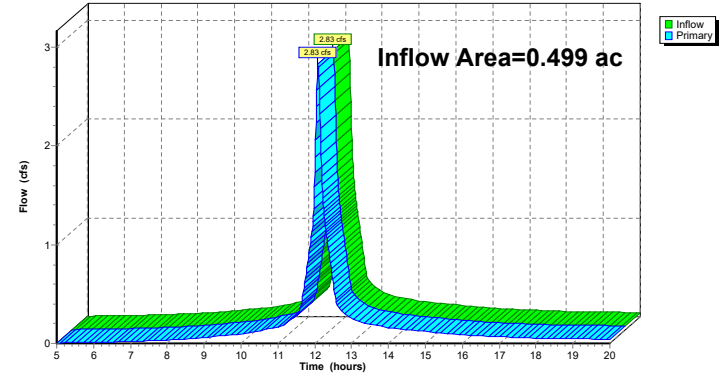
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.499 ac, 71.55% Impervious, Inflow Depth > 4.72" for 100-Year event  
 Inflow = 2.83 cfs @ 12.09 hrs, Volume= 0.196 af  
 Primary = 2.83 cfs @ 12.09 hrs, Volume= 0.196 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs

**Pond 19P: CB**

Hydrograph



**Summary for Pond 20P: TRENCH**

Inflow Area = 0.285 ac, 17.13% Impervious, Inflow Depth > 2.69" for 100-Year event  
 Inflow = 0.96 cfs @ 12.09 hrs, Volume= 0.064 af  
 Outflow = 0.96 cfs @ 12.09 hrs, Volume= 0.060 af, Atten= 0%, Lag= 0.0 min  
 Discarded = 0.02 cfs @ 12.09 hrs, Volume= 0.018 af  
 Primary = 0.94 cfs @ 12.09 hrs, Volume= 0.044 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 8.93' @ 12.09 hrs Surf.Area= 0.010 ac Storage= 0.004 af

Plug-Flow detention time=29.8 min calculated for 0.060 af (94% of inflow)  
 Center-of-Mass det. time= 8.2 min ( 810.5 - 802.3 )

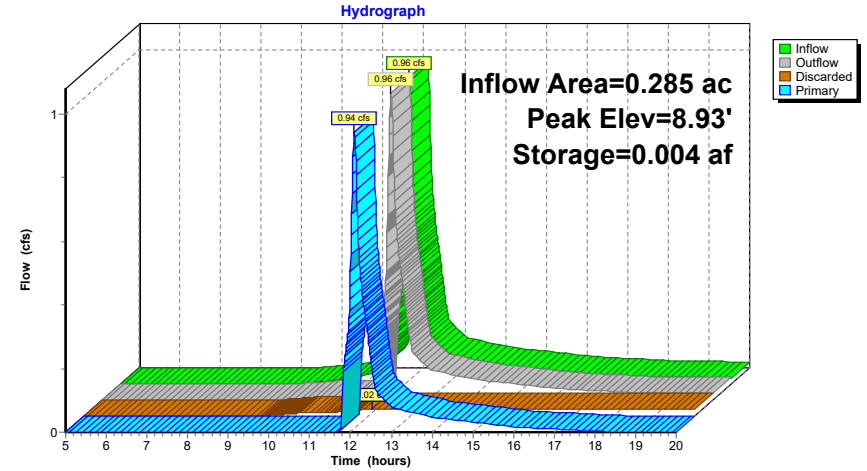
Volume	Invert	Avail.Storage	Storage Description
#1	7.91'	0.008 af	2.00'W x 217.00'L x 2.00'H Prismatoid 0.020 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	7.91'	1.020 in/hr Exfiltration over Wetted area
#2	Primary	8.91'	100.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.02 cfs @ 12.09 hrs HW=8.93' (Free Discharge)  
 1=Exfiltration (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.91 cfs @ 12.09 hrs HW=8.93' (Free Discharge)  
 2=Broad-Crested Rectangular Weir(Weir Controls 0.91 cfs @ 0.40 fps)

**Pond 20P: TRENCH**



**Summary for Pond 22P: TRENCH**

Inflow Area = 1.985 ac, 2.51% Impervious, Inflow Depth > 2.98" for 100-Year event  
 Inflow = 7.45 cfs @ 12.09 hrs, Volume= 0.492 af  
 Outflow = 7.45 cfs @ 12.09 hrs, Volume= 0.486 af, Atten= 0%, Lag= 0.0 min  
 Discarded = 0.03 cfs @ 12.09 hrs, Volume= 0.024 af  
 Primary = 7.42 cfs @ 12.09 hrs, Volume= 0.462 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs / 4  
 Peak Elev= 14.29' @ 12.09 hrs Surf.Area= 0.011 ac Storage= 0.007 af

Plug-Flow detention time=7.8 min calculated for 0.486 af (99% of inflow)  
 Center-of-Mass det. time= 2.7 min ( 799.6 - 796.9 )

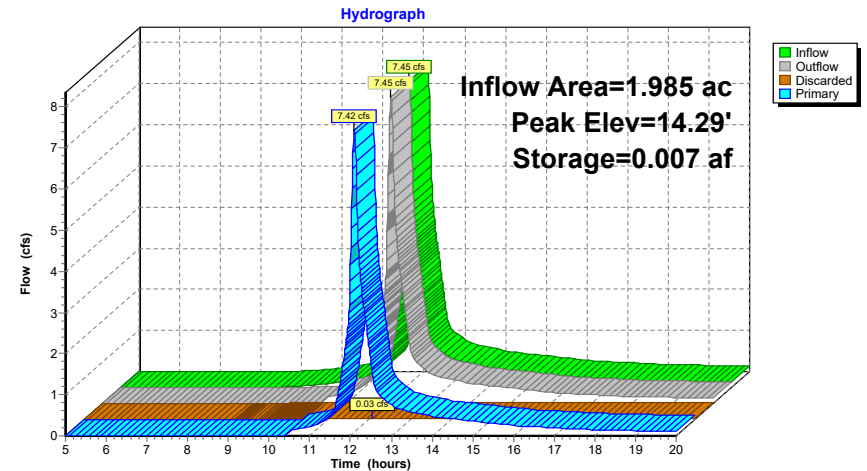
Volume	Invert	Avail.Storage	Storage Description
#1	12.70'	0.009 af	2.00'W x 234.00'L x 2.00'H Prismatoid 0.021 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	12.70'	1.020 in/hr Exfiltration over Wetted area
#2	Primary	14.20'	100.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.03 cfs @ 12.09 hrs HW=14.29' (Free Discharge)  
 1=Exfiltration (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=7.38 cfs @ 12.09 hrs HW=14.29' (Free Discharge)  
 2=Broad-Crested Rectangular Weir(Weir Controls 7.38 cfs @ 0.81 fps)

**Pond 22P: TRENCH**





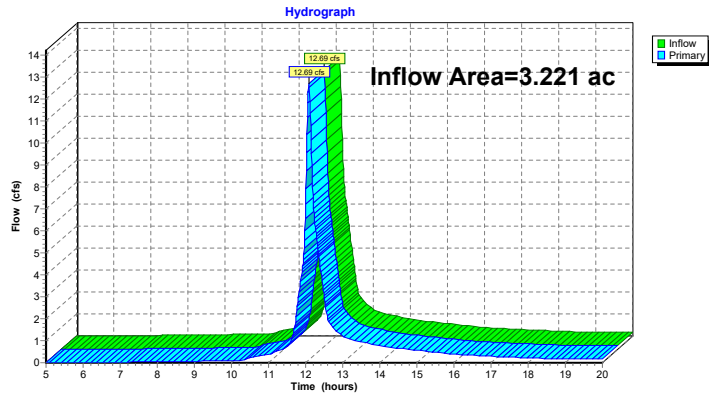
**Summary for Pond 23P: OUTLET (No Storage)**

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 3.221 ac, 16.59% Impervious, Inflow Depth > 2.90" for 100-Year event  
 Inflow = 12.69 cfs @ 12.09 hrs, Volume= 0.780 af  
 Primary = 12.69 cfs @ 12.09 hrs, Volume= 0.780 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs

**Pond 23P: OUTLET (No Storage)**



**Summary for Pond 24P: TRENCH**

Inflow Area = 0.330 ac, 24.84% Impervious, Inflow Depth > 2.98" for 100-Year event  
 Inflow = 1.24 cfs @ 12.09 hrs, Volume= 0.082 af  
 Outflow = 1.24 cfs @ 12.09 hrs, Volume= 0.075 af, Atten= 0%, Lag= 0.1 min  
 Discarded = 0.04 cfs @ 12.09 hrs, Volume= 0.031 af  
 Primary = 1.19 cfs @ 12.09 hrs, Volume= 0.044 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs / 2  
 Peak Elev= 7.03' @ 12.09 hrs Surf.Area= 714 sf Storage= 436 cf

Plug-Flow detention time= 53.4 min calculated for 0.075 af (91% of inflow)  
 Center-of-Mass det. time= 25.3 min ( 822.2 - 796.9 )

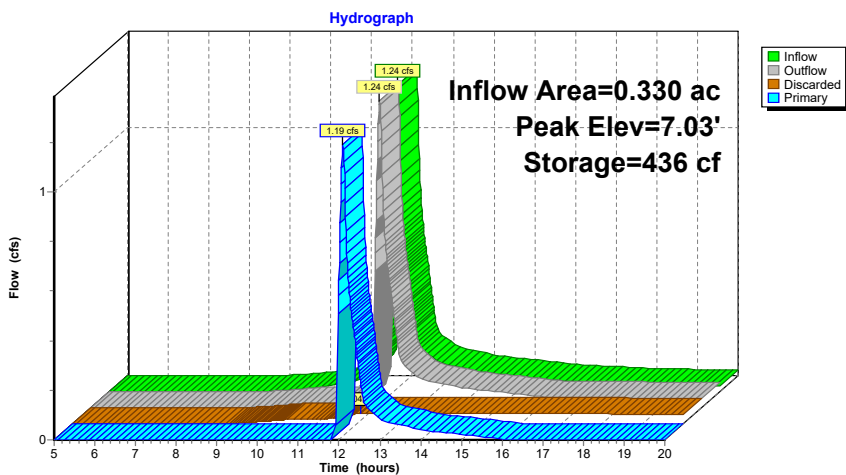
Volume	Invert	Avail.Storage	Storage Description
#1	5.50'	571 cf	2.00'W x 357.00'L x 2.00'H Prismatic 1,428 cf Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	5.50'	1.020 in/hr Exfiltration over Wetted area
#2	Primary	7.00'	100.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.04 cfs @ 12.09 hrs HW=7.03' (Free Discharge)  
 1=Exfiltration (Exfiltration Controls 0.04 cfs)

Primary OutFlow Max=1.14 cfs @ 12.09 hrs HW=7.03' (Free Discharge)  
 2=Broad-Crested Rectangular Weir(Weir Controls 1.14 cfs @ 0.44 fps)

**Pond 24P: TRENCH**



**Summary for Pond 26P: TRENCH**

Inflow Area = 0.971 ac, 16.79% Impervious, Inflow Depth > 2.69" for 100-Year event  
 Inflow = 3.29 cfs @ 12.09 hrs, Volume= 0.218 af  
 Outflow = 3.29 cfs @ 12.09 hrs, Volume= 0.205 af, Atten= 0%, Lag= 0.1 min  
 Discarded = 0.07 cfs @ 12.09 hrs, Volume= 0.052 af  
 Primary = 3.22 cfs @ 12.09 hrs, Volume= 0.153 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs / 2  
 Peak Elev= 6.26' @ 12.09 hrs Surf.Area= 1,408 sf Storage= 592 cf

Plug-Flow detention time= 28.4 min calculated for 0.205 af (94% of inflow)  
 Center-of-Mass det. time= 7.7 min ( 810.0 - 802.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	5.21'	1,126 cf	2.00'W x 704.00'L x 2.00'H Prismatic 2,816 cf Overall x 40.0% Voids

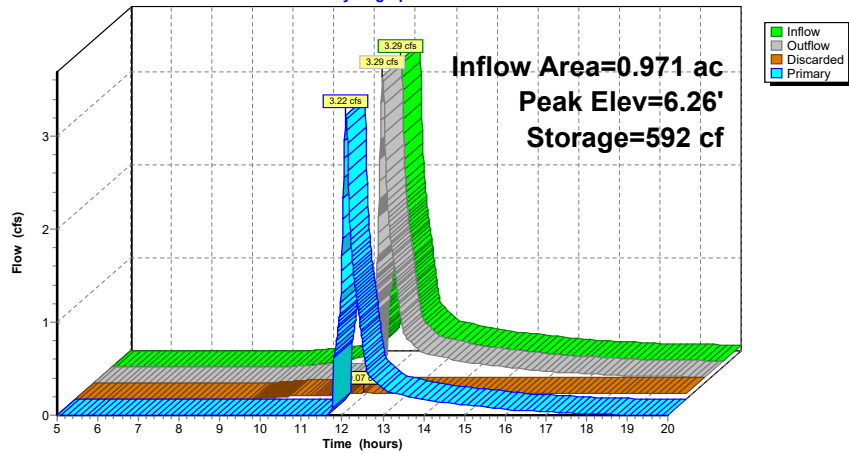
Device	Routing	Invert	Outlet Devices
#1	Discarded	5.21'	1.020 in/hr Exfiltration over Wetted area
#2	Primary	6.21'	100.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.07 cfs @ 12.09 hrs HW=6.26' (Free Discharge)  
 1=Exfiltration (Exfiltration Controls 0.07 cfs)

Primary OutFlow Max=3.17 cfs @ 12.09 hrs HW=6.26' (Free Discharge)  
 2=Broad-Crested Rectangular Weir(Weir Controls 3.17 cfs @ 0.61 fps)

Pond 26P: TRENCH

Hydrograph



Summary for Pond 28P: TRENCH

Inflow Area = 0.809 ac, 19.62% Impervious, Inflow Depth > 2.79" for 100-Year event  
 Inflow = 2.84 cfs @ 12.09 hrs, Volume= 0.188 af  
 Outflow = 2.84 cfs @ 12.09 hrs, Volume= 0.172 af, Atten=0%, Lag=0.1 min  
 Discarded = 0.08 cfs @ 12.09 hrs, Volume= 0.061 af  
 Primary = 2.75 cfs @ 12.09 hrs, Volume= 0.111 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs / 2  
 Peak Elev= 7.05' @ 12.09 hrs Surf.Area= 1,384 sf Storage= 856 cf

Plug-Flow detention time= 46.3 min calculated for 0.172 af (92% of inflow)  
 Center-of-Mass det. time= 18.2 min ( 818.7 - 800.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	5.50'	1,107 cf	2.00'W x 692.00'L x 2.00'H Prismatoid 2,768 cf Overall x 40.0% Voids

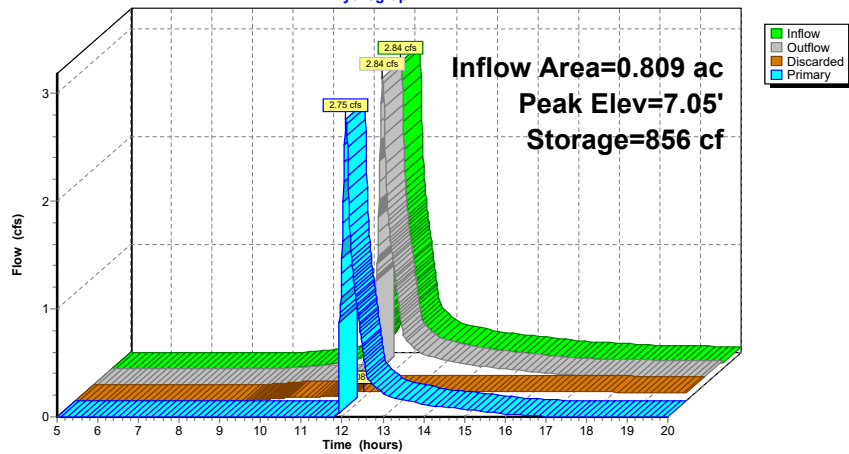
Device	Routing	Invert	Outlet Devices
#1	Discarded	5.50'	1.020 in/hr Exfiltration over Wetted area
#2	Primary	7.00'	100.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.08 cfs @ 12.09 hrs HW=7.05' (Free Discharge)  
 1=Exfiltration (Exfiltration Controls 0.08 cfs)

Primary OutFlow Max=2.71 cfs @ 12.09 hrs HW=7.05' (Free Discharge)  
 2=Broad-Crested Rectangular Weir(Weir Controls 2.71 cfs @ 0.58 fps)

Pond 28P: TRENCH

Hydrograph



Summary for Pond 29P: OUTLET (No Storage)

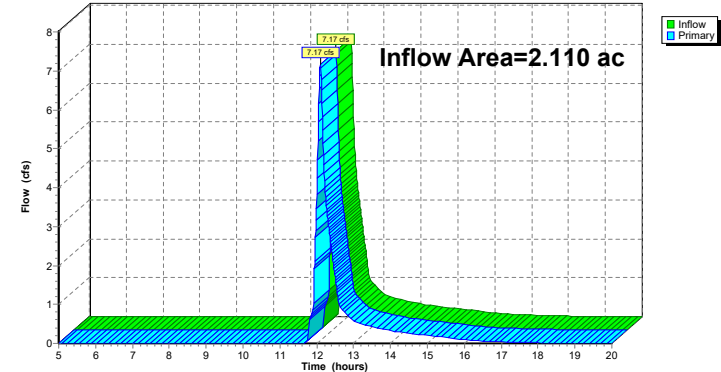
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 2.110 ac, 19.13% Impervious, Inflow Depth = 1.75" for 100-Year event  
 Inflow = 7.17 cfs @ 12.09 hrs, Volume= 0.308 af  
 Primary = 7.17 cfs @ 12.09 hrs, Volume= 0.308 af, Atten=0%, Lag=0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.01 hrs

Pond 29P: OUTLET (No Storage)

Hydrograph





**SECTION 7.0**

**ADDITIONAL DRAINAGE CALCULATIONS**

7.01 TOTAL SUSPENDED SOLIDS REMOVAL (TSS)

**7.01 TOTAL SUSPENDED SOLIDS REMOVAL (TSS)**

# TSS Removal Calculation Worksheet

Location: Boston, MA

Project: Neponset River Greenway - Tenean to Morrissey



Prepared By: K. Eagan

Date: 12/29/2020

## TRAIL DRAINAGE TO INFILTRATION TRENCH

A	B	C	D	E
BMP	TSS Removal Rate*	Starting TSS Load*	Amount Removed (BxC)	Remaining Load (C-D)
Infiltration Trench	0.8	1.00	0.80	0.20

**TSS Removal = 0.80**

\* Maximum allowed TSS removal rates by DEP





**APPENDICES**



**USGS LOCUS MAP**







PREPARED FOR:



DEPARTMENT OF  
CONSERVATION &  
RECREATION

251 CAUSEWAY ST  
BOSTON, MA 02114

USGS LOCUS MAP

Source:

NEPONSET RIVER GREENWAY  
BOSTON, MA



803 Summer Street  
Boston, Massachusetts  
02127

617 896 4300

Job No.: 89572.01 Date: 12/11/20

Scale: 1"=2000' Revised:

Dwg. No.: \_\_\_\_\_ Figure: 1





**FEMA MAP**





# National Flood Hazard Layer FIRMMette



71°3'14"W 42°18'19"N



71°2'36"W 42°17'52"N

## Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) <i>Zone A, V, A99</i>
		With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i>
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile <i>Zone X</i>
		Future Conditions 1% Annual Chance Flood Hazard <i>Zone X</i>
		Area with Reduced Flood Risk due to Levee. See Notes. <i>Zone X</i>
		Area with Flood Risk due to Levee <i>Zone D</i>
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard <i>Zone X</i>
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard <i>Zone D</i>
		Channel, Culvert, or Storm Sewer
OTHER FEATURES		Levee, Dike, or Floodwall
		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
		17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
MAP PANELS		Jurisdiction Boundary
		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped
		The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.



This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **12/14/2020 at 9:47 AM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



# National Flood Hazard Layer FIRMMette



71°3'10"W 42°18'2"N



## Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) <i>Zone A, V, A99</i>	With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i>
	Regulatory Floodway	

OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile <i>Zone X</i>
	Future Conditions 1% Annual Chance Flood Hazard <i>Zone X</i>
	Area with Reduced Flood Risk due to Levee. See Notes. <i>Zone X</i>
	Area with Flood Risk due to Levee <i>Zone D</i>

OTHER AREAS	NO SCREEN Area of Minimal Flood Hazard <i>Zone X</i>
	Effective LOMRs
	Area of Undetermined Flood Hazard <i>Zone D</i>

GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer
	Levee, Dike, or Floodwall

OTHER FEATURES	Cross Sections with 1% Annual Chance Water Surface Elevation
	20.2 17.5
	Coastal Transect
	Base Flood Elevation Line (BFE)
	Limit of Study
	Jurisdiction Boundary
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature

MAP PANELS	Digital Data Available
	No Digital Data Available
	Unmapped

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **12/14/2020 at 9:48 AM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

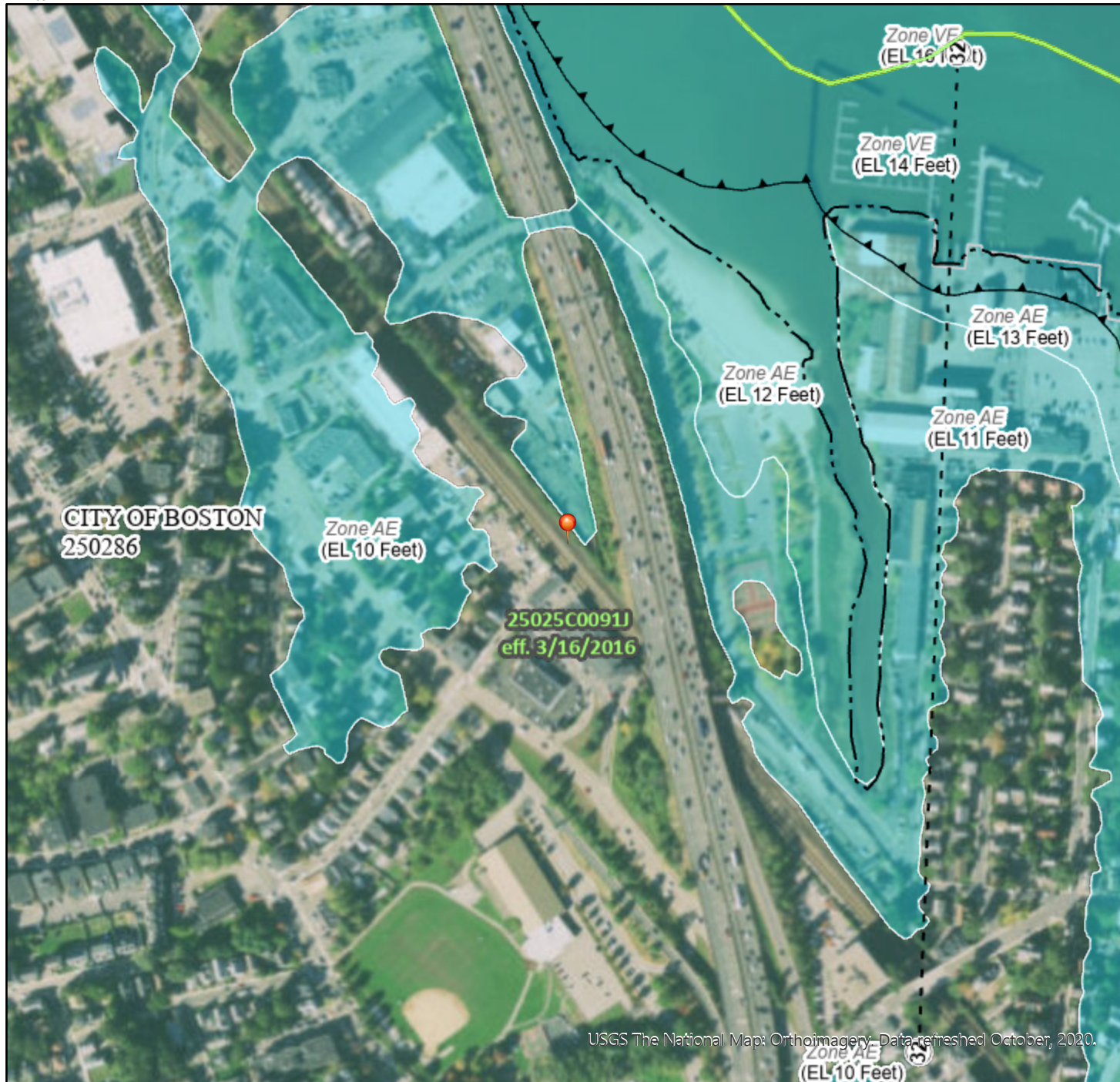
This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



# National Flood Hazard Layer FIRMMette



71°2'59"W 42°17'41"N



## Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

- |                                    |  |   |
|------------------------------------|--|---|
| <b>SPECIAL FLOOD HAZARD AREAS</b>  |  | Without Base Flood Elevation (BFE)<br>Zone A, V, A99  |
|                                    |  | With BFE or Depth Zone AE, AO, AH, VE, AR   |
|                                    |  | Regulatory Floodway   |
| <b>OTHER AREAS OF FLOOD HAZARD</b> |  | 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X |
|                                    |  | Future Conditions 1% Annual Chance Flood Hazard Zone X  |
|                                    |  | Area with Reduced Flood Risk due to Levee. See Notes. Zone X  |
|                                    |  | Area with Flood Risk due to Levee Zone D  |
| <b>OTHER AREAS</b>                 |  | NO SCREEN Area of Minimal Flood Hazard Zone X   |
|                                    |  | Effective LOMRs   |
| <b>GENERAL STRUCTURES</b>          |  | Area of Undetermined Flood Hazard Zone D  |
|                                    |  | Channel, Culvert, or Storm Sewer  |
| <b>OTHER FEATURES</b>              |  | Levee, Dike, or Floodwall   |
|                                    |  | 20.2 Cross Sections with 1% Annual Chance Water Surface Elevation   |
| <b>MAP PANELS</b>                  |  | 17.5 Coastal Transect   |
|                                    |  | Base Flood Elevation Line (BFE)   |
|                                    |  | Limit of Study  |
|                                    |  | Jurisdiction Boundary   |
|                                    |  | Coastal Transect Baseline   |
|                                    |  | Profile Baseline  |
|                                    |  | Hydrographic Feature  |
|                                    |  | Digital Data Available  |
|                                    |  | No Digital Data Available   |
|                                    |  | Unmapped  |
|                                    |  | The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.                              |

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **12/14/2020 at 9:49 AM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

USGS The National Map: Orthoimagery Data refreshed October, 2020.

0 250 500 1,000 1,500 2,000 Feet 1:6,000

71°2'22"W 42°17'14"N



**SOIL SURVEY MAP**

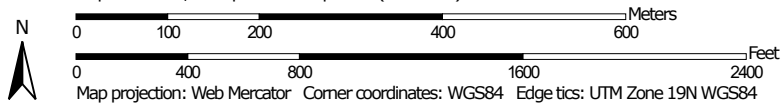




Parent Material Name—Norfolk and Suffolk Counties, Massachusetts  
(Neponset River Greenway)



Map Scale: 1:8,250 if printed on A portrait (8.5" x 11") sheet.



Parent Material Name—Norfolk and Suffolk Counties, Massachusetts  
(Neponset River Greenway)






**MAP LEGEND**


**Area of Interest (AOI)**

 Area of Interest (AOI)







**Soils**

**Soil Rating Polygons**







-  excavated and filled land over herbaceous organic material and/or alluvium and/or marine deposits
-  excavated and filled sandy and gravelly human transported material over highly-decomposed herbaceous organic material
-  friable coarse-loamy eolian deposits over dense coarse-loamy lodgment till derived from metamorphic rock
-  gravelly marine deposits
-  loamy glaciofluvial deposits derived from granite, schist, and gneiss over sandy and gravelly glaciofluvial deposits derived from granite, schist, and gneiss

 Not rated or not available


**Soil Rating Lines**

-  excavated and filled land over herbaceous organic material and/or alluvium and/or marine deposits
-  excavated and filled sandy and gravelly human transported material over highly-decomposed herbaceous organic material
-  friable coarse-loamy eolian deposits over dense coarse-loamy lodgment till derived from metamorphic rock
-  gravelly marine deposits
-  loamy glaciofluvial deposits derived from granite, schist, and gneiss over sandy and gravelly glaciofluvial deposits derived from granite, schist, and gneiss
-  Not rated or not available







**Soil Rating Points**

-  excavated and filled land over herbaceous organic material and/or alluvium and/or marine deposits
-  excavated and filled sandy and gravelly human transported material over highly-decomposed herbaceous organic material
-  friable coarse-loamy eolian deposits over dense coarse-loamy lodgment till derived from metamorphic rock
-  gravelly marine deposits
-  loamy glaciofluvial deposits derived from granite, schist, and gneiss over sandy and gravelly glaciofluvial deposits derived from granite, schist, and gneiss
-  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 1:25,000.

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: Norfolk and Suffolk Counties, Massachusetts  
Survey Area Data: Version 16, Jun 11, 2020

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

Date(s) aerial images were photographed: Sep 11, 2019—Oct 5, 2019

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.

## Parent Material Name

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1	Water		82.6	33.2%
603	Urban land, wet substratum, 0 to 3 percent slopes	excavated and filled land over herbaceous organic material and/or alluvium and/or marine deposits	96.6	38.8%
626B	Merrimac-Urban land complex, 0 to 8 percent slopes	loamy glaciofluvial deposits derived from granite, schist, and gneiss over sandy and gravelly glaciofluvial deposits derived from granite, schist, and gneiss	4.4	1.8%
627C	Newport-Urban land complex, 3 to 15 percent slopes	friable coarse-loamy eolian deposits over dense coarse-loamy lodgment till derived from metamorphic rock	10.4	4.2%
643	Beaches, cobble	gravelly marine deposits	2.5	1.0%
655	Udorthents, wet substratum	excavated and filled sandy and gravelly human transported material over highly-decomposed herbaceous organic material	52.2	21.0%
<b>Totals for Area of Interest</b>			<b>248.8</b>	<b>100.0%</b>

## Description

Parent material name is a term for the general physical, chemical, and mineralogical composition of the unconsolidated material, mineral or organic, in which the soil forms. Mode of deposition and/or weathering may be implied by the name.

The soil surveyor uses parent material to develop a model used for soil mapping. Soil scientists and specialists in other disciplines use parent material to help interpret soil boundaries and project performance of the material below the soil. Many soil properties relate to parent material. Among these properties are proportions of sand, silt, and clay; chemical content; bulk density; structure; and the kinds and amounts of rock fragments. These properties affect interpretations and may be criteria used to separate soil series. Soil properties and landscape information may imply the kind of parent material.

For each soil in the database, one or more parent materials may be identified. One is marked as the representative or most commonly occurring. The representative parent material name is presented here.

## Rating Options

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff:* None Specified

*Tie-break Rule:* Lower



# MASSACHUSETTS DEPARTMENT OF TRANSPORTATION HIGHWAY DIVISION

BOSTON NEPONSET RIVER GREENWAY			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	1	44
PROJECT FILE NO. 608943			
TITLE SHEET & INDEX			

## PLAN AND PROFILE OF NEPONSET RIVER GREENWAY, VICTORY ROAD, & CONLEY STREET

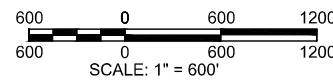
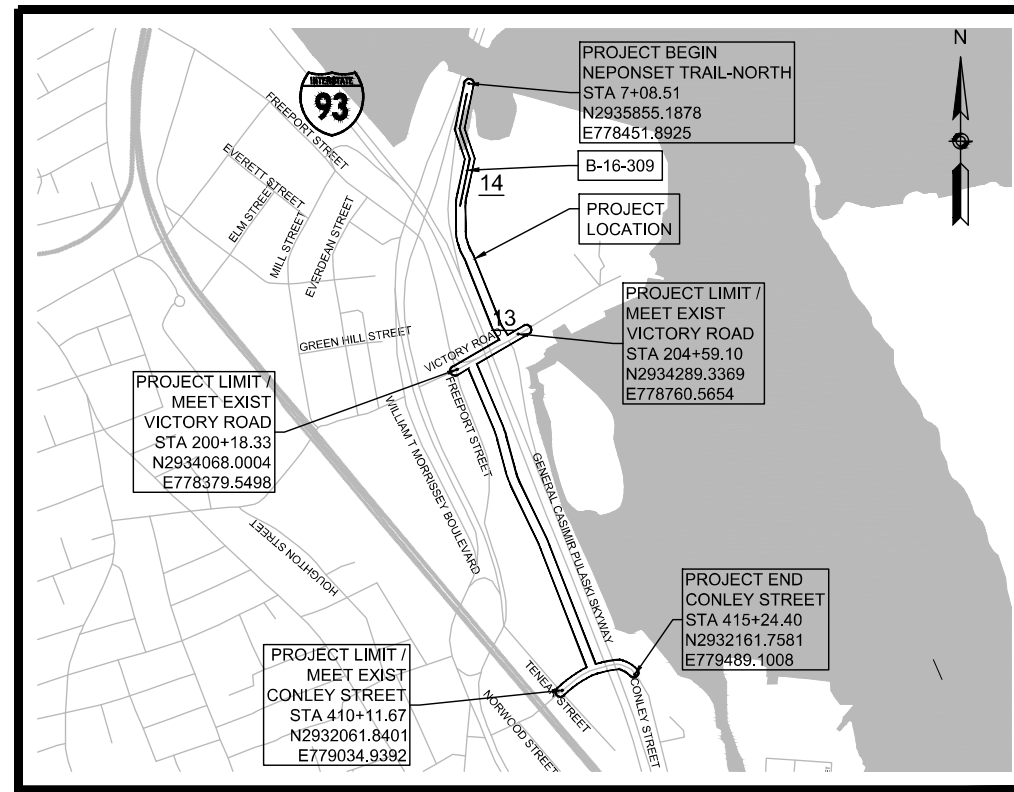
IN THE CITY OF  
**BOSTON**  
SUFFOLK COUNTY

FEDERAL AID PROJECT NO.

THESE PLANS ARE SUPPLEMENTED BY THE OCTOBER 2017 CONSTRUCTION STANDARD DETAILS, THE 2015 OVERHEAD SIGNAL STRUCTURE AND FOUNDATION STANDARD DRAWINGS, MASSDOT TRAFFIC MANAGEMENT PLANS AND DETAIL DRAWINGS, THE 1990 STANDARD DRAWINGS FOR SIGNS AND SUPPORTS, THE 1968 STANDARD DRAWINGS FOR TRAFFIC SIGNALS AND HIGHWAY LIGHTING, AND THE LATEST EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK.

