NOTICE OF INTENT

AREA A-7 EAST BOSTON POLICE STATION
338 East Eagle Street
Boston, Massachusetts

Prepared for

City of Boston on behalf of The Leers Weinzapfel Associates Architects, Inc.

January 7, 2019

Prepared by

GREEN INTERNATIONAL AFFILIATES, INC.
Civil and Structural Engineers

Building Strong Client Relationships Through Engineering Excellence

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January 7, 2019

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

Subject: NOI Submittal
New Area A-7 Police Station – East Boston

Dear Boston Conservation Commission Members:

On behalf of the Boston Public Facilities Department (PFD) and Leers Weinzapfel Associates Architects (LWA), Green International Affiliates, Inc. (Green) is pleased to submit the enclosed Notice of Intent (NOI) to the Boston Conservation Commission pursuant to the Massachusetts Wetlands Protection Act (WPA) Regulations for work within the Riverfront Area, Land Subject to Coastal Storm Flowage (LSCSF) and Buffer Zone.

The project is proposing to replace in kind an existing 12" drain line that is in disrepair and discharges directly to the Chelsea River. This portion of the project is located is located within Coastal Bank, Land Subject to Coastal Storm Flowage (LSCSF), Riverfront Area (RA) and Buffer Zone. This NOI is being submitted for the purpose of receiving an Order of Conditions under the Massachusetts WPA for the proposed work within this resource area.

The proposed project includes construction of a new 13,900 SF Area A-7 Police Station (AAPS) building, related utility systems, one parking lot for up to 54 spots and other earth disturbing activities; utility services exiting the building will connect to utilities within East Eagle Street. The proposed building will be accessed via new curb cuts along Condor Street and East Eagle Street. Public and private parking will be available through a new curb cut along Condor Street. A sally port drive and exit-only driveway to East Eagle Street will be provided between the site and adjacent DPW property. New exterior lighting will provide the necessary level of light for parking and access to the building at nighttime. The new building will be a fully sprinklered facility that satisfies the needs of East Boston.

The project will result in a decrease in impervious area and represents a "Redevelopment" project under the MassDEP Stormwater Management Standards and therefore subject to meet Standards 2, 3, 4, 5 and 6 to the maximum extent practicable. This project provides an opportunity to improve the quality of stormwater runoff that currently discharges via overland flow with little to no treatment directly to the Chelsea River or abutting streets. A stormwater report is attached to the NOI demonstrating compliance with the 10 State Stormwater Standards and BWSC Stormwater Requirements.

This Notice of Intent (NOI) is being submitted to the Boston Conservation Commission pursuant to the Massachusetts Rivers Protection Act Regulations for work within Riverfront Area and Buffer Zone and pursuant to the Massachusetts Wetlands Protection Act (WPA) Regulations for work within Coastal Banks and the Land Subject to Coastal Storm Flowage.

Enclosed are the following items included with this submission:

- Fee Exempt - The proposed project is for the City of Boston; therefore, it is exempt from the fees (Category 2(g) – source discharge and .075% of Construction cost).
- 8 copies of the NOI Report
- 8 half size (18x24) set of drawings
- 2 copies of the Stormwater Report and draft SWPPP
- Electronic copies of the NOI Report (includes all appendices as separate pdfs for ease of review) and plans will be sent via email with a link to downloadable files to: Amelia Croteau at amelia.croteau@boston.gov

While the proposed project includes a new building, the building is located outside of any WPA jurisdiction, including Land Subject to Coastal Flooding; therefore, a "BPDA Climate Resiliency Checklist" is not included in this submission.

As required by regulation, one (1) copy of the above submittal is being provided concurrently to the Massachusetts DEP Northeast Office.

We respectfully request that this project be placed on the Conservation Commission agenda for the hearing scheduled on January 23, 2019. Should you have any questions regarding this submittal, please do not hesitate to contact me.

Sincerely,

Green International Affiliates, Inc.

Danielle H. Spicer, P.E.
Senior Project Manager

cc: DEP - NERO
Brian Melia – PFD
James E. Vogel – LWA

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NOTICE OF INTENT FORMS & LOCAL CHECKLIST

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Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

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

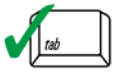
Provided by MassDEP:

MassDEP File Number

Document Transaction Number

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):

338 East Eagle Street (a. Street Address) | Boston (b. City/Town) | 02128 (c. Zip Code)

Latitude and Longitude: 42°22'54"N (d. Latitude) | 71°01'40"W (e. Longitude)

3711-3 (f. Assessors Map/Plat Number) | 010371103 & 3711002 (g. Parcel /Lot Number)

2. Applicant:

Brian (a. First Name) | Melia (b. Last Name)

Public Facilities Department c/o City of Boston (c. Organization)

26 Court St, 10th Floor (d. Street Address)

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

617-635-0412 (h. Phone Number) | (i. Fax Number) | brian.melia@boston.gov (j. Email Address)

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

(a. First Name) | (b. Last Name)

(c. Organization)

(d. Street Address)

(e. City/Town) | (f. State) | (g. Zip Code)

(h. Phone Number) | (i. Fax Number) | (j. Email address)

4. Representative (if any):

Danielle (a. First Name) | Spicer (b. Last Name)

Green International Affiliates, Inc (c. Company)

239 Littleton Road (d. Street Address)

Westford (e. City/Town) | MA (f. State) | 01886 (g. Zip Code)

978-923-0400 (h. Phone Number) | (i. Fax Number) | dspicer@greenintl.com (j. Email address)

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

Exempt (a. Total Fee Paid) | Exempt (b. State Fee Paid) | Exempt (c. City/Town Fee Paid)

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A. General Information (continued)

6. General Project Description:

This project includes a construction of a new 13,900 Sf Area A-7 Police Station building with new driveways, security gated parking accomodations and related underground utility infrastructures. The proposed project will decrease impervious area on the site. See project description for more information.

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:

a. County	b. Certificate # (if registered land)
59934 & 4751	215 & 455 (respectively)
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.

Massachusetts Department of Environmental Protection
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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 3. cubic feet of flood storage lost	2. square feet 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

Chelsea River (coastal)
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: 16,765 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.
640	640 (temporary)	N/A

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	20 (temporary) 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	75 (temporary) 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

   2017
   b. Date of map

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

   c. Submit Supplemental Information for Endangered Species Review*

      1. ☐ Percentage/acreage of property to be altered:

         (a) within wetland Resource Area _____ percentage/acreage

         (b) outside Resource Area _____ percentage/acreage

      2. ☐ Assessor's Map or right-of-way plan of site

2. ☐ Project plans for entire project site, including wetland resource areas and areas outside of wetlands jurisdiction, showing existing and proposed conditions, existing and proposed tree/vegetation clearing line, and clearly demarcated limits of work **

   (a) ☐ Project description (including description of impacts outside of wetland resource area & buffer zone)

   (b) ☐ Photographs representative of the site

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

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

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

(c) ☐ MESA filing fee (fee information available at http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/mesa/mesa_fee_schedule.htm). 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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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.

See Attached Plan List
a. Plan Title

Green International Affiliates, Inc
b. Prepared By

Danielle Spicer, P.E.
c. Signed and Stamped by

d. Final Revision Date

As noted
e. Scale

f. Additional Plan or Document Title

g. Date

5. ☐ If there is more than one property owner, please attach a list of these property owners not listed on this form.

6. ☐ Attach proof of mailing for Natural Heritage and Endangered Species Program, if needed.

7. ☐ Attach proof of mailing for Massachusetts Division of Marine Fisheries, if needed.

8. ☒ Attach NOI Wetland Fee Transmittal Form

9. ☒ Attach Stormwater Report, if needed.

E. Fees

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

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

2. Municipal Check Number

3. Check date

4. State Check Number

5. Check date

6. Payor name on check: First Name

7. Payor name on check: Last Name

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F. Signatures and Submittal Requirements

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

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

Tom Leahy (the Project MANAGER) — 1-4-19

1. Signature of Applicant (Tom Leahy for Brian Melia) — 2. Date

3. Signature of Property Owner (if different) — 4. Date

5. Signature of Representative (if any) Danielle Spicer, P.E. — 6. Date 01/04/2019

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.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

NOI Wetland Fee Transmittal Form

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

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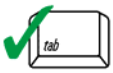


A. Applicant Information

1. Location of Project:

338 East Eagle Street	Boston
a. Street Address	b. City/Town
Exempt	Exempt
c. Check number	d. Fee amount

2. Applicant Mailing Address:

Brian		Melia
a. First Name		b. Last Name
Public Facilities Department c/o City of Boston		
c. Organization		
26 Court St, 10th Floor		
d. Mailing Address		
Boston	MA	02108
e. City/Town	f. State	g. Zip Code
617-635-0412		brian.melia@boston.gov
h. Phone Number	i. Fax Number	j. Email Address

3. Property Owner (if different):

a. First Name		b. Last Name
c. Organization		
d. Mailing Address		
e. City/Town	f. State	g. Zip Code
h. Phone Number	i. Fax Number	j. Email Address

B. Fees

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

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

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

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

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

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

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

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

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

NOI Wetland Fee Transmittal Form

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

B. Fees (continued)

Step 1/Type of Activity	Step 2/Number of Activities	Step 3/Individual Activity Fee	Step 4/Subtotal Activity Fee
Category 2(g) - source discharge	1.5	$500	$750

Step 5/Total Project Fee:

Step 6/Fee Payments:

Total Project Fee:	Exempt a. Total Fee from Step 5
State share of filing Fee:	Exempt b. 1/2 Total Fee **less $**12.50
City/Town share of filling Fee:	Exempt 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.)

1.0 PROJECT DESCRIPTION

This Notice of Intent Application has been prepared for the 13,900 SF Area A-7 Police Station building along East Eagle Street in East Boston, MA. Located on a waterfront site in East Boston, the new police station will act as a mediator between the three major use groups of that part of the city: industrial, commercial, and residential. A Stormwater Report is attached demonstrating the compliance of the project with the Massachusetts Stormwater Management Standards. The proposed new building will be LEED certified, and will comply with the State's Chapter 91 environmental regulations.

The project includes construction of a new 13,900 SF Area A-7 Police Station building. The three-story portion of the building will occupy the approximate southern half of the footprint and contain office space and employee facilities. The single-story portion to the north will contain a booking area and detention cells and a lower level vehicle maintenance garage. The proposed building will include services and facilities necessary for its function. One gated sally port drive and adjacent exit-only driveway will be accessed via East Eagle Street. A plaza with a wooden bench will be located at the corner of East Eagle and Condor Street. An ADA accessible public parking area for five spots and a separate secured parking lot for forty-nine private spots will be accessed via Condor Street. A new timber fence sound barrier will separate our project site from the adjacent DPW property. The building responds in scale to the adjacent residential buildings, and in materials to East Boston's brick civic buildings, by featuring a granite and terra cotta-clad structure with a glass entry corner facing onto a public plaza.

This Notice of Intent (NOI) is being submitted to the Boston Conservation Commission pursuant to the Massachusetts Wetlands Protection Act (WPA) Regulations for work within Coastal Banks, Riverfront Area and the Land Subject to Coastal Storm Flowage.

1.1 EXISTING CONDITIONS

The existing site within the limit of work is entirely developed and consists of paved parking lot, driveway, debris and some isolated vegetated areas. The site is bordered by East Eagle Street to the south, Condor Street to the west, Chelsea River to the north and the adjacent DPW facility to the east (see Figure 2 – Aerial Map). The majority of the project is located outside all wetland resource areas, except for the replacement of the existing 12" drain line, which currently discharges directly to the Chelsea River.

Subsurface utility exploration was performed on two different occasions by BSI in 2018 to determine the condition of the 12" drain line and where it extends upstream. After two attempts at cleaning it and camering it, a full pipe collapse was discovered at approximately 30' upstream from the outlet of the pipe. In addition, after they jetted upstream from the break, a massive root ball infiltrating the drain line approximately 15 feet upstream was discovered. The root infiltration is so severe that it has compromised the structural integrity of the pipe at this location so cutting the roots out is not an option. The proposed project will replace the last 50' of the pipe in kind.

1.2 PROPOSED CONDITIONS

The proposed project features the construction of a 13,900 SF Area A-7 Police Station building. The new station strives to be welcoming to the public, but must also be a highly secure facility, housing detective

offices and a detention area. It is organized across its length by increasing levels of security. Therefore, an impact resistant envelope and several levels of security will be installed inside.

The center can be a high-stress work environment for employees/dispatchers and as such, special consideration has been taken regarding the architecture of the building and site layout. These attributes play a fundamental role in reducing the stress level to which dispatchers are exposed. The occupied spaces inside the building were designed around a central core to maximize daylight and views. The front desk can see all public areas and have connections to police operations and detention areas. All of the office spaces allow for maximum flexibility. All occupied spaces in the building receive natural light.

The proposed site was designed to improve water quality runoff from the site and avoid permanent direct impacts to adjacent resource areas. The proposed stormwater mitigation system was designed using catch basins, proprietary structures and subsurface infiltration chambers to treat the runoff and further reduce flow before discharging to the Chelsea River. There is an existing 12" drain outlet leaving the site and discharging to Chelsea River at the northernmost part of the site. This pipe as previously noted is in poor condition, being filled with debris and broken from roots. Part of this project is to replace the pipe up to the alignment of the proposed pipe that discharges flow from the subsurface storage chambers.

The Contractor will be prohibited from any fueling of vehicles or equipment within the buffer zone. Stockpiles of bulk material will be contained by a ring of compost filter tubes. Catch basins that could receive runoff from construction areas or staging areas will be equipped with basin inserts to intercept any sediment before storm drains transport it to local water courses or municipal systems.

1.3 PROJECT PLAN LIST

The following plan sheets are included with this Notice of Intent:

Sheet	Title	Prepared by	Date
0	Title Sheet	Green International Affiliates, Inc	01/04/2019
C-0	Notes and Legend	Green International Affiliates, Inc	01/04/2019
C-1	Existing Conditions Plan	Green International Affiliates, Inc	01/04/2019
C-2	Site Prep Plan	Green International Affiliates, Inc	01/04/2019
C-3	Site Layout Plan	Green International Affiliates, Inc	01/04/2019
C-4	Grading Plan	Green International Affiliates, Inc	01/04/2019
C-5	Utility Plan	Green International Affiliates, Inc	01/04/2019
C-6 – C-12	Details	Green International Affiliates, Inc	01/04/2019

LEGEND:

APPROXIMATE LIMIT OF WORK

SCALE IN FEET

1000 0 1000 2000

ELEVATIONS IN METERS

USGS LOCUS MAP

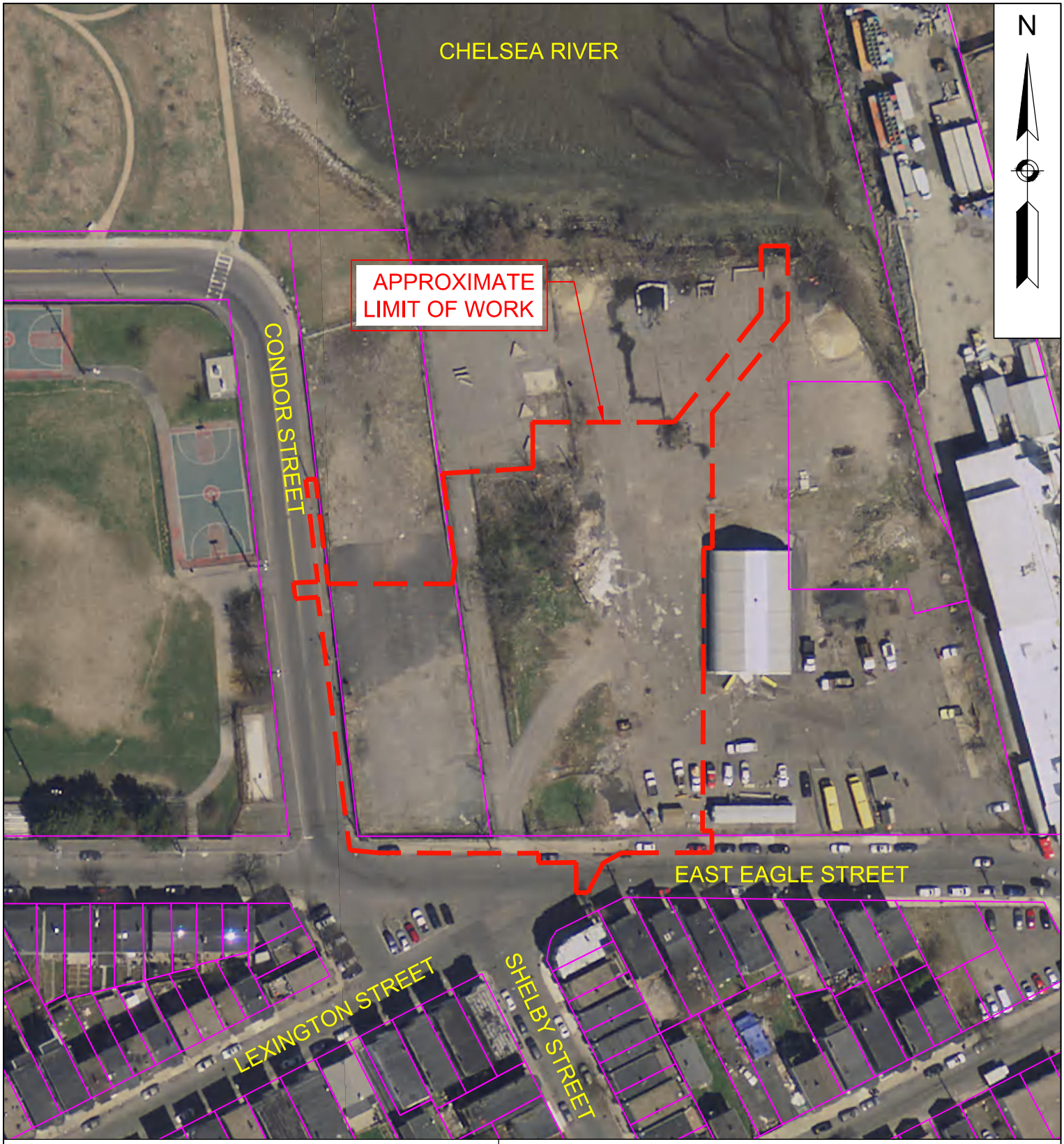
338 EAST EAGLE STREET
BOSTON, MA

PREPARED BY:
GREEN INTERNATIONAL AFFILIATES, INC.
CIVIL AND STRUCTURAL ENGINEERS
239 LITTLETON RD, WESTFORD, MA (978) 923-0400
24 ALBION RD, LINCOLN, RI (401) 305-7895

PREPARED FOR:
CITY OF BOSTON
1 CITY HALL SQUARE
BOSTON, MA 02201

SCALE: AS NOTED	PROJECT NO. 16091	FIGURE 1
DATE: 10/17/2018 REVISED:	DRAWN BY: ED CHECKED BY: DS	

F:\Projects\2016\16091\dwg\Figures\Figure 1 -USGS.dwg



LEGEND:

APPROXIMATE LIMIT OF WORK

PARCEL BOUNDARY

NOTE: PARCEL BOUNDARY INFORMATION WAS TAKEN FROM MASSGIS WEBSITE.

