Nitsch Engineering

October 09, 2019

NOTICE OF INTENT

Under the *Massachusetts Wetland Protection Act* (MGL c. 131, s. 40)

For

CONSTITUTION WHARF
75 Constitution Road
Boston, Massachusetts 02129

Prepared for:

JAMESTOWN
21 Drydock Avenue, 3rd Floor
Boston, Massachusetts 02210

Prepared by:

NITSCH ENGINEERING, INC.
2 Center Plaza Suite 430
Boston, MA 02108

Nitsch Project #13323

TABLE OF CONTENTS

ATTACHMENT A

APPLICATION FORMS

WPA Form 3 - Notice of Intent
NOI Wetland Fee Transmittal Form

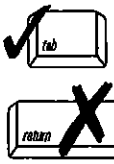
Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

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

Provided by MassDEP:
CCB ENVIRONMENT DEPT
MassDEP File Number
RECEIVED
Document Transaction Number
2019 OCT 11 AM 11:47
Boston
City/Town

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):

a. Street Address	b. City/Town	c. Zip Code
75 Constitution Road	Boston	02129

Latitude and Longitude:

d. Latitude	e. Longitude
42.37139N	71.05806W

f. Assessors Map/Plat Number	g. Parcel /Lot Number
2	03594000

2. Applicant:

a. First Name	b. Last Name
Lee	Shain

c. Organization: Jamestown

d. Street Address: 21 Drydock Ave, 3rd Floor

e. City/Town	f. State	g. Zip Code
Boston	MA	02210

h. Phone Number	i. Fax Number	j. Email Address
617-449-5501		lee.shain@jamestownlp.com

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

a. First Name	b. Last Name
Jennifer	Revill

c. Organization: MassPort

d. Street Address: One Harborside Drive, Suite 2005

e. City/Town	f. State	g. Zip Code
East Boston	MA	02128

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

4. Representative (if any):

a. First Name	b. Last Name
Michelle	Callahan

c. Company: Nitsch Engineering

d. Street Address: 2 Center Plaza, Suite 430

e. City/Town	f. State	g. Zip Code
Boston	MA	02108

h. Phone Number	i. Fax Number	j. Email address
617-338-0063		mcallahan@nitscheng.com

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

a. Total Fee Paid	b. State Fee Paid	c. City/Town Fee Paid
$500	$237.50	$1,500 (Boston Fee)

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A. General Information (continued)

6. General Project Description:

Exterior landscape improvements around existing building

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)
10714	159
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. ☐ Bank	1. linear feet	2. linear feet
b. ☐ Bordering Vegetated Wetland	1. square feet	2. square feet
c. ☐ Land Under Waterbodies and Waterways	1. square feet 3. cubic yards dredged	2. square feet

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
d. ☐ Bordering Land Subject to Flooding	1. square feet	2. square feet
	3. cubic feet of flood storage lost	4. cubic feet replaced
e. ☐ Isolated Land Subject to Flooding	1. square feet	
	2. cubic feet of flood storage lost	3. cubic feet replaced
f. ☐ Riverfront Area	1. Name of Waterway (if available) - **specify coastal or inland**	

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.

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
a. ☐ Designated Port Areas	Indicate size under Land Under the Ocean, below	
b. ☐ Land Under the Ocean	1. square feet 2. cubic yards dredged	
c. ☐ Barrier Beach	Indicate size under Coastal Beaches and/or Coastal Dunes below	
d. ☐ Coastal Beaches	1. square feet	2. cubic yards beach nourishment
e. ☐ Coastal Dunes	1. square feet	2. cubic yards dune nourishment
	Size of Proposed Alteration	**Proposed Replacement (if any)**
f. ☐ Coastal Banks	1. linear feet	
g. ☐ Rocky Intertidal Shores	1. square feet	
h. ☐ Salt Marshes	1. square feet	2. sq ft restoration, rehab., creation
i. ☐ Land Under Salt Ponds	1. square feet 2. cubic yards dredged	
j. ☐ Land Containing Shellfish	1. square feet	
k. ☐ 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. ☒ Land Subject to Coastal Storm Flowage	4300 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.

   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

   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

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* 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). 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; 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

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

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.

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Boston
City/Town

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

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

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.

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.

Civil & Landscape Plans
a. Plan Title

Nitsch Engineering/CRJA
b. Prepared By

Nitsch Engineering/CRJA
c. Signed and Stamped by

October 2019/July 2019
d. Final Revision Date

1"=20'
e. Scale

Survey
f. Additional Plan or Document Title

March 2016
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:

0006069682
2. Municipal Check Number

7/5/19
3. Check date

0006069683
4. State Check Number

7/5/19
5. Check date

Partners Healthcare
6. Payor name on check: First Name

7. Payor name on check: Last Name

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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.

Ken Shinn - Construction Manager 1. Signature of Applicant	10.9.2019 2. Date
James Stolecki – MASSPORT 3. Signature of Property Owner (if different)	10/22/2019 4. Date
Michelle Callahan 5. Signature of Representative (if any)	10/9/19 6. Date

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.

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NOI Wetland Fee Transmittal Form

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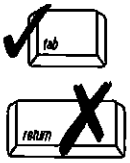
Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A. Applicant Information

1. Location of Project:

75 Constitution Road	Boston
a. Street Address	b. City/Town
0006069683	$237.50
c. Check number	d. Fee amount

2. Applicant Mailing Address:

Lee	Shain
a. First Name	b. Last Name

Jamestown
c. Organization

21 Drydock Ave, 3rd Floor
d. Mailing Address

Boston	MA	02210
e. City/Town	f. State	g. Zip Code

617-449-5501		lee.shain@jamestownlp.com
h. Phone Number	i. Fax Number	j. Email Address

3. Property Owner (if different):

Jennifer	Revill
a. First Name	b. Last Name

Massport
c. Organization

One Harborside Drive, Suite 2005
d. Mailing Address

East Boston	MA	02128
e. City/Town	f. State	g. Zip Code

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

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.

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B. Fees (continued)

Step 1/Type of Activity	Step 2/Number of Activities	Step 3/Individual Activity Fee	Step 4/Subtotal Activity Fee
2J. Any other activity not in Category 1, 3, 4 or 6	1	500.00	$500.00

Step 5/Total Project Fee: _____

Step 6/Fee Payments:

Total Project Fee:	$500.00 a. Total Fee from Step 5
State share of filing Fee:	$237.50 b. 1/2 Total Fee **less** $12.50
City/Town share of filling Fee:	$1,500 (Boston Fee) c. 1/2 Total Fee **plus** $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.)

PROJECT NARRATIVE CONTENTS

1.0 PROJECT OVERVIEW

On behalf of the Applicant, Jamestown, Nitsch Engineering is filing the enclosed Notice of Intent (NOI) with the City of Boston Conservation Commission for the existing landscape maintenance and proposed landscape improvement project at Constitution Wharf. The proposed project includes landscape improvements near a portion of the existing building located on
Constitution Wharf, to serve new tenant fit out within the building. Proposed site improvements include updated walkways and planter layouts and a new patio.

The proposed project is a modification to recently completed project in the same space (MassDEP File #006-1509). The project proposes to update the configuration of a patio layout and reconfigure the plantings and shrubs along the outdoor space. The Harborwalk will not be modified as part of this project. The project also requires a new sewer connection as part of the tenant fit out, which is outside of the jurisdictional resource areas described below.

The site is located within 100-feet of the Boston Harbor and in the Federal Emergency Management Association's (FEMA) Flood Insurance Rate Map Zone AE, which is Land Subject to Coastal Storm Flowage, more commonly known as the 100-year flood plain. The purpose of this NOI Application is to receive an Order of Conditions from the City of Boston Conservation Commission approving the proposed project under the *Massachusetts Wetlands Protection Act* (M.G.L. c. 131, §40) and its Regulations (310 CMR 10.00).

2.0 EXISTING CONDITIONS

2.1 Existing Site Description

The project site is located at 1 Constitution Center in Boston, Massachusetts (Figure 1 – USGS Locus Map and Figure 2 – Aerial Locus Map). The site is bounded to the north by Constitution Road and by the Boston Harbor to the west, south and east. The Site is approximately 8.4-acres (366,431 square feet) with the area of disturbance as part of this project approximately 0.12 acres (5,080 square feet). Currently the site is mostly impervious and covered by buildings and parking areas with landscaped areas and pedestrian walkways along the edge of the site boundary, Harborwalk, and within the parking lot. Proposed work within the existing site is limited to landscaped areas around the entrance to the site and the existing building, and the area north of the existing building where the new sewer connection is needed.

2.2 Existing Utility Infrastructure

The existing site has underground utilities to support the building and site uses. Within the proposed limit of work, there is existing electrical service for site lighting, minimal underground stormwater collection systems and an irrigation system. Stormwater management within the limit of work is provided naturally by landscaped area infiltration and sheet flow over pedestrian walkways to discharge to the Boston Harbor through gaps at the bottom of the Harborwalk wall. There is one (1) existing catch basin within the limit of work, located in a landscaped area. The catch basin collects stormwater from the landscaped area and discharges to the Boston Harbor.

2.3 Soils

Based on the Natural Resources Conservation Service (NRCS) Web Soil Survey (2016), the majority of the site is classified as urban land (Figure 5).

2.4 Environmental Considerations

FEMA Flood Zone

Based on the Flood Insurance Rate Map (FIRM), Community Panel Number 25025C0081J, dated

March 16, 2016 some portions of the site are located within Zone AE (Land Subject to Coastal Storm Flowage) with an elevation of 10 (NAVD88). Refer to Figure 4 – FEMA Floodplain Map.

Water Supply Protection Area

The site is not located within a Water Supply Protection Area.

Other Resource Areas

The project site is bordered to the west, south and east by the Boston Harbor and delineated by a granite seawall and revetment which is subject to a 100-foot buffer zone.

Natural Heritage and Endangered Species Program

The site is not located within a Priority Habitat of Rare Species or an Estimated Habitat of Rare Wildlife (Figure 3).

3.0 PROPOSED CONDITIONS

3.1 Overview of Proposed Work

The proposed project includes landscape improvements near a portion of the existing building located on Constitution Wharf, to serve new tenant fit out within the building. Proposed site improvements include updated walkways and planter layouts and a new patio.

The proposed project is a modification to recently completed project in the same space. The project proposes to update the configuration of a patio layout and reconfigure the plantings and shrubs along the outdoor space. The Harborwalk will not be modified as part of this project. There are no proposed utility improvements as part of the proposed project other than the new sewer connection as required to support the proposed building fit out.

The proposed project will increase the impervious area by 549 square feet of pedestrian walkway areas, as outlined in Table 1. All of the increased impervious area is for pedestrian walkways or patios and will not be subject to vehicular travel.

Table 1. Proposed land use change for Constitution Wharf (in square feet)

Land Use	Existing	Proposed	Change
[redacted]			
Grass/Plantings (Improvements)	4,906	3,543	- 1,363
[redacted]			
Pervious Decking (Improvements)	69	883	+ 814
[redacted]			

4.0 RESOURCE AREA IMPACTS

The impact of the proposed project on jurisdictional resources was limited to the maximum extent practicable. The entirety of the site is located within the 100-foot Buffer Zone to the coastal bank,

white a portion of the proposed work (including landscape maintenance and developments) is located within the FEMA Flood Zone AE. Table 2 provides a summary of the resource areas impacted by the proposed project.

Table 2. Summary of alteration within jurisdiction recourse areas (in square feet)

Resource Area	Total Work Within Resource Area		Existing Impervious		Proposed Impervious	
	Maintain	Develop	Maintain	Develop	Maintain	Develop
100-foot Buffer to Coastal Bank	290	4,975	[illegible]	[illegible]	[illegible]	[illegible]
Land Subject to Coastal Storm Flowage (Zone AE)	290	4,010	0	[illegible]	[illegible]	[illegible]

5.0 PROPOSED MITIGATION MEASURES

5.1 Construction Period Erosion and Sedimentation Controls

Erosion and sedimentation controls are proposed to reduce the construction-related impact of the proposed project on adjacent resource areas and the Boston Harbor. Control measures will include, but are not limited to, minimizing land disturbance, providing temporary stabilization and covers, installing perimeter controls (silt fence and straw wattles/bales), constructing temporary sediment basins, and providing stormwater inlet protection (silt sack and silt socks). The contractor will be required to do inspections of all controls regularly to ensure that the controls are working properly. The contractor shall clean and reinstall any control that needs to be cleaned or replaced. Additionally, the contractor will clean/flush the entire stormwater management system prior to final acceptance by the owner.

5.2 Long-Term Pollution Prevention

A Long-Term Pollution Prevention Plan has been prepared in compliance with the Standards 4 and 9 of the 2008 Massachusetts Department of Environmental Protection (MassDEP) Stormwater Management Standards, which require provisions for the following:

- Good Housekeeping
- Storing materials and waste products inside or under cover
- Routine inspections of existing drainage systems
- Spill prevention and response
- Maintenance of lawns, gardens, and other landscaped areas
- Storage and used of fertilizers, herbicides, and pesticides
- Pet waste management
- Proper management of deicing chemicals and snow

6.0 INTERESTS OF THE WETLANDS PROTECTION ACT

The Wetlands Protection Act regulates wetland resource areas in order to contribute to the following interests:

- Protection of Public and Private Water Supply
- Protection of Groundwater Supply
- Flood Control
- Storm Damage Prevention
- Prevention of Pollution
- Protection of Land Containing Shellfish
- Protection of Fisheries
- Protection of Wildlife Habitat

By implementing low impact development techniques and installing appropriate landscaping, the proposed project will protect the interests of the Wetlands Protection Act, protection of groundwater supply, prevention of storm damage, and prevention of pollution. By minimizing work within the Buffer Zone and proposing improvements only to the Wharf, the proposed project will protect wildlife habitat, including fish and shellfish.

7.0 CONCLUSION

On behalf of the Applicant, Jamestown, Nitsch Engineering is filing the enclosed Notice of Intent (NOI) with the City of Boston Conservation Commission for the proposed landscape maintenance and improvements at Constitution Wharf. This NOI report and associated appendices provide a thorough description of the design details and regulatory compliance in accordance with the pertinent Wetland Statutes and Regulations. The Applicant seeks an Order of Conditions approving the project as proposed.

ATTACHMENT C

Stormwater Report (Under separate cover)

Including the Long-Term Pollution Prevention Plan and Stormwater Operation and Maintenance Plan

ATTACHMENT D

Certified Abutters List

Abutter Notification

Affidavit of Service

PID	OWNER	ADDRESSEE	MLG_ADDRESS	MLG_CITYSTATE	MLG_ZIPCODE	LOC_ADDRESS	LOC_CITY	LOC_ZIPCODE
203570010	MASS TURNPIKE AUTHORITY	MASS TURNPIKE AUTHORITY	CHELSEA ST	CHARLESTOWN MA	2129	CHELSEA ST	CHARLESTOWN	2129
203570015	MASS TURNPIKE AUTHORITY	MASS TURNPIKE AUTHORITY	CHELSEA ST	CHARLESTOWN MA	2129	CHELSEA ST	CHARLESTOWN	2129
203570020	GATEWAY DEVELOPERS LLC	GATEWAY DEVELOPERS LLC	1 UNIVERSITY AV STE 110	WESTWOOD MA	2090	CHELSEA ST	CHARLESTOWN	2129
203591000	TUDOR WHARF HOTEL RLTY LLC	TUDOR WHARF HOTEL RLTY LLC	ONE POST OFFICE SQUARE #3100	BOSTON MA	2109	44 CHARLES RIVER AV	CHARLESTOWN	2129
203593030	CONSTITUTION PLAZA ASSOCS	CONSTITUTION PLAZA ASSOCS	CONSTITUTION PLAZA	CHARLESTOWN MA	2129	CONSTITUTION PZ	CHARLESTOWN	2129
203594000	CONSTITUTION PLAZA ASSOCS	CONSTITUTION PLAZA ASSOCS	9 WEST BROAD ST 2ND FL	STAMFORD CT	6902	75 CONSTITUTION RD	CHARLESTOWN	2129
203594100	MASS PORT AUTHORITY	MASS PORT AUTHORITY	1 HARBORSIDE DR #200S	EAST BOSTON MA	2128	CONSTITUTION RD	CHARLESTOWN	2129
203594200	MASS PORT AUTHORITY	MASS PORT AUTHORITY	1 HARBORSIDE DR #200S	EAST BOSTON MA	2128	CONSTITUTION RD	CHARLESTOWN	2129
203594300	MASS PORT AUTHORITY	MASS PORT AUTHORITY	1 HARBORSIDE DR #200S	EAST BOSTON MA	2128	105 CONSTITUTION RD	CHARLESTOWN	2129
203594500	CONSTITUTION PLAZA ASSOCS	CONSTITUTION PLAZA ASSOCS	2310 WASHINGTON ST	NEWTON MA	2462	CONSTITUTION PZ	CHARLESTOWN	2129
203595000	UNITED STATES OF AMERICA	UNITED STATES OF AMERICA	BOX 83	ARLINGTON MA	2174	115 CONSTITUTION RD	CHARLESTOWN	2129

NOTIFICATION TO ABUTTERS
UNDER THE MASSACHUSETTS WETLANDS PROTECTION ACT

In accordance with the second paragraph of Massachusetts General Laws Chapter 131, Section 40, you are hereby notified of the following:

A. The name of the Applicant is Jamestown.

B. The Applicant has filed a Notice of Intent with the Boston Conservation Commission to remove, fill, dredge, or alter an Area Subject to Protection under the Wetlands Protection Act (General Laws Chapter 131, Section 40).

The proposed project includes landscape improvements near a portion of the existing building located on Constitution Wharf, to serve new tenant fit out within the building. Proposed site improvements include updated walkways and planter layouts and a new patio.

C. The location of the proposed activity is 75 Constitution Road, Boston, MA.

D. Copies of the Notice of Intent may be examined at the Boston Conservation Commission (Boston City Hall, 1 City Hall Square, Boston, MA) between the hours of 9:00 am and 4:00 pm, Monday through Friday.

E. Copies of the Notice of Intent may be obtained from the applicant's representative: Please contact Michelle Callahan at Nitsch Engineering, Inc. at (617) 338-0063 between 9:00 am and 5:00 pm, Monday through Friday.

F. Information regarding the date, time, and place of the Public Hearing may be obtained from the Boston Conservation Commission by calling 617-635-3850 between the hours 9:00 am and 4:00 pm, Monday through Friday.

The Public Hearing for the proposed project will be held during the Boston Conservation Commission meeting on Wednesday, October 23rd at 6:00 pm, at Boston City Hall in the Piemonte Room, 5th Floor, subject to change. Check the Boston Conservation Commission's website to confirm hearing date, time and agenda items at: https://www.boston.gov/environment-and-energy/protecting-bostons-wetlands

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

NOTE: Notice of the public hearing, including its date, time, and place, will be posted on the Boston Conservation Commission website:
https://www.boston.gov/environment-and-energy/protecting-bostons-wetlands
not less than forty-eight (48) hours in advance.

NOTE: You may contact the nearest Department of Environmental Protection Regional office for more information about this application or the Wetlands Protection Act. To contact DEP, call:
Northeast Region: 978-661-7600

AFFIDAVIT OF SERVICE

Under the Massachusetts Wetlands Protection Act

I, Michelle L. Callahan, P.E., hereby certify under the pains and penalties that at least one week prior to the public hearing I gave notification 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 to the following matter:

Submission of a Notice of Intent to the Boston Conservation Commission for the work associated with the proposed landscape improvement project located at 1 Constitution Center in Boston, Massachusetts was filed on July 24, 2019. The proposed project includes landscape improvements near a portion of the existing building located on Constitution Wharf, to serve new tenant fit out within the building. Proposed site improvements include updated walkways and planter layouts and a new patio.

The form of notification and the list of abutters to whom it was given is attached to the Affidavit of Service.

Michelle Callahan
Name

10/9/19
Date

FIGURES

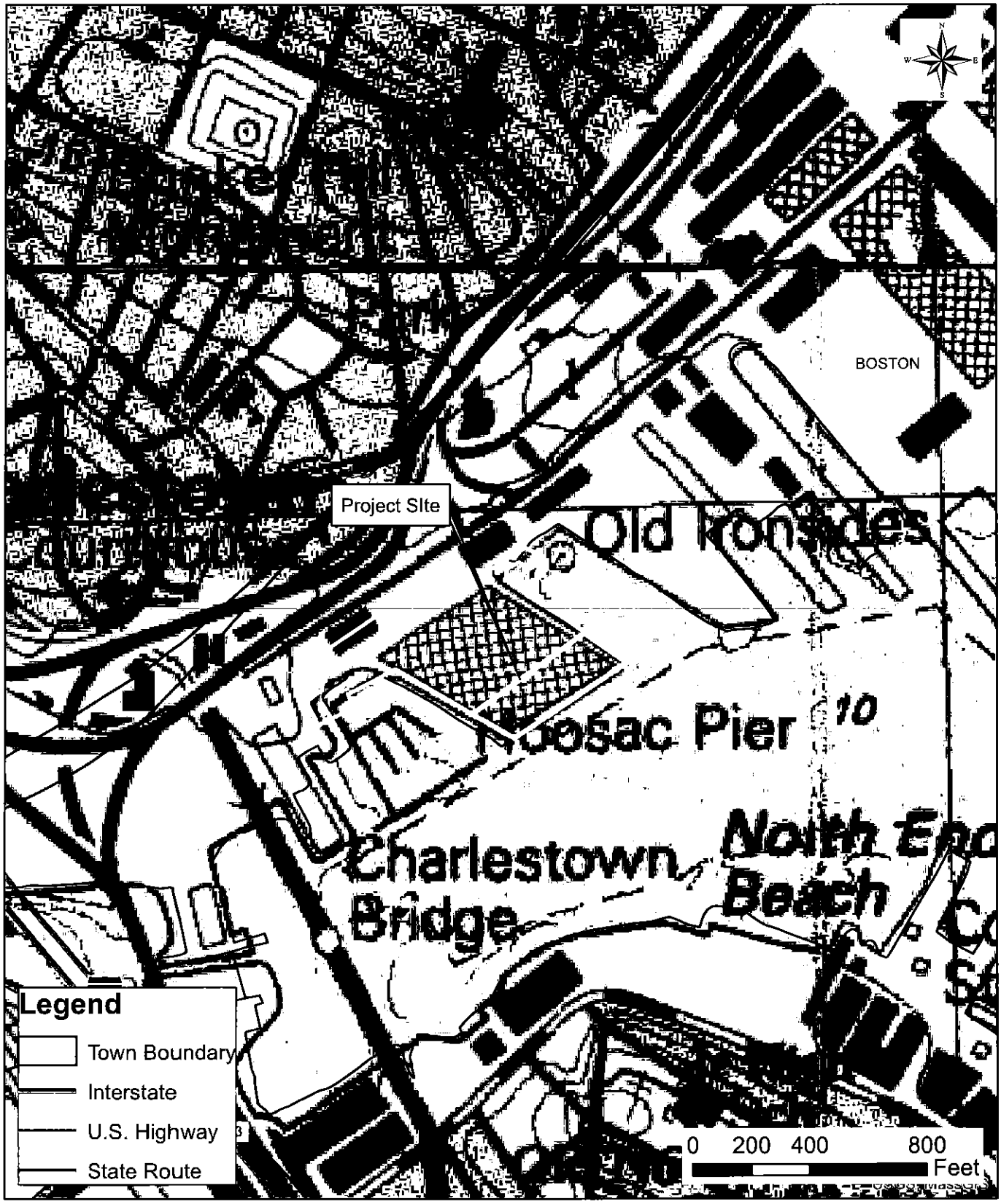


Figure 1: USGS Locus
Constitution Wharf
1 Constitution Center
Charlestown, Boston, MA

Data Source: MassGIS
Nitsch Project # 13323

Nitsch Engineering

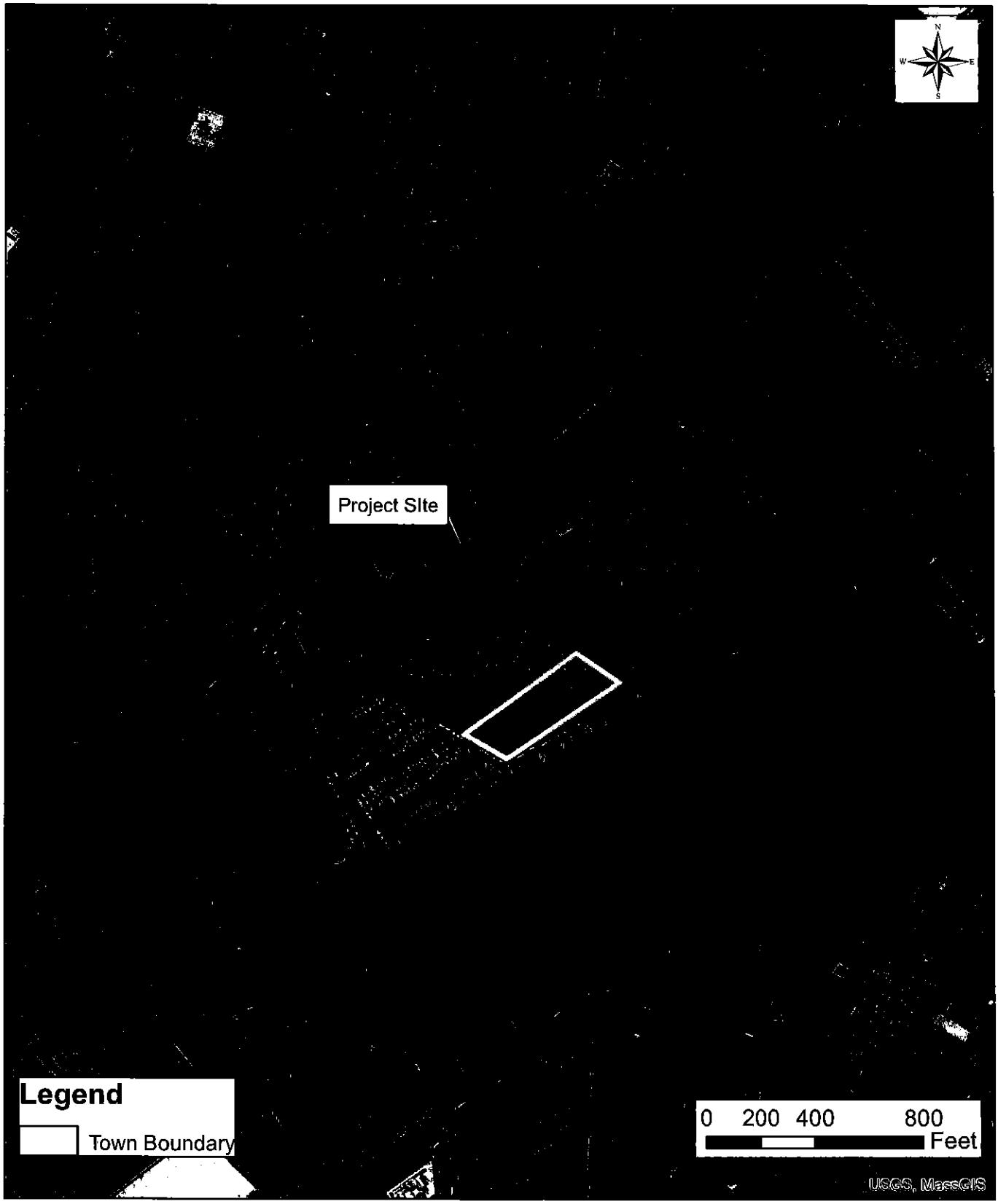


Figure 2: Aerial Locus Map
Constitution Wharf
1 Constitution Center
Charlestown, Boston, MA

Data Source: MassGIS
Nitsch Project # 13323

Nitsch Engineering

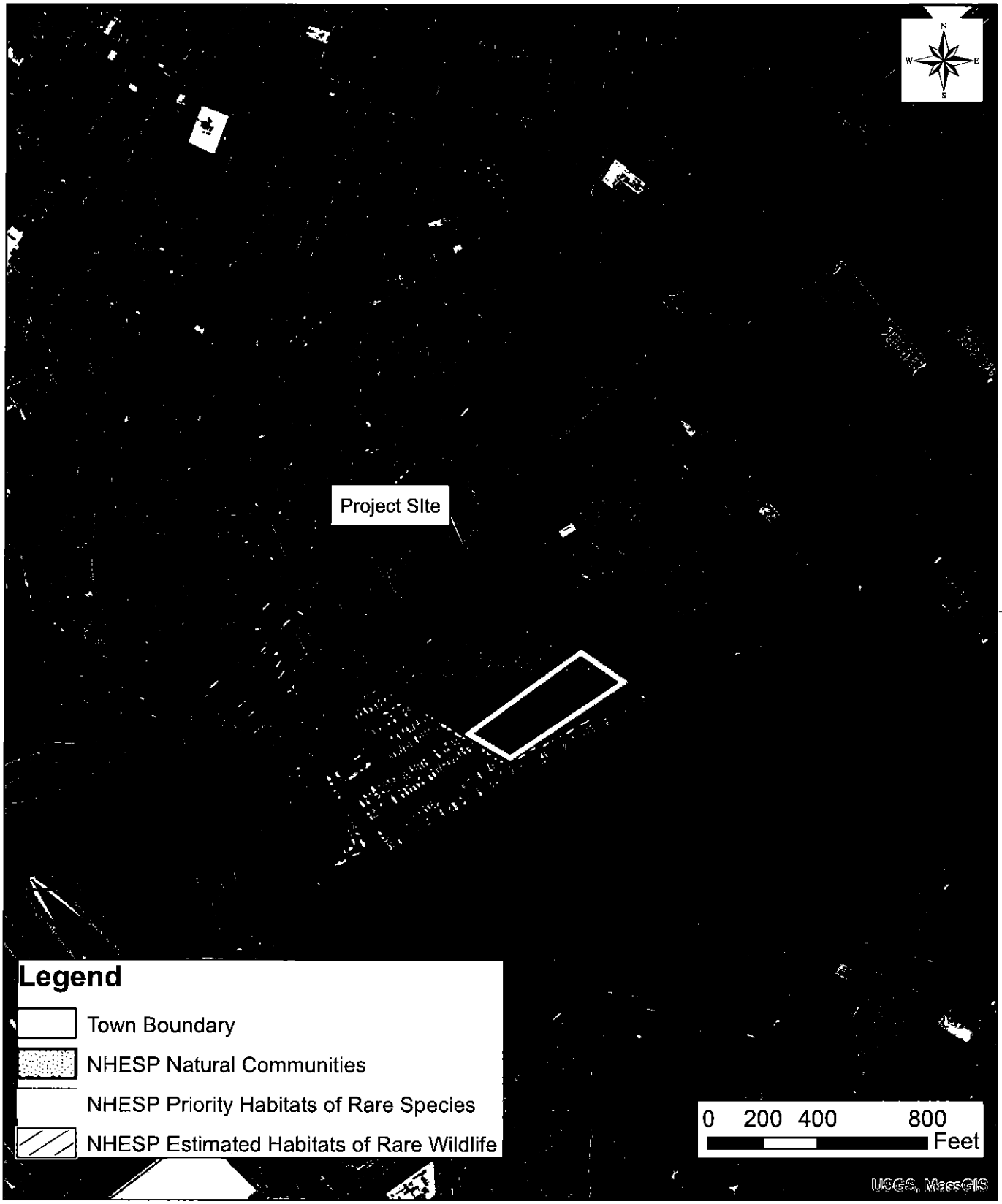
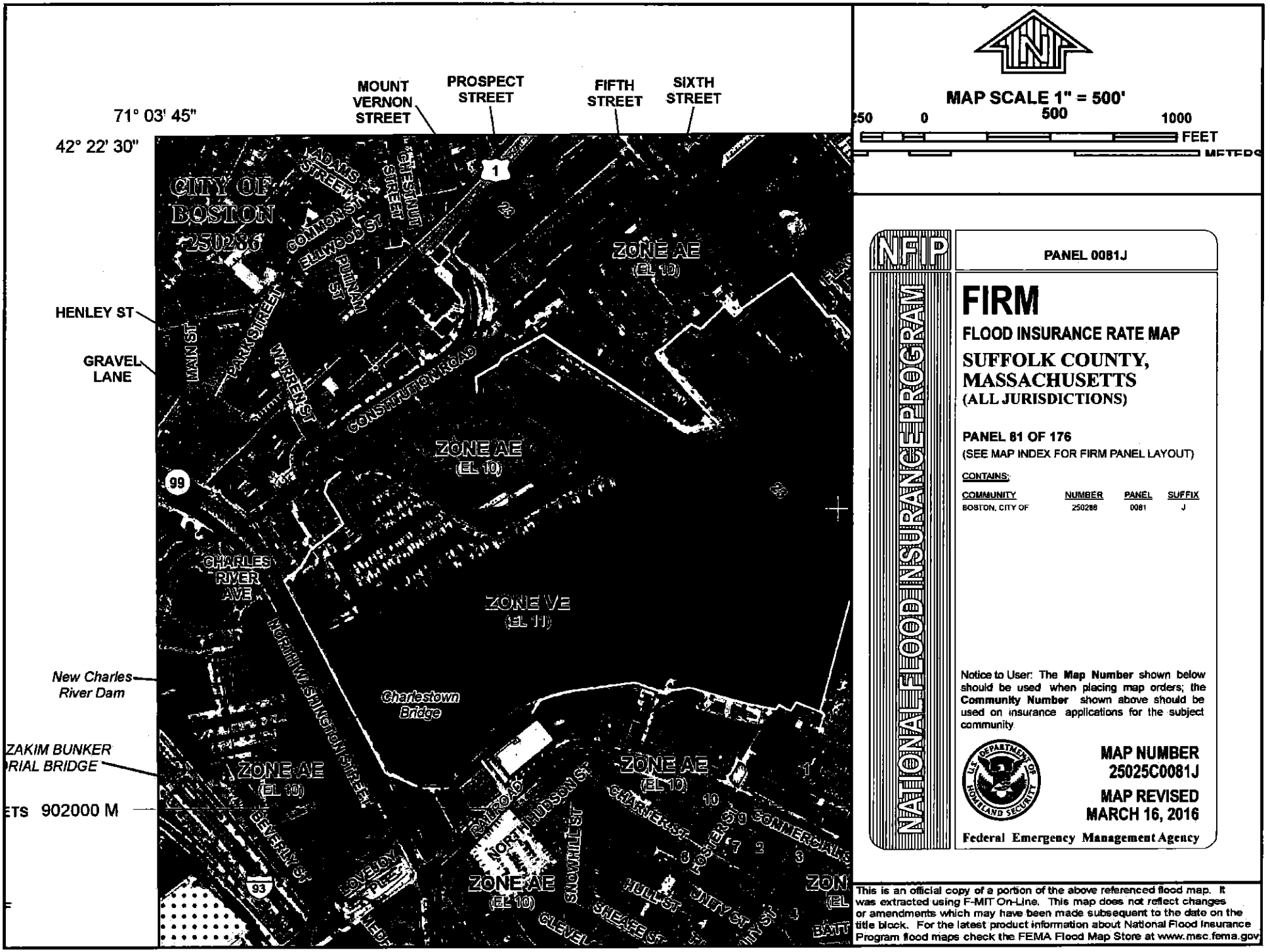


Figure 3: NHESP Map
Constitution Wharf
1 Constitution Center
Charlestown, Boston, MA

Data Source: MassGIS
Nitsch Project #13323

Nitsch Engineering



MAP SCALE 1" = 500'

250 0 500 1000

FEET

METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0081J

FIRM

FLOOD INSURANCE RATE MAP

SUFFOLK COUNTY, MASSACHUSETTS (ALL JURISDICTIONS)

PANEL 81 OF 176

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BOSTON, CITY OF	250286	0081	J

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
25025C0081J

MAP REVISED
MARCH 16, 2016

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

(EL 987) Base Flood Elevation value where feet*

*Referenced to the North American Vertical Datum of 1988

A — A Cross section line

23 - - - - - 23 Transect line

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0081J

FIRM

FLOOD INSURANCE RATE MAP

SUFFOLK COUNTY, MASSACHUSETTS (ALL JURISDICTIONS)

PANEL 81 OF 176

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
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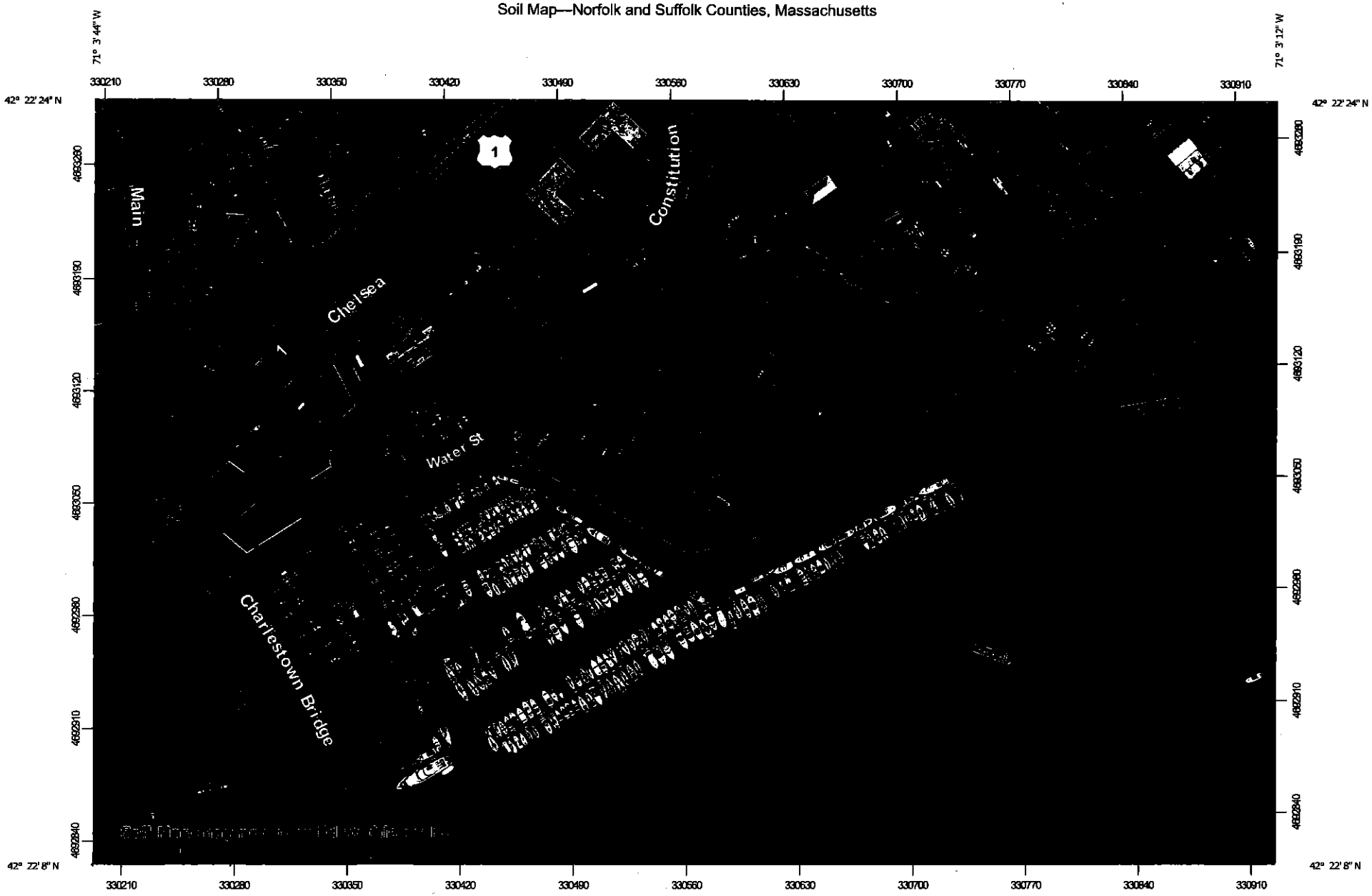
Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER 25025C0081J

MAP REVISED MARCH 16, 2016

Federal Emergency Management Agency



Map Scale: 1:3,350 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 45 90 180 270

Feet: 0 150 300 600 900

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

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:25,000.