# NOTICE OF INTENT PLANS

INDEX	
SHEET NO.	DESCRIPTION
1	TITLE SHEET & INDEX
2	LEGEND & ABBREVIATIONS
3	SURVEY & GENERAL NOTES
4	KEY PLAN & BORING LOCATIONS
5 - 12	EXISTING CONDITIONS
13 - 14	TYPICAL SECTIONS & PAVEMENT NOTES
15 - 22	CONSTRUCTION PLANS
23 - 28	PROFILES
29 - 38	LANDSCAPE PLANS
39	EROSION CONTROL DETAILS
41 - 42	BOARDWALK DETAILS
43 - 44	TIDEGATE DETAILS



LENGTH OF PROJECT = 4,468.60 FEET = 0.846 MILES

### DESIGN DESIGNATION (VICTORY ROAD)

DESIGN SPEED	30 MPH
ADT (2019)	5,385
ADT (2029)	5,945
K	9.0%
D	94% WB
T (PEAK HOUR)	12.8%
T (AVERAGE DAY)	11.4%
DHV	475
DDHV	450
FUNCTIONAL CLASSIFICATION	LOCAL ROAD

### DESIGN DESIGNATION (CONLEY STREET)

DESIGN SPEED	30 MPH
ADT (2019)	1,875
ADT (2029)	2,075
K	9.0%
D	55% NB
T (PEAK HOUR)	19.0%
T (AVERAGE DAY)	12.8%
DHV	175
DDHV	95
FUNCTIONAL CLASSIFICATION	LOCAL ROAD

# JULY 2021



DATE	DESCRIPTION	REV #

**BSC GROUP**  
803 Summer Street  
Boston, Massachusetts 02127  
www.bscgroup.com 617 896 4300



RECOMMENDED FOR APPROVAL

\_\_\_\_\_  
CHIEF ENGINEER      DATE

**GENERAL SYMBOLS**

EXISTING	PROPOSED	DESCRIPTION
		JERSEY BARRIER
		CATCH BASIN
		CATCH BASIN CURB INLET
		FLAG POLE
		GAS PUMP
		MAIL BOX
		POST SQUARE
		POST CIRCULAR
		WELL
		ELECTRIC HANDHOLE
		FENCE GATE POST
		GAS GATE
		BORING HOLE
		MONITORING WELL
		TEST PIT
		HYDRANT
		MASONRY PLUG
		LIGHT POLE
		COUNTY BOUND
		GPS POINT
		CABLE MANHOLE
		DRAINAGE MANHOLE
		ELECTRIC MANHOLE
		GAS MANHOLE
		MISC MANHOLE
		SEWER MANHOLE
		TELEPHONE MANHOLE
		WATER MANHOLE
		MASSACHUSETTS HIGHWAY BOUND
		MONUMENT
		STONE BOUND
		TOWN OR CITY BOUND
		TRaverse OR TRIANGULATION STATION
		TROLLEY POLE OR GUY POLE
		UTILITY POLE W/ FIREBOX
		UTILITY POLE WITH DOUBLE LIGHT
		UTILITY POLE W/ 1 LIGHT
		UTILITY POLE
		BUSH
		TREE
		STUMP
		SWAMP / MARSH
		WATER GATE
		PARKING METER
		OVERHEAD CABLE/WIRE
		CURBING
		CONTOURS (ON-THE-GROUND SURVEY DATA)
		CONTOURS (PHOTOGRAMMETRIC DATA)
		UNDERGROUND DRAIN PIPE (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND ELECTRIC DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND GAS MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND SEWER MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND TELEPHONE DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND WATER MAIN (DOUBLE LINE 24 INCH AND OVER)
		BALANCED STONE WALL
		GUARD RAIL - STEEL POSTS
		GUARD RAIL - WOOD POSTS
		CHAIN LINK OR METAL FENCE
		WOOD FENCE
		COMPOST FILTER TUBES
		TREE LINE
		SAWCUT LINE
		TOP OR BOTTOM OF SLOPE
		LIMIT OF EDGE OF PAVEMENT OR COLD PLANE AND OVERLAY
		BANK OF RIVER OR STREAM
		BORDER OF WETLAND
		100 FT WETLAND BUFFER
		200 FT RIVERFRONT BUFFER
		STATE HIGHWAY LAYOUT
		TOWN OR CITY LAYOUT
		COUNTY LAYOUT
		RAILROAD SIDELINE
		TOWN OR CITY BOUNDARY LINE
		PROPERTY LINE OR APPROXIMATE PROPERTY LINE
		EASEMENT

**TRAFFIC SYMBOLS**

EXISTING	PROPOSED	DESCRIPTION
		CONTROLLER PHASE ACTUATED
		TRAFFIC SIGNAL HEAD (SIZE AS NOTED)
		WIRE LOOP DETECTOR (6' x 6' TYP UNLESS OTHERWISE SPECIFIED)
		VIDEO DETECTION CAMERA
		MICROWAVE DETECTOR
		PEDESTRIAN PUSH BUTTON, SIGN (DIRECTIONAL ARROW AS SHOWN) AND SADDLE
		EMERGENCY PREEMPTION CONFIRMATION STROBE LIGHT
		VEHICULAR SIGNAL HEAD
		VEHICULAR SIGNAL HEAD, OPTICALLY PROGRAMMED
		FLASHING BEACON
		PEDESTRIAN SIGNAL HEAD, (TYPE AS NOTED OR AS SPECIFIED)
		RAILROAD SIGNAL
		SIGNAL POST AND BASE (ALPHA-NUMERIC DESIGNATION NOTED)
		MAST ARM, SHAFT AND BASE (ARM LENGTH AS NOTED)
		HIGH MAST POLE OR TOWER
		SIGN AND POST
		SIGN AND POST (2 POSTS)
		MAST ARM WITH LUMINAIRE
		OPTICAL PRE-EMPTION DETECTOR
		CONTROL CABINET, GROUND MOUNTED
		CONTROL CABINET, POLE MOUNTED
		FLASHING BEACON CONTROL AND METER PEDESTAL
		LOAD CENTER ASSEMBLY
		PULL BOX 12"x12" (OR AS NOTED)
		ELECTRIC HANDHOLE 12"x24" (OR AS NOTED)
<hr/>		TRAFFIC SIGNAL CONDUIT

**PAVEMENT MARKINGS SYMBOLS**

EXISTING	PROPOSED	DESCRIPTION
		PAVEMENT ARROW - WHITE
		LEGEND "ONLY" - WHITE
		STOP LINE - 12" WHITE LINE LOCATED 4' BEHIND CW (TYP)
		CROSSWALK - 12" WHITE LINES (WIDTH - 10', LADDERING - 3' O.C. (2' SPACING))
		SOLID WHITE LINE - 6"
		SOLID YELLOW LINE - 6"
		BROKEN WHITE LINE - 6" (10' LINE, 30' SPACE)
		BROKEN YELLOW LINE - 6" (10' LINE, 30' SPACE)
		DOTTED WHITE LINE - 6" (3' LINE, 9' SPACE)
		DOTTED YELLOW LINE - 6" (3' LINE, 9' SPACE)
		DOTTED WHITE LINE EXTENSION - 6" (2' LINE, 6' SPACE)
		DOTTED YELLOW LINE EXTENSION - 6" (2' LINE, 6' SPACE)
		DOUBLE WHITE LINE - 6"
		DOUBLE YELLOW LINE - 6"

**ABBREVIATIONS**

GENERAL	DESCRIPTION
AADT	ANNUAL AVERAGE DAILY TRAFFIC
ABAN	ABANDON
ADJ	ADJUST
APPROX.	APPROXIMATE
A.C.	ASPHALT CONCRETE
ACCM PIPE	ASPHALT COATED CORRUGATED METAL PIPE
BIT.	BITUMINOUS
BC	BOTTOM OF CURB
BD.	BOUND
BL	BASELINE
BLDG	BUILDING
BM	BENCHMARK
BO	BY OTHERS
BOS	BOTTOM OF SLOPE
BR.	BRIDGE
CB	CATCH BASIN
CBCI	CATCH BASIN WITH CURB INLET
CC	CEMENT CONCRETE
CCM	CEMENT CONCRETE MASONRY
CEM	CEMENT
CI	CURB INLET
CIP	CAST IRON PIPE
CLF	CHAIN LINK FENCE
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
CSP	CORRUGATED STEEL PIPE
CO.	COUNTY
CONC	CONCRETE
CONT	CONTINUOUS
CONST	CONSTRUCTION
CR GR	CROWN GRADE
DHV	DESIGN HOURLY VOLUME
DI	DROP INLET
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DW	STEADY DON'T WALK - PORTLAND ORANGE
DWY	DRIVEWAY
ELEV (or EL.)	ELEVATION
EMB	EMBANKMENT
EOP	EDGE OF PAVEMENT
EXIST (or EX)	EXISTING
EXC	EXCAVATION
F&C	FRAME AND COVER
F&G	FRAME AND GRATE
FDN.	FOUNDATION
FLDSTN	FIELDSTONE
GAR	GARAGE
GD	GROUND
GG	GAS GATE
GI	GUTTER INLET
GIP	GALVANIZED IRON PIPE
GRAN	GRANITE
GRAV	GRAVEL
GRD	GUARD
HDW	HEADWALL
HMA	HOT MIX ASPHALT
HOR	HORIZONTAL
HYD	HYDRANT
INV	INVERT
JCT	JUNCTION
L	LENGTH OF CURVE
LB	LEACH BASIN
LP	LIGHT POLE
LSA	LANDSCAPED AREA
LSCSF	LAND SUBJECT TO COASTAL STORM FLOOD
LT	LEFT
MAX	MAXIMUM
MB	MAILBOX
MH	MANHOLE
MHB	MASSACHUSETTS HIGHWAY BOUND
MIN	MINIMUM
NIC	NOT IN CONTRACT
NO.	NUMBER
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE
P.G.L.	PROFILE GRADE LINE
PI	POINT OF INTERSECTION
POC	POINT ON CURVE
POT	POINT ON TANGENT
PRC	POINT OF REVERSE CURVATURE
PROJ	PROJECT
PROP	PROPOSED
PSB	PLANTABLE SOIL BORROW
PT	POINT OF TANGENCY
PVC	POINT OF VERTICAL CURVATURE
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY

**BOSTON  
NEPONSET RIVER GREENWAY**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		2	44

**LEGEND & ABBREVIATIONS**

**ABBREVIATIONS (cont.)**

GENERAL	DESCRIPTION
PVMT	PAVEMENT
PWW	PAVED WATER WAY
R	RADIUS OF CURVATURE
R&D	REMOVE AND DISPOSE
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
RDWY	ROADWAY
REM	REMOVE
RET	RETAIN
RET WALL	RETAINING WALL
ROW	RIGHT OF WAY
RR	RAILROAD
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
RT	RIGHT
SB	STONE BOUND
SHLD	SHOULDER
SMH	SEWER MANHOLE
ST	STREET
STA	STATION
SSD	STOPPING SIGHT DISTANCE
SHLO	STATE HIGHWAY LAYOUT LINE
SW	SIDEWALK
T	TANGENT DISTANCE OF CURVE/TRUCK %
TAN	TANGENT
TBM	TEMPORARY BENCHMARK
TEMP	TEMPORARY
TC	TOP OF CURB
TOS	TOP OF SLOPE
TYP	TYPICAL
UP	UTILITY POLE
VAR	VARIES
VERT	VERTICAL
VC	VERTICAL CURVE
WCR	WHEEL CHAIR RAMP
WG	WATER GATE
WIP	WROUGHT IRON PIPE
WM	WATER METER/WATER MAIN
X-SECT	CROSS SECTION

**TRAFFIC SIGNAL**

CAB.	CABINET
CCVE	CLOSED CIRCUIT VIDEO EQUIPMENT
DW	STEADY DON'T WALK
FDW	FLASHING DON'T WALK
FR	FLASHING CIRCULAR RED
FRL	FLASHING RED LEFT ARROW
FRR	FLASHING RED RIGHT ARROW
FY	FLASHING CIRCULAR AMBER
FYL	FLASHING AMBER LEFT ARROW
FYR	FLASHING AMBER RIGHT ARROW
G	STEADY CIRCULAR GREEN
GL	STEADY GREEN LEFT ARROW
GR	STEADY GREEN RIGHT ARROW
GSL	STEADY GREEN SLASH LEFT ARROW
GSR	STEADY GREEN SLASH RIGHT ARROW
GV	STEADY GREEN VERTICAL ARROW
OL	OVERLAP
PED	PEDESTRIAN
PTZ	PAN, TILE, ZOOM
R	STEADY CIRCULAR RED
RL	STEADY RED LEFT ARROW
RR	STEADY RED RIGHT ARROW
TR SIG	TRAFFIC SIGNAL
TSC	TRAFFIC SIGNAL CONDUIT
W	STEADY WALK
Y	STEADY CIRCULAR AMBER
YL	STEADY AMBER LEFT ARROW





BOSTON NEPONSET RIVER GREENWAY			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	3	44
PROJECT FILE NO.		608943	

**SURVEY & GENERAL NOTES**

**SURVEY NOTES**

1. THIS PLAN IS BASED UPON COMPILED INFORMATION PROVIDED BY MASSDOT AND DCR. THE SURVEY INFORMATION LOCATED FROM VICTORY ROAD NORTH TO MORRISSEY BOULEVARD FROM A PLAN ENTITLED "NEPONSET GREENWAY" BOSTON, MASSACHUSETTS PREPARED BY NITSCH ENGINEERING, 2 CENTER PLAZA, SUITE 430, BOSTON, MA 02108. THE SURVEY INFORMATION LOCATED FROM VICTORY ROAD SOUTH ALONG THE I-93 EMBANKMENT TO CONLEY STREET WAS PREPARED AND PROVIDED BY MASSDOT.
2. TOPOGRAPHY AND DETAIL OF VICTORY ROAD AND CONLEY STREET ARE BASED ON AN ON-THE-GROUND INSTRUMENT SURVEY PERFORMED BY BSC GROUP, INC. IN MARCH AND APRIL OF 2019. THIS PLAN IS BASED UPON A COMPILATION OF THE ABOVE MENTIONED PLAN MERGED WITH THE BSC FIELD DATA AND TRANSLATED TO MASSDOT LAYERING AND POINT CONVENTIONS FOR USE IN THE CIVIL3D ENVIRONMENT.
3. PROVIDED CONTROL POINTS AND MONUMENTS WERE VERIFIED BY AN ON-THE-GROUND INSTRUMENT SURVEY FOR HORIZONTAL POSITION ONLY.
4. COORDINATES ARE IN US SURVEY FEET, REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD '83). ELEVATION ARE IN US SURVEY FEET, REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD '88) BASED ON GPS OBSERVATIONS.
5. NO EASEMENT RESEARCH WAS COMPLETED FOR THIS PROJECT. EASEMENTS SHOWN HEREON ARE FROM PLANS WHICH WERE FOUND WHILE COMPILING PROPERTY LINES.

**GENERAL NOTES**

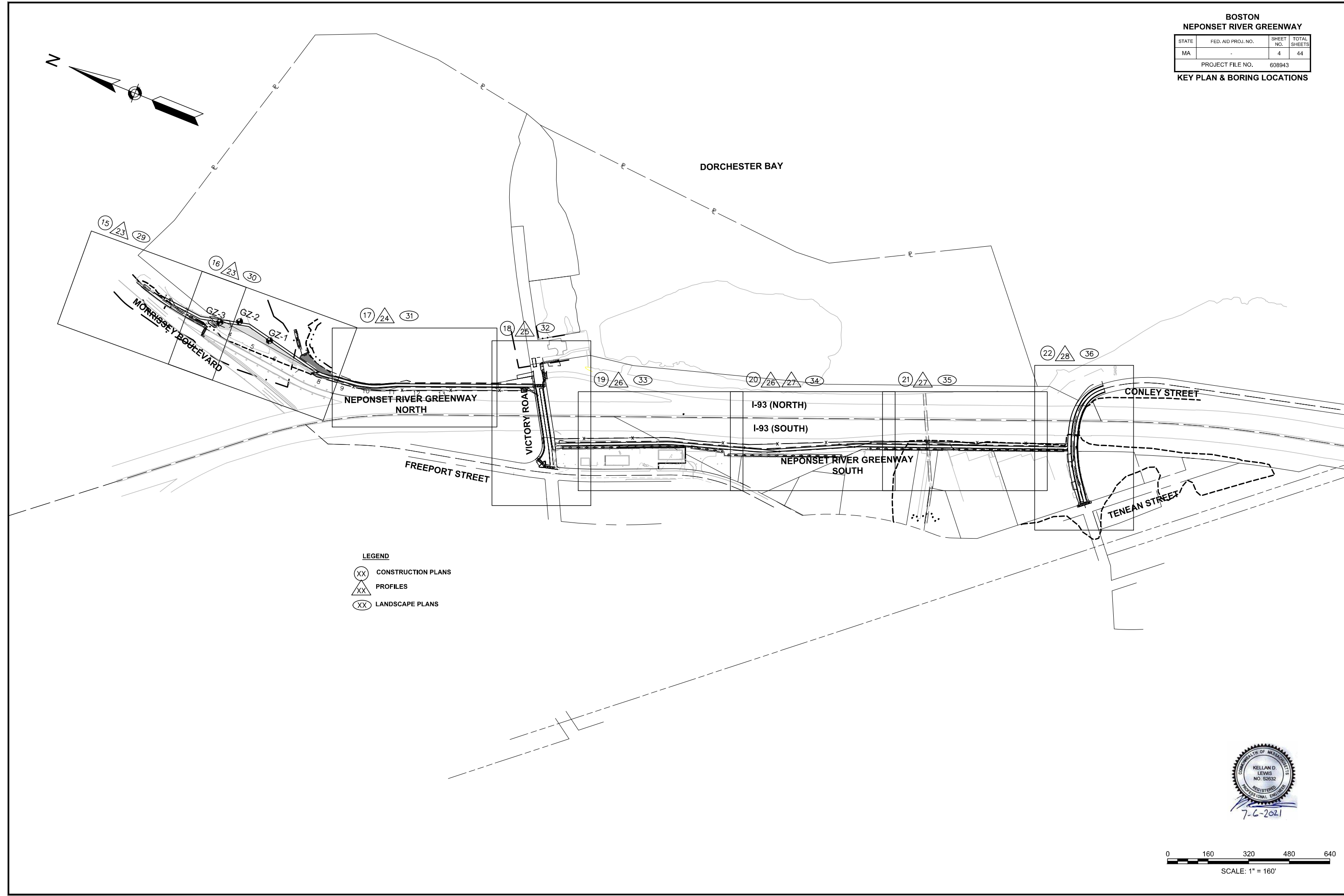
1. EXISTING GROUND SURFACES SHOWN ON PLANS, PROFILES AND CROSS SECTIONS ARE BASED UPON DATA OBTAINED BY FIELD SURVEYS.
2. THE LOCATIONS OF EXISTING SUBSURFACE STRUCTURES, SUCH AS SEWERS, WATER MAINS, DRAINS AND OTHER UTILITIES ARE APPROXIMATE ONLY AND THE ENGINEER DOES NOT GUARANTEE THEIR NUMBER OR LOCATIONS. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UNDERGROUND UTILITIES BEFORE EXCAVATING.
3. THE CONTRACTOR SHALL DIG TEST PITS AT EXISTING DRAINAGE STRUCTURES TO DETERMINE EXISTING INVERT ELEVATIONS INDICATED ON THE PLANS AS N/A (NOT AVAILABLE). PROPOSED DRAINAGE ELEVATIONS ARE PROVIDED FOR DESIGN PURPOSES ONLY. THE CONTRACTOR SHALL VERIFY BY TEST PIT, THE LOCATIONS OF EXISTING UTILITIES WHICH MAY CONFLICT WITH THE PROPOSED DRAINAGE OR UTILITY DESIGN. ANY FIELD ADJUSTMENTS REQUIRED WILL BE MADE AS APPROVED OR REQUIRED BY THE ENGINEER. ONLY AFTER THE CONTRACTOR VERIFIES ELEVATIONS FOR THE CONSTRUCTABILITY OF THE DRAINAGE SYSTEM SHALL ANY STRUCTURES BE ORDERED.
4. EXISTING WATER BOXES AND CURB STOPS, FIRE ALARM, SEWER AND SURFACE DRAIN MANHOLE FRAMES AND COVERS, CATCH BASIN FRAMES AND GRATES AND OTHER CASTINGS SHALL BE ADJUSTED TO LINE AND/OR GRADE AS SHOWN ON THE PLANS AND/OR AS REQUIRED BY THE ENGINEER.
5. ALL EXISTING BROKEN OR DAMAGED SERVICE BOXES AND GATE BOXES WITHIN THE PROJECT SITE SHALL BE REPLACED WITH NEW STRUCTURES IN ACCORDANCE WITH THE BOSTON WATER AND SEWER COMMISSION STANDARDS AND AS REQUIRED BY THE ENGINEER.
6. ALL GAS GATES, ELECTRIC MANHOLES AND TELEPHONE MANHOLES WITHIN THE LIMITS OF WORK SHALL BE ADJUSTED BY THE OWNING AGENCY, UNLESS OTHERWISE INDICATED ON THE PLANS. ALL GAS, ELECTRIC, TELEPHONE AND CATV WORK SHALL BE DONE BY THE OWNING AGENCY. THE CONTRACTOR SHALL NOTIFY THE OWNING AGENCIES TO ADJUST AND/OR RELOCATE THESE STRUCTURES TO AVOID IMPACTING THE CONTRACTOR'S SCHEDULE OF OPERATIONS.
7. ALL PROPOSED DRAINAGE CONNECTIONS TO EXISTING STRUCTURES WILL BE INCLUDED IN THE COST OF THE NEW PIPE.
8. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH THE UTILITY COMPANIES DOING WORK IN THE SAME AREA. THE CONTRACTOR SHALL ALLOW THE UTILITY COMPANIES AND THEIR REPRESENTATIVES TO ADJUST AND/OR INSTALL THEIR SYSTEMS WITHIN TOWN/STATE OWNED STREETS AND EASEMENTS.
9. NO EXISTING PUBLIC UTILITY STRUCTURES SHALL BE ABANDONED AND/OR DISMANTLED WITHOUT AUTHORIZATION FROM THE ENGINEER.
10. THE CONTRACTOR SHALL NOTIFY THE APPROPRIATE UTILITY COMPANIES WHEN THE INSTALLATION OF DRAINAGE LINES AND STRUCTURES ARE IN CLOSE PROXIMITY TO EXISTING UTILITY POLES.
11. THE CONTRACTOR SHALL COORDINATE WORK WITH THE OWNERS OF UTILITY POLES AND SHALL BE RESPONSIBLE FOR TRIMMING TREES AS NECESSARY TO ACCOMMODATE NEW UTILITY POLE LOCATIONS.
12. THE CONTRACTOR SHALL MAKE ARRANGEMENTS FOR TEMPORARY SUPPORT WHILE EXCAVATING IN CLOSE PROXIMITY OF UTILITY POLES, IF REQUIRED BY THE UTILITY, AT NO ADDITIONAL COST.
13. CURB SHALL BE FURNISHED AND SET AT LOCATIONS SHOWN ON THE PLANS AND/OR AS REQUIRED BY THE ENGINEER.
14. CONSTRUCT DRIVEWAYS AND WALKS AS SHOWN ON THE PLANS AN/OR AS REQUIRED BY THE ENGINEER.
15. EXISTING GRANITE CURB SUITABLE FOR REUSE WITHIN THE PROJECT SITE SHALL BE REMOVED AND RESET IN ACCORDANCE WITH THE PLANS AND/OR AS REQUIRED BY THE ENGINEER. EXISTING CURB CORNERS IN THE PROJECT SHOULD BE REMOVED AND DISCARDED.
16. SAW CUT EXISTING BITUMINOUS CONCRETE ROADWAYS, CEMENT CONCRETE SIDEWALKS AND BITUMINOUS CONCRETE DRIVEWAYS AS SHOWN ON THE PLANS AND AT THE PROPOSED MATCH LINE.
17. WHERE THE NEW CONSTRUCTION COINCIDES WITH PRESENT TRAVELED WAYS.
  - 17.1. THE CONTRACTOR SHALL PERFORM WORK IN ACCORDANCE WITH THE TEMPORARY TRAFFIC CONTROL PLANS AND THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" FOR WORK ZONES.
  - 17.2. THE CONTRACTOR SHALL PERFORM HIS WORK IN A MANNER ACCEPTABLE TO THE ENGINEER SO THAT INTERFERENCE WITH AND INCONVENIENCE TO BUSINESS CONCERNS AND ABUTTERS, ON ACCOUNT OF THE CONSTRUCTION WORK, IS KEPT TO A MINIMUM.
  - 17.3. THE CONTRACTOR SHALL NOT BE ALLOWED TO PARK EQUIPMENT OR STOCKPILE EQUIPMENT OR MATERIAL ON THE TRAVELED WAYS OVERNIGHT OR WHEN NOT IN USE.
  - 17.4. THE CONTRACTOR SHALL MAINTAIN SAFE AND RESPONSIBLE ACCESS TO AND FROM ABUTTING PROPERTY PRIVATE WAYS, DRIVEWAYS AND ALL ALLEYS AT ALL TIMES DURING THE CONSTRUCTION PERIOD.
18. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION OF THE CONFLICT.
19. THE CONTRACTOR SHALL DIG TEST PITS AS REQUIRED TO LOCATE EXISTING UTILITIES PRIOR TO TREE/SHRUB PLANTING. ROOT BALLS SHALL BE PLANTED A MINIMUM OF THREE (3) LATERAL FEET AWAY FROM GAS PIPES.
20. THE CONTRACTOR SHALL REPORT ANY CONFLICTS BETWEEN TREE PITS AND EXISTING UNDERGROUND UTILITIES TO THE ENGINEER AND THE MUNICIPAL TREE WARDEN FOR RESOLUTION.
21. THE CONTRACTOR SHALL DIG TEST PITS TO LOCATE EXISTING UTILITIES PRIOR TO INSTALLING LIGHT POLE FOUNDATIONS. LIGHT POLE FOUNDATIONS SHALL BE INSTALLED A MINIMUM OF THREE (3) LATERAL FEET AWAY FROM GAS PIPES.
22. UNLESS OTHERWISE INDICATED ON THE PLANS OR REQUIRED BY THE ENGINEER, THE LIMIT OF WORK SHALL BE THE BACK OF EXISTING SIDEWALK. ANY DISTURBED LAWN AREAS ALONG THE BACK OF SIDEWALK SHALL BE LOAMED AND SEEDED, AS REQUIRED BY THE ENGINEER.
23. AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
24. ALL PROPOSED PAVEMENT MARKINGS SHALL BE THERMOPLASTIC.
25. THE CONTRACTOR SHALL RESTORE ANY EXISTING SURFACE PAVEMENTS AND TURF WHICH IS TO REMAIN THAT IS DISTURBED BY THE PROPOSED WORK AND SHALL PATCH ALL HOLES RESULTING FROM THE REMOVAL OF FOUNDATIONS WITH MATERIALS SIMILAR TO THE EXISTING.
26. ALL ACCESSIBLE ROUTES, WALKWAYS, CURB CUTS, RAMPS, SIDEWALKS, DRIVEWAY OPENINGS, CLEARANCES AND SLOPE TOLERANCES SHALL CONFORM WITH THE ARCHITECTURAL ACCESS BOARD (AAB), 521 CMR AND MASSDOT CONSTRUCTION AND TRAFFIC STANDARD DRAWINGS.
27. ALL UTILITY COVERS WITHIN ACCESSIBLE ROUTES SHALL BE REPLACED WITH SLIP-RESISTANT COVERS.
28. ITEMS LABELED "REM" SHALL BE REMOVED AND DISCARDED BY CONTRACTOR.
29. BEFORE START OF ANY WORK ON THE SITE, PRECEDING THE ARRIVAL OF EQUIPMENT, MATERIALS, OR VEHICLES TO THE SITE, AND PRIOR TO THE COMMENCEMENT OF ANY CLEARING ON THE SITE, THE CONTRACTOR AND ARBORIST SHALL ARRANGE A PRECONSTRUCTION TREE INVENTORY CONFERENCE ON THE SITE WITH THE ENGINEER AND REPRESENTATIVE TOWN TREE WARDENS TO IDENTIFY TREES AND SHRUBS THAT ARE TO BE PROTECTED OR REMOVED AND REVIEW APPROVED PROTECTION MEASURES. NO CLEARING OR PRUNING SHALL BE DONE WITHOUT A CLEAR UNDERSTANDING OF EXISTING CONDITIONS TO BE PRESERVED.
30. THE CONTRACTOR SHALL PROTECT EXISTING SURVEY MONUMENTS AND SHALL RESET ANY MONUMENTATION DISTURBED BY HIS OPERATIONS.
31. ALL PAVEMENT DEEMED UNSATISFACTORY BENEATH THE PROPOSED MILLING DEPTH SHALL BE REMOVED AND REPLACED TO PROVIDE A SUITABLE BASE CONDITION FOR THE NEW TOP COURSE PAVEMENT.
32. WHERE EXISTING SUNKEN TRENCH PAVEMENTS ARE ENCOUNTERED, THE AFFECTED AREA SHALL BE SAWCUT AND REPAIRED FOLLOWING FULL DEPTH PAVEMENT DESIGN AS SHOWN IN THE PAVEMENT NOTES.



**BOSTON  
NEPONSET RIVER GREENWAY**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	4	44
PROJECT FILE NO.		608943	

**KEY PLAN & BORING LOCATIONS**

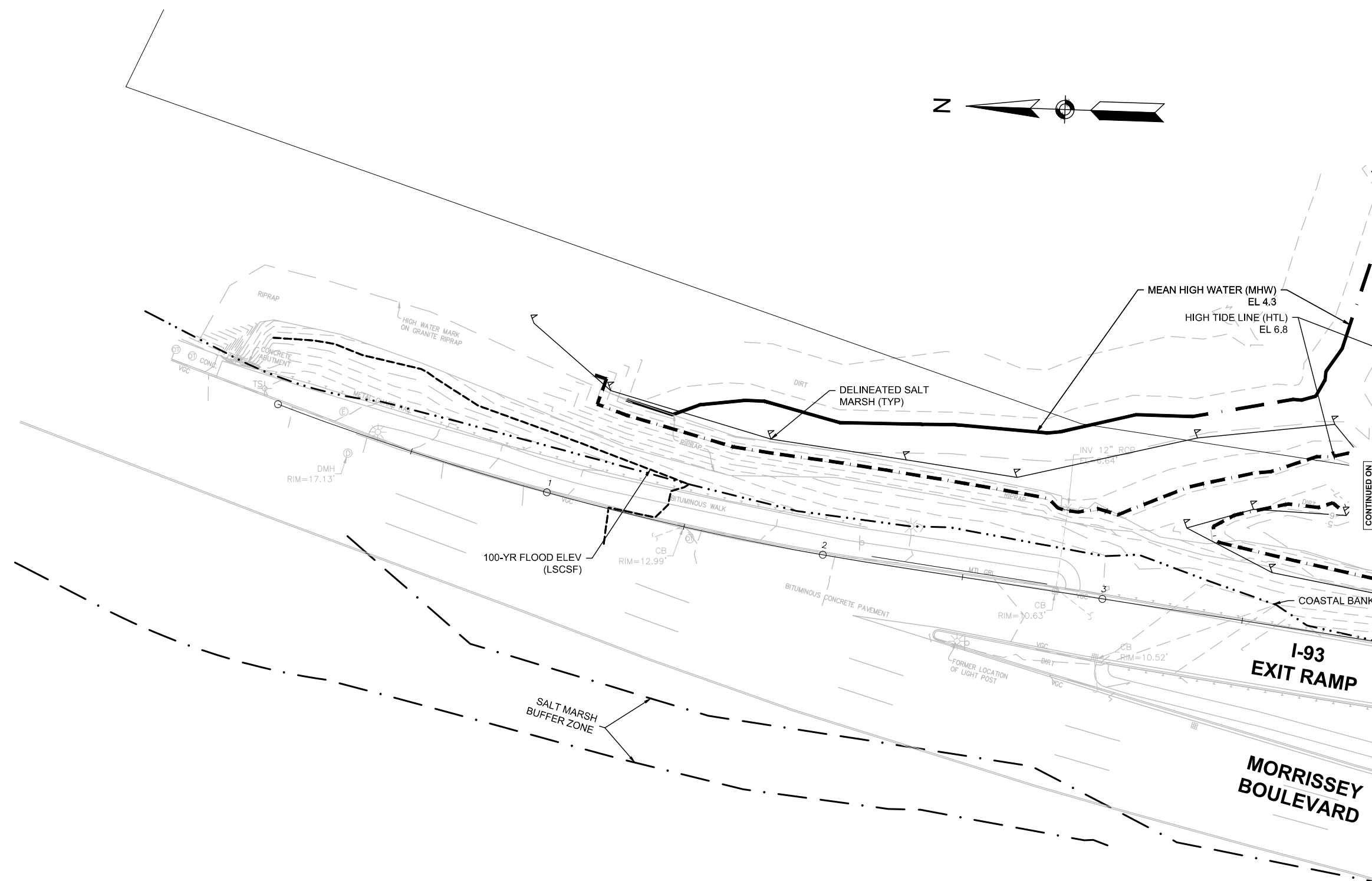


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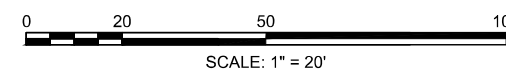
**BOSTON  
NEPONSET RIVER GREENWAY**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	5	44
PROJECT FILE NO.		608943	

**EXISTING CONDITIONS 1**



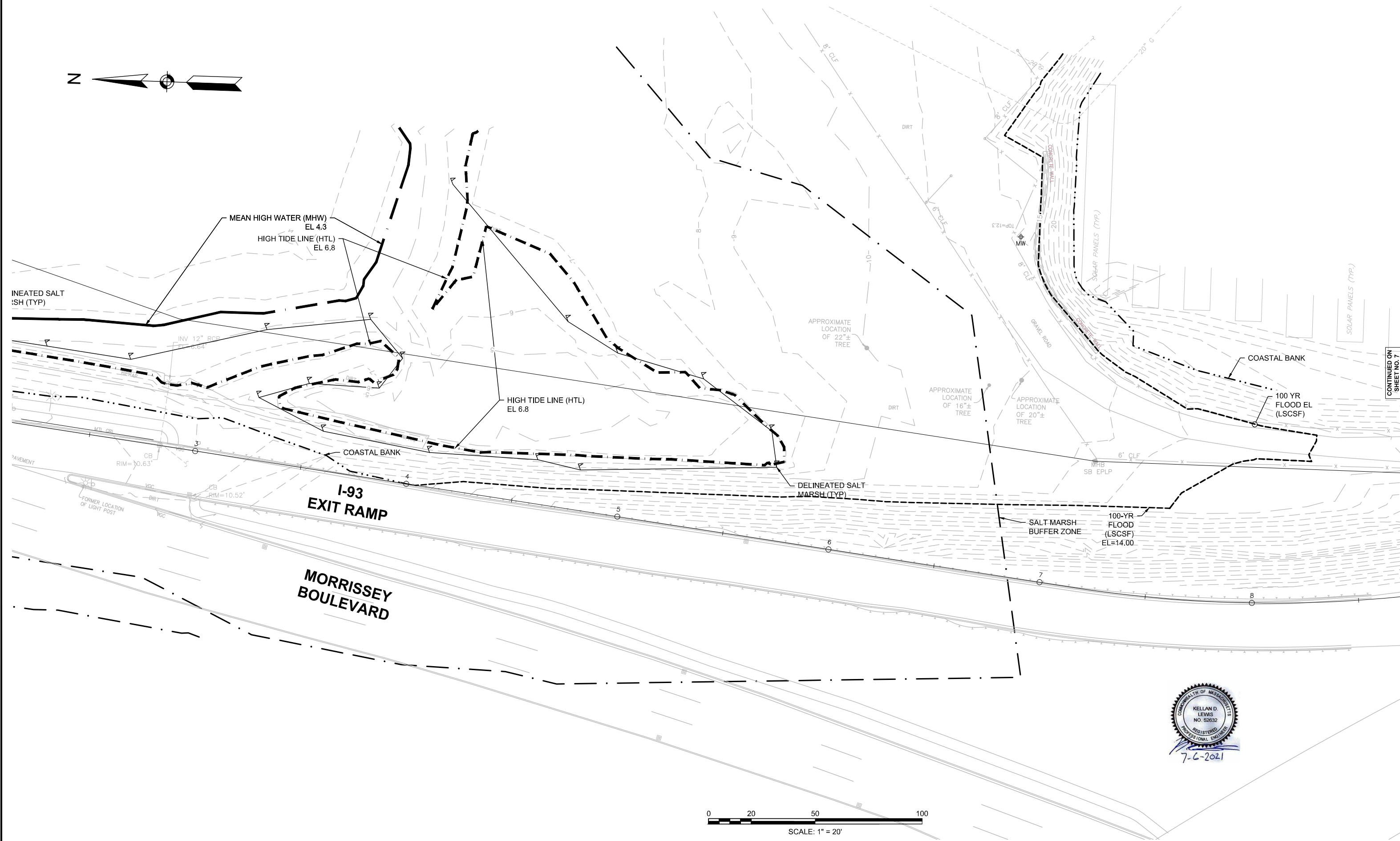
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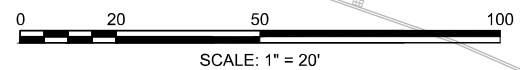
**BOSTON  
NEPONSET RIVER GREENWAY**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	6	44
PROJECT FILE NO.		608943	

**EXISTING CONDITIONS 2**



CONTINUED ON  
SHEET NO. 7



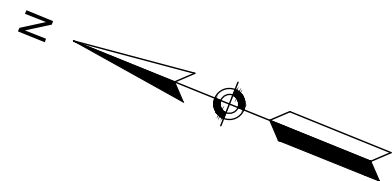


**BOSTON  
NEPONSET RIVER GREENWAY**

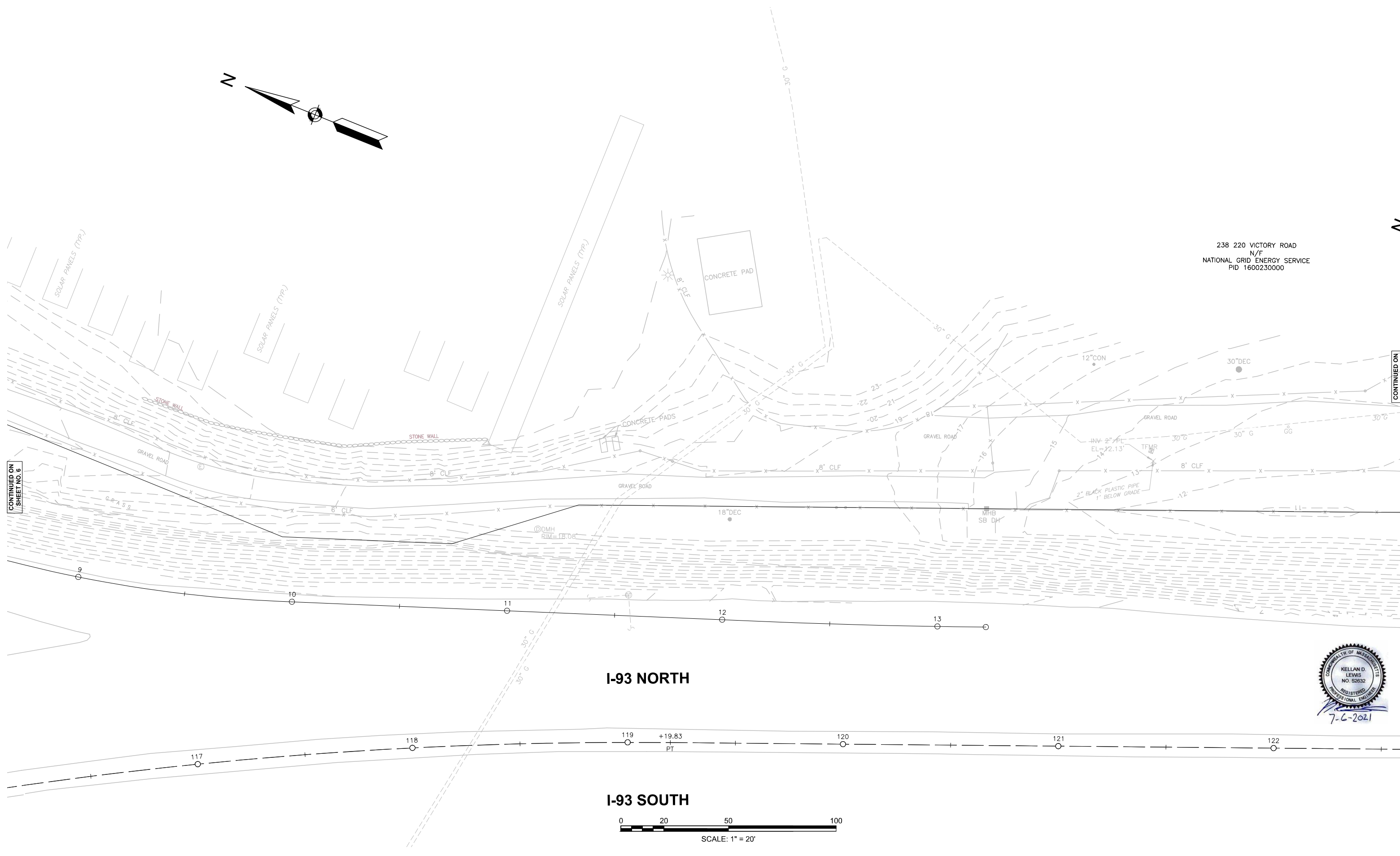
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	7	44
PROJECT FILE NO.		608943	