HORIZONTAL GRAPHIC SCALE:

100 0 50 100

1" = 100'

AERIAL MAP

338 EAST EAGLE STREET
BOSTON, MA

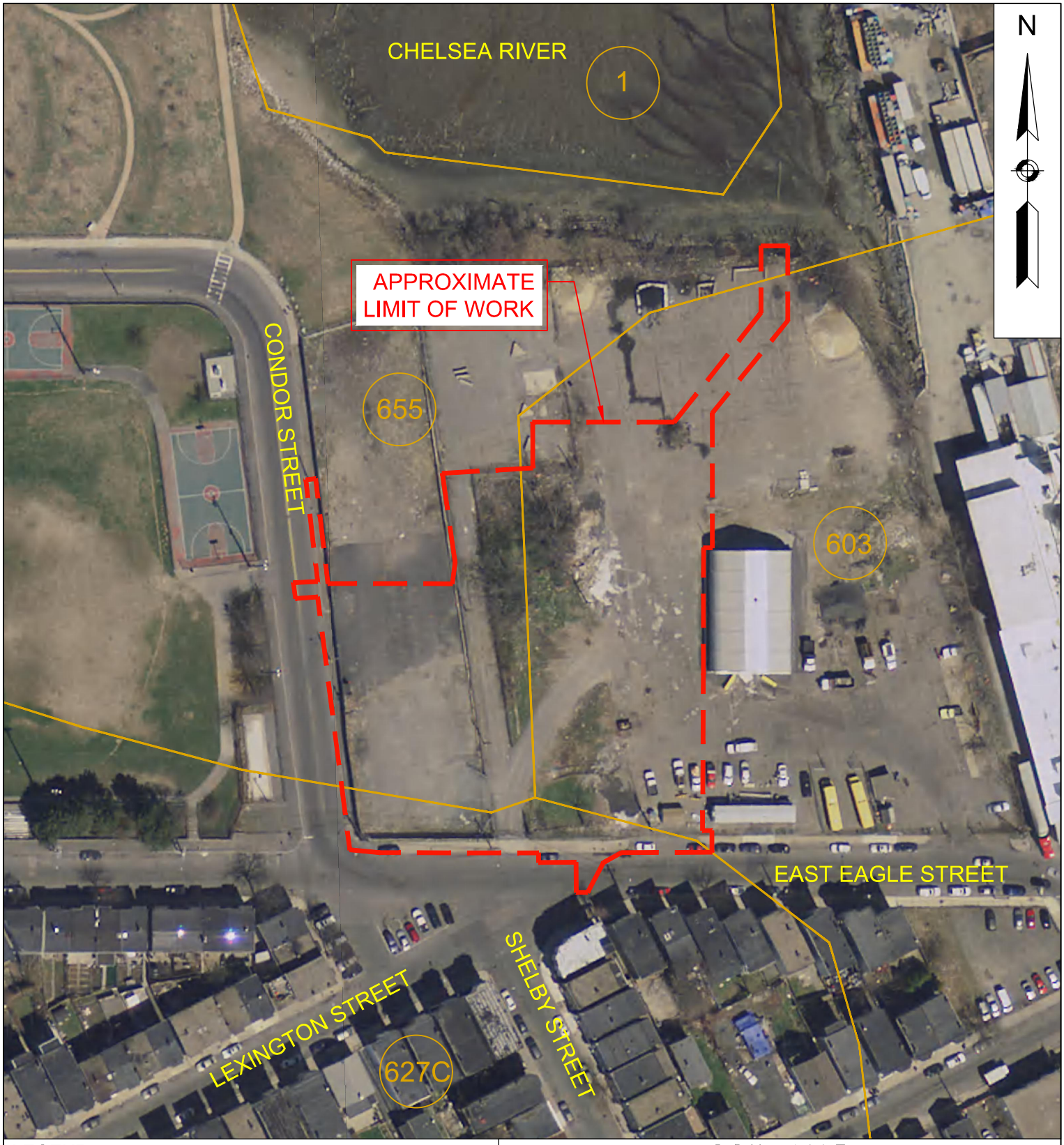
PREPARED BY:
GREEN INTERNATIONAL AFFILIATES, INC.
CIVIL AND STRUCTURAL ENGINEERS
239 LITTLETON RD, WESTFORD, MA (978) 923-0400
24 ALBION RD, LINCOLN, RI (401) 305-7895

PREPARED FOR:
CITY OF BOSTON
1 CITY HALL SQUARE
BOSTON, MA 02201

SCALE: AS NOTED	PROJECT NO. 16091
DATE: 10/17/2018 REVISED:	DRAWN BY: ED CHECKED BY: DS

FIGURE 2

F:\Projects\2016\16091\dwg\Figures\Figure 2 - Aerial Map.dwg



LEGEND:

APPROXIMATE LIMIT OF WORK

NRCS SOIL SURVEY BOUNDARY

603 NRCS SOIL SURVEY SYMBOL

NOTE: MAP INFORMATION TAKEN FROM MASSGIS AND SOILS INFORMATION TAKEN FROM NRCS WEB SOIL SURVEY FOR MIDDLESEX COUNTY, MA.

HORIZONTAL GRAPHIC SCALE:
100 0 50 100
1" = 100'

SOIL MAP

338 EAST EAGLE STREET
BOSTON, MA

PREPARED BY:
GREEN INTERNATIONAL AFFILIATES, INC.
CIVIL AND STRUCTURAL ENGINEERS
239 LITTLETON RD, WESTFORD, MA (978) 923-0400
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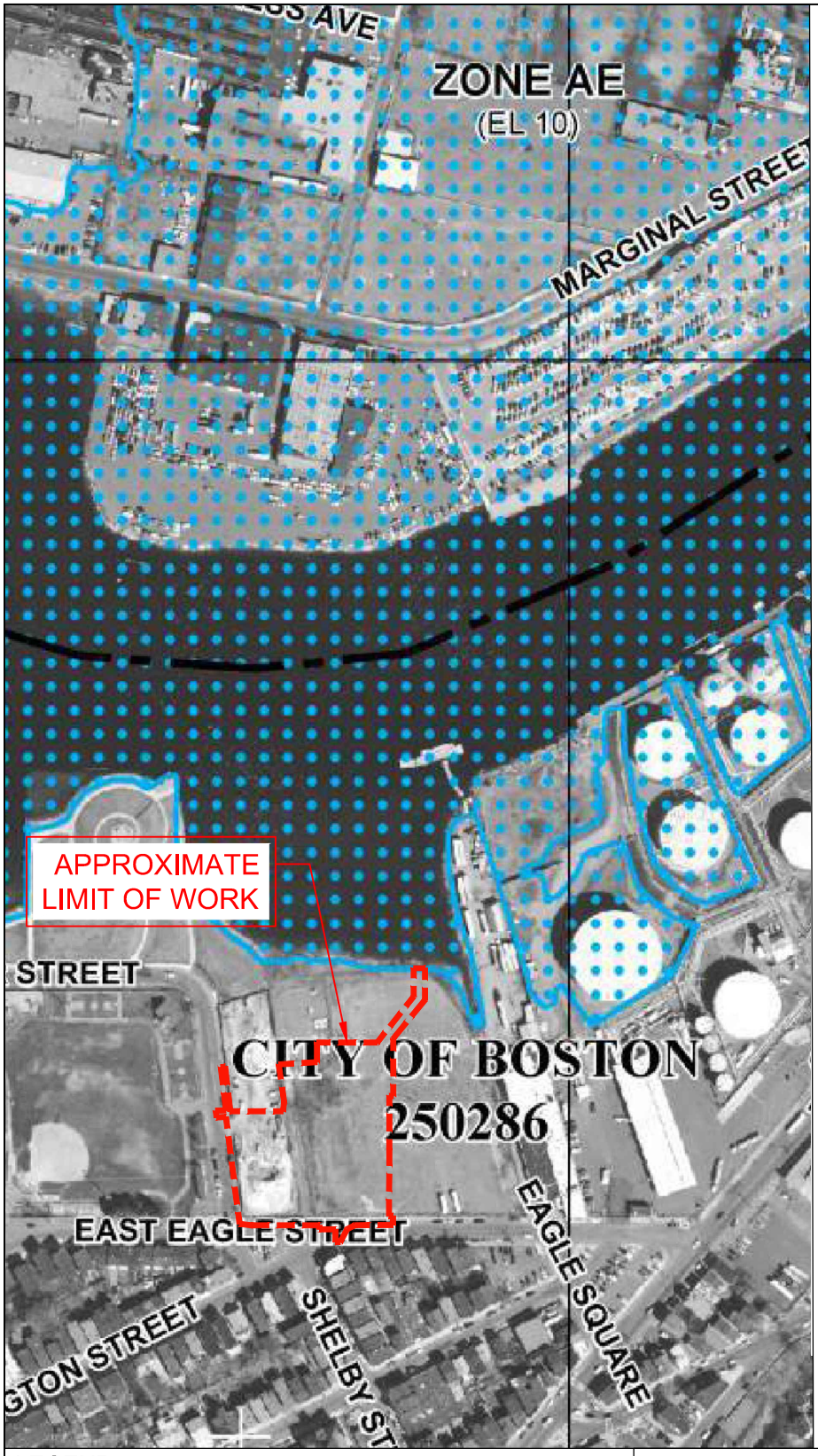
REVISED:
DRAWN BY: ED
CHECKED BY: DS

FIGURE 3

F:\Projects\2016\16091\dwg\Figures\Figure 3 - Soil Map.dwg



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

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% Annual Chance Floodplain Boundary
- 0.2% Annual Chance Floodplain Boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary

Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities.

Limit of Moderate Wave Action

Limit of Moderate Wave Action coincident with Zone Break

513 — Base Flood Elevation line and value; elevation in feet*

(EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

A — A — Cross section line

23 — 23 — Transect line

Culvert

Bridge

45° 02' 08", 93° 02' 12" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83) Western Hemisphere

4989000 M — 1000-meter grid: Massachusetts State Plane Mainland Zone (FIPS Zone 2001), Lambert Conformal Conic projection

^{4989000m} N — 1000-meter Universal Transverse Mercator tick values, zone 19N

DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
September 25, 2009

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
March 16, 2016 - to change Base Flood Elevations and Special Flood Hazard Areas, to change zone designations, to update the effects of wave action, to update corporate limits, to add roads and road names, to incorporate previously issued Letters of Map Revision and to modify Coastal Barrier Resource System units.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

N

LEGEND:

APPROXIMATE LIMIT OF WORK

NOTE:
THE FLOOD ZONE DATA SHOWN IS TAKEN FROM THE FEDERAL INSURANCE RATE MAPS (FIRM) FOR THE CITY OF BOSTON, MA. (FIRM COMMUNITY PANEL NUMBER 25025C0019J, DATED 3/16/2016)

HORIZONTAL GRAPHIC SCALE:
300 0 150 300
1" = 300'

FEMA MAP

338 EAST EAGLE STREET
BOSTON, MA

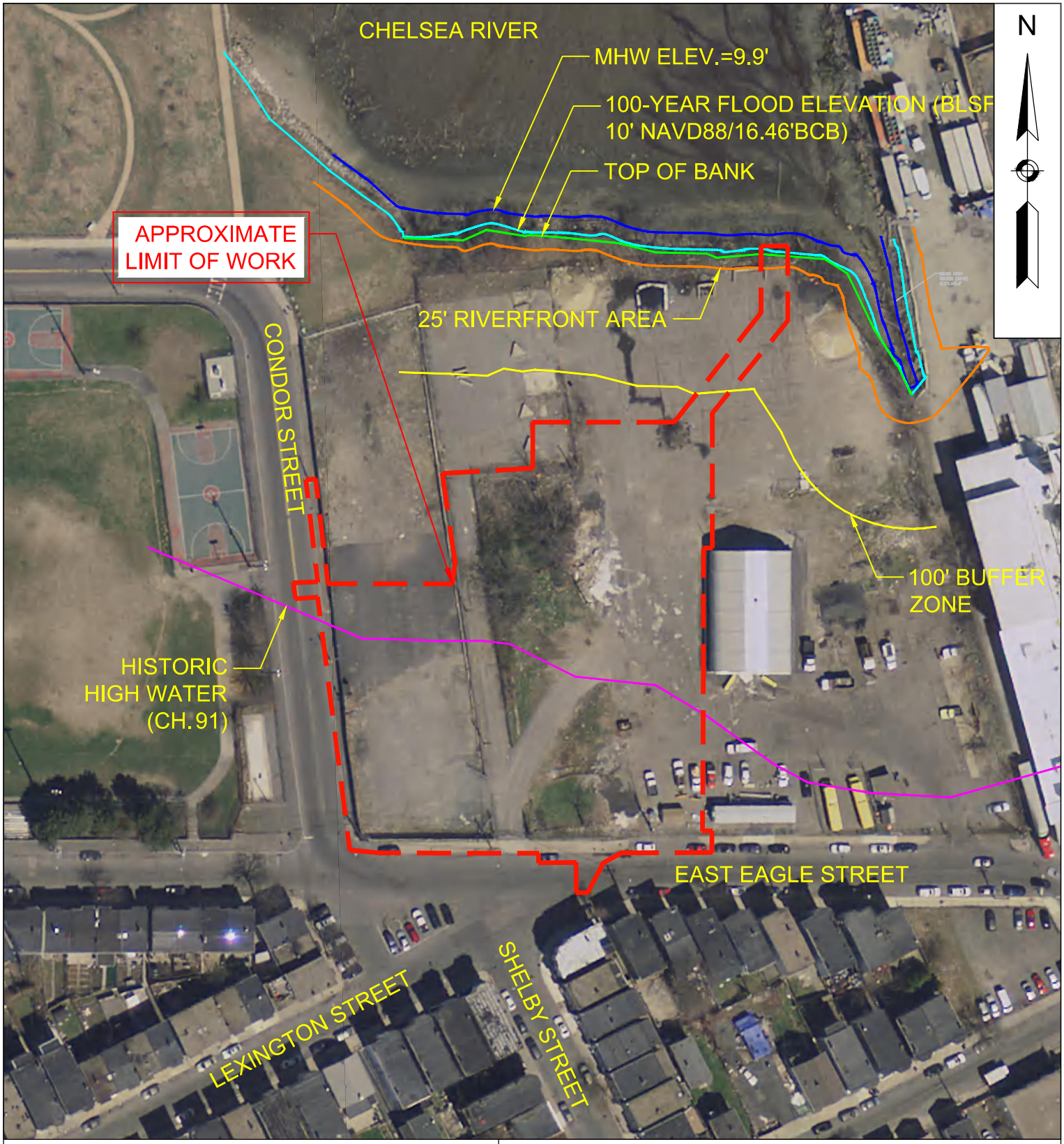
PREPARED BY:
GREEN INTERNATIONAL AFFILIATES, INC.
CIVIL AND STRUCTURAL ENGINEERS
239 LITTLETON RD, WESTFORD, MA (978) 923-0400
24 ALBION RD, LINCOLN, RI (401) 305-7895

PREPARED FOR:
CITY OF BOSTON
1 CITY HALL SQUARE
BOSTON, MA 02201

SCALE: AS NOTED	PROJECT NO. 16091
DATE: 10/17/2018	DRAWN BY: ED
REVISED:	CHECKED BY: DS

FIGURE 4

F:\Projects\2016\16091\dwg\Figures\Figure 4 - FEMA Map.dwg



LEGEND:

- APPROXIMATE LIMIT OF WORK
- MEAN HIGH WATER ELEVATION
- TOP OF BANK
- 25' RIVERFRONT AREA
- 100-YEAR FLOOD ELEVATION (BLSF) (10' NADV88/16.46' BCB)
- 100' BUFFER ZONE
- HISTORIC HIGH WATER
- NHESP, ESTIMATED HABITATS OF RARE WILDLIFE AND PRIORITY HABITATS OF RARE SPECIES
- ACEC
- ORW
- CERTIFIED VERNAL POOLS
- POTENTIAL VERNAL POOLS

HORIZONTAL GRAPHIC SCALE:
100 0 50 100
1" = 100'

RESOURCE AREA MAP

338 EAST EAGLE STREET
BOSTON, MA

PREPARED BY:
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CIVIL AND STRUCTURAL ENGINEERS
239 LITTLETON RD, WESTFORD, MA (978) 923-0400
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CHECKED BY: DS

FIGURE 5

F:\Projects\2016\16091\dwg\Figures\Figure 5 - Resource Areas Map.dwg

2.0 RESOURCE AREAS

2.1 WETLAND RESOURCE AREAS

The wetland Resource Areas on the Project Site are regulated under Federal, State and Local regulatory programs including:

- Section 404 of the Clean Water Act (CWA) which is administered by the U.S. Army Corps of Engineers (ACOE)
- Section 401 of the CWA which is overseen by the Massachusetts Department of Environmental Protection (DEP)
- Massachusetts Wetlands Protection Act (WPA) and 310 CMR 10.00 which is administered by the Boston Conservation Commission or (upon appeal) by DEP

The proposed project is within or directly abutting wetland resource areas. These areas are identified on Figure 5, Protected Resource Areas, attached to this application as well as shown on the Existing Conditions plan. Areas subject to the jurisdictions above are identified in this NOI and include the following:

- Coastal Bank
- Land Subject to Coastal Storm Flowage (LSCSF)
- River Front Area (RA)
- Buffer Zone

These resource areas and buffer zone are collectively associated with the Chelsea River. The following sections describe on-site jurisdictional areas:

2.1.1 Coastal Bank

There is a coastal bank associated with the Chelsea River that is shown as top of bank on Sheet C-0, Existing Conditions plan.

2.1.2 Land Subject to Coastal Storm Flowage (LSCSF)

The project is located within the 100-year flood plain as shown on the Flood Insurance Rate Map (FIRM) for the City of Boston, Massachusetts, Panel No. 25025C0019J dated March 16, 2016. The flood plain area is shown on Figure 4 – FEMA Map. As this area is coastal, the flood plain is referred to as Land Subject to Coastal Storm Flowage.

2.1.3 Riverfront Area

There is a 25’ riverfront area associated with the Chelsea River (established though 310 CMR 10.58 3(a)). The work proposed in the Riverfront Area meets the definition of work within a previously developed Riverfront Area and is regulated by 310 CMR 10.58(5), which may allow work within Previously Developed Riverfront Areas, provided the proposed work improves existing conditions and meets the performance standards listed in 10.58(5).

2.1.4 Buffer Zone

The 100-foot Buffer Zone (established through 310 CMR 10.02) is a 100-foot offset landwards from the limits of the top of Bank associated with the Chelsea River bank. In the vicinity of the project site, the Buffer Zone includes a degraded area mostly consisting of bituminous pavement and piles of debris (look at photos for more description if needed). Portions of the project are located within the Buffer Zone.

2.2 PROJECT IMPACTS

The project has been designed to avoid wetland resource area impacts to the extent practicable and will mitigate unavoidable resource area impacts in accordance with state regulations.

2.2.1 Direct Impacts

The proposed project will not result in any permanent direct impacts. All impacts within the resource areas are temporary in nature due to the replacement of the 12" drain line discharging to the Chelsea River.

2.2.2 Temporary Impacts

There are minimal temporary impacts to wetland resource areas associated with the project. The temporary impacts are associated with the replacement of the 12" drain line in kind and consist of the following:

Coastal Bank

There will be approximately 20 LF of coastal bank that will be temporarily impacted with the installation of the 12" drain line. These impacts are temporary in nature and the bank will be restored to meet existing conditions or better. The existing slope along the Chelsea River is very steep; therefore, riprap will be installed at the outlet of the 12" pipe for erosion control.

Land Subject to Coastal Storm Flowage (LSCSF)

The project is located within the 100-year flood plain as shown on the Flood Insurance Rate Map (FIRM) for the City of Boston, Massachusetts, Panel No. 25025C0019J dated March 16, 2016. Work within the 100-year floodplain is for the replacement of the 12" drain pipe in kind and no grading or land cover will change as a result of this construction. There are no performance standards for work within LSCSF.

Riverfront Area (RA)

The impacts resulting from the project are associated with the replacement of the existing 12" drain line in kind. The project provides the use of erosion and sedimentation controls to attenuate non-point source pollution during construction. Pursuant to 310 CMR 10.58(4), the work, including the proposed mitigation, will have no significant adverse impact on the Riverfront Area to protect the interests described in the statute. Wildlife habitat functions of the Riverfront Area within the inner riparian zone will not be disturbed.

In accordance with 310 CMR 10.58(5), notwithstanding the provisions of 310 CMR 10.58(4)(c) and (d) (setting forth the otherwise applicable general performance standards), the proposed work redeveloping the previously developed Riverfront Area on-site may be allowed by the Conservation Commission, where the work will improve existing conditions. Existing improvements may be redeveloped where the work involved includes one or more of the following: the replacement, rehabilitation or expansion of existing structures, improvement of existing roads, or the reuse of degraded and/or previously developed areas.