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 12, Sep 15, 2016

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

Date(s) aerial images were photographed: Aug 10, 2014—Aug 25, 2014

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

Map Unit Legend

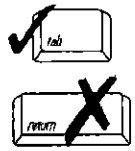
Norfolk and Suffolk Counties, Massachusetts (MA616)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
1	Water	12.5	48.7%
603	Urban land, wet substratum, 0 to 3 percent slopes	13.2	51.3%
Totals for Area of Interest		**25.7**	**100.0%**

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.[1] 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[2]
- 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 applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

[1] 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.

[2] 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 any land disturbance activity on the site.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

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.

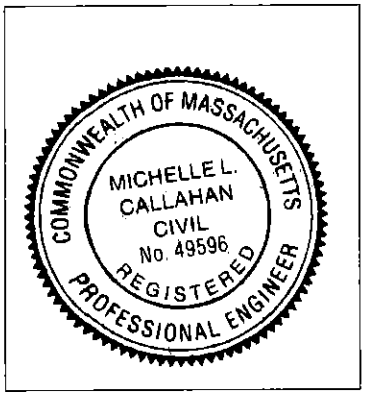
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the 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.

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



Michelle Callahan 10/9/19
Signature and Date

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

Checklist for Stormwater Report

Checklist (continued)

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

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.

Checklist for Stormwater Report

Checklist (continued)

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[1]

☒ 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
- ☐ 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.

[1] 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.

Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

☐ 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;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.

☒ 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)
- ☐ 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.

Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

☐ The BMP is sized (and calculations provided) based on:

- ☐ The ½" 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 propriety 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.

Checklist for Stormwater Report

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;
- Inspection and Maintenance Log Form.

☒ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.

Checklist for Stormwater Report

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:

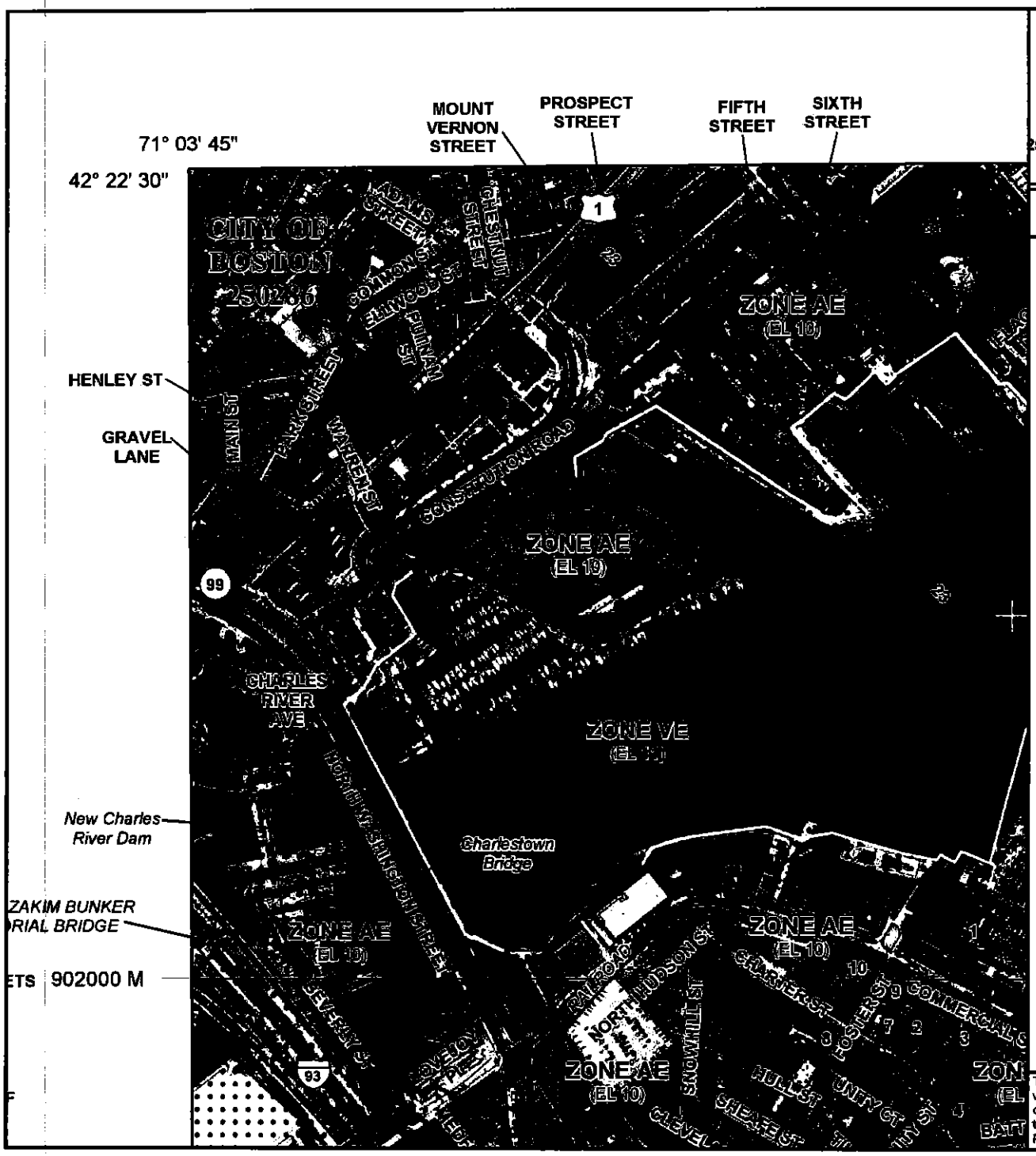
- ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
- ☐ A plan and easement deed that allows site access for the legal entity 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.



MAP SCALE 1" = 500'

250 0 500 1000

FEET

METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0081J

FIRM

FLOOD INSURANCE RATE MAP

SUFFOLK COUNTY, MASSACHUSETTS (ALL JURISDICTIONS)

PANEL 81 OF 176

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BOSTON, CITY OF	250286	0081	J

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
25025C0081J

MAP REVISED
MARCH 16, 2016

Federal Emergency Management Agency

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

(EL 987) Base Flood Elevation value where feet*

*Referenced to the North American Vertical Datum of 1988

A — A Cross section line

23 - - - - - 23 Transect line

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0081J

FIRM

FLOOD INSURANCE RATE MAP

SUFFOLK COUNTY, MASSACHUSETTS

(ALL JURISDICTIONS)

PANEL 81 OF 176

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BOSTON, CITY OF	250286	0081	J

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

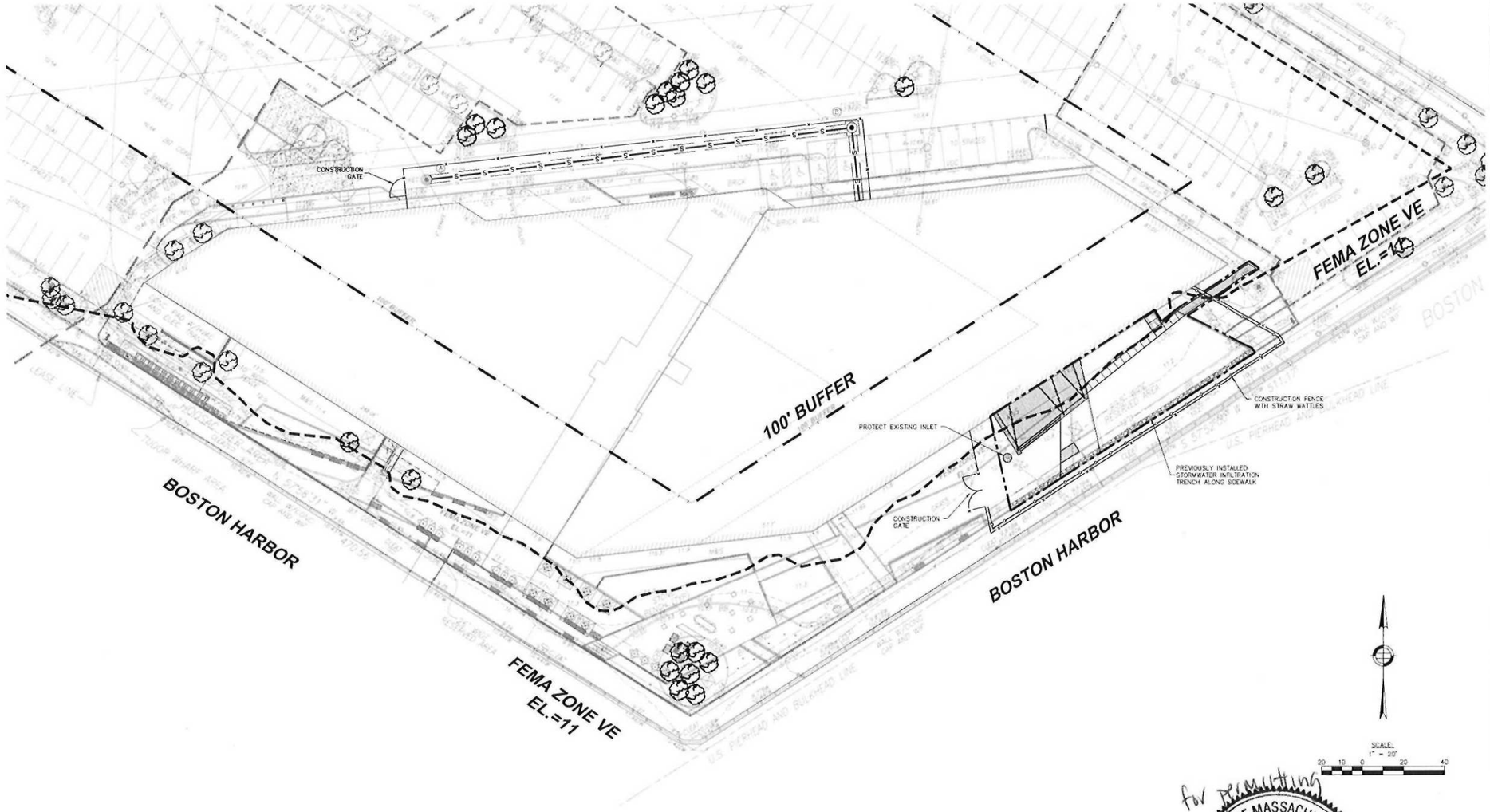
MAP NUMBER
25025C0081J

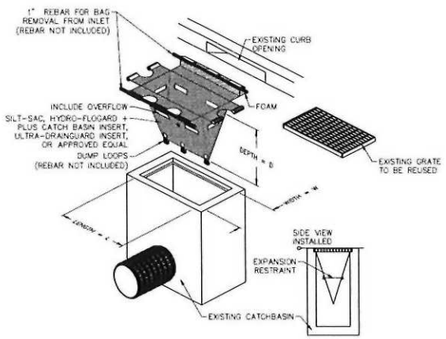
MAP REVISED
MARCH 16, 2016

Federal Emergency Management Agency

SEDIMENTATION AND EROSION CONTROL NOTES:

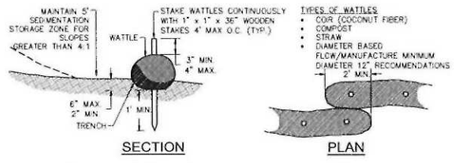
1. ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH PUBLISHED EROSION CONTROL AND SEDIMENT GUIDELINES FOR MASSACHUSETTS (SEE REFERENCE BELOW, NOTE #6).
2. SEDIMENT CONTROL MEASURES SHALL BE ADJUSTED TO MEET FIELD CONDITIONS AT THE TIME OF AND DURING ALL PHASES OF CONSTRUCTION AND BE CONSTRUCTED PRIOR TO AND IMMEDIATELY AFTER ANY GRADING OR DISTURBANCE OF EXISTING SURFACE MATERIAL ON THE SITE.
3. PERIODIC INSPECTION AND MAINTENANCE OF ALL SEDIMENT CONTROL STRUCTURES SHALL BE PROVIDED TO INSURE THAT THE INTENDED PURPOSE IS ACCOMPLISHED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SEDIMENT LEAVING THE LIMIT OF WORK. SEDIMENT CONTROL MEASURES SHALL BE IN WORKING CONDITION AT THE END OF EACH WORKING DAY.
4. ALL POINTS OF CONSTRUCTION INGRESS OR EGRESS WILL BE PROTECTED TO PREVENT TRACKING OF MUD ONTO PUBLIC WAYS.
5. ALL SEDIMENT WILL BE PREVENTED FROM ENTERING ANY STORM DRAINAGE SYSTEM (I.E. THROUGH THE USE OF HAY BALES, CATCH BASIN SEDIMENT TRAPS, GRAVEL, OR OTHER APPLICABLE METHODS).
6. THE CONTRACTOR INSTALLING THE ABOVE SHALL OBTAIN AND FOLLOW THE "MASSACHUSETTS EROSION AND SEDIMENT CONTROL GUIDELINES FOR URBAN AND SUBURBAN AREAS" PREPARED BY DEPARTMENT OF ENVIRONMENTAL PROTECTION, BUREAU OF RESOURCE PROTECTION, DATED MAY 1997, REPRINTED MAY 2003 (OR LATEST EDITION), AND THE 2008 NPDES GENERAL PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES, OR LATEST EDITION.
7. AFTER ANY SIGNIFICANT RAINFALL, SEDIMENT CONTROL STRUCTURES SHALL BE INSPECTED FOR INTEGRITY. ANY DAMAGED DEVICES SHALL BE CORRECTED IMMEDIATELY.
8. ANY SEDIMENT TRACKED ONTO PAVED AREAS SHALL BE SWEPT AT THE END OF EACH WORKING DAY.
9. ALL DEBRIS GENERATED DURING SITE PREPARATION ACTIVITIES SHALL BE LEGALLY DISPOSED OF OFF-SITE.
10. ALL TOPSOIL ENCOUNTERED WITHIN THE WORK AREA SHALL BE STRIPPED TO ITS FULL DEPTH AND STOCKPILED OR DISPOSED OF AS DIRECTED BY OWNER.
11. ANY DENUDED SURFACE WHICH WILL BE EXPOSED FOR A PERIOD OF 14 CALENDAR DAYS OR MORE SHALL BE CONSIDERED CRITICAL VEGETATION AREAS. THESE AREAS SHALL BE MULCHED WITH STRAW. MULCH SHALL BE SPREAD UNIFORMLY IN A CONTINUOUS BLANKET OF SUFFICIENT THICKNESS TO COMPLETELY HIDE THE SOIL FROM VIEW.
12. AN EROSION CONTROL BARRIER SHALL BE INSTALLED ALONG THE EDGE OF PROPOSED WORK AS INDICATED IN THE PLAN PRIOR TO COMMENCEMENT OF DEMOLITION OR CONSTRUCTION OPERATIONS.
13. THE CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF ALL EROSION AND SEDIMENT CONTROLS AT THE COMPLETION OF SITE CONSTRUCTION.
14. MEANS OF EROSION AND SEDIMENT PROTECTION AS NOTED ON THE DRAWINGS INDICATE THE MINIMUM PROVISIONS NECESSARY. ADDITIONAL MEANS OF PROTECTION SHALL BE PROVIDED BY THE CONTRACTOR AS REQUIRED FOR CONTINUED OR UNFORESEEN EROSION PROBLEMS, AT NO ADDITIONAL EXPENSE TO THE OWNER.
15. THE CONTRACTOR SHALL USE TEMPORARY SEEDING, MULCHING OR OTHER APPROVED STABILIZATION MEASURES TO PROTECT EXPOSED AREAS DURING PROLONGED CONSTRUCTION OR OTHER LAND DISTURBANCE. STOCKPILES THAT WILL BE EXPOSED FOR LONGER THAN 15 DAYS SHALL BE SEEDED WITH AN ANNUAL RYE.





THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE THE INLET DRAINS SHEET, OVERLAND OR CONCENTRATED FLOWS (NOT GREATER THAN 1 CFS). THE METHOD CAN DRAIN FLAT AREA TO STEEP SLOPES. INLET CAPACITY WILL BE DECREASED WITH THIS METHOD AND THE CONTRACTOR SHALL EXPECT PONDING DURING HIGH FLOW EVENTS.

INLET PROTECTION
CATCH BASIN W/ SILTATION SACK
NOT TO SCALE



WATTLES - SLOPE PROTECTION FOR SLOPES LESS THAN 10:1
NOT TO SCALE

SCALE:
1" = 20'
20 10 0 20 40

for Permitting

COMMONWEALTH OF MASSACHUSETTS
MICHELLE L. CALLAHAN
No. 49508
REGISTERED
PROFESSIONAL ENGINEER
10/7/19

LEGEND

- EROSION CONTROL BARRIER
- CONSTRUCTION FENCE
- INLET PROTECTION (PROVIDE ON ALL EXISTING AND PROPOSED CATCH BASINS AND AREA DRAINS)
- LIMIT OF WORK
- ZONE VE
- ZONE AE
- 100' BUFFER

ABBREVIATIONS

APPROX.	APPROXIMATE
DMH	DRAIN MANHOLE
TYP.	TYPICAL

NORTH

ISSUED FOR BIDDING

Architect
Isgenuity LLC
50 Harrison Avenue Suite 5F
Boston, MA 02203
Tel 617 419 4560
www.isgenuity.com

Civil Engineer
Nitsch Engineering
2 Center Plaza
Boston, MA 02108
Tel 617-338-0063
Fax 617-338-6472

Landscape Architect
Carol R Johnson Associates Inc
21 Custom House St
Boston, MA 02110
Tel 617-896-2500

Structural Engineer
Goldstein-Milano LLC
105 Main Street
Reading, MA 01867
Tel 781-670-9906
Fax 781-670-9939

MEP/FP Engineer
NV5 Engineers
200 Brickstone Square
Andover, MA 01810
Tel 978-296-6200
Fax 978-296-6201

AV Consultant
Vantage Technology Consulting Group
150 Baker Avenue, Suite 310
Concord, MA 01742
Tel 978-341-0700

Issuance Schedule

Number	Date	Description

MGH Institute of Health Professions
ONE CONSTITUTION WHARF OFFICE SUITE

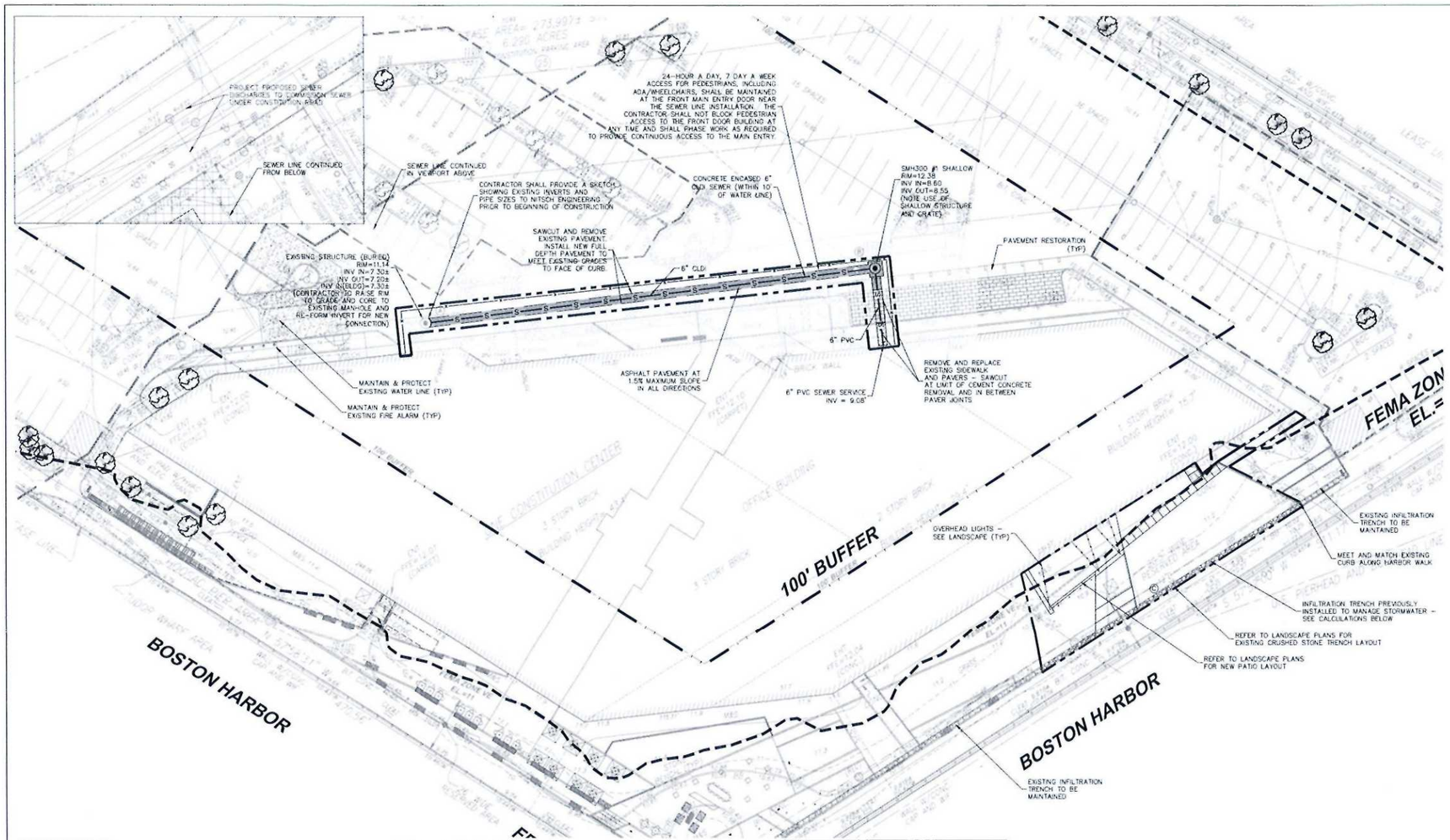
SWPPP

Scale: 1" = 20'-0" Date Issued 10/08/19

C-100

Project Number 13323

8/5/2019 8:06:23 PM



LEGEND

S —— SANITARY SEWER PIPE

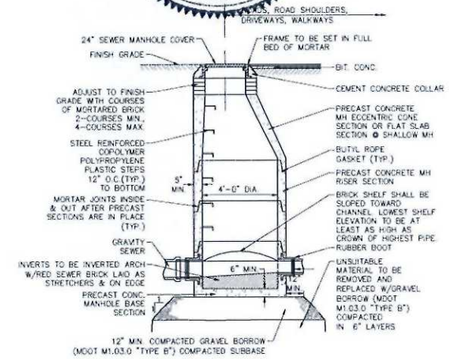
ABBREVIATIONS

AD	AREA DRAIN
(E)	EXISTING GRADE
INV	INVERT ELEVATION
LOW	LIMIT OF WORK
MIN	MINIMUM
TBD	TO BE DETERMINED

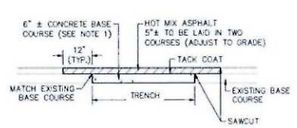
AV permitting

COMMONWEALTH OF MASSACHUSETTS
MICHELLE L. CALLAHAN
CIVIL
No. 48506
REGISTERED PROFESSIONAL ENGINEER
9/19/19

SCALE: 1" = 20'



TYPICAL SEWER MANHOLE DETAIL
NOT TO SCALE



NOTES:
1. PROPOSED CONCRETE BASE COURSE SHALL BE LEVEL WITH THE TOP OF THE EXISTING BASE COURSE

PAVEMENT RESTORATION OVER TRENCH DETAIL
NOT TO SCALE

BWSC INSPECTION SIGN OFF LIST	DATE AND SIGNATURE	COMMENT	DYE TEST
A. CONNECTION TO EX SEWER MANHOLE			
B. PROPOSED SEWER MANHOLE			
C. INFILTRATION SYSTEM			
AS-BUILT FEE			

NORTH

ISSUED FOR BIDDING

BWSC SITE PLAN #19184
BWSC USE ONLY

SITE ADDRESS:
75 CONSTITUTION ROAD
BOSTON, MA 02129

BWSC EXISTING ACCOUNT NUMBERS TO REMAIN:
EXISTING TO REMAIN

WARD / PARCEL NUMBER:
02/03594000

LAND USE CODE: E

TYPE OF PREMISE:
OFFICE

OWNER CONTACT INFORMATION:
JAMESTOWN
21 DRYDOCK AVENUE, 3RD FLOOR
BOSTON, MA 02210
(617) 559-5080

GENERAL NOTES:

1. TOPOGRAPHIC DATA, PROPERTY LINE INFORMATION, AND EXISTING SITE FEATURES WERE OBTAINED FROM A PLAN ENTITLED "ALTA/ACSM LAND TITLE SURVEY", PREPARED BY FELDMAN LAND SURVEYORS, REVISED MARCH 14, 2016.
2. FLOODPLAIN INFORMATION WAS OBTAINED FROM THE FLOOD INSURANCE RATE MAP (FIRM) NO. 25025B0008J. THE SITE IS PARTIALLY IN ZONES AE AND VE.
3. THE CONTRACTOR SHALL COMPLY WITH MASSACHUSETTS GENERAL LAWS CHAPTER 82, SECTION 40, AS AMENDED, WHICH STATES THAT NO ONE MAY EXCAVATE IN THE COMMONWEALTH OF MASSACHUSETTS EXCEPT IN AN EMERGENCY WITHOUT 72 HOURS NOTICE, EXCLUSIVE OF SATURDAYS, SUNDAYS, AND LEGAL HOLIDAYS, TO NATURAL GAS PIPELINE COMPANIES, AND MUNICIPAL UTILITY DEPARTMENTS THAT SUPPLY GAS, ELECTRICITY, TELEPHONE, OR CABLE TELEVISION SERVICE IN OR TO THE CITY OR TOWN WHERE THE EXCAVATION IS TO BE MADE. THE CONTRACTOR SHALL CALL "DIG SAFE" AT 1-888-DIG-SAFE.
4. THE CONTRACTOR SHALL COMPLY WITH MASSACHUSETTS GENERAL LAWS CHAPTER 82A, ALSO REFERRED TO AS JACKIE'S LAW, AS DETAILED IN SECTION 520 CMR 14.00 OF THE CODE OF MASSACHUSETTS REGULATIONS.
5. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL LAWS, RULES, REGULATIONS AND SAFETY CODES IN THE CONSTRUCTION OF ALL IMPROVEMENTS.
6. THE LOCATIONS AND ELEVATIONS OF ALL EXISTING UTILITIES ARE APPROXIMATE AND AND ALL UTILITIES MAY NOT BE SHOWN. PRESENCE AND LOCATIONS OF ALL UTILITIES WITHIN THE LIMIT OF WORK MUST BE DETERMINED BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING AND CONTACTING THE CONTROLLING AUTHORITIES AND/OR UTILITY COMPANIES RELATIVE TO THE LOCATIONS AND ELEVATIONS OF THEIR LINES. THE CONTRACTOR SHALL KEEP A RECORD OF ANY DISCREPANCIES OR CHANGES IN THE LOCATIONS OF ANY UTILITIES SHOWN OR ENCOUNTERED DURING CONSTRUCTION. ANY DISCREPANCIES SHALL BE REPORTED TO THE OWNER AND NITSCH ENGINEERING. ANY DAMAGE RESULTING FROM THE FAILURE OF THE CONTRACTOR TO MAKE THESE DETERMINATIONS AND CONTACTS SHALL BE BORNE BY THE CONTRACTOR.
7. THE CONTRACTOR SHALL, THROUGHOUT CONSTRUCTION, TAKE ADEQUATE PRECAUTIONS TO PROTECT ALL WALKS, GRADING, SIDEWALKS AND SITE DETAILS OUTSIDE OF THE LIMIT OF WORK AS DEFINED ON THE DRAWINGS AND SHALL REPAIR AND REPLACE OR OTHERWISE MAKE GOOD AS DIRECTED BY THE ENGINEER OR OWNER'S DESIGNATED REPRESENTATIVE ANY SUCH OR OTHER DAMAGE SO CAUSED.
8. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR JOB SITE SAFETY AND ALL CONSTRUCTION MEANS AND METHODS.
9. PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL BECOME FAMILIAR WITH THE SITE AND CONSTRUCTION DOCUMENTS TO DEVELOP A THOROUGH UNDERSTANDING OF THE PROJECT, INCLUDING ANY SPECIAL CONDITIONS AND CONSTRAINTS.
10. IT IS THE CONTRACTOR'S RESPONSIBILITY TO BECOME FAMILIAR WITH THE PROJECT SITE AND TO VERIFY ALL CONDITIONS IN THE FIELD AND REPORT DISCREPANCIES BETWEEN PLANS AND ACTUAL CONDITIONS TO THE OWNER OR OWNER'S REPRESENTATIVE IMMEDIATELY.
11. THE CONTRACTOR SHALL CONDUCT ALL NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN ALL NECESSARY CONSTRUCTION PERMITS.
12. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE ESTABLISHMENT AND USE OF ALL VERTICAL AND HORIZONTAL CONSTRUCTION CONTROLS.
13. ELEVATIONS REFER TO NAVD 88.
14. THE CONTRACTOR SHALL COMPLY WITH THE ORDER OF CONDITIONS DATED XXX AND ISSUED BY THE CITY OF BOSTON CONSERVATION COMMISSION (DEP #XXX).

BWSC & CONTRACTOR NOTES:

1. THE ESTIMATED SANITARY SEWAGE DISCHARGE IS 9,720 GALLONS PER DAY (GPD). THIS ESTIMATE IS BASED ON 310 C.M.R. 15.000 THE STATE ENVIRONMENTAL CODE, TITLE 5: STANDARD REQUIREMENTS FOR THE SITING, CONSTRUCTION, INSPECTION, UPGRADE AND EXPANSION OF ON-SITE SEWAGE TREATMENT AND DISPOSAL SYSTEMS AND FOR THE TRANSPORT AND DISPOSAL OF SEPTAGE.
2. BACKWATER VALVES SHALL BE PROVIDED BY THE PLUMBER AT ALL GRAVITY SANITARY SEWER AND STORM DRAIN CONNECTIONS FOR ANY FIXTURE LOCATED AT AN ELEVATION BELOW THE TOP OF THE SEWER OR DRAIN MANHOLE.
3. THE CONTRACTOR SHALL NOTIFY THE BWSC CROSS-CONNECTION DEPARTMENT AT 617-989-7283 ONCE BACKWATER VALVES ARE INSTALLED FOR BWSC INSPECTION.
4. DYE TESTING SHALL BE PERFORMED ON NEW STORM DRAIN AND SANITARY SEWER CONNECTIONS AFTER INSTALLATION IS COMPLETE. DYE TESTS SHALL BE WITNESSED BY THE BWSC.
5. A PREREQUISITE FOR FILING A GENERAL SERVICE APPLICATION WITH THE BWSC FOR NEW CONSTRUCTION IS THE ROUGH CONSTRUCTION SIGN-OFF DOCUMENT FROM THE CITY OF BOSTON'S INSPECTIONAL SERVICES DEPARTMENT.
6. AN AS-BUILT PLAN (AUTOCAD 2016 OR EARLIER RELEASE) SHALL BE PROVIDED BY THE CONTRACTOR AND ENDORSED BY A CIVIL ENGINEER OR PROFESSIONAL LAND SURVEYOR SHOWING THE LOCATION, DEPTH, AND INVERT OF EVERY BEND, FITTING, VALVE, CLEANOUT AND ANCHOR. THE AS-BUILT DRAWING SHALL BE SUBMITTED TO THE BOSTON WATER SEWER COMMISSION FOR REVIEW AND APPROVAL.