**EXISTING CONDITIONS 3**

238 220 VICTORY ROAD  
N/F  
NATIONAL GRID ENERGY SERVICE  
PID 1600230000



N



CONTINUED ON  
SHEET NO. 6

CONTINUED ON  
SHEET NO. 8

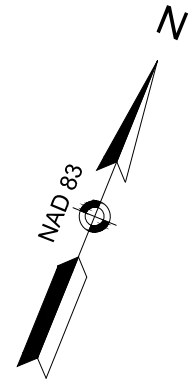
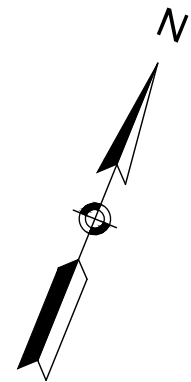


**BOSTON**  
**NEPONSET RIVER GREENWAY**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		8	44

PROJECT FILE NO. 608943

**EXISTING CONDITIONS 4**



**I-93 SOUTH**

**I-93 NORTH**

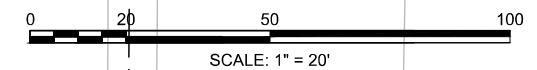
**VICTORY ROAD**

**EXIT RAMP  
I-93 NORTH**

**COASTAL BANK BUFFER ZONE**

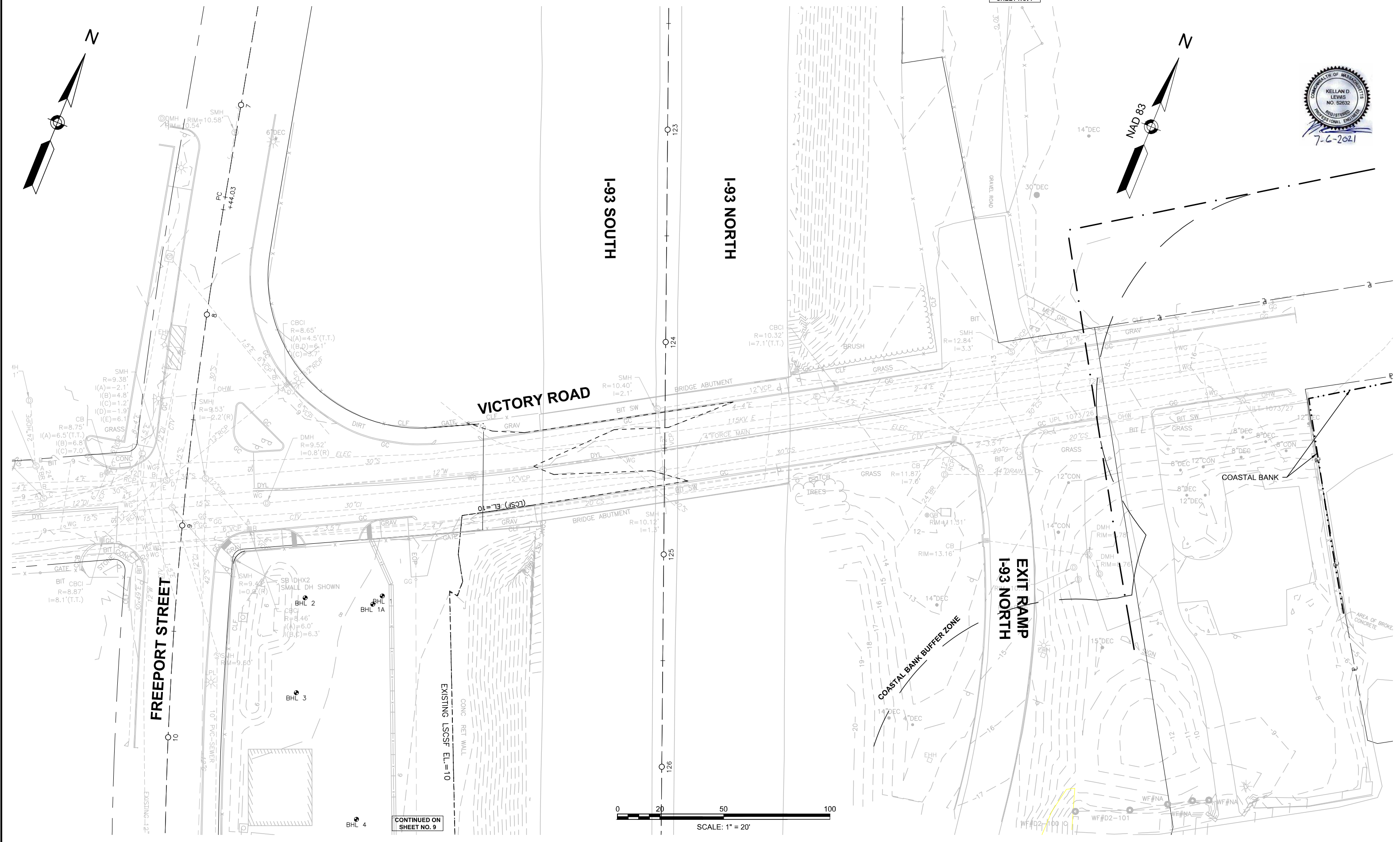
**COASTAL BANK**

**FREEMPT STREET**



CONTINUED ON  
SHEET NO. 7

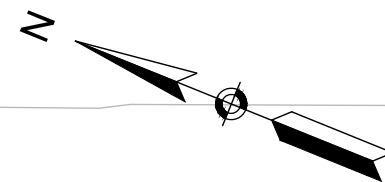
CONTINUED ON  
SHEET NO. 9



**BOSTON  
NEPONSET RIVER GREENWAY**

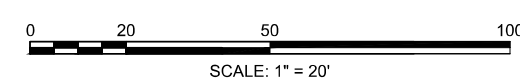
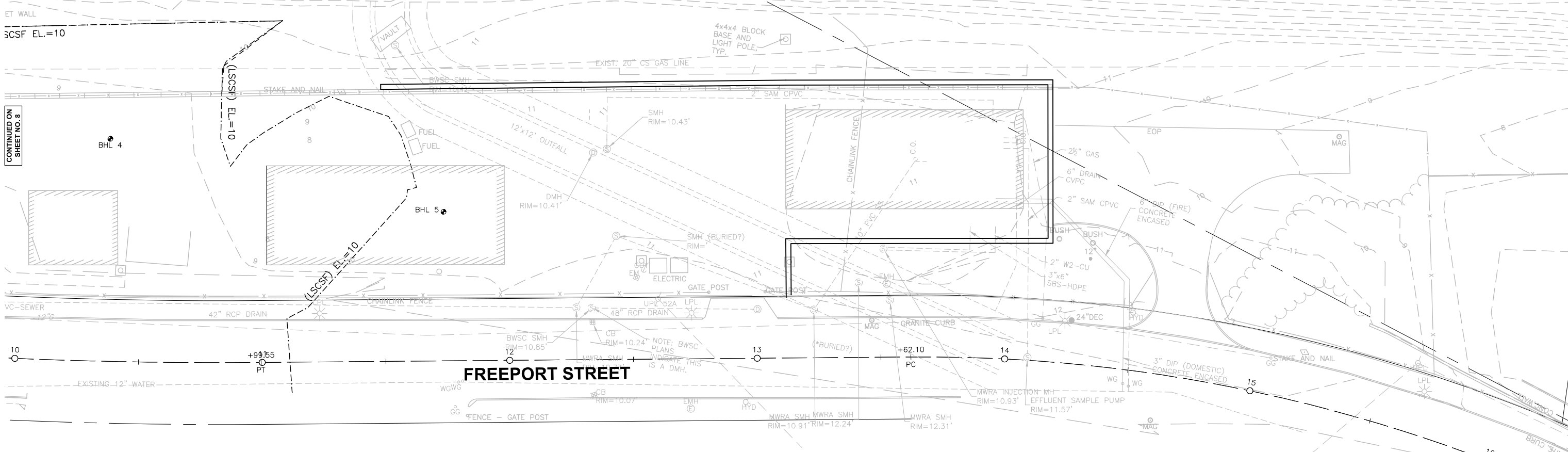
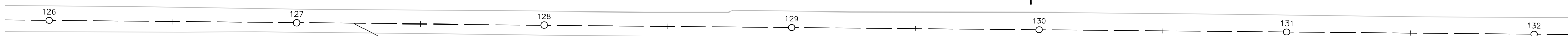
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	9	44
PROJECT FILE NO.		608943	

**EXISTING CONDITIONS 5**



**I-93 NORTH**

**I-93 SOUTH**



CONTINUED ON SHEET NO. 8

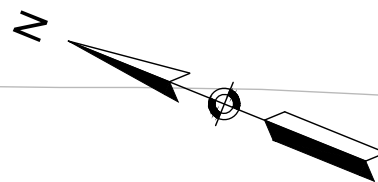
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**BOSTON  
NEPONSET RIVER GREENWAY**

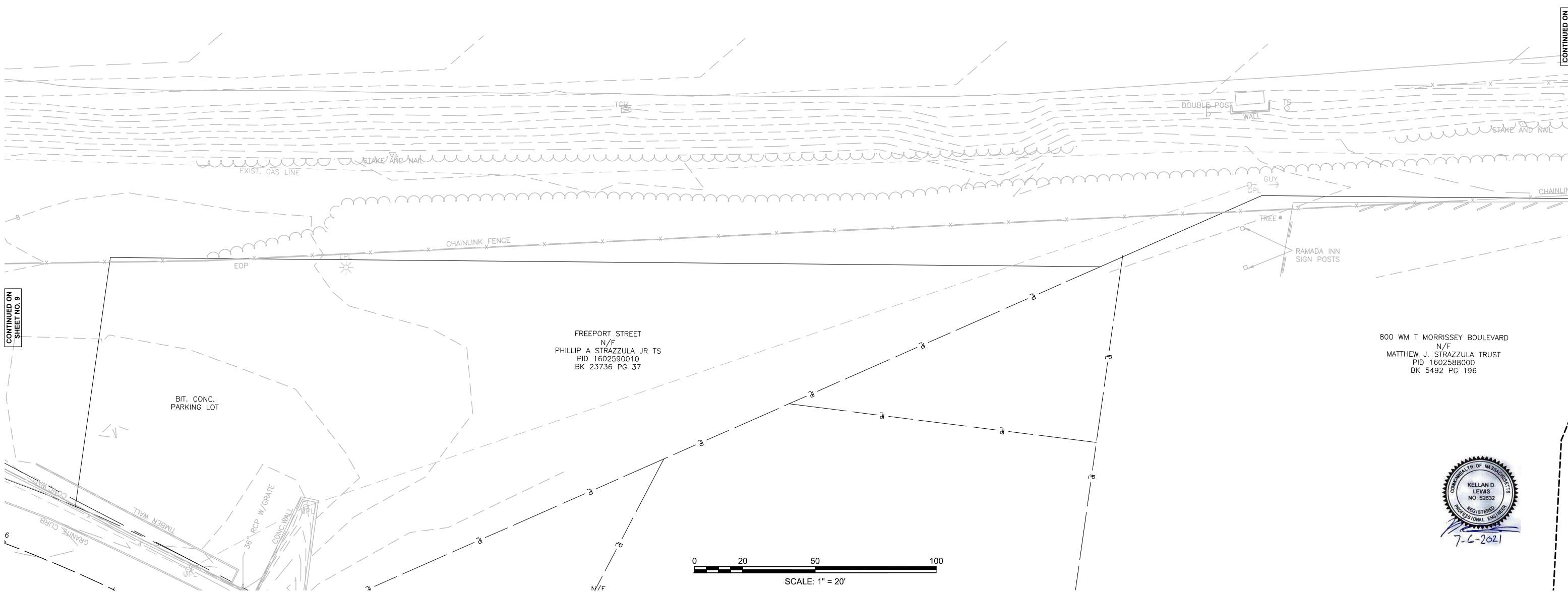
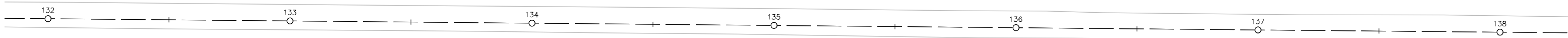
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	10	44
PROJECT FILE NO.		608943	

**EXISTING CONDITIONS 6**



**I-93 NORTH**

**I-93 SOUTH**

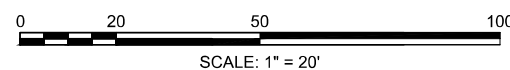


CONTINUED ON SHEET NO. 9

CONTINUED ON SHEET NO. 11

FREEPORT STREET  
N/F  
PHILLIP A STRAZZULA JR TS  
PID 1602590010  
BK 23736 PG 37

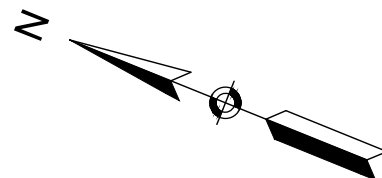
800 WM T MORRISSEY BOULEVARD  
N/F  
MATTHEW J. STRAZZULA TRUST  
PID 1602588000  
BK 5492 PG 196



**BOSTON  
NEPONSET RIVER GREENWAY**

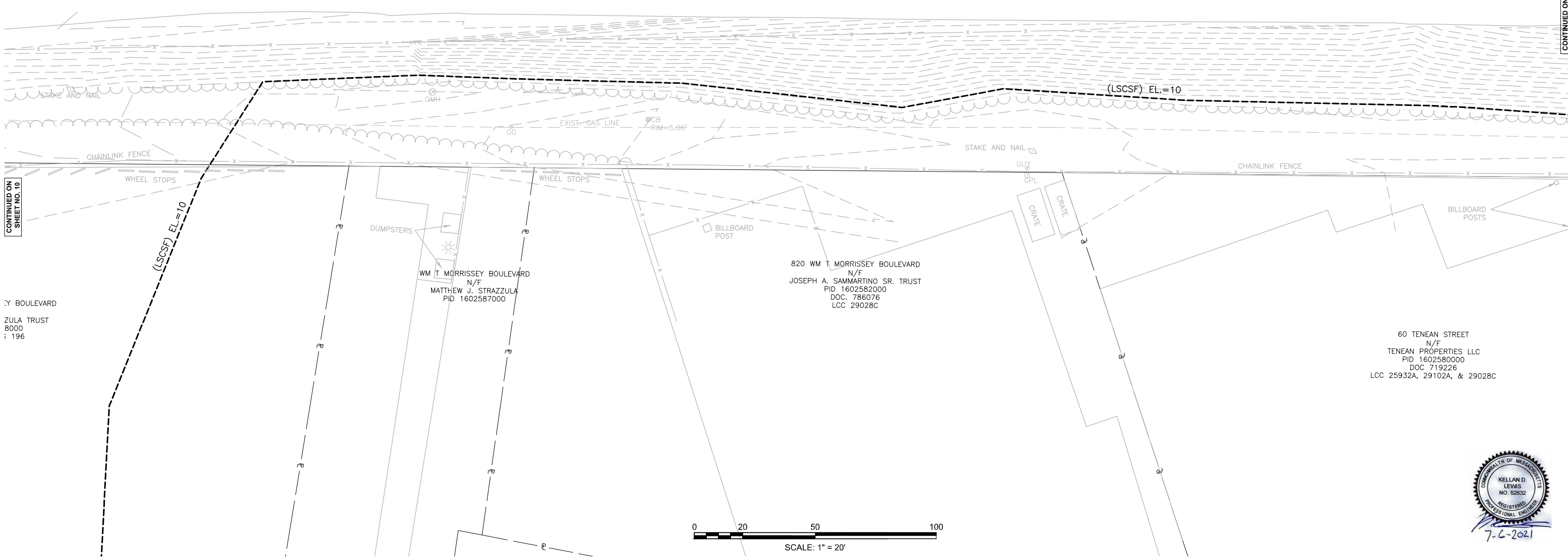
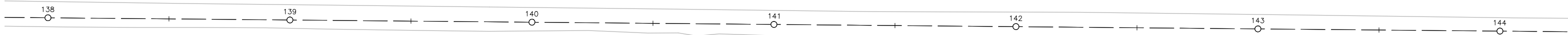
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	11	44
PROJECT FILE NO.		608943	

**EXISTING CONDITIONS 7**

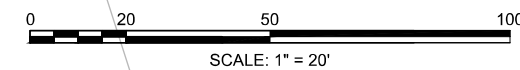


**I-93 NORTH**

**I-93 SOUTH**



CONTINUED ON SHEET NO. 12



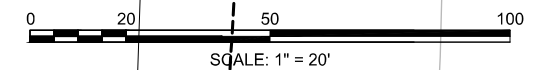
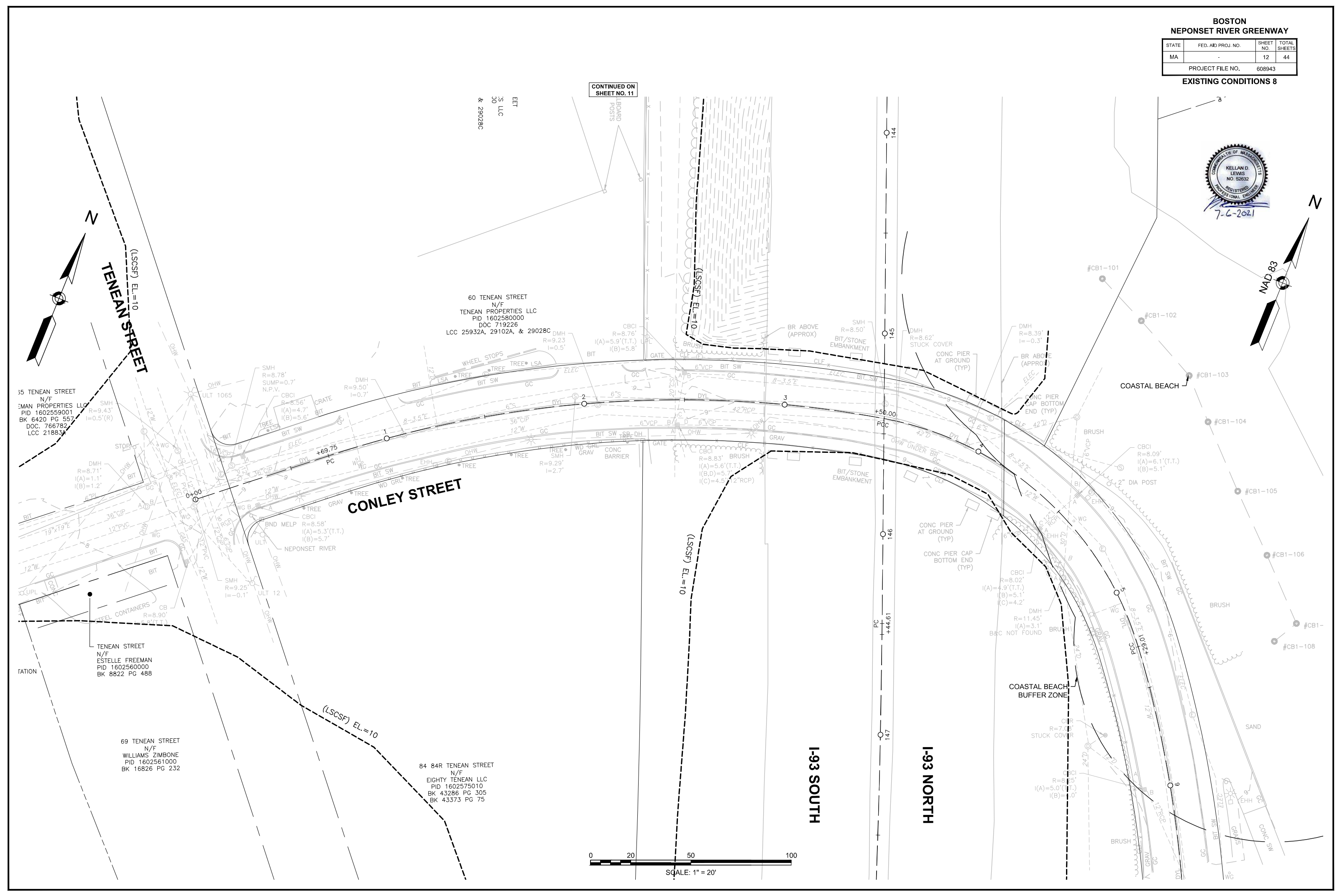
**BOSTON  
NEPONSET RIVER GREENWAY**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	12	44
PROJECT FILE NO. 608943			

**EXISTING CONDITIONS 8**



608943\_N01(EXISTINGCONDITIONS).DWG Printed on 7-Jul-2021 10:25 AM



**I-93 SOUTH**

**I-93 NORTH**

**TENEAN STREET**  
(LSCSF) EL.=10

**CONLEY STREET**

(LSCSF) EL.=10

84 84R TENEAN STREET  
N/F  
EIGHTY TENEAN LLC  
PID 1602575010  
BK 43286 PG 305  
BK 43373 PG 75

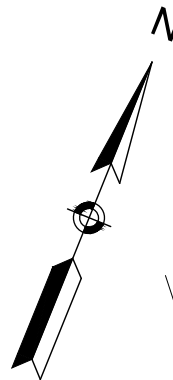
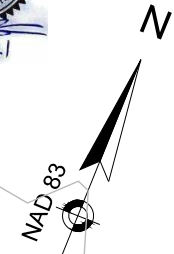
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N/F  
TENEAN PROPERTIES LLC  
PID 1602580000  
DOC 719226  
LCC 25932A, 29102A, & 29028C

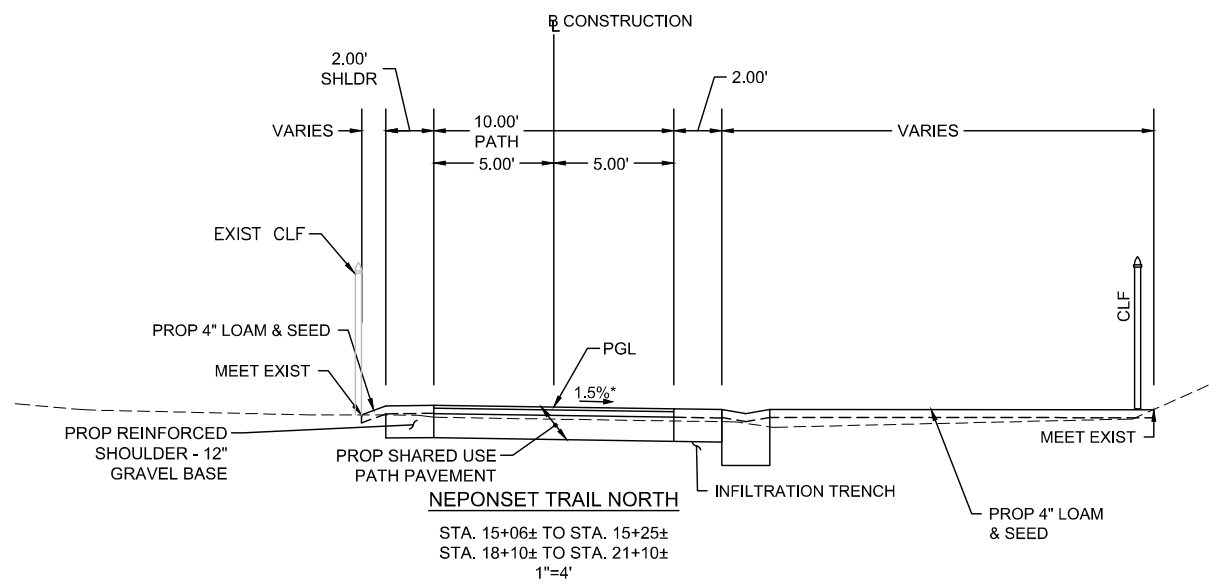
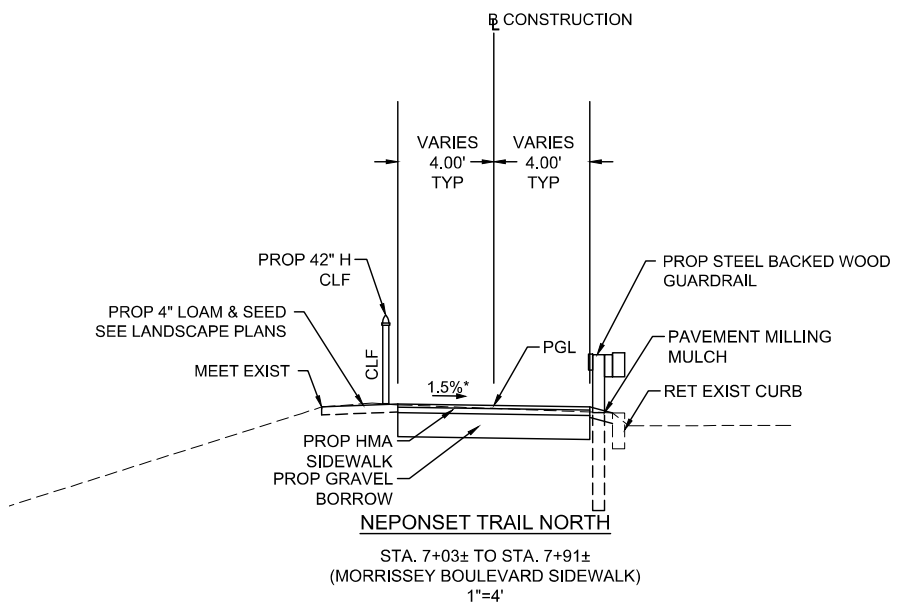
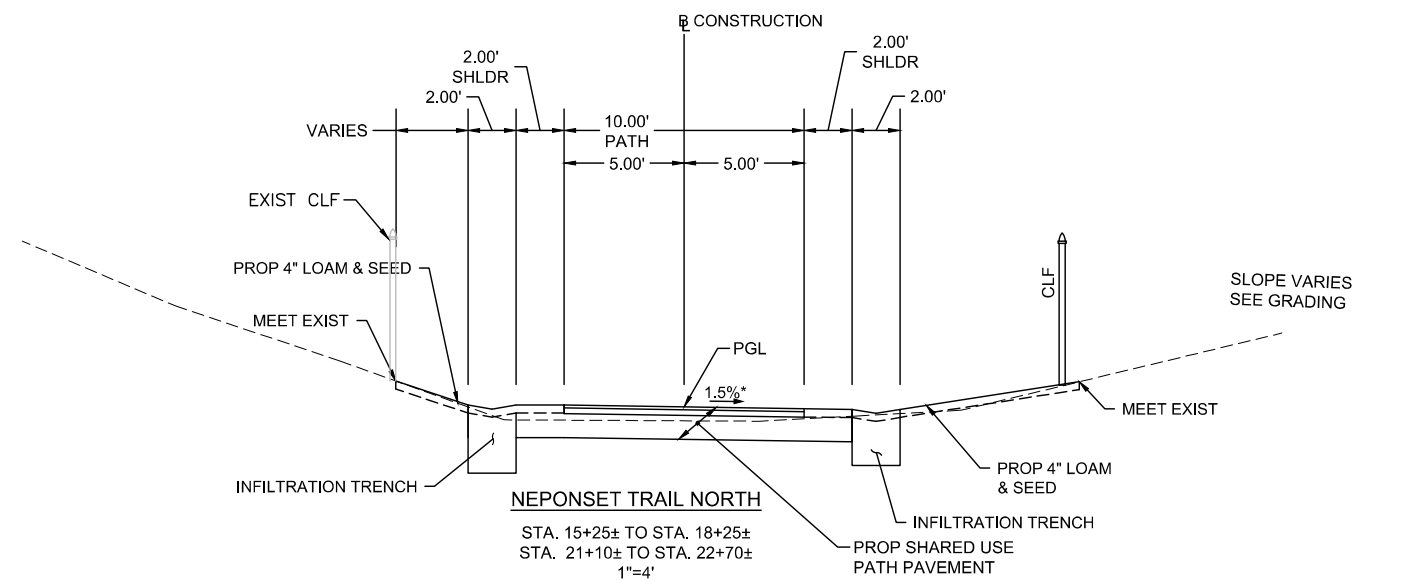
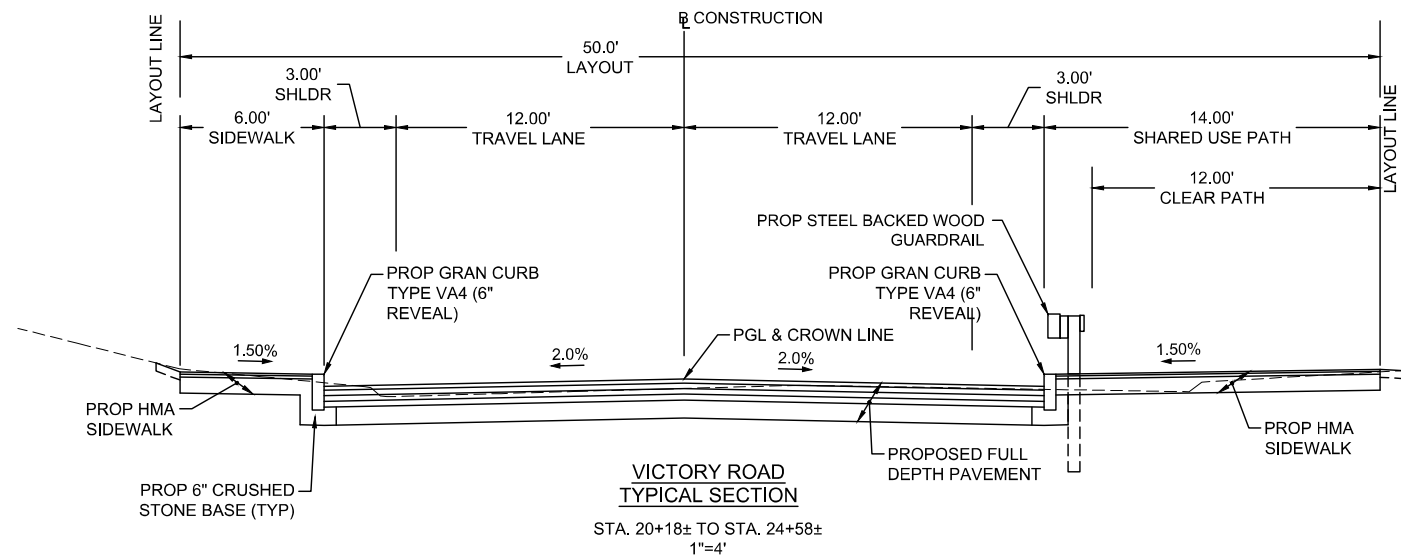
35 TENEAN STREET  
N/F  
EMAN PROPERTIES LLC  
PID 160259001  
BK 6420 PG 557  
DOC. 766782  
LCC 21883A

TENEAN STREET  
N/F  
ESTELLE FREEMAN  
PID 1602560000  
BK 8822 PG 488

69 TENEAN STREET  
N/F  
WILLIAMS ZIMBONE  
PID 1602561000  
BK 16826 PG 232

CONTINUED ON  
SHEET NO. 11





**PAVEMENT NOTES**

**PROPOSED FULL DEPTH PAVEMENT**

SURFACE: 2" SUPERPAVE SURFACE COURSE - 12.5 (SSC - 12.5) OVER 0.07 GAL/SY TACK COAT OVER  
 INTERMEDIATE: 5 1/2" SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC - 19.0) IN TWO (2) 2 3/4" LAYERS OVER  
 SUB-BASE: 3" DENSE GRADED CRUSHED STONE OVER 9" GRAVEL BORROW (M1.03.0 TYPE b)

**PROPOSED SHARED USE PATH PAVEMENT**

SURFACE: 1 1/2" SUPERPAVE SURFACE COURSE - 12.5 (SSC - 12.5) 0.07 GAL/SY TACK COAT OVER  
 BASE: 2 3/4" SUPERPAVE INTERMEDIATE COURSE - 12.5 (SIC - 12.5)  
 FOUNDATION: 12" GRAVEL BORROW (M1.03.0 TYPE b)

**PROPOSED PAVEMENT MILLING AND OVERLAY**

SURFACE: 1 3/4" SUPERPAVE SURFACE COURSE - 12.5 (SSC - 12.5) OVER 0.09 GAL/SY TACK COAT OVER  
 VARIABLE DEPTH PAVEMENT MICRO-MILLING

**PROPOSED CEMENT CONCRETE SIDEWALK / WHEELCHAIR RAMP**

SURFACE: 4" CEMENT CONCRETE (AIR ENTRAINED 4,000 PSI, 3/4", 610)  
 FOUNDATION: 8" GRAVEL BORROW (M1.03.0 TYPE b)

**PROPOSED HOT MIX ASPHALT SIDEWALK**

SURFACE: 1 1/2" SUPERPAVE SURFACE COURSE - 12.5 (SSC - 12.5)  
 INTERMEDIATE: 2" SUPERPAVE INTERMEDIATE COURSE - 12.5 (SIC - 12.5)  
 FOUNDATION: 8" GRAVEL BORROW (M1.03.0 TYPE b)

**PROPOSED HOT MIX ASPHALT DRIVEWAY**

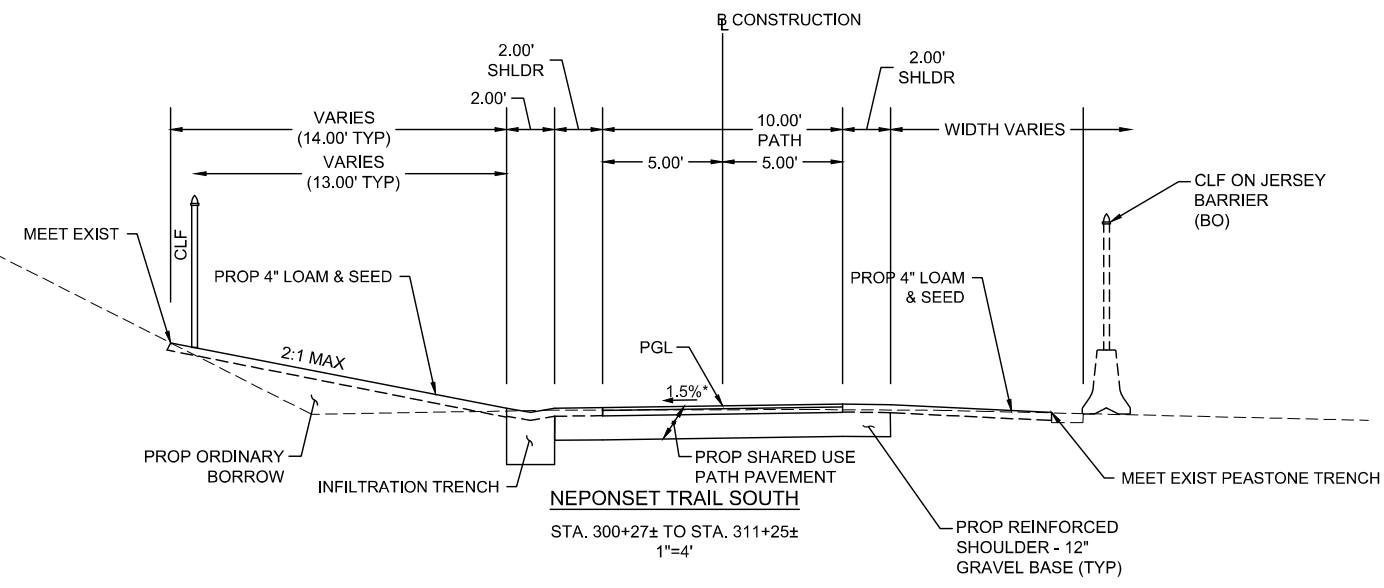
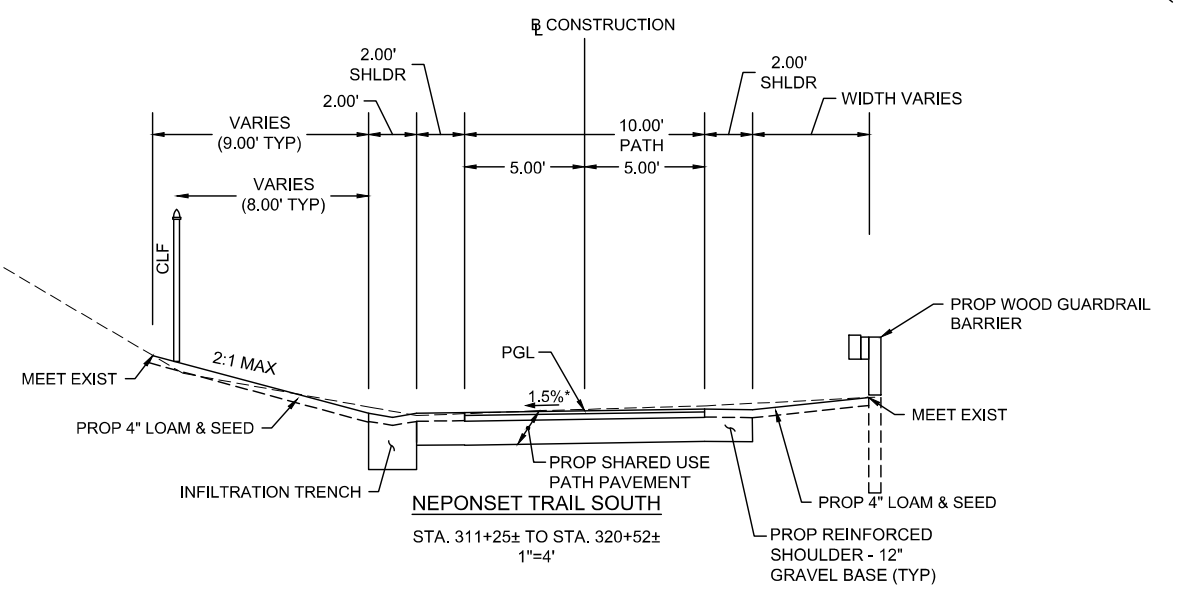
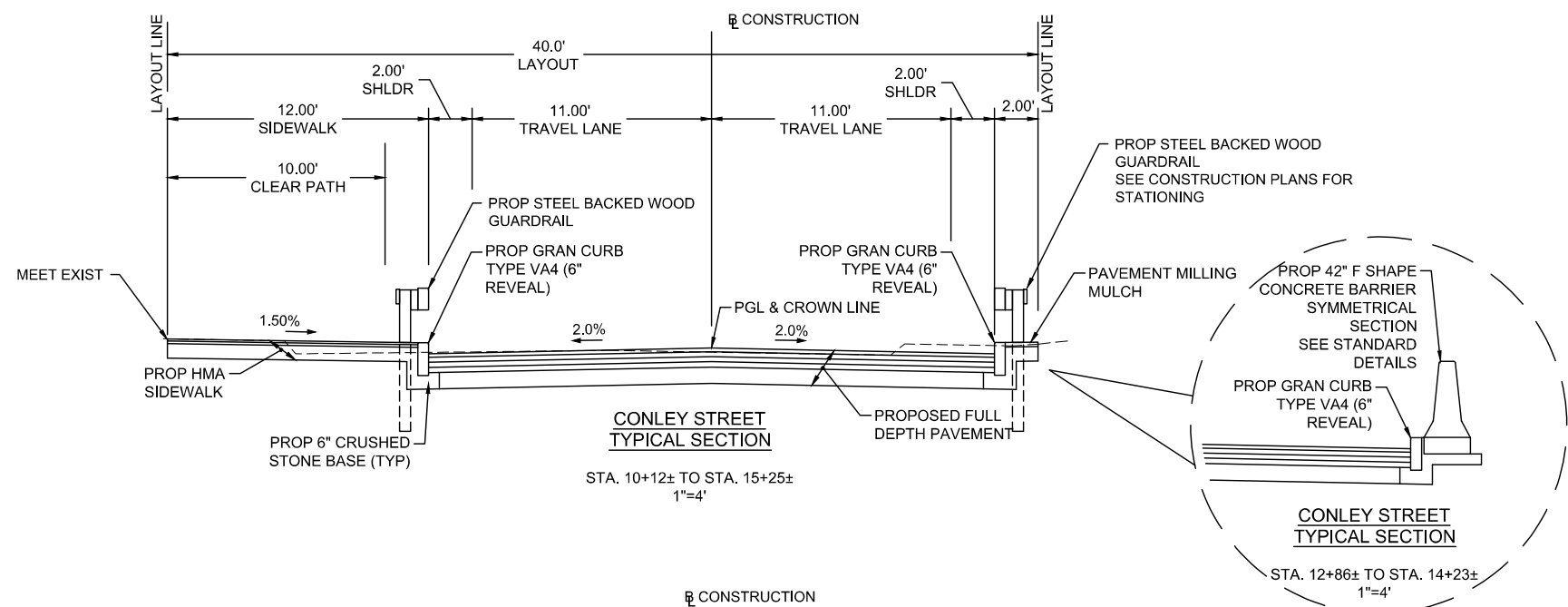
SURFACE: 1 3/4" SUPERPAVE SURFACE COURSE - 12.5 (SSC - 12.5)  
 BASE: 2" SUPERPAVE INTERMEDIATE COURSE - 12.5 (SIC - 12.5)  
 FOUNDATION: 8" GRAVEL BORROW (M1.03.0 TYPE b)

\* TOLERANCE FOR CONSTRUCTION ±0.5%

**NOTES:**

- EXISTING GRAVEL BORROW SATISFYING GRADATION REQUIREMENTS SHALL REMAIN IN PLACE. UNSUITABLE MATERIALS SHALL BE REPLACED WITH GRAVEL BORROW FOR BASE COURSE.
- PREPARATION OF UNDERLYING SURFACE, ASPHALT EMULSION FOR TACK COAT, HMA FOR PATCHING, AND HMA JOINT SEALANT SHALL BE IN ACCORDANCE WITH SECTION 450.
- ASPHALT EMULSION FOR TACK COAT SHALL MEET ALL REQUIREMENTS OUTLINED IN THE 2020 CONSTRUCTION SPECIFICATIONS FOR ANIONIC EMULSIFIED ASPHALT (SECTION M.03.1), AND SPRAYED FOR 90% UNIFORM COVERAGE PRIOR TO PAVING.