The following section describes how the proposed work within Previously Developed Riverfront Area meets the performance standards:

10.58(5)(a) Improvement over existing conditions:

The only portion of the project within the Riverfront Area consists of the existing 12" drain line that outlets to the Chelsea River. As a result of a field inspection and subsurface utility investigation, including CCTV of the downstream outlet pipe, the existing 12" drain outlet was found to be in poor condition, clogged with trash and debris, and had some large tree root penetrations in the pipe. Therefore, the project is proposing to replace the last 30' of pipe in kind, which will result in an improvement over existing conditions.

10.58(5)(b): Stormwater management:

The existing site is a degraded site consisting mostly of impervious area with piles of debris. Runoff from the site currently discharges via overland flow directly into the Chelsea River with little to no treatment. The proposed project is a Redevelopment project and will significantly increase the treatment of runoff prior to discharging to the Chelsea River. A Stormwater Management report is included as an appendix of this NOI demonstrating compliance with the 10 State Stormwater Standards.

10.58(5)(c) Proposed work shall not be located closer to the River:

The proposed work is temporary in nature and will not result in any proposed permanent alteration closer to the Chelsea River.

10.58(5)(d) Location of proposed work outside the Riverfront Area or toward the Riverfront Area boundary:

The Riverfront Area associated with the Chelsea River is 25' (not 200'), all work is temporary and located within the outer portion of the RA.

10.58(5)(e) Proposed work shall not exceed the amount of degraded area:

This project is temporary and does not result in an increase of impervious area within the Riverfront Area within the limit of work. The project will improve the existing outfall.

10.58(5)(f) Restoration on-site of degraded Riverfront Area notwithstanding the criteria of 10.58(5)(c), (d), and (e):

The impacts are temporary, and no restoration of degraded Riverfront Area is proposed for this project; therefore, this Standard is not applicable.

10.58(5)(g): Mitigation of Riverfront Area:

The impacts are temporary, and no mitigation of Riverfront Area is proposed for this project; therefore, this Standard is not applicable.

10.58(5)(h) Demonstrate Restoration or Mitigation has been completed:

The project is not proposing mitigation under Standard 10.58(5)(f) and (g), therefore this Standard is not applicable.

Buffer Zone

Portion of the site is located within the 100-foot Buffer Zone to Chelsea River bank. Erosion and sediment control Best Management Practices (BMPs) will be installed during construction to protect adjacent resource areas. These BMPs ensure the land disturbance within the Buffer Zone does not negatively impact resource areas and will secure the protection of those interests.

2.2.3 Stormwater Management

Stormwater management for this project has been designed in compliance with the Stormwater Management Standards as outlined in 310 CMR 10.05(6)(k) through (q) and defined in detail in the DEP's Stormwater Management Handbook. The current site discharges runoff with little to no treatment directly into the Chelsea River. The proposed project has been designed to improve significantly upon existing stormwater conditions while minimizing impacts on nearby resource areas from both the construction and operation of the proposed project. A Stormwater Report documenting compliance with the DEP's Stormwater Management Standards, including description of methodology, is attached as Appendix C to this report.

2.2.4 Rare Species

The project site is not located within an area designated as Priority or Estimated Habitat of Rare Species by the Natural Heritage & Endangered Species Program (NHESP) 2017 Maps. No Certified or Potential Vernal Pools are located in this area of the City (see Figure 5).

The U.S. Fish and Wildlife Service's Information for Planning and Consultation (IPaC) project planning website was consulted for a determination of whether the proposed project could impact any listed species under the ESA. The website noted the potential presence is the Northern Long-eared Bat (Myotis Septentrionalis) (NLEB) in the area, which is designated as a "threatened" species under the ESA. The NLEB is also listed as "endangered" under MESA.

The FWS has promulgated a final rule, Section 4(d) of the ESA, which addresses what would constitute an illegal "take" of the NLEB. The rule prohibits tree removal activities within 0.25 miles of a bat hibernaculum or within 150 feet of known occupied maternity roost trees. No known occupied maternity roost trees are indicated to exist in Boston, and the closet NLEB hibernaculum is located

approximately 13 miles west of the project site. The trimming and removal of trees may subsequently take place as needed at the proposed Area A-7 Police Station project site without ESA/MESA

2.2.5 Area of Critical Environmental Concern

Per MassGIS online data mapping, the project site is not located within an Area of Critical Environmental Concern (ACEC). (See Figure 5).

2.2.6 Water Quality

Based on MassGIS online data mapping, the project site is not located within an Outstanding Resource Water (ORW). (See Figure 5).

2.2.7 Mitigation Measures

Erosion and Sediment Control

To protect the resource areas during construction a combination of erosion and sediment control BMPs will be installed as shown on the attached plan set. The erosion controls will be maintained in good condition until on-site soils are stabilized. All areas will be permanently stabilized following the completion of construction work. For additional information on erosion and sediment controls please see the attached Stormwater Management Report in Appendix C of this report.

Trench Dewatering

If trench dewatering is needed, all pumped effluent will be directed into a ring of staked haybales, filter bag, or other approved systems for filtering and removal of suspended solids prior to discharge into the buffer zone. There will be no direct discharge of pumped water into any resource area, or closed drainage system. This project will disturb more than an acre and will require a NPDES Construction General permit; therefore, all dewatering will be done in accordance this permit.

APPENDICIES

Appendix A – Photos

Appendix B – Abutter Information

Appendix C – Stormwater Report and Checklist

Appendix D – Drawings for NOI Submission (Bound Separately)

APPENDIX A

PHOTOS

Photo Log – April & May 2018

Photo 01 – Looking east on East Eagle Street

Photo 02 – Looking west on East Eagle Street & Condor Street Intersection

Photo 03 – Looking north on Condor Street

Photo 04 – Looking south on Condor Street

Photo 05 – Looking northeast towards Chelsea River

Photo 6 – Existing 12” drain outlet into Chelsea River

Photo 7 – Existing 12” drain outlet into Chelsea River

Photo 8 – Existing 12” drain outlet into Chelsea River

Photo 09 – Looking northwest

Photo 10 – Looking southwesterly from the center of the parcel

Photo 11 – Looking west at the southwest corner of the parcel

Photo 12 – Looking northwest

Photo 13 – Existing retaining wall adjacent to East Eagle Street

Photo 14 – Looking northeasterly from the existing retaining wall adjacent to East Eagle Street

Photo 15 – Looking northeast

APPENDIX B

ABUTTER INFORMATION

- Certified Abutters List
- Abutter Notification
- Affidavit of Service

1023

CHELSEA RIVER (1945)
~~CREEK~~

N

1022

Boston Natura / Foundating Inc.
42287

9348
102-7
12-31-79

175,795
102,600 SOLID
49,595 FLATS
23,600 DOCK

10065
123
9-15-82

3711-1

493'
277.0
102.86
314.21
40'
48'
7816
375.90
30,890
375.0

SECT 3 BLK 46 A2

8977
488
8-17-77

LOW WATER LINE

389.86
300
87.89

CONDOR ST.

M.B.T.A.
290,608
148,000 SOLID
142,608 FLATS

30,000
55,000
85,000 SOLID FILL
86000
83856

1025

SECTION 4 BLOCK 1

SECTION 3 BLOCK 33
1061

FALCON ST.

SECTION 3 BLOCK 32
1061

GLENDON ST.

345.51
40000
City of Boston (Part)
SECT. 3 BLK 46A1
147,436
402.66
312
391.67

CONDOR ST.

452.99
45543
42,275
(A.W.D.)
City of Boston
3711-2
3711-3
100.00
399.81
338
342
346
370
106.00
B.
3711-4

EAST

TRENTON ST.

1062
SECTION 3 BLOCK 28A

LEXINGTON SQ.

1062
SECTION 3 BLOCK 28B

EAGLE SQ.

EAGLE ST.

LEXINGTON ST.

1100

SHELBY ST.

ASSESSORS PLAN
WARD 1023
SECTION 3
BLOCK 46A1-PART BLOCK 46A2
SCALE: 1" = 60'
JUNE, 1971
E. CORSANO C.E.

1023

0 Condor Street Parcel
10/17/2018

PID	OWNER	ADDRESSEE	MLG_ADDRESS	MLG_CITYSTATE	MLG_ZIPCODE	LOC_ADDRESS	LOC_CITY	LOC_ZIPCODE
100231000	LANDAVERDE JOSE A	C/O JOSE A LANDAVERDE	2 LEXINGTON SQ	EAST BOSTON MA	2128	2 LEXINGTON SQ	EAST BOSTON	2128
100230000	ZHENG JINGWEN	C/O JINGWEN ZHENG	1 LEXINGTON SQ	EAST BOSTON MA	2128	1 LEXINGTON SQ	EAST BOSTON	2128
100229000	BONILLA FRANCISCO		317 E EAGLE ST	E BOSTON MA	2128	317 E EAGLE ST	EAST BOSTON	2128
100232000	DLG HOLDINGS LLC	C/O DLG HOLDINGS LLC	156 CHELSEA ST #104	EAST BOSTON MA	2128	306 LEXINGTON ST	EAST BOSTON	2128
100255000	NIL NATALIA	C/O NATALIA SHCHERBINA	20 OUTLOOK RD	SWAMPSCOTT MA	1907	2 SHELBY ST	EAST BOSTON	2128
100256000	CHAVEZ ALMA	C/O ALMA CHAVEZ	317 LEXINGTON ST	EAST BOSTON MA	2128	317 LEXINGTON ST	EAST BOSTON	2128
100312000	CITY OF BOSTON		CONDOR ST	EAST BOSTON MA	2128	CONDOR ST	EAST BOSTON	2128
103711002	CITY OF BOSTON		CONDOR	EAST BOSTON MA	2128	CONDOR ST	EAST BOSTON	2128
103711001	CITY OF BOSTON		300 CONDOR	EAST BOSTON MA	2128	300 CONDOR ST	EAST BOSTON	2128
103711003	CITY OF BOSTON		26 COURT ST 10TH FLR	BOSTON MA	2108	338 E EAGLE ST	EAST BOSTON	2128

338 East Eagle Street
10/17/2018

PID	OWNER	ADDRESSEE	MLG_ADDRESS	MLG_CITYSTATE	MLG_ZIPCODE	LOC_ADDRESS	LOC_CITY	LOC_ZIPCODE
100255000	NIL NATALIA	C/O NATALIA SHCHERBINA	20 OUTLOOK RD	SWAMPSCOTT MA	1907	2 SHELBY ST	EAST BOSTON	2128
100256000	CHAVEZ ALMA	C/O ALMA CHAVEZ	317 LEXINGTON ST	EAST BOSTON MA	2128	317 LEXINGTON ST	EAST BOSTON	2128
100259000	SEVENTY ONE SCHOOL OPCO LLC	C/O SEVENTY ONE SCHOOL OPCO	854 HUNTINGTON AV	BOSTON MA	2115	329 E EAGLE ST	EAST BOSTON	2128
100257000	325 EAST EAGLE STREET		325 EAST EAGLE ST	EAST BOSTON MA	2128	325 E EAGLE ST	EAST BOSTON	2128
100264000	MNA REAL ESTATE HOLDING	MNA REAL ESTATE HOLDING LLC	370 EAST EAGLE ST	EAST BOSTON MA	2128	E EAGLE ST	EAST BOSTON	2128
100267000	MNA REAL ESTATE HOLDING	MNA REAL ESTATE HOLDING LLC	370 EAST EAGLE ST	EAST BOSTON MA	2128	PRINCETON ST	EAST BOSTON	2128
100258000	LARA ARACELY	C/O ARACELY LARA	327 EAST EAGLE ST	EAST BOSTON MA	2128	327 E EAGLE ST	EAST BOSTON	2128
100281000	ALBARO CARMELLA		6 SHELBY	EAST BOSTON MA	2128	6 SHELBY ST	EAST BOSTON	2128
100261000	MARTINEZ JOSE		333 EAST EAGLE ST	EAST BOSTON MA	2128	333 E EAGLE ST	EAST BOSTON	2128
100263000	DENARO JOHN LT	C/O JOHN DENARO	337 EAST EAGLE	EAST BOSTON MA	2128	337 E EAGLE ST	EAST BOSTON	2128
100265000	MNA REAL ESTATE HOLDING	MNA REAL ESTATE HOLDING LLC	370 EAST EAGLE ST	EAST BOSTON MA	2128	E EAGLE ST	EAST BOSTON	2128
100260000	TEDESCUCCI ANTHONY MICHAEL		14 WENTWORTH RD &	PEABODY MA	1960	331 E EAGLE ST	EAST BOSTON	2128
100262000	ALFARO MAREL W	C/O MAREL W ALFARO	335 E EAGLE ST	EAST BOSTON MA	2128	335 E EAGLE ST	EAST BOSTON	2128
100266000	MNA REAL ESTATE HOLDING	MNA REAL ESTATE HOLDING LLC	370 EAST EAGLE ST	EAST BOSTON MA	2128	PRINCETON ST	EAST BOSTON	2128
100268000	FOLEY BRIAN C	C/O BRIAN C FOLEY	657 EAST 4TH STREET	SOUTH BOSTON MA	2127	362 PRINCETON ST	EAST BOSTON	2128
103711020	NSTAR ELECTRIC COMPANY	NSTAR ELECTRIC CO PROP TAX	P.O BOX 270	HARTFORD CT	6141	E EAGLE ST	EAST BOSTON	2128
103711002	CITY OF BOSTON		CONDOR	EAST BOSTON MA	2128	CONDOR ST	EAST BOSTON	2128
103711001	CITY OF BOSTON		300 CONDOR	EAST BOSTON MA	2128	300 CONDOR ST	EAST BOSTON	2128
103711004	CHANNEL FISH CO INC		370 EAST EAGLE	EAST BOSTON MA	2128	370 E EAGLE ST	EAST BOSTON	2128
103711003	CITY OF BOSTON		26 COURT ST 10TH FLR	BOSTON MA	2108	338 E EAGLE ST	EAST BOSTON	2128
103711005	SUNOCO PARTNERS MARKETING &	C/O K E ANDREWS & COMPANY	1900 DALROCK RD	ROWLETT TX	75088	460 CHELSEA ST	EAST BOSTON	2128

NOTIFICATION TO ABUTTERS UNDER
THE MASSACHUSETTS WETLAND PROTECTION ACT

A. The name of the applicant(s) is Public Facilities Department (PFD) c/o City of Boston

B. The applicant has filed a Notice of Intent with the Conservation Commission for the City of Boston, Massachusetts, seeking to work within an Area Subject to Protection under the Massachusetts Wetlands Protection Act (General Laws Chapter 131, Section 40).

C. The proposed project to occur at 338 East Eagle Street, Boston, MA 02128
(Northeast corner of North Eagle Street and Condor Street)
(Address)

D. Copies of application may be obtained by contacting: The City of Boston Conservation Commission Monday - Friday between the hours of 8AM – 4:00PM.

E. A public hearing will be held on January 23, 2019 at or after 6:00 p.m. in the Piemonte Room, 5th floor, City Hall, Boston, MA 02201 on Notice of Intent From Public Facilities Department (PFD) c/o City of Boston, 26 Court St, 10th Floor, Boston, MA 02108
(Name & address of applicant)

F. Project Description: This project includes construction of a new 13,900 sq.ft. Area A-7 Police Station building, related utility systems tying to the existing utilities along East Eagle Street, one separate parking lot with gated access and other site improvement amenities. See project description in the Notice of Intent Report for more information.

G. Notice of the public hearing, including the date, time, and place will be posted in the Boston Herald not less than five (5) days in advance of the public hearing.

H. You may also contact your local Conservation Commission at 617-635-3850 or the nearest Department of Environmental Protection Regional Office for more information about this application or The Wetlands Protection Act. To contact the Department of Environmental Protection, please call the Northeast Regional Office at (978) 694-3200.

AFFIDAVIT OF SERVICE
Under the Massachusetts Wetlands Protection Act

I, Danielle Spicer, hereby certify, under the pains and penalties of perjury, that on January 7, 2019, I provided 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 with the following matter:

> A Notice of Intent filed under the Massachusetts Wetlands Protection Act by the City of Boston Public Facilities Department, with the City of Boston Conservation Commission on January 7, 2019, for the work associated with construction of a new 13,900 sq.ft. Area A-7 Police Station building and associated site amenities.

The form of notification, and a list of the abutters to whom it was given and their addresses, are attached to this Affidavit of Service.

_____ January 7, 2019

Signature – Danielle Spicer Date

APPENDIX C

STORMWATER REPORT AND CHECKLIST

APPENDIX D

DRAWINGS FOR NOI SUBMISSION (BOUND SEPARATELY)

GENERAL CONSTRUCTION NOTES

1. ALL CONSTRUCTION DEBRIS SHALL BE DISPOSED OF LEGALLY OFF SITE.
2. CONTRACTOR IS RESPONSIBLE FOR DUST CONTROL. DUST CONTROL SHALL INCLUDE THE WATERING OF UNPAVED ROAD SURFACES AND STREET SWEEPING OF PAVED SURFACES. STREET SWEEPING SHALL OCCUR ON THE PAVED SURFACES WITHIN THE SITE AND OFF THE SITE WHERE VEHICLE TRACKING OF SEDIMENTS HAS OCCURRED.
3. ALL SITE WORK SHALL BE SECURED AT THE END OF THE WORK DAY TO REDUCE EROSION AND SEDIMENT PROBLEMS. THIS INCLUDES AS APPLICABLE, COVERING STOCKPILES OF SOIL, INSTALLING TEMPORARY VEGETATION OR BY USING GEOTEXTILES TO COVER DISTURBED AREAS WITH STEEPER SLOPES.
4. DEWATERING OPERATION SHALL COMPLY WITH THE REQUIREMENTS OF THE U.S. EPA NPDES CONSTRUCTION GENERAL PERMIT FOR CONSTRUCTION SITES THAT ARE GREATER THAN 1 ACRE.
5. CONSTRUCTION FENCING SHALL BE SET TO PREVENT UNCONTROLLED ACCESS TO THE SITE AT ALL TIMES AND ADJUSTED AS NECESSARY THROUGHOUT CONSTRUCTION AT NO ADDITIONAL COST TO THE OWNER DEPENDING ON PHASING.
6. EXISTING CONDITIONS SURVEY WAS PREPARED BY SMC, SURVEYING AND MAPPING CONSULTANTS, INC, DATED JANUARY 14, 2010 AND LAST REVISED MARCH 6, 2016.
7. THE CONTRACTOR SHALL NOTIFY THE OWNER AND ENGINEER IMMEDIATELY WITH ANY DISCREPANCIES BETWEEN FIELD CONDITIONS AND THE EXISTING CONDITIONS PLAN PREPARED BY SCM, SURVEYING AND MAPPING CONSULTANTS, INC.
8. ALL AREAS DISTURBED WITHIN THE LIMIT OF WORK SHALL BE RESTORED TO EXISTING CONDITIONS OR BETTER.
9. AREA OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION, AT NO ADDITIONAL COST TO THE OWNER.