UTILITY NOTES:

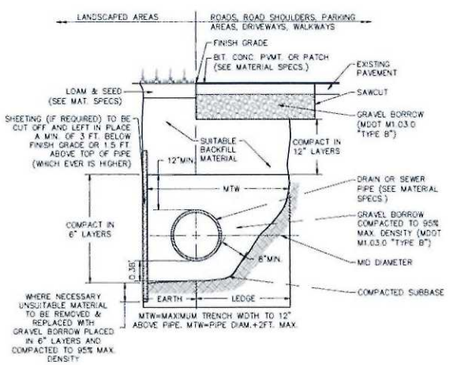
1. ALL UTILITY CONNECTIONS ARE SUBJECT TO THE APPROVAL OF, AND GRANTING OF PERMITS BY, THE LOCAL MUNICIPALITY. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN ALL PERMITS AND APPROVALS RELATED TO UTILITY WORK PRIOR TO COMMENCEMENT OF CONSTRUCTION.
2. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR OBTAINING ALL PERMISSIONS FOR, AND FOR CONDUCTING ALL PREPARATIONS RELATED TO, WORK AFFECTING ANY UTILITIES WITHIN THE JURISDICTION OF ANY NON-MUNICIPAL UTILITY COMPANY, INCLUDING BUT NOT LIMITED TO ELECTRIC, TELEPHONE, AND/OR GAS. THE CONTRACTOR SHALL NOTIFY ALL APPROPRIATE AGENCIES, DEPARTMENTS, AND UTILITY COMPANIES, IN WRITING, AT LEAST 7 DAYS (OR PER UTILITY COMPANY REQUIREMENT) AND NOT MORE THAN 30 DAYS PRIOR TO ANY CONSTRUCTION.
3. THE CONTRACTOR SHALL MAINTAIN UTILITIES SERVICING BUILDINGS AND FACILITIES WITHIN OR OUTSIDE THE PROJECT LIMIT UNLESS THE INTERRUPTION OF SERVICE IS COORDINATED WITH THE OWNER.
4. MAINTAIN 10 FEET HORIZONTAL SEPARATION AND 18 INCHES VERTICAL SEPARATION (WATER OVER SEWER) BETWEEN SEWER AND WATER LINES. WHEREVER THERE IS LESS THAN 10 FEET OF HORIZONTAL SEPARATION AND 18 INCHES OF VERTICAL SEPARATION BETWEEN A PROPOSED OR EXISTING SEWER LINE TO REMAIN AND A PROPOSED OR EXISTING WATER LINE TO REMAIN BOTH WATER MAIN AND SEWER MAIN SHALL BE CONSTRUCTED OF MECHANICAL JOINT CEMENT LINED DUCTILE IRON PIPE FOR A DISTANCE OF 10-FEET ON EITHER SIDE OF THE CROSSING. ONE (1) FULL LENGTH OF WATER PIPE SHALL BE CENTERED OVER THE SEWER AT THE CROSSING.
5. THE CONTRACTOR SHALL MAINTAIN ALL EXISTING UTILITIES EXCEPT THOSE NOTED TO BE ABANDONED AND/OR REMOVED & DISPOSED OF.
6. ALL ONSITE UTILITIES SHALL BE INSTALLED UNDERGROUND.
7. ALL EXISTING AND PROPOSED MANHOLE FRAMES, COVERS, VALVES, CLEANOUTS, CASTINGS, ETC. SHALL BE RAISED TO FINISHED GRADE PRIOR TO FINAL GRADING AND PAVING CONSTRUCTION.

RECHARGE CALCULATIONS:
Article 32 requires groundwater recharge in the volume equal to 1" of storage over the impervious area of the site

Required Storage Volume (Ratio):
The impervious site = 549 sf
1.0" of runoff (1.083 ft) over the site = 0.08 x 549 sf = 44 cf of storage

Storage Volume Provided:
Stone Trench Length * Stone Trench Width * Stone Trench Depth * Stone Voids = Total Volume Provided
145 ft * 2 ft * 2 ft * .3 = 174 cf Stone

Total Storage Required = 44 cf of storage
Total Storage Provided = 174 cf of storage



STANDARD TRENCH DETAIL FOR UTILITY PIPE
NOT TO SCALE

8/5/2019 8:00:23 PM

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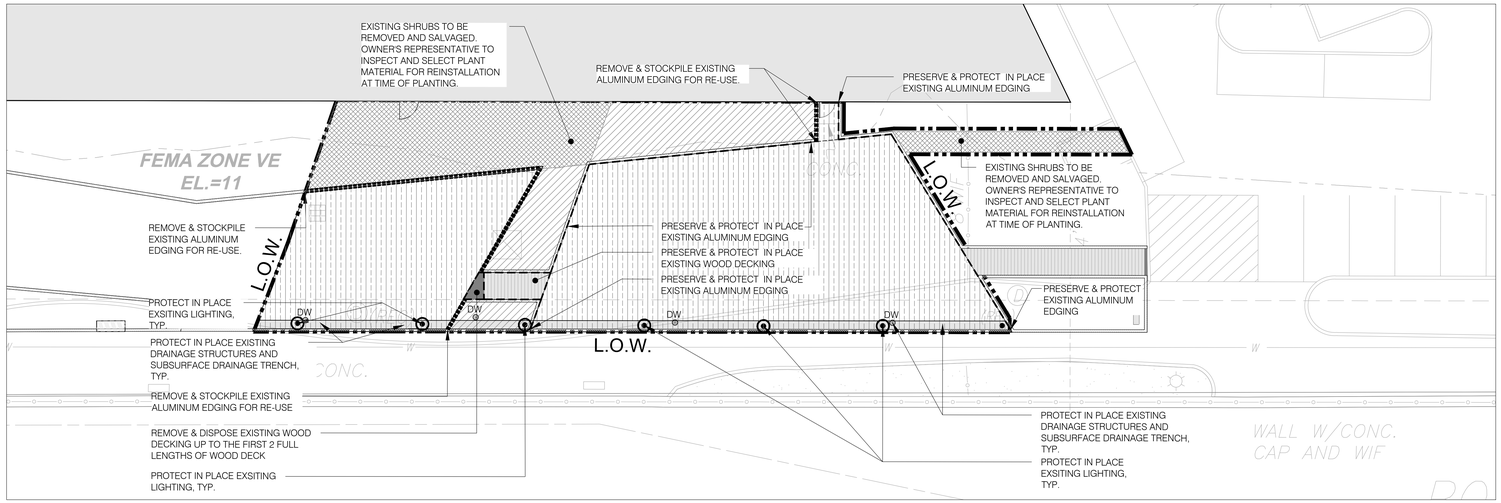
MGH Institute of Health Professions
ONE CONSTITUTION WHARF OFFICE SUITE

SEWER UTILITY PLAN

Scale: 1" = 20'-0" Date Issued 10/09/19

C-200

Project Number 19323



SITE PREPARATION AND DEMOLITION PLAN

SITE PREPARATION & DEMOLITION LEGEND

- LIMIT OF WORK (L.O.W.)
- REMOVE AND STOCKPILE ALUMINUM EDGING
- PRESERVE AND PROTECT IN PLACE ALUMINUM EDGING
- REMOVE AND DISPOSE EXISTING LAWN
- PROTECT IN PLACE EXISTING PLANTING
- EXISTING SHRUBS TO BE REMOVED AND SALVAGED. CONTRACTOR TO STORE AND MAINTAIN PLANT MATERIAL FOR REINSTALLATION AT TIME OF PLANTING.
- REMOVE AND DISPOSE WOOD DECKING
- PROTECT IN PLACE SUBSURFACE DRAINAGE TRENCH

0 5' 10' 20'

NORTH

2/20/2019 9:35:34 AM

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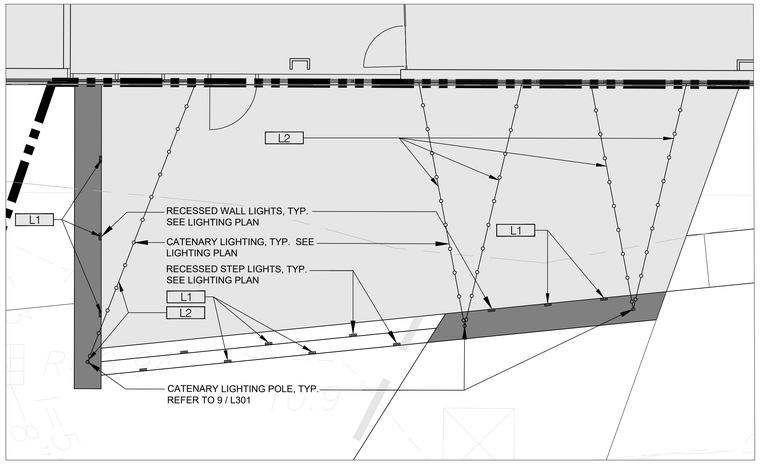
SITE PREPARATION & DEMOLITION PLAN

MGH Institute of Health Professions
ONE CONSTITUTION WHARF OFFICE SUITE

Scale: As Noted Date Issued: 07/09/19

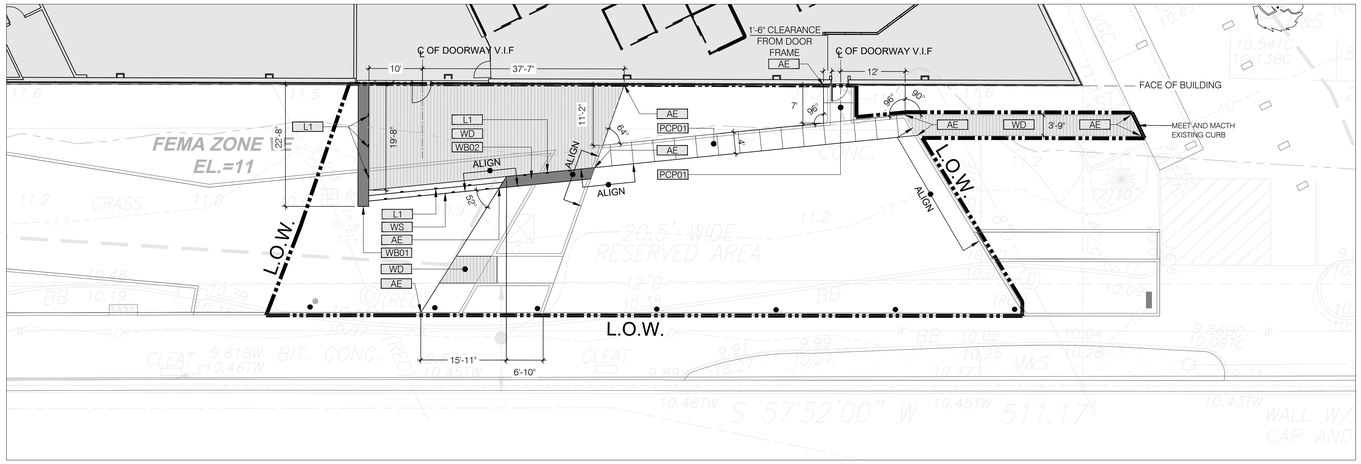
L100

Project Number: 120065



LIGHTING DIAGRAM

SCALE: 1" = 1'-0"



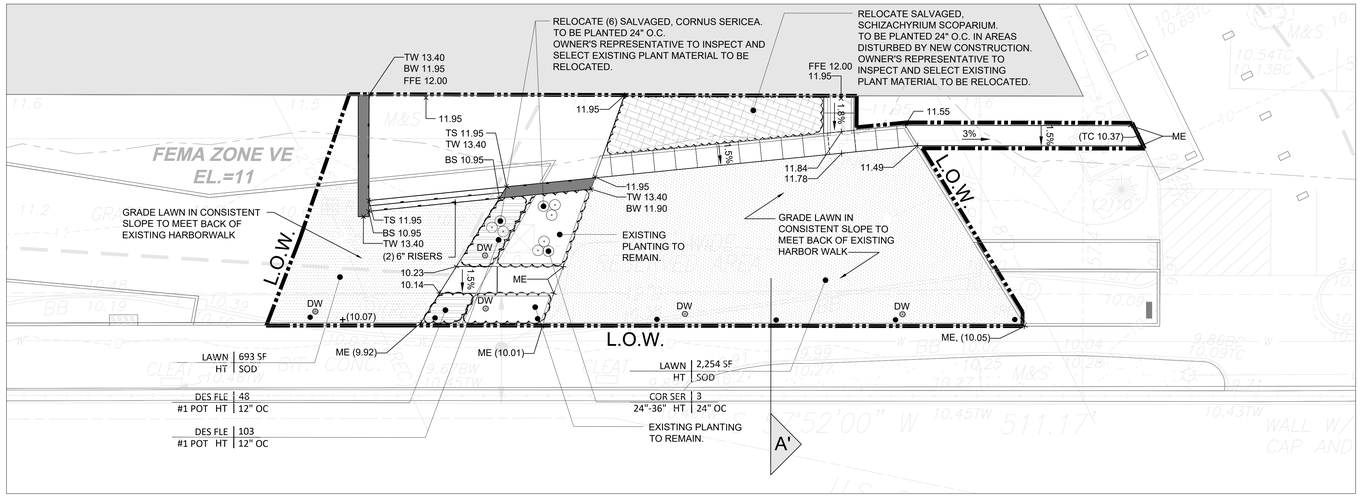
LAYOUT & MATERIALS PLAN

MATERIALS SCHEDULE

CALLOUT	Description	Detail	Material / Supplier / Model #	Color	Finish	Notes
PAVING SCHEDULE						
PCP01	Pedestrian Concrete Pavement	1 /L300	6'x12"x2 3/4" UNILOCK	STEEL MOUNTAIN	PREMIER/SMOOTH	MATCH EXISTING
WD	Wood Decking	6, 7, 10 /L300	5/4" x 6" IPE Decking	NATURAL	SEE SPEC.	SHOP DRAWINGS
CURB / STEP SCHEDULE						
AE	Aluminum Edging	3, 4, 5 /L300	Permaloc Aluminum Edge			MATCH EXISTING
WS	Wood Stair	8/L300	IPE	NATURAL	SEE SPEC.	SHOP DRAWINGS
WB	Wood Bench	9/L300	IPE	NATURAL	SEE SPEC.	SHOP DRAWINGS
SITE AMENITIES SCHEDULE						
FR07	Café Moveable Tables, & Chairs (Square)	1 & 2/L301	Owner FF&E			
TR01	Trash & Recycle Receptacles	4/L301	Owner FF&E	-	-	-
UM01	Umbrella 7.5' Square	3/L301	Owner FF&E	-	-	-
L1	Recessed Wall or step light	8 & 9/L300	See Lighting Plan	MATCH EXISTING	MATCH EXISTING	PER LIGHTING DESIGNER
L2	Catenary Lighting	9/L301	See Lighting Plan	MATCH EXISTING	MATCH EXISTING	PER LIGHTING DESIGNER

LAYOUT LEGEND

	LIMIT OF WORK (L.O.W.)
℄	CENTERLINE
POB	POINT OF BEGINNING
20'	DIMENSION
R5'	RADIUS = 5'
	ALIGN
TYP	TYPICAL
VIF	VERIFY IN FIELD
FC	FACE OF CURB
BC	BACK OF CURB
PT	POINT OF TANGENCY



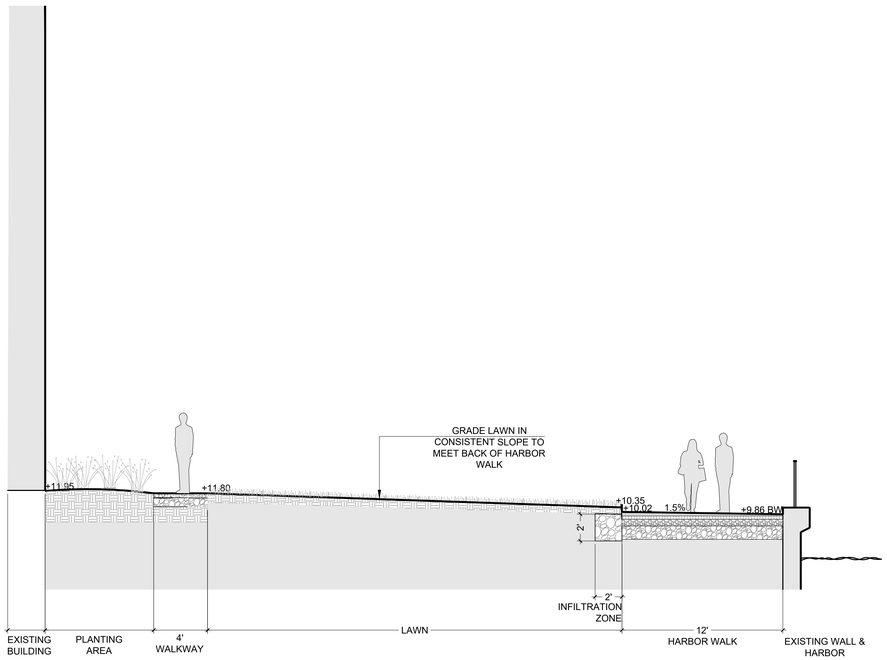
PLANTING & GRADING PLAN

PLANTING SCHEDULE

KEY	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
SHRUBS					
COR SER	3	Cornus sericea	Red Twig Dogwood	24"- 36" HT.	24" O.C.
PERENNIAL, GRASSES AND GROUNDCOVERS					
DES FLE	233	Deschampsia flexuosa	Tufted Hair grass	#1	12" O.C.
LAWN	2,947 SF		Lawn	SOD	SF

IRRIGATION NOTE:

IRRIGATION SYSTEM TO BE MODIFIED AND EXTENDED TO ACCOMMODATE PROPOSED WORK. THIS WORK SHALL BE CARRIED OUT BY THE CURRENT IRRIGATION VENDOR (LEAHY LANDSCAPING 781-581-3489) IN ORDER TO MAINTAIN THE EXISTING IRRIGATION WARRANTY.



1 SECTION A-A'

SCALE: 1/4"=1'-0"

GRADING LEGEND

	LIMIT OF WORK (L.O.W.)	FFE	FINISH FLOOR ELEVATION
300	MAJOR CONTOUR LINE	ME	MATCH EXISTING GRADE
302	MINOR CONTOUR LINE	TW	TOP OF WALL ELEVATION
		BW	BOTTOM OF WALL ELEVATION
(306.40)↦	ASSUMED EXISTING SPOT ELEVATION. VERIFY IN FIELD	TS	TOP OF STAIR ELEVATION
306.40↦	PROPOSED SPOT ELEVATION	BS	BOTTOM OF STAIR ELEVATION
1.6%	PROPOSED SLOPE		

0 5' 10' 20'

NORTH

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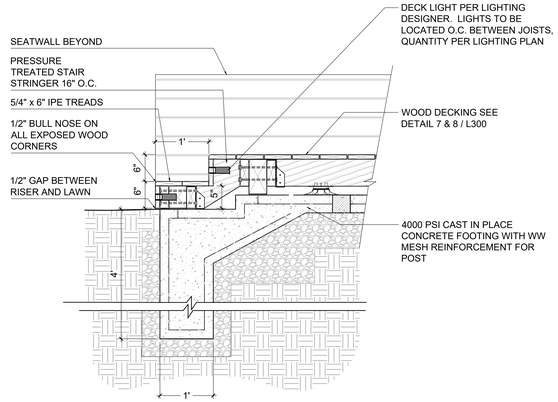
LAYOUT & MATERIALS GRADING & PLANTING PLAN

MGH Institute of Health Professions
ONE CONSTITUTION WHARF OFFICE SUITE

Scale: As Noted Date Issued: 07/09/19

L200

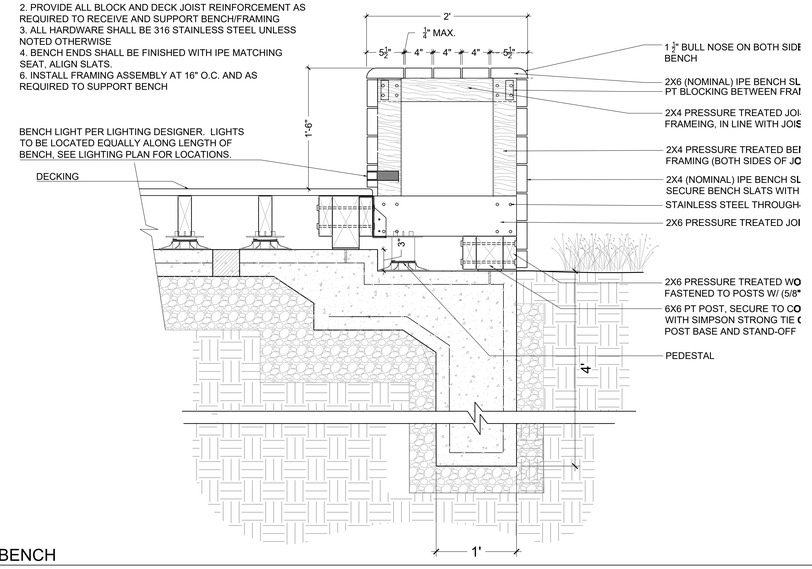
Project Number: 120065



8 WOOD STAIRS

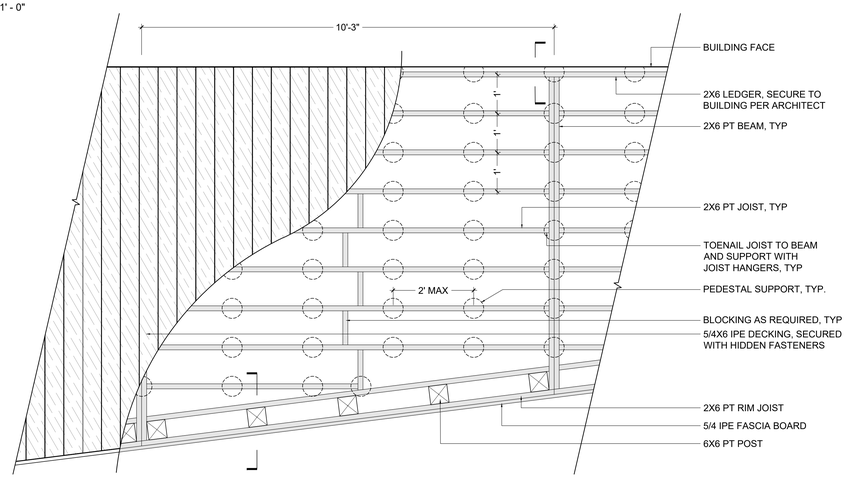
SCALE: 1" = 1'-0"

NOTES:
1. SUBMIT FUL SHOP DRAWINGS
2. PROVIDE ALL BLOCK AND DECK JOIST REINFORCEMENT AS REQUIRED TO RECEIVE AND SUPPORT BENCH/FRAMING
3. ALL HARDWARE SHALL BE 316 STAINLESS STEEL UNLESS NOTED OTHERWISE
4. BENCH ENDS SHALL BE FINISHED WITH IPE MATCHING SEAT, ALIGN SLATS.
6. INSTALL FRAMING ASSEMBLY AT 16" O.C. AND AS REQUIRED TO SUPPORT BENCH



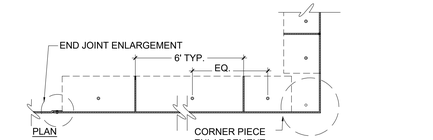
9 WOOD BENCH

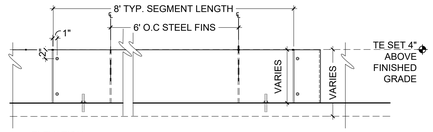
1" = 1' - 0"



10 WOOD DECK - PLAN

1" = 3/4' - 0"



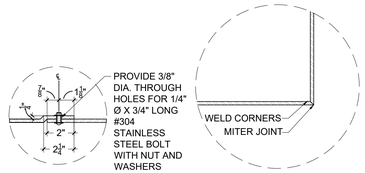


ELEVATION

NOTES:
1. PROVIDE FULL SHOP DRAWINGS FOR ALL CONDITIONS.
2. TOP OF EDGING (TE) ELEVATIONS ARE SET AT LEVEL DATUMS IN SOME AREAS, SEE GRADING PLAN FOR LOCATIONS AND TE ELEVATIONS.
3. ALL STAINLESS STEEL EDGING PIECES SHALL BE SHOP FABRICATED INCLUDING ALL WELDING.

4 ALUMINUM EGDING - ELEVATION

1" = 1' - 0"

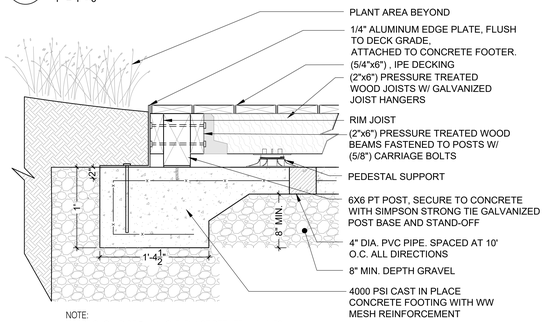


END JOINT ENLARGEMENT
SCALE: 3" = 1'-0"

CORNER PIECE ENLARGEMENT
SCALE: 3" = 1'-0"

5 ALUMINUM EDGING - END JOINT ENLARGEMENT

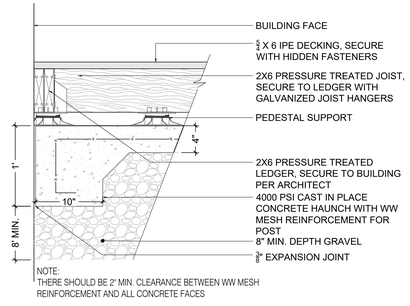
1" = 1' - 0"



NOTE:
THERE SHOULD BE 2' MIN. CLEARANCE BETWEEN WW MESH REINFORCEMENT AND ALL CONCRETE FACES

6 WOOD DECKING

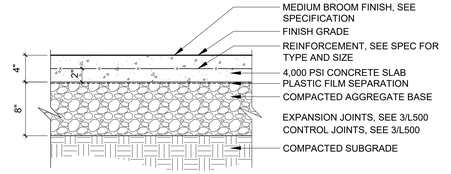
SCALE: 1-1/2"=1'-0"



NOTE:
THERE SHOULD BE 2' MIN. CLEARANCE BETWEEN WW MESH REINFORCEMENT AND ALL CONCRETE FACES

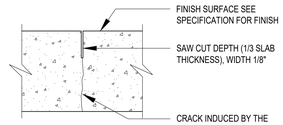
7 WOOD DECKING AT BUILDING FACE

1" = 1' - 0"

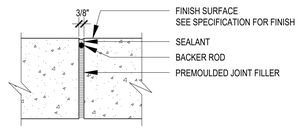


1 PEDESTRIAN CONCRETE PAVEMENT

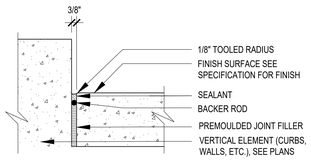
SCALE: 1-1/2"=1'-0"



SAWCUT JOINT



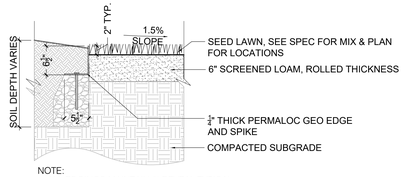
EXPANSION JOINT



EXPANSION JOINT AT VERTICAL ELEMENT

2 CONCRETE PAVEMENT JOINTS

SCALE: 3"=1'-0"



NOTE:
1, ALL EDGINGS MAINTAIN 2" REVEAL TYPICAL
2, PLEASE SUBMIT CAD FILE FOR REVIEW PRIOR TO FABRICATION

3 ALUMINUM EDGING - PLANTING AREA AT LAWN AREA

1" = 1' - 0"

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Project Number: 120065

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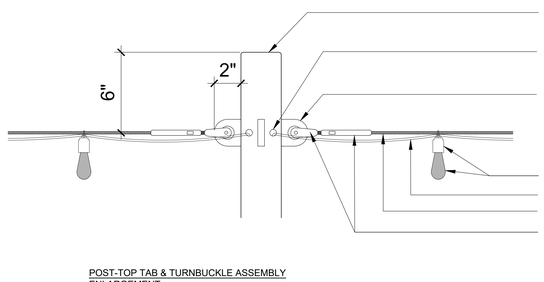
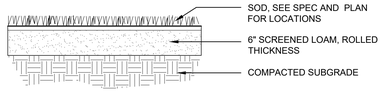


POST-TOP TAB & TURNBUCKLE ASSEMBLY ENLARGEMENT
3"=1'-0"

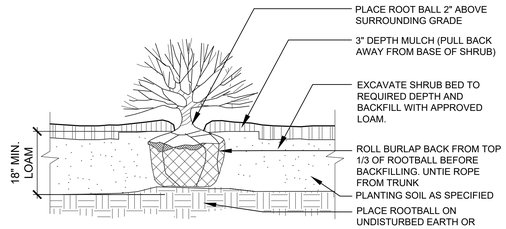
9 CATENARY LIGHT DETAIL

SCALE: 1" = 1'-0"



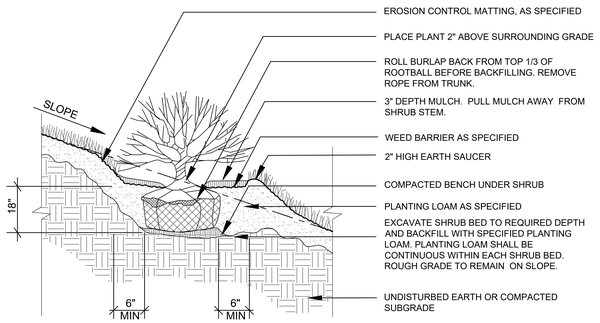
5 SOD

SCALE: NTS



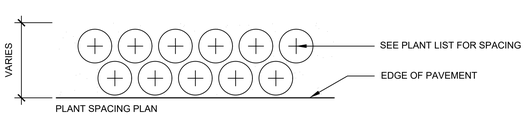
6 SHRUB PLANTING

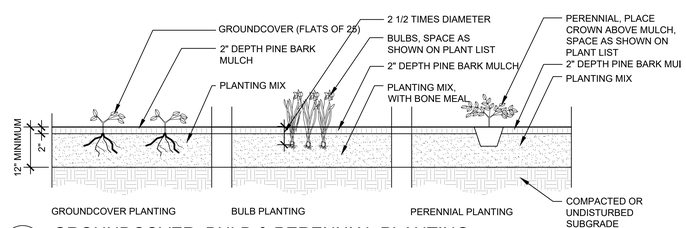
SCALE: NTS



7 SHRUB PLANTING ON SLOPE

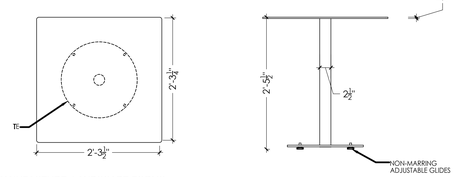
SCALE: NTS





8 GROUNDCOVER, BULB & PERENNIAL PLANTING

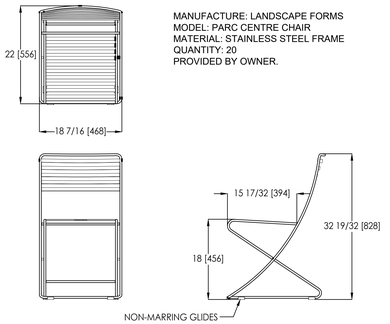
SCALE: 3/4" = 1'-0"



MANUFACTURE: LANDSCAPE FORMS
MODEL: 28" SQUARE PARC CENTRE TABLE
MATERIAL: STAINLESS STEEL
QUANTITY: 6
PROVIDED BY OWNER.

1 CAFE TABLE -PARC CENTRE TABLE -SQUARE

SCALE: NTS



MANUFACTURE: LANDSCAPE FORMS
MODEL: PARC CENTRE CHAIR
MATERIAL: STAINLESS STEEL FRAME
QUANTITY: 20
PROVIDED BY OWNER.

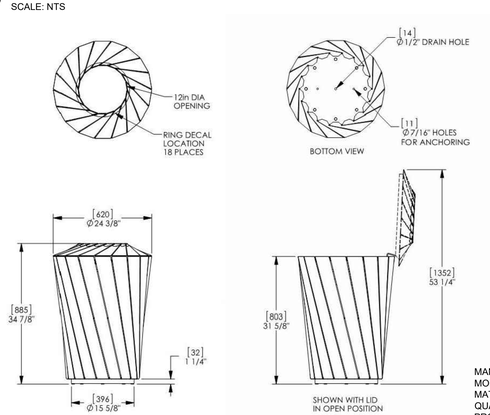
2 CHAIR - PARC CENTRE CHAIR

SCALE: NTS

FRONT VIEW
MANUFACTURE: TUUCI, LANDSCAPEFORMS
MODEL: 7.5' SQUARE
MATERIAL: SUBRELLA MARINE-GRADE FIBER
QUANTITY: 3
PROVIDED BY OWNER.

3 UMBERLLA - TUUCI OCEAN MASTER CLASSIC PARASPOL, 7 1/2' SQUARE

SCALE: NTS



MANUFACTURE: LANDSCAPEFORMS
MODEL: 12" OPENING CENTRAL PARK CONSERVANCY
MATERIAL: POWERCOATE STEEL
QUANTITY: 1 SET
PROVIDED BY OWNER.