NOTE:  
SEE SHEET 5 FOR PAVEMENT NOTES





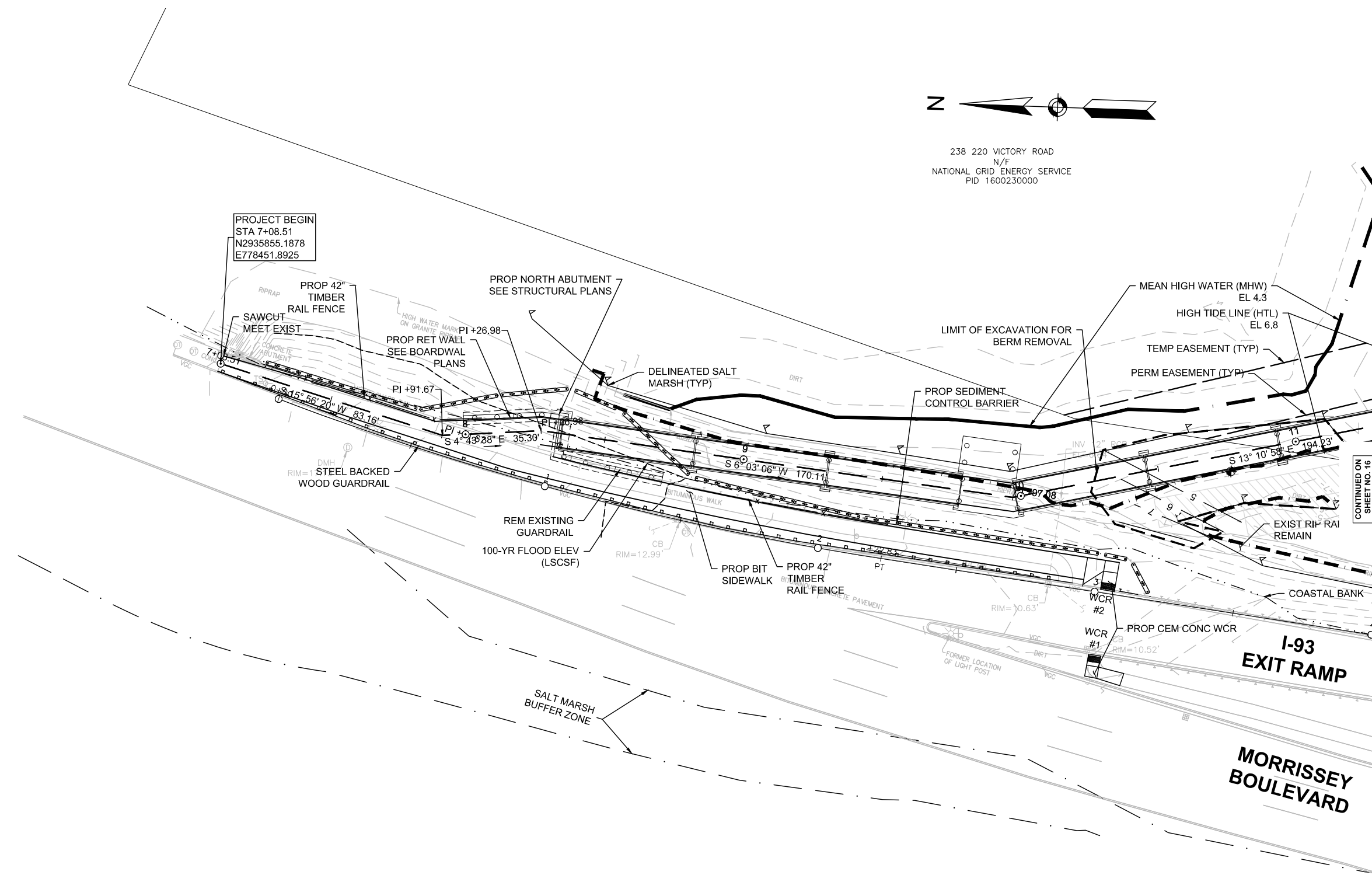
**BOSTON  
NEPONSET RIVER GREENWAY**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	15	44
PROJECT FILE NO.		608943	

**CONSTRUCTION PLAN 1**



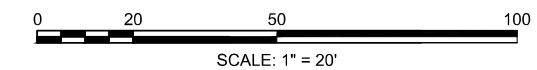
238 220 VICTORY ROAD  
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NATIONAL GRID ENERGY SERVICE  
PID 1600230000

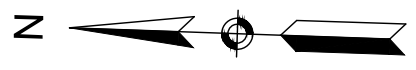


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SHEET NO. 16

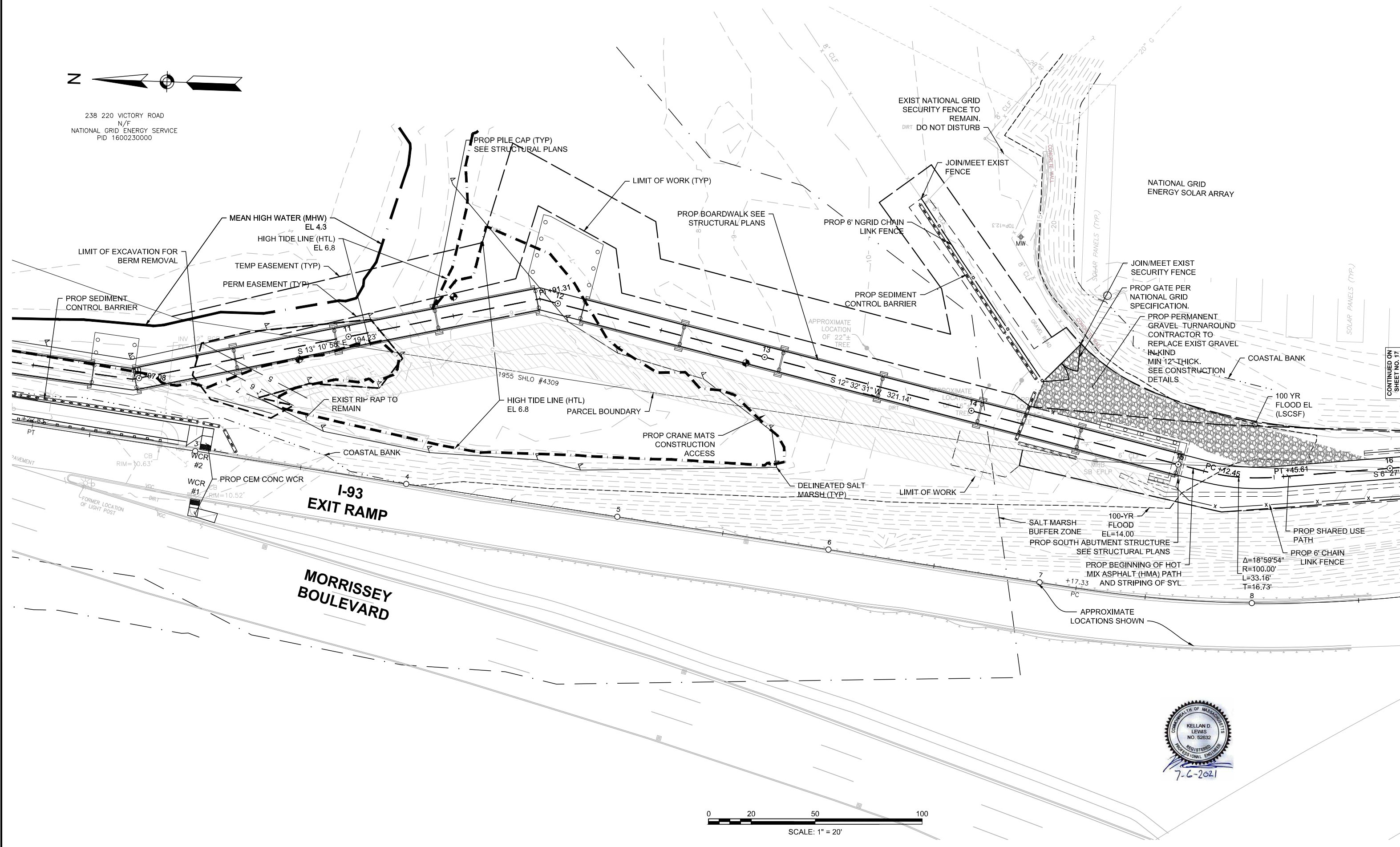


7-6-2021

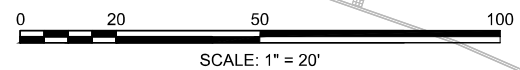




238 220 VICTORY ROAD  
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NATIONAL GRID ENERGY SERVICE  
PID 1600230000



CONTINUED ON  
SHEET NO. 17



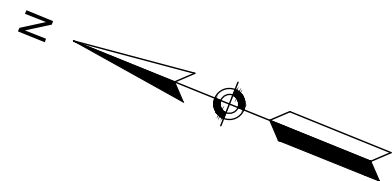


**BOSTON  
NEPONSET RIVER GREENWAY**

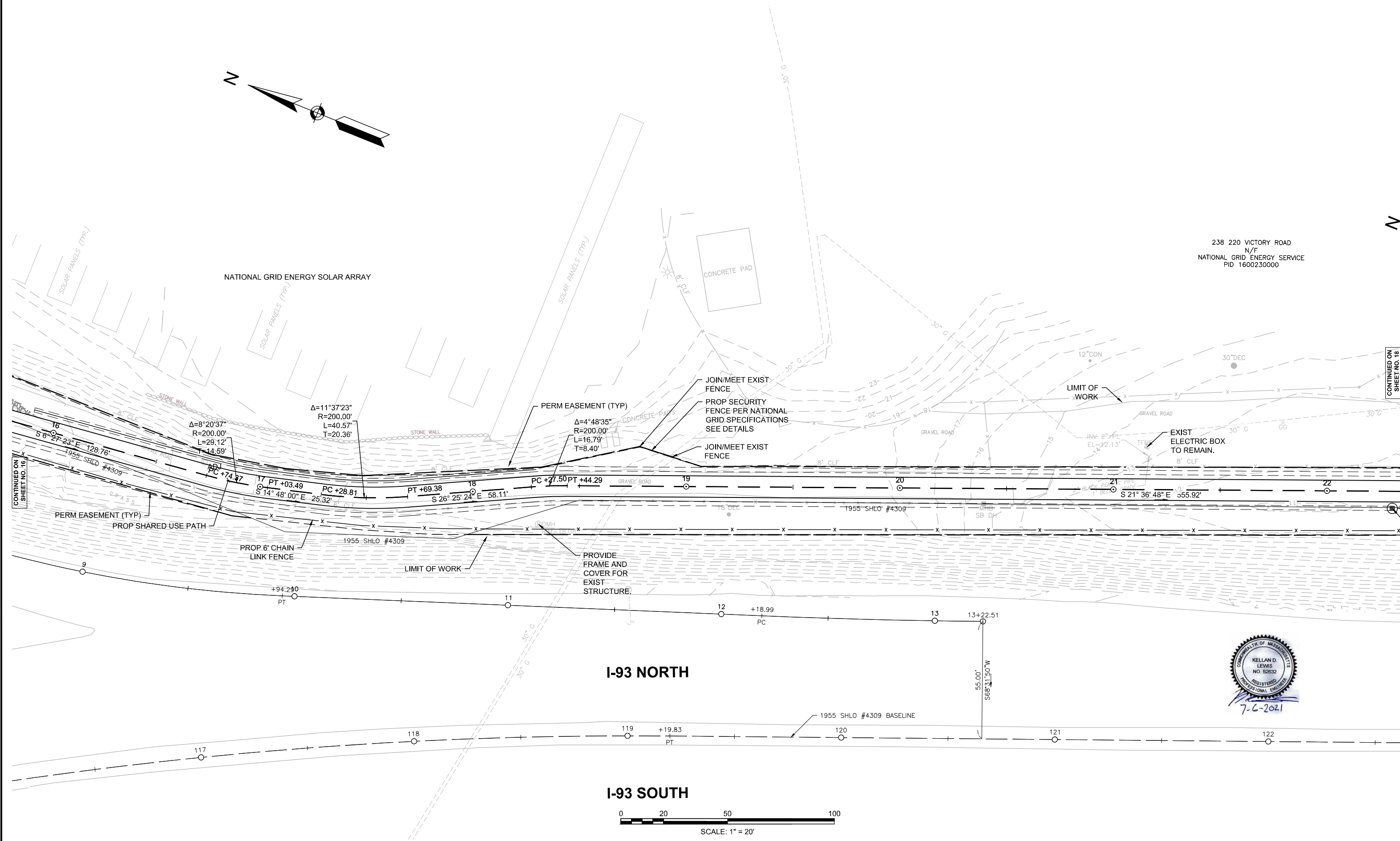
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MA	-	17	44
PROJECT FILE NO.		608943	

**CONSTRUCTION PLAN 3**

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NATIONAL GRID ENERGY SERVICE  
PID 1600230000



N

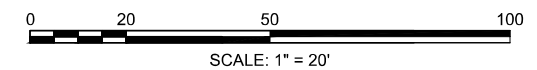


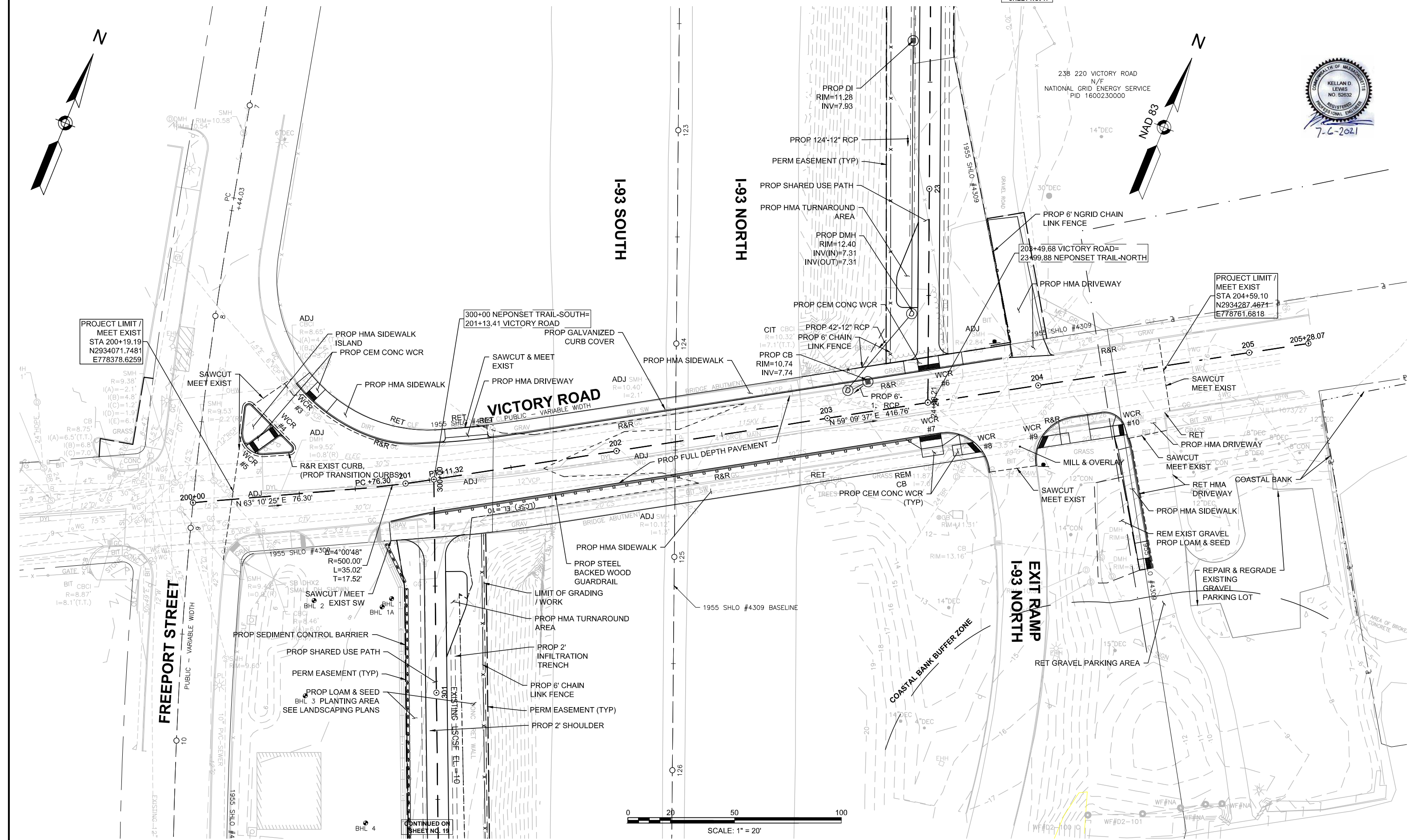
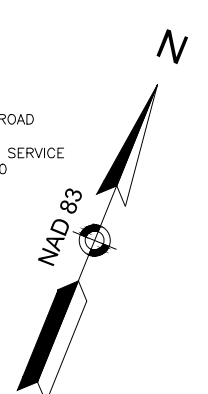
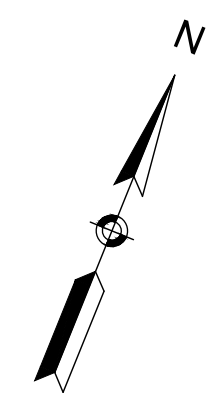
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**I-93 NORTH**

**I-93 SOUTH**

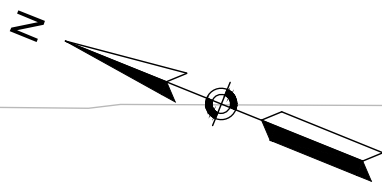




**BOSTON  
NEPONSET RIVER GREENWAY**

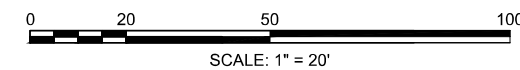
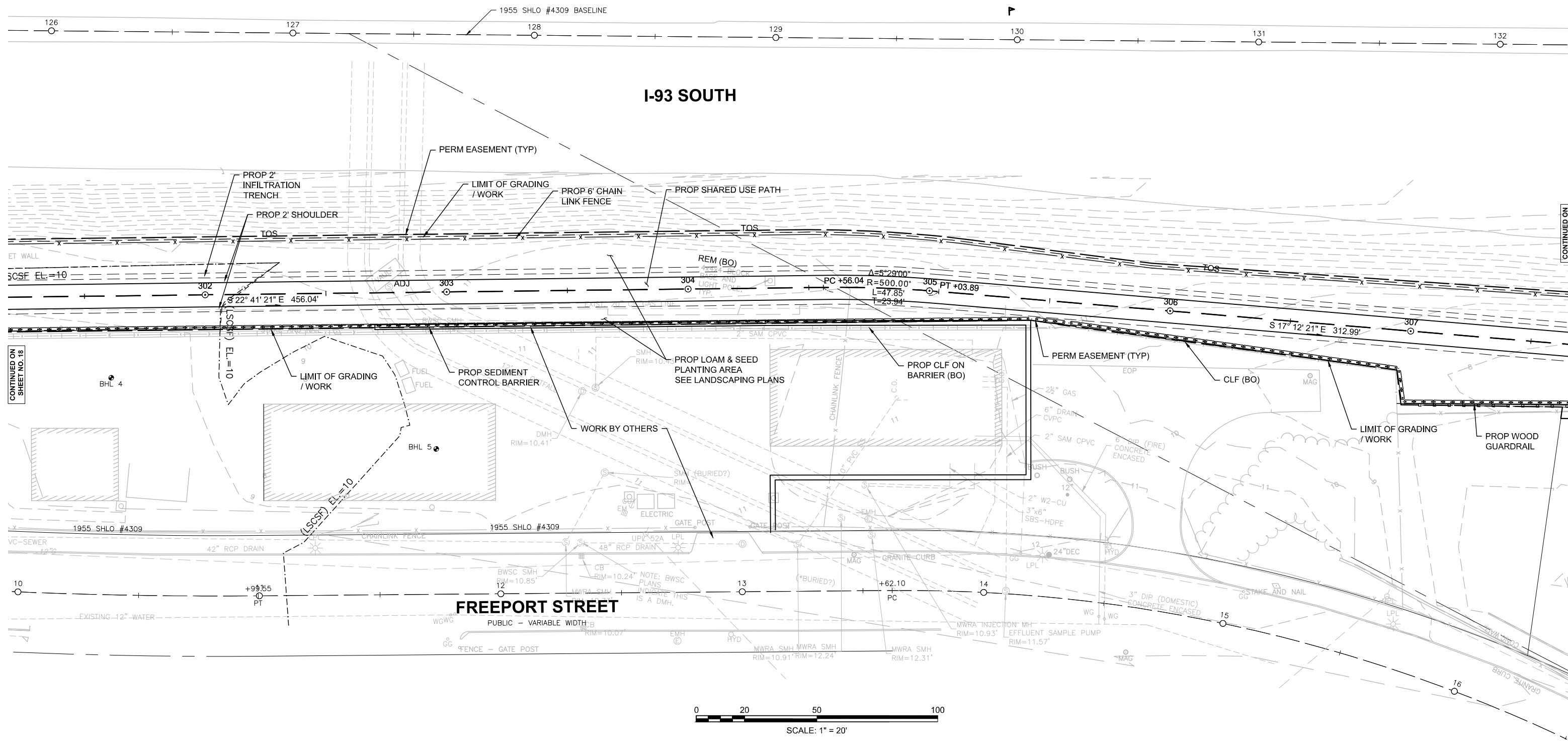
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	19	44
PROJECT FILE NO.		608943	

**CONSTRUCTION PLAN 5**



**I-93 NORTH**

**I-93 SOUTH**



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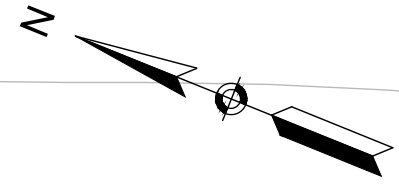
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**BOSTON  
NEPONSET RIVER GREENWAY**

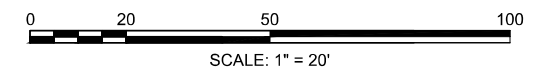
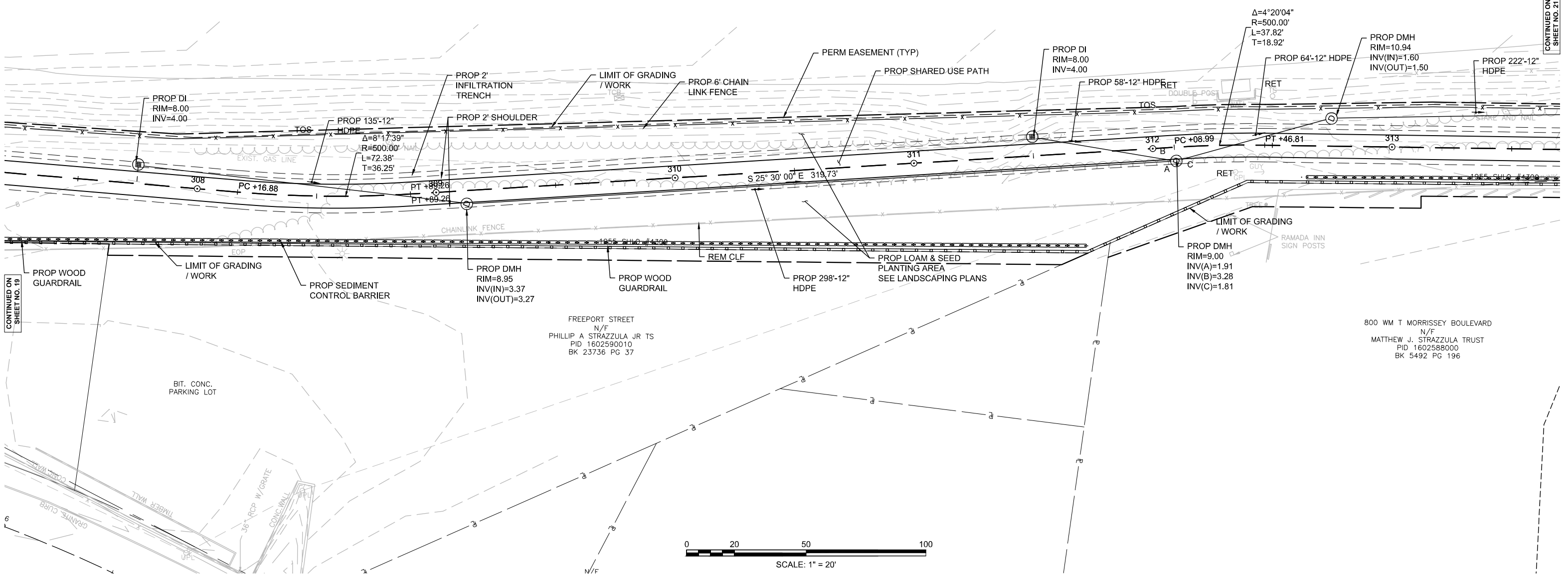
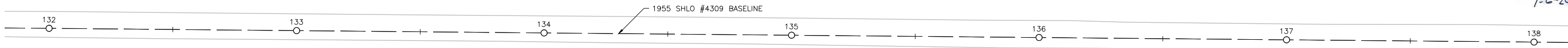
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MA	-	20	44

PROJECT FILE NO. 608943  
**CONSTRUCTION PLAN 6**



**I-93 NORTH**

**I-93 SOUTH**



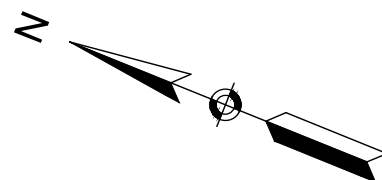
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**BOSTON  
NEPONSET RIVER GREENWAY**

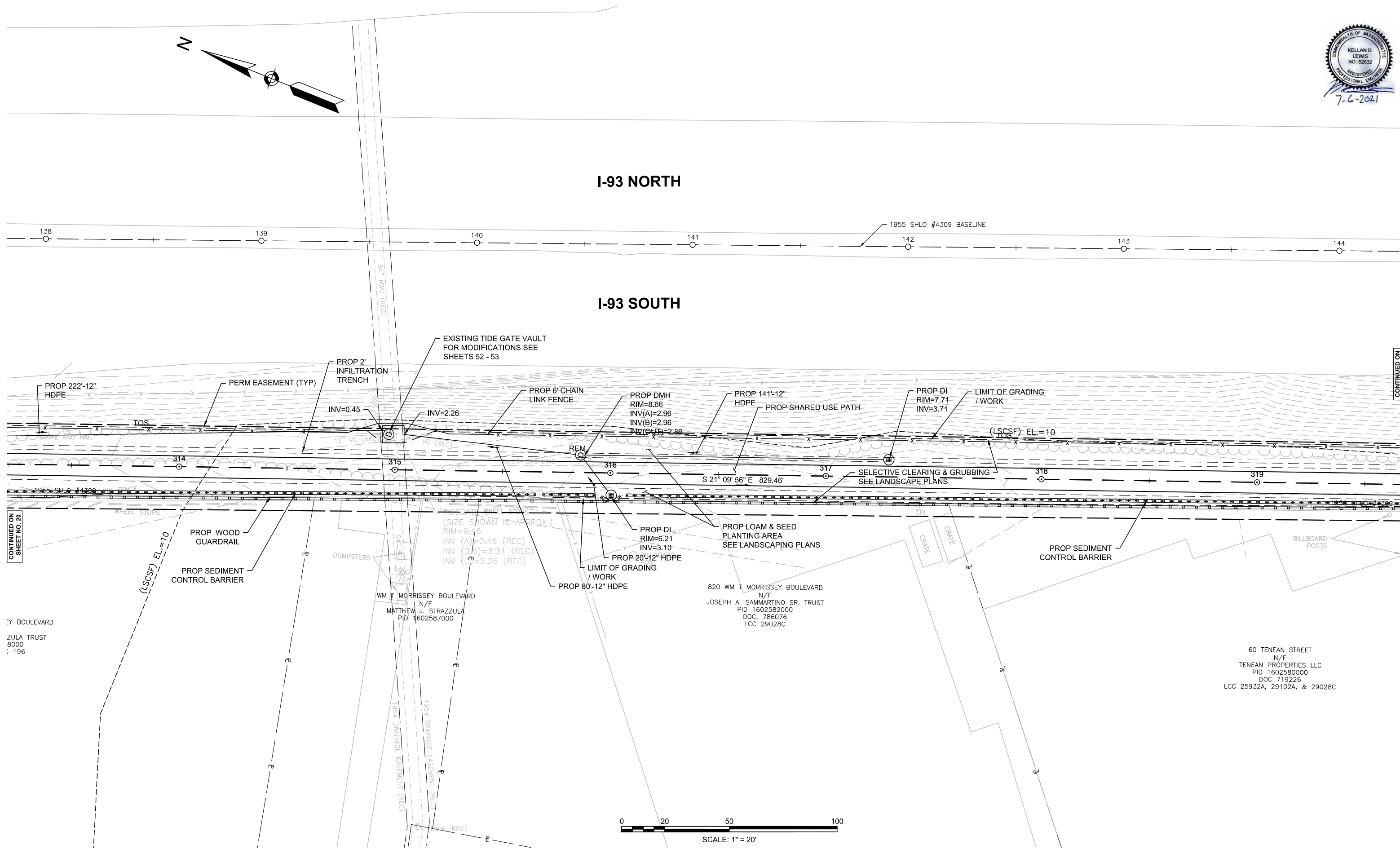
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MA	-	21	44

PROJECT FILE NO. 608943  
**CONSTRUCTION PLAN 7**



**I-93 NORTH**

**I-93 SOUTH**



CONTINUED ON  
SHEET NO. 20

CONTINUED ON  
SHEET NO. 22

608943\_N01(CONSTRUCTION)PLANS.DWG Plotted on 7-Jul-2021 10:25 AM

**BOSTON  
NEPONSET RIVER GREENWAY**

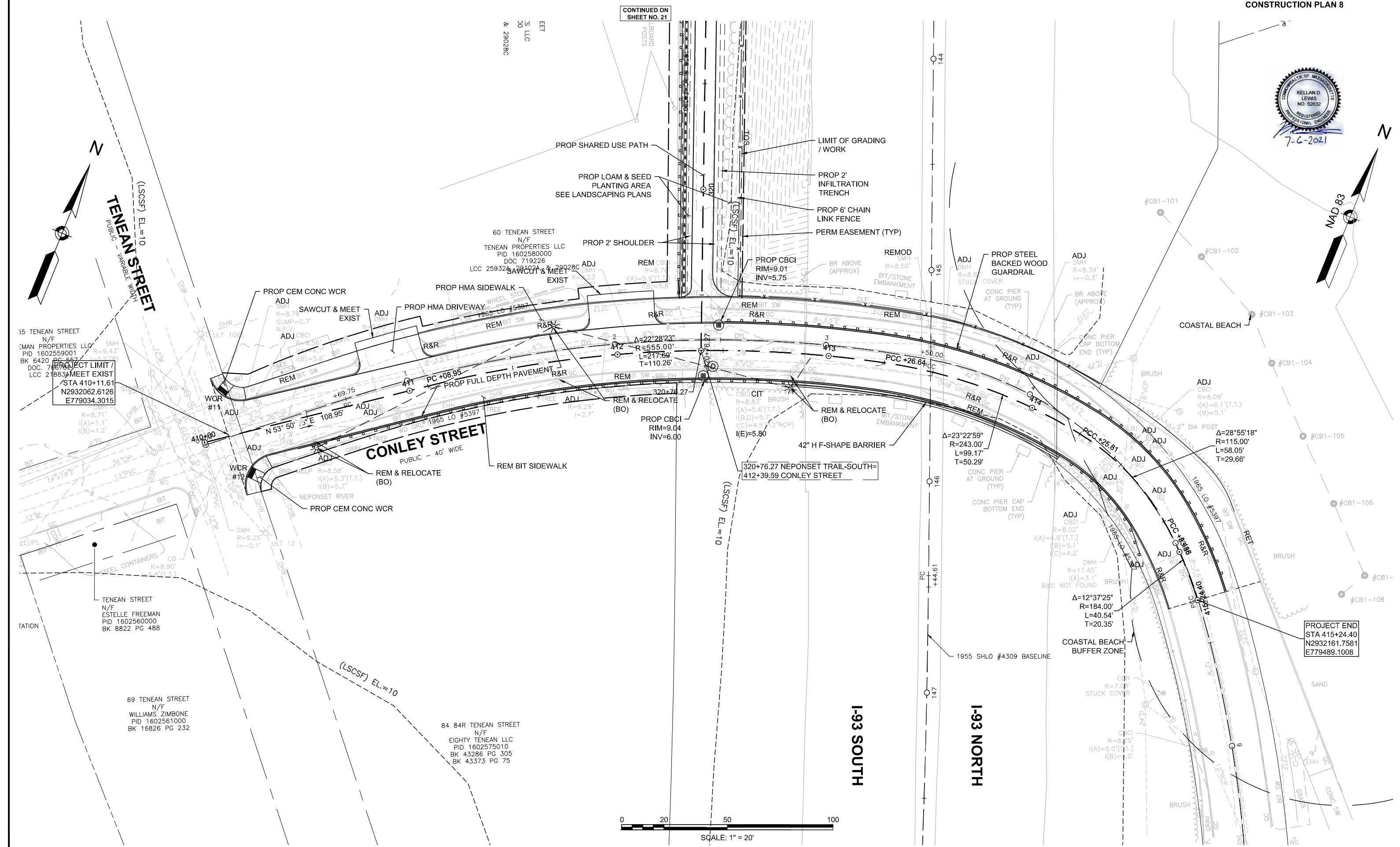
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	22	44

PROJECT FILE NO. 608943

**CONSTRUCTION PLAN 8**



608943\_N01CONSTRUCTIONPLANS.DWG Ploited on 7-Jul-2021 10:25 AM



PROJECT LIMIT / MEET EXIST  
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N2932062.6126  
E779034.3015