PLAN SYMBOLS - EXISTING CONDITIONS

- 100x0 SPOT ELEVATION
- BOULDER/STONE
- MONITORING WELL
- BCC BITUMINOUS CONCRETE CURB
- DRAIN MANHOLE
- CATCH BASIN
- SEWER MANHOLE
- TELEPHONE MANHOLE
- ELECTRIC MANHOLE
- STONE BOUND
- FIRE HYDRANT
- WATER GATE VALVE
- GAS GATE VALVE
- SIGN
- UTILITY POLE
- SURVEY CONTROL POINT
- TREE

- EXISTING MAJOR 10' CONTOUR
- EXISTING MINOR 2' CONTOUR
- PROPOSED CONTOUR
- UNDERGROUND DRAIN LINE
- UNDERGROUND SEWER LINE
- UNDERGROUND ELECTRIC LINE
- OVERHEAD UTILITY WIRES
- UNDERGROUND WATER LINE
- UNDERGROUND GAS LINE
- FENCE
- STONE WALL
- PROPERTY LINE
- TREE/SHRUB LINE
- WETLAND RESORURCE BOUNDRY
- FLOOD ZONE AE
- EXISTING WOOD GAURD RAIL
- EDGE OF PAVEMENT

SITE PREPARATION NOTES

1. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES AND PROCEDURES; AND FOR THE SAFETY PRECAUTIONS AND PROGRAMS REQUIRED FOR THE WORK UNDER THIS CONTRACT. THE CONTRACT DOCUMENTS DO NOT INCLUDE THE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY AND THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR PROVIDING ALL SAFETY BARRIERS, WARNING FLASHERS, AND THE LIKE AS REQUIRED FOR THE PROTECTION OF WORKERS AND THE PUBLIC. COMPLY WITH OSHA REQUIREMENTS.
2. PRIOR TO THE START OF WORK, INSTALL WOVEN POLYPROPYLENE GEOTEXTILE FILTER BAGS IN CATCH BASINS AND/OR DRYWELL STRUCTURES ON AND NEAR THE SITE. WHEN INSTALLING FILTER BAGS, HOLD APPROXIMATELY SIX INCHES OUTSIDE THE FRAME AND REPLACE THE GRATE, USING THE WEIGHT OF THE GRATE TO HOLD THE FILTER BAG IN PLACE.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SECURING ALL NECESSARY CONSTRUCTION PERMITS REQUIRED FOR THIS PROJECT.
4. THE CONTRACTOR SHALL PROTECT ALL UTILITIES WITHIN THE PROJECT AREA, IN THE STREET, AND ON ADJACENT PROPERTIES FROM DAMAGE AND UNDERMINING DURING EXCAVATION.
5. AS OF JANUARY 1, 2009, ALL TRENCH EXCAVATION CONTRACTORS SHALL COMPLY WITH MASSACHUSETTS GENERAL LAWS CHAPTER 82A, TRENCH EXCAVATION SAFETY REQUIREMENTS, TO PROTECT THE GENERAL PUBLIC FROM UNAUTHORIZED ACCESS TO UNATTENDED TRENCHES. A TRENCH EXCAVATION PERMIT IS REQUIRED. THIS APPLIES TO ALL TRENCHES ON PUBLIC AND PRIVATE PROPERTY.
6. REMOVE ALL EXISTING SURFACE FEATURES SUCH AS BIT. CONC., CURBING AND ASSOCIATED UNDERGROUND ELECTRICAL CONDUITS, MANHOLE, MANHOLE FRAME AND COVERS, AND THE LIKE TO ALLOW FOR THE CONSTRUCTION OF THE PROPOSED SITE IMPROVEMENTS.
7. REMNANTS OF PREVIOUS BUILDING FOUNDATIONS, UTILITY STRUCTURES AND UNDERGROUND UTILITIES MAY BE ENCOUNTERED DURING EXCAVATION AND SHALL BE REMOVED AND DISPOSED OF LEGALLY OFF SITE, UNLESS SPECIFIED TO BE PROTECTED AND RETAINED.
8. THE CONTRACTOR SHALL PERFORM ALL WORK WITHIN THE PUBLIC RIGHT-OF-WAY IN CONFORMANCE WITH THE CITY OF BOSTON STANDARD SPECIFICATIONS.
9. ALL EXISTING WATER AND GAS SERVICES DESIGNATED TO BE REMOVED OR ABANDONED SHALL BE CUT AND CAPPED AT THE MAIN IN THE STREET.
10. ALL EXISTING SEWER AND DRAIN LINES DESIGNATED TO BE REMOVED OR ABANDONED SHALL BE CUT AND CAPPED AT THE MAIN IN THE STREET.
11. ALL EXISTING UTILITY FRAMES, COVERS AND/OR GRATES WITHIN PROJECT LIMITS ARE TO BE ADJUSTED TO PROPOSED FINISHED GRADE UNLESS OTHERWISE NOTED.
12. TEMPORARY CONSTRUCTION ENTRANCES SHALL BE INSTALLED AS SHOWN ON PLANS.
13. CONTRACTOR SHALL INSTALL TEMPORARY CONSTRUCTION FENCE AS NOTED ON PLANS.

EROSION AND SEDIMENT CONTROLS

1. A DRAFT STORMWATER POLLUTION PREVENTION PLAN (SWPPP) HAS BEEN PREPARED FOR THIS PROJECT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FINALIZING THE SWPPP IN ACCORDANCE WITH THE EPA'S NPDES CONSTRUCTION GENERAL PERMIT (CGP) AND FILING A NOTICE OF INTENT (eNOI) TO THE EPA PURSUANT TO THE NPDES PHASE I STORMWATER PROGRAM. THE eNOI SHALL BE SUBMITTED TO EPA, BOSTON CONSERVATION COMMISSION AND THE ENGINEER 14 DAYS PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR IS RESPONSIBLE FOR CONTROLLING THE EROSION AND SEDIMENT DURING THE CONSTRUCTION PROCESS. SITE SPECIFIC CONDITIONS MAY REQUIRE MODIFICATIONS IN THE FIELD, BUT THE CONTRACTOR MUST ENSURE THAT THE PROJECT SPECIFICATIONS THAT ARE DEVELOPED IN THE FIELD MEET THE MINIMUM REQUIREMENTS OF THIS PLAN.
3. DURING CONSTRUCTION, TRENCH EXCAVATIONS SHALL BE BACKFILLED AS SOON AS POSSIBLE AND SHOULD NOT DIRECT RUNOFF AROUND TREATMENT AND DETENTION FACILITIES.
4. IN ORDER TO MINIMIZE EROSION AND SEDIMENT RUNOFF FROM THE SITE, THE CONTRACTOR SHOULD MAINTAIN EXISTING VEGETATION WHERE POSSIBLE AND STABILIZE THE DISTURBED PORTIONS OF THE SITE AS QUICKLY AS POSSIBLE. THIS MAY INCLUDE PHASING THE PROJECT AS NEEDED TO MINIMIZE THE SIZE OF THE DISTURBED AREAS ON THE SITE.
5. THE CONTRACTOR MUST ALSO ANTICIPATE INCREASED RUNOFF FROM STEEPER SLOPES AND DURING HIGH GROUNDWATER CONDITIONS. THIS MAY OCCUR DURING THE WET SEASON (TYPICALLY MARCH THROUGH APRIL) OR AFTER SIGNIFICANT PRECIPITATION EVENTS.
6. THE CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION OF SILT FENCES, DRAINAGE SWALES, EARTH DIKES, TEMPORARY SETTLING BASINS, CHECK DAMS AND TEMPORARY OR PERMANENT SEDIMENT BASINS. THESE PRACTICES DIVERT FLOWS FROM EXPOSED SOILS, LIMIT RUNOFF AND THE DISCHARGE OF POLLUTANTS FROM EXPOSED AREAS OF THE SITE TO THE DEGREE ATTAINABLE.
7. THE CONTRACTOR SHALL, AT ALL TIMES, HAVE A STOCKPILE OF STRAW WATTLES AND SILT FENCE ADEQUATE TO REINFORCE/REPLACE EROSION AND SEDIMENT CONTROL AS NEEDED.
8. ALL AREAS OF DISTURBANCE MUST HAVE TEMPORARY OR FINAL STABILIZATION WITHIN 14 DAYS OF THE INITIAL DISTURBANCE. AFTER THIS TIME, ANY DISTURBANCE IN THE AREA MUST BE STABILIZED AT THE END OF EACH WORK DAY. THE FOLLOWING EXCEPTIONS APPLY:

   i) STABILIZATION IS NOT REQUIRED IF WORK IS TO CONTINUE IN THE AREA WITHIN THE NEXT 24 HOURS AND THERE IS NO PRECIPITATION FORECAST FOR THE NEXT 24 HOURS.

   ii) STABILIZATION IS NOT REQUIRED IF THE WORK IS OCCURRING IN A SELF-CONTAINED EXCAVATION WITH A DEPTH OF 2 FEET OR GREATER.

UTILITY NOTES

1. ALL UTILITY COMPANIES, PUBLIC AND PRIVATE, MUST BE NOTIFIED, INCLUDING THOSE IN CONTROL OF UTILITIES NOT SHOWN ON THIS PLAN, (SEE CHAPTER 370, ACTS OF 1963, MASSACHUSETTS) PRIOR TO DESIGNING, EXCAVATING, BLASTING, INSTALLING, BACKFILLING, GRADING, PAVEMENT RESTORING OR REPAVING.
2. THE LOCATION OF EXISTING PIPES OR OTHER UNDERGROUND STRUCTURES OR PROPERTY LINES ARE NOT WARRANTED TO BE EXACT, NOR IS IT WARRANTED THAT ALL UNDERGROUND PIPES OR STRUCTURES ARE SHOWN. THE CONTRACTOR SHALL CALL "DIG SAFE" (1-888-344-7233) 72 HOURS (EXCLUDING SATURDAYS, SUNDAYS AND HOLIDAYS) PRIOR TO ANY EXCAVATION TO OBTAIN ACCURATE UTILITY LOCATIONS.
3. UTILITY WORK WITHIN THE ZONE 10 FT OUTSIDE OF FOUNDATION WALL OF THE BUILDING SHALL CONFORM TO EFFECTIVE BUILDING CODE REQUIREMENTS, AND THE MECHANICAL, ELECTRICAL AND PLUMBING SPECIFICATIONS. UTILITIES, WITHIN THIS AREA (10 FT FROM THE FOUNDATION WALL), ARE SHOWN ON THIS DRAWING FOR COORDINATION PURPOSES. REFER TO THE MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS AND SPECIFICATIONS FOR PIPE SIZES AND MATERIALS.
4. CONTRACTOR TO ADJUST UTILITY ELEMENT MEANT TO BE FLUSH WITH GRADE (CLEAN-OUTS, UTILITY MANHOLES, CATCH BASINS, INLETS, ECT.) THAT ARE AFFECTED BY SITE WORK OR GRADE CHANGES, WHETHER SPECIFICALLY NOTED ON THE PLANS OR NOT.
5. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE TAKEN FROM RECORD INFORMATION SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MAY BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ALL UNDERGROUND UTILITIES.
6. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION, AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION OF THE CONFLICT.
7. THE CONTRACTOR SHALL ALTER THE MASONRY OF THE TOP SECTION OF ALL EXISTING DRAINAGE STRUCTURES AS NECESSARY FOR CHANGES IN GRADE, AND RESET ALL WATER AND DRAINAGE FRAMES, GRATES, AND BOXES TO THE PROPOSED FINISH SURFACE GRADE.
8. SITE LIGHT POLES ARE SHOWN ON THIS PLAN FOR COORDINATION PURPOSES ONLY. REFER TO ELECTRICAL PLANS FOR EXACT TYPE AND LOCATION.
9. THE LOCATION, SIZE, DEPTH, AND SPECIFICATIONS FOR CONSTRUCTION OF PRIVATE UTILITY SERVICES SHALL BE INSTALLED ACCORDING TO THE REQUIREMENTS PROVIDED BY, AND APPROVED BY, THE RESPECTIVE UTILITY COMPANY (GAS, TELEPHONE, ELECTRICAL). FINAL DESIGN AND LOCATIONS AT THE BUILDING WILL BE PROVIDED BY THE ARCHITECT. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF THE UTILITY CONNECTION WITH THE RESPECTIVE COMPANIES PRIOR TO ANY UTILITY CONSTRUCTION.
10. ALL WORK MUST COMPLY WITH STATE AND LOCAL PERMITS, AS WELL AS THE CITY OF BOSTON REQUIREMENTS.

SITE GRADING NOTES

1. PROPOSED GRADING SHALL MATCH EXISTING GRADES AT THE LIMIT OF WORK. WHERE PROPOSED GRADES MEET EXISTING GRADES, CONTRACTOR SHALL BLEND GRADES TO PROVIDE A SMOOTH TRANSITION BETWEEN EXISTING AND NEW WORK AND ENSURE NO PONDING AREAS ARE CREATED.
2. GRADE ALL AREAS TO DRAIN.
3. PROPOSED WALKWAYS SHALL BE CONSTRUCTED WITH A CROSS SLOPE OF NO MORE THAN 1.5% AND A LONGITUDINAL SLOPE OF NO MORE THAN 4.5%.
4. LANDINGS AT BUILDING ENTRANCES SHALL BE CONSTRUCTED WITH SLOPES NO MORE THAN 1.5% IN ANY DIRECTION.
5. HANDICAP PARKING SPACES SHALL BE CONSTRUCTED WITH SLOPES NO MORE THAN 1.5% IN ANY DIRECTION.
6. CONTRACTORS SHALL MAINTAIN POSITIVE DRAINAGE AWAY FROM ALL BUILDING FOUNDATIONS AND STRUCTURES.

PLANTING NOTES:

1. ALL PLANT MATERIALS SHALL BE TAGGED IN THE NURSERY BY THE LANDSCAPE ARCHITECT AS PER THE SPECIFICATION.
2. THE LANDSCAPE ARCHITECT OR THE OWNER'S REPRESENTATIVE MAY REJECT DAMAGED PLANT MATERIAL UPON DELIVERY TO THE SITE.
3. FINAL LIST OF PLANT MATERIALS AND SEED MIXES SHALL BE SUBMITTED FOR APPROVAL, PRIOR TO DELIVERY TO THE SITE.
4. SEE SPECIFICATION FOR SEED MIXES.

project name/owner's name

AREA A-7 POLICE STATION - EAST BOSTON

CITY OF BOSTON

project identification number

7071

architect

LEERS WEINZAPFEL ASSOCIATES ARCHITECTS, INC.

75 Kneeland Street
Boston, Massachusetts 02111
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consultant information

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(978) 923-0400

seal/signature

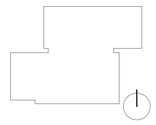
7101

COMMONWEALTH OF MASSACHUSETTS
DANIELLE H. SPICER
CIVIL
No. 46067
REGISTERED PROFESSIONAL ENGINEER
1/4/2019

revisions

no.	item	date

key plan



issued for

BWSC/NOI SUBMISSION

date

01/04/2019

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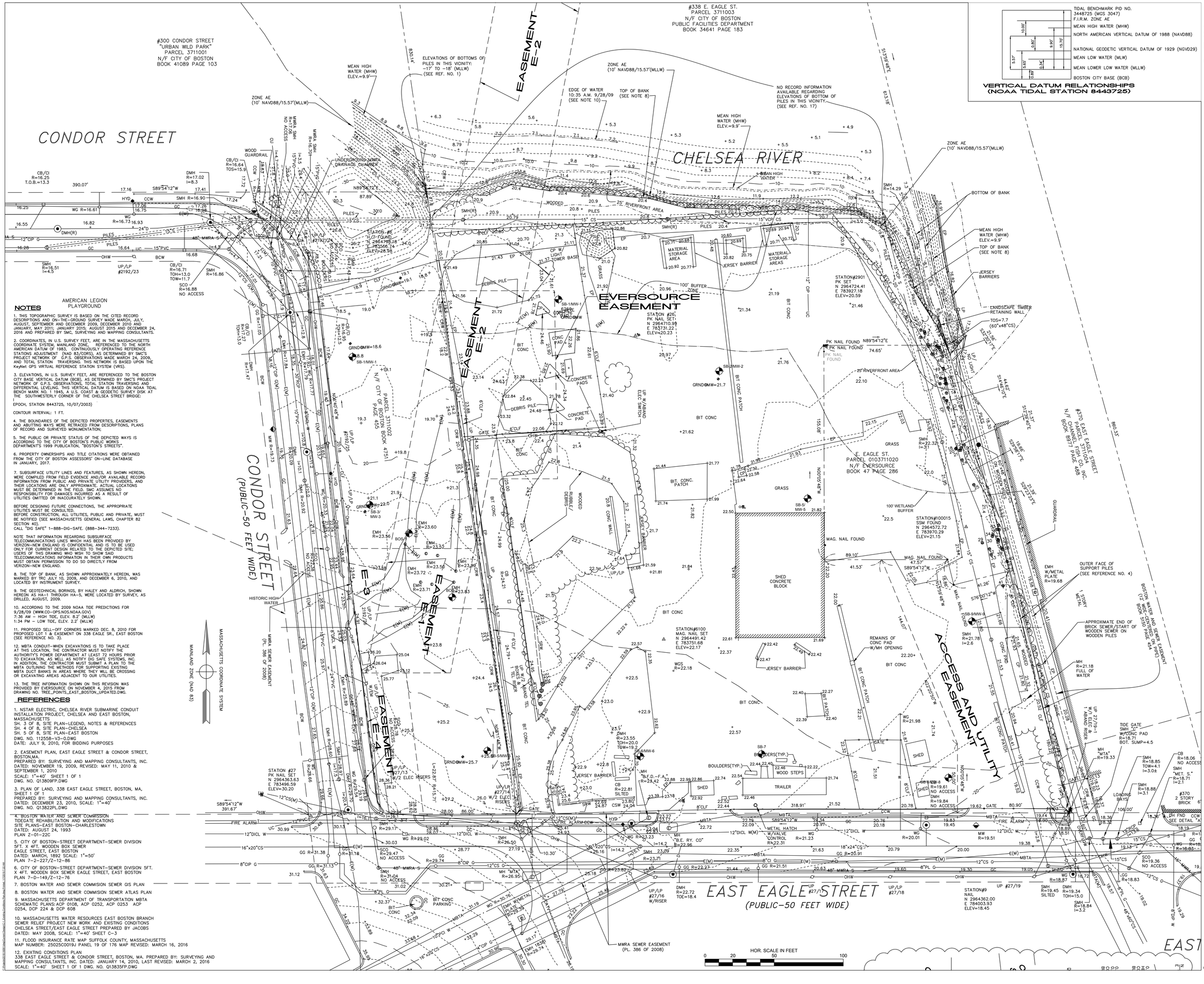

VERTICAL DATUM RELATIONSHIPS (NOAA TIDAL STATION 8443725)

NOTES

1. THIS TOPOGRAPHIC SURVEY IS BASED ON THE CITED RECORD DESCRIPTIONS AND ON-THE-GROUND SURVEY MADE MARCH, JULY, AUGUST, SEPTEMBER AND DECEMBER 2009, DECEMBER 2010 AND JANUARY, MAY 2011; JANUARY 2015; AUGUST 2015 AND DECEMBER 24, 2016 AND PREPARED BY SMC, SURVEYING AND MAPPING CONSULTANTS.

2. COORDINATES, IN U.S. SURVEY FEET, ARE IN THE MASSACHUSETTS COORDINATE SYSTEM, MAINLAND ZONE, REFERENCED TO THE NORTH AMERICAN DATUM OF 1983, CONTINUOUSLY OPERATING REFERENCE STATIONS ADJUSTMENT (NAD 83/CORS), AS DETERMINED BY SMC'S PROJECT NETWORK OF G.P.S. OBSERVATIONS MADE MARCH 24, 2009, AND TOTAL STATION TRAVERSING. THIS NETWORK IS BASED UPON THE KeyNet GPS VIRTUAL REFERENCE STATION SYSTEM (VRS).

3. ELEVATIONS, IN U.S. SURVEY FEET, ARE REFERENCED TO THE BOSTON CITY BASE VERTICAL DATUM (BCB), AS DETERMINED BY SMC'S PROJECT NETWORK OF G.P.S. OBSERVATIONS, TOTAL STATION TRAVERSING AND DIFFERENTIAL LEVELING. THIS VERTICAL DATUM IS BASED ON NOAA TIDAL BENCH MARK NO. 1 1945, A U.S. COAST & GEODETIC SURVEY DISK AT THE SOUTHWESTERLY CORNER OF THE CHELSEA STREET BRIDGE:

EPOCH, STATION 8443725, 10/07/2003)

CONTOUR INTERVAL: 1 FT.

4. THE BOUNDARIES OF THE DEPICTED PROPERTIES, EASEMENTS AND ABUTTING WAYS WERE RETRACED FROM DESCRIPTIONS, PLANS OF RECORD AND SURVEYED MONUMENTATION;

5. THE PUBLIC OR PRIVATE STATUS OF THE DEPICTED WAYS IS ACCORDING TO THE CITY OF BOSTON'S PUBLIC WORKS DEPARTMENT'S 1999 PUBLICATION, "BOSTON'S STREETS".