4 TRASH CAN - CENTRAL PARK

SCALE: 1"=1'-0"

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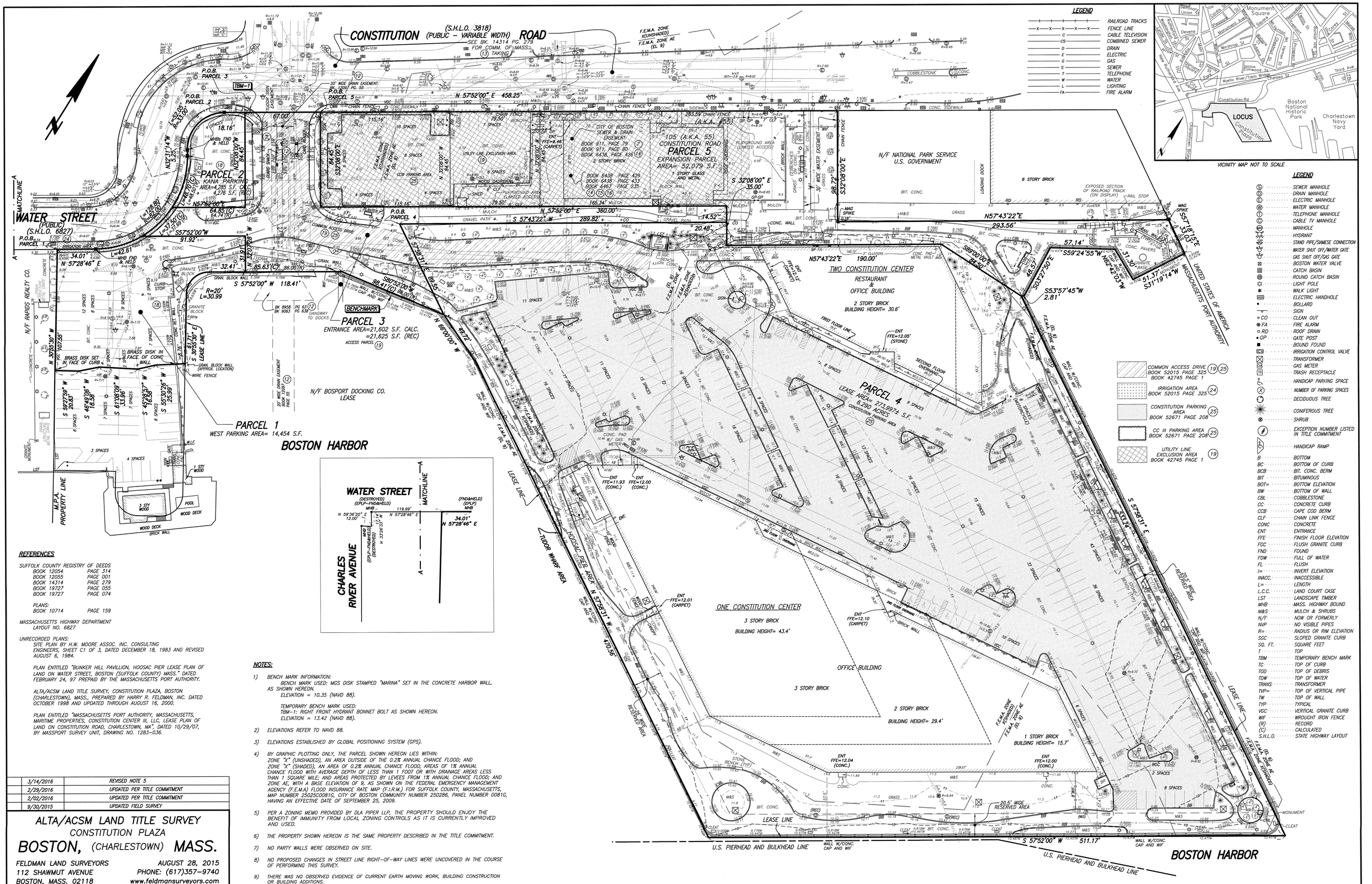

LEGEND

- RAILROAD TRACKS
- FENCE LINE
- C — CABLE TELEVISION
- CS — COMBINED SEWER
- D — DRAIN
- E — ELECTRIC
- G — GAS
- S — SEWER
- T — TELEPHONE
- W — WATER
- L — LIGHTING
- FA — FIRE ALARM

LEGEND

- S — SEWER MANHOLE
- D — DRAIN MANHOLE
- E — ELECTRIC MANHOLE
- W — WATER MANHOLE
- T — TELEPHONE MANHOLE
- C — CABLE TV MANHOLE
- MH — MANHOLE
- HYDRANT
- SP — STAND PIPE/SIAMESE CONNECTION
- WSO — WATER SHUT OFF/WATER GATE
- GSO — GAS SHUT OFF/GAS GATE
- BOSTON WATER VALVE
- CATCH BASIN
- ROUND CATCH BASIN
- LIGHT POLE
- WALK LIGHT
- ELECTRIC HANDHOLE
- BOLLARD
- SIGN
- CO — CLEAN OUT
- FA — FIRE ALARM
- RD — ROOF DRAIN
- GP — GATE POST
- BOUND FOUND
- IRRIGATION CONTROL VALVE
- TRANSFORMER
- GAS METER
- TRASH RECEPTACLE
- HANDICAP PARKING SPACE
- NUMBER OF PARKING SPACES
- DECIDUOUS TREE
- CONIFEROUS TREE
- SHRUB
- EXCEPTION NUMBER LISTED IN TITLE COMMITMENT
- HANDICAP RAMP
- B — BOTTOM
- BC — BOTTOM OF CURB
- BCB — BIT. CONC. BERM
- BIT — BITUMINOUS
- BOT= — BOTTOM ELEVATION
- BW — BOTTOM OF WALL
- CBL — COBBLESTONE
- CC — CONCRETE CURB
- CCB — CAPE COD BERM
- CLF — CHAIN LINK FENCE
- CONC — CONCRETE
- ENT — ENTRANCE
- FFE — FINISH FLOOR ELEVATION
- FGC — FLUSH GRANITE CURB
- FND — FOUND
- FOW — FULL OF WATER
- FL — FLUSH
- I= — INVERT ELEVATION
- INACC. — INACCESSIBLE
- L= — LENGTH
- L.C.C. — LAND COURT CASE
- LST — LANDSCAPE TIMBER
- MHB — MASS. HIGHWAY BOUND
- M&S — MULCH & SHRUBS
- N/F — NOW OR FORMERLY
- NVP — NO VISIBLE PIPES
- R= — RADIUS OR RIM ELEVATION
- SGC — SLOPED GRANITE CURB
- SQ. FT. — SQUARE FEET
- T — TOP
- TBM — TEMPORARY BENCH MARK
- TC — TOP OF CURB
- TOD — TOP OF DEBRIS
- TOW — TOP OF WATER
- TRANS — TRANSFORMER
- TVP= — TOP OF VERTICAL PIPE
- TW — TOP OF WALL
- TYP — TYPICAL
- VGC — VERTICAL GRANITE CURB
- WIF — WROUGHT IRON FENCE
- (R) — RECORD
- (C) — CALCULATED
- S.H.L.O. — STATE HIGHWAY LAYOUT

REFERENCES

SUFFOLK COUNTY REGISTRY OF DEEDS

BOOK 12054	PAGE 314
BOOK 12055	PAGE 001
BOOK 14314	PAGE 279
BOOK 19727	PAGE 055
BOOK 19727	PAGE 074

PLANS:
BOOK 10714 PAGE 159

MASSACHUSETTS HIGHWAY DEPARTMENT
LAYOUT NO. 6827

UNRECORDED PLANS:
SITE PLAN BY H.W. MOORE ASSOC. INC. CONSULTING ENGINEERS, SHEET C1 OF 3, DATED DECEMBER 18, 1983 AND REVISED AUGUST 6, 1984.

PLAN ENTITLED "BUNKER HILL PAVILLION, HOOSAC PIER LEASE PLAN OF LAND ON WATER STREET, BOSTON (SUFFOLK COUNTY) MASS." DATED FEBRUARY 24, 97 PREPAID BY THE MASSACHUSETTS PORT AUTHORITY.

ALTA/ACSM LAND TITLE SURVEY, CONSTITUTION PLAZA, BOSTON (CHARLESTOWN), MASS., PREPARED BY HARRY R. FELDMAN, INC. DATED OCTOBER 1998 AND UPDATED THROUGH AUGUST 16, 2000.

PLAN ENTITLED "MASSACHUSETTS PORT AUTHORITY, MASSACHUSETTS, MARITIME PROPERTIES, CONSTITUTION CENTER III, LLC, LEASE PLAN OF LAND ON CONSTITUTION ROAD, CHARLESTOWN, MA", DATED 10/29/07, BY MASSPORT SURVEY UNIT, DRAWING NO. 1283-036.

NOTES:

1) BENCH MARK INFORMATION:
BENCH MARK USED: MGS DISK STAMPED "MARINA" SET IN THE CONCRETE HARBOR WALL, AS SHOWN HEREON.
ELEVATION = 10.35 (NAVD 88).
TEMPORARY BENCH MARK USED:
TBM-1: RIGHT FRONT HYDRANT BONNET BOLT AS SHOWN HEREON.
ELEVATION = 13.42 (NAVD 88).

2) ELEVATIONS REFER TO NAVD 88.

3) ELEVATIONS ESTABLISHED BY GLOBAL POSITIONING SYSTEM (GPS).

4) BY GRAPHIC PLOTTING ONLY, THE PARCEL SHOWN HEREON LIES WITHIN: ZONE "X" (UNSHADED), AN AREA OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOOD; AND ZONE "X" (SHADED), AN AREA OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTH OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE FLOOD; AND ZONE AE, WITH A BASE ELEVATION OF 9, AS SHOWN ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY (F.E.M.A) FLOOD INSURANCE RATE MAP (F.I.R.M.) FOR SUFFOLK COUNTY, MASSACHUSETTS, MAP NUMBER 25025C0081G, CITY OF BOSTON COMMUNITY NUMBER 250286, PANEL NUMBER 0081G, HAVING AN EFFECTIVE DATE OF SEPTEMBER 25, 2009.

5) PER A ZONING MEMO PROVIDED BY DLA PIPER LLP, THE PROPERTY SHOULD ENJOY THE BENEFIT OF IMMUNITY FROM LOCAL ZONING CONTROLS AS IT IS CURRENTLY IMPROVED AND USED.

6) THE PROPERTY SHOWN HEREON IS THE SAME PROPERTY DESCRIBED IN THE TITLE COMMITMENT.

7) NO PARTY WALLS WERE OBSERVED ON SITE.

8) NO PROPOSED CHANGES IN STREET LINE RIGHT-OF-WAY LINES WERE UNCOVERED IN THE COURSE OF PERFORMING THIS SURVEY.

9) THERE WAS NO OBSERVED EVIDENCE OF CURRENT EARTH MOVING WORK, BUILDING CONSTRUCTION OR BUILDING ADDITIONS.

10) THERE WAS NO OBSERVED EVIDENCE OF SITE USE AS A SOLID WASTE DUMP, SUMP OR SANITARY LANDFILL.

11) THE SUBJECT PROPERTY HAS DIRECT ACCESS TO CONSTITUTION ROAD, A PUBLIC WAY. THE SUBJECT PROPERTY HAS DIRECT ACCESS TO WATER STREET, A PUBLIC WAY, AS SHOWN ON S.H.L.O. 6827. THE SUBJECT PROPERTY HAS DIRECT ACCESS TO WARREN STREET, A PUBLIC WAY, VIA CONSTITUTION ROAD.

12) PARCELS 1, 2, 4, AND 5 ARE ALL CONTIGUOUS TO PARCEL 3 WITH NO GAPS OR GORES.

5	3/14/2016	REVISED NOTE 5
4	2/29/2016	UPDATED PER TITLE COMMITMENT
3	2/02/2016	UPDATED PER TITLE COMMITMENT
2	9/30/2015	UPDATED FIELD SURVEY

ALTA/ACSM LAND TITLE SURVEY
CONSTITUTION PLAZA
BOSTON, (CHARLESTOWN) MASS.

FELDMAN LAND SURVEYORS
112 SHAWMUT AVENUE
BOSTON, MASS. 02118
PHONE: (617)357-9740
www.feldmansurveyors.com

AUGUST 28, 2015

FELDMAN LAND SURVEYORS

30 0 15 30 60 120

SCALE: 1"=30'

RESEARCH AJA	FIELD CHIEF AB	PROJ MGR DJR	APPROVED DJR	SHEET NO. 1 OF 2	
CALC AJA	CADD DCH RTC	FIELD CHECKED	CRD FILE 14746	JOB NO. 14746	

FILENAME: S:\PROJECTS\14700s\14746\DWG\14746B-ALTA.dwg

BOUNDARY DESCRIPTIONS PER LEASEHOLD LOAN POLICY NO. C22406 ISSUED BY COMMONWEALTH LAND TITLE INSURANCE COMPANY HAVING AN EFFECTIVE DATE OF DECEMBER 11, 2015.

THOSE PARCELS OF LAND SHOWN ON A PLAN ENTITLED ALTA/ ACSM LAND TITLE SURVEY CONSTITUTION CENTER BOSTON (CHARLESTOWN) MASS., SCALE: 1" = 40'' PREPARED BY HARRY R. FELDMAN, INC. AND DATED OCTOBER 19, 1998, REVISED AND UPDATED; 3/11/99, 4/4/99,5/26/99, 8/16/99, 7/18/02, 9/20/02, 2/20/07, 5/21/07, 7/10/07 AND 10/17/07 ("CONSTITUTION CENTER SURVEY").

PARCEL 1
(WEST PARKING AREA)

A CERTAIN PARCEL OF LAND LOCATED ON THE SOUTHERLY SIDE OF WATER STREET IN BOSTON, MASSACHUSETTS, BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE SOUTHERLY SIDELINE OF WATER STREET, SAID POINT BEING THE NORTHWEST CORNER OF THE HEREIN-DESCRIBED PARCEL;

THENCE RUNNING N 57°28'46"E, A DISTANCE OF 34.01 FEET ALONG THE SOUTHERLY SIDELINE OF WATER STREET TO A MASSACHUSETTS HIGHWAY BOUND AT A POINT OF CURVATURE;

THENCE TURNING AND RUNNING NORTHERLY BY A CURVE TO THE LEFT HAVING A RADIUS OF 82.00 FEET, A DISTANCE OF 42.61 FEET ALONG THE SOUTHEASTERLY SIDELINE OF WATER STREET;

THENCE TURNING AND RUNNING N 57°52'00"E, A DISTANCE OF 91.92 FEET;

THENCE TURNING AND RUNNING S 32°07'28"E, A DISTANCE OF 31.91 FEET;

THENCE TURNING AND RUNNING S 57°52'00"W, A DISTANCE OF 32.41 FEET TO A POINT OF CURVATURE;

THENCE TURNING AND RUNNING SOUTHERLY BY A CURVE TO THE LEFT HAVING A RADIUS OF 20 FEET, A DISTANCE OF 30.99 FEET TO A POINT OF TANGENCY;

THENCE RUNNING S 30°55'30"E, A DISTANCE OF 61.71 FEET;

THENCE TURNING AND RUNNING S 55°30'26"W, A DISTANCE OF 25.99 FEET;

THENCE TURNING AND RUNNING S 45°28'57"W, A DISTANCE OF 16.58 FEET;

THENCE TURNING AND RUNNING S 61°08'09"W, A DISTANCE OF 33.96 FEET;

THENCE TURNING AND RUNNING S 46°49'06 "W, A DISTANCE OF 18.58 FEET;

THENCE TURNING AND RUNNING S 59°27'59"W, A DISTANCE OF 20.83 FEET;

THENCE TURNING AND RUNNING N 30°55'30"W, A DISTANCE OF 107.55 FEET TO THE POINT OF BEGINNING.

THE ABOVE-DESCRIBED PARCEL OF LAND CONTAINS AN AREA OF 14,454 SQUARE FEET ACCORDING TO SAID CONSTITUTION CENTER SURVEY.

PARCEL 2
(KANA PARKING AREA)

A CERTAIN PARCEL OF LAND LOCATED ON THE SOUTHEAST SIDE OF WATER STREET IN BOSTON, MASSACHUSETTS, BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT A MASSACHUSETTS HIGHWAY BOUND LOCATED AT A POINT OF TANGENCY IN THE SOUTHERLY SIDELINE OF WATER STREET;

THENCE RUNNING N 57°52'00"E, A DISTANCE OF 18.16 FEET ALONG SAID SIDELINE OF WATER STREET;

THENCE TURNING AND RUNNING S 32°08'00"E, A DISTANCE OF 84.45 FEET;

THENCE TURNING AND RUNNING S 57°52'00"W, A DISTANCE OF 64.74 FEET TO A POINT ON THE EASTERLY SIDELINE OF WATER STREET;

THENCE TURNING AND RUNNING NORTHERLY BY A CURVE TO THE LEFT HAVING A RADIUS OF 82.00 FEET, A DISTANCE OF 48.50 FEET ALONG SAID EASTERLY SIDELINE OF WATER STREET TO A MASSACHUSETTS HIGHWAY BOUND AT A POINT OF TANGENCY;

THENCE RUNNING N 32°31'14"W, A DISTANCE OF 5.25 FEET ALONG SAID EASTERLY SIDELINE OF WATER STREET TO A MASSACHUSETTS HIGHWAY BOUND AT A POINT OF CURVATURE;

THENCE TURNING AND RUNNING NORTHEASTERLY BY A CURVE TO THE RIGHT HAVING A RADIUS OF 33.00 FEET, A DISTANCE OF 52.05 FEET ALONG THE SOUTHEASTERLY SIDELINE OF WATER STREET TO THE POINT OF BEGINNING.

THE ABOVE-DESCRIBED PARCEL OF LAND CONTAINS AN AREA OF 4,276 SQUARE FEET ACCORDING TO SAID CONSTITUTION CENTER SURVEY.

PARCEL 3
(ENTRANCE AREA)

A CERTAIN PARCEL OF LAND LOCATED ON THE SOUTHERLY SIDE OF THE INTERSECTION OF CONSTITUTION ROAD AND WATER STREET IN BOSTON, MASSACHUSETTS, BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE SOUTHERLY SIDELINE OF WATER STREET, SAID POINT BEING THE NORTHWEST CORNER OF THE HEREIN-DESCRIBED PARCEL;

THENCE RUNNING N 57°52'00"E, A DISTANCE OF 67.00 FEET ALONG THE SOUTHERLY SIDELINE OF WATER STREET;

THENCE TURNING AND RUNNING S 32°08'00"E, A DISTANCE OF 84.45 FEET;

THENCE TURNING AND RUNNING N 57°52'00"E, A DISTANCE OF 360.00 FEET;

THENCE TURNING AND RUNNING S 32°08'00"E, A DISTANCE OF 14.52 FEET;

THENCE TURNING AND RUNNING S 57°43'22"W, A DISTANCE OF 289.82 FEET;

THENCE TURNING AND RUNNING S 57°58'31 "E, A DISTANCE OF 89.55 FEET;

THENCE TURNING AND RUNNING S 80°52'00"W, A DISTANCE OF 98.00 FEET;

THENCE TURNING AND RUNNING S 57°52'00"W, A DISTANCE OF 86.00 FEET;

THENCE TURNING AND RUNNING N 32°07'28"W, A DISTANCE OF 31.91 FEET;

THENCE TURNING AND RUNNING S 57°52'00"W, A DISTANCE OF 91.92 FEET TO A POINT ON THE SOUTHEASTERLY SIDELINE OF WATER STREET;

THENCE TURNING AND RUNNING NORTHEASTERLY BY A CURVE TO THE LEFT HAVING A RADIUS OF 82.00 FEET, A DISTANCE OF 37.69 FEET ALONG SAID SOUTHEASTERLY SIDELINE OF WATER STREET;

THENCE TURNING AND RUNNING N 57°52'00"E, A DISTANCE OF 64.74 FEET;

THENCE TURNING AND RUNNING N 32°08'00"W, A DISTANCE OF 84.45 FEET TO THE POINT OF BEGINNING.

THE ABOVE-DESCRIBED PARCEL OF LAND CONTAINS AN AREA OF 21,625 SQUARE FEET ACCORDING TO SAID CONSTITUTION CENTER SURVEY.

PARCEL 4
(LEASE AREA)

BEGINNING AT A POINT AT THE MOST NORTHWESTERLY CORNER OF THE LEASE PARCEL ABOUT 100 FEET SOUTHEASTERLY OF THE SOUTHERLY STREET LINE OF CONSTITUTION ROAD, SAID POINT BEING THE POINT OF BEGINNING:

THENCE RUNNING N57°43'22" E A DISTANCE OF 289.82 FEET TO A POINT;

THENCE S32°08'00"E A DISTANCE OF 20.48 FEET TO A POINT;

THENCE N57°43'22"E A DISTANCE OF 190.00 FEET TO A POINT;

THENCE S89°00'00"E A DISTANCE OF 84.50 FEET TO A POINT;

THENCE S57°58'31"E A DISTANCE OF 533.24 FEET TO A POINT;

THENCE [S57°52'00"W] A DISTANCE 511.17 FEET TO A POINT;

THENCE N57°58'31"W A DISTANCE OF 470.56 FEET TO A POINT;

THENCE N66°00'00"W A DISTANCE OF 49.72 FEET TO A POINT;

THENCE N57°58'31"W A DISTANCE OF 89.55 FEET TO THE POINT OF BEGINNING.

TOGETHER WITH ACCESS TO AND FROM CONSTITUTION ROAD AND WATER ST., PUBLIC WAYS.

CONTAINING ABOUT 273,999± SQUARE FEET OF LAND ACCORDING TO SAID CONSTITUTION CENTER SURVEY.

TOGETHER WITH THE RIGHT TO MAINTAIN, REPAIR AND REPLACE EXISTING UTILITY LINES WHICH CURRENTLY SERVE THE INSURED PREMISES LOCATED ON ANY ADJOINING LAND FORMERLY LEASED TO DEPARTMENT OF THE INTERIOR, NATIONAL PARK SERVICE, BOSTON NATIONAL HISTORIC PARK BY LEASE DATED MARCH 14, 1997 AND THE RIGHT TO MAINTAIN ELECTRIC AND TELEPHONE LINES AS PRESENTLY LOCATED ACROSS MASS PORT'S LAND BETWEEN THE ENTRANCE AREA AND SAID DEPARTMENT OF THE INTERIOR LAND. ALL OF THE AFORESAID RIGHTS ARE CREATED PURSUANT TO THE SECOND AMENDED AND RESTATED GROUND LEASE BETWEEN CONSTITUTION CENTER LLC AND MASSPORT, AND WHICH ARE SHOWN ON PLAN ENTITLED, "UPDATED SURVEY INSPECTION – MAR. 11, 1999 ALTA/ACSM LAND TITLE SURVEY CONSTITUTION PLAZA BOSTON (CHARLESTOWN) MASS., SCALE: 1" = 40'' PREPARED BY HARRY R. FELDMAN, INC. AND DATED OCTOBER 19, 1998, AS REVISED ON AUGUST 16, 2000 AND FURTHER REVISED ON JULY 18, 2002, AND SEPTEMBER 20, 2002, FEBRUARY 20, 2007, MAY 17, 2007, JULY 10, 2007, AND OCTOBER 17, 2007.

SAID PARCELS 1 THROUGH 4, HAVE THE BENEFIT OF AND ARE SUBJECT TO RIGHTS AND EASEMENTS FOR ACCESS AND UTILITIES AS SET FORTH IN AN ACCESS AND UTILITY EASEMENT AGREEMENT BY AND AMONG CONSTITUTION CENTER III LLC, CONSTITUTION CENTER LLC AND MASSACHUSETTS PORT AUTHORITY DATED NOVEMBER 19, 2007, RECORDED IN BOOK 42745, PAGE 1.

SAID PARCELS 1 THROUGH 4 HAVE THE BENEFIT OF AND ARE SUBJECT TO RIGHTS, OBLIGATIONS AND NON-EXCLUSIVE EASEMENTS AS SET FORTH IN THE RECIPROCAL PARKING AGREEMENT BY AND BETWEEN CONSTITUTION CENTER LLC AND CONSTITUTION CENTER III LLC DATED AS OF DECEMBER 9, 2013 AND RECORDED IN BOOK 52671, PAGE 208.

PARCEL 5
(EXPANSION PARCEL)

A CERTAIN PARCEL OF LAND SHOWN ON A PLAN ENTITLED "MASSACHUSETTS PORT AUTHORITY BOSTON, MASSACHUSETTS, MARITIME PROPERTIES, CONSTITUTION CENTER III, LLC, LEASE PLAN OF LAND ON CONSTITUTION ROAD CHARLESTOWN, MA", PREPARED BY MASSPORT SURVEY UNIT, LOGAN AIRPORT, EAST BOSTON, MA 02128, DATED 10/29/07, DRAWING NO. 1283-036 ("CONSTITUTION CENTER III SURVEY") AND FURTHER DESCRIBED AS:

BEGINNING AT A POINT ON THE NORTHWEST CORNER OF THE PARCEL ON CONSTITUTION RD,

THENCE RUNNING N 57-52-00 E, A DISTANCE OF 458.25 FEET BY SAID CONSTITUTION RD,

THENCE S 32-08-00 E, A DISTANCE OF 98.72 FEET,

THENCE N 57-43-22 E, A DISTANCE OF 293.56 FEET,

THENCE S 57-18-15 E, A DISTANCE OF 33.03 FEET, SAID LAST THREE COURSES BY LAND OF THE NATIONAL PARK SERVICE,

THENCE S 31-19-14 W, A DISTANCE OF 51.37 FEET,

THENCE N 62-42-03 W, A DISTANCE OF 31.30 FEET,

THENCE S 59-24-55 W, A DISTANCE OF 57.14 FEET,

THENCE S 03-27-50 E, A DISTANCE OF 48.57 FEET,

THENCE S 53-57-45 W, A DISTANCE OF 2.81 FEET, SAID LAST FIVE COURSES BY THE SEAWARD FACE OF A SEAWALL,

THENCE N 89-00-00 W, A DISTANCE OF 84.50 FEET,

THENCE S 57-43-22 W, A DISTANCE OF 190.00 FEET,

THENCE N 32-08-00 W, A DISTANCE OF 35.00 FEET,

THENCE S 57-52-00 W, A DISTANCE OF 360.00 FEET,

THENCE N 32-08-00 W, A DISTANCE OF 84.45 FEET TO THE POINT OF BEGINNING, SAID LAST FIVE COURSES BY LAND LEASED TO CONSTITUTION CENTER, LLC,

CONTAINING APPROXIMATELY 52,079 SQUARE FEET ACCORDING TO SAID CONSTITUTION CENTER III SURVEY.

SAID PARCEL 5 HAS THE BENEFIT OF AND IS SUBJECT TO RIGHTS AND EASEMENTS FOR ACCESS AND UTILITIES AS SET FORTH IN AN ACCESS AND UTILITY EASEMENT AGREEMENT BY AND AMONG CONSTITUTION CENTER III LLC, CONSTITUTION CENTER LLC, AND MASSACHUSETTS PORT AUTHORITY DATED NOVEMBER 19, 2007 RECORDED IN BOOK 42745, PAGE 1.

SAID PARCEL 5 HAS THE BENEFIT OF AND IS SUBJECT TO RIGHTS, OBLIGATIONS AND NON-EXCLUSIVE EASEMENTS AS SET FORTH IN THE RECIPROCAL PARKING AGREEMENT BY AND BETWEEN CONSTITUTION CENTER LLC AND CONSTITUTION CENTER III LLC DATED AS OF DECEMBER 9, 2013 AND RECORDED IN BOOK 52671, PAGE 208.

[ ] SCRIVENERS ERROR

EXCEPTIONS FROM COVERAGE (SURVEY RELATED ONLY) SCHEDULE B, PART I, LISTED IN LEASEHOLD LOAN POLICY NO. C22406 ISSUED BY COMMONWEALTH LAND TITLE INSURANCE COMPANY HAVING AN EFFECTIVE DATE OF DECEMBER 11, 2015.

6. TERMS AND PROVISIONS OF THE FOLLOWING LICENSES: (NOT PLOTTABLE)
   - a) BOOK 1516, PAGE 243
   - b) BOOK 1523, PAGE 189
   - c) BOOK 1525, PAGE 399
   - d) BOOK 1535, PAGE 213
   - e) BOOK 1545, PAGE 602
   - f) BOOK 1819, PAGE 354
   - g) BOOK 2567, PAGE 377
   - h) BOOK 2694, PAGE 141
   - i) BOOK 2793, PAGE 289
   - j) BOOK 3018, PAGE 268
   - k) BOOK 3096, PAGE 392
   - l) BOOK 3145, PAGE 42
   - m) BOOK 10698, PAGE 242

7. TERMS AND PROVISIONS OF THE CITY OF BOSTON DRAIN AND SEWER EASEMENTS RECORDED IN BOOK 911, PAGE 79 AND IN BOOK 911, PAGE 80. (AS SHOWN HEREON)

8. RIGHTS OF THE COMMONWEALTH OF MASSACHUSETTS AND THE PUBLIC GENERALLY IN AND TO THAT PORTION OF THE INSURED PREMISES THAT LIES SEAWARD OF THE PRIMITIVE LOW WATER MARK OF THE ATLANTIC OCEAN (BOSTON HARBOR), INCLUDING WITHOUT LIMITATION AN IMPLIED PUBLIC TRUST OR OTHER MATTER(S) ARISING OUT OF THE LAWS OF THE COMMONWEALTH OF MASSACHUSETTS AS DEFINED BY THE COURTS OF THE COMMONWEALTH. (NOT PLOTTABLE)

9. EASEMENT RIGHTS OF THE PUBLIC FOR FISHING, FOWLING, AND NAVIGATION IN SO MUCH OF THE INSURED PREMISES AS LIES BELOW THE LINE OF THE PRIMITIVE MEAN HIGH WATER MARK OF THE ATLANTIC OCEAN (BOSTON HARBOR). (NOT PLOTTABLE)

10. RIGHTS OF THE UNITED STATES OF AMERICA UNDER THE FEDERAL NAVIGATIONAL SERVITUDE IN AND TO THAT PORTION OF THE INSURED PREMISES THAT LIES SEAWARD OF THE PRIMITIVE HIGH WATER MARK OF THE ATLANTIC OCEAN (BOSTON HARBOR). (NOT PLOTTABLE)

11. INTENTIONALLY OMITTED.

12. TERMS AND PROVISIONS OF A LICENSE TO THE BOSTON REDEVELOPMENT AUTHORITY RECORDED IN BOOK 8958, PAGE 63 AND AN EASEMENT RECORDED IN BOOK 8063, PAGE 638 CROSSING ENTRANCE AREA; AS AFFECTED BY THE TERMS AND PROVISIONS OF A GRANT OF EASEMENT AND AGREEMENT BY AND BETWEEN THE MASSACHUSETTS PORT AUTHORITY AND THE BOSTON WATER AND SEWER COMMISSION DATED NOVEMBER 22, 1985 AND RECORDED ON DECEMBER 5, 1985 IN BOOK 12097, PAGE 55. (AS SHOWN HEREON)

13. ORDER OF TAKING BY THE COMMONWEALTH OF MASSACHUSETTS, DEPARTMENT OF PUBLIC WORKS RECORDED IN BOOK 14314, PAGE 279; AS AFFECTED BY AMENDMENT TO LAYOUT NO. 6827 RECORDED IN BOOK 15038, PAGE 37. (NOT LOCUS)

14. ABANDONMENT OF SEWER EASEMENT BY THE CITY OF BOSTON DATED JANUARY 21, 1948 AND RECORDED IN BOOK 6438, PAGE 426; AS AFFECTED BY A RELEASE OF EASEMENTS TO THE COMMONWEALTH OF MASSACHUSETTS DATED JANUARY 21, 1948 AND RECORDED IN BOOK 6438, PAGE 429, AS TO EASEMENTS SHOWN WITHIN THE LOCATIONS DESIGNATED "A" AND "B" AND RETENTION OF EASEMENTS IN LOCATION DESIGNATED AS "C" ON PLAN DATED APRIL 8, 1947 AND RECORDED IN BOOK 6438, PAGE 429. (AS SHOWN HEREON)

15. TERMS AND PROVISIONS OF THE DRAIN AND SEWER EASEMENT GRANTED BY THE COMMONWEALTH OF MASSACHUSETTS, PORT OF BOSTON AUTHORITY DATED MAY 18, 1948 AND RECORDED IN BOOK 6438, PAGE 433. (AS SHOWN HEREON)

16. TERMS AND PROVISIONS OF THE DRAIN AND SEWER EASEMENT GRANTED BY THE COMMONWEALTH OF MASSACHUSETTS, PORT OF BOSTON AUTHORITY DATED MAY 1948 AND RECORDED IN BOOK 6467, PAGE 235. (AS SHOWN HEREON)

17. TERMS AND PROVISIONS OF THE LICENSE OF THE DEPARTMENT OF ENVIRONMENTAL PROTECTION DATED FEBRUARY 10, 1993 AND RECORDED IN BOOK 18047, PAGE 182. (NOT PLOTTABLE – PLAN NOT PROVIDED)

18. TERMS AND PROVISIONS OF A PARKING LICENSE AGREEMENT DATED AS OF SEPTEMBER 19, 2002 BY AND BETWEEN CONSTITUTION CENTER LLC AND BOSPORT DOCKING LLC D/B/A CONSTITUTION MARINA RECORDED IN BOOK 29819, PAGE 274. (AS SHOWN HEREON)

19. TERMS AND PROVISIONS OF AN ACCESS AND UTILITY EASEMENT AGREEMENT BY AND AMONG CONSTITUTION CENTER III LLC, CONSTITUTION CENTER LLC, AND THE MASSACHUSETTS PORT AUTHORITY DATED NOVEMBER 19, 2007 AND RECORDED IN BOOK 42745, PAGE 1 (THE "ACCESS AND UTILITY EASEMENT"). (AS SHOWN HEREON)

20. TERMS AND PROVISIONS OF A LEASE, EXECUTED BY CONSTITUTION CENTER LLC, AS TENANT, AND THE MASSACHUSETTS PORT AUTHORITY, AS LANDLORD, AND ANY AMENDMENTS THERETO. NOTICE OF SAID LEASE IS DATED MARCH 18, 1999 AND RECORDED IN BOOK 23554, PAGE 311; AS AFFECTED BY THE TERMS AND PROVISIONS OF AN ASSIGNMENT AND ASSUMPTION OF LEASEHOLD ESTATE DATED MARCH 18, 1999 AND RECORDED ON MARCH 19, 1999 IN BOOK 23554, PAGE 324; AND AS AFFECTED BY THE TERMS AND PROVISIONS A NOTICE OF SECOND AMENDED AND RESTATED GROUND LEASE DATED NOVEMBER 19, 2007 AND RECORDED IN BOOK 42744, PAGE 319. (NOT PLOTTABLE)

21. TERMS AND PROVISIONS OF A LEASE BY AND BETWEEN CONSTITUTION CENTER LLC, AS LANDLORD, AND TOOMEY & YUDYSKY, LLP, AS TENANT, NOTICE OF WHICH IS DATED APRIL 28, 2009 AND RECORDED IN BOOK 44914, PAGE 129. (NOT PLOTTABLE)

22. TERMS AND PROVISIONS OF A LEASE BY AND BETWEEN CONSTITUTION CENTER LLC, AS LANDLORD, AND PARTNERS HEALTH CARE SYSTEMS, INC., AS TENANT, NOTICE OF WHICH IS DATED AUGUST 6, 2009 AND RECORDED IN BOOK 45461, PAGE 176. (NOT PLOTTABLE)

23. TERMS AND PROVISIONS OF A LEASE BY AND BETWEEN CONSTITUTION CENTER LLC, AS LANDLORD, AND THE MGH INSTITUTE OF HEALTH PROFESSIONAL, INC., AS TENANT, NOTICE OF WHICH IS DATED SEPTEMBER 21, 2011 AND RECORDED IN BOOK 48506, PAGE 40; AS AFFECTED BY THE TERMS AND PROVISIONS OF AN AMENDED AND RESTATED NOTICE OF LEASE DATED JUNE 28, 2013 AND RECORDED IN BOOK 51999, PAGE 103. (NOT PLOTTABLE)

24. TERMS AND PROVISIONS OF A SIGN EASEMENT AND UTILITY AGREEMENT BY AND BETWEEN CONSTITUTION CENTER LLC AND TUDOR WHARF HOTEL REALTY, LLC DATED AUGUST 19, 2013, RECORDED IN BOOK 52015, PAGE 325, AND FILED AS DOCUMENT NO. [822684]. (AS SHOWN HEREON)

25. TERMS AND PROVISIONS OF THE RECIPROCAL PARKING AGREEMENT BY AND BETWEEN CONSTITUTION CENTER LLC AND CONSTITUTION CENTER III LLC DATED DECEMBER 9, 2013 AND RECORDED IN BOOK 52671, PAGE 208. (NOTE: ALSO AFFECTS PARCEL 5). (AS SHOWN HEREON)

26. INTENTIONALLY OMITTED.

27. TERMS AND PROVISIONS OF AN EXPANSION PARCEL GROUND LEASE BY AND BETWEEN CONSTITUTION CENTER III LLC, AS TENANT, AND THE MASSACHUSETTS PORT AUTHORITY, AS LANDLORD, NOTICE OF WHICH IS DATED NOVEMBER 19, 2007 AND RECORDED IN BOOK 42744, PAGE 328. (NOT PLOTTABLE)

28. TERMS AND PROVISIONS OF A LEASE BY AND BETWEEN CONSTITUTION CENTER III LLC, AS LANDLORD, AND BRIGHT HORIZONS CHILDREN'S CENTERS, LLC, AS TENANT, NOTICE OF WHICH IS DATED DECEMBER 9, 2013 AND RECORDED IN BOOK 52671, PAGE 185. (NOT PLOTTABLE)

29. OBLIGATIONS AND LIABILITIES RELATING TO OVERHEAD AND UNDERGROUND FACILITIES AS SET FORTH IN A DEED OF BOSTON AND MAINE CORPORATION DATED JANUARY 13, 1984 AND RECORDED IN BOOK 10737, PAGE 320. (NOT PLOTTABLE)

30. INTENTIONALLY OMITTED.

31. TERMS AND PROVISIONS OF LICENSE NO. 13657 ISSUED BY THE COMMONWEALTH OF MASSACHUSETTS, DEPARTMENT OF ENVIRONMENTAL PROTECTION RECORDED IN BOOK 52819, PAGE 127. (NOT PLOTTABLE)

32. TERMS AND PROVISIONS OF LEASE BY AND BETWEEN CONSTITUTION CENTER III LLC, AS LANDLORD, AND PARTNERS HEALTH CARE SYSTEM, INC., AS TENANT, NOTICE OF WHICH IS DATED AUGUST 6, 2009 AND RECORDED IN BOOK 45461, PAGE 170. (NOT PLOTTABLE)

33. TERMS AND PROVISIONS OF A LEASE BY AND BETWEEN CONSTITUTION CENTER III LLC, AS LANDLORD, AND THE MGH INSTITUTE OF HEALTH PROFESSIONALS, INC., AS TENANT, NOTICE OF WHICH IS DATED SEPTEMBER 21, 2011 AND RECORDED IN BOOK 48506, PAGE 49; AS AFFECTED BY THE TERMS AND PROVISIONS OF AN AMENDED AND RESTATED A NOTICE OF LEASE DATED JUNE 28, 2013 AND RECORDED IN BOOK 51999, PAGE 112. (NOT PLOTTABLE)

[ ] SCRIVENERS ERROR

	3/14/2016	REVISED NOTE 5
	2/29/2016	UPDATED PER TITLE COMMITMENT
	2/02/2016	UPDATED PER TITLE COMMITMENT
	9/30/2015	UPDATED FIELD SURVEY

ALTA/ACSM LAND TITLE SURVEY
CONSTITUTION PLAZA
BOSTON, (CHARLESTOWN) MASS.