PROJECT END  
STA 415+24.40  
N2932161.7581  
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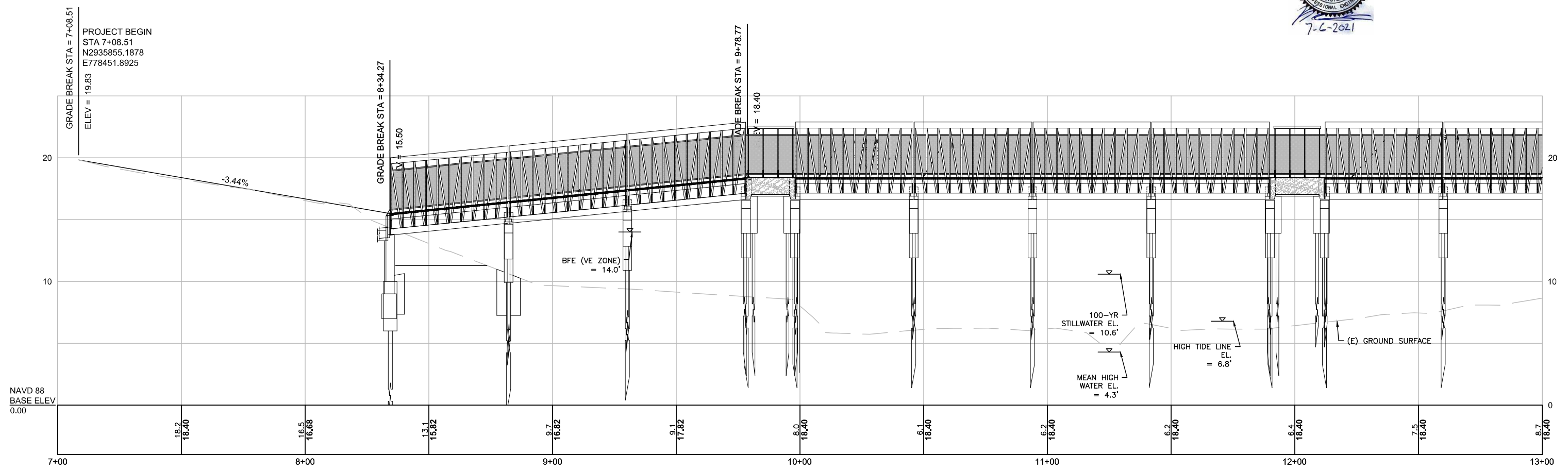
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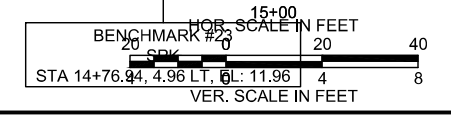
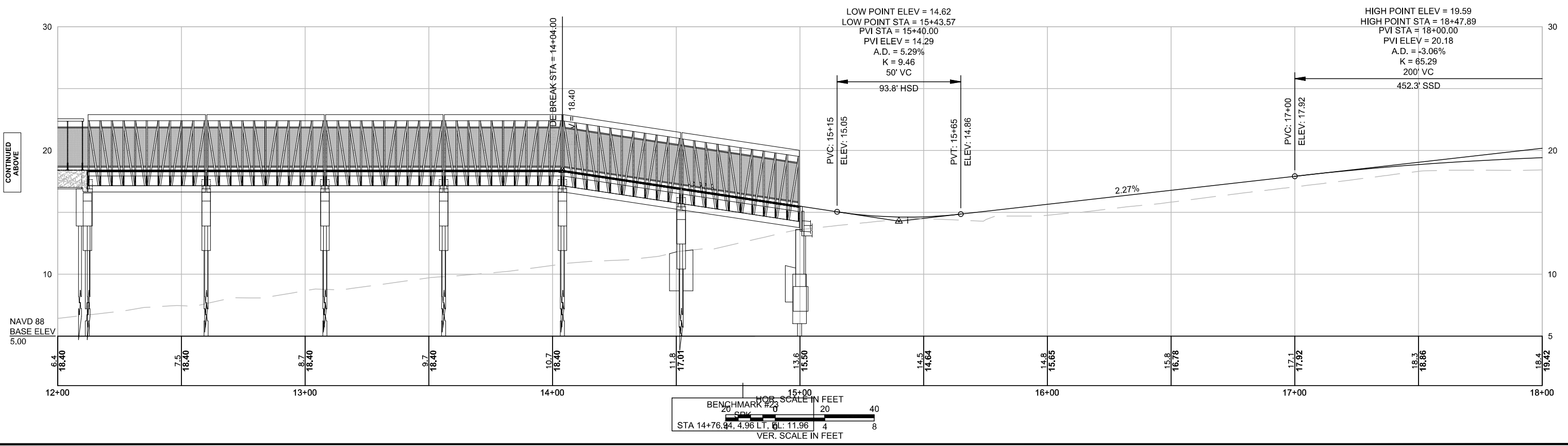
**BOSTON  
NEPONSET RIVER GREENWAY**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	23	44
PROJECT FILE NO.		608943	

**PROFILES 1**



**NEPONSET TRAIL-NORTH**



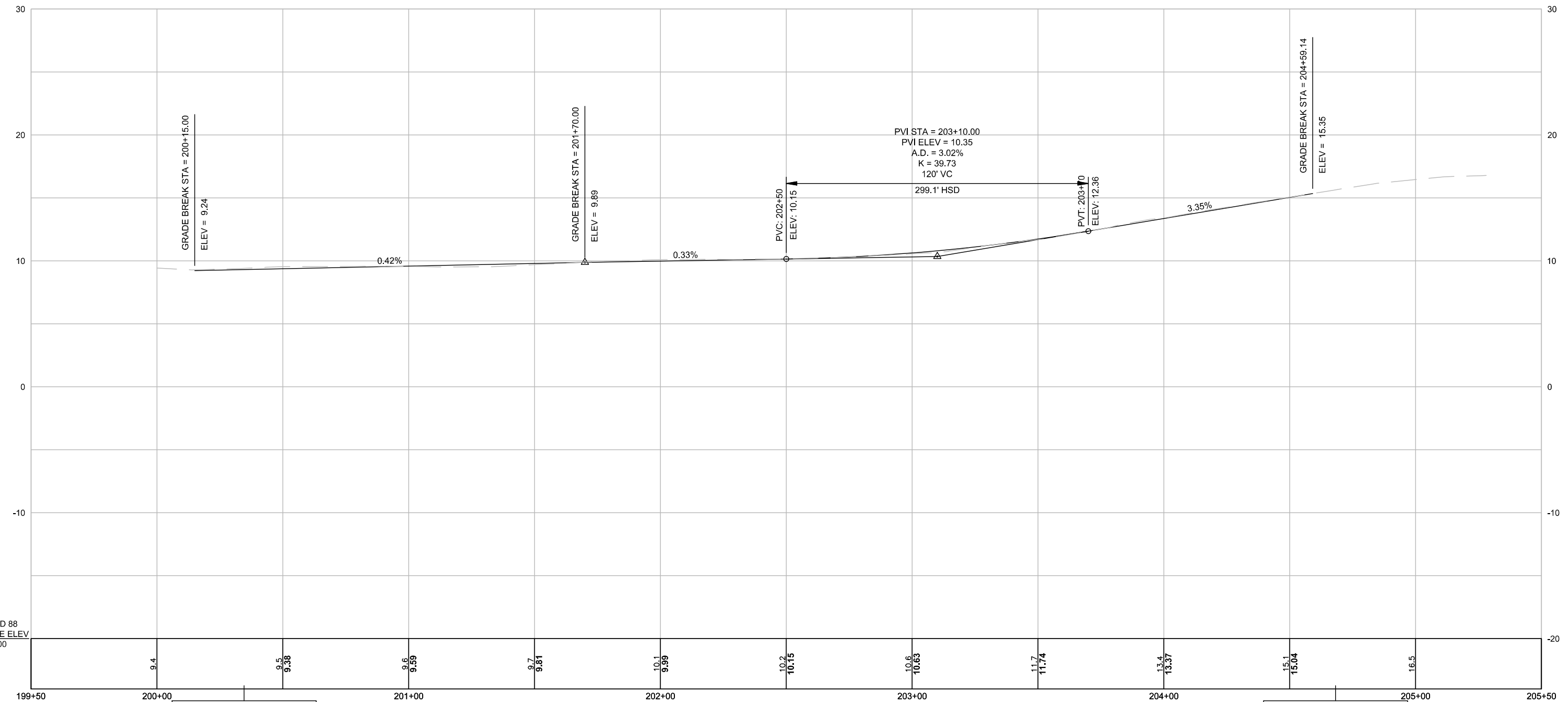
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BELOW

CONTINUED  
ABOVE

CONTINUED ON  
SHEET NO. 24





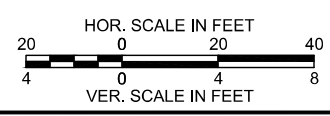


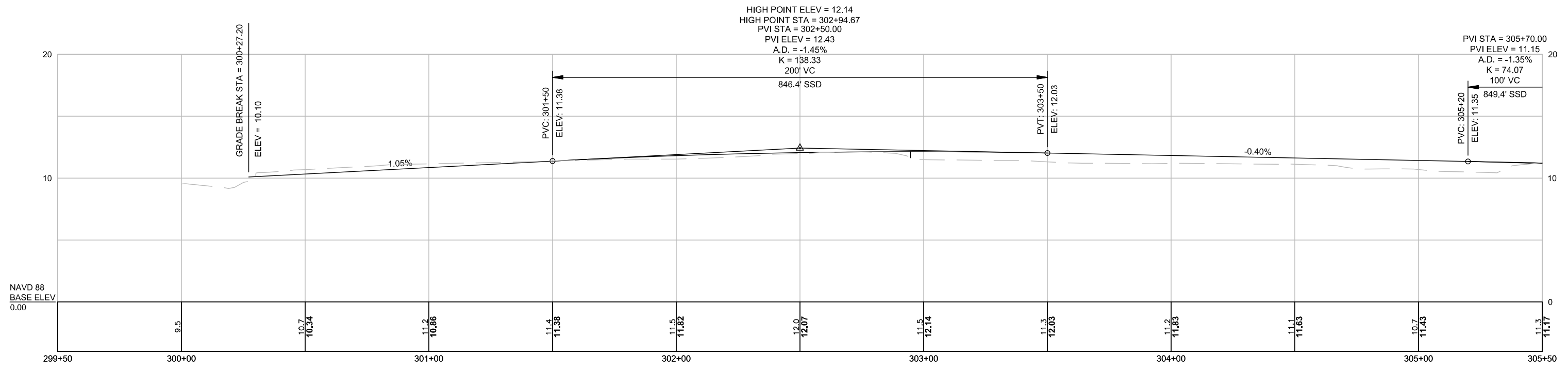
NAVD 88  
BASE ELEV  
-20.00

BENCHMARK #12  
MAG  
STA 200+34.63, 34.63 LT, EL: 9.91

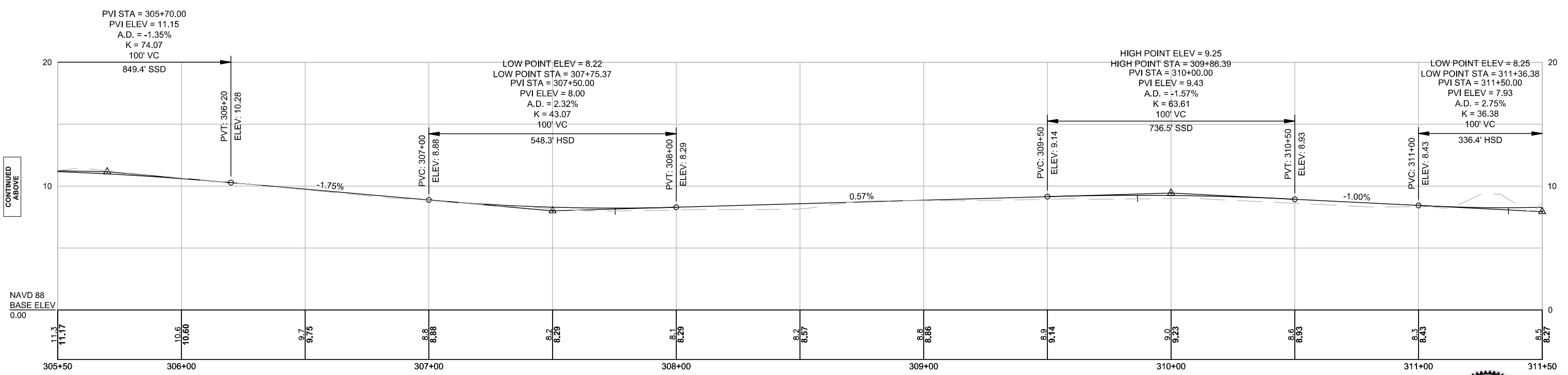
BENCHMARK #11  
MAG  
STA 204+68.23, 23.62 RT, EL: 16.0

**VICTORY ROAD**

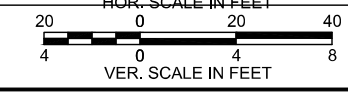




**NEPONSET TRAIL-SOUTH**



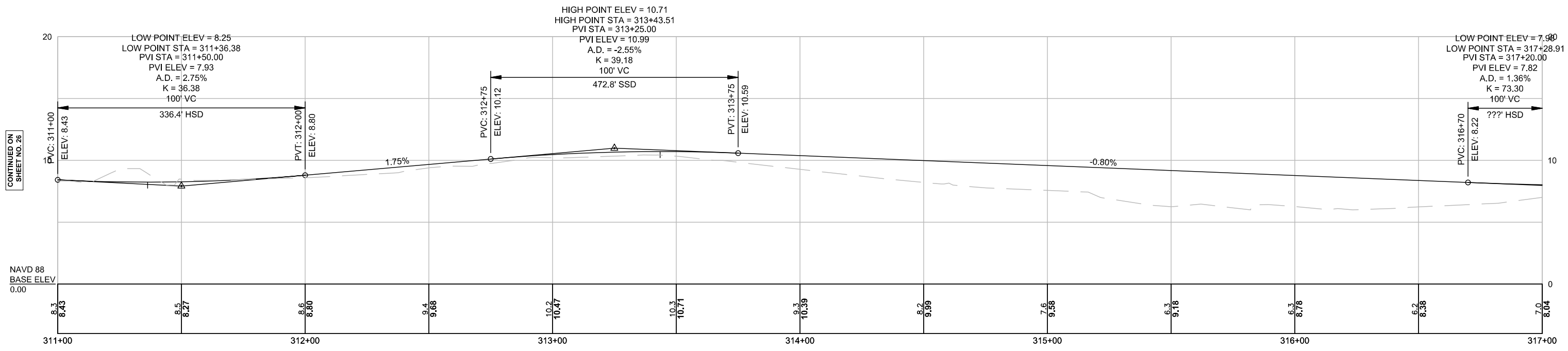
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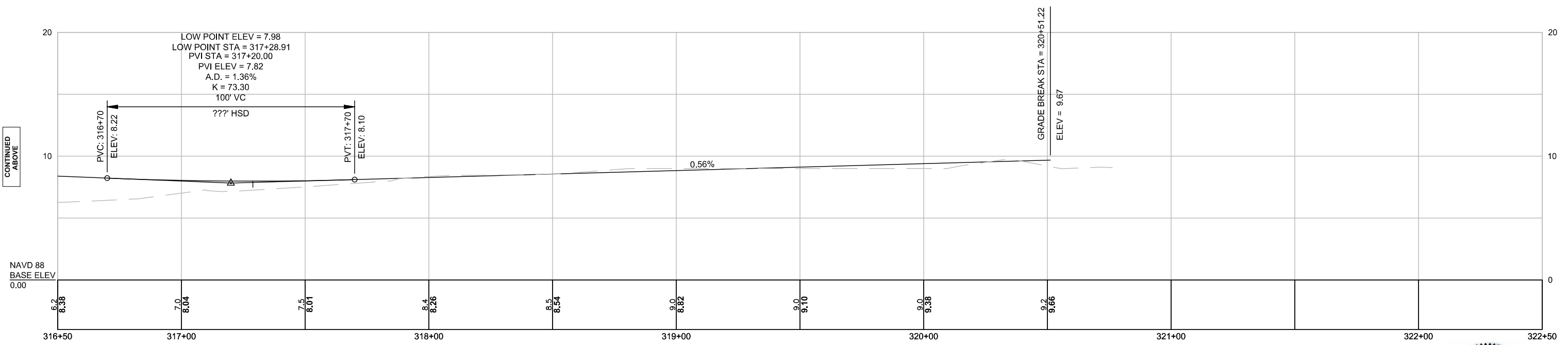
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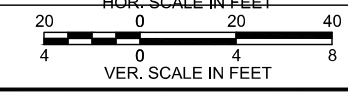
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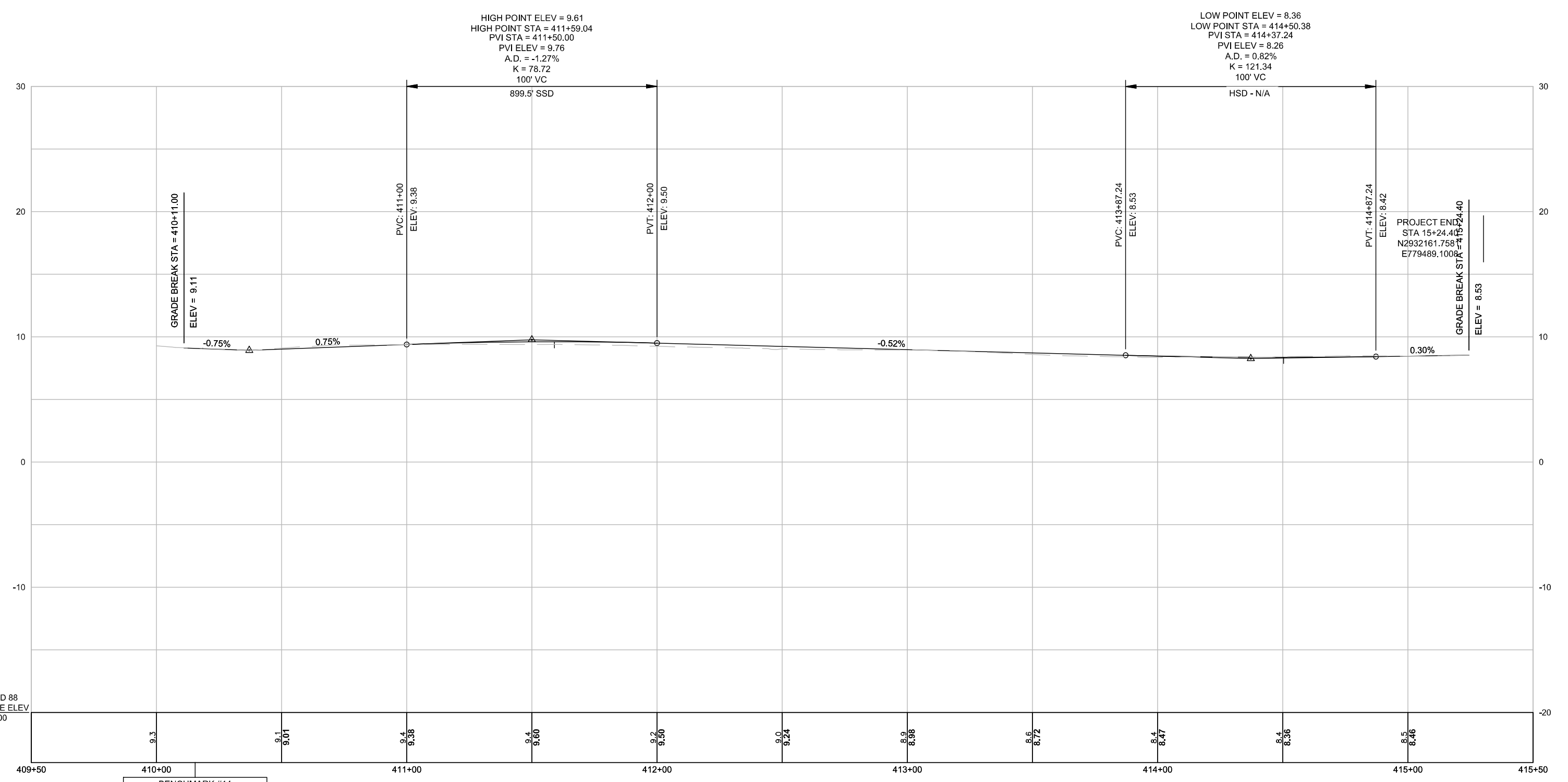


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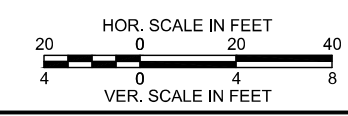


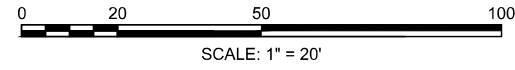
**NEPONSET TRAIL-SOUTH**





**CONLEY STREET**

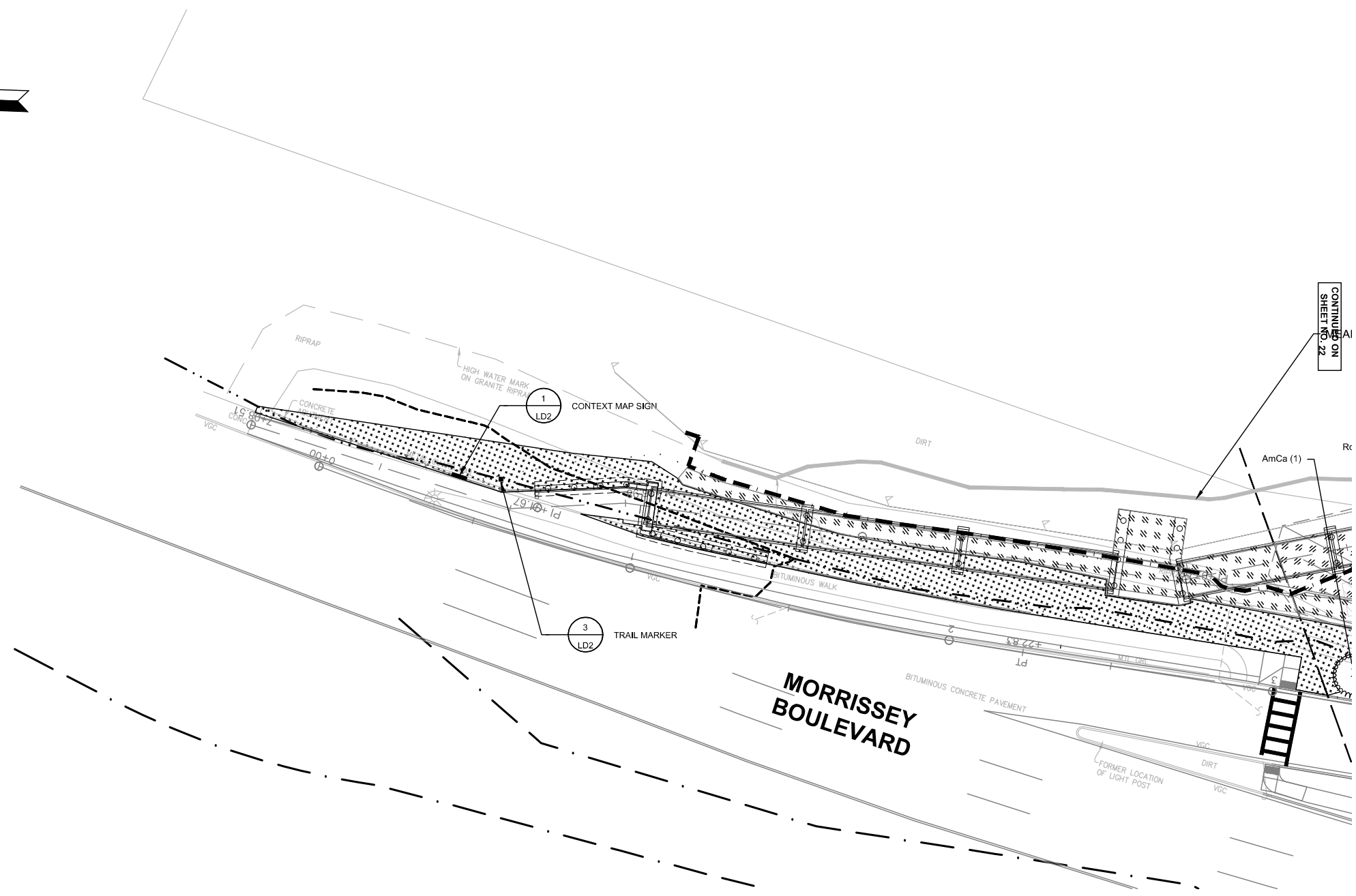
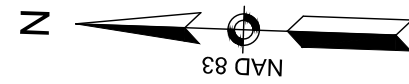




**BOSTON  
NEPONSET RIVER GREENWAY**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	29	44
PROJECT FILE NO.		608943	

**LANDSCAPE PLAN - 1**



**PLANTING LEGEND**

SYMBOL	DETAIL	DESCRIPTION	SYMBOL	DETAIL	DESCRIPTION
		EXISTING TREE, PRUNE AS DIRECTED BY RESIDENT ENGINEER			
	1 LD1	TREE PLANTING DECIDUOUS TREE		3 LD1	SHRUB PLANTING
	1 LD1	TREE PLANTING EVERGREEN TREE		5 LD1	SEEDED PLANTING LOW UPLAND NATIVE SEED MIX
	1 LD1	TREE PLANTING UNDERSTORY TREE		5 LD1	SEEDED PLANTING NEW ENGLAND COASTAL SALT TOLERANT GRASS MIX
	2 LD1	TREE PLANTING ON SLOPE DECIDUOUS TREE		4 LD1	PLUG PLANTING COASTAL SALT MARSH PLUG MIX

**NEW ENGLAND COASTAL SALT TOLERANT SEED MIX - THIS SHEET**

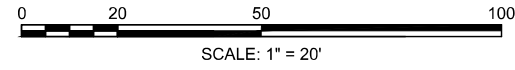
BOTANICAL NAME	COMMON NAME	Application Rate: 35lb/acre	.15 ACRES
<i>Elymus canadensis</i>	Canada Wild Rye		
<i>Panicum amarum</i>	Atlantic Coastal Panic Grass		
<i>Andropogon gerardii</i>	Big Bluestem		
<i>Festuca rubra</i>	Red Fescue		
<i>Panicum virgatum</i>	Switch Grass		
<i>Sorghastrum nutans</i>	Indian Grass		
<i>Juncus tenuis</i>	Path Rush		

**COASTAL SALT MARSH PLUGS - THIS SHEET**

BOTANICAL NAME	COMMON NAME	PLUGS SPACED AT 12" OC
<i>Distichlis spicata</i>	Seashore Saltgrass	974
<i>Spartina patens</i>	Salt Meadow Grass	974



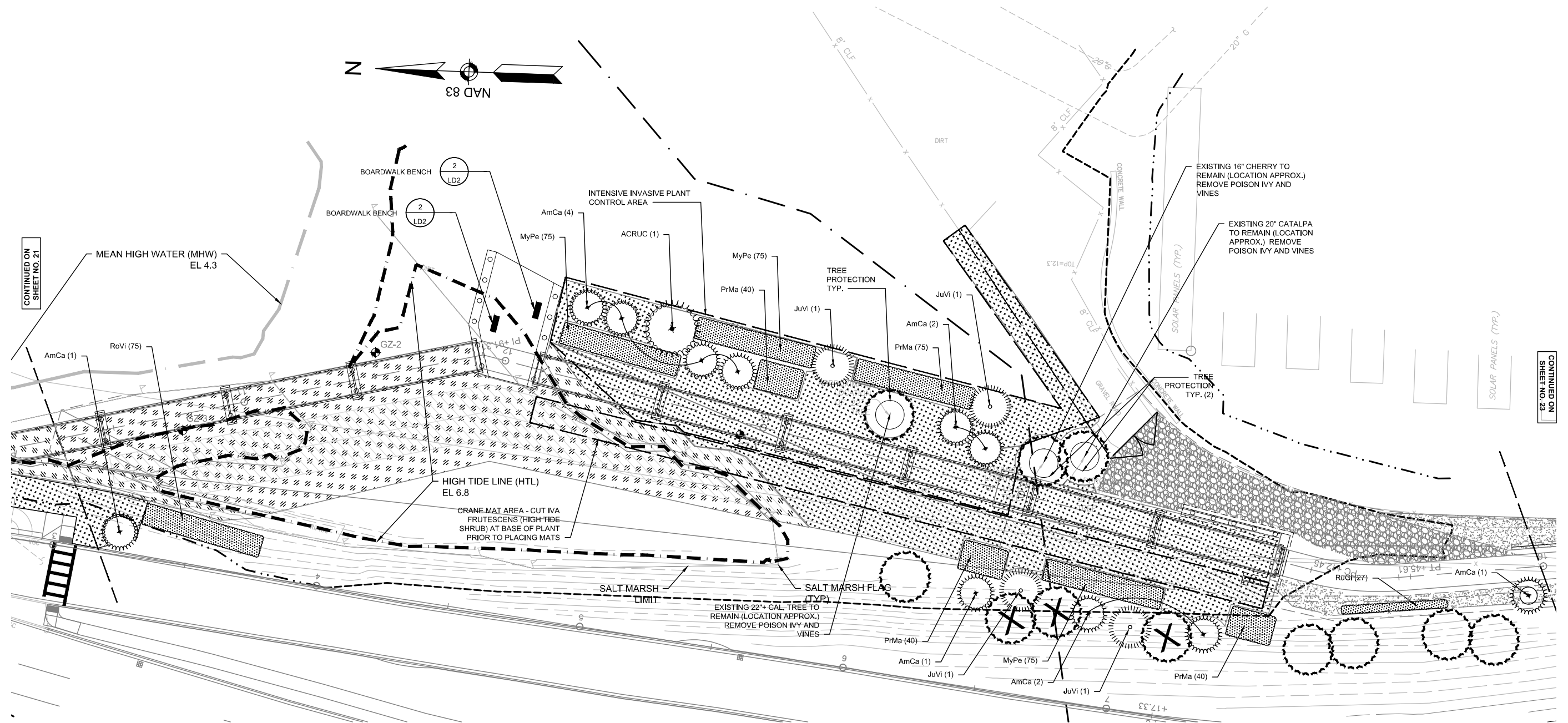




**BOSTON  
NEPONSET RIVER GREENWAY**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	30	44
PROJECT FILE NO. 608943			

**LANDSCAPE PLAN - 2**



**PLANTING LEGEND**

SYMBOL	DETAIL	DESCRIPTION	SYMBOL	DETAIL	DESCRIPTION
		EXISTING TREE, PRUNE AS DIRECTED BY RESIDENT ENGINEER			
	1 LD1	TREE PLANTING DECIDUOUS TREE		3 LD1	SHRUB PLANTING
	1 LD1	TREE PLANTING EVERGREEN TREE		5 LD1	SEEDED PLANTING LOW UPLAND NATIVE SEED MIX
	1 LD1	TREE PLANTING UNDERSTORY TREE		5 LD1	SEEDED PLANTING NEW ENGLAND COASTAL SALT TOLERANT GRASS MIX
	2 LD1	TREE PLANTING ON SLOPE DECIDUOUS TREE		4 LD1	PLUG PLANTING COASTAL SALT MARSH PLUG MIX

**NEW ENGLAND COASTAL SALT TOLERANT SEED MIX - THIS SHEET**

BOTANICAL NAME	COMMON NAME	Application Rate: 35lbs/acre	.30 ACRES
<i>Elymus canadensis</i>	Canada Wild Rye		
<i>Panicum amarum</i>	Atlantic Coastal Panic Grass		
<i>Andropogon gerardii</i>	Big Bluestem		
<i>Festuca rubra</i>	Red Fescue		
<i>Panicum virgatum</i>	Switch Grass		
<i>Sorghastrum nutans</i>	Indian Grass		
<i>Juncus tenuis</i>	Path Rush		

**COASTAL SALT MARSH PLUGS - THIS SHEET**

BOTANICAL NAME	COMMON NAME	PLUGS SPACED AT 12" OC
<i>Distichlis spicata</i>	Seashore Saltgrass	5585
<i>Spartina patens</i>	Salt Meadow Grass	5585

**PLANT LIST FOR THIS SHEET**

SYMBOL	BOTANICAL NAME	COMMON NAME	QUANTITY	SIZE	REMARKS
ACRUC	<i>Acer rubrum</i>	Red Maple	1	1-1.5" CAL	CONTAINER
AmCa	<i>Amelanchier canadensis</i>	Serviceberry	11	6-8 FT HT Multistem	CONTAINER
JuVi	<i>Juniperus virginiana</i>	Eastern Red Cedar	4	4 FT MIN HT	CONTAINER
MyPe	<i>Myrica pensylvanica</i>	Bayberry	225	2 GAL.	CONTAINER
PrMa	<i>Prunus maritima</i>	Beach Plum	195	2 GAL.	CONTAINER
RhGi	<i>Rhus glabra</i>	Smooth Sumac	27	3 GAL.	CONTAINER
RoVi	<i>Rosa virginiana</i>	Virginia Rose	75	2 GAL.	CONTAINER

**LOW UPLAND NATIVE SEED MIX - THIS SHEET**

NAME	MIX PERCENTAGE
LITTLE BLUESTEM 'ALBANY PINE'	50
VIRGINIA WILD RYE	20
CREeping RED FESCUE	12
DEERTONGUE GRASS 'TIOGA'	5
UPLAND BENTGRASS	4
HERBS/FORBS (VARIOUS)	8







PLANTING LEGEND

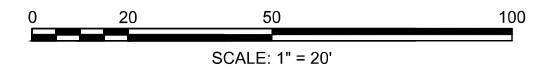
SYMBOL	DETAIL	DESCRIPTION	SYMBOL	DETAIL	DESCRIPTION
		EXISTING TREE, PRUNE AS DIRECTED BY RESIDENT ENGINEER		1	TREE PLANTING DECIDUOUS TREE
	1	TREE PLANTING EVERGREEN TREE		3	SHRUB PLANTING
	1	TREE PLANTING UNDERSTORY TREE		5	SEEDED PLANTING LOW UPLAND NATIVE SEED MIX
	2	TREE PLANTING ON SLOPE DECIDUOUS TREE		5	SEEDED PLANTING NEW ENGLAND COASTAL SALT TOLERANT GRASS MIX
				4	PLUG PLANTING COASTAL SALT MARSH PLUG MIX

PLANT LIST FOR THIS SHEET

SYMBOL	BOTANICAL NAME	COMMON NAME	QUANTITY	SIZE	REMARKS
ACRU	<i>Acer rubrum</i>	Red Maple	5	2-2.5" CAL	B&B
NYSY	<i>Nyssa sylvanica</i>	Nyssa	3	2-2.5" CAL	B&B
AmCa	<i>Amelanchier canadensis</i>	Serviceberry	8	6-8 FT HT Multistem	B&B
HaVi	<i>Hamamelis virginiana</i>	Witchhazel	1	6-8 FT HT	B&B
JuVi	<i>Juniperus virginiana</i>	Eastern Red Cedar	2	5 FT MIN HT	B&B
RhGl	<i>Rhus Glabra</i>	Smooth Sumac	23	3 GAL.	CONTAINER

LOW UPLAND NATIVE SEED MIX - THIS SHEET

NAME	MIX PERCENTAGE
LITTLE BLUESTEM 'ALBANY PINE'	50%
VIRGINIA WILD RYE	20%
CREeping RED FESCUE	12%
DEERTONGUE GRASS 'TIOGA'	5%
UPLAND BENTGRASS	4%
HERBS/FORBES (VARIOUS)	8%

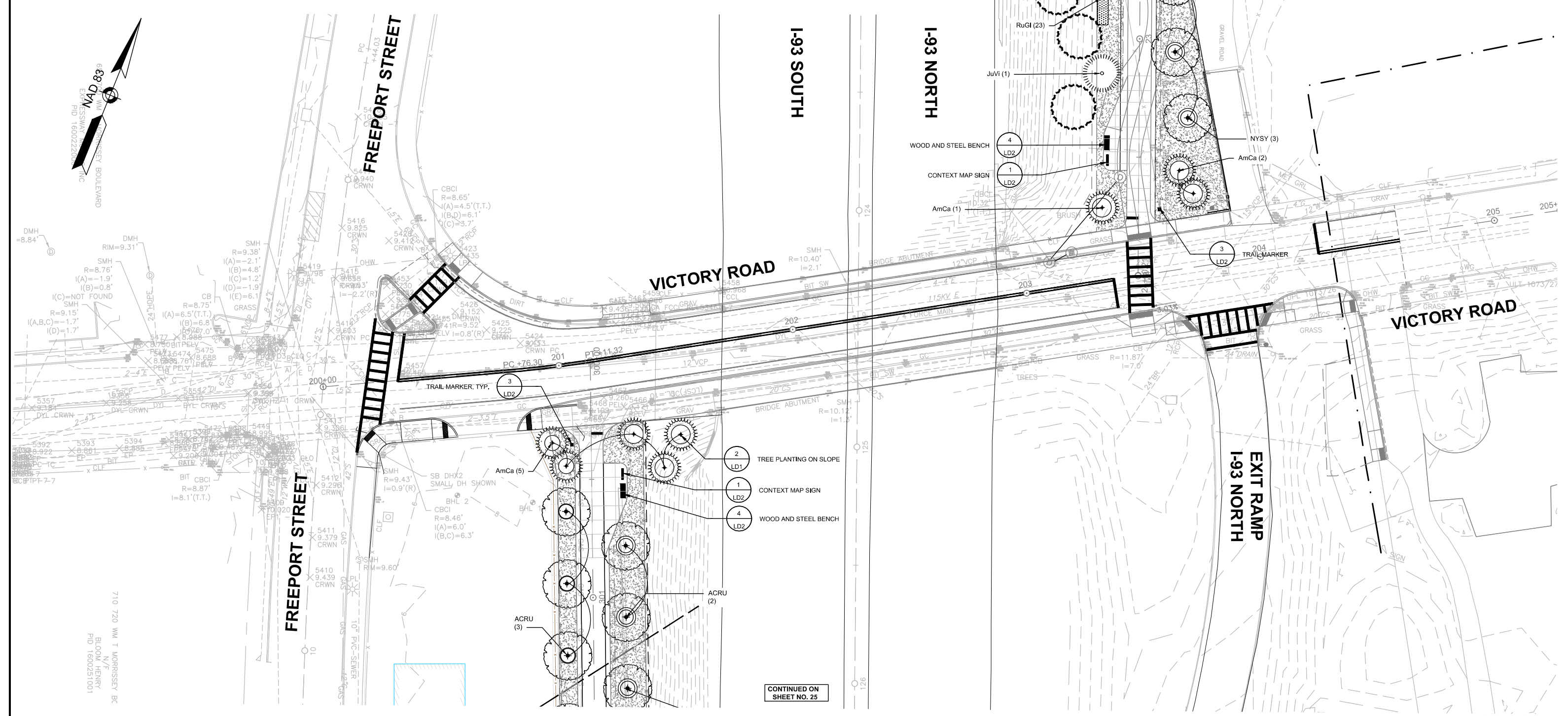


**BOSTON**  
**NEPONSET RIVER GREENWAY**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		32	44

PROJECT FILE NO. 608943

**LANDSCAPE PLAN - 4**



CONTINUED ON SHEET NO. 23

CONTINUED ON SHEET NO. 25



710 720 WM T MORRISSEY BC  
N/F  
BLOOM HENRY  
PID 1600251001

PLANTING LEGEND

SYMBOL	DETAIL	DESCRIPTION	SYMBOL	DETAIL	DESCRIPTION
		EXISTING TREE, PRUNE AS DIRECTED BY RESIDENT ENGINEER			
	1 LD1	TREE PLANTING DECIDUOUS TREE		3 LD1	SHRUB PLANTING
	1 LD1	TREE PLANTING EVERGREEN TREE		5 LD1	SEEDED PLANTING LOW UPLAND NATIVE SEED MIX
	1 LD1	TREE PLANTING UNDERSTORY TREE		5 LD1	SEEDED PLANTING NEW ENGLAND COASTAL SALT TOLERANT GRASS MIX
	2 LD1	TREE PLANTING ON SLOPE DECIDUOUS TREE		4 LD1	PLUG PLANTING COASTAL SALT MARSH PLUG MIX