6. PROPERTY OWNERSHIPS AND TITLE CITATIONS WERE OBTAINED FROM THE CITY OF BOSTON ASSESSORS' ON-LINE DATABASE IN JANUARY, 2017.

7. SUBSURFACE UTILITY LINES AND FEATURES, AS SHOWN HEREON, WERE COMPILED FROM FIELD EVIDENCE AND/OR AVAILABLE RECORD INFORMATION FROM PUBLIC AND PRIVATE UTILITY PROVIDERS, AND THEIR LOCATIONS ARE ONLY APPROXIMATE. ACTUAL LOCATIONS MUST BE DETERMINED IN THE FIELD. SMC ASSUMES NO RESPONSIBILITY FOR DAMAGES INCURRED AS A RESULT OF UTILITIES OMITTED OR INACCURATELY SHOWN.

BEFORE DESIGNING FUTURE CONNECTIONS, THE APPROPRIATE UTILITIES MUST BE CONSULTED.
BEFORE CONSTRUCTION, ALL UTILITIES, PUBLIC AND PRIVATE, MUST BE NOTIFIED (SEE MASSACHUSETTS GENERAL LAWS, CHAPTER 82 SECTION 40).
CALL "DIG SAFE" 1-888-DIG-SAFE. (888-344-7233).

NOTE THAT INFORMATION REGARDING SUBSURFACE TELECOMMUNICATIONS LINES WHICH HAS BEEN PROVIDED BY VERIZON-NEW ENGLAND IS CONFIDENTIAL AND IS TO BE USED ONLY FOR CURRENT DESIGN RELATED TO THE DEPICTED SITE. USERS OF THIS DRAWING WHO WISH TO SHOW SAID TELECOMMUNICATIONS INFORMATION IN THEIR OWN PRODUCTS MUST OBTAIN PERMISSION TO DO SO DIRECTLY FROM VERIZON-NEW ENGLAND.

8. THE TOP OF BANK, AS SHOWN APPROXIMATELY HEREON, WAS MARKED BY TRC JULY 10, 2009, AND DECEMBER 6, 2010, AND LOCATED BY INSTRUMENT SURVEY.

9. THE GEOTECHNICAL BORINGS, BY HALEY AND ALDRICH, SHOWN HEREON AS HA-1 THROUGH HA-5, WERE LOCATED BY SURVEY, AS DRILLED, AUGUST, 2009.

10. ACCORDING TO THE 2009 NOAA TIDE PREDICTIONS FOR 9/28/09 (WWW.CO-OPS.NOS.NOAA.GOV)
7:36 AM – HIGH TIDE, ELEV. 8.2' (MLLW)
1:34 PM – LOW TIDE, ELEV. 2.2' (MLLW)

11. PROPOSED SELL-OFF CORNERS MARKED DEC. 8, 2010 FOR PROPOSED LOT 1 & EASEMENT ON 338 EAGLE SR., EAST BOSTON (SEE REFERENCE NO. 3).

12. MBTA CONDUIT-WHEN EXCAVATIONS IS TO TAKE PLACE AT THIS LOCATION, THE CONTRACTOR MUST NOTIFY THE AUTHORITY'S POWER DEPARTMENT AT LEAST 72 HOURS PRIOR TO EXCAVATION, AS WELL AS NOTIFY DIG SAFE SYSTEMS, INC. IN ADDITION, THE CONTRACTOR MUST SUBMIT A PLAN TO THE MBTA OUTLINING THE METHODS FOR SUPPORTING EXISTING MBTA DUCT BANKS IN AREAS WHERE THEY WILL BE CROSSING OR EXCAVATING AREAS ADJACENT TO OUR UTILITIES.

13. THE TREE INFORMATION SHOWN ON THIS REVISION WAS PROVIDED BY EVERSOURCE ON NOVEMBER 4, 2015 FROM DRAWING NO. TREE_POINTS_EAST_BOSTON_UPDATED.DWG.

REFERENCES

1. NSTAR ELECTRIC, CHELSEA RIVER SUBMARINE CONDUIT INSTALLATION PROJECT, CHELSEA AND EAST BOSTON, MASSACHUSETTS
SH. 3 OF 8, SITE PLAN-LEGEND, NOTES & REFERENCES
SH. 4 OF 8, SITE PLAN-CHELSEA
SH. 5 OF 8, SITE PLAN-EAST BOSTON
DWG. NO. 112558-V3-0.DWG
DATE: JULY 9, 2010, FOR BIDDING PURPOSES

2. EASEMENT PLAN, EAST EAGLE STREET & CONDOR STREET, BOSTON,MA.
PREPARED BY: SURVEYING AND MAPPING CONSULTANTS, INC.
DATED: NOVEMBER 19, 2009, REVISED: MAY 11, 2010 & SEPTEMBER 1, 2010
SCALE: 1"=40' SHEET 1 OF 1
DWG NO. Q13809FP.DWG

3. PLAN OF LAND, 338 EAST EAGLE STREET, BOSTON, MA, SHEET 1 OF 1
PREPARED BY: SURVEYING AND MAPPING CONSULTANTS, INC.
DATED: DECEMBER 23, 2010, SCALE: 1"=40'
DWG. NO. Q13822PL.DWG

4. BOSTON WATER AND SEWER COMMISSION
TIDEGATE REHABILITATION AND MODIFICATIONS
SITE PLANS-EAST BOSTON-CHARLESTOWN
DATED: AUGUST 24, 1993
PLAN Z-01-22C

5. CITY OF BOSTON-STREET DEPARTMENT-SEWER DIVISION
5FT. X 4FT. WOODEN BOX SEWER
EAGLE STREET, EAST BOSTON
DATED: MARCH, 1892 SCALE: 1"=50'
PLAN 7-2-227/Z-12-86

6. CITY OF BOSTON-STREET DEPARTMENT-SEWER DIVISION 5FT. X 4FT. WOODEN BOX SEWER EAGLE STREET, EAST BOSTON
PLAN 7-D-149/Z-12-76

7. BOSTON WATER AND SEWER COMMISION SEWER GIS PLAN

8. BOSTON WATER AND SEWER COMMISION SEWER ATLAS PLAN

9. MASSACHUSETTS DEPARTMENT OF TRANSPORTATION MBTA SCHEMATIC PLANS: ACP 0108, ACP 0252, ACP 0253 ACP 0254, DCP 224 & DCP 608

10. MASSACHUSETTS WATER RESOURCES EAST BOSTON BRANCH SEWER RELIEF PROJECT NEW WORK AND EXISTING CONDITIONS CHELSEA STREET/EAST EAGLE STREET PREPARED BY JACOBS
DATED: MAY 2008, SCALE: 1"=40' SHEET C-3

11. FLOOD INSURANCE RATE MAP SUFFOLK COUNTY, MASSACHUSETTS
MAP NUMBER: 25025C0019J PANEL 19 OF 176 MAP REVISED: MARCH 16, 2016

12. EXIXTING CONDITIONS PLAN
338 EAST EAGLE STREET & CONDOR STREET, BOSTON, MA. PREPARED BY: SURVEYING AND MAPPING CONSULTANTS, INC. DATED: JANUARY 14, 2016, LAST REVISED: MARCH 2, 2016
SCALE: 1"=40' SHEET 1 OF 1 DWG. NO. Q13835FP.DWG

project name/owner's name

AREA A-7 POLICE STATION - EAST BOSTON

CITY OF BOSTON

project identification number

architect

LEERS WEINZAPFEL ASSOCIATES ARCHITECTS, INC.

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consultant information

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COMMONWEALTH OF MASSACHUSETTS
DANIELLE H. SPIZZIR
CIVIL
No. 46067
REGISTERED PROFESSIONAL ENGINEER
1/4/2019

revisions

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key plan

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date

01/04/2019

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KK

scale

sheet title

EXISTING CONDITIONS PLAN

sheet number

C-1

project name/owner's name

AREA A-7 POLICE STATION - EAST BOSTON

CITY OF BOSTON

project identification number

7071

architect

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1/4/2019

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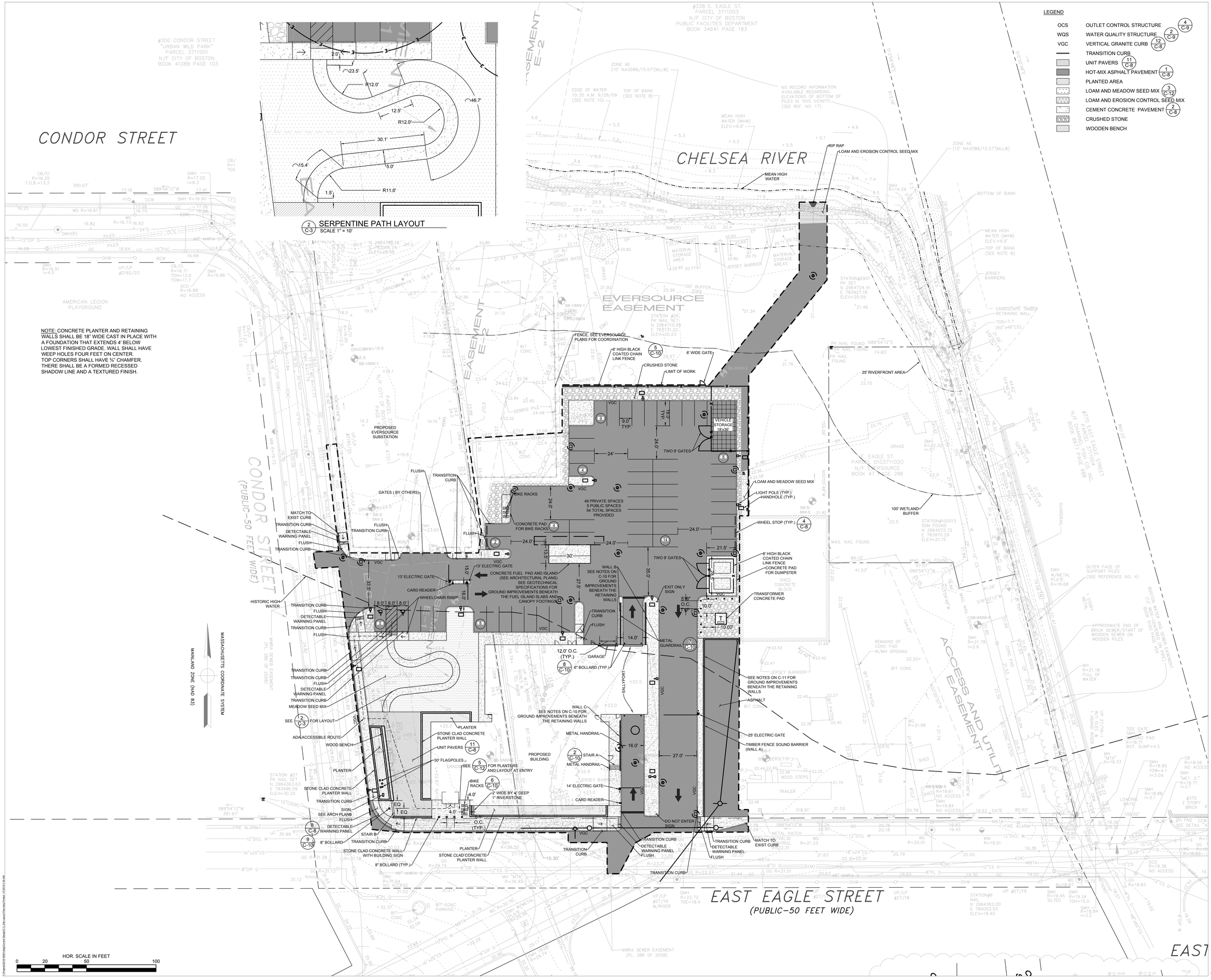
SITE PREPARATION PLAN

sheet number

C-2



LEGEND

OCS	OUTLET CONTROL STRUCTURE (4 / C-9)
WQS	WATER QUALITY STRUCTURE (2 / C-9)
VGC	VERTICAL GRANITE CURB (12 / C-8)
	TRANSITION CURB
	UNIT PAVERS (11 / C-8)
	HOT-MIX ASPHALT PAVEMENT (1 / C-8)
	PLANTED AREA
	LOAM AND MEADOW SEED MIX (3 / C-12)
	LOAM AND EROSION CONTROL SEED MIX
	CEMENT CONCRETE PAVEMENT (2 / C-8)
	CRUSHED STONE
	WOODEN BENCH

project name/owner's name

AREA A-7 POLICE STATION - EAST BOSTON

CITY OF BOSTON

project identification number

architect

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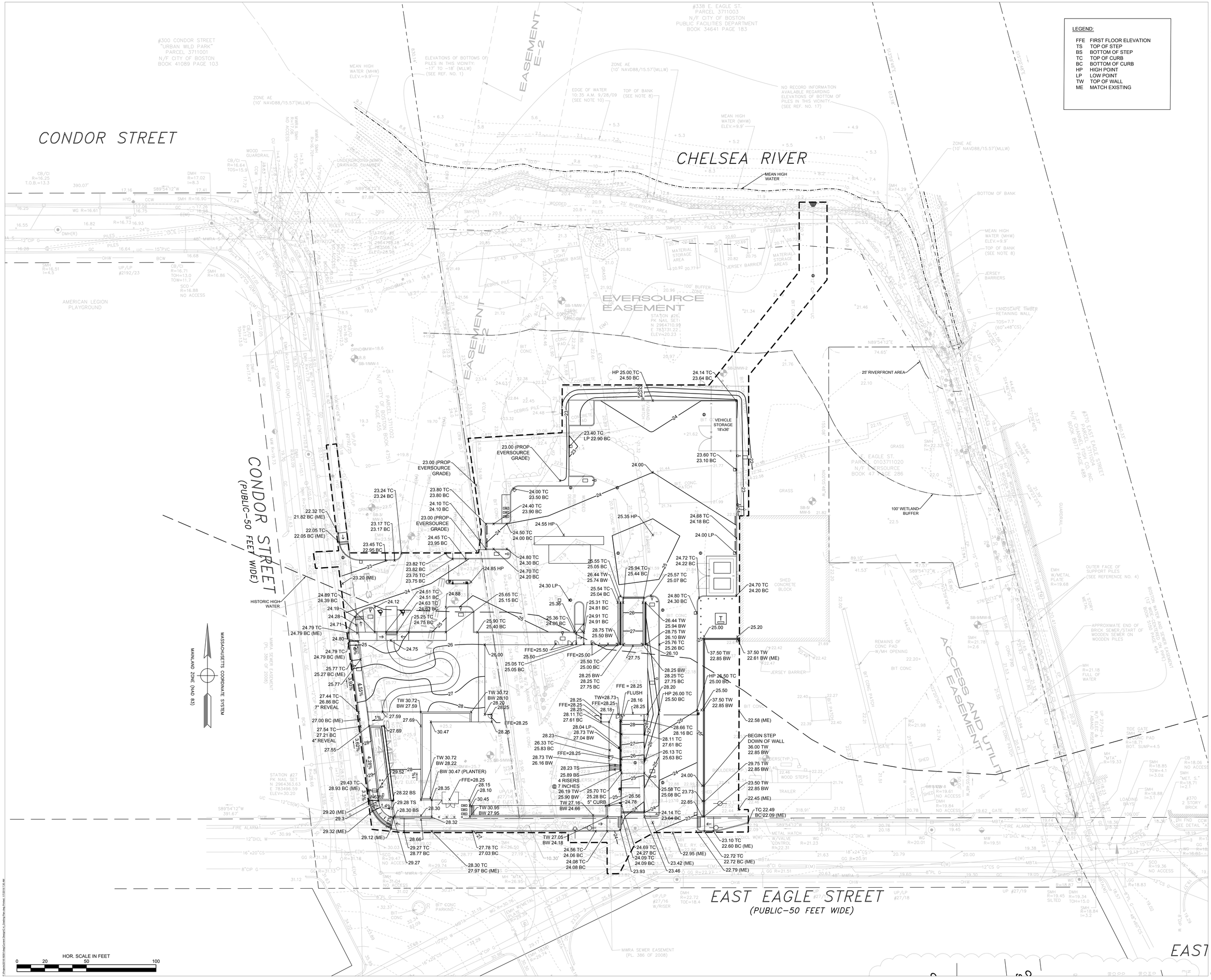
SITE LAYOUT AND MATERIALS PLAN

sheet number

C-3



project name/owner's name

AREA A-7 POLICE STATION - EAST BOSTON

CITY OF BOSTON

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architect

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GRADING PLAN

sheet number

C-4

LEGEND

CB	CATCH BASIN
SMH	SEWER MANHOLE
C.O.	CLEAN-OUT
DMH	DRAIN MANHOLE
OCS	OUTLET CONTROL STRUCTURE
WQS	WATER QUALITY STRUCTURE
TSV	TAPPING SLEEVE AND VALVE

CONDOR STREET

CHELSEA RIVER

#300 CONDOR STREET
"URBAN WILD PARK"
PARCEL 3711001
N/F CITY OF BOSTON
BOOK 41089 PAGE 103

#338 E. EAGLE ST.
PARCEL 3711003
N/F CITY OF BOSTON
PUBLIC FACILITIES DEPARTMENT
BOOK 34641 PAGE 183

EASEMENT E-2

EVERSOURCE EASEMENT

ACCESS AND UTIL. EASEMENT

AMERICAN LEGION PLAYGROUND

N/F CITY OF BOSTON PARCEL 3711002 BOOK 47189 PAGE 455

N/F EAGLE ST. PARCEL 0103711020 BOOK 47189 PAGE 286

ELEVATIONS OF BOTTOMS OF PILES IN THIS VICINITY: -17' TO -18' (MLLW) (SEE REF. NO. 1)

NO RECORD INFORMATION AVAILABLE REGARDING ELEVATIONS OF BOTTOM OF PILES IN THIS VICINITY (SEE REF. NO. 17)

EDGE OF WATER 10:35 A.M. 9/28/09 (SEE NOTE 10)

TOP OF BANK (SEE NOTE 8)

MEAN HIGH WATER (MHW) ELEV.=9.9'

MEAN HIGH WATER

ZONE AE (10' NAVD88/15.57'(MLLW)

ZONE AE (10' NAVD88/15.57'

25' RIVERFRONT AREA

100' BUFFER ZONE

100' WETLAND BUFFER

MATCH EXIST INVERT (I=15.2) 12" END OF PIPE CHECK VALVE AT OUTLET

REPLACE WITH NEW 12" HDPE

INSTALL TERMINAL BACKWATER VALVE ON PROPOSED PIPE INSIDE THE DRAIN MANHOLE

DMH-06 W/ 4' SUMP
INV. (A)=15.5
INV. (B)=15.6
INV. (C)=16.1
MAINTAIN EXISTING 12" PIPE

49'x96' SUBSURFACE STORAGE CHAMBER
BOTTOM OF CHAMBER = 17.50'
BOTTOM OF STONE = 16.50'
11,880 CF

OCS-01
RIM=24.05
INV.(A)=17.5
INV.(B)=18.4

VEHICLE STORAGE 18'x36'

CB-06
RIM=22.9
INV=19.5

CB-05
RIM=23.1
INV=19.8

CB-07
RIM=23.5
INV=20.0

WQS-02
RIM=24.0
INV.(A)=17.6
INV.(B)=17.7
INV.(C)=18.5

DMH-03
RIM=24.6
INV.(A)=19.1
INV.(B)=19.4
INV.(C)=19.6

DMH-01 (5' DIA.)
RIM=25.0
INV.(A)=18.0
INV.(B)=18.7
INV.(C)=18.1
INV.(D)=20.4

DMH-04
RIM=23.8
INV.(A)=19.0
INV.(B)=19.4
INV.(C)=19.1

WQS-01
RIM=22.50 (ME)
INV IN=18.25
INV OUT=18.15

CB-01
RIM=22.85
INV=18.35

10,000 GAL. FUEL TANK (SEE ARCHITECTURAL PLANS)

FUEL PUMP CONC PAD (SEE ARCHITECTURAL PLANS)

LOOP DETECTORS (SEE ELECTRICAL PLANS)