FELDMAN LAND SURVEYORS
112 SHAWMUT AVENUE
BOSTON, MASS. 02118

AUGUST 28, 2015
PHONE: (617)357-9740
www.feldmansurveyors.com

FELDMAN
LAND SURVEYORS

30 0 15 30 60 120

SCALE: 1"=30'

RESEARCH AJA	FIELD CHIEF AB	PROJ MGR DJR	APPROVED DJR	SHEET NO. 2 OF 2
CALC AJA	CADD DCH RTC	FIELD CHECKED	CRD FILE 14746	JOB NO. 14746

FILENAME: S:\PROJECTS\14700s\14746\DWG\14746B-ALTA.dwg

TO: HSBC BANK USA, NATIONAL ASSOCIATION, AS ADMINISTRATIVE AGENT FOR ITSELF AND CERTAIN OTHER CO-LENDERS AND THEIR RESPECTIVE SUCCESSORS, NOMINEES AND ASSIGNS, AS THEIR INTERESTS MAY APPEAR;
CONSTITUTION CENTER LLC;
CONSTITUTION CENTER III LLC;
CONSTITUTION CENTER INVESTORS VAF LLC;
ND CONSTITUTION CENTER, LLC;
CR CONSTITUTION CENTER LLC; AND
COMMONWEALTH LAND TITLE INSURANCE COMPANY:

THIS IS TO CERTIFY THAT THIS PLAN AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2011 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 2, 3, 4, 6(B), 7(A), 7(B)(1), 7(C), 8, 9, 10, 11(A), 13, 16, 17, 18 AND 21 OF TABLE A THEREOF. THE FIELD WORK WAS COMPLETED ON AUGUST 28, 2015

FELDMAN LAND SURVEYORS

DAMIEN J. RAFFLE, PLS (MA# 49629)
djr@feldmanlandsurveyors.com

3/14/2016
DATE

COMMONWEALTH OF MASSACHUSETTS
DAMIEN J. RAFFLE No.49629
REGISTERED PROFESSIONAL LAND SURVEYOR

Nitsch Engineering

October 9, 2019

STORMWATER REPORT
FOR NOTICE OF INTENT

For

CONSTITUTION WHARF PHASE 2
75 Constitution Road
Boston, Massachusetts 02129

Prepared for:

JAMESTOWN
21 Drydock Avenue
Boston, Massachusetts 02210

Prepared by:

NITSCH ENGINEERING, INC.
2 Center Plaza Suite 430
Boston, MA 02108

Nitsch Project #13323

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APPENDICES

1.0 INTRODUCTION

On behalf of the Applicant, Jamestown, Nitsch Engineering is providing this Stormwater Report to support the Notice of Intent (NOI) application with the City of Boston Conservation Commission for the proposed landscape improvement project at Constitution Wharf. The proposed project includes landscape improvements near a portion of the existing building located on Constitution Wharf, to serve new tenant fit out within the building. Proposed site improvements include updated walkways and planter layouts, a new patio, and a new sewer service.

The proposed project is a modification to recently completed project in the same space. The project proposes to update the configuration of a patio layout and reconfigure the plantings and shrubs along the outdoor space. The Harborwalk will not be modified as part of this project. The project also requires a new sewer connection as part of the tenant fit out, which is outside of the jurisdictional resource areas described below.

The site is located within 100-feet of the Boston Harbor and in the Federal Emergency Management Association's (FEMA) Flood Insurance Rate Map Zone AE, which is Land Subject to Coastal Storm Flowage, more commonly known as the 100-year flood plain. The purpose of this NOI Application is to receive an Order of Conditions from the City of Boston Conservation Commission approving the proposed project under the Massachusetts Wetlands Protection Act (M.G.L. c. 131, §40) and its Regulations (310 CMR 10.00).

2.0 EXISTING CONDITIONS

2.1 Existing Site Description

The project site is located at 1 Constitution Center in Boston, Massachusetts (Figure 1 – USGS Locus Map and Figure 2 – Aerial Locus Map). The site is bounded to the north by Constitution Road and by the Boston Harbor to the west, south and east. The Site is approximately 8.4-acres (366,431 square feet) with the area of disturbance as part of this project approximately 0.12 acres (5,080 square feet). Currently the Site is mostly impervious and covered by buildings and parking areas with landscaped areas and pedestrian walkways along the edge of the site boundary, Harborwalk, and within the parking lot. Proposed work within the existing site is limited to landscaped areas around an entrance to the existing building to construct a patio, and the project north of the existing building where the new sewer connection is needed.

2.2 Existing Utility Infrastructure

The existing site has underground utilities to support the building and site uses. Within the proposed limit of work, there is existing electrical service for site lighting, minimal underground stormwater collection systems and an irrigation system. Stormwater management within the limit of work is provided naturally by landscaped area infiltration and sheet flow over pedestrian walkways to previously installed infiltration trenches at the back of the Harborwalk sidewalk which discharge to the Boston Harbor through gaps at the bottom of the Harborwalk wall. There is one (1) existing catch basin within the limit of work, located in a landscaped area. The catch basin collects stormwater from the landscaped area and discharges to the Boston Harbor.

2.3 Soils

Based on the Natural Resources Conservation Service (NRCS) Web Soil Survey (2016), the majority of the site is classified as urban land.

2.4 Environmental Considerations

FEMA Flood Zone

Based on the Flood Insurance Rate Map (FIRM), Community Panel Number 25025C0081J, dated March 16, 2016 some portions of the site are located within Zone AE (Land Subject to Coastal Storm Flowage) with an elevation of 10 (NAVD88 or 16.46 Boston City Base (BCB)).

Water Supply Protection Area

The site is not located within a Water Supply Protection Area.

Other Resource Areas

The project site is bordered to the west, south and east by the Boston Harbor and delineated by a granite seawall and revetment which is subject to a 100-foot buffer zone.

Natural Heritage and Endangered Species Program

The site is not located within a Priority Habitat of Rare Species or an Estimated Habitat of Rare Wildlife.

3.0 PROPOSED CONDITIONS

3.1 Project Description

The proposed project includes landscape improvements near a portion of the existing building located on Constitution Wharf, to serve new tenant fit out within the building. Proposed site improvements within the jurisdictional area include updated walkways and planter layouts and a new patio.

The proposed project is a modification to recently completed project in the same space. The project proposes to update the configuration of a patio layout and reconfigure the plantings and shrubs along the outdoor space. The Harborwalk will not be modified as part of this project. There are no proposed utility improvements as part of the proposed project other than the new sewer connection as required to support the proposed building fit out.

The proposed project will increase the impervious area by 549 square feet of pedestrian walkway areas, as outlined in Table 1. All of the increased impervious area is for pedestrian walkways or patios and will not be subject to vehicular travel.

Table 1. Proposed land use change for Constitution Wharf (in square feet)

Land Use	Existing	Proposed	Change
Site Impervious Walkways	0	549	+ 549
Grass/Plantings (Improvements)	4,906	3,543	- 1,363
Infiltration Trench (Maintained)	290	290	0
Pervious Decking (Improvements)	69	883	+ 814
Total	5,265	5,265	---

3.2 Stormwater Management System

No changes to the closed stormwater management system are proposed. The proposed improvements drain to the Boston Harbor, as they do in the existing condition.

4.0 STORMWATER MANAGEMENT ANALYSIS

4.1 Methodology

Nitsch Engineering completed a hydrologic analysis of the existing project site utilizing Soil Conservation Service (SCS) Runoff Curve Number (CN) methodology. The SCS method calculates the rate at which the runoff reaches the design point considering several factors: the slope and flow lengths of the subcatchment area, the soil type of the subcatchment area, and the type of surface cover in the subcatchment area. HydroCAD Version 10.00 computer modeling software was used in conjunction with the SCS method to determine the peak rates of runoff for the 2-, 10-, 25- and 100-year, 24-hour storm events. The proposed project site is being analyzed with the same methodology.

The project site will drain to two design points. A portion of the site will be collected in the municipal drainage network while the remaining portion will sheet flow to the infiltration trench ultimately discharging into Boston Harbor. For each subcatchment area, SCS Runoff Curve Numbers (CNs) were selected by using the cover type and hydrologic soil group of each area. The peak runoff rates for the 2-, 10-, 25- and 100-year 24-hour storm events were then determined by inputting the drainage areas, CNs, and Tc paths into HydroCAD.

4.2 HydroCAD Version 10.00

The HydroCAD computer program uses SCS and TR-20 methods to model drainage systems. TR-20 (Technical Release 20) was developed by the Soil Conservation Service to estimate runoff and peak discharges in small watersheds. TR-20 is generally accepted by engineers and reviewing authorities as the standard method for estimating runoff and peak discharges.

HydroCAD Version 10.00 uses up to four types of components to analyze the hydrology of a given site: subcatchments, reaches, basins, and links. Subcatchments are areas of land that produce surface runoff. The area, weighted CN, and T_c characterize each individual subcatchment area. Reaches are generally uniform streams, channels, or pipes that convey water from one point to another. A basin is any impoundment that fills with water from one or more sources and empties via an outlet structure. Links are used to introduce hydrographs into a project from another source or to provide a junction for more than one hydrograph within a project.

The time span for the model was set for 0-48 hours to prevent truncation of the hydrograph.

4.3 Precipitation Data

Nitsch used NOAA Atlas 14 by ethe National Oceanic and Atmospheric Administration to estimate the rainfall for the 2-year, 25-year 10-year, and 100-year 24-hour storms. The rainfall values for Suffolk County that were used are as follows:

Storm Event	24–hour Rainfall
2-year	3.2 in.
10-year	4.6 in.
25-year	5.5 in.
100-year	6.6 in.

4.4 Existing Hydrologic Conditions

The existing site drains via overland sheet flow to Boston Harbor. There is one catch basin located within the project area which collects landscaped area runoff and discharges to the Boston Harbor. Refer to Figure 1- Existing Conditions Watershed Map.

4.5 Proposed Hydrologic Conditions

There is an increase in impervious area for the proposed conditions, but with the previous installation of the stone trenches in landscaped area, there will be a decrease in the proposed peak rates of runoff from the project site to below the existing rates for the 10-, 25- and 100-year, 24-hour storm events. Peak flows are slightly greater in the 2-year storm for the proposed conditions than they are for the existing condition and will result in a slight increase in peak rate of stormwater flow over the pedestrian walkways to discharge to the Boston Harbor. The existing and proposed peak discharge rate calculations for the 2-, 10-, 25- and 100-year, 24-hour storm events are provided in Appendix A and Appendix B, respectively.

Table 2: Peak Rates of Runoff in cubic feet per second (cfs)

	2-Year	10-Year	25-Year	100-Year
Existing R1 (Boston Harbor)	.06	.51	.54	.78
Proposed R1 (Boston Harbor)	.14	.41	.52	.74

The proposed project will also provide stormwater storage and treatment for the stormwater volume equal to 1-inch depth over the area of proposed impervious surface improvements. Stormwater storage will be provided in the new crushed stone trench in the landscaped area. Stormwater storage as calculated was shown below in cubic feet (C.F.):

Total Improvement Impervious Area = 549 S.F.
Storage Volume (1”) = 549 S.F. x (1’/12”) = 45.75 C.F.

Storage Available in Crushed Stone Trench
Storage Volume = 290 S.F. (145 FT. long x 2 FT. wide) x 2 FT. deep x 30% Voids = 174 C.F.

Total Storage Volume Required (1”) = 46 C.F.
Total Storage Volume Provided = 174 C.F.

5.0 MassDEP Stormwater Management Standards

The proposed project was designed to meet the MassDEP Stormwater Management Standards as summarized below:

Standard 1: No New Untreated Discharges

The proposed project will not discharge any new untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.

Standard 2: Peak Rate Attenuation

The proposed project will meet this standard to the maximum extent practicable.
This standard may be waived for discharges to land subject to coastal storm flowage as defined in 310 CMR 10.04. The existing and proposed peak discharge rate calculations for the 2-, 10-, 25- and 100-year, 24-hour storm events are provided in Appendix A and Appendix B, respectively.

Standard 3: Groundwater Recharge

The Site was designed with Stormwater BMPs to minimize the loss of annual recharge to groundwater. The annual recharge from the post-development site will increase the annual recharge from pre-development conditions based on the proposed infiltration systems soil type using the guidelines provided in the MassDEP Stormwater Management Handbook.

Standard 4: Water Quality Treatment

The improved landscaped areas, grass areas, plant beds, trees and stormwater BMPs expected to increase the quality of runoff entering Boston Harbor.

Source control and pollution prevention measures, such stabilization of eroded surfaces, are included in the Long-Term Pollution Prevention Plan and Operation and Maintenance Plan provided in Appendix C.

Standard 5: Land Uses with Higher Potential Pollutant Loads

The proposed project site does not contain any land uses with higher potential pollutant loads. Therefore, this standard is not applicable.

Standard 6: Critical Areas

The proposed project is not located near any critical areas. Therefore, this standard is not applicable.

Standard 7: Redevelopments

The proposed project is located on a previously developed site and results in a slight increase in impervious area. Therefore, the project is not considered a redevelopment under the DEP Stormwater Management Standards.

Standard 8: Construction Period Pollution Prevention and Sedimentation Control

A plan to control construction-related impacts, including erosion, sedimentation, and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention plan) will be developed and implemented prior to earth removing activities.

Standard 9: Operation and Maintenance Plan

A post-construction operation and maintenance plan has been prepared and will be implemented to ensure that stormwater management systems function as designed. Source control and stormwater BMP operation requirements are summarized in the Long-Term Pollution Prevention Plan and Operation and Maintenance Plan provided in Appendix C.

Standard 10: Prohibition of Illicit Discharges

There will be no illicit discharges to the stormwater management system associated with this project.

6.0 TOTAL MAXIMUM DAILY LOAD

The project site discharges directly into the Boston Harbor. A Draft Pathogen TMDL for the Boston Harbor Watershed (excluding the Neponset River sub-basin) was issued by DEP and the Environmental Protection Agency (EPA).

The TMDL identifies stormwater runoff as a source of bacteria. The existing site includes pedestrian walkways and landscaped areas adjacent to a building. The proposed project will reconstruct the pedestrian walkways, landscaped areas and install a stone trench, promoting infiltration to improve the water quality of the generated stormwater runoff. Therefore, it is anticipated that the bacteria load from the proposed project site will be less than the existing load, and the project will comply with the requirements of the TMDL.

7.0 CONCLUSION

In conclusion, the Project's stormwater management system will reduce or maintain peak runoff rates through use of an infiltration stone trench and improve the water quality of stormwater being discharged from the Site. The Project is being designed to meet the MassDEP Stormwater Management Standards and the Boston Water and Sewer Stormwater Requirements.

FIGURES

ENT
FFE=12.00
(CONC.)

239.57'

11.5 11.6 11.7 11,95 11.6

M&S

CONC.

VGC

ST

BR

11.2

8"WIE

(2)10"

R=9.94

10.6 10.9 11.2

20.5' WIDE
RESERVED AREA

12"D

10.38

10.07

Existing infiltration trench to be utilized for stormwater management

Existing infiltration trench to be maintained

BB

10.09

10.02 10.04 10.25 10.28 10.27

BIT. CONC.

9.67BW
10.45TW

CLEAT

9.89 9.91 9.99 10.27 10.27

M&S

L.O.W.

10.45TW

511.17'

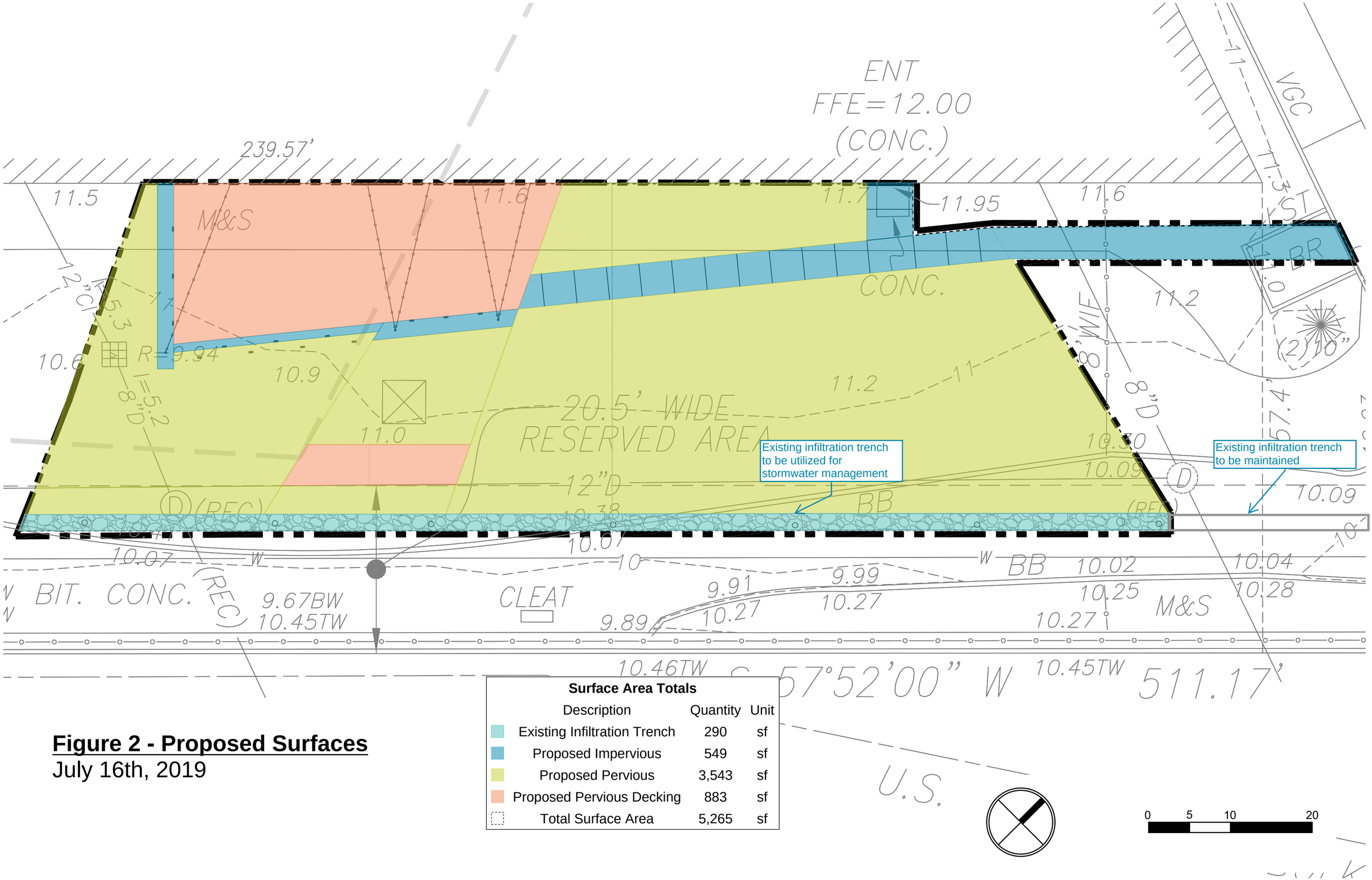
U.S.

Surface Area Totals

Description	Quantity	Unit
Existing Infiltration Trench	290	sf
Existing Pervious Decking	69	sf
Existing Pervious Landscape	4,906	sf
Total Surface Area	5,265	sf

0 5 10 20

Figure 1 - Existing Surfaces
July 16th, 2019

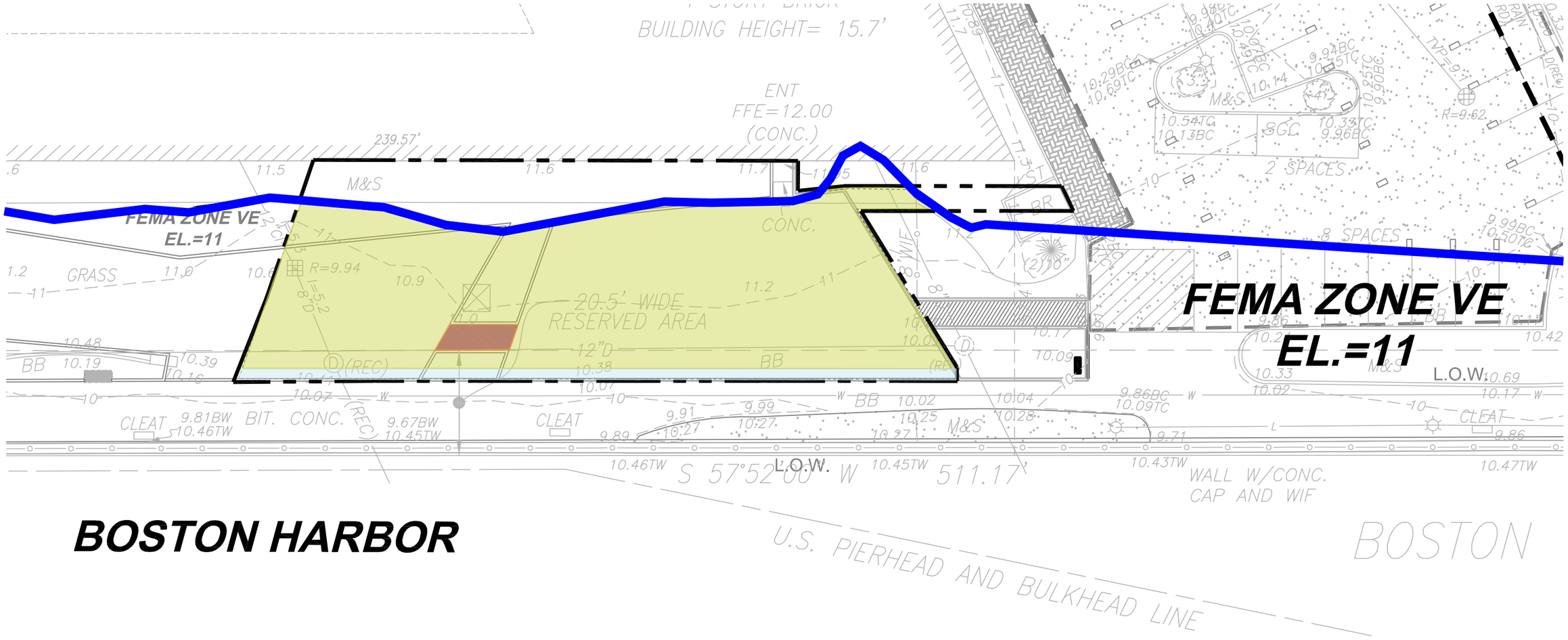


Surface Area Totals

Description	Quantity	Unit
Existing Infiltration Trench	290	sf
Proposed Impervious	549	sf
Proposed Pervious	3,543	sf
Proposed Pervious Decking	883	sf
Total Surface Area	5,265	sf

Figure 2 - Proposed Surfaces
July 16th, 2019

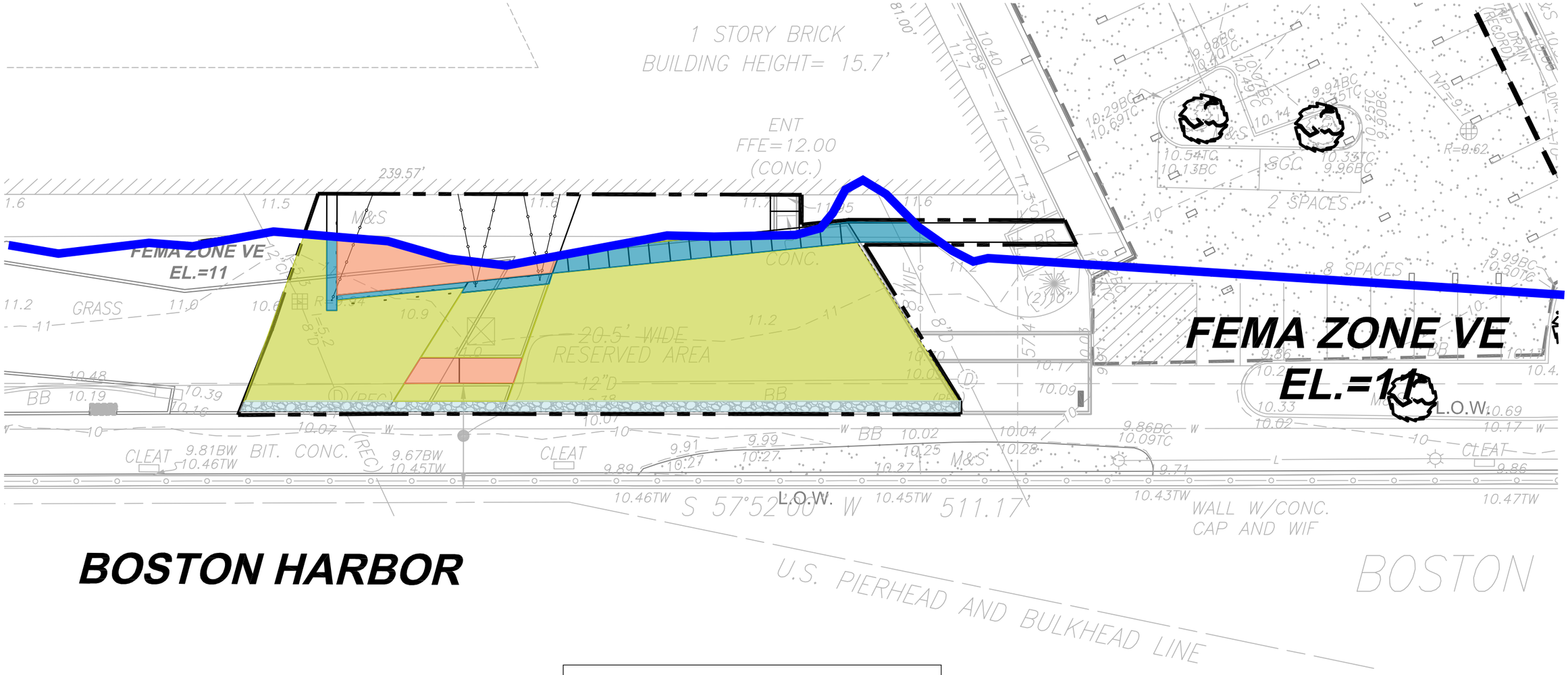
Figure 3 - Existing Resource Areas
July 16th, 2019



Legend		
Description	Quantity	Unit
Pervious - Infiltration Trench	290	sf
Pervious - Landscape	3,800	sf
Pervious - Landscape	69	sf
Total Area	4,159	sf
FEMA Zone Elevation = 11		

0 10 20 40

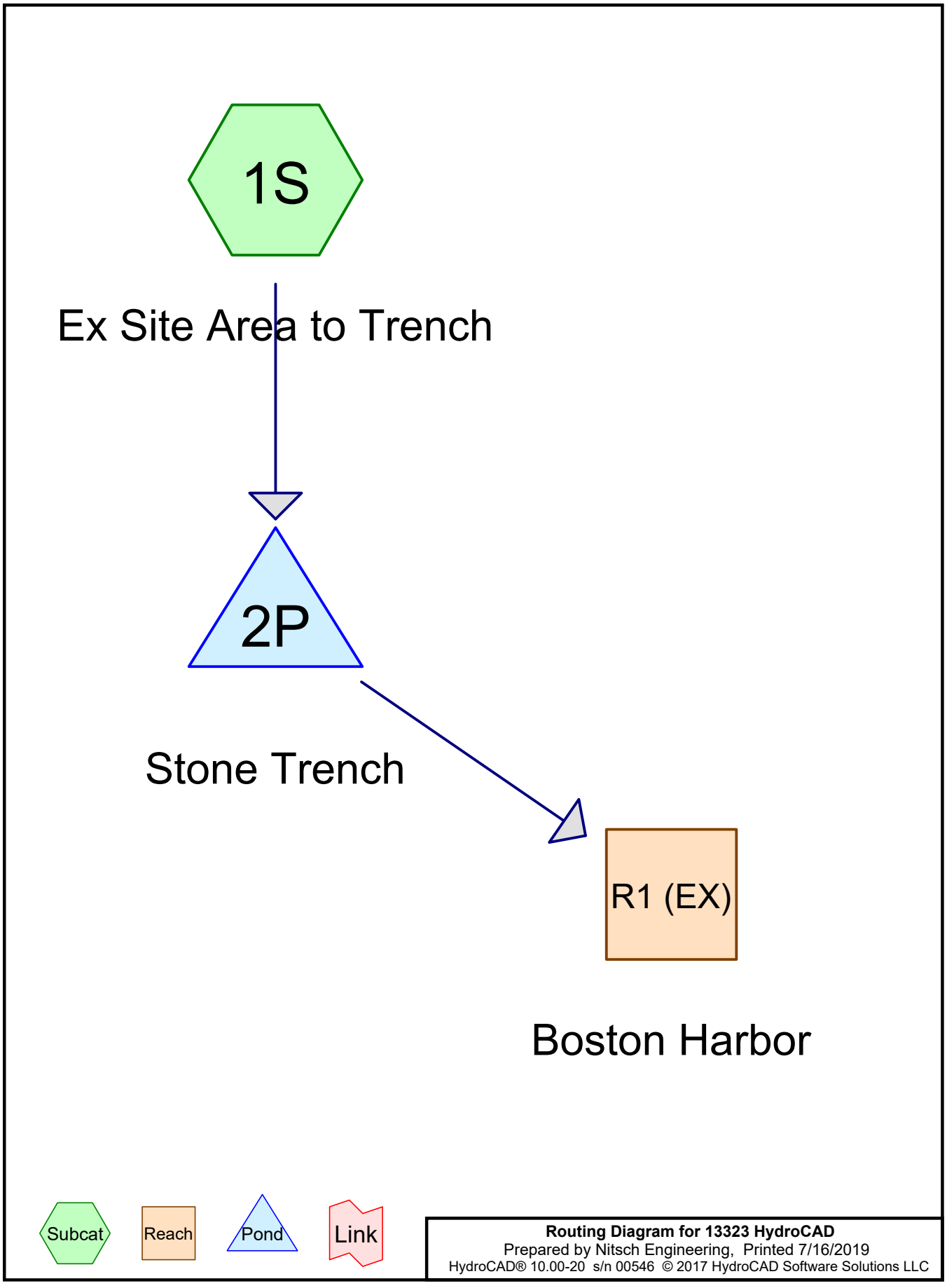
Figure 4 - Proposed Resource Areas
July 16th, 2019



Legend		
Description	Quantity	Unit
Impervious - Concrete	362	sf
Pervious - Decking	354	sf
Pervious - Infiltration Trench	290	sf
Pervious - Landscape	3,154	sf
Total Area	4,159	sf
FEMA Zone Elevation = 11		

APPENDIX A

Existing Conditions – HydroCAD Calculations



Routing Diagram for 13323 HydroCAD
Prepared by Nitsch Engineering, Printed 7/16/2019

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
69	86	<50% Grass cover, Poor, HSG C (1S)
5,196	74	>75% Grass cover, Good, HSG C (1S)
5,265	**74**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
5,265	HSG C	1S
0	HSG D	
0	Other	
5,265		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Su Nu
0	0	69	0	0	69	<50% Grass cover, Poor	
0	0	5,196	0	0	5,196	>75% Grass cover, Good	
0	**0**	**5,265**	**0**	**0**	**5,265**	**TOTAL AREA**	

Time span=0.00-24.00 hrs, dt=0.03 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Ex Site Area to Trench Runoff Area=5,265 sf 0.00% Impervious Runoff Depth>1.04"
Tc=0.0 min CN=74 Runoff=0.17 cfs 455 cf

Reach R1 (EX): Boston Harbor Inflow=0.08 cfs 229 cf
Outflow=0.08 cfs 229 cf

Pond 2P: Stone Trench Peak Elev=11.99' Storage=174 cf Inflow=0.17 cfs 455 cf
Discarded=0.00 cfs 54 cf Primary=0.08 cfs 229 cf Outflow=0.08 cfs 282 cf

Total Runoff Area = 5,265 sf Runoff Volume = 455 cf Average Runoff Depth = 1.04"
100.00% Pervious = 5,265 sf 0.00% Impervious = 0 sf

Summary for Subcatchment 1S: Ex Site Area to Trench

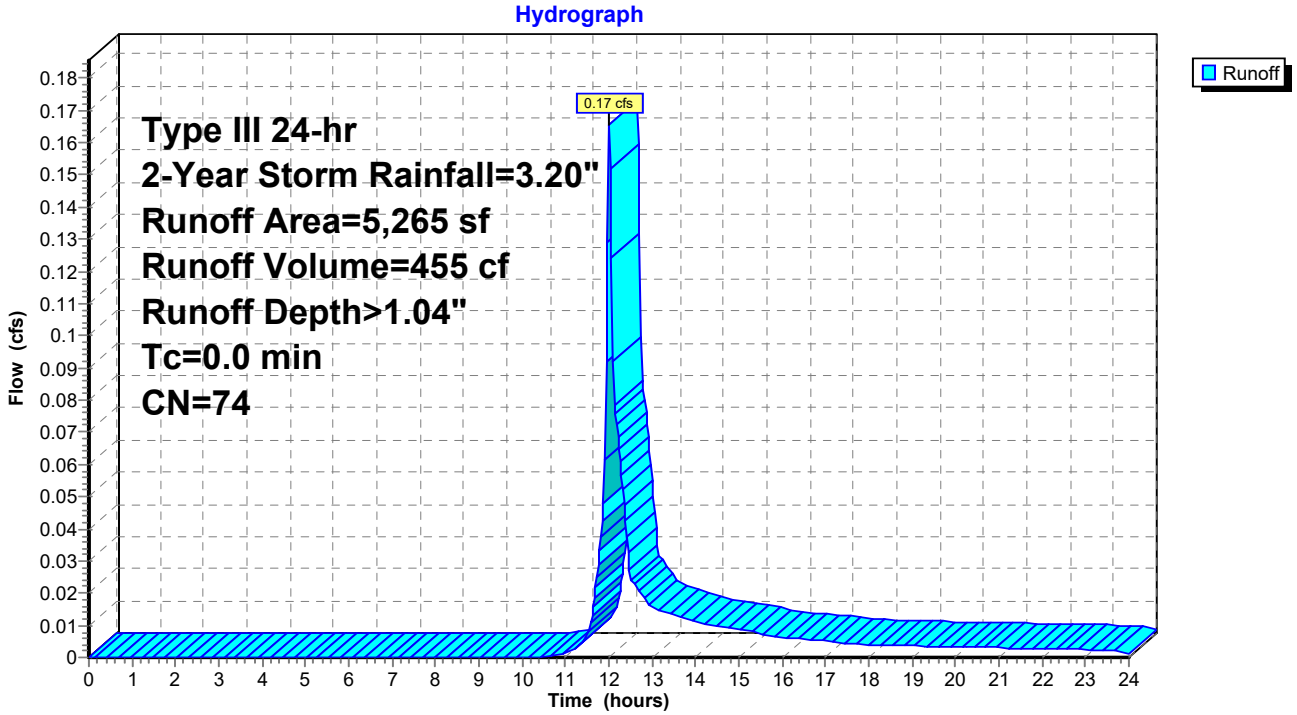
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.17 cfs @ 12.01 hrs, Volume= 455 cf, Depth> 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Type III 24-hr 2-Year Storm Rainfall=3.20"