PLANT LIST FOR THIS SHEET					
SYMBOL	BOTANICAL NAME	COMMON NAME	QUANTITY	SIZE	REMARKS
ACRU	<i>Acer rubrum</i>	Red Maple	13	2-2.5" CAL	B&B
LIST	<i>Liquidambar styraciflua</i>	Sweetgum	5	2-2.5" CAL	B&B
QUBI	<i>Quercus bicolor</i>	Swamp Oak	1	2-2.5" CAL	B&B
QRUR	<i>Quercus rubra</i>	Red Oak	1	1-1.5" CAL	B&B
ULAM	<i>Ulmus americana</i>	American Elm	5	2-2.5" CAL	B&B
AmCa	<i>Amelanchier canadensis</i>	Serviceberry	2	6-8 FT HT Multi-stem	B&B
HaVi	<i>Hamamelis virginiana</i>	Witchhazel	3	6-8 FT HT	B&B
JuVi	<i>Juniperus virginiana</i>	Eastern Red Cedar	1	5 FT MIN HT	B&B
RhGi	<i>Rhus glabra</i>	Smooth Sumac	135	3 GAL.	CONTAINER

LOW UPLAND NATIVE SEED MIX - THIS SHEET

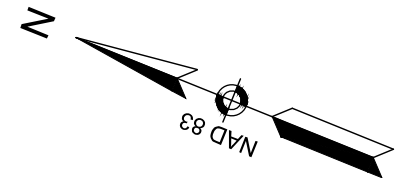
NAME	MIX PERCENTAGE
LITTLE BLUESTEM 'ALBANY PINE'	50
VIRGINIA WILD RYE	20
CREeping RED FESCUE	12
DEERTONGUE GRASS 'TIOGA'	5
UPLAND BENTGRASS	4
HERBS/FORBS (VARIOUS)	8

BOSTON  
NEPONSET RIVER GREENWAY

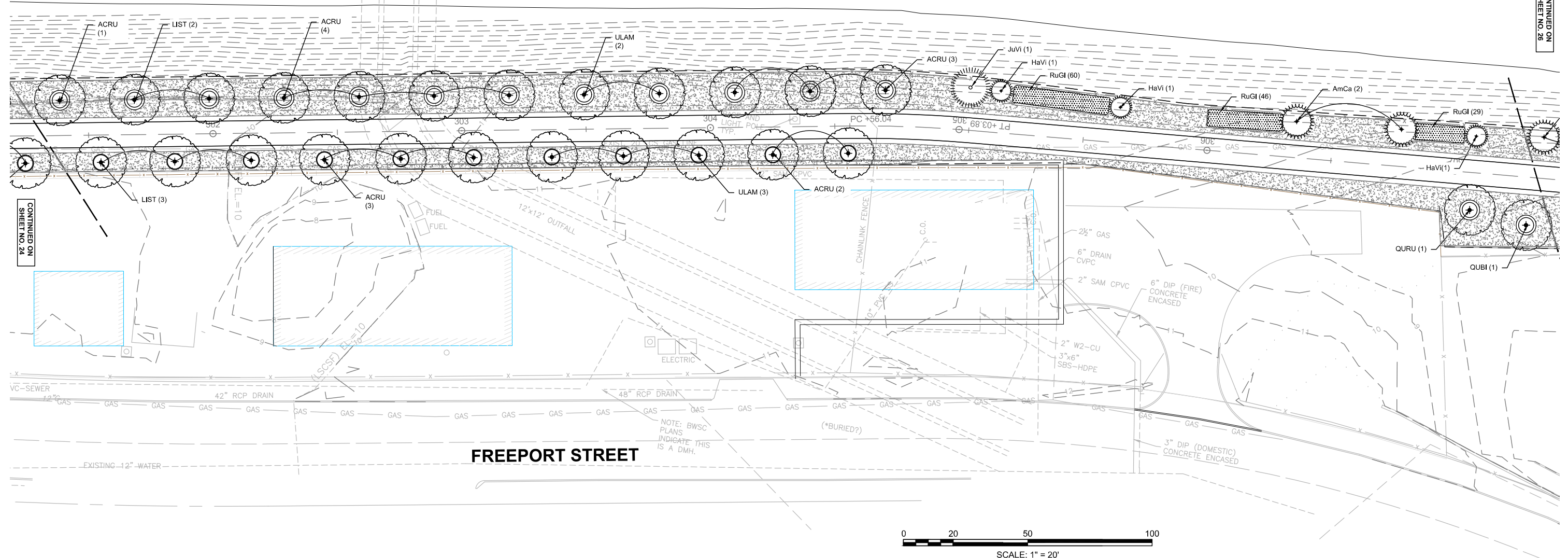
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		33	44

PROJECT FILE NO. 608943

LANDSCAPE PLAN 5



I-93 SOUTH



CONTINUED ON SHEET NO. 28

CONTINUED ON SHEET NO. 28



PLANTING LEGEND

SYMBOL	DETAIL	DESCRIPTION	SYMBOL	DETAIL	DESCRIPTION
		EXISTING TREE, PRUNE AS DIRECTED BY RESIDENT ENGINEER			SHRUB PLANTING
	1 LD1	TREE PLANTING DECIDUOUS TREE		5 LD1	SEEDED PLANTING LOW UPLAND NATIVE SEED MIX
	1 LD1	TREE PLANTING EVERGREEN TREE		5 LD1	SEEDED PLANTING NEW ENGLAND COASTAL SALT TOLERANT GRASS MIX
	1 LD1	TREE PLANTING UNDERSTORY TREE		4 LD1	PLUG PLANTING COASTAL SALT MARSH PLUG MIX
	2 LD1	TREE PLANTING ON SLOPE DECIDUOUS TREE			

PLANT LIST FOR THIS SHEET

SYMBOL	BOTANICAL NAME	COMMON NAME	QUANTITY	SIZE	REMARKS
QUBI	<i>Quercus bicolor</i>	Swamp Oak	3	2-2.5" CAL	B&B
QUCO	<i>Quercus coccinea</i>	Scarlet Oak	6	2-2.5" CAL	B&B
QURU	<i>Quercus rubra</i>	Red Oak	3	1-1.5" CAL	B&B
AmCa	<i>Amelanchier canadensis</i>	Serviceberry	12	6-8 FT Multistem	B&B
HaVi	<i>Hamamelis virginiana</i>	Witchhazel	6	6-8 FT HT	B&B
JuVi	<i>Juniperus virginiana</i>	Eastern Red Cedar	15	5 FT MIN HT	B&B
RhGl	<i>Rhus Glabra</i>	Smooth Sumac	87	3 GAL.	CONTAINER

LOW UPLAND NATIVE SEED MIX - THIS SHEET

NAME	MIX PERCENTAGE
LITTLE BLUESTEM 'ALBANY PINE'	50%
VIRGINIA WILD RYE	20%
CREEPING RED FESCUE	12%
DEERTONGUE GRASS 'TIOGA'	5%
UPLAND BENTGRASS	4%
HERBS/FORBS (VARIOUS)	8%

BOSTON  
NEPONSET RIVER GREENWAY

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		34	44

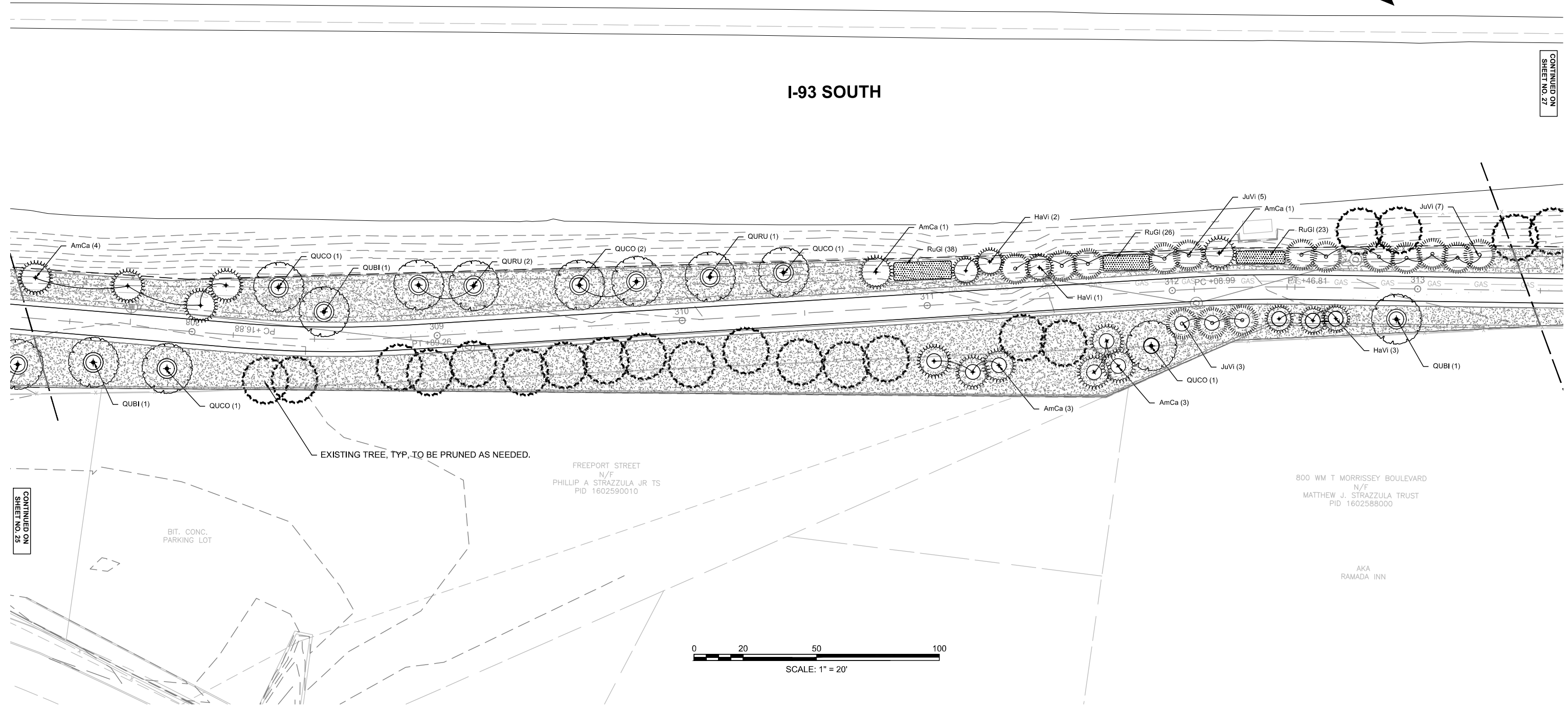
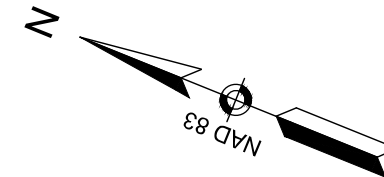
PROJECT FILE NO. 608943

LANDSCAPE PLAN - 6



I-93 NORTH

I-93 SOUTH



CONTINUED ON  
SHEET NO. 27

CONTINUED ON  
SHEET NO. 25

PLANTING LEGEND

SYMBOL	DETAIL	DESCRIPTION	SYMBOL	DETAIL	DESCRIPTION
		EXISTING TREE, PRUNE AS DIRECTED BY RESIDENT ENGINEER			SHRUB PLANTING
	1 LD1	TREE PLANTING DECIDUOUS TREE		5 LD1	SEEDED PLANTING LOW UPLAND NATIVE SEED MIX
	1 LD1	TREE PLANTING EVERGREEN TREE		5 LD1	SEEDED PLANTING NEW ENGLAND COASTAL SALT TOLERANT GRASS MIX
	1 LD1	TREE PLANTING UNDERSTORY TREE		4 LD1	PLUG PLANTING COASTAL SALT MARSH PLUG MIX
	2 LD1	TREE PLANTING ON SLOPE DECIDUOUS TREE			

PLANT LIST FOR THIS SHEET

SYMBOL	BOTANICAL NAME	COMMON NAME	QUANTITY	SIZE	REMARKS
AmCa	<i>Amelanchier canadensis</i>	Serviceberry	1	6-8 FT HT	B&B
HaVi	<i>Hamamelis virginiana</i>	Witchhazel	7	6-8 FT HT	B&B
JuVi	<i>Juniperus virginiana</i>	Eastern Red Cedar	11	5 FT MIN HT	B&B
PIRI	<i>Pinus rigida</i>	Pitch Pine	3	10 GAL.	CONTAINER
CoPe	<i>Comptonia peregrina</i>	Sweetfern	317	2 GAL.	CONTAINER
RhGl	<i>Rhus Glabra</i>	Smooth Sumac	180	3 GAL.	CONTAINER

LOW UPLAND NATIVE SEED MIX - THIS SHEET

NAME	MIX PERCENTAGE
LITTLE BLUESTEM 'ALBANY PINE'	50%
VIRGINIA WILD RYE	20%
CREEPING RED FESCUE	12%
DEERTONGUE GRASS 'TIOGA'	5%
UPLAND BENTGRASS	4%
HERBS/FORBS (VARIOUS)	8%

BOSTON  
NEPONSET RIVER GREENWAY

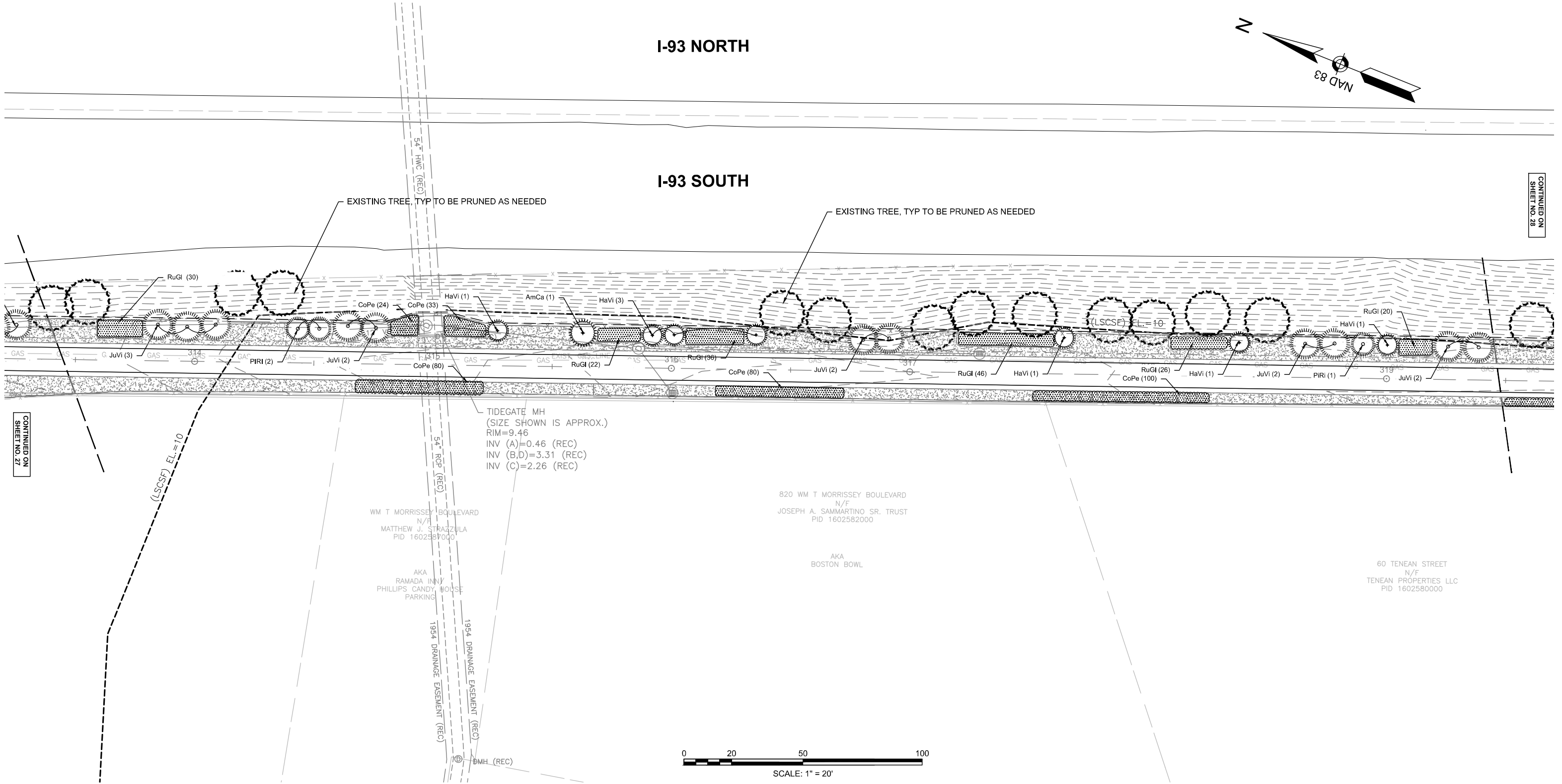
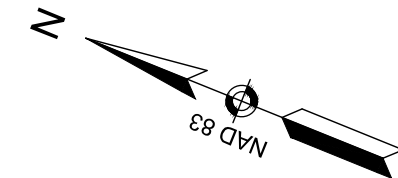
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		35	44

PROJECT FILE NO. 608943  
LANDSCAPE PLANS - 7



I-93 NORTH

I-93 SOUTH



CONTINUED ON  
SHEET NO. 26

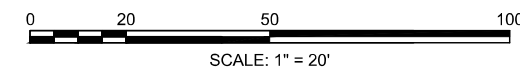
CONTINUED ON  
SHEET NO. 27

TIDEGATE MH  
(SIZE SHOWN IS APPROX.)  
RIM=9.46  
INV (A)=0.46 (REC)  
INV (B,D)=3.31 (REC)  
INV (C)=2.26 (REC)

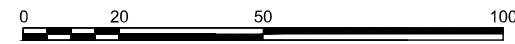
820 WM T MORRISSEY BOULEVARD  
N/F  
JOSEPH A. SAMMARTINO SR. TRUST  
PID 1602582000

AKA  
BOSTON BOWL

60 TENEAN STREET  
N/F  
TENEAN PROPERTIES LLC  
PID 1602580000





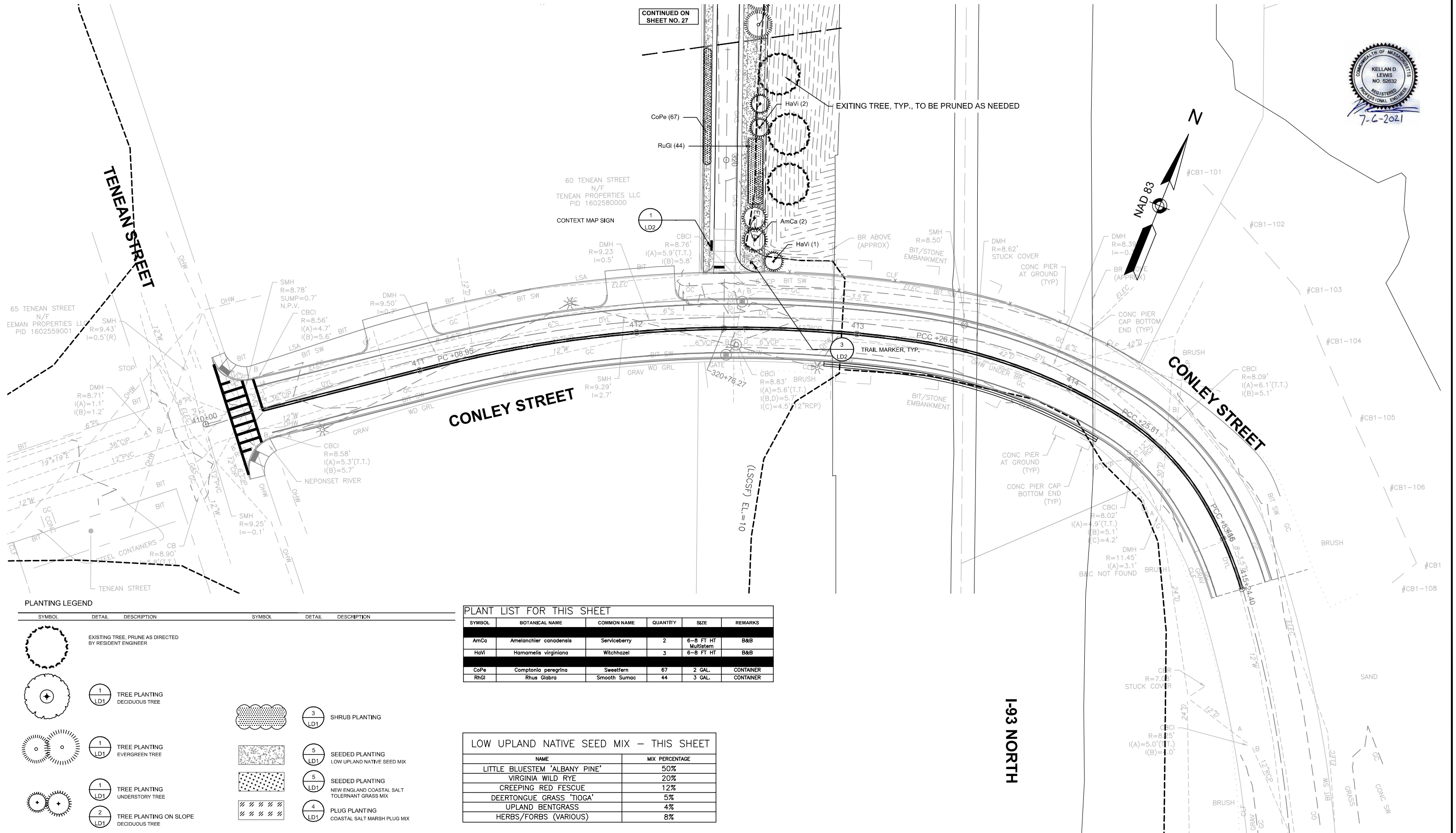


SCALE: 1" = 20'

**BOSTON**  
**NEPONSET RIVER GREENWAY**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		36	44

PROJECT FILE NO. 608943  
**LANDSCAPE PLANS - 8**



CONTINUED ON SHEET NO. 27

EXITING TREE, TYP., TO BE PRUNED AS NEEDED

60 TENEAN STREET  
N/F  
TENEAN PROPERTIES LLC  
PID 1602580000

CONTEXT MAP SIGN

1  
LD2

CBCI  
R=8.76'  
I(A)=5.9'(T.T.)  
I(B)=5.8'

DMH  
R=9.23  
I=0.5'

SMH  
R=8.50'  
I=0.7'

BIT SW

GC

6" S

DYL

4" T

PC+08.95

6" VCP

6" VCP

6" VCP

6" VCP

6" VCP

6" VCP

6" VCP

6" VCP

6" VCP

6" VCP

6" VCP

6" VCP

6" VCP

6" VCP

6" VCP

6" VCP

6" VCP

6" VCP

6" VCP

6" VCP

**PLANTING LEGEND**

SYMBOL	DETAIL	DESCRIPTION	SYMBOL	DETAIL	DESCRIPTION
		EXISTING TREE, PRUNE AS DIRECTED BY RESIDENT ENGINEER		1 LD1	TREE PLANTING DECIDUOUS TREE
	1 LD1	TREE PLANTING EVERGREEN TREE		3 LD1	SHRUB PLANTING
	1 LD1	TREE PLANTING UNDERSTORY TREE		5 LD1	SEEDED PLANTING LOW UPLAND NATIVE SEED MIX
	2 LD1	TREE PLANTING ON SLOPE DECIDUOUS TREE		5 LD1	SEEDED PLANTING NEW ENGLAND COASTAL SALT TOLERANT GRASS MIX
				4 LD1	PLUG PLANTING COASTAL SALT MARSH PLUG MIX

**PLANT LIST FOR THIS SHEET**

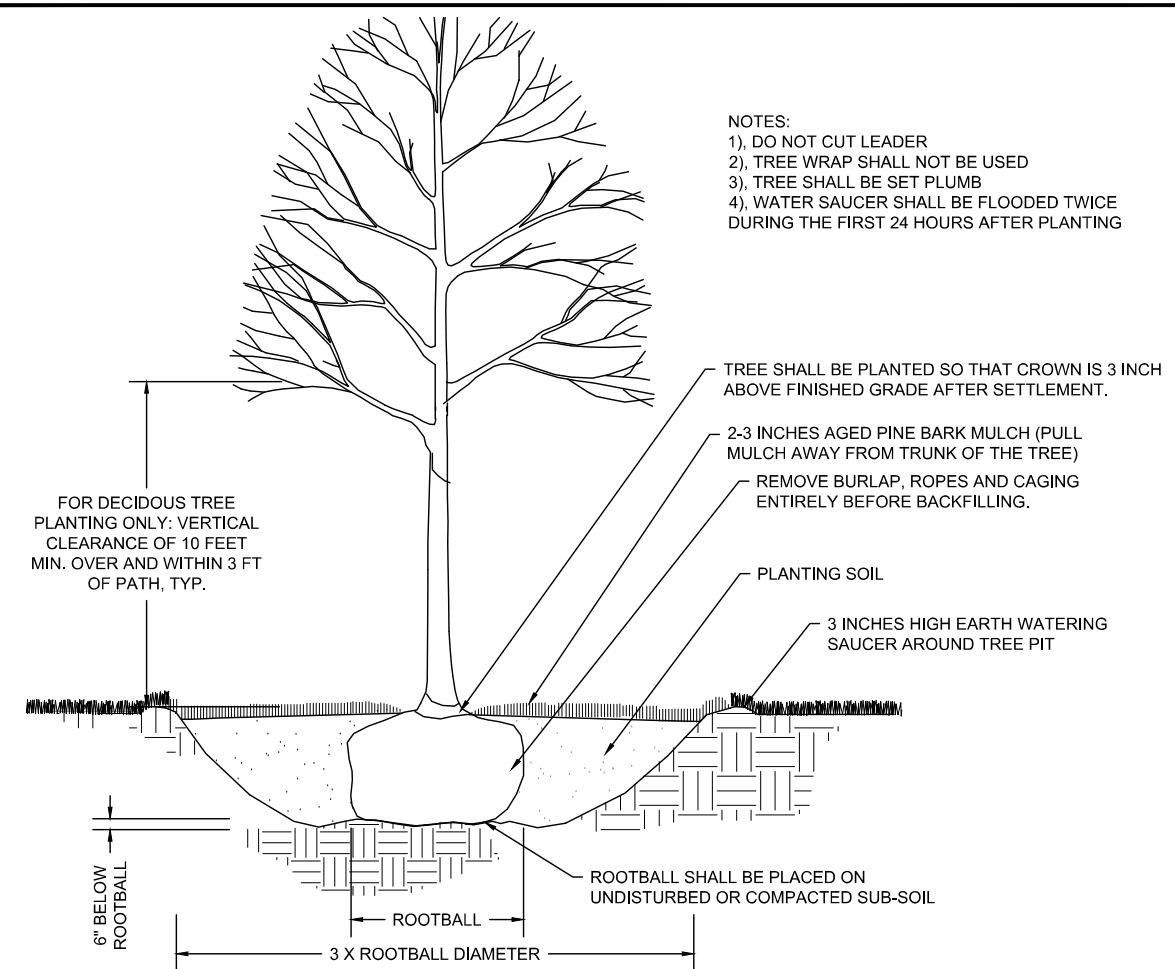
SYMBOL	BOTANICAL NAME	COMMON NAME	QUANTITY	SIZE	REMARKS
AmCa	<i>Amelanchier canadensis</i>	Serviceberry	2	6-8 FT HT Multistem	B&B
HaVi	<i>Hamamelis virginiana</i>	Witchhazel	3	6-8 FT HT	B&B
CoPe	<i>Comptonia peregrina</i>	Sweetfern	67	2 GAL.	CONTAINER
RuGi	<i>Rhus glabra</i>	Smooth Sumac	44	3 GAL.	CONTAINER

**LOW UPLAND NATIVE SEED MIX - THIS SHEET**

NAME	MIX PERCENTAGE
LITTLE BLUESTEM 'ALBANY PINE'	50%
VIRGINIA WILD RYE	20%
CREEPING RED FESCUE	12%
DEERTONGUE GRASS 'TIOGA'	5%
UPLAND BENTGRASS	4%
HERBS/FORBS (VARIOUS)	8%

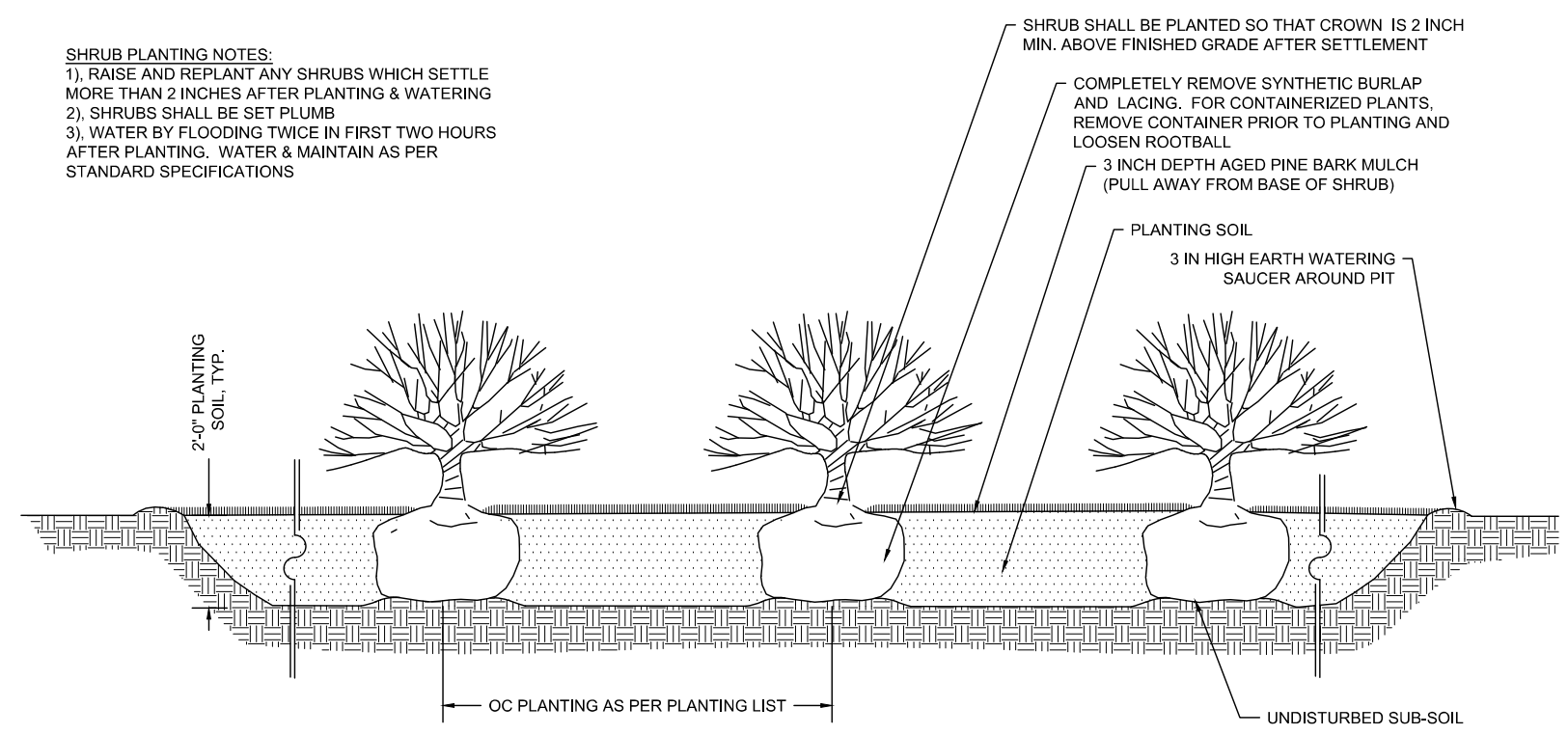


**NOTES:**  
 1) DO NOT CUT LEADER  
 2) TREE WRAP SHALL NOT BE USED  
 3) TREE SHALL BE SET PLUMB  
 4) WATER SAUCER SHALL BE FLOODED TWICE DURING THE FIRST 24 HOURS AFTER PLANTING



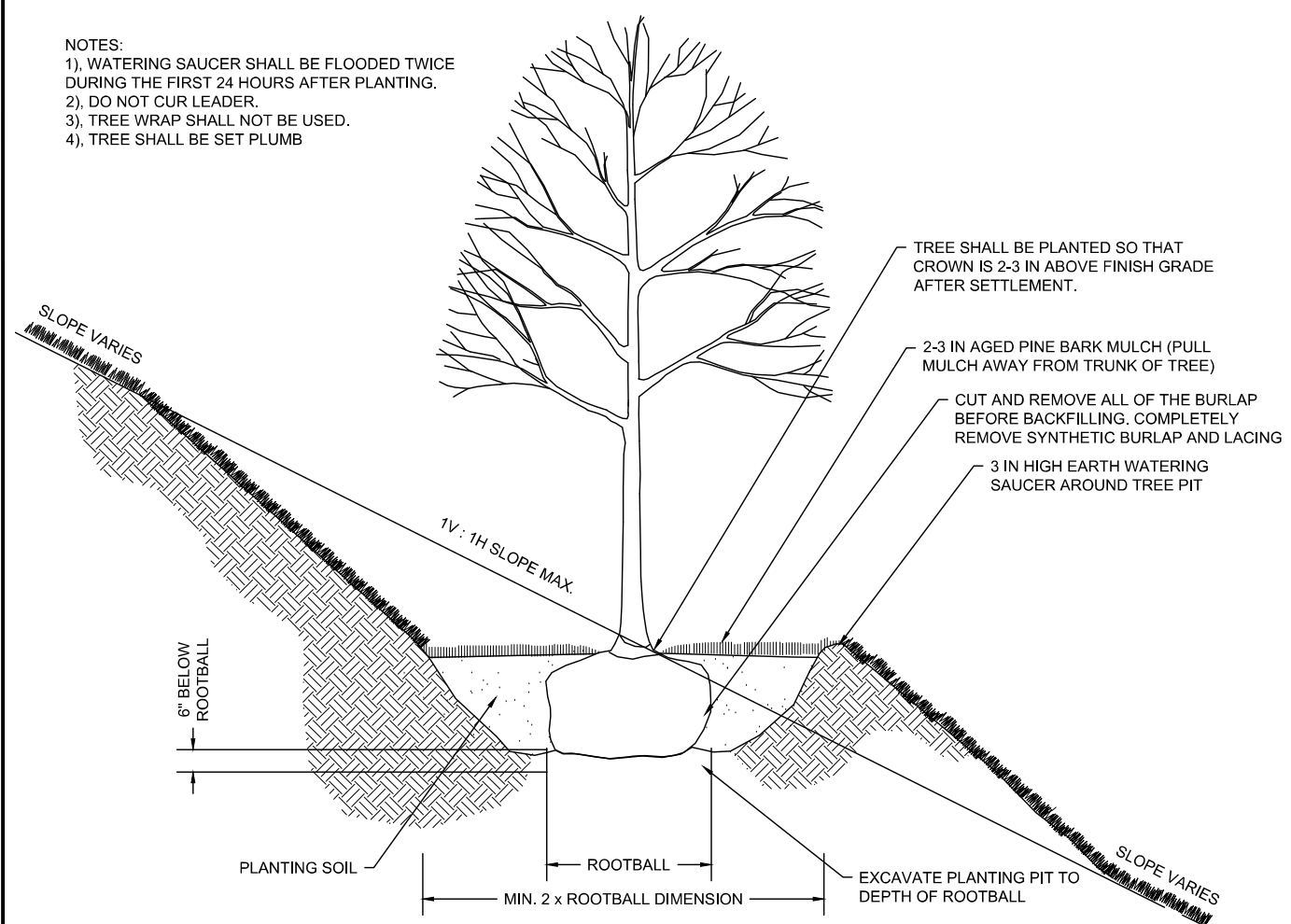
**1 TREE PLANTING**  
1/2" = 1'-0"

**SHRUB PLANTING NOTES:**  
 1) RAISE AND REPLANT ANY SHRUBS WHICH SETTLE MORE THAN 2 INCHES AFTER PLANTING & WATERING  
 2) SHRUBS SHALL BE SET PLUMB  
 3) WATER BY FLOODING TWICE IN FIRST TWO HOURS AFTER PLANTING. WATER & MAINTAIN AS PER STANDARD SPECIFICATIONS

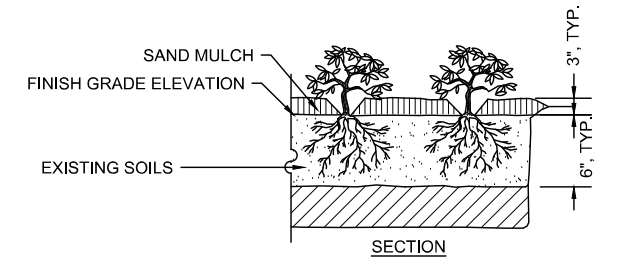


**3 SHRUB PLANTING**  
1/2" = 1'-0"

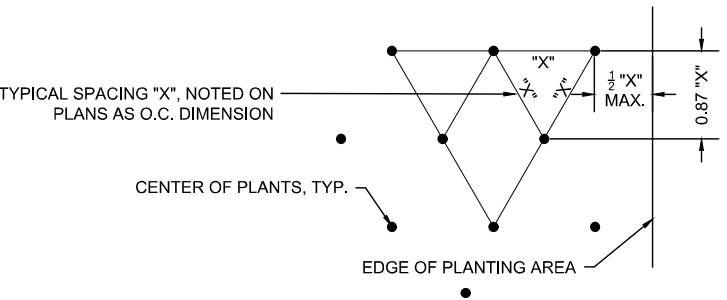
**NOTES:**  
 1) WATERING SAUCER SHALL BE FLOODED TWICE DURING THE FIRST 24 HOURS AFTER PLANTING.  
 2) DO NOT CUR LEADER.  
 3) TREE WRAP SHALL NOT BE USED.  
 4) TREE SHALL BE SET PLUMB