CHIMNEY CONNECTION INTO EXISTING 24" DRAIN AT CROWN OF EXISTING PIPE =15.95 (FIELD VERIFY)

TEST PIT TO BE PERFORMED TO CONFIRM EXISTING UTILITY LOCATION AND DEPTH BEFORE ANY PROPOSED UTILITY CONNECTIONS

HISTORIC HIGH WATER

2-2" ELECTRICAL DIRECT BURIED CONDUIT (SEE ELECTRICAL PLANS)

2-4" ELECTRICAL CONDUIT CONCRETE ENCASED (SEE ELECTRICAL PLANS)

WYE CONNECTION

TRENCH DRAIN WITH IN-LINE CB

CB-02
RIM=24.3
INV=20.7

DMH-07
RIM=24.4
INV.(A)=20.5
INV.(B)=21.4
INV.(C)=20.6
INSTALL TERMINAL BACKWATER VALVE ON 6" PIPE

DMH-02
RIM=25.1
INV.(A)=18.6
INV.(B)=20.3
INV.(C)=18.9

CB-04
RIM=24.0
INV=19.8
CONCRETE TRANSFORMER UTILITY PAD WITH 4' CLEARANCE (SEE ELECTRICAL PLANS)

NEW LOCATION OF DISCONNECT SHALL INTERCEPT LOW VOLTAGE FEEDER. (SEE ELECTRICAL PLANS)

3" ELECTRICAL NEW UNDERGROUND DIRECT BURIED CONDUIT (SEE ELECTRICAL PLANS)

CB-03
RIM=24.3
INV=20.5

6" PERIMETER DRAIN INV.=23.5

800 GALLON UST (SEE PLUMBING PLANS)

2-2" ELECTRICAL DIRECT BURIED CONDUIT (SEE ELECTRICAL PLANS)

SEE PLUMING DRAWINGS FOR CONTINUATION

4" GARAGE WASTE

GASOLINE, OIL, AND SAND INTERCEPTOR (SEE PLUMBING PLANS)
RIM=27.80

8" SANITARY SERVICE
8" ROOF DRAIN
45° BENDS

LOOP DETECTORS (SEE ELECTRICAL PLANS)

3" ELECTRICAL NEW UNDERGROUND DIRECT BURIED CONDUIT (SEE ELECTRICAL PLANS)

2-4" ELECTRICAL SONDUIT CONCRETE ENCASED DUCT BANK FOR PRIMARY ELECTRICAL SERVICE TO UTILITY TRANSFORMER (SEE ELECTRICAL PLANS)

RELOCATED UTILITY POLE, DISCONNECT SWITCH, AND METER (SEE ELECTRICAL PLANS FOR DETAILS)

8" ROOF DRAIN
4" DOMESTIC WATER SERVICE
2" GAS SERVICE
6" FIRE SERVICE
4" SANITARY SEWER

WYE CONNECTION
SMH=24.0
RIM=25.56
INV.(A)=20.56
INV.(B)=21.06

WYE CONNECTION
AREA DRAIN
RIM=28.73
INV=23.00

WYE CONNECTION
INV.=22.0

DMH-05
RIM=23.9
INV.(A)=19.7
INV.(B)=19.8
INV.(C)=19.9

4-4" CONCRETE ENCASED CONDUIT FOR TELECOMMUNICATION SERVICES (SEE ELECTRICAL PLANS)

LOOP DETECTORS (SEE ELECTRICAL PLANS)

UTILITY POLE (BY OTHERS)

NEW UTILITY POLE

TRENCH DRAIN WITH IN-LINE CB

HYDRANT

6" WATER LINE
6' GATE VALVE
12"x12"x6" TSV
CONNECT TO EXIST. 12" WATER MAIN

6" GATE VALVE
12"x12"x6" TSV
CONNECT TO EXIST. 12" WATER MAIN

4" GATE VALVE
12"x12"x4" TSV
CONNECT TO EXIST. 12" WATER MAIN

EXISTING UTILITY POLE

ELECTRICAL CONDUIT DUCTBANK (BY OTHERS)

OHW (BY OTHERS)

CB-08
RIM=23.0
INV=20.0

OHW TO EXTEND TO NEW UTILITY POLE (BY OTHERS)

CHIMNEY CONNECTION INTO EXISTING 12" COMBINED SEWER AT CROWN OF EXISTING PIPE=15.1 (FIELD VERIFY)

TEST PIT TO BE PERFORMED TO CONFIRM EXISTING UTILITY LOCATION AND DEPTH BEFORE ANY PROPOSED UTILITY CONNECTIONS

TSV TO 8" GAS MAIN

EAST EAGLE STREET
(PUBLIC-50 FEET WIDE)

CONDOR STREET
(PUBLIC-50 FEET WIDE)

MASSACHUSETTS COORDINATE SYSTEM
MAINLAND ZONE (NAD 83)

HOR. SCALE IN FEET
0 20 50 100

BWSC INSPECTION

(1) WATER CONNECTION 6" FIRE CONNECTION DATE: INSPECTOR:	(2) WATER CONNECTION 4" DOMESTIC CONNECTION DATE: INSPECTOR:
(3) SEWER CONNECTION 4" GARAGE WASTE DATE: INSPECTOR:	(4) HYDRANT CONNECTION 6" WATER CONNECTION DATE: INSPECTOR:
(5) HYDRANT 6" WATER CONNECTION DATE: INSPECTOR:	(6) SUBSURFACE INFILTRATION SYSTEM 12" HDPE DATE: INSPECTOR:
(7) WATER QUALITY STRUCTURE # 1 12" HDPE DATE: INSPECTOR:	(8) WATER QUALITY STRUCTURE # 2 12" HDPE DATE: INSPECTOR:

WARD 1023, PARCEL # 0103711002 and 0103711003
BWSC ACCOUNT #
338 EAST EAGLE STREET
BOSTON, MA 02128
SITE PLAN # XX
OWNER:
PUBLIC FACILITIES DEPARTMENT C/O CITY OF BOSTON
26 COURT STREET, 10TH FLOOR
BOSTON, MA 02108
CONTACT: BRIAN MELIA
TEL (617) 635-0412

FOR BWSC USE ONLY

project name/owner's name

AREA A-7 POLICE STATION - EAST BOSTON

CITY OF BOSTON

project identification number

architect

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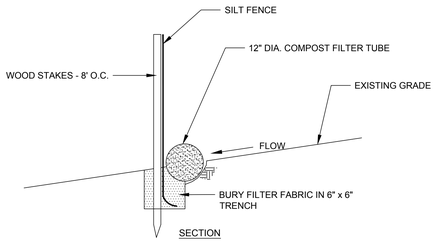
UTILITY PLAN

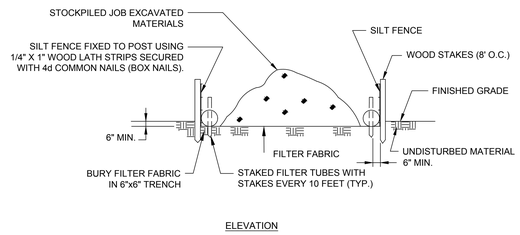
sheet number

C-4



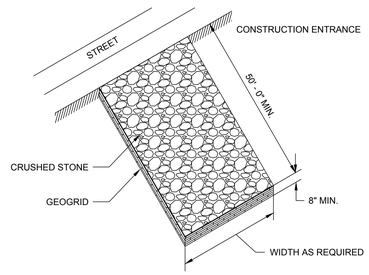
1 COMPOST FILTER TUBE / SILT FENCE

NOT TO SCALE



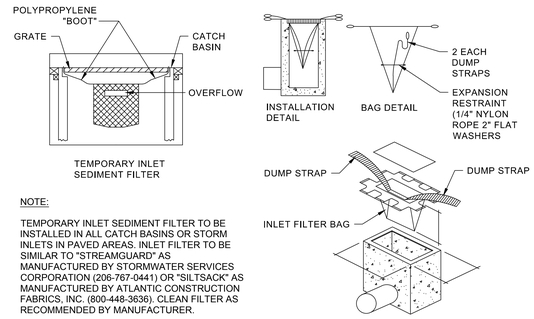
2 STOCKPILED MATERIAL

NOT TO SCALE



3 TEMPORARY CONSTRUCTION ENTRANCE

NOT TO SCALE

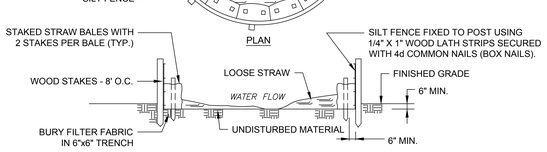


NOTE:

TEMPORARY INLET SEDIMENT FILTER TO BE INSTALLED IN ALL CATCH BASINS OR STORM INLETS IN PAVED AREAS. INLET FILTER TO BE SIMILAR TO "STREAMGUARD" AS MANUFACTURED BY STORMWATER SERVICES CORPORATION (206-767-0441) OR "SILTSACK" AS MANUFACTURED BY ATLANTIC CONSTRUCTION FABRICS, INC. (800-448-3636). CLEAN FILTER AS RECOMMENDED BY MANUFACTURER.

4 TEMPORARY INLET SEDIMENT FILTER

NOT TO SCALE

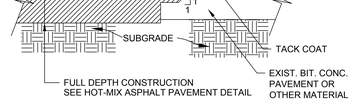


NOTE:

DETAIL SHOWN FOR EXAMPLE ONLY. DESIGN OF ANY DEWATERING BASINS IS THE RESPONSIBILITY OF THE CONTRACTOR.

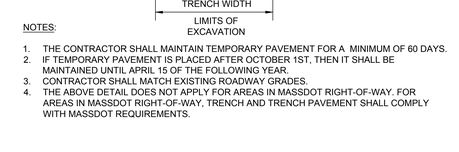
5 DEWATERING BASIN

NOT TO SCALE



6 TYPICAL SAWCUT

NOT TO SCALE

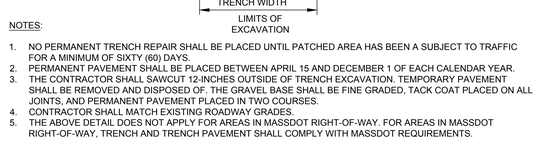


NOTES:

1. THE CONTRACTOR SHALL MAINTAIN TEMPORARY PAVEMENT FOR A MINIMUM OF 60 DAYS.
2. IF TEMPORARY PAVEMENT IS PLACED AFTER OCTOBER 1ST, THEN IT SHALL BE MAINTAINED UNTIL APRIL 15 OF THE FOLLOWING YEAR.
3. CONTRACTOR SHALL MATCH EXISTING ROADWAY GRADES.
4. THE ABOVE DETAIL DOES NOT APPLY FOR AREAS IN MASSDOT RIGHT-OF-WAY. FOR AREAS IN MASSDOT RIGHT-OF-WAY, TRENCH AND TRENCH PAVEMENT SHALL COMPLY WITH MASSDOT REQUIREMENTS.

7 TEMPORARY TRENCH PAVEMENT

NOT TO SCALE

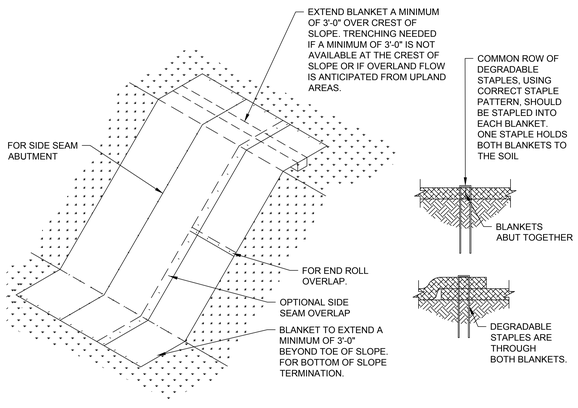


NOTES:

1. NO PERMANENT TRENCH REPAIR SHALL BE PLACED UNTIL PATCHED AREA HAS BEEN A SUBJECT TO TRAFFIC FOR A MINIMUM OF SIXTY (60) DAYS.
2. PERMANENT PAVEMENT SHALL BE PLACED BETWEEN APRIL 15 AND DECEMBER 1 OF EACH CALENDAR YEAR.
3. THE CONTRACTOR SHALL SAWCUT 12-INCHES OUTSIDE OF TRENCH EXCAVATION. TEMPORARY PAVEMENT SHALL BE REMOVED AND DISPOSED OF. THE GRAVEL BASE SHALL BE FINE GRADED, TACK COAT PLACED ON ALL JOINTS, AND PERMANENT PAVEMENT PLACED IN TWO COURSES.
4. CONTRACTOR SHALL MATCH EXISTING ROADWAY GRADES.
5. THE ABOVE DETAIL DOES NOT APPLY FOR AREAS IN MASSDOT RIGHT-OF-WAY. FOR AREAS IN MASSDOT RIGHT-OF-WAY, TRENCH AND TRENCH PAVEMENT SHALL COMPLY WITH MASSDOT REQUIREMENTS.

8 PERMANENT TRENCH PAVEMENT

NOT TO SCALE

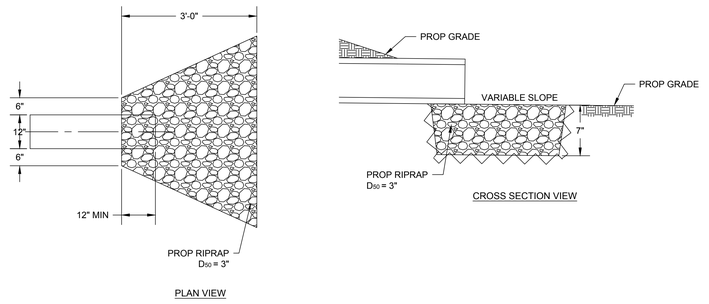


NOTES:

1. BLANKET SHALL BE BIODEGRADABLE .
2. SEE MANUFACTURER'S STAPLE PATTERN GUIDE FOR DETAILS.
3. 2. INSTALL EROSION CONTROL BLANKET SLOPE STABILIZATION ON ALL SLOPES 3 TO 1 OR STEEPER.
4. 3. AREAS WITH EROSION CONTROL BLANKET SHALL BE SEEDED.

9 SLOPE STABLIZATION

NOT TO SCALE



10 RIPRAP APRON FOR 12" DIA. PIPE

NOT TO SCALE

project name/owner's name

AREA A-7 POLICE STATION - EAST BOSTON

CITY OF BOSTON

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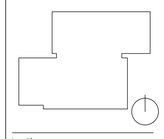
no.	item	date

key plan



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01/04/2019

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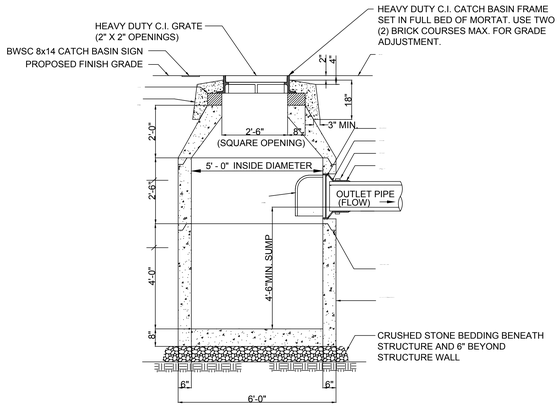
DETAILS I

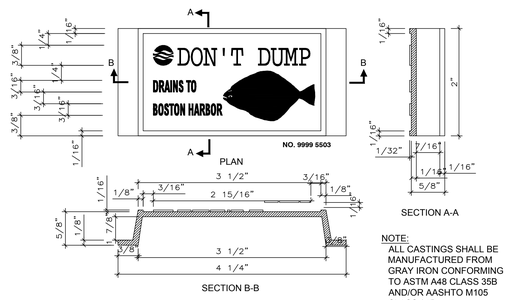
sheet number

C-6



1 TYPICAL BWSC PRECAST CATCH BASIN

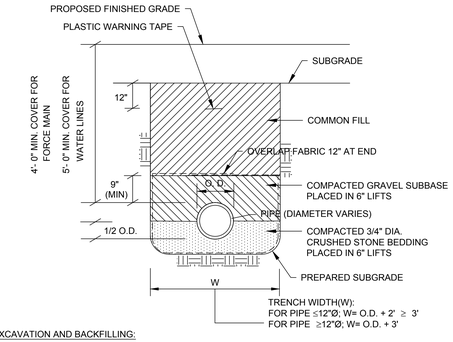
NOT TO SCALE



NOTE:
ALL CASTINGS SHALL BE MANUFACTURED FROM GRAY IRON CONFORMING TO ASTM A48 CLASS 35B AND/OR AASHTO M105 CLASS 35B.

2 BWSC 8x14 CATCH BASIN SIGN

NOT TO SCALE

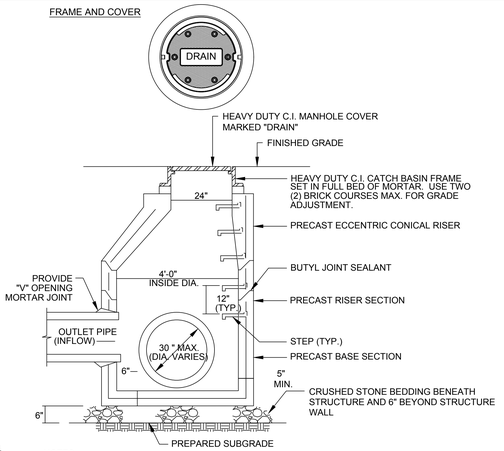


TRENCH EXCAVATION AND BACKFILLING:

1. EXCAVATE TRENCH BOTTOMS AS INDICATED. REMOVE STONES AND SHARP OBJECTS TO AVOID POINT LOADING. PLACE CRUSHED STONE PIPE BEDDING AS INDICATED.
2. PLACE AND COMPACT INITIAL BACKFILL OF SAND-GRAVEL MATERIAL, FREE OF PARTICLES GREATER THAN 1 INCH, TO A HEIGHT OF 12" ABOVE THE UTILITY LINE OR CONDUIT.
3. CAREFULLY COMPACT MATERIAL UNDER PIPE HAUNCHES AND BACKFILL EVENLY ON BOTH SIDES ALONG FULL LENGTH OF LINE TO AVOID DAMAGE OR DISPLACEMENT OF UTILITY SYSTEM.
4. COMPACT TRENCH BACKFILL IN 6" LIFTS WITH A HAND OPERATED (VIBRATOR PLATE) TAMPER AS FOLLOWS: UNDER PAVEMENT AND STRUCTURES; TO 95% MAX. DRY DENSITY PER ASTM D1557. UNDER LAWNS; 90% MAXIMUM DRY DENSITY PER ASTM D1557.

3 TYPICAL PIPE TRENCH

NOT TO SCALE



NOTES:

1. PRECAST CONCRETE SECTIONS SHALL CONFORM TO ASTM C-478
2. STEEL REINFORCING SHALL CONFORM TO ASTM A185
3. MANHOLE STEPS SHALL BE 14" WIDE STEEL REINFORCED COPOLYMER POLYPROPYLENE PLASTIC AND SHALL BE CAST INTO MANHOLE SECTIONS BY THE PRECAST MANHOLE MANUFACTURER.

4 TYPICAL PRECAST CONCRETE DRAIN MANHOLE

NOT TO SCALE

NOTES:

1. 5'-0"DIAMETER FOR ALL MANHOLE DEPTHS GREATER THAN 20 FEET OR WHEN ORDERED BY THE ENGINEER.
2. 6" MIN. WALL THICKNESS AND 7 INCH MIN. BASE THICKNESS WITH 5'-0" DIAMETER MANHOLES.
3. 6 INCH LIP OPTIONAL UNLESS OTHERWISE NOTED.CONCRETE INVERT AND SHELF MAY BE SUBSTITUTED IN STORM DRAIN MANHOLES AS DIRECTED BY THE ENGINEER.