Area (sf)	CN	Description
4,927	74	>75% Grass cover, Good, HSG C
69	86	<50% Grass cover, Poor, HSG C
269	74	>75% Grass cover, Good, HSG C
5,265	74	Weighted Average
5,265		100.00% Pervious Area

Subcatchment 1S: Ex Site Area to Trench



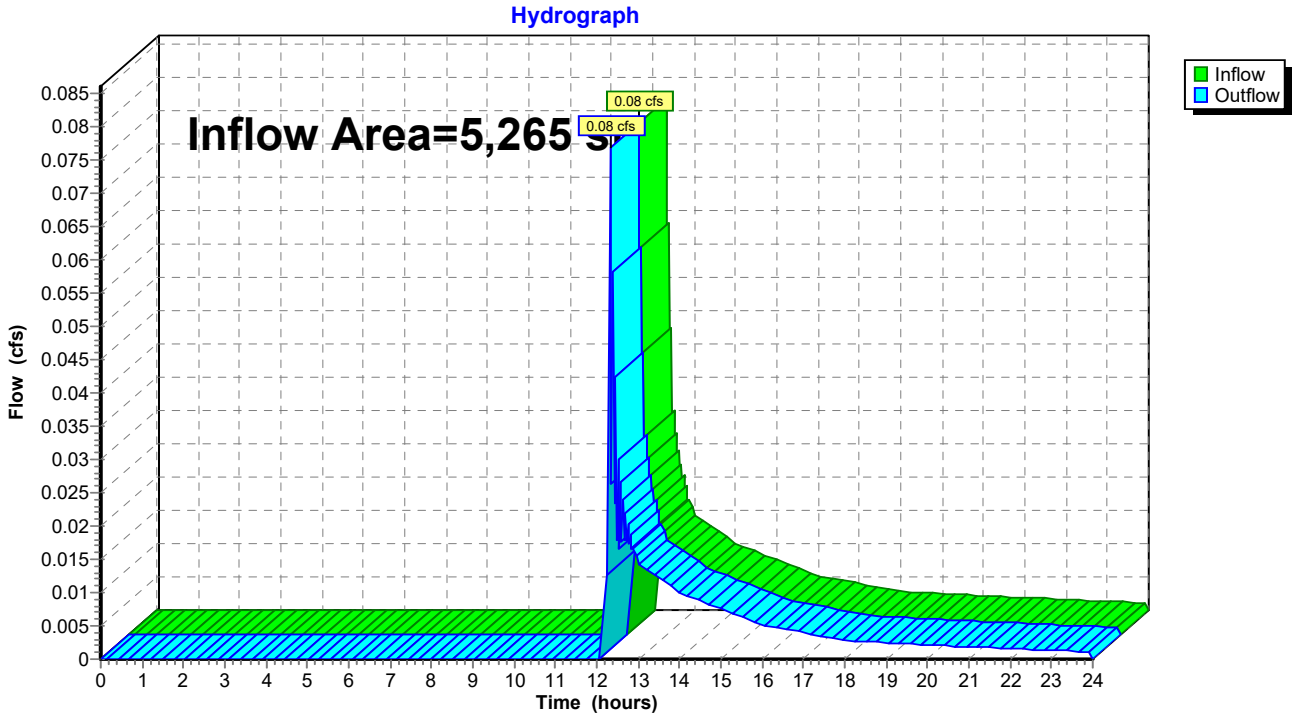
Summary for Reach R1 (EX): Boston Harbor

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 5,265 sf, 0.00% Impervious, Inflow Depth > 0.52" for 2-Year Storm event
Inflow = 0.08 cfs @ 12.33 hrs, Volume= 229 cf
Outflow = 0.08 cfs @ 12.33 hrs, Volume= 229 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs

Reach R1 (EX): Boston Harbor



Summary for Pond 2P: Stone Trench

[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=7)

Inflow Area = 5,265 sf, 0.00% Impervious, Inflow Depth > 1.04" for 2-Year Storm event
Inflow = 0.17 cfs @ 12.01 hrs, Volume= 455 cf
Outflow = 0.08 cfs @ 12.33 hrs, Volume= 282 cf, Atten= 53%, Lag= 19.6 min
Discarded = 0.00 cfs @ 11.22 hrs, Volume= 54 cf
Primary = 0.08 cfs @ 12.33 hrs, Volume= 229 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Peak Elev= 11.99' @ 12.33 hrs Surf.Area= 290 sf Storage= 174 cf

Plug-Flow detention time= 201.8 min calculated for 282 cf (62% of inflow)
Center-of-Mass det. time= 84.1 min (940.6 - 856.5)

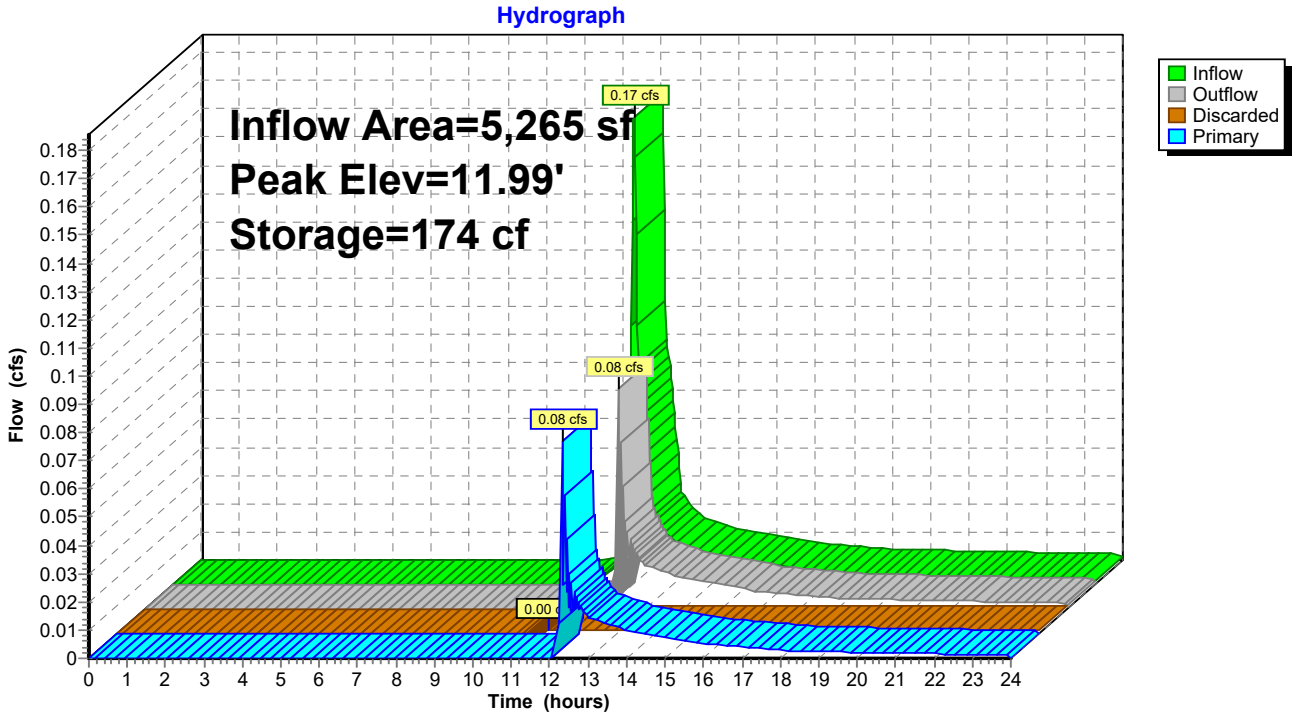
Volume	Invert	Avail.Storage	Storage Description
#1	10.00'	174 cf	**2.00'W x 145.00'L x 2.00'H Stone Trench** 580 cf Overall x 30.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	10.00'	**0.170 in/hr Exfiltration over Surface area**
#2	Primary	11.99'	**60.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.00 cfs @ 11.22 hrs HW=10.02' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.05 cfs @ 12.33 hrs HW=11.99' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 0.05 cfs @ 0.17 fps)

Pond 2P: Stone Trench



Time span=0.00-24.00 hrs, dt=0.03 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Ex Site Area to Trench Runoff Area=5,265 sf 0.00% Impervious Runoff Depth>2.05"
Tc=0.0 min CN=74 Runoff=0.34 cfs 899 cf

Reach R1 (EX): Boston Harbor Inflow=0.55 cfs 667 cf
Outflow=0.55 cfs 667 cf

Pond 2P: Stone Trench Peak Elev=12.01' Storage=174 cf Inflow=0.34 cfs 899 cf
Discarded=0.00 cfs 59 cf Primary=0.55 cfs 667 cf Outflow=0.55 cfs 726 cf

Total Runoff Area = 5,265 sf Runoff Volume = 899 cf Average Runoff Depth = 2.05"
100.00% Pervious = 5,265 sf 0.00% Impervious = 0 sf

Summary for Subcatchment 1S: Ex Site Area to Trench

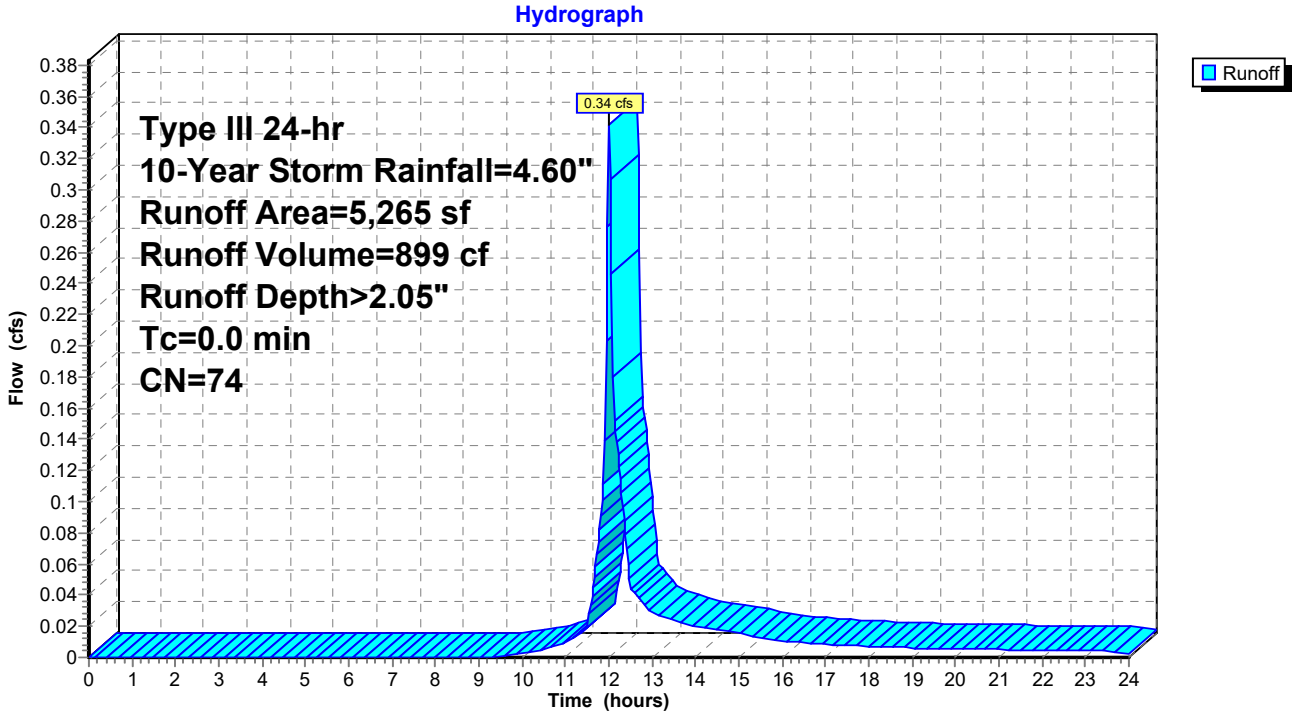
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.34 cfs @ 12.00 hrs, Volume= 899 cf, Depth> 2.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Type III 24-hr 10-Year Storm Rainfall=4.60"

Area (sf)	CN	Description
4,927	74	>75% Grass cover, Good, HSG C
69	86	<50% Grass cover, Poor, HSG C
269	74	>75% Grass cover, Good, HSG C
5,265	74	Weighted Average
5,265		100.00% Pervious Area

Subcatchment 1S: Ex Site Area to Trench



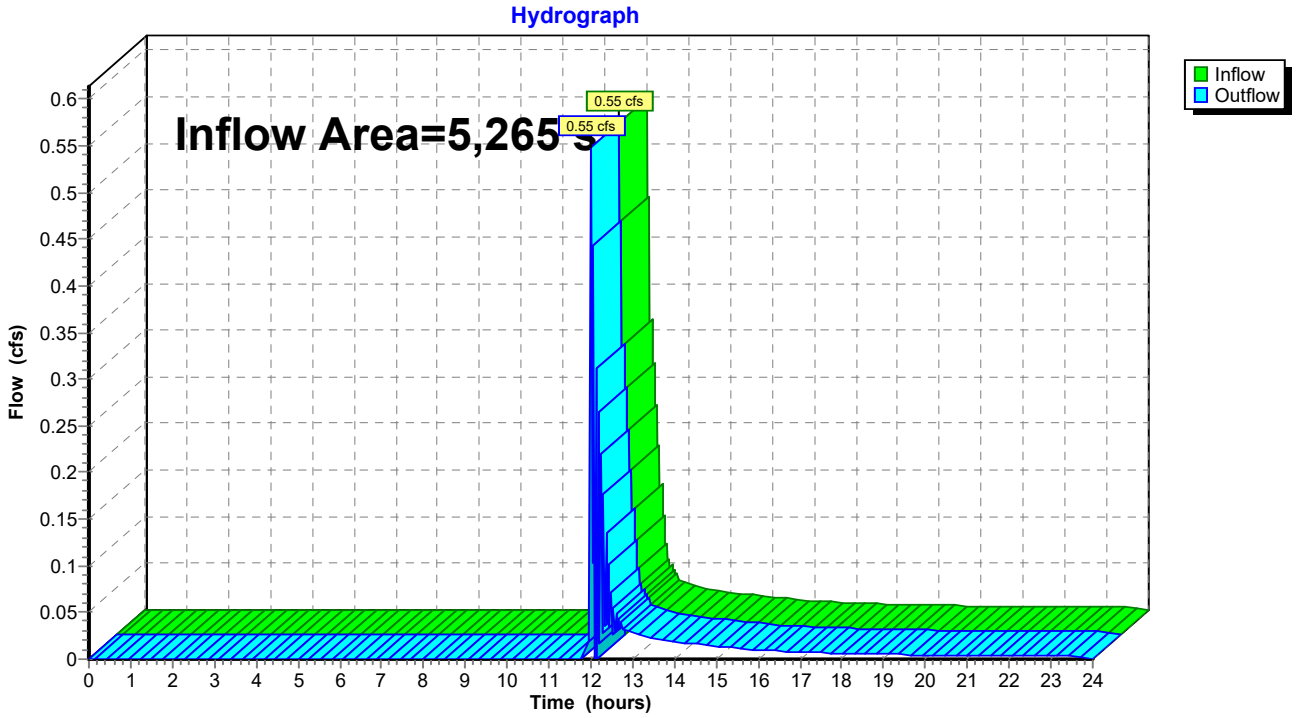
Summary for Reach R1 (EX): Boston Harbor

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 5,265 sf, 0.00% Impervious, Inflow Depth > 1.52" for 10-Year Storm event
Inflow = 0.55 cfs @ 12.00 hrs, Volume= 667 cf
Outflow = 0.55 cfs @ 12.00 hrs, Volume= 667 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs

Reach R1 (EX): Boston Harbor



Summary for Pond 2P: Stone Trench

[93] Warning: Storage range exceeded by 0.01'
[88] Warning: Qout>Qin may require smaller dt or Finer Routing
[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=11)

Inflow Area = 5,265 sf, 0.00% Impervious, Inflow Depth > 2.05" for 10-Year Storm event
Inflow = 0.34 cfs @ 12.00 hrs, Volume= 899 cf
Outflow = 0.55 cfs @ 12.00 hrs, Volume= 726 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.00 cfs @ 9.96 hrs, Volume= 59 cf
Primary = 0.55 cfs @ 12.00 hrs, Volume= 667 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Peak Elev= 12.01' @ 12.00 hrs Surf.Area= 290 sf Storage= 174 cf

Plug-Flow detention time= 110.3 min calculated for 725 cf (81% of inflow)
Center-of-Mass det. time= 33.2 min (869.2 - 836.0)

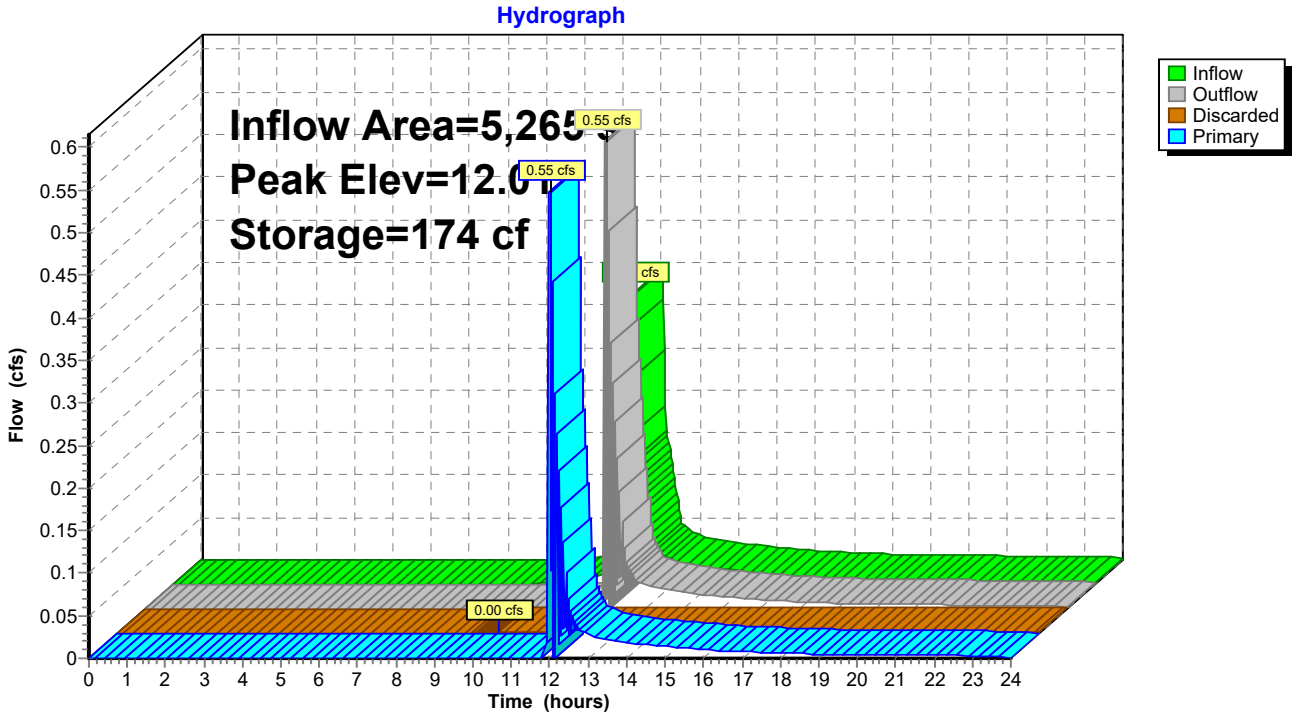
Volume	Invert	Avail.Storage	Storage Description
#1	10.00'	174 cf	**2.00'W x 145.00'L x 2.00'H Stone Trench** 580 cf Overall x 30.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	10.00'	**0.170 in/hr Exfiltration over Surface area**
#2	Primary	11.99'	**60.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.00 cfs @ 9.96 hrs HW=10.02' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.50 cfs @ 12.00 hrs HW=12.01' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 0.50 cfs @ 0.38 fps)

Pond 2P: Stone Trench



Time span=0.00-24.00 hrs, dt=0.03 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Ex Site Area to Trench Runoff Area=5,265 sf 0.00% Impervious Runoff Depth>2.77"
Tc=0.0 min CN=74 Runoff=0.47 cfs 1,215 cf

Reach R1 (EX): Boston Harbor Inflow=0.53 cfs 980 cf
Outflow=0.53 cfs 980 cf

Pond 2P: Stone Trench Peak Elev=12.01' Storage=174 cf Inflow=0.47 cfs 1,215 cf
Discarded=0.00 cfs 62 cf Primary=0.53 cfs 980 cf Outflow=0.53 cfs 1,042 cf

Total Runoff Area = 5,265 sf Runoff Volume = 1,215 cf Average Runoff Depth = 2.77"
100.00% Pervious = 5,265 sf 0.00% Impervious = 0 sf

Summary for Subcatchment 1S: Ex Site Area to Trench

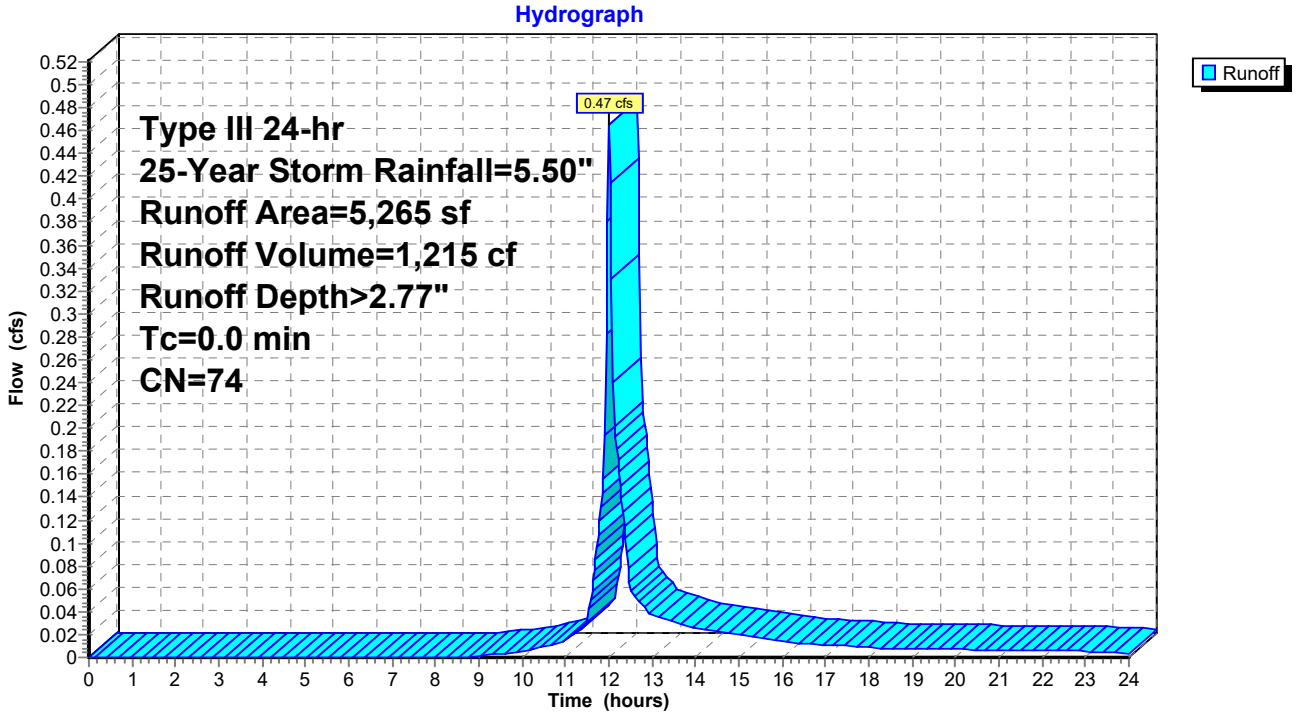
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.47 cfs @ 12.00 hrs, Volume= 1,215 cf, Depth> 2.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Type III 24-hr 25-Year Storm Rainfall=5.50"

Area (sf)	CN	Description
4,927	74	>75% Grass cover, Good, HSG C
69	86	<50% Grass cover, Poor, HSG C
269	74	>75% Grass cover, Good, HSG C
5,265	74	Weighted Average
5,265		100.00% Pervious Area

Subcatchment 1S: Ex Site Area to Trench



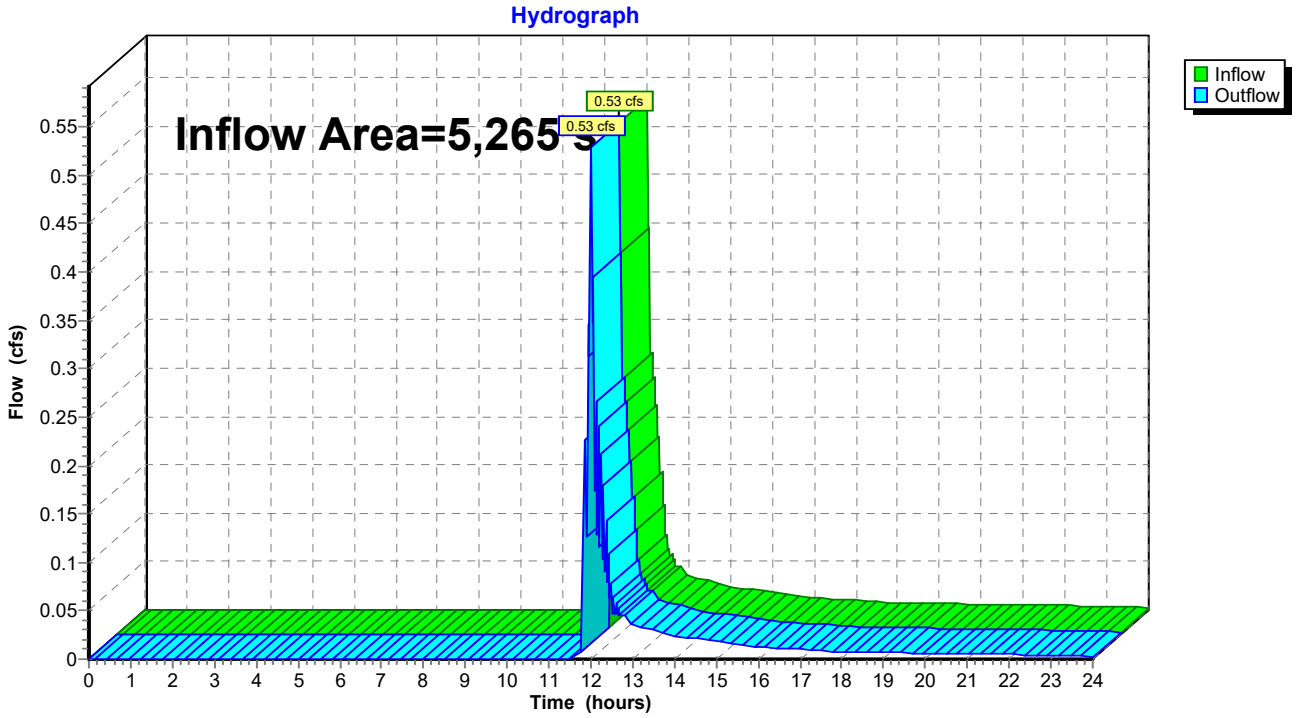
Summary for Reach R1 (EX): Boston Harbor

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 5,265 sf, 0.00% Impervious, Inflow Depth > 2.23" for 25-Year Storm event
Inflow = 0.53 cfs @ 12.00 hrs, Volume= 980 cf
Outflow = 0.53 cfs @ 12.00 hrs, Volume= 980 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs

Reach R1 (EX): Boston Harbor



Summary for Pond 2P: Stone Trench

[93] Warning: Storage range exceeded by 0.01'
[88] Warning: Qout>Qin may require smaller dt or Finer Routing
[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=12)

Inflow Area = 5,265 sf, 0.00% Impervious, Inflow Depth > 2.77" for 25-Year Storm event
Inflow = 0.47 cfs @ 12.00 hrs, Volume= 1,215 cf
Outflow = 0.53 cfs @ 12.00 hrs, Volume= 1,042 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.00 cfs @ 9.27 hrs, Volume= 62 cf
Primary = 0.53 cfs @ 12.00 hrs, Volume= 980 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Peak Elev= 12.01' @ 12.00 hrs Surf.Area= 290 sf Storage= 174 cf

Plug-Flow detention time= 87.5 min calculated for 1,041 cf (86% of inflow)
Center-of-Mass det. time= 24.7 min (852.0 - 827.3)

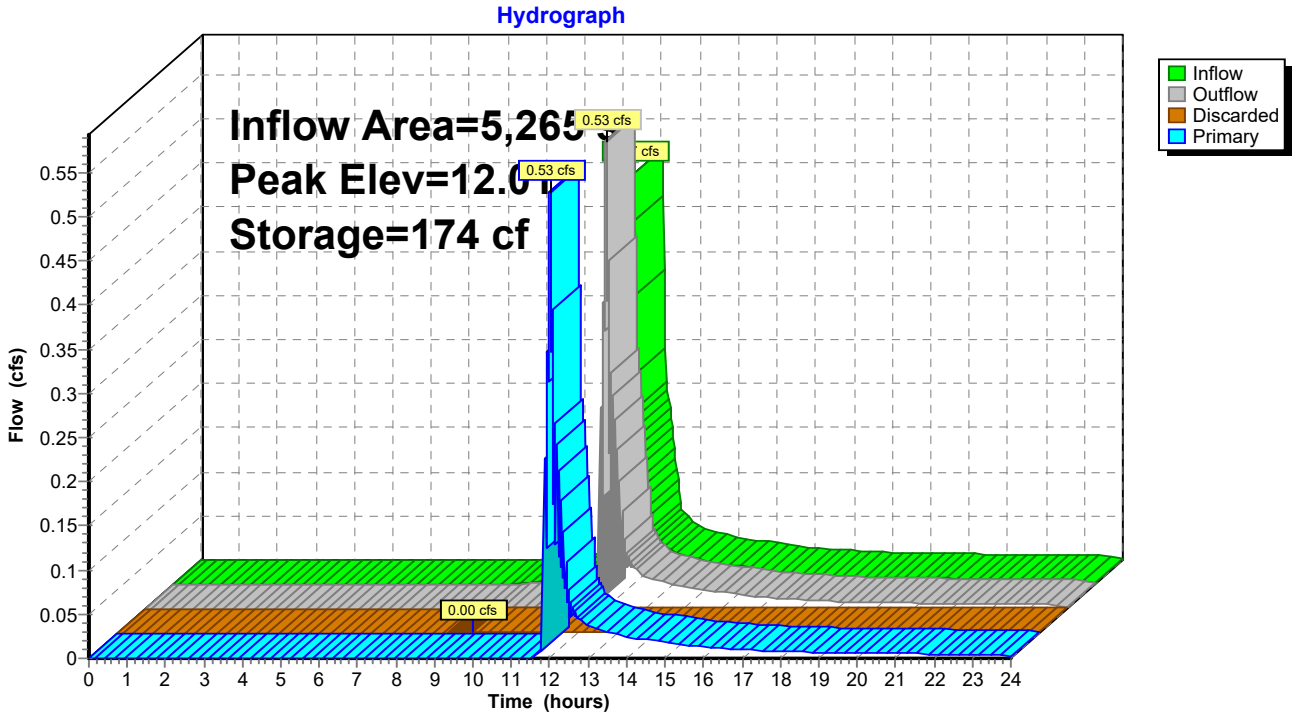
Volume	Invert	Avail.Storage	Storage Description
#1	10.00'	174 cf	**2.00'W x 145.00'L x 2.00'H Stone Trench** 580 cf Overall x 30.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	10.00'	**0.170 in/hr Exfiltration over Surface area**
#2	Primary	11.99'	**60.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.00 cfs @ 9.27 hrs HW=10.02' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.48 cfs @ 12.00 hrs HW=12.01' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 0.48 cfs @ 0.37 fps)

Pond 2P: Stone Trench



Time span=0.00-24.00 hrs, dt=0.03 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Ex Site Area to Trench Runoff Area=5,265 sf 0.00% Impervious Runoff Depth>3.61"
Tc=0.0 min CN=74 Runoff=0.61 cfs 1,584 cf

Reach R1 (EX): Boston Harbor Inflow=0.65 cfs 1,346 cf
Outflow=0.65 cfs 1,346 cf

Pond 2P: Stone Trench Peak Elev=12.02' Storage=174 cf Inflow=0.61 cfs 1,584 cf
Discarded=0.00 cfs 64 cf Primary=0.65 cfs 1,346 cf Outflow=0.65 cfs 1,411 cf

Total Runoff Area = 5,265 sf Runoff Volume = 1,584 cf Average Runoff Depth = 3.61"
100.00% Pervious = 5,265 sf 0.00% Impervious = 0 sf