**2 TREE PLANTING ON SLOPE**  
1/2" = 1'-0"



**4 PLUG PLANTING**  
1" = 8" X REF



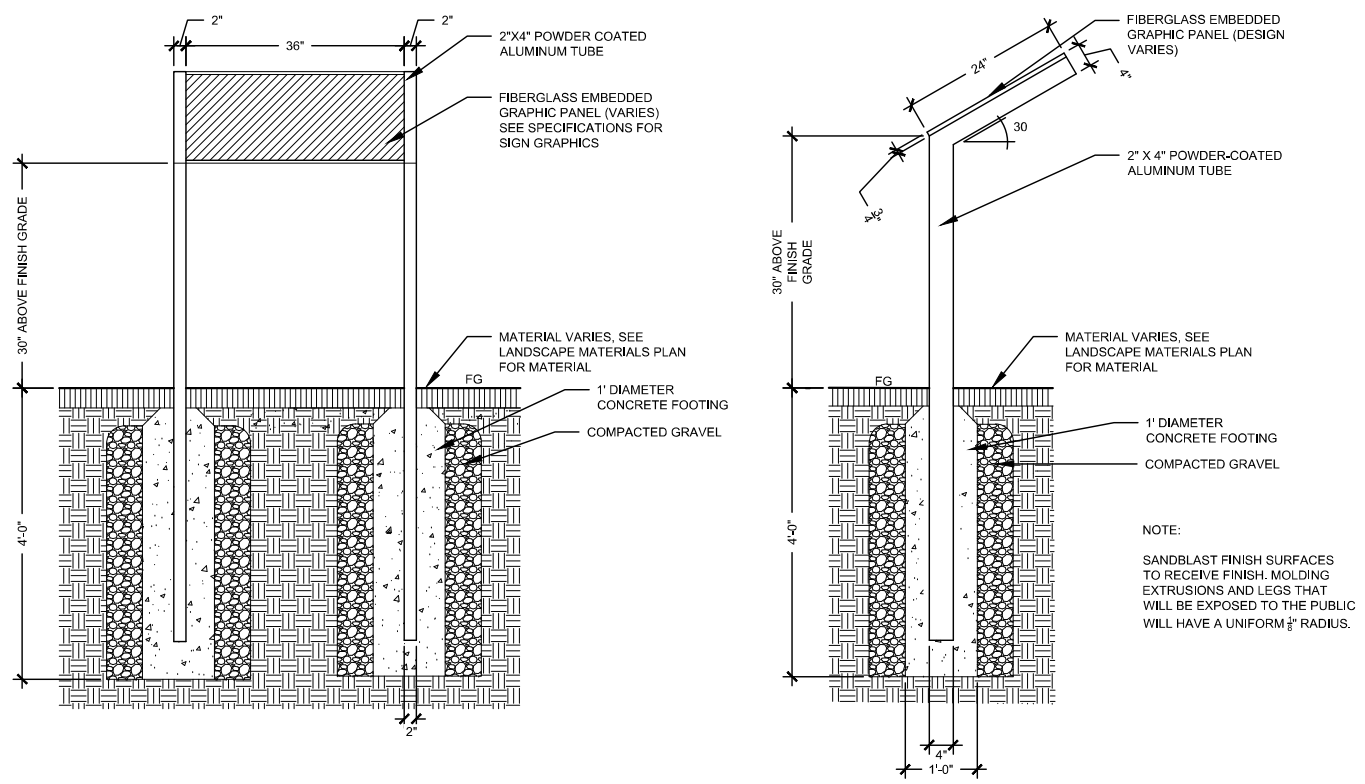
**5 SEEDED PLANTING**  
1" = 8" X REF

PLANT LIST FOR ALL SHEETS						
SYMBOL	BOTANICAL NAME	COMMON NAME	QUANTITY	SIZE	REMARKS	
ACRU	<i>Acer rubrum</i>	Red Maple	24	2-2.5" CAL	B&B	
ACRUC	<i>Acer rubrum</i>	Red Maple	1	1-1.5" CAL	CONTAINER	
BENI	<i>Betula nigra</i>	River Birch	4	6-8 FT Multistem	B&B	
LIST	<i>Liquidambar styraciflua</i>	Sweetgum	5	2-2.5" CAL	B&B	
NYSY	<i>Nyssa sylvatica</i>	Nyssa	3	2-2.5" CAL	B&B	
QUBI	<i>Quercus bicolor</i>	Swamp Oak	7	2-2.5" CAL	B&B	
QUCO	<i>Quercus coccinea</i>	Scarlet Oak	6	2-2.5" CAL	B&B	
QURU	<i>Quercus rubra</i>	Red Oak	4	1-1.5" CAL	B&B	
ULAM	<i>Ulmus americana</i>	American Elm	5	2-2.5" CAL	B&B	
AmCa	<i>Amelanchier canadensis</i>	Serviceberry	39	6-8 FT HT Multistem	CONTAINER	
HaVi	<i>Hornamellis virginiana</i>	Witchhazel	22	6-8 FT HT	B&B	
JuVi	<i>Juniperus virginiana</i>	Eastern Red Cedar	35	4 FT MIN HT	CONTAINER	
PIRI	<i>Pinus rigida</i>	Pitch Pine	3	10 GAL.	CONTAINER	
CoPe	<i>Comptonia peregrina</i>	Sweetfern	624	2 GAL.	CONTAINER	
MyPe	<i>Myrica pensylvanica</i>	Bayberry	225	2 GAL.	CONTAINER	
PrMa	<i>Prunus maritima</i>	Beach Plum	195	2 GAL.	CONTAINER	
RhGi	<i>Rhus glabra</i>	Smooth Sumac	401	3 GAL.	CONTAINER	
RoVi	<i>Rosa virginiana</i>	Virginia Rose	75	2 GAL.	CONTAINER	

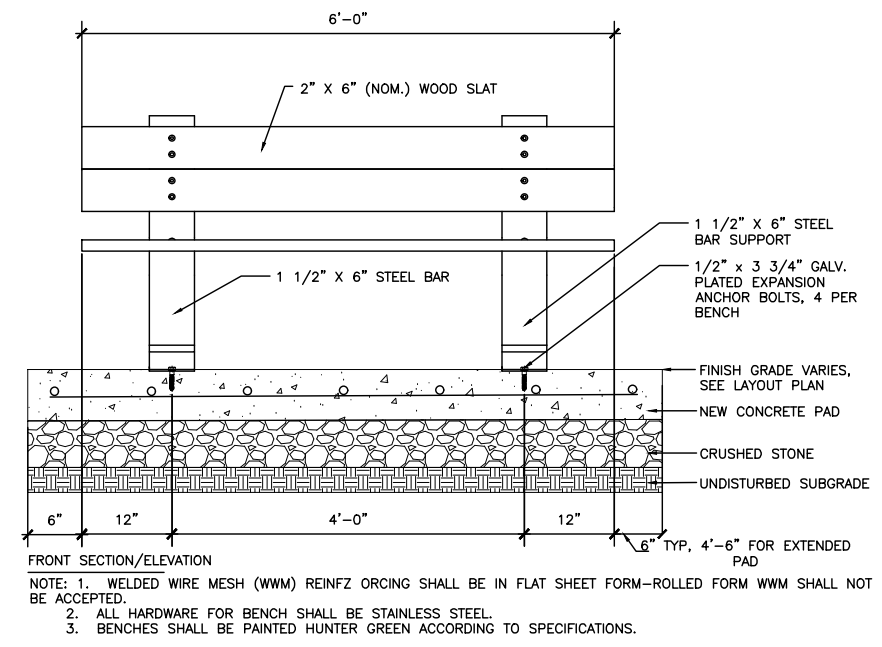
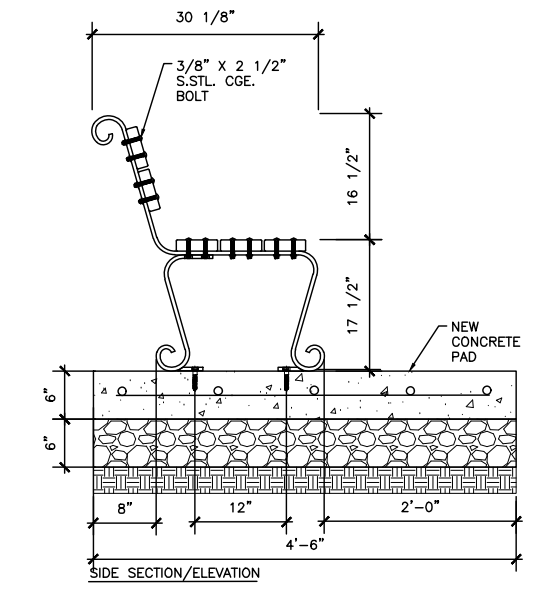
NEW ENGLAND COASTAL SALT TOLERANT SEED MIX - ALL SHEETS			
BOTANICAL NAME	COMMON NAME	Application Rate: 35lbs/acre	.45 ACRES
<i>Elymus canadensis</i>	Canada Wild Rye		
<i>Panicum amarum</i>	Atlantic Coastal Panic Grass		
<i>Andropogon gerardii</i>	Big Bluestem		
<i>Festuca rubra</i>	Red Fescue		
<i>Panicum virgatum</i>	Switch Grass		
<i>Sorghastrum nutans</i>	Indian Grass		
<i>Juncus tenuis</i>	Path Rush		

COASTAL SALT MARSH PLUGS - ALL SHEET		
BOTANICAL NAME	COMMON NAME	PLUGS SPACED AT 12" OC
<i>Distichlis spicata</i>	Seashore Saltgrass	6559
<i>Spartina patens</i>	Salt Meadow Grass	6559

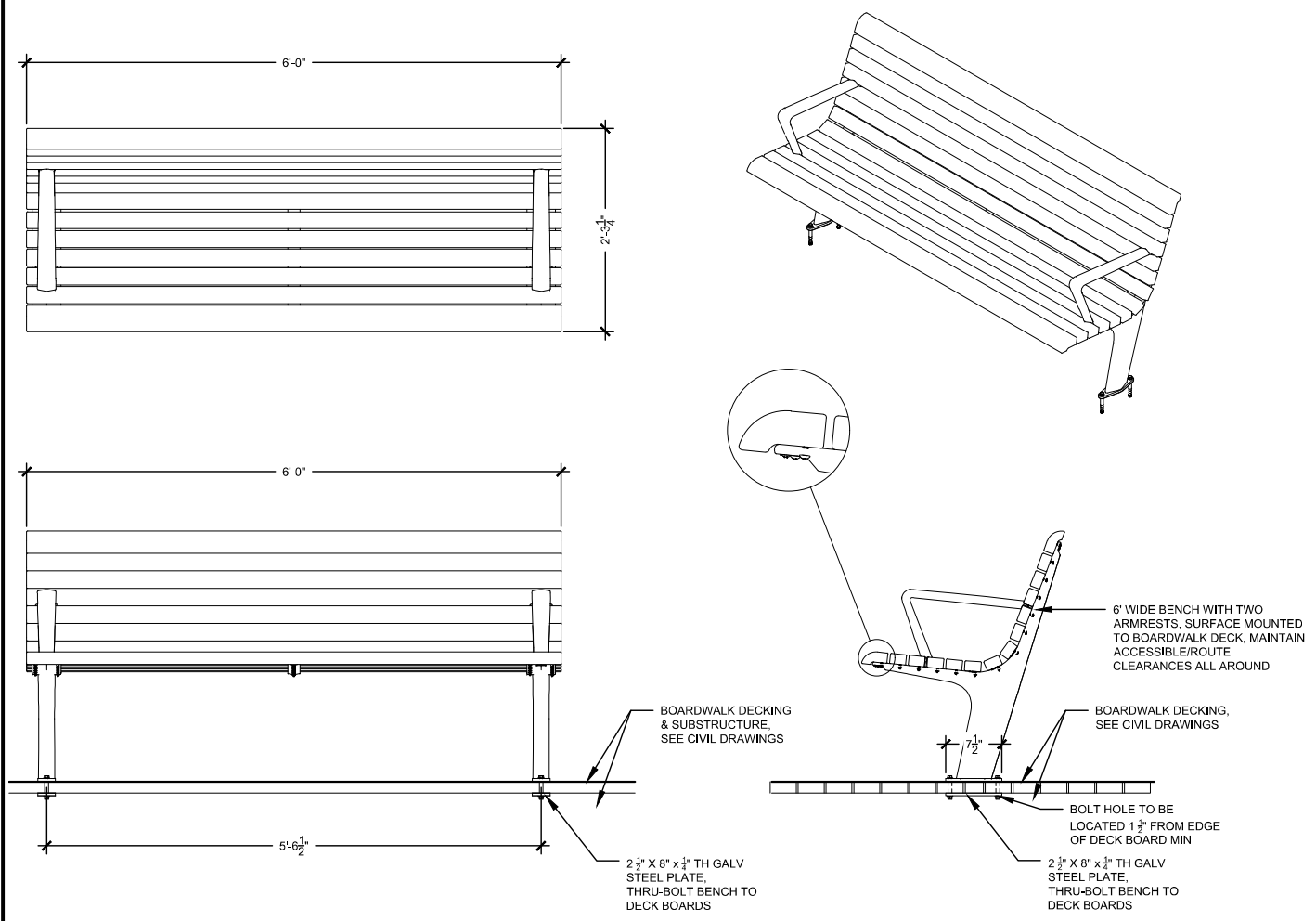
LOW UPLAND NATIVE SEED MIX - ALL SHEETS		
NAME	MIX PERCENTAGE	1.6 ACRES
LITTLE BLUESTEM 'ALBANY PINE'	50	
VIRGINIA WILD RYE	20	
CREEPIING RED FESCUE	12	
DEERTONGUE GRASS 'TIOGA'	5	
UPLAND BENTGRASS	4	
HERBS/FORBS (VARIOUS)	8	



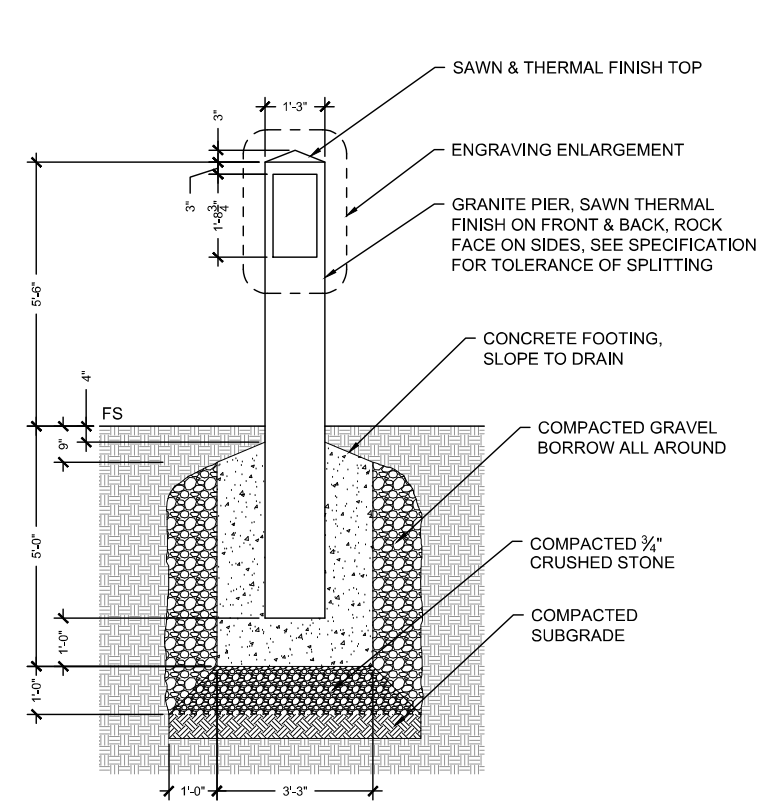
**1** CONTEXT MAP SIGN  
1:16\_XREF



**4** WOOD AND STEEL BENCH  
1"=1'-0"

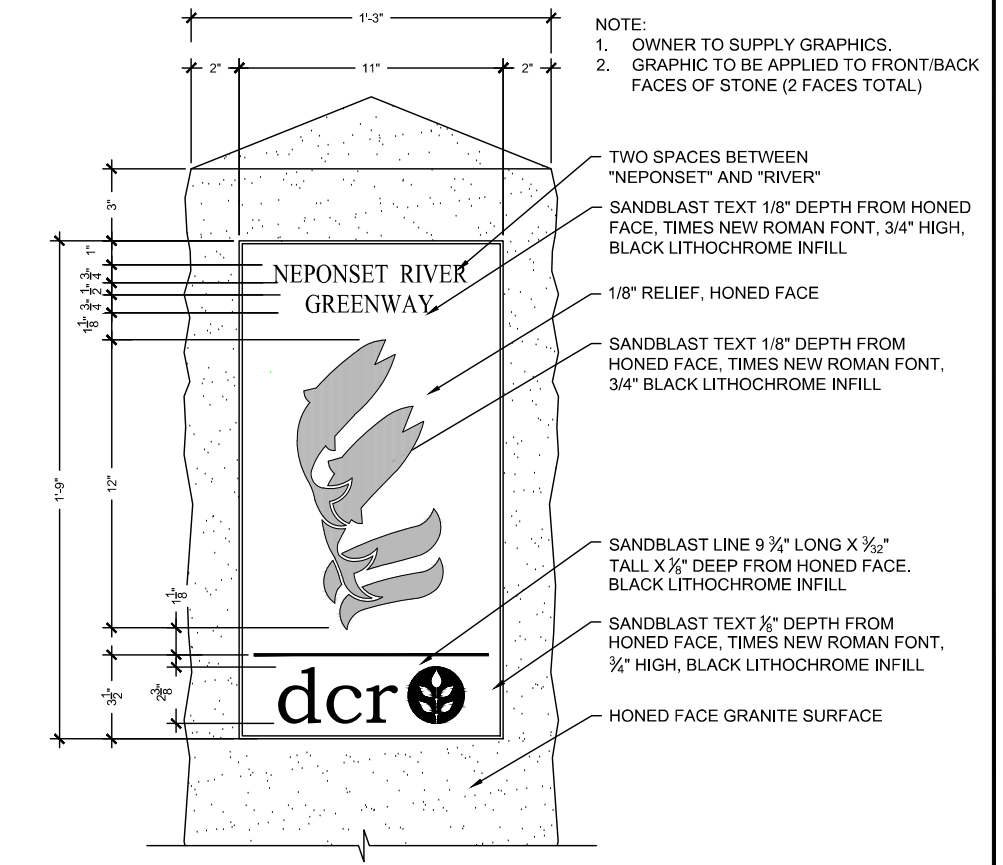


**2** BOARDWALK BENCH  
1"=1'-0"



**TRAIL MARKER**  
1/2"=1'-0"

**3** TRAIL MARKER  
VARIES



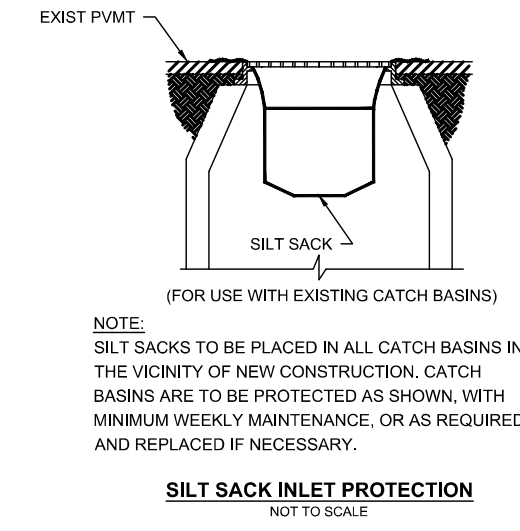
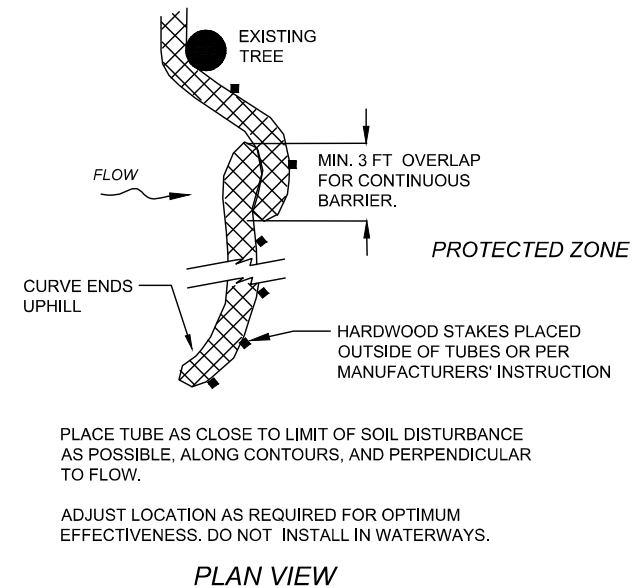
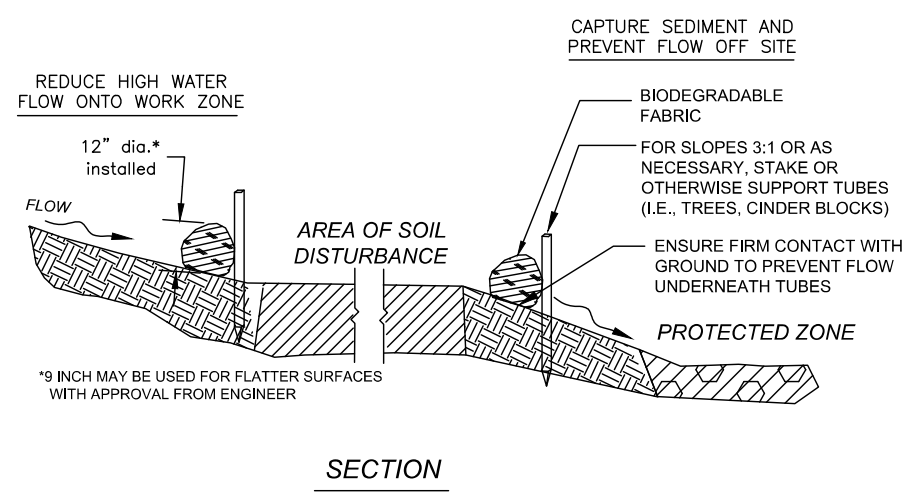
**ENGRAVING ENLARGEMENT**  
3"=1'-0"



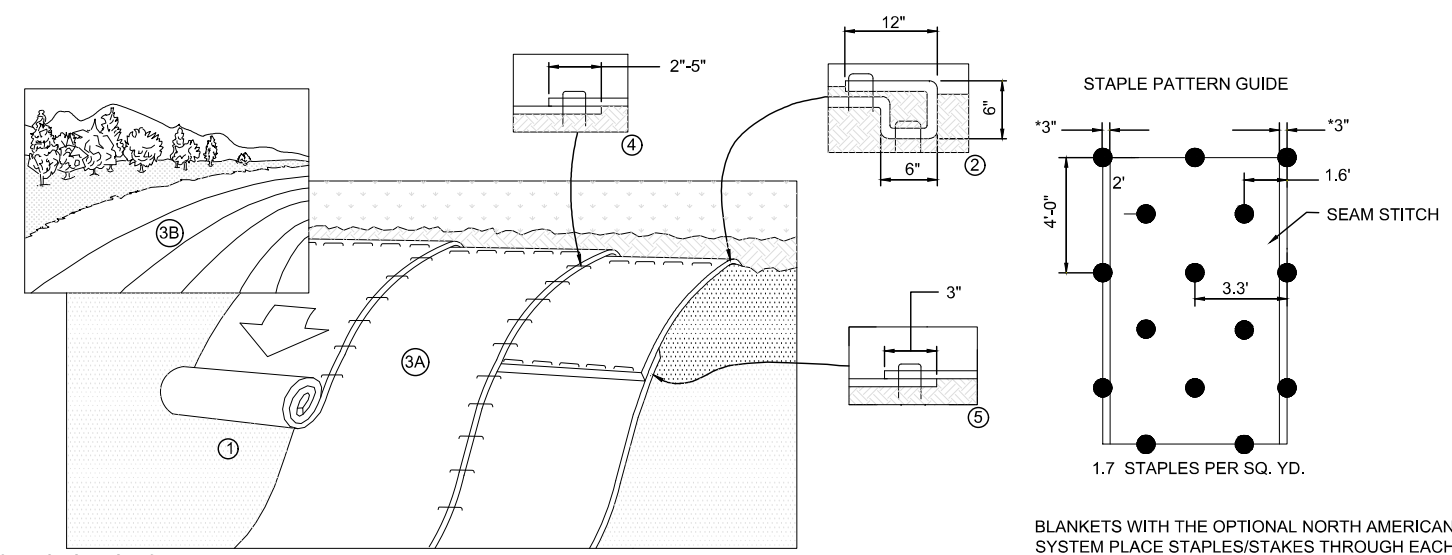
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	39	44
PROJECT FILE NO.		608943	

EROSION CONTROL DETAILS

Plotted on 6-Jul-2021 2:27 PM  
608943\_N01(0)DETAILS.DWG



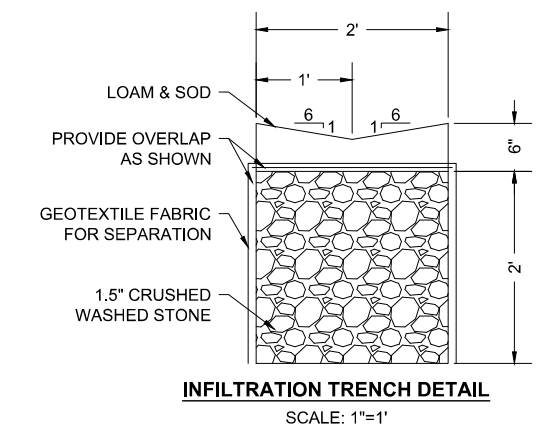
**SEDIMENT CONTROL BARRIER**  
NOT TO SCALE



- CONSTRUCTION NOTES:**
1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. HYDROSEED SIDE SLOPES BEFORE INSTALLATION OF BLANKETS.
  2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30cm) PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30cm) APART ACROSS THE WIDTH OF THE BLANKET.
  3. ROLL THE BLANKETS (A.) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING OPTIONAL DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
  4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2"-5" (5cm-12.5cm) OVERLAP DEPENDING ON BLANKET TYPE. TO ENSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE COLORED SEAM STITCH ON THE PREVIOUSLY INSTALLED BLANKET.
  5. CONSECUTIVE BLANKETS SPICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" (7.5cm) OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" (30cm) APART ACROSS ENTIRE BLANKET WIDTH.

- NOTES:**
- \* IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15CM) MAY BE NECESSARY TO PROPERLY SECURE THE BLANKETS.
  - \*\* IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS IN EXCESS OF 6" (15 CM) MAY BE NECESSARY TO PROPERLY ANCHOR THE BLANKETS.
  - \* LOCATION OF SEAM STITCH WILL VARY DEPENDING ON NORTH AMERICAN GREEN PRODUCT TYPE. -APPROX. 5" SEAM OVERLAP FOR BIONET EROSION CONTROL BLANKETS
- CRITICAL POINTS**
- A. OVERLAPS AND SEAMS
  - B. PROJECTED WATER LINE
  - C. CHANNEL BOTTOM/SIDE SLOPE VERTICES
- \* HORIZONTAL STAPLE SPACING SHOULD BE ALTERED IF NECESSARY TO ALLOW STAPLES TO SECURE THE CRITICAL POINTS ALONG THE CHANNEL SURFACE.

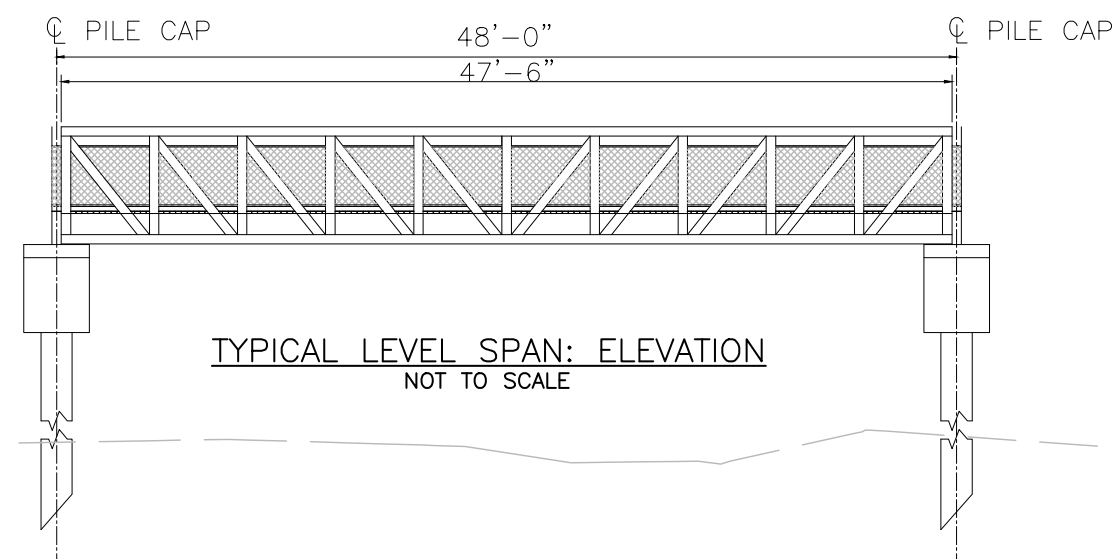
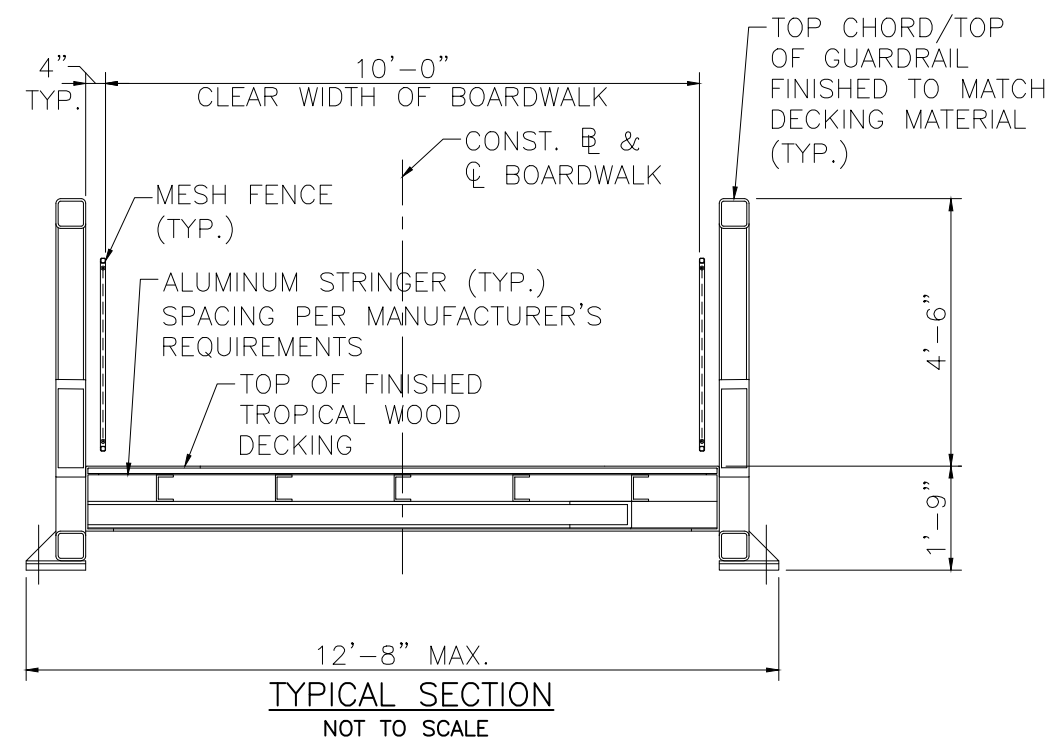
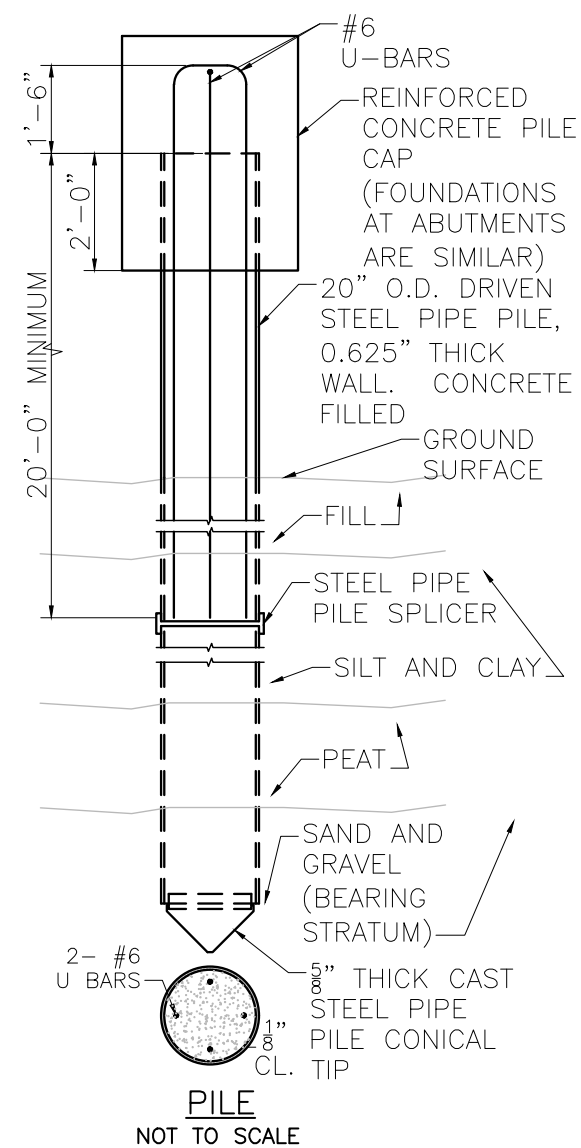
**MATting FOR EROSION CONTROL**  
NOT TO SCALE



**BOSTON  
NEPONSET RIVER GREENWAY**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	40	44
PROJECT FILE NO.		608943	

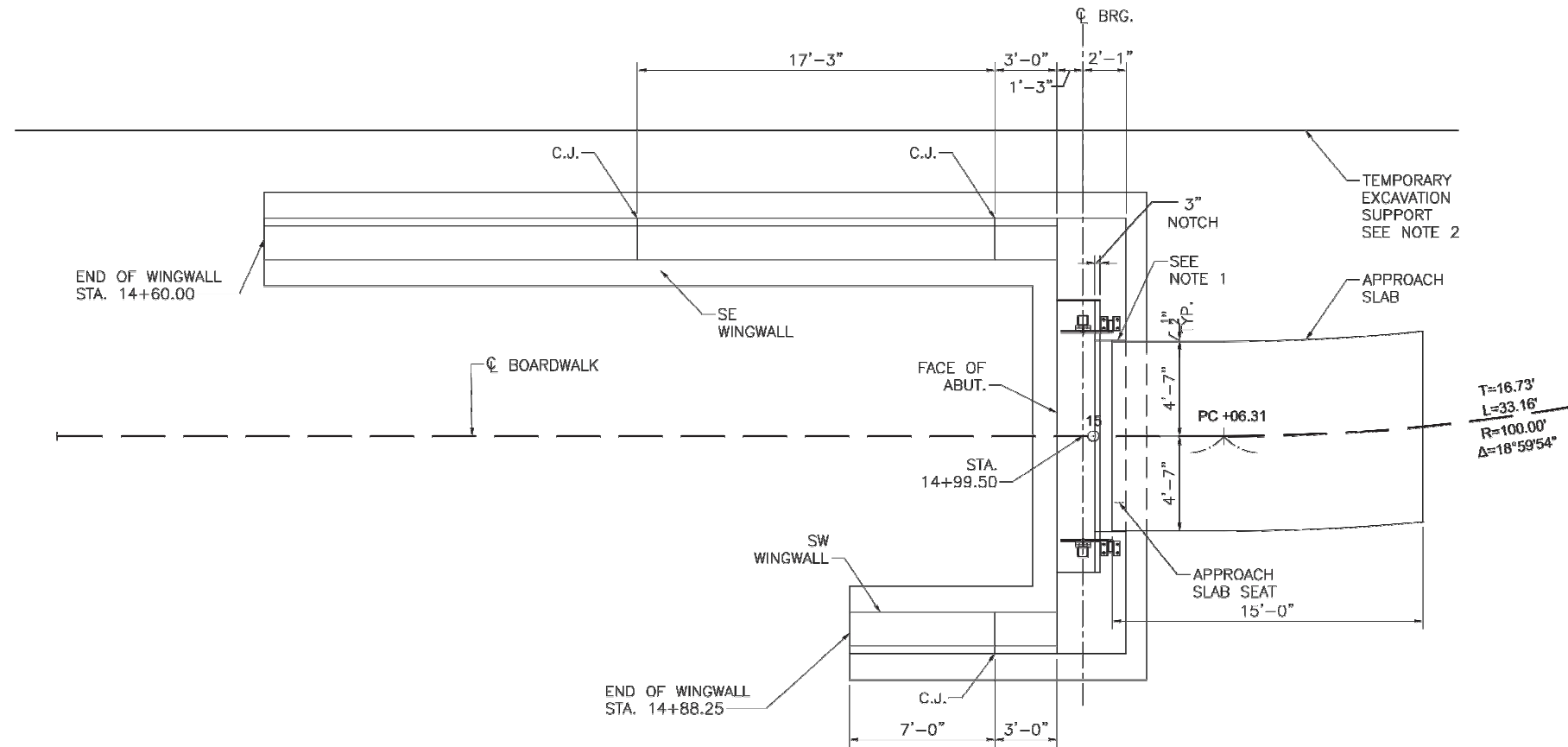
**BOARDWALK DETAILS**



7-6-2021

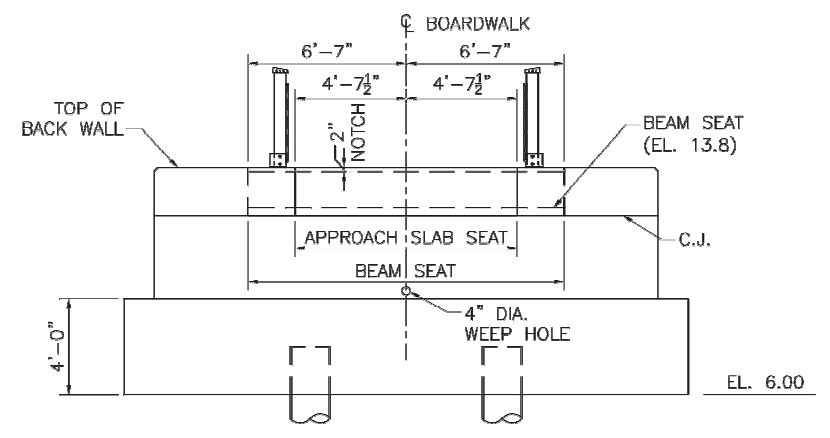




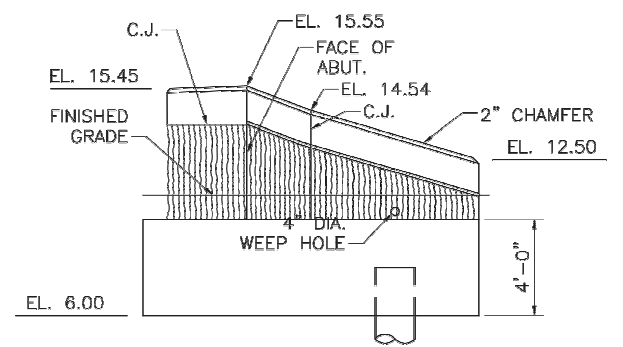


- NOTES:**
1. 1/2" CLOSED CELL FOAM BETWEEN APPROACH SLAB AND ABUTMENT.
  2. FOR ADDITIONAL TEMPORARY EXCAVATION SUPPORT INFORMATION SEE SHEET 10.
  3. PILE NOT SHOW FOR CLARITY.