5 TYPICAL BWSC PRECAST CONCRETE SEWER MANHOLE DETAIL

NOT TO SCALE

6 BWSC SEWER CLEANOUT

NOT TO SCALE

7 BWSC TYPICAL WATER PIPE CONNECTION WITH TAPPING SLEEVE AND GATE VALVE

NOT TO SCALE

NOTES:

1. PRECAST CONCRETE SECTIONS SHALL CONFORM TO ASTM C-478
2. STEEL REINFORCING SHALL CONFORM TO ASTM A185
3. MANHOLE STEPS SHALL BE 14" WIDE STEEL REINFORCED COPOLYMER POLYPROPYLENE PLASTIC AND SHALL BE CAST INTO MANHOLE SECTIONS BY THE PRECAST MANHOLE MANUFACTURER.

8 5' Ø PRECAST CONCRETE DRAIN MANHOLE DETAIL

NOT TO SCALE

NOTE:

1. MINIMUM CONCRETE STRENGTH OF 4,000 PSI. CONCRETE SHOULD BE VIBRATED TO ELIMINATE AIR POCKETS.
2. EXPANSION AND CONTRACTION CONTROL JOINTS AND REINFORCEMENT ARE REQUIRED TO PROTECT CHANNEL AND CONCRETE SURROUND.
3. THE FINISHED LEVEL OF THE CONCRETE SURROUND MUST BE APPROX. $\frac{3}{8}$" (3 MM) ABOVE THE TOP OF THE CHANNEL EDGE.
4. CONCRETE BASE THICKNESS SHOULD MATCH SLAB THICKNESS.
5. TRENCH DRAIN SHALL BE FOR H20 LOADING.

9 TYPICAL TRENCH DRAIN

NOT TO SCALE

GENERAL:
THE SURFACE DRAINAGE SYSTEM SHALL BE POLYMER CONCRETE CHANNEL SYSTEM WITH GALVANIZED STEEL EDGE RAILS.

MATERIALS

CHANNELS SHALL BE MANUFACTURED FROM POLYESTER RESIN POLYMER CONCRETE WITH AN INTEGRALLY CAST-IN GALVANIZED STEEL EDGE RAIL. MINIMUM PROPERTIES OF POLYMER CONCRETE WILL BE AS FOLLOWS:

COMPRESSIVE STRENGTH:	14,000 PSI
FLEXURAL STRENGTH:	4,000 PSI
TENSILE STRENGTH:	1,500 PSI
WATER ABSORPTION:	0.07%
FROST PROOF	YES
DILUTE ACID AND ALKALI RESISTANT	YES
B117 SALT SPRAY TEST COMPLIANT	YES

THE SYSTEM SHALL BE 12" (300mm) NOMINAL INTERNAL WIDTH WITH A 14.2" (390mm) OVERALL WIDTH AND A BUILT-IN SLOPE OF 0.5%. CHANNEL INVERT SHALL HAVE DEVELOPED "V" SHAPE. ALL CHANNELS SHALL BE INTERLOCKING WITH A MALE/FEMALE JOINT.

CHANNEL SHALL WITHSTAND H20 LOADING. GRATES SHALL BE SECURED USING "QUICKLOK" BOLTLESS LOCKING SYSTEM. CHANNEL AND GRATE SHALL BE CERTIFIED TO MEET THE H20 LOAD CLASS. THE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTION AND RECOMMENDATIONS.

One meter channel

ONE METER CHANNEL SECTION
NOT TO SCALE

IN-LINE CATCH BASIN
NOT TO SCALE

Plan view

Side elevation

LONGITUDINAL DUCTILE IRON HEAVY DUTY GRADE
NOT TO SCALE

10 TYPICAL AREA DRAIN

NOT TO SCALE

project name/owner's name

AREA A-7 POLICE STATION - EAST BOSTON

CITY OF BOSTON

project identification number

architect

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COMMONWEALTH OF MASSACHUSETTS
DANIELLE H. SPICER
CIVIL
No. 48067
REGISTERED PROFESSIONAL ENGINEER
1/4/2019

revisions

no.	item	date

key plan

issued for

BWSC/NOI SUBMISSION

date

01/04/2019

checked by

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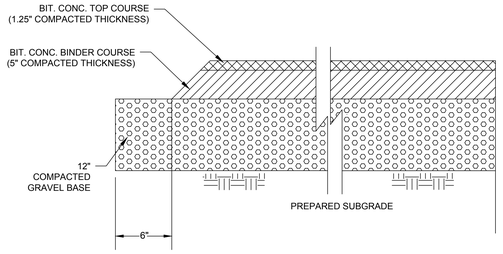
scale

sheet title

DETAILS II

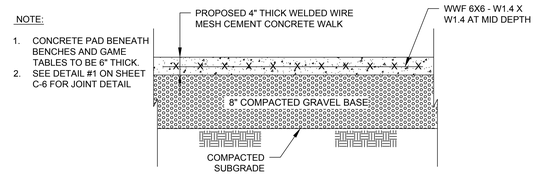
sheet number

C-7



1 HOT-MIX ASPHALT PAVEMENT

NOT TO SCALE

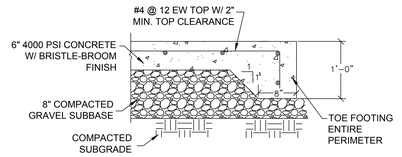


CEMENT CONCRETE PAVEMENT NOTES

1. CEMENT CONCRETE PAVEMENT SHALL HAVE A 28-DAY COMPRESSIVE STRENGTH OF 4,000 PSI WITH 6% AIR-ENTRAINMENT AND MINIMUM CEMENT CONTENT OF 610 LBS/C.Y.
2. CONTRACTOR SHALL SUBMIT CONCRETE JOINT LAYOUT PLAN FOR APPROVAL. EXPANSION JOINTS SHALL BE TRANSVERSE PREFORMED EXPANSION JOINT FILLER (AASHTO M-213-65) ½ IN. THICKNESS.
3. PREFORMED EXPANSION JOINT FILLER SHALL BE PLACED ADJACENT TO OR AROUND EXISTING STRUCTURES AND WALKWAYS.
4. EXPANSION JOINTS SHALL BE CONSTRUCTED WITH DOWELS, AS INDICATED IN DETAIL #9 ON SHEET C-7.
5. AFTER CONSOLIDATION, CONCRETE DEPTH SHALL BE 4 INCHES IN DEPTH.
6. ENSURE THAT NO BLED WATER OR WATER SHEEN EXISTS ON THE SURFACE OF THE CONCRETE AND THAT CONCRETE HAS STARTED TO STIFFEN BEFORE ANY FINISHING OPERATIONS ARE PERFORMED.
7. AFTER TROWELING, SURFACE SHALL BE BRUSHED BY DRAWING A SOFT-BRISTLED PUSHBROOM WITH A LONG HANDLE OVER THE SURFACE OF THE CONCRETE TO PRODUCE A NON-SLIP SURFACE.
8. THE FINISHING OF CONCRETE SURFACE SHALL BE DONE BY EXPERIENCED AND COMPETENT CEMENT CONCRETE FINISHERS.
9. FINISHING SHALL BE BROOM FINISH.
10. SAW CUT CONTROL JOINTS.
11. WHEN COMPLETED, WALKWAYS SHALL BE KEPT MOIST AND PROTECTED FROM TRAFFIC AND WEATHER FOR AT LEAST 3 DAYS.
12. WELDED WIRE MESH SHALL BE 6"x6" No. 10 GAUGE AND SHALL BE SHEET MESH ONLY NOT ROLLED. MESH SHALL REST ON CONCRETE BLOCKS AND BE INSTALLED AT MID DEPTH IN CONCRETE.

2 CEMENT CONCRETE PAVEMENT

NOT TO SCALE

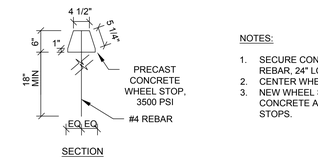


CEMENT CONCRETE PAD NOTES

1. CEMENT CONCRETE FOR PAD SHALL HAVE A 28-DAY COMPRESSIVE STRENGTH OF 4,000 PSI WITH 6% AIR-ENTRAINMENT AND MINIMUM CEMENT CONTENT OF 610 LBS/C.Y.
2. CONCRETE SHALL BE PLACED IN ALTERNATE SLABS 8.75 FEET IN LENGTH. THE SLABS SHALL BE SEPARATED BY TRANSVERSE PREFORMED EXPANSION JOINT FILLER (AASHTO M-213-65) ½" IN THICKNESS.
3. PREFORMED EXPANSION JOINT FILLER SHALL BE PLACED ADJACENT TO OR AROUND EXISTING STRUCTURES AND WALKWAYS.
4. AFTER CONSOLIDATION, CONCRETE DEPTH SHALL BE 6 INCHES IN DEPTH.
5. ENSURE THAT NO BLED WATER OR WATER SHEEN EXISTS ON THE SURFACE OF THE CONCRETE AND THAT CONCRETE HAS STARTED TO STIFFEN BEFORE ANY FINISHING OPERATIONS ARE PERFORMED.
6. AFTER TROWELING, SURFACE SHALL BE BRUSHED BY DRAWING A SOFT-BRISTLED PUSHBROOM WITH A LONG HANDLE OVER THE SURFACE OF THE CONCRETE TO PRODUCE A NON-SLIP SURFACE.
7. THE FINISHING OF CONCRETE SURFACE SHALL BE DONE BY EXPERIENCED AND COMPETENT CEMENT CONCRETE FINISHERS.
8. WHEN COMPLETED, PAD SHALL BE KEPT MOIST AND PROTECTED FROM TRAFFIC AND WEATHER FOR AT LEAST 3 DAYS.
9. REINFORCEMENT SHALL BE #4 REBAR. REINFORCEMENT SHALL REST ON CONCRETE BLOCKS.

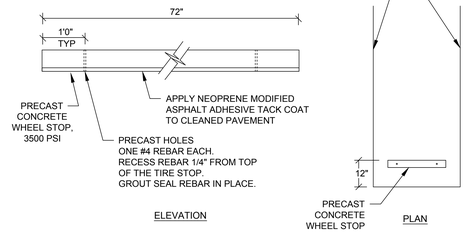
3 CONCRETE PAD FOR TRANSFORMER

NOT TO SCALE



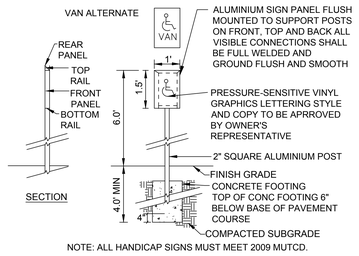
NOTES:

1. SECURE CONCRETE WHEEL STOPS WITH (2) 1/2" REBAR, 24" LONG IN EACH WHEEL STOP.
2. CENTER WHEEL STOP IN EACH PARKING STALL.
3. NEW WHEEL STOPS SHALL BE REINFORCED CONCRETE AND SHALL MATCH EXISTING WHEEL STOPS.



4 PRECAST CONCRETE WHEEL STOP

NOT TO SCALE



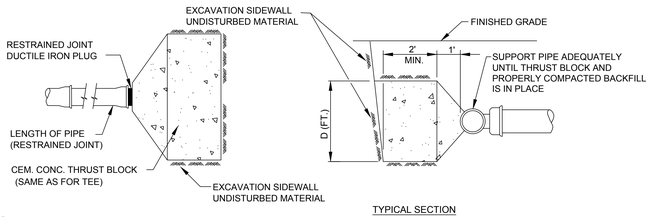
NOTE: ALL HANDICAP SIGNS MUST MEET 2009 MUTCD.

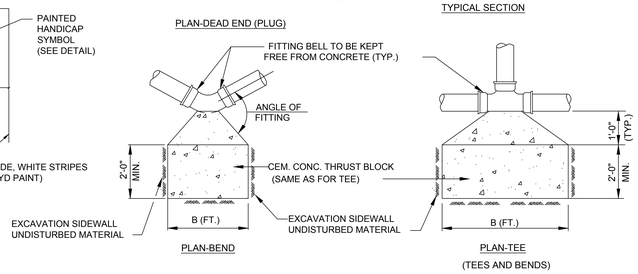
5 HANDICAP SIGN

NOT TO SCALE

PIPE SIZE	≤6"		8"		12"	
DIMENSION	B	D	B	D	B	D
TEE/PLUG	2	2	3	3	4	4
90°	2	2	3	3	4	4
45°	2	2	2	2	4	4
22 1/2°	2	2	2	2	3	3

THRUST BLOCK SCHEDULE





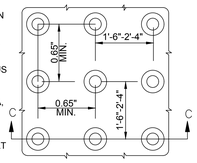
1. PROVIDE A CONCRETE THRUST COLLAR OR ANCHOR AT EACH PLUG/BEND/TEE WITH THE CAPACITY TO RESIST A 10,000 POUND FORCE AT THE PLUG/BEND/TEE ONCE THE EXISTING PIPE IS CUT AND REMOVED.

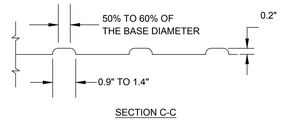
7 THRUST BLOCK

NOT TO SCALE

DETECTABLE WARNING PANEL NOTES:

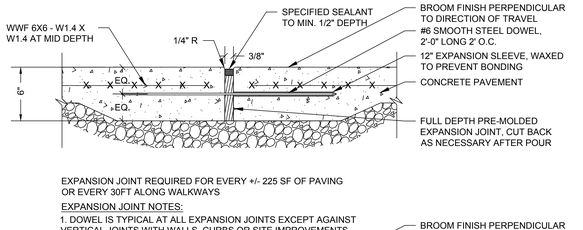
1. THE DETECTABLE WARNING PANEL SHALL BE A PREFABRICATED, CAST-IN-PLACE TYPE, DETECTABLE WARNING TILE FOR THE APPLICATION DESIGNATED MEETING THE REQUIREMENTS AND SPECIFICATIONS OF ADA AND MAAB.
2. THE TILE SHALL BE 2' WIDE AND SPAN THE ENTIRE WIDTH OF THE CURB RAMP.
3. THE TILE SHALL HAVE A BRICK RED HOMOGENEOUS COLOR THROUGHOUT IN COMPLIANCE WITH FEDERAL STANDARD 595A COLOR #20109.
4. AT FLUSH CURB IN DRIVEWAY TURNAROUND AREA, SET DETECTABLE WARNING PANEL IN CEMENT CONCRETE, MAINTAINING 6" OF EXPOSED CONCRETE BETWEEN EDGE OF DETECTABLE WARNING PANEL AND ADJACENT POROUS ASPHALT SURFACE.





8 DETECTABLE WARNING PANEL

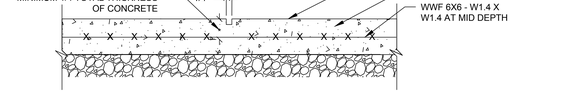
NOT TO SCALE



EXPANSION JOINT REQUIRED FOR EVERY +/- 225 SF OF PAVING OR EVERY 30FT ALONG WALKWAYS

EXPANSION JOINT NOTES:

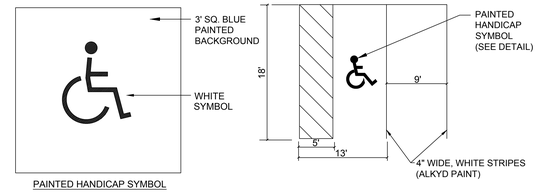
1. DOWEL IS TYPICAL AT ALL EXPANSION JOINTS EXCEPT AGAINST VERTICAL JOINTS WITH WALLS, CURBS OR SITE IMPROVEMENTS.



SAWCUT CONTROL JOINT REQUIRED FOR EVERY 36 SF OF PAVING.

9 CONCRETE PAVEMENT JOINTS

NOT TO SCALE

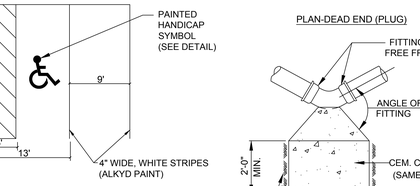


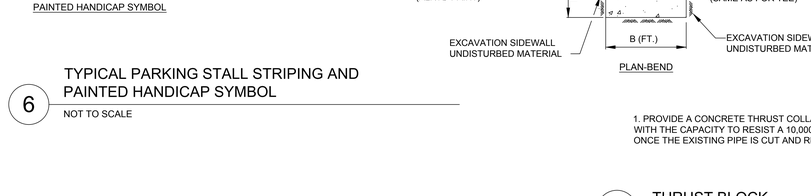
6 TYPICAL PARKING STALL STRIPING AND PAINTED HANDICAP SYMBOL

NOT TO SCALE

ACCESSIBLE CURB RAMP NOTES:

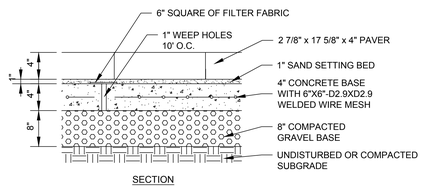
1. CURB RAMPS ARE TO BE PROVIDED WITH A NON-SLIP FINISH.
2. ALL SLOPES AND DIMENSIONS TO COMPLY WITH MAAB AND ADA REQUIREMENTS.
3. PROVIDE HEAVY BROOM FINISH ON RAMP AND SIDE SLOPES PERPENDICULAR TO FLOW OF TRAFFIC.
4. TRANSITION CURB LENGTH AS REQUIRED TO MEET CODE.
5. FIXED OBJECTS (I.E. UTILITY POLES, HYDRANTS, ETC.) MUST NOT ENCROACH ON ANY PART OF AN ACCESSIBLE CURB RAMP, INCLUDING TRANSITION SLOPES.
6. CEMENT CONCRETE ACCESSIBLE CURB RAMP SHALL CONFORM TO THE REQUIREMENTS OF DETAIL #2 ON THIS SHEET.





10 ACCESSIBLE CURB RAMPS

NOT TO SCALE

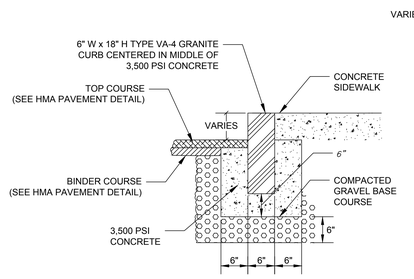


NOTES:

1. TOP OF UNIT PAVERS SHALL BE FLUSH WITH ADJACENT CONCRETE PAVEMENT.
2. CENTER WEEP HOLES IN GAPS BETWEEN WELDED WIREMESH.
3. PATTERN SHALL BE RUNNING BOND.
4. CONTRACTOR SHALL SUBMIT PLAN SHOWING PATTERN.
5. CONCRETE BASE SHALL HAVE DOWELS AT EXPANSION JOINTS.

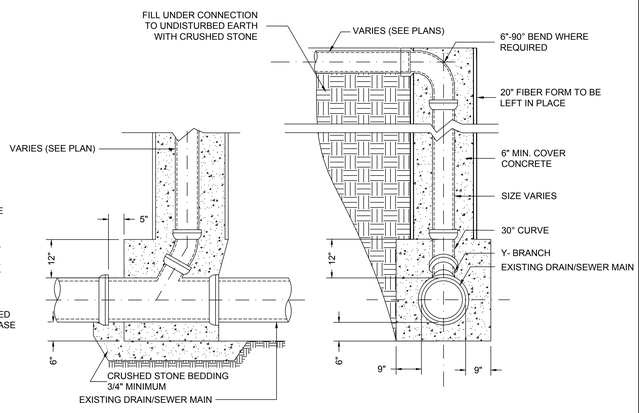
11 UNIT PAVERS

NOT TO SCALE



12 VERTICAL GRANITE CURB

NOT TO SCALE



13 BWSC TYPICAL CHIMNEY SEWER

NOT TO SCALE

project name/owner's name

AREA A-7 POLICE STATION - EAST BOSTON

CITY OF BOSTON

project identification number

architect

LEERS WEINZAPFEL ASSOCIATES ARCHITECTS, INC.