Summary for Subcatchment 1S: Ex Site Area to Trench

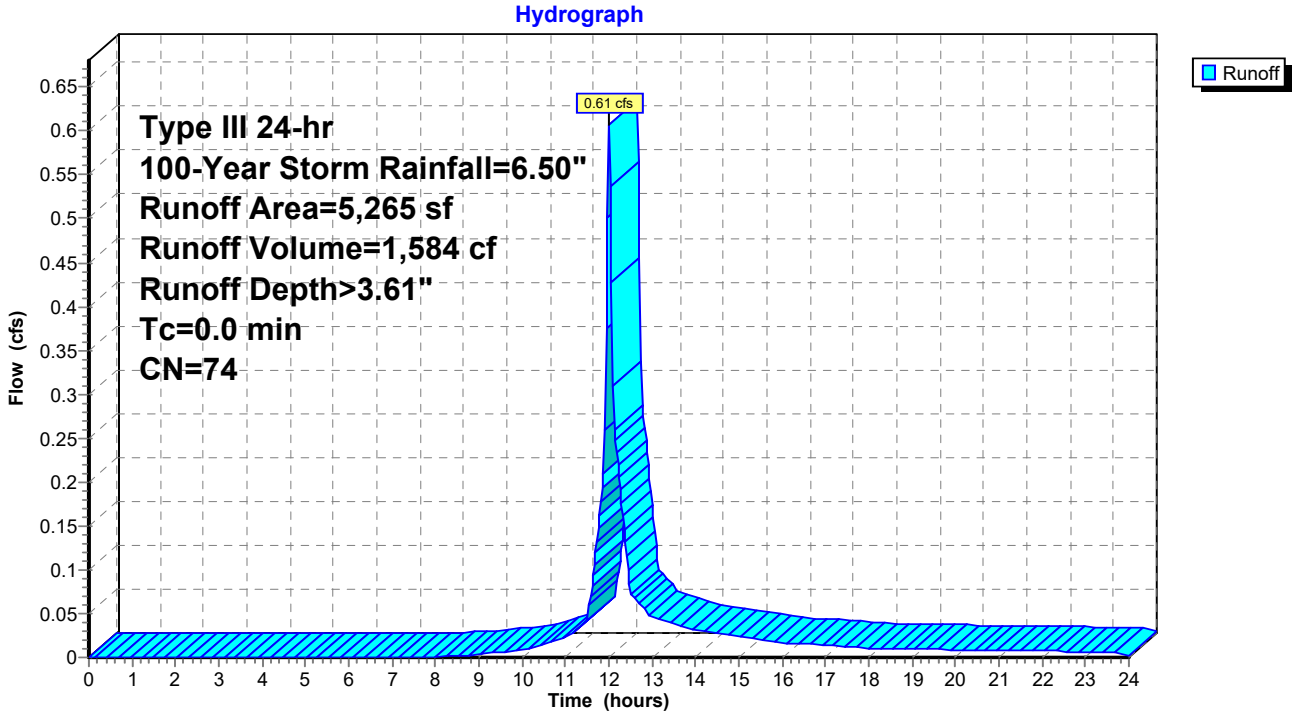
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.61 cfs @ 12.00 hrs, Volume= 1,584 cf, Depth> 3.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Type III 24-hr 100-Year Storm Rainfall=6.50"

Area (sf)	CN	Description
4,927	74	>75% Grass cover, Good, HSG C
69	86	<50% Grass cover, Poor, HSG C
269	74	>75% Grass cover, Good, HSG C
5,265	74	Weighted Average
5,265		100.00% Pervious Area

Subcatchment 1S: Ex Site Area to Trench



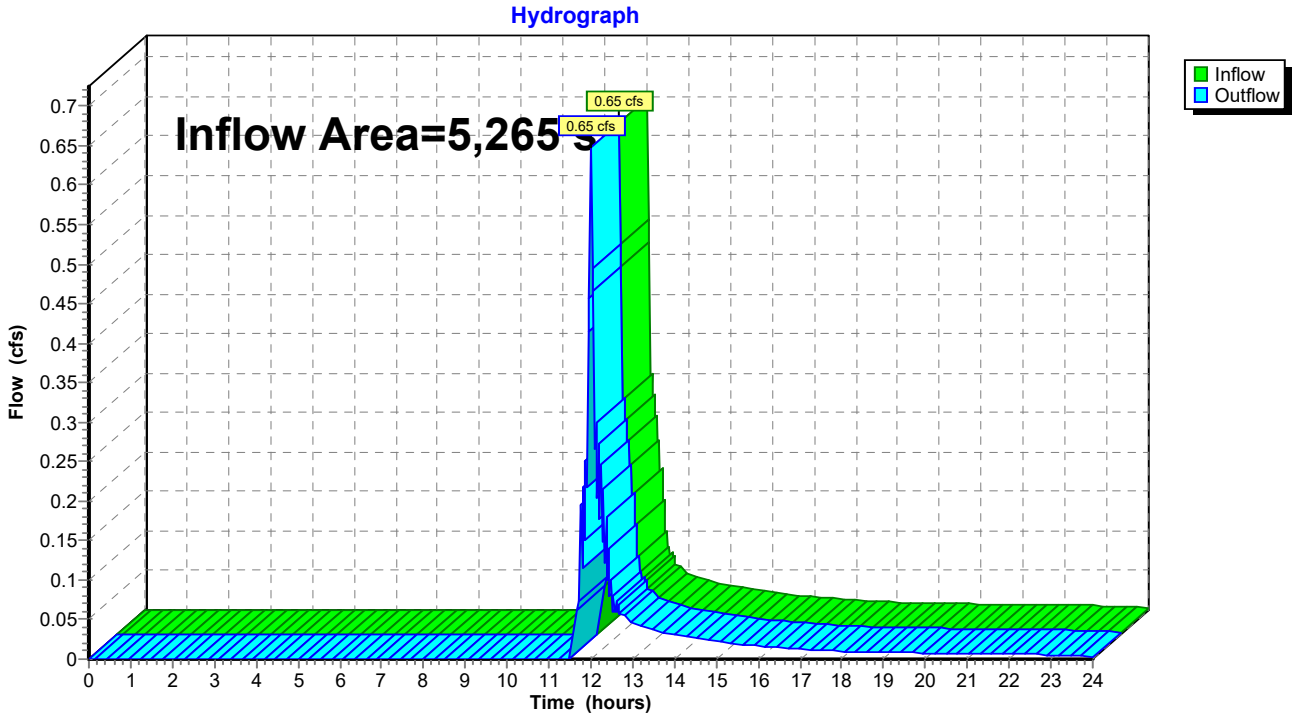
Summary for Reach R1 (EX): Boston Harbor

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 5,265 sf, 0.00% Impervious, Inflow Depth > 3.07" for 100-Year Storm event
Inflow = 0.65 cfs @ 12.00 hrs, Volume= 1,346 cf
Outflow = 0.65 cfs @ 12.00 hrs, Volume= 1,346 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs

Reach R1 (EX): Boston Harbor



Summary for Pond 2P: Stone Trench

[93] Warning: Storage range exceeded by 0.02'
[88] Warning: Qout>Qin may require smaller dt or Finer Routing
[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=13)

Inflow Area =	5,265 sf,	0.00% Impervious,	Inflow Depth >	3.61"	for 100-Year Storm event
Inflow =	0.61 cfs @	12.00 hrs,	Volume=	1,584 cf	
Outflow =	0.65 cfs @	12.00 hrs,	Volume=	1,411 cf,	Atten= 0%, Lag= 0.0 min
Discarded =	0.00 cfs @	8.64 hrs,	Volume=	64 cf	
Primary =	0.65 cfs @	12.00 hrs,	Volume=	1,346 cf	

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Peak Elev= 12.02' @ 12.00 hrs Surf.Area= 290 sf Storage= 174 cf

Plug-Flow detention time= 72.3 min calculated for 1,411 cf (89% of inflow)
Center-of-Mass det. time= 20.3 min (840.0 - 819.6)

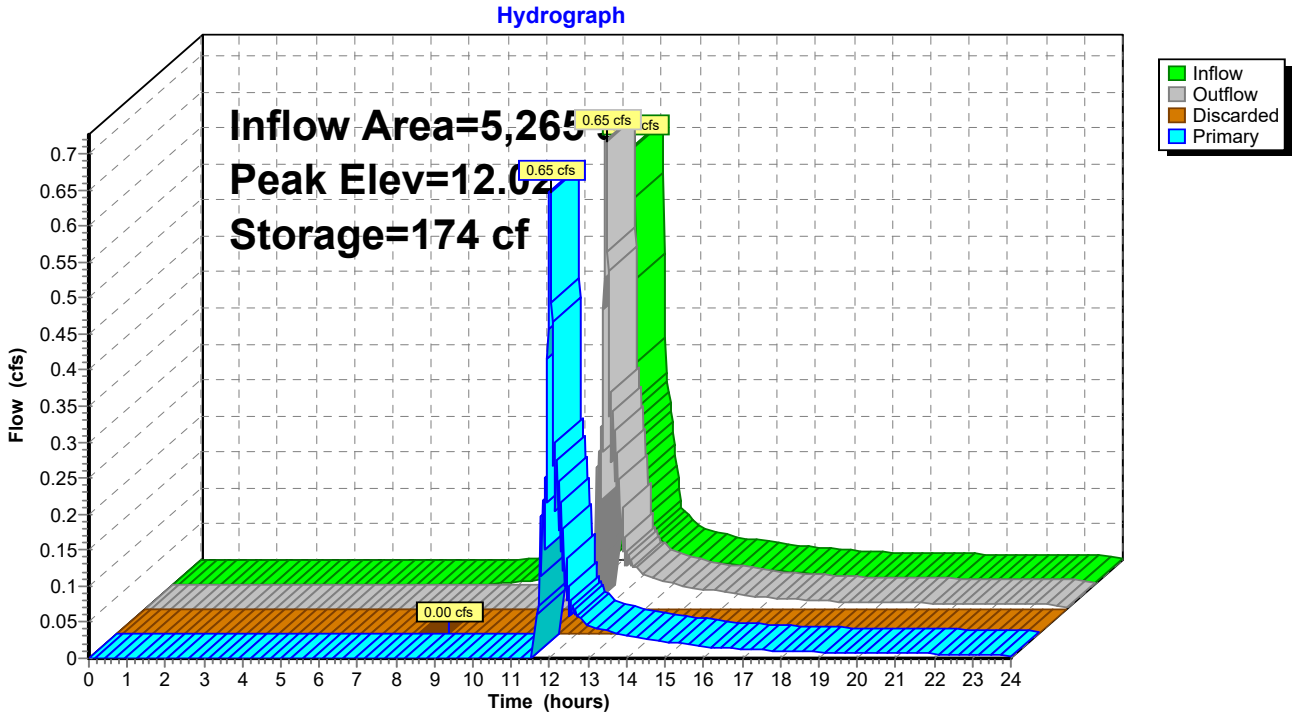
Volume	Invert	Avail.Storage	Storage Description
#1	10.00'	174 cf	**2.00'W x 145.00'L x 2.00'H Stone Trench** 580 cf Overall x 30.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	10.00'	**0.170 in/hr Exfiltration over Surface area**
#2	Primary	11.99'	**60.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.00 cfs @ 8.64 hrs HW=10.02' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.00 cfs)

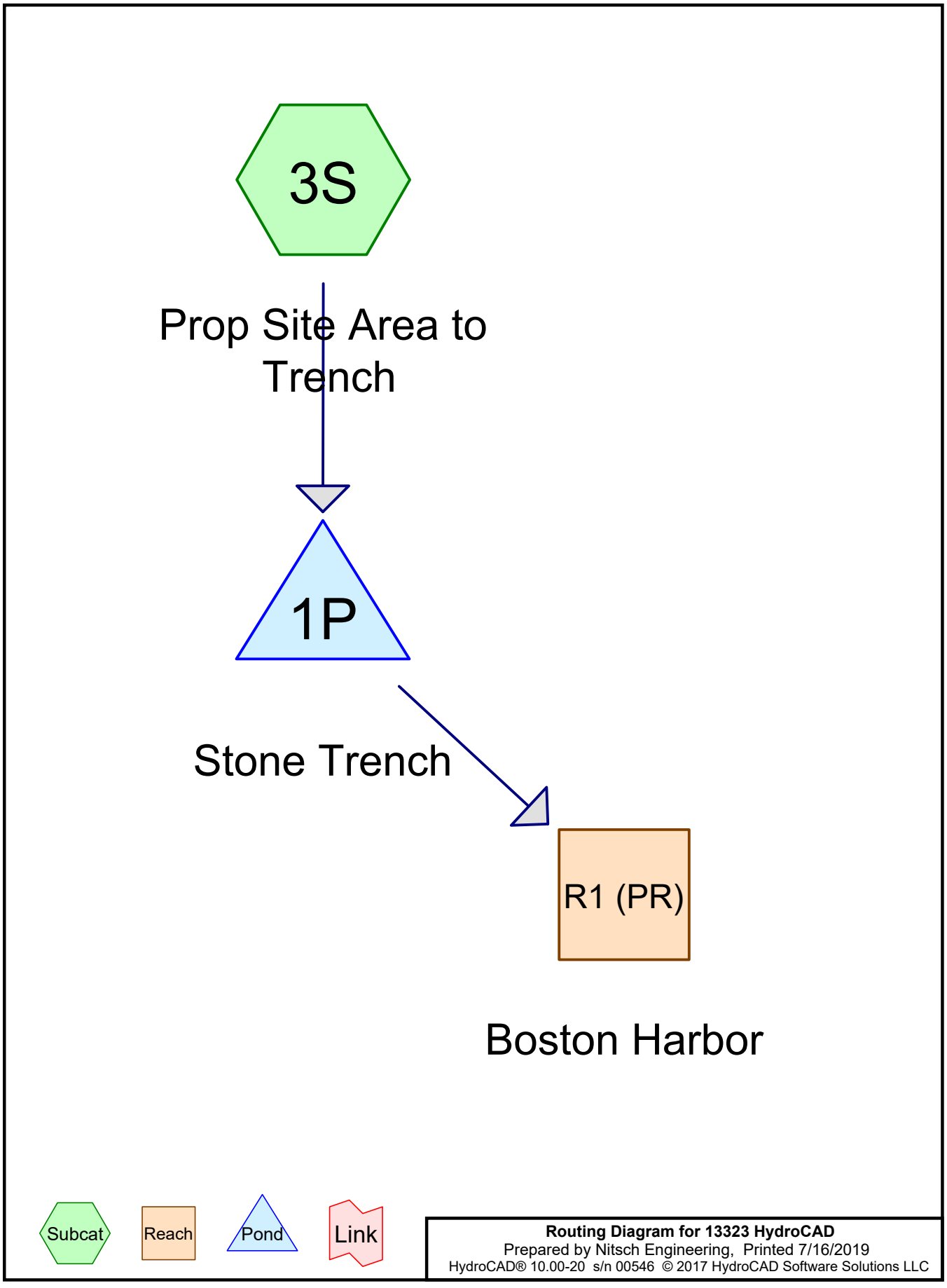
Primary OutFlow Max=0.61 cfs @ 12.00 hrs HW=12.02' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 0.61 cfs @ 0.40 fps)

Pond 2P: Stone Trench



APPENDIX B

Proposed Conditions – HydroCAD Calculations



Routing Diagram for 13323 HydroCAD
Prepared by Nitsch Engineering, Printed 7/16/2019

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
883	86	<50% Grass cover, Poor, HSG C (3S)
3,833	74	>75% Grass cover, Good, HSG C (3S)
549	98	Unconnected pavement, HSG C (3S)
5,265	**79**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
5,265	HSG C	3S
0	HSG D	
0	Other	
5,265		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Su Nu
0	0	883	0	0	883	<50% Grass cover, Poor	
0	0	3,833	0	0	3,833	>75% Grass cover, Good	
0	0	549	0	0	549	Unconnected pavement	
0	**0**	**5,265**	**0**	**0**	**5,265**	**TOTAL AREA**	

Time span=0.00-24.00 hrs, dt=0.03 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment3S: Prop Site Area to Trench Runoff Area=5,265 sf 10.43% Impervious Runoff Depth>1.21"
Tc=6.0 min UI Adjusted CN=77 Runoff=0.17 cfs 531 cf

Reach R1 (PR): Boston Harbor Inflow=0.15 cfs 303 cf
Outflow=0.15 cfs 303 cf

Pond 1P: Stone Trench Peak Elev=12.00' Storage=174 cf Inflow=0.17 cfs 531 cf
Discarded=0.00 cfs 55 cf Primary=0.15 cfs 303 cf Outflow=0.15 cfs 358 cf

Total Runoff Area = 5,265 sf Runoff Volume = 531 cf Average Runoff Depth = 1.21"
89.57% Pervious = 4,716 sf 10.43% Impervious = 549 sf

Summary for Subcatchment 3S: Prop Site Area to Trench

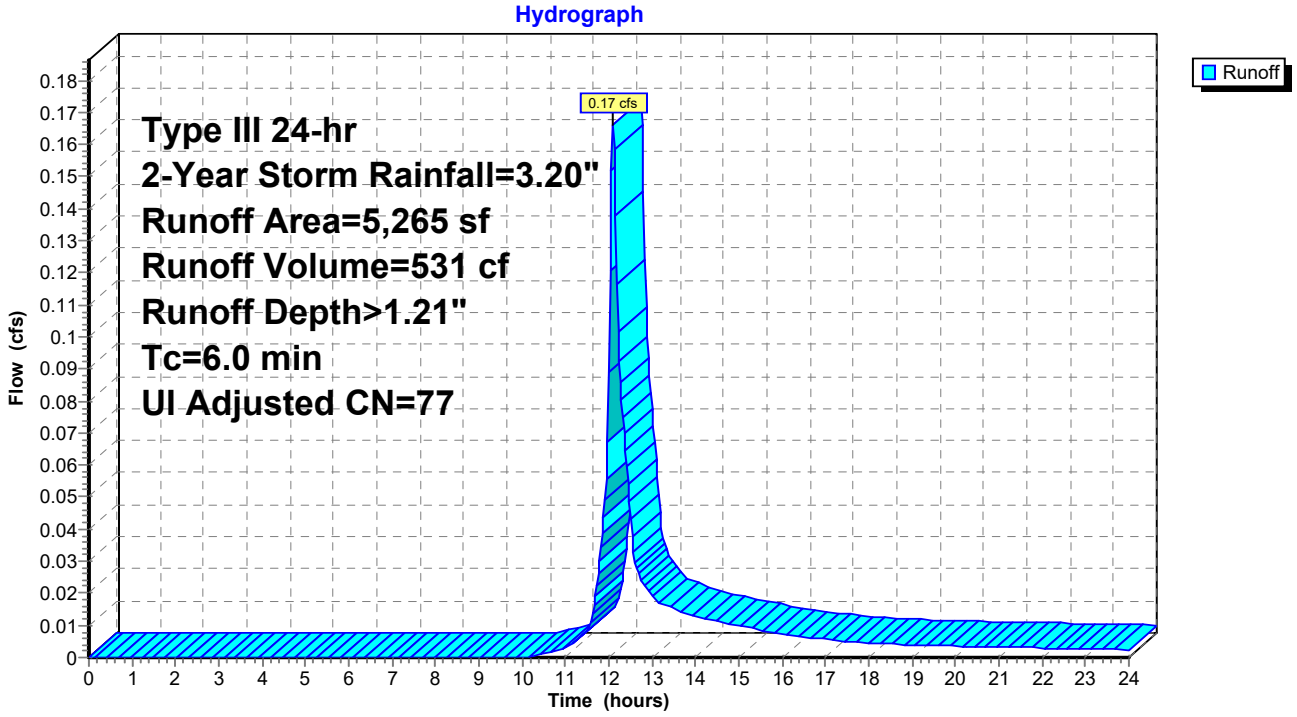
Runoff = 0.17 cfs @ 12.09 hrs, Volume= 531 cf, Depth> 1.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Type III 24-hr 2-Year Storm Rainfall=3.20"

Area (sf)	CN	Adj	Description
883	86		<50% Grass cover, Poor, HSG C
350	98		Unconnected pavement, HSG C
3,543	74		>75% Grass cover, Good, HSG C
290	74		>75% Grass cover, Good, HSG C
199	98		Unconnected pavement, HSG C
5,265	79	77	Weighted Average, UI Adjusted
4,716			89.57% Pervious Area
549			10.43% Impervious Area
549			100.00% Unconnected

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

Subcatchment 3S: Prop Site Area to Trench



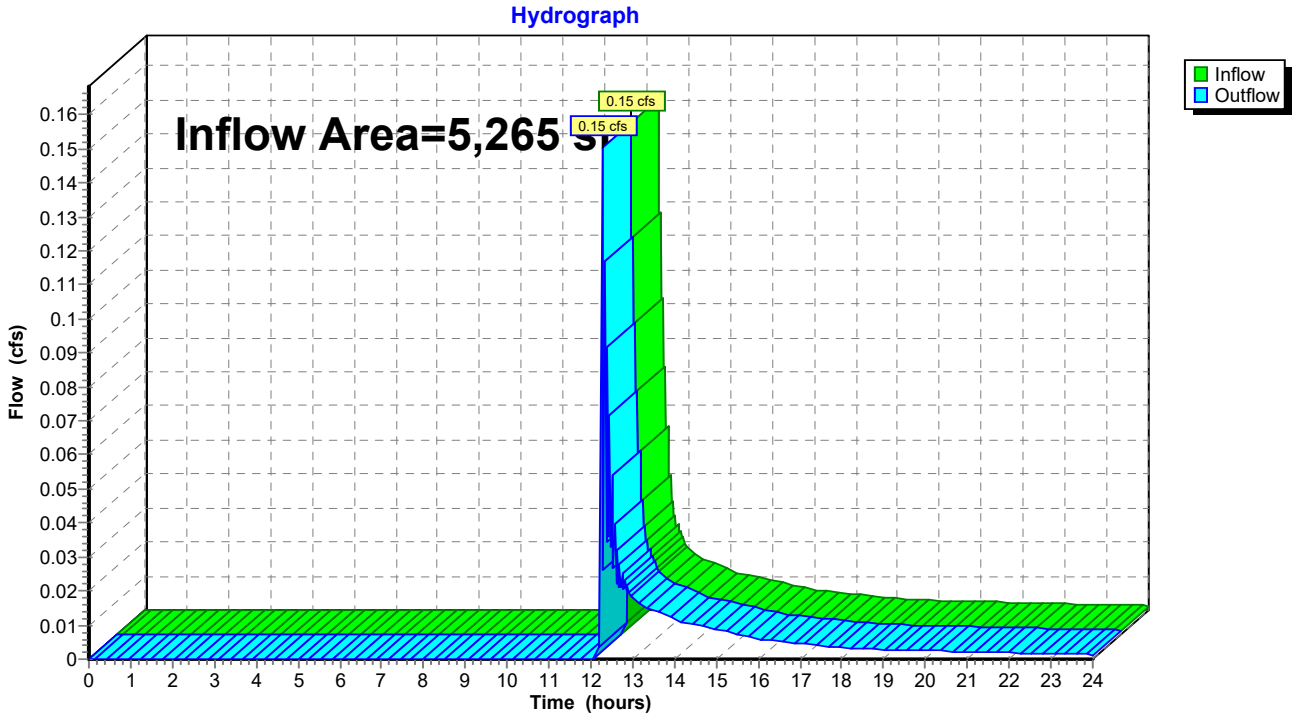
Summary for Reach R1 (PR): Boston Harbor

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 5,265 sf, 10.43% Impervious, Inflow Depth > 0.69" for 2-Year Storm event
Inflow = 0.15 cfs @ 12.27 hrs, Volume= 303 cf
Outflow = 0.15 cfs @ 12.27 hrs, Volume= 303 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs

Reach R1 (PR): Boston Harbor



Summary for Pond 1P: Stone Trench

[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=9)

Inflow Area = 5,265 sf, 10.43% Impervious, Inflow Depth > 1.21" for 2-Year Storm event
Inflow = 0.17 cfs @ 12.09 hrs, Volume= 531 cf
Outflow = 0.15 cfs @ 12.27 hrs, Volume= 358 cf, Atten= 9%, Lag= 10.6 min
Discarded = 0.00 cfs @ 10.83 hrs, Volume= 55 cf
Primary = 0.15 cfs @ 12.27 hrs, Volume= 303 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Peak Elev= 12.00' @ 12.27 hrs Surf.Area= 290 sf Storage= 174 cf

Plug-Flow detention time= 170.4 min calculated for 358 cf (67% of inflow)
Center-of-Mass det. time= 64.4 min (916.0 - 851.6)

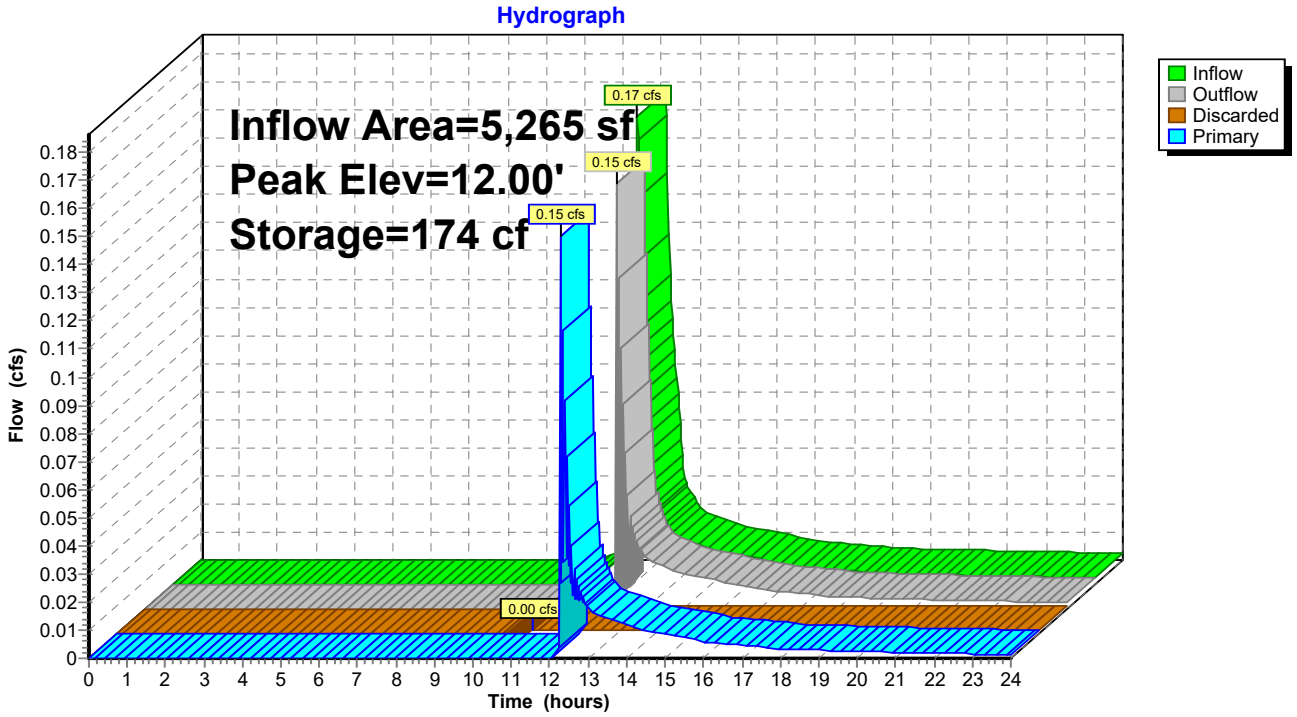
Volume	Invert	Avail.Storage	Storage Description
#1	10.00'	174 cf	**2.00'W x 145.00'L x 2.00'H Stone Trench** 580 cf Overall x 30.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	10.00'	**0.170 in/hr Exfiltration over Surface area**
#2	Primary	11.99'	**60.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.00 cfs @ 10.83 hrs HW=10.02' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.14 cfs @ 12.27 hrs HW=12.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 0.14 cfs @ 0.25 fps)

Pond 1P: Stone Trench



Time span=0.00-24.00 hrs, dt=0.03 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment3S: Prop Site Area to Trench Runoff Area=5,265 sf 10.43% Impervious Runoff Depth>2.29"
Tc=6.0 min UI Adjusted CN=77 Runoff=0.32 cfs 1,005 cf

Reach R1 (PR): Boston Harbor Inflow=0.47 cfs 770 cf
Outflow=0.47 cfs 770 cf

Pond 1P: Stone Trench Peak Elev=12.01' Storage=174 cf Inflow=0.32 cfs 1,005 cf
Discarded=0.00 cfs 61 cf Primary=0.47 cfs 770 cf Outflow=0.47 cfs 831 cf

Total Runoff Area = 5,265 sf Runoff Volume = 1,005 cf Average Runoff Depth = 2.29"
89.57% Pervious = 4,716 sf 10.43% Impervious = 549 sf

Summary for Subcatchment 3S: Prop Site Area to Trench

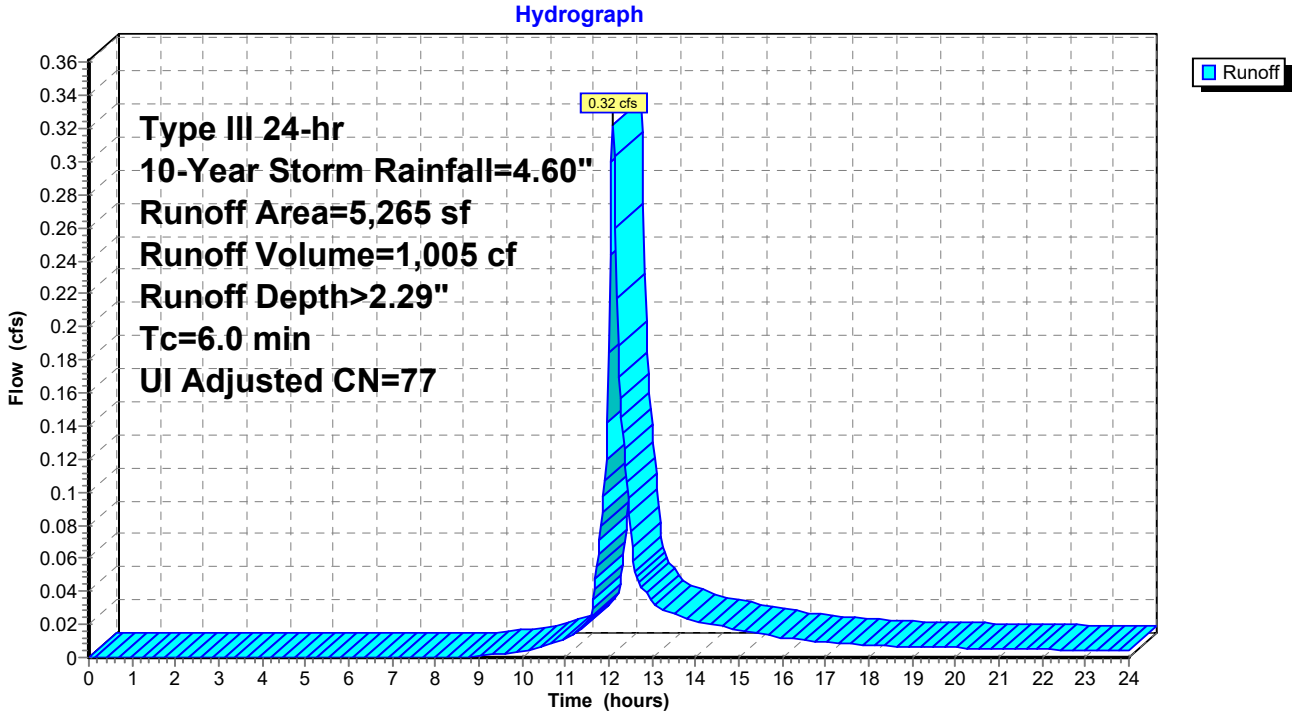
Runoff = 0.32 cfs @ 12.09 hrs, Volume= 1,005 cf, Depth> 2.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Type III 24-hr 10-Year Storm Rainfall=4.60"

Area (sf)	CN	Adj	Description
883	86		<50% Grass cover, Poor, HSG C
350	98		Unconnected pavement, HSG C
3,543	74		>75% Grass cover, Good, HSG C
290	74		>75% Grass cover, Good, HSG C
199	98		Unconnected pavement, HSG C
5,265	79	77	Weighted Average, UI Adjusted
4,716			89.57% Pervious Area
549			10.43% Impervious Area
549			100.00% Unconnected

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

Subcatchment 3S: Prop Site Area to Trench



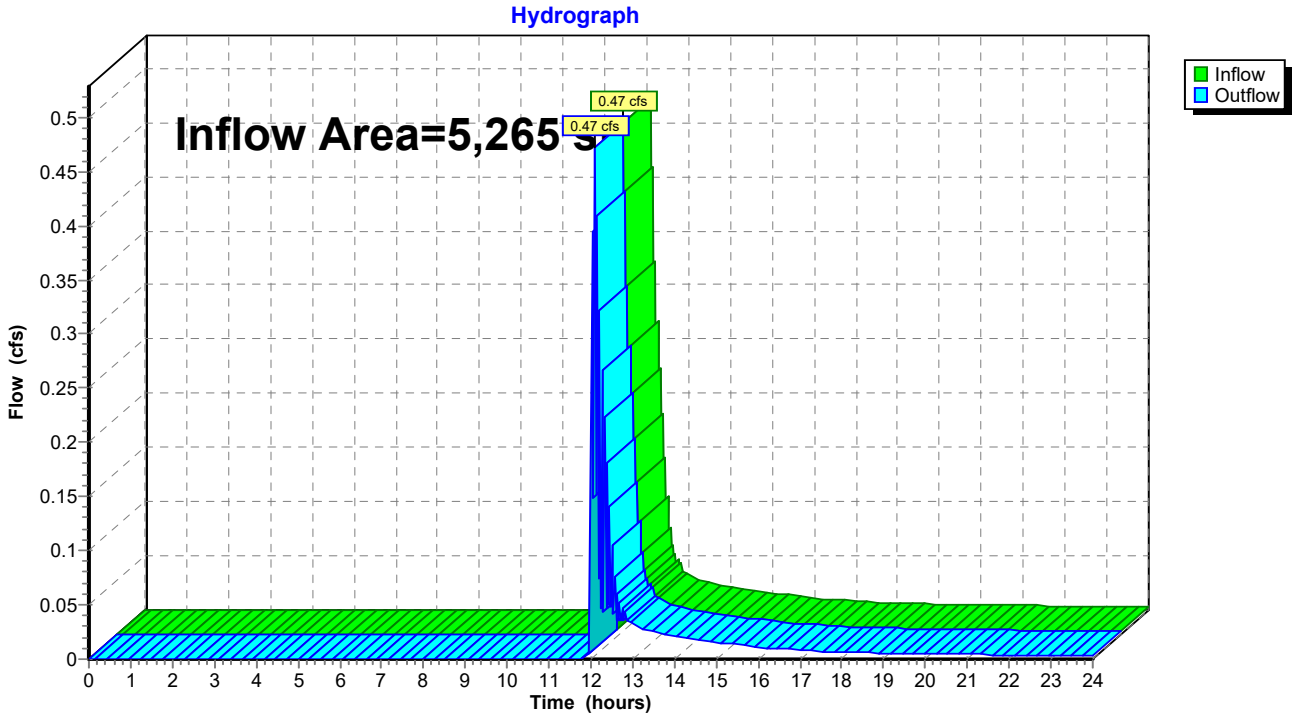
Summary for Reach R1 (PR): Boston Harbor

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 5,265 sf, 10.43% Impervious, Inflow Depth > 1.76" for 10-Year Storm event
Inflow = 0.47 cfs @ 12.09 hrs, Volume= 770 cf
Outflow = 0.47 cfs @ 12.09 hrs, Volume= 770 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs

Reach R1 (PR): Boston Harbor



Summary for Pond 1P: Stone Trench

[93] Warning: Storage range exceeded by 0.01'
[88] Warning: Qout>Qin may require smaller dt or Finer Routing
[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=12)

Inflow Area = 5,265 sf, 10.43% Impervious, Inflow Depth > 2.29" for 10-Year Storm event
Inflow = 0.32 cfs @ 12.09 hrs, Volume= 1,005 cf
Outflow = 0.47 cfs @ 12.09 hrs, Volume= 831 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.00 cfs @ 9.51 hrs, Volume= 61 cf
Primary = 0.47 cfs @ 12.09 hrs, Volume= 770 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Peak Elev= 12.01' @ 12.09 hrs Surf.Area= 290 sf Storage= 174 cf

Plug-Flow detention time= 100.7 min calculated for 831 cf (83% of inflow)
Center-of-Mass det. time= 29.5 min (862.4 - 833.0)