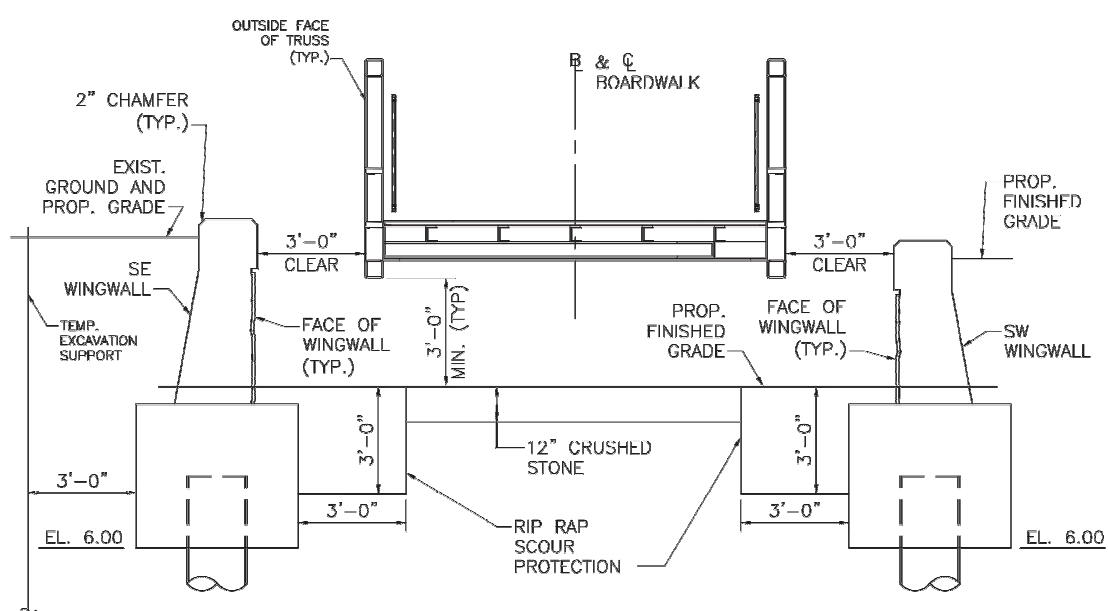
**SOUTH ABUTMENT AND WINGWALL PLAN**  
 SCALE: 1/4" = 1'-0"



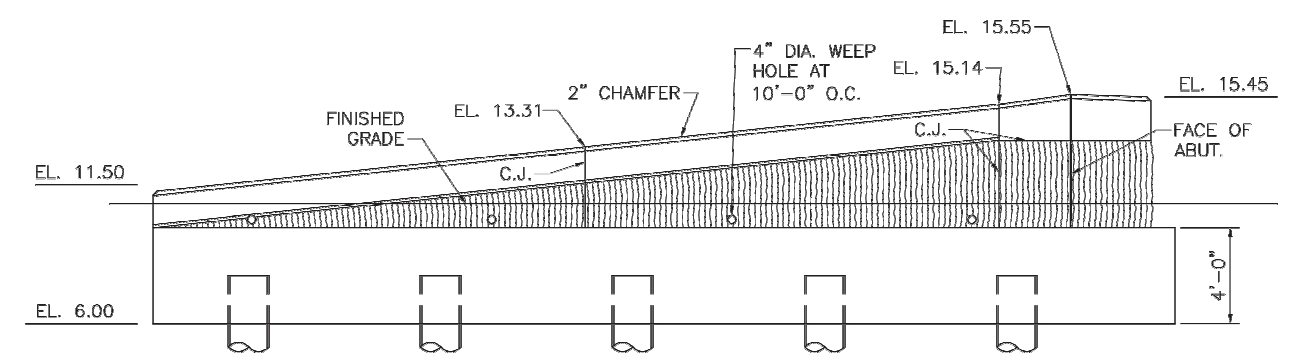
**SOUTH ABUTMENT ELEVATION (LOOKING NORTH)**  
 SCALE: 1/4" = 1'-0"



**SOUTHWEST WINGWALL ELEVATION (LOOKING WEST)**  
 SCALE: 1/4" = 1'-0"



**TYPICAL BRIDGE AND WINGWALL SECTION**  
 (LOOKING UP STATION)  
 SCALE: 3/8" = 1'-0"



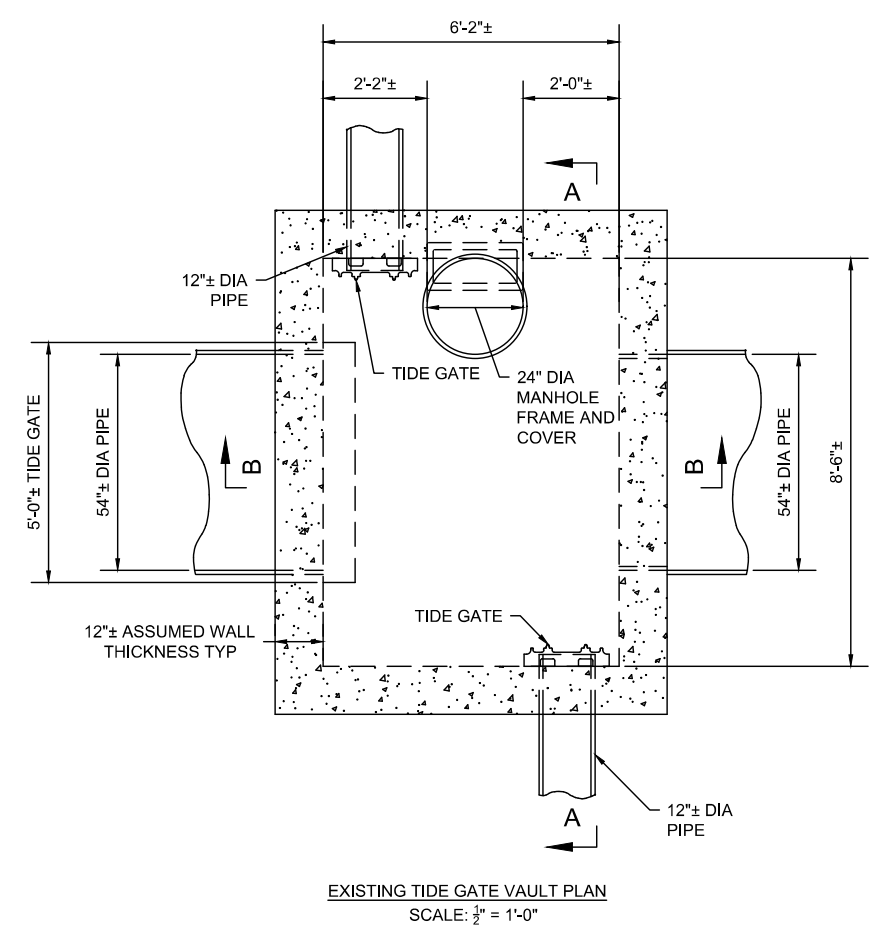
**SOUTHEAST WINGWALL ELEVATION (LOOKING EAST)**  
 SCALE: 1/4" = 1'-0"

MONTH DD, YYYY	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

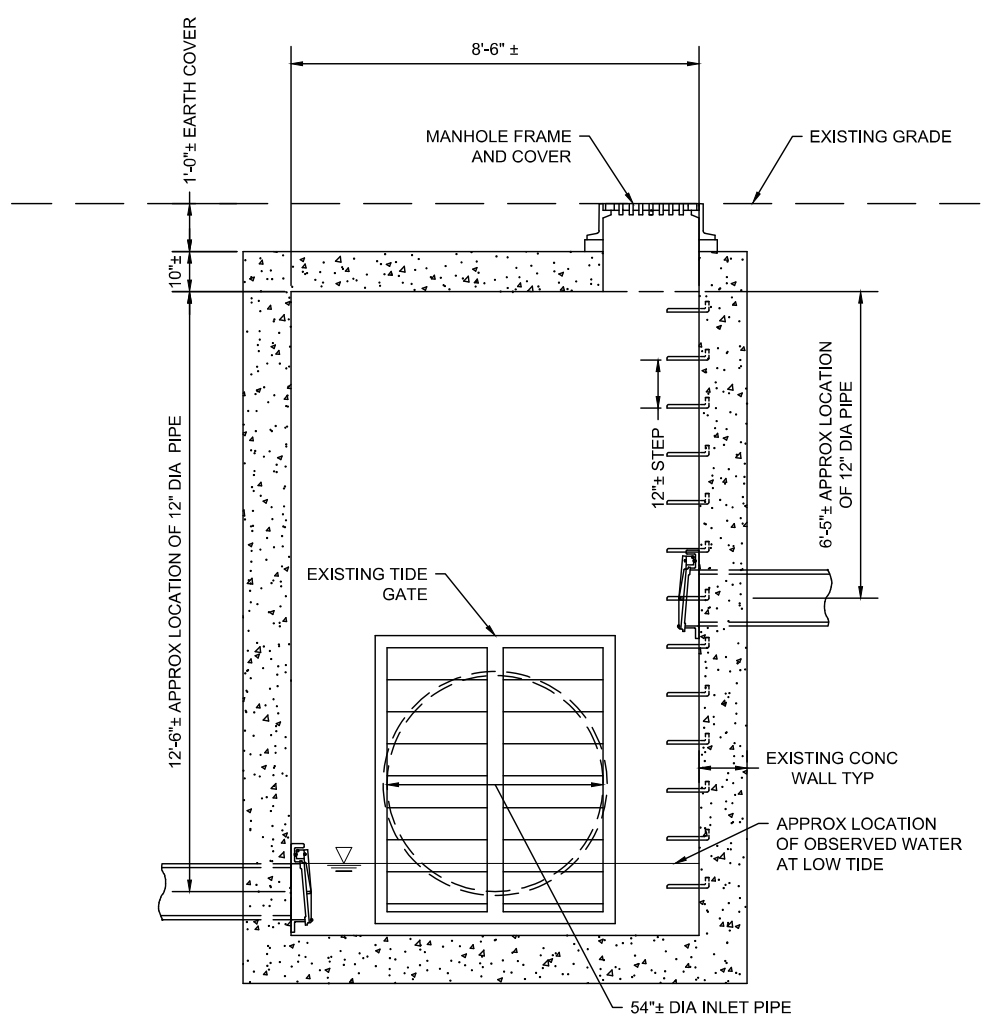
608943\_N01DETAILS.DWG Plotted on 6-Jul-2021 2:28 PM

- TEMPORARY SHORING NOTES:**
1. ALL TEMPORARY SHORING SHALL BE INSTALLED WITH THE SPECIFIED MINIMUM CLEAR DISTANCE.
  2. THE TEMPORARY SHORING METHODS DEPICTED WITHIN THE CONTRACT DOCUMENTS ARE TO PROVIDE AN EQUAL BASIS FOR BIDDING. THE CONTRACTOR SHALL SUBMIT A PLAN OF THE PROPOSED WORK SHOWING THE DETAILS AND INDICATING THE EQUIPMENT THEY PROPOSE TO USE. THE SUBMITTAL SHALL INCLUDE DESIGN COMPUTATIONS, BASED ON APPLICABLE PRESSURE AND LOADING, SEQUENCE OF OPERATIONS, AND ALL DETAILS INCIDENTAL THERETO. APPROVAL OF THIS SUBMISSION SHALL BE OBTAINED PRIOR TO THE COMMENCEMENT OF ANY WORK UNDER THIS ITEM. THE PLAN AND COMPUTATIONS SHALL BEAR THE SEAL AND SIGNATURE OF A REGISTERED PROFESSIONAL STRUCTURAL ENGINEER IN MASSACHUSETTS.

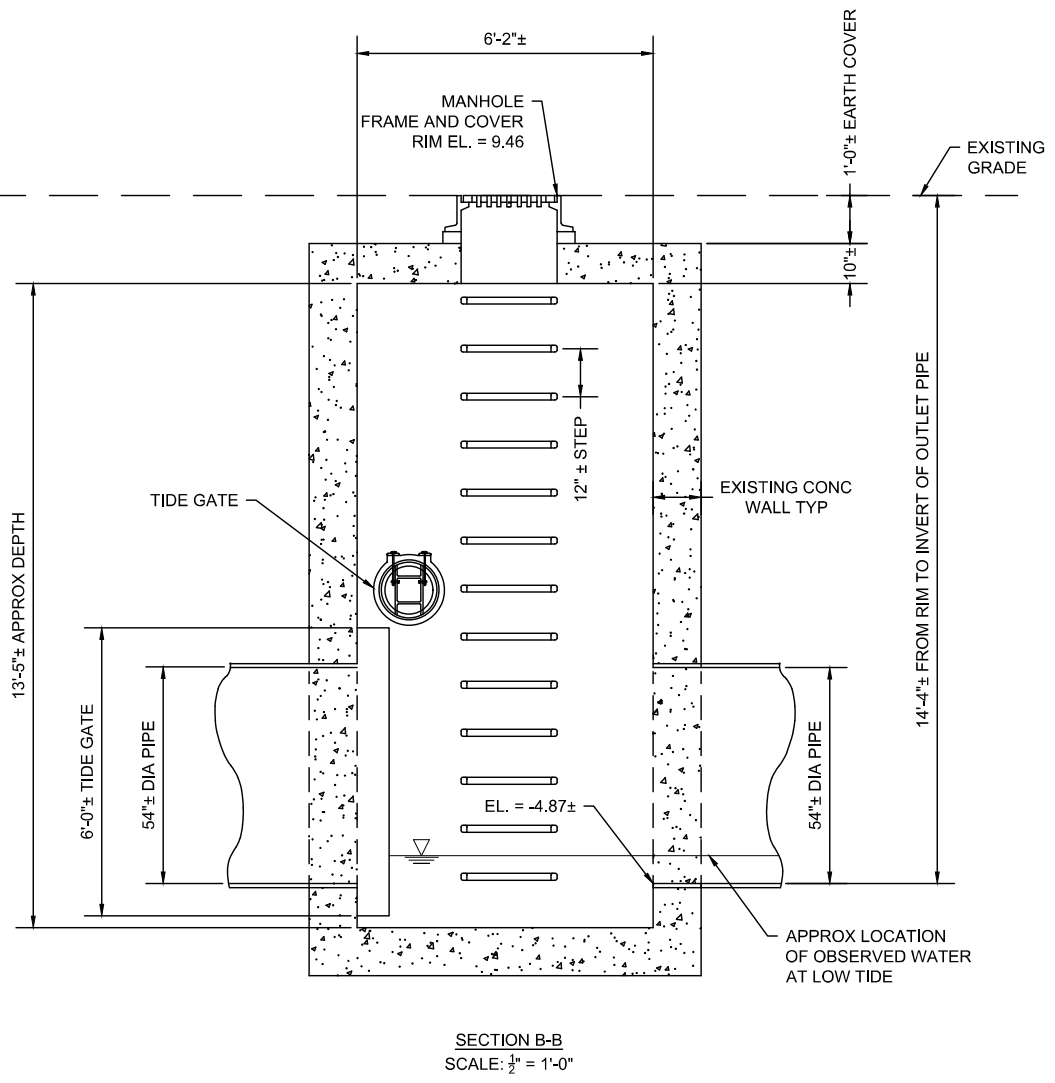
- REINFORCED CONCRETE EXCAVATION NOTES:**
1. DIMENSIONS OF THE BURIED/HIDDEN PORTIONS OF THE EXISTING STRUCTURE ARE NOT KNOWN. THE DEPICTED STRUCTURE IS BASED ON LIMITED EXPLORATORY INVESTIGATION.
  2. ALL REINFORCED CONCRETE EXCAVATION ACTIVITIES SHALL OCCUR IN THE DRY.
  3. ALL MATERIALS SHALL BE REMOVED FROM THE JOB SITE, AND DISPOSED OF IN A LEGAL MANNER AT NO ADDITIONAL COST.
  4. ALL CONCRETE SHALL BE REMOVED TO A DEPTH OF 13" BELOW THE TOP OF CONCRETE.



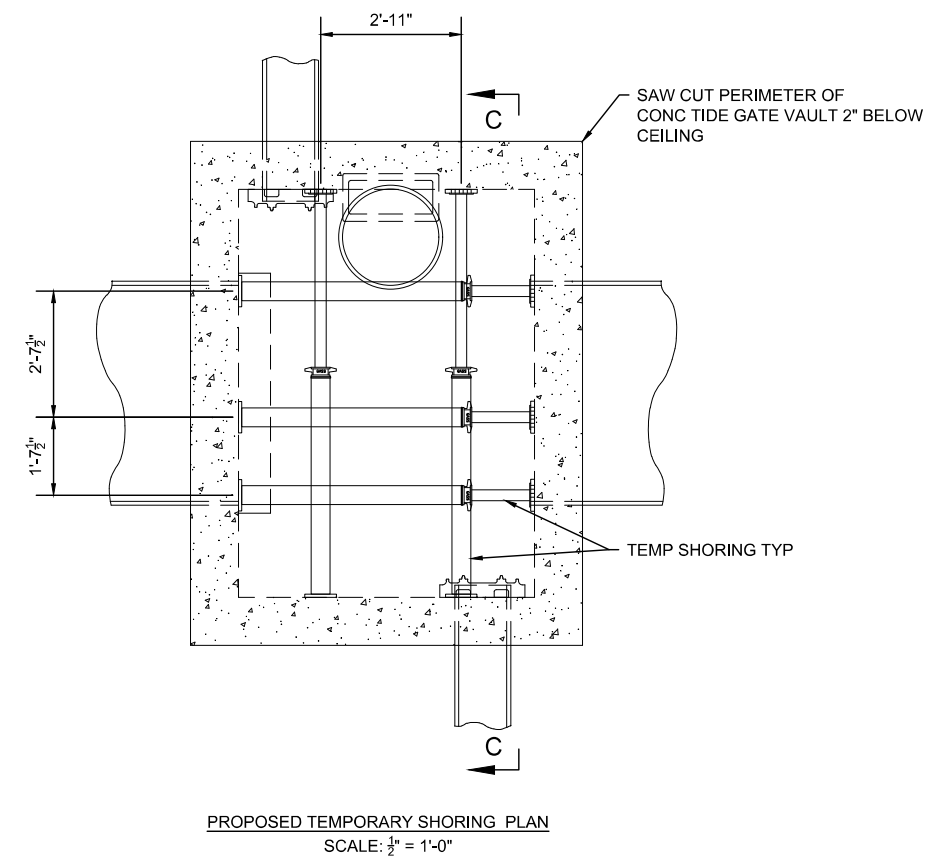
EXISTING TIDE GATE VAULT PLAN  
SCALE: 1/2" = 1'-0"



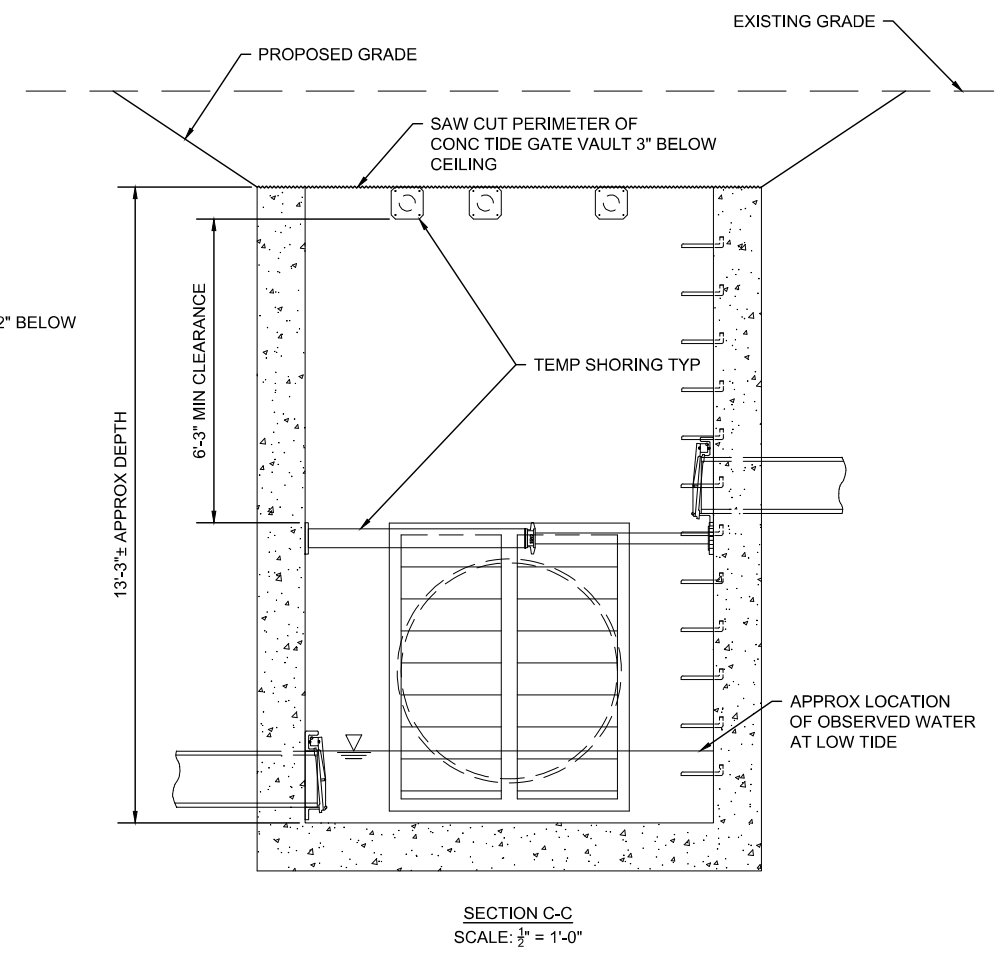
SECTION A-A  
SCALE: 1/2" = 1'-0"



SECTION B-B  
SCALE: 1/2" = 1'-0"



PROPOSED TEMPORARY SHORING PLAN  
SCALE: 1/2" = 1'-0"



SECTION C-C  
SCALE: 1/2" = 1'-0"

**BOSTON  
NEPONSET RIVER GREENWAY**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	44	44
PROJECT FILE NO. 608943			

**TIDEGATE DETAIL 2**

**CONCRETE NOTES:**

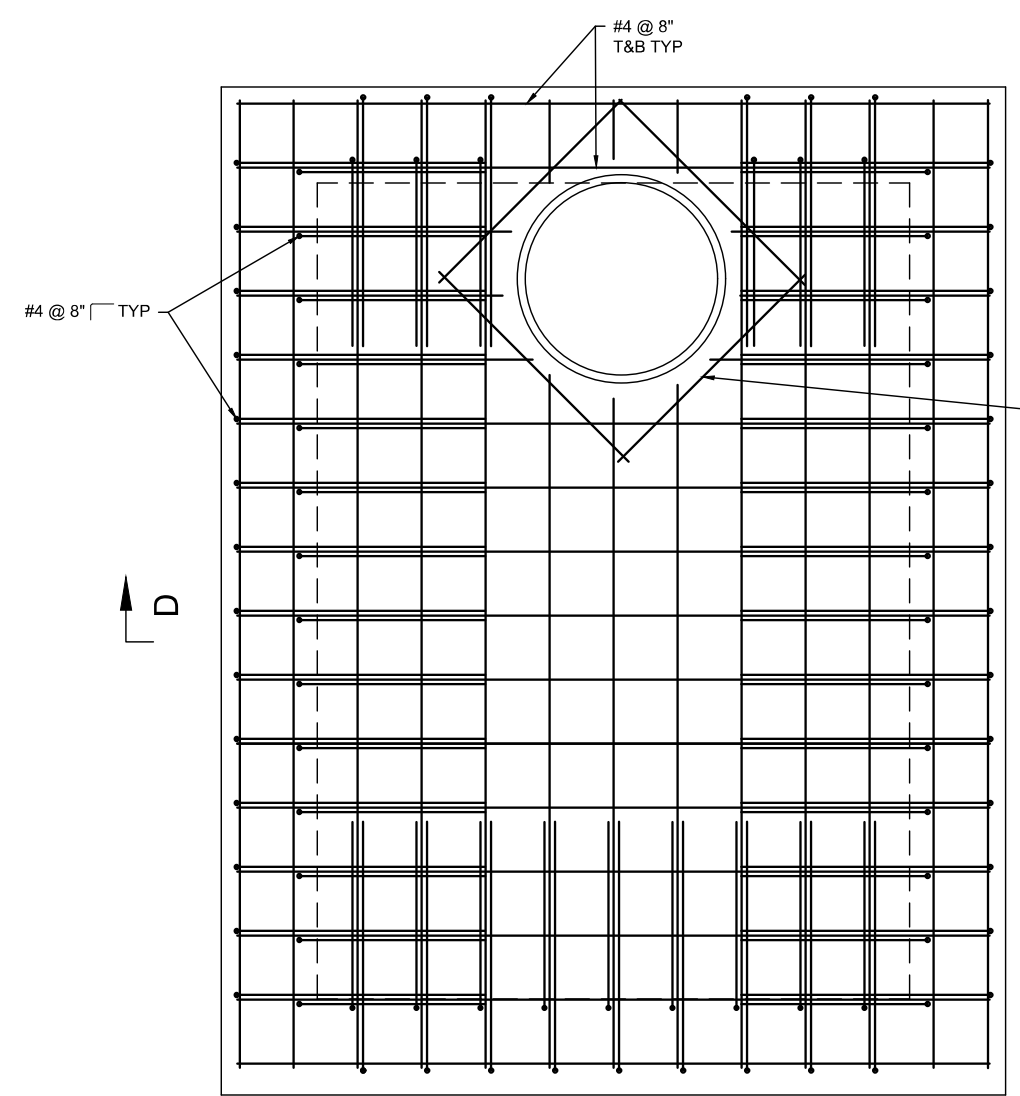
1. ALL CONCRETE SHALL BE 4000 PSI, 3/4 IN. 610 CEMENT CONCRETE.
2. EPOXY BONDING COMPOUND SHALL BE APPLIED TO ALL THE INTERFACES BETWEEN NEW AND EXISTING CONCRETE.
3. THE EPOXY BONDING COMPOUND SHALL MEET REQUIREMENTS OF MATERIALS SPECIFICATIONS SUBSECTION M4.05.5 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGES.
4. ALL SURFACE INTERFACES BETWEEN NEW AND EXISTING CONCRETE SHALL BE CLEAN OF CONTAMINANTS AND FREE OF STANDING WATER.

**REINFORCEMENT NOTES:**

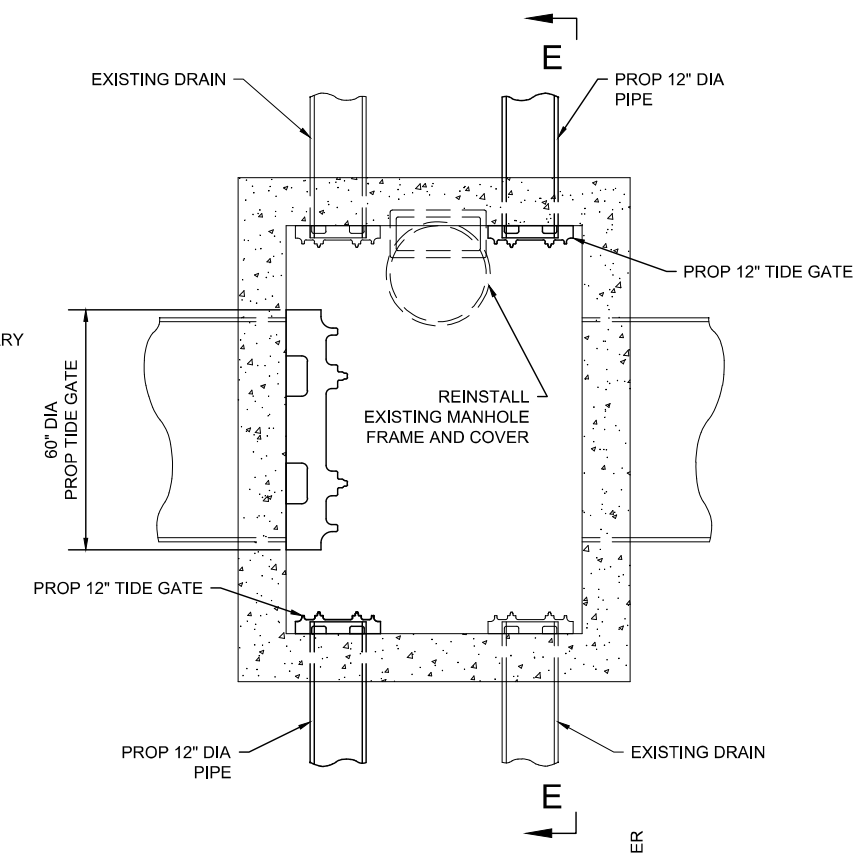
1. ALL HOLES DRILLED INTO THE EXISTING CONCRETE STRUCTURE WILL BE DRILLED TO A MINIMUM DEPTH OF 14" AND ACCORDING TO THE EPOXY MANUFACTURERS REQUIREMENTS FOR HOLE DIAMETER.
2. ALL HOOKED DOWELS SHALL BE INSTALLED USING MASSDOT APPROVED ADHESIVE ANCHORS AS SPECIFIED IN THE MASSDOT QUALIFIED CONSTRUCTION MATERIALS LIST.
3. ALL HOOKED DOWELS SHALL BE INSTALLED WITH A MINIMUM LAP LENGTH OF 21"

**SUGGESTED CONSTRUCTION SEQUENCE NOTES:**

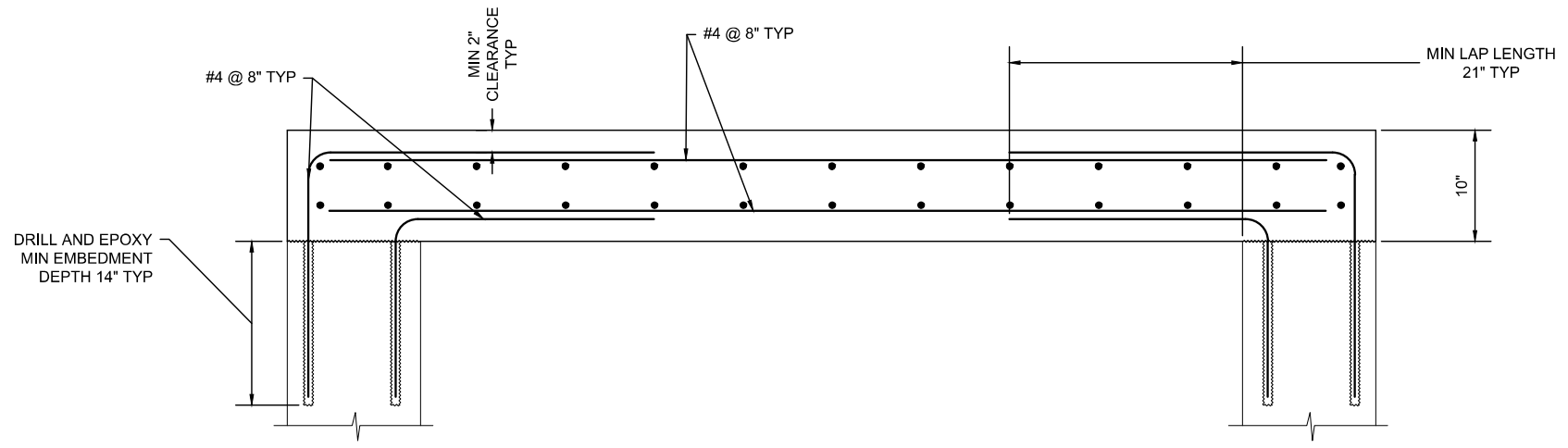
1. INSTALL TEMPORARY SHORING AT SPECIFIED LOCATIONS.
2. EXCAVATE ABOVE AND ALONG ALL SIDES OF CONCRETE TIDE GATE VAULT.
3. REMOVE MANHOLE COVER AND FRAME, SET ASIDE TO BE REUSED.
4. SAW CUT ALONG THE PERIMETER OF CONCRETE TIDE GATE VAULT 3" BELOW THE CEILING ELEVATION.
5. REMOVE LID OF CONCRETE TIDE GATE VAULT.
6. REMOVE EXISTING TIDE GATE.
7. INSTALL NEW TIDE GATE.
8. DRILL AND INSTALL PROPOSED 12" DRAINS.
9. BUILD CONCRETE TIDE GATE VAULT ROOF.
10. INSTALL REBAR.
11. PLACE CONCRETE FOR THE PROPOSED TIDE GATE VAULT ROOF.
12. REINSTALL EXISTING MANHOLE FRAME AND COVER.
13. BACKFILL STRUCTURE.
14. REMOVE TEMPORARY SHORING.



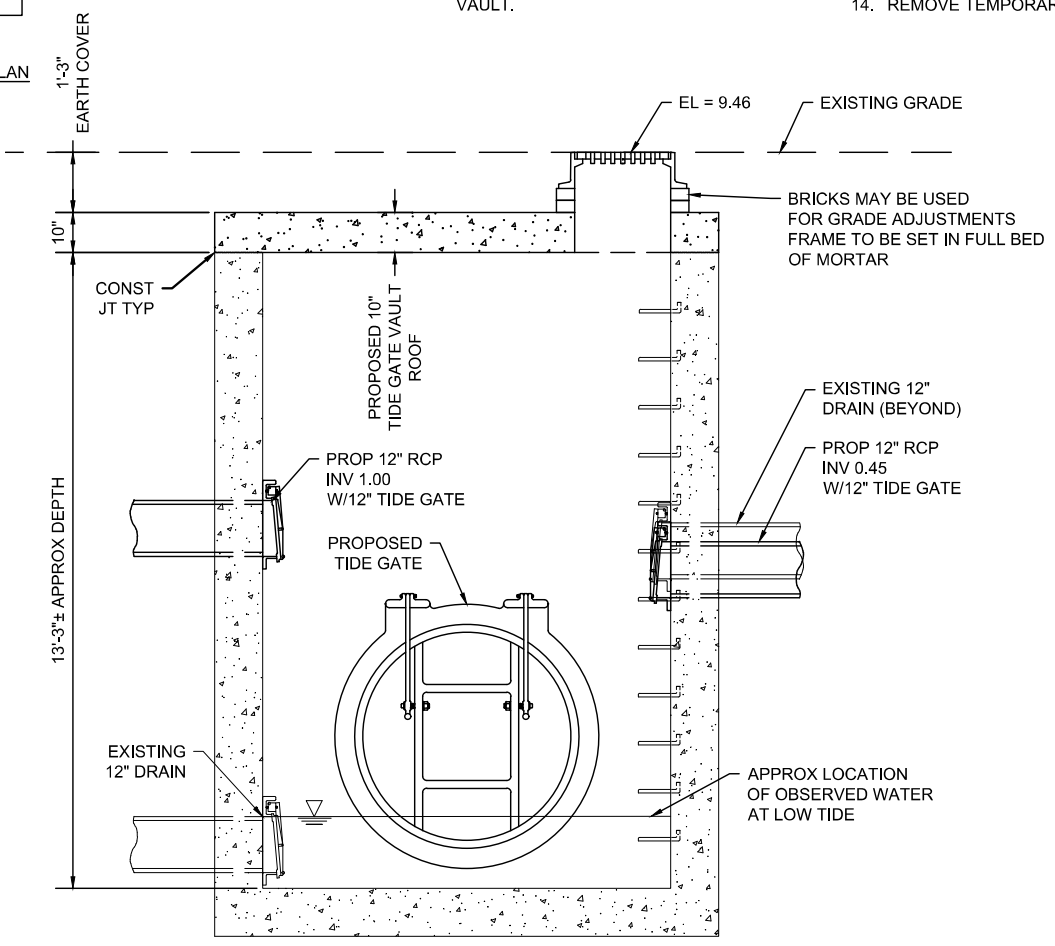
TIDE GATE VAULT ROOF REINFORCEMENT  
PLAN  
SCALE: 1" = 1'-0"



PROPOSED TIDE GATE VAULT PLAN  
SCALE: 1/2" = 1'-0"



SECTION D-D  
SCALE: 1/2" = 1'-0"



SECTION E-E  
SCALE: 1/2" = 1'-0"