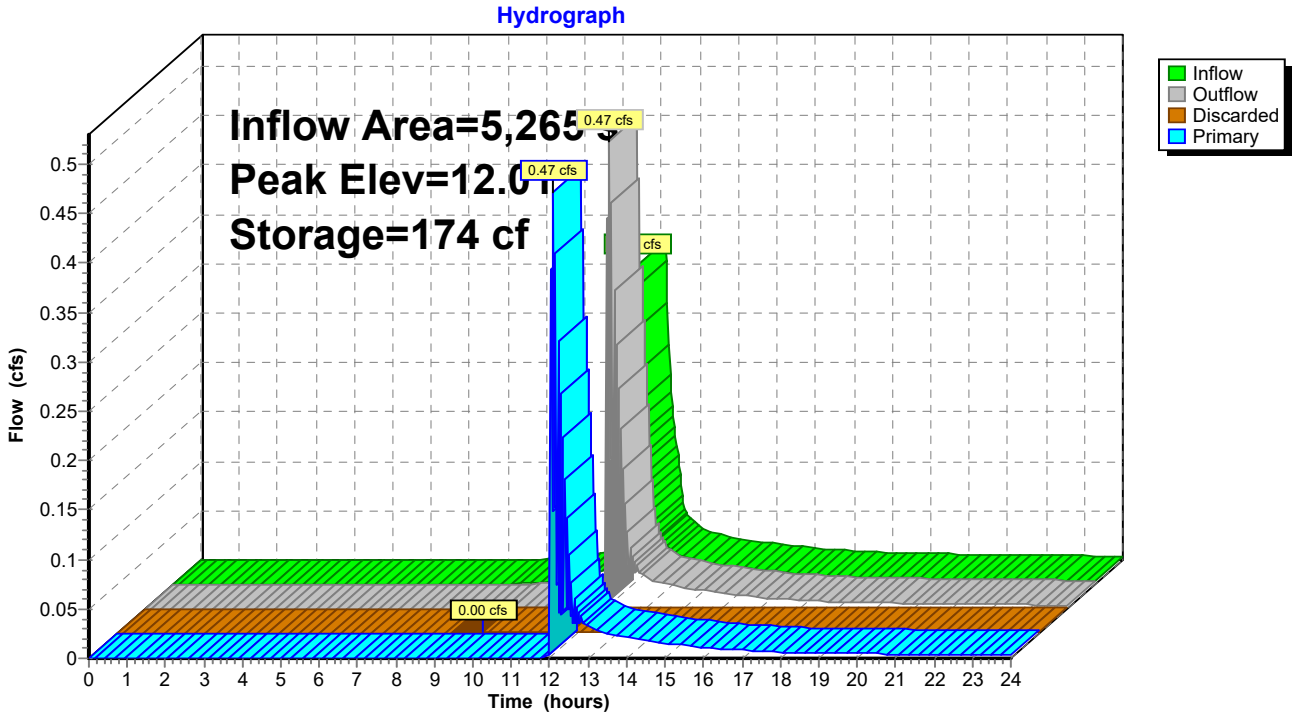
Volume	Invert	Avail.Storage	Storage Description
#1	10.00'	174 cf	**2.00'W x 145.00'L x 2.00'H Stone Trench** 580 cf Overall x 30.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	10.00'	**0.170 in/hr Exfiltration over Surface area**
#2	Primary	11.99'	**60.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.00 cfs @ 9.51 hrs HW=10.02' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.43 cfs @ 12.09 hrs HW=12.01' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 0.43 cfs @ 0.36 fps)

Pond 1P: Stone Trench



Time span=0.00-24.00 hrs, dt=0.03 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment3S: Prop Site Area to Trench Runoff Area=5,265 sf 10.43% Impervious Runoff Depth>3.04"
Tc=6.0 min UI Adjusted CN=77 Runoff=0.43 cfs 1,335 cf

Reach R1 (PR): Boston Harbor Inflow=0.44 cfs 1,098 cf
Outflow=0.44 cfs 1,098 cf

Pond 1P: Stone Trench Peak Elev=12.01' Storage=174 cf Inflow=0.43 cfs 1,335 cf
Discarded=0.00 cfs 64 cf Primary=0.44 cfs 1,098 cf Outflow=0.44 cfs 1,162 cf

Total Runoff Area = 5,265 sf Runoff Volume = 1,335 cf Average Runoff Depth = 3.04"
89.57% Pervious = 4,716 sf 10.43% Impervious = 549 sf

Summary for Subcatchment 3S: Prop Site Area to Trench

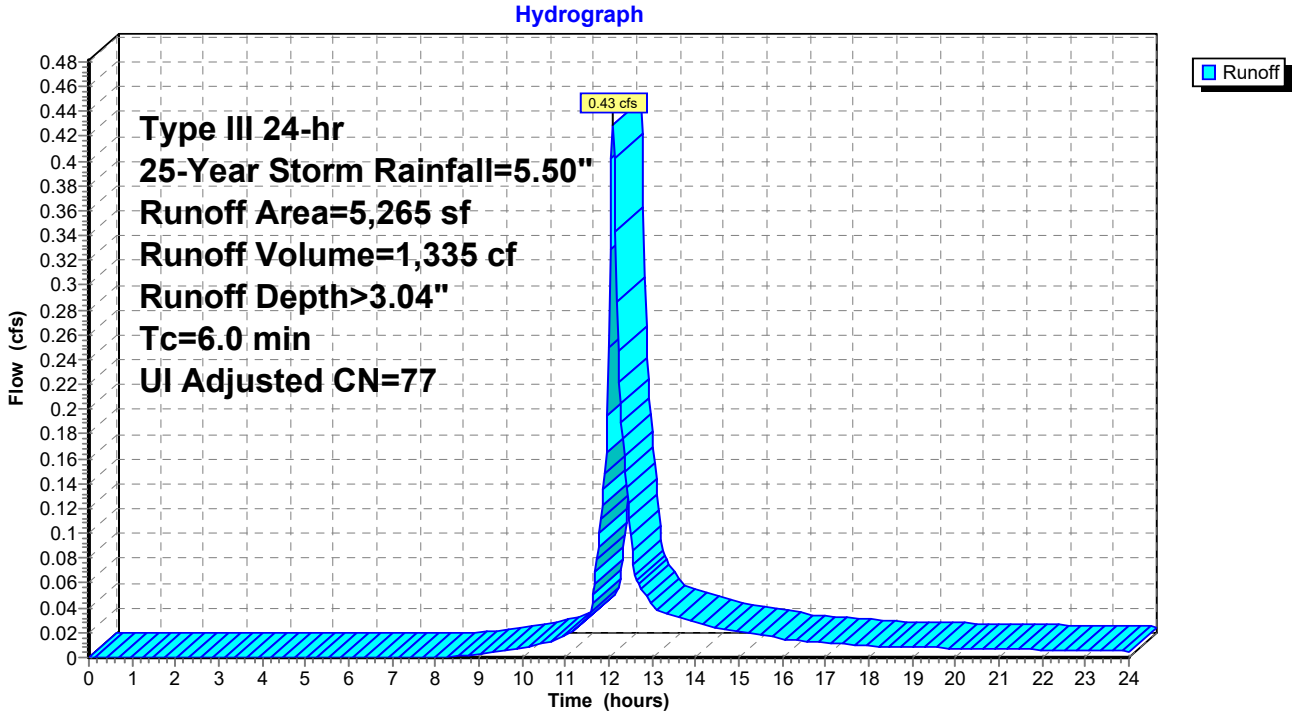
Runoff = 0.43 cfs @ 12.09 hrs, Volume= 1,335 cf, Depth> 3.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Type III 24-hr 25-Year Storm Rainfall=5.50"

Area (sf)	CN	Adj	Description
883	86		<50% Grass cover, Poor, HSG C
350	98		Unconnected pavement, HSG C
3,543	74		>75% Grass cover, Good, HSG C
290	74		>75% Grass cover, Good, HSG C
199	98		Unconnected pavement, HSG C
5,265	79	77	Weighted Average, UI Adjusted
4,716			89.57% Pervious Area
549			10.43% Impervious Area
549			100.00% Unconnected

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

Subcatchment 3S: Prop Site Area to Trench



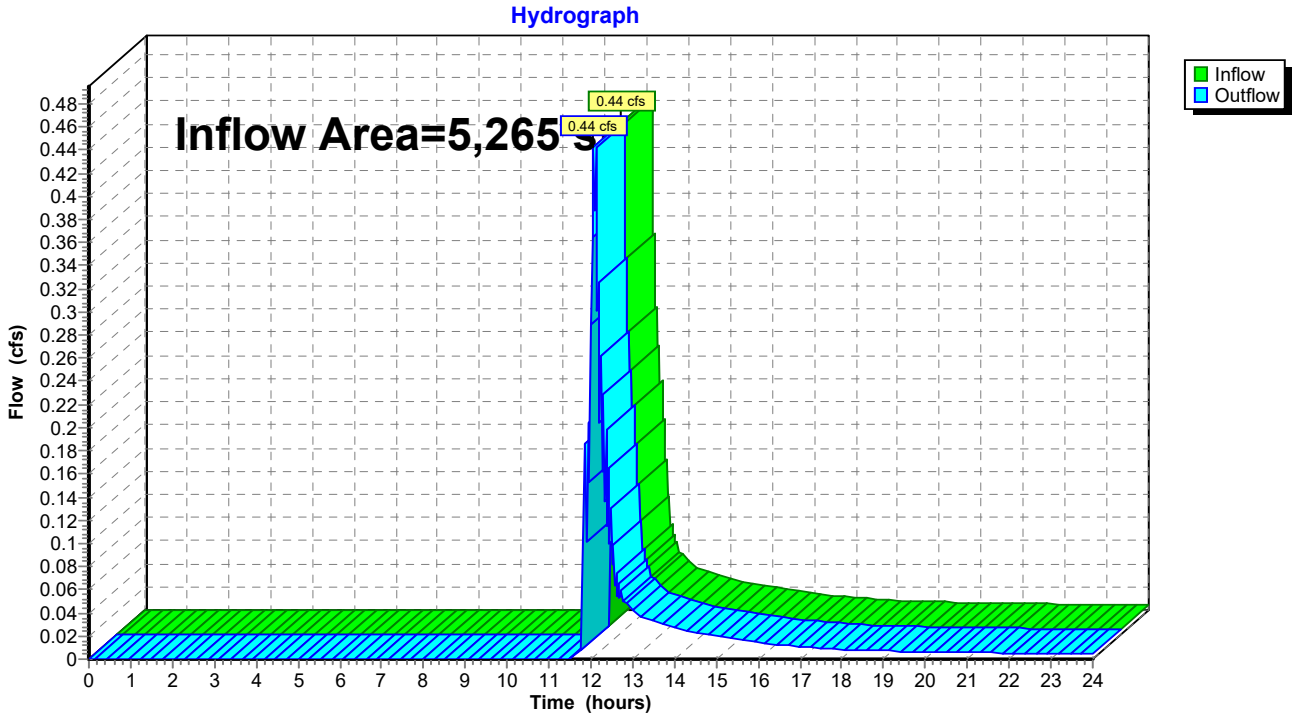
Summary for Reach R1 (PR): Boston Harbor

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 5,265 sf, 10.43% Impervious, Inflow Depth > 2.50" for 25-Year Storm event
Inflow = 0.44 cfs @ 12.06 hrs, Volume= 1,098 cf
Outflow = 0.44 cfs @ 12.06 hrs, Volume= 1,098 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs

Reach R1 (PR): Boston Harbor



Summary for Pond 1P: Stone Trench

[93] Warning: Storage range exceeded by 0.01'
[88] Warning: Qout>Qin may require smaller dt or Finer Routing
[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=12)

Inflow Area = 5,265 sf, 10.43% Impervious, Inflow Depth > 3.04" for 25-Year Storm event
Inflow = 0.43 cfs @ 12.09 hrs, Volume= 1,335 cf
Outflow = 0.44 cfs @ 12.06 hrs, Volume= 1,162 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.00 cfs @ 8.82 hrs, Volume= 64 cf
Primary = 0.44 cfs @ 12.06 hrs, Volume= 1,098 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Peak Elev= 12.01' @ 12.06 hrs Surf.Area= 290 sf Storage= 174 cf

Plug-Flow detention time= 81.8 min calculated for 1,162 cf (87% of inflow)
Center-of-Mass det. time= 23.3 min (848.1 - 824.8)

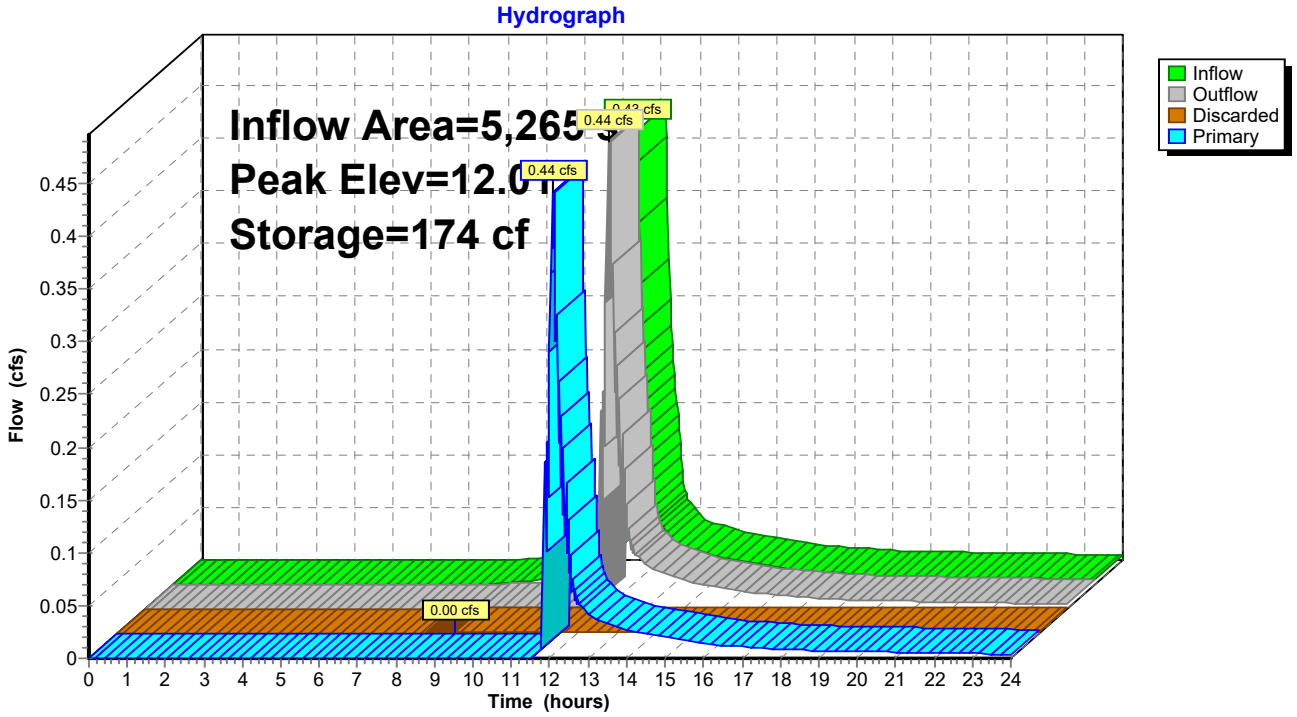
Volume	Invert	Avail.Storage	Storage Description
#1	10.00'	174 cf	**2.00'W x 145.00'L x 2.00'H Stone Trench** 580 cf Overall x 30.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	10.00'	**0.170 in/hr Exfiltration over Surface area**
#2	Primary	11.99'	**60.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.00 cfs @ 8.82 hrs HW=10.02' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.40 cfs @ 12.06 hrs HW=12.01' (Free Discharge)
2=Broad-Crested Rectangular Weir (Weir Controls 0.40 cfs @ 0.35 fps)

Pond 1P: Stone Trench



Time span=0.00-24.00 hrs, dt=0.03 hrs, 801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment3S: Prop Site Area to Trench Runoff Area=5,265 sf 10.43% Impervious Runoff Depth>3.92"
Tc=6.0 min UI Adjusted CN=77 Runoff=0.55 cfs 1,718 cf

Reach R1 (PR): Boston Harbor Inflow=0.55 cfs 1,478 cf
Outflow=0.55 cfs 1,478 cf

Pond 1P: Stone Trench Peak Elev=12.01' Storage=174 cf Inflow=0.55 cfs 1,718 cf
Discarded=0.00 cfs 67 cf Primary=0.55 cfs 1,478 cf Outflow=0.55 cfs 1,545 cf

Total Runoff Area = 5,265 sf Runoff Volume = 1,718 cf Average Runoff Depth = 3.92"
89.57% Pervious = 4,716 sf 10.43% Impervious = 549 sf

Summary for Subcatchment 3S: Prop Site Area to Trench

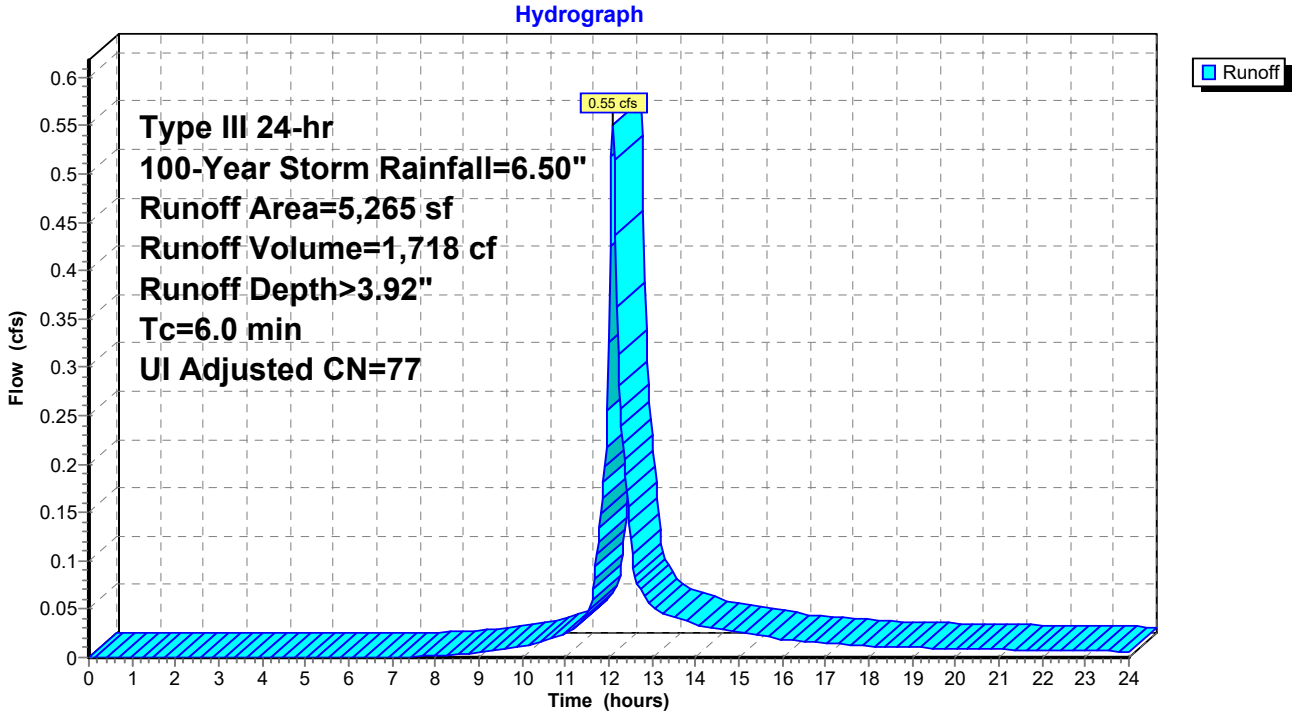
Runoff = 0.55 cfs @ 12.09 hrs, Volume= 1,718 cf, Depth> 3.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Type III 24-hr 100-Year Storm Rainfall=6.50"

Area (sf)	CN	Adj	Description
883	86		<50% Grass cover, Poor, HSG C
350	98		Unconnected pavement, HSG C
3,543	74		>75% Grass cover, Good, HSG C
290	74		>75% Grass cover, Good, HSG C
199	98		Unconnected pavement, HSG C
5,265	79	77	Weighted Average, UI Adjusted
4,716			89.57% Pervious Area
549			10.43% Impervious Area
549			100.00% Unconnected

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

Subcatchment 3S: Prop Site Area to Trench



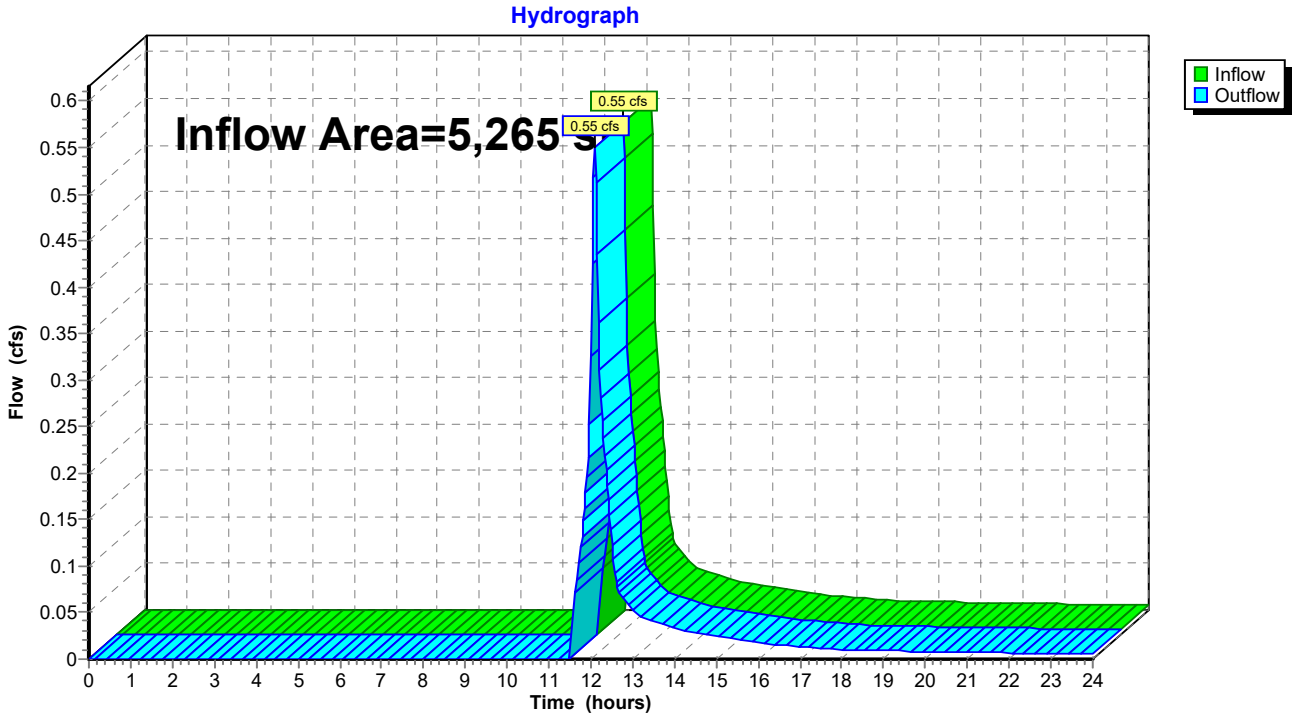
Summary for Reach R1 (PR): Boston Harbor

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 5,265 sf, 10.43% Impervious, Inflow Depth > 3.37" for 100-Year Storm event
Inflow = 0.55 cfs @ 12.09 hrs, Volume= 1,478 cf
Outflow = 0.55 cfs @ 12.09 hrs, Volume= 1,478 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs

Reach R1 (PR): Boston Harbor



Summary for Pond 1P: Stone Trench

[93] Warning: Storage range exceeded by 0.01'

Inflow Area = 5,265 sf, 10.43% Impervious, Inflow Depth > 3.92" for 100-Year Storm event
Inflow = 0.55 cfs @ 12.09 hrs, Volume= 1,718 cf
Outflow = 0.55 cfs @ 12.09 hrs, Volume= 1,545 cf, Atten= 0%, Lag= 0.0 min
Discarded = 0.00 cfs @ 8.16 hrs, Volume= 67 cf
Primary = 0.55 cfs @ 12.09 hrs, Volume= 1,478 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Peak Elev= 12.01' @ 12.09 hrs Surf.Area= 290 sf Storage= 174 cf

Plug-Flow detention time= 68.5 min calculated for 1,545 cf (90% of inflow)
Center-of-Mass det. time= 19.9 min (837.5 - 817.6)

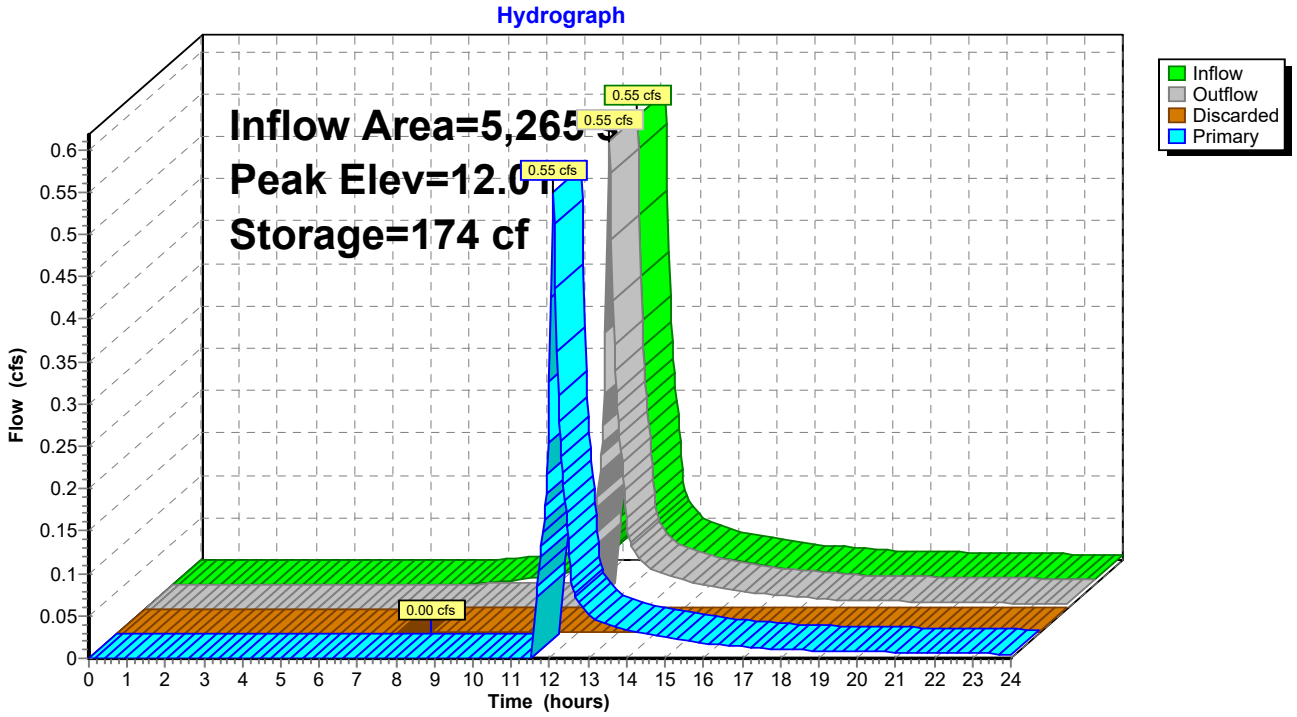
Volume	Invert	Avail.Storage	Storage Description
#1	10.00'	174 cf	**2.00'W x 145.00'L x 2.00'H Stone Trench** 580 cf Overall x 30.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	10.00'	**0.170 in/hr Exfiltration over Surface area**
#2	Primary	11.99'	**60.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.00 cfs @ 8.16 hrs HW=10.02' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.51 cfs @ 12.09 hrs HW=12.01' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 0.51 cfs @ 0.38 fps)

Pond 1P: Stone Trench



APPENDIX C

Operations & Maintenance Plan

Stormwater System Operations and Maintenance Plan

Project: Constitution Wharf
Location: Boston, MA

Owner: Jamestown

Date: October 2019

Prepared by: Nitsch Engineering, Inc.
2 Center Plaza, Suite 430
Boston, MA 02108
(617) 338-0063

Prepared for: Constitution Wharf ***Nitsch Project #13323***

I. Stormwater management system owner: Constitution Center INV FAC, LLC c/o National Development

II. Parties responsible for O&M during construction: Contractor

III. Parties responsible for O&M post-construction: Constitution Center INV FAC, LLC c/o National Development

IV. A schedule for O&M: See below

V. Routine and non-routine maintenance tasks to be undertaken during and after construction: See below

VI. The entire stormwater management system will be inspected and cleaned by the Contractor prior to the completion of construction. A report of the inspection/cleaning will be forwarded to the owner and the design engineer.

VII. The stormwater management system shall be inspected the first year of operation after large rainfall events (all storms greater than 0.5-inch in 24-hour period) to verify functionality.

VIII. The driveways and parking areas shall be swept six times per year.

IX. All material removed during the cleaning operations shall be disposed of in accordance with applicable guidelines and regulations.

X. All post construction maintenance activities will be documented and kept on file and made available upon request.

XI. The drainage system shall be maintained. The repair of any component of the system shall be made as soon as possible to prevent any potential pollutants (including silt) from entering the resource areas or the existing closed drainage system.

Part I: Construction of the System

Sediment and erosion control during construction will prevent possible damage to the drainage systems. The following guidelines shall be adhered to during construction.

1. Keep land disturbance to a minimum. Plan the phases of development so that only the areas actively being developed are exposed. All other areas should have natural vegetation preserved, have good temporary cover, or permanent vegetation established.

2. Stabilize disturbed areas. Permanent structures, temporary or permanent vegetation, and mulch should be employed as quickly as possible after land is disturbed.

3. Protect disturbed areas from stormwater runoff. Install erosion control or stormwater management measures to prevent water from entering and running over disturbed areas, and to prevent erosion damage to downstream facilities.

4. Install perimeter control practices. Use practices that isolate the development site from surrounding areas. Siltation fence, haybales, and temporary settlement basin shall be utilized.

5. The existing Stormwater Best Management Practices shall not be used as temporary sediment traps for construction. Sediment and erosion controls should be used to keep runoff and sediment away from these systems/structures. During and after excavation, all excavated materials should be placed downstream, away from these stormwater management systems, to prevent the redeposit of these materials during runoff events. These materials should be properly handled and disposed of during and after construction. Light earth-moving equipment shall be used to excavate the infiltration systems to minimize the compaction of the soils beneath the trench floor.

6. If necessary, temporary dewatering and groundwater control systems shall be designed to keep excavations free of water and to avoid disturbance of the sub-grade. The flows of all water resulting from pumping shall be managed so as not to cause erosion, siltation of drainage systems, or damage to adjacent properties or resource areas associated with the project site.

7. Contractor shall clean/flush entire stormwater system prior to final acceptance by the owner. The Contractor shall clean the interior of all drainage piping and structures of dirt and other superfluous material as work progresses. Care shall be taken to prevent earth, water and other materials from entering the pipeline. As soon as possible after the pipe and manholes are completed, the Contractor shall clean out the pipeline and manholes being careful to prevent soil, water and debris from entering the proposed infiltration systems, any storm drains, the isolated wetland area, and adjacent properties. The Contractor shall place plugs in the ends of uncompleted pipe at the end of the work day or whenever work stops. Flush lines between manholes if required to remove collected debris. Remove and dispose all debris, mortar, and soil from the bottom of all structures. The Contractor shall remove and dispose of sediment and debris from the onsite structures.

Part II: Maintenance of the System

Maintenance Schedule during Construction

Sediment Control	***Inspection***	***Maintenance Thresholds***	***Maintenance Action***
Street Sweeping	Sweep six (6) times per year	Per Schedule	Sweep access roads and all parking lots
Erosion control silt fences, haybales	Weekly and after large storm events (more than 0.25-inch of rainfall in 24-hour period)	If integrity of the system is compromised	Restore the integrity of the system and/or clean sediment out
Catch Basins	Weekly and after large storm events (more than 0.25-inches of rainfall in 24-hour period)	If the sump is 1/3 full with sediment	Clean sediment out

After all slopes have been fully stabilized all erosion control measures shall be cleaned out. All temporary erosion control measures shall be removed.

Post-Construction Maintenance Schedule

Maintenance Schedule Post-Construction

Sediment Control	***Inspection***	***Maintenance Thresholds***	***Maintenance Action***
Street Sweeping	Sweep six (6) times per year	Per Schedule	Sweep access roads and all parking lots
Catch Basins	Semi-annually and after large storm events (more than 3.2-inches of rainfall in 24-hour period)	If the sump is 1/3 full with sediment	Clean sediment out

The Owner should prepare and maintain a report for each semi-annual inspection of the Stormwater Management System.

Part III: Repair of the System

The drainage system shall be maintained. The repair of any component of the system shall be made as soon as possible to prevent any potential pollutants including silt from discharging offsite or to the resource areas located on the property.

Part IV: Snow Management

Snow will be managed by the owner's snow removal crews. Snow will be placed on the sides and edges of the driveways.

Part V: Reporting

Construction Maintenance Reporting

The Contractor shall maintain a record of erosion control measures and drainage system inspections and maintenance during construction. Attached is a prototype of the Erosion and Sedimentation Controls Inspection and Maintenance Report and the Stormwater Management System Report to be used.

Post-Construction Maintenance Reporting

The owner shall maintain a record of drainage system inspections and maintenance. Attached is a prototype of the Stormwater Management System Report to be used.

EROSION AND SEDIMENTATION CONTROLS INSPECTION AND MAINTENANCE REPORT

INSPECTOR: _____ DATE: _____ NUMBER: _____

DAYS SINCE LAST RAINFALL: _____ AMOUNT LAST RAINFALL: _____ INCHES

TEMPORARY STABILIZATION

CATCH BASIN SILT SACKS? (YES/NO)	PAVED AREAS? (YES/NO)	LANDSCAPED AREAS? (YES/NO)

COMMENTS/ACTION:

TO BE PERFORMED BY: _____ ON OR BEFORE: _____

STABILIZED CONSTRUCTION ENTRANCES

IS SEDIMENT TRACKED ONTO ROAD? (YES/NO)	IS THE GRAVEL CLEAN? (YES/NO)	DOES ALL TRAFFIC USE THE STABILIZED ENTRANCE TO LEAVE THE SITE? (YES/NO)

COMMENTS/ACTION:

TO BE PERFORMED BY: _____ ON OR BEFORE: _____

SILT FENCES AND HAYBALES

	DEPTH OF SEDIMENT	CONDITION OF EFFLUENT?	CONDITION OF SILT FENCE	ANY EVIDENCE OF SEDIMENT BYPASSING THE FENCE
SILT FENCE				

COMMENTS/ACTION:

TO BE PERFORMED BY: _____ ON OR BEFORE: _____

CHANGES REQUIRED TO THE POLLUTION PREVENTION PLAN/REASONS FOR CHANGES:

INSPECTED BY _____ SIGNATURE _____ DATE _____

STORMWATER MANAGEMENT SYSTEM REPORT

1 Constitution Center Inspected by:_____
Boston, MA Date:_____

Component	Status	Action Taken

APPENDIX D

Illicit Discharge Statement

Nitsch Engineering

2 Center Plaza, Suite 430
Boston, MA 02108-1928
T: 617-338-0063
F: 617-338-6472
www.nitscheng.com

STANDARD 10: Illicit Discharge Compliance Statement

Project Name: Constitution Wharf	Nitsch Project #: 13323
Location: Boston, MA	Checked by: DMD
Prepared by: MLC	Sheet No. 1 of 1
Date: July 15, 2019	

Standard 10 states: All illicit discharges to the stormwater management system are prohibited.

This is to verify:

1. Based on the information available there are no known or suspected illicit discharges to the stormwater management system at the Constitution Wharf site as defined in the MassDEP Stormwater Handbook.

2. The design of the stormwater system includes no proposed illicit discharges.

Michelle Callahan

Michelle Callahan, PE

10/9/19

Date