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COMMONWEALTH OF MASSACHUSETTS
DANIELLE H. SPICER
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revisions

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drawn by

KK

scale

sheet title

DETAILS III

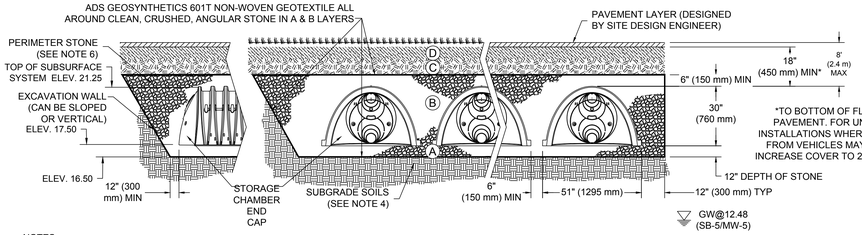
sheet number

C-8

ACCEPTABLE FILL MATERIALS: CHAMBER SYSTEMS

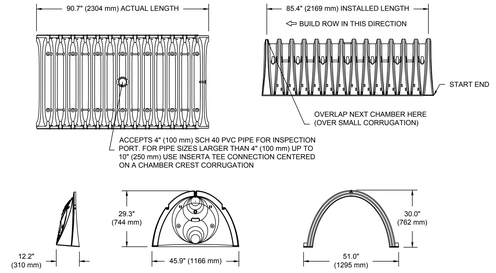
	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. [2 3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.



NOTES:
1. STORAGE CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS", OR ASTM F2922 "STANDARD SPECIFICATION FOR POLYETHYLENE (PE) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. STORAGE CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
4. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
5. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
6. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.

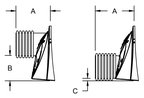
TECHNICAL SPECIFICATION
NTS



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	51.0" X 30.0" X 85.4"	(1295 mm X 762 mm X 2169 mm)
CHAMBER STORAGE	45.9 CUBIC FEET	(1.30 m³)
MINIMUM INSTALLED STORAGE*	74.9 CUBIC FEET	(2.12 m³)
WEIGHT	75.0 lbs.	(33.6 kg)

*ASSUMES 6" (152 mm) STONE ABOVE, BELOW, AND BETWEEN CHAMBERS



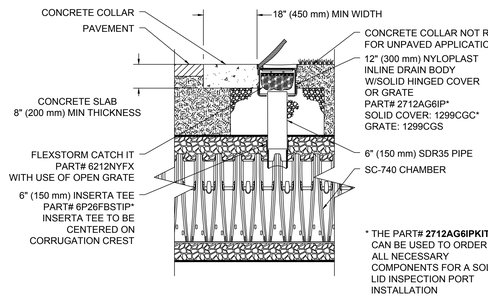
STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"

PART #	STUB	A	B	C
SC740EPE06T / SC740EPE06BTPC	6" (150 mm)	10.9" (277 mm)	18.5" (470 mm)	---
SC740EPE06B / SC740EPE06BPC			---	0.5" (13 mm)
SC740EPE08T /SC740EPE08TPC	8" (200 mm)	12.2" (310 mm)	16.5" (419 mm)	---
SC740EPE08B / SC740EPE08BPC			---	0.6" (15 mm)
SC740EPE10T / SC740EPE10TPC	10" (250 mm)	13.4" (340 mm)	14.5" (368 mm)	---
SC740EPE10B / SC740EPE10BPC			---	0.7" (18 mm)
SC740EPE12T / SC740EPE12TPC	12" (300 mm)	14.7" (373 mm)	12.5" (318 mm)	---
SC740EPE12B / SC740EPE12BPC			---	1.2" (30 mm)
SC740EPE15T / SC740EPE15TPC	15" (375 mm)	18.4" (467 mm)	9.0" (229 mm)	---
SC740EPE15B / SC740EPE15BPC			---	1.3" (33 mm)
SC740EPE18T / SC740EPE18TPC	18" (450 mm)	19.7" (500 mm)	5.0" (127 mm)	---
SC740EPE18B / SC740EPE18BPC			---	1.6" (41 mm)
SC740EPE24B*	24" (600 mm)	18.5" (470 mm)	---	0.1" (3 mm)

ALL STUBS, EXCEPT FOR THE SC740EPE24B ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP.

* FOR THE SC740EPE24B THE 24" (600 mm) STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 1.75" (44 mm). BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.

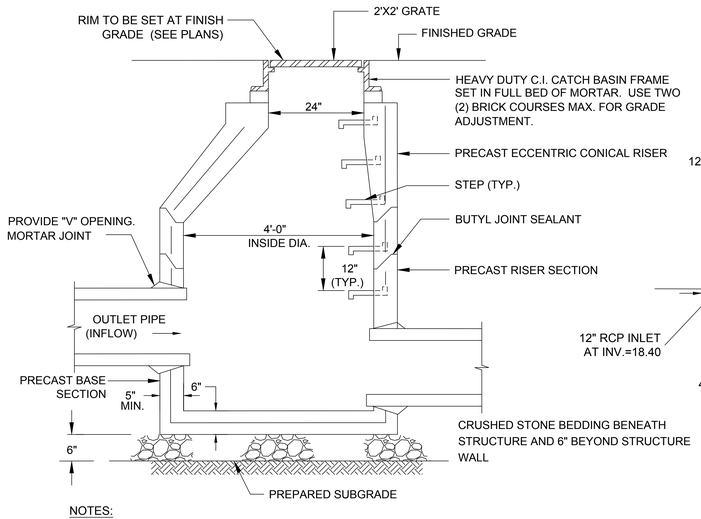
NOTE: ALL DIMENSIONS ARE NOMINAL

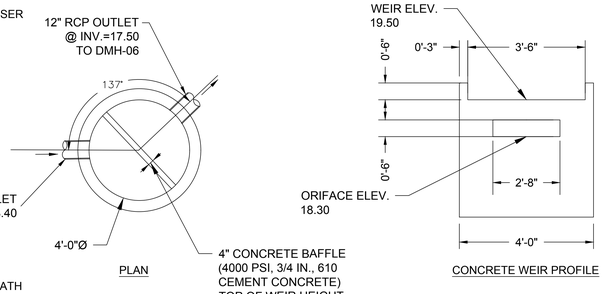


STORAGE CHAMBER 6" INSPECTION PORT DETAIL
NTS

NOTES:
SUBSURFACE STORAGE CHAMBERS SHALL BE OF ONE LISTED BELOW, OR APPROVED EQUAL:
1. ADS STORMTECH SC-740
2. CULTEC R-330XL HD
3. CONTECH CHAMBER MAX 2016

1 SUBSURFACE STORAGE CHAMBER
NOT TO SCALE

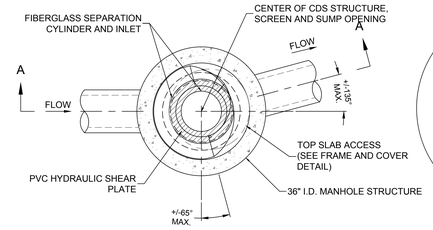




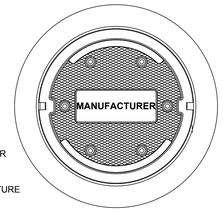
NOTES:
1. PRECAST CONCRETE SECTIONS SHALL CONFORM TO ASTM C-478
2. STEEL REINFORCING SHALL CONFORM TO ASTM A185
3. MANHOLE STEPS SHALL BE 14" WIDE STEEL REINFORCED COPOLYMER POLYPROPYLENE PLASTIC AND SHALL BE CAST INTO MANHOLE SECTIONS BY THE PRECAST MANHOLE MANUFACTURER.

OUTLET CONTROL STRUCTURE (OCS)
NOT TO SCALE

2 TYPICAL OUTLET CONTROL STRUCTURE (OCS)
NOT TO SCALE



PLAN VIEW B-B
N.T.S.

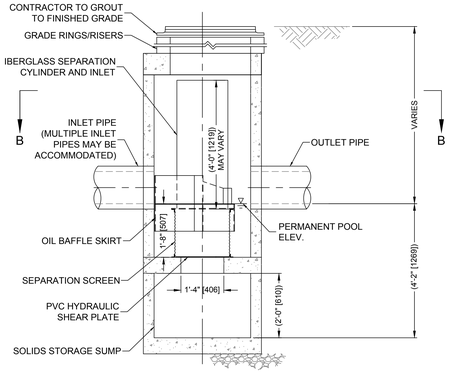


FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

DESIGN NOTES	
RATED TREATMENT CAPACITY IS 1.0 CFS, OR PER LOCAL REGULATIONS. THE STANDARD CONFIGURATION IS SHOWN.	
SITE SPECIFIC DATA REQUIREMENTS	
STRUCTURE ID	
WATER QUALITY FLOW RATE (CFS OR L/s)	*
PEAK FLOW RATE (CFS OR L/s)	*
RETURN PERIOD OF PEAK FLOW (YRS)	*
SCREEN APERTURE (2400 OR 4700)	*

PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	*	*	*
INLET PIPE 2	*	*	*
OUTLET PIPE	*	*	*

RIM ELEVATION		*
ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
	*	*
NOTES/SPECIAL REQUIREMENTS:		
* PER ENGINEER OF RECORD		

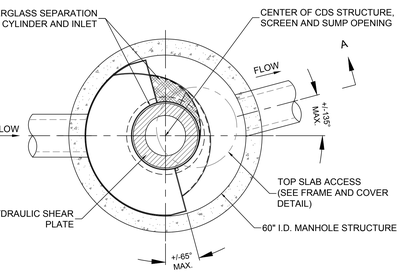


ELEVATION A-A
N.T.S.

3 WATER QUALITY STRUCTURE 01
NOT TO SCALE

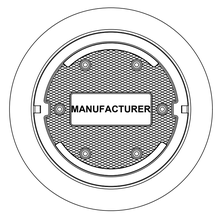
GENERAL NOTES:
1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT MANUFACTURER.
3. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 2', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306.
5. IF REQUIRED, PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.
6. CDS STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES:
- A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
- B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE.
- C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
- D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S). MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
- E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.



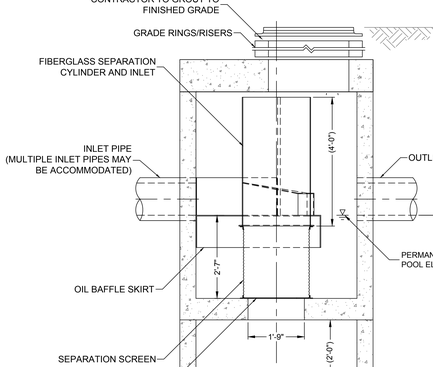
PLAN VIEW B-B
N.T.S.

DESIGN NOTES	
RATED TREATMENT CAPACITY IS 2.2 CFS, OR PER LOCAL REGULATIONS. THE STANDARD CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW. SOME CONFIGURATIONS MAY BE COMBINED TO SUIT SITE REQUIREMENTS.	
CONFIGURATION DESCRIPTION	
GRATED INLET ONLY (NO INLET PIPE)	
GRATED INLET WITH INLET PIPE OR PIPES	
CURB INLET ONLY (NO INLET PIPE)	
CURB INLET WITH INLET PIPE OR PIPES	



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS			
STRUCTURE ID			
WATER QUALITY FLOW RATE (CFS OR L/s)			*
PEAK FLOW RATE (CFS OR L/s)			*
RETURN PERIOD OF PEAK FLOW (YRS)			*
SCREEN APERTURE (2400 OR 4700)			*
PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	*	*	*
INLET PIPE 2	*	*	*
OUTLET PIPE	*	*	*
RIM ELEVATION			*
ANTI-FLOTATION BALLAST		WIDTH	HEIGHT
		*	*
NOTES/SPECIAL REQUIREMENTS: * PER ENGINEER OF RECORD			



ELEVATION A-A
N.T.S.

GENERAL NOTES
1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT MANUFACTURER.
3. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 2', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306.
5. IF REQUIRED, PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.
6. CDS STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES
- A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
- B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE.
- C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
- D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S). MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
- E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

4 WATER QUALITY STRUCTURE 02
NOT TO SCALE

project name/owner's name

AREA A-7 POLICE STATION - EAST BOSTON

CITY OF BOSTON

project identification number

architect

LEERS WEINZAPFEL ASSOCIATES ARCHITECTS, INC.

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7101

COMMONWEALTH OF MASSACHUSETTS
DANIELLE H. SPICER
CIVIL
No. 49367
REGISTERED PROFESSIONAL ENGINEER
1/4/2019

revisions

no.	item	date

key plan

issued for

BWSC/NOI SUBMISSION

date

01/04/2019

checked by

drawn by

KK

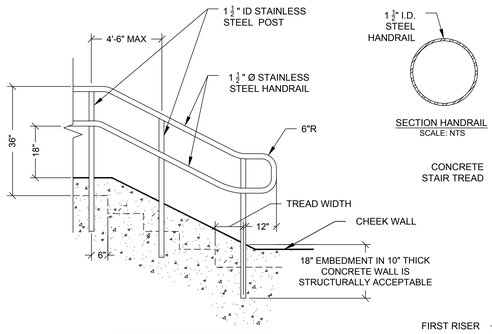
scale

sheet title

DETAILS IV

sheet number

C-9

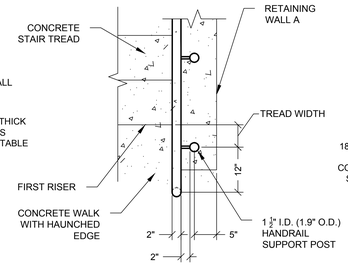


HANDRAIL ELEVATION FOR STAIRS
SCALE: NTS

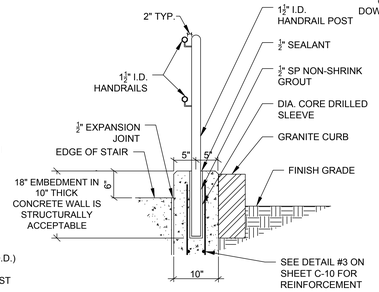
SECTION HANDRAIL
SCALE: NTS

NOTES:

1. PROVIDE SHOP DRAWING FOR APPROVAL.
2. HANDRAIL CONTINUOUS AT LEVEL LANDING (SEE PLANS).
3. WHERE HANDRAIL EXTENSIONS PROTRUDE INTO WALKWAYS OR TERRACE WRAP 12" EXTENSION AROUND CORNER (SEE PLANS).
4. HANDRAIL AND SUPPORTS SHALL BE 1 ½" O.D. GALVANIZED STEEL WITH PRIMER AND COLOR FINISH.
5. SEE SPECIFICATION FOR FINISH.

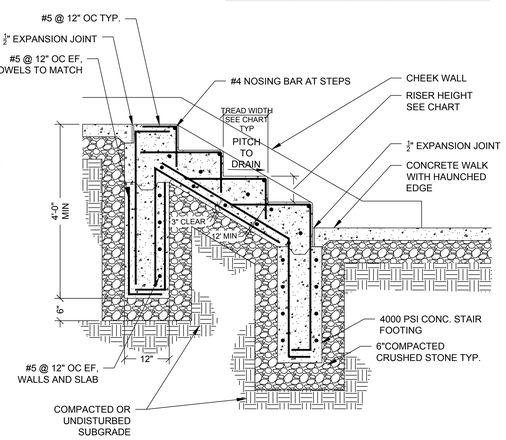


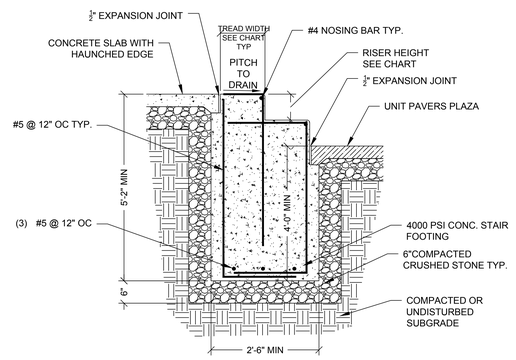
PLAN HANDRAIL
SCALE: NTS



ELEVATION HANDRAIL
SCALE: NTS

STAIR SCHEDULE	RISER HEIGHT	# RISERS	TREAD WIDTH	STAIR WIDTH
STAIR A	7"	4	12"	5'-8"
STAIR B	6 3/8"	2	13"	11'-4"

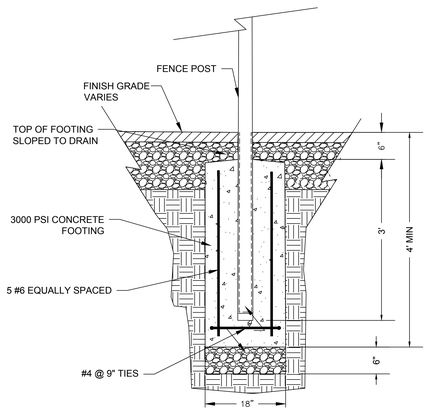




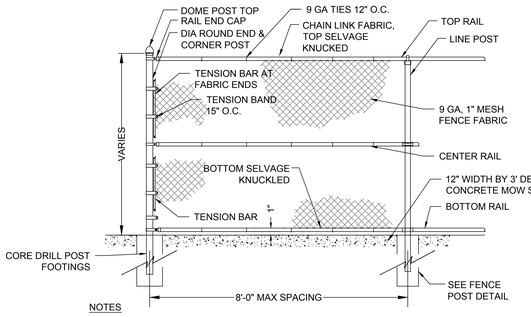
1 METAL HANDRAIL
NOT TO SCALE

2 CONCRETE STAIR A
NOT TO SCALE

3 CONCRETE STAIR B
NOT TO SCALE



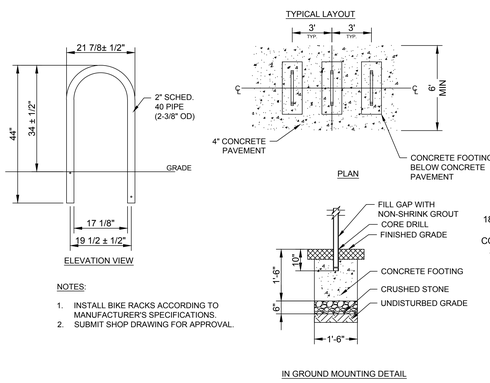
4 CONCRETE FENCE POST FOOTING
NOT TO SCALE



NOTES

1. SEE SPECIFICATION FOR POST AND RAIL DIAMETERS.
2. ALL FABRIC TO BE BLACK VINYL COATED.
3. POSTS, RAILS AND FASTENERS SHALL BE POWDER COAT. COLOR SHALL BE BLACK.
4. PROVIDE SHOP DRAWING.
5. ALL POSTS FOR GATE SHALL HAVE A MINIMUM TENSILE STRENGTH OF 60 KSI.

5 CHAIN LINK FENCE
NOT TO SCALE



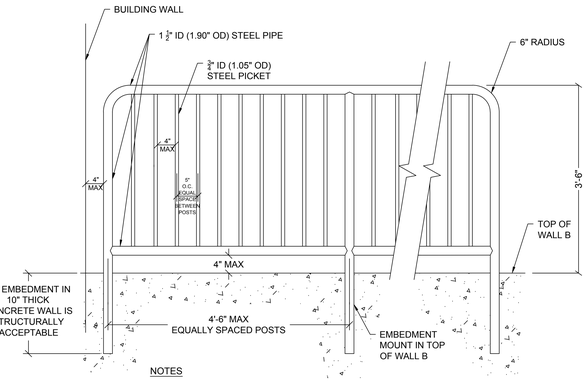
ELEVATION VIEW

NOTES:

1. INSTALL BIKE RACKS ACCORDING TO MANUFACTURER'S SPECIFICATIONS.
2. SUBMIT SHOP DRAWING FOR APPROVAL.

IN GROUND MOUNTING DETAIL

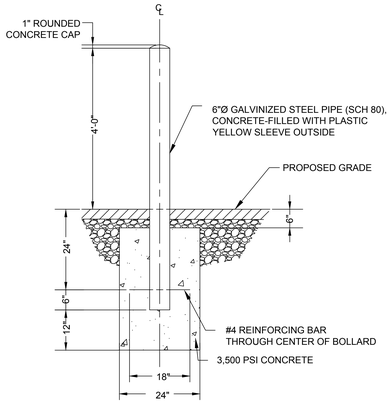
6 BIKE RACK
NOT TO SCALE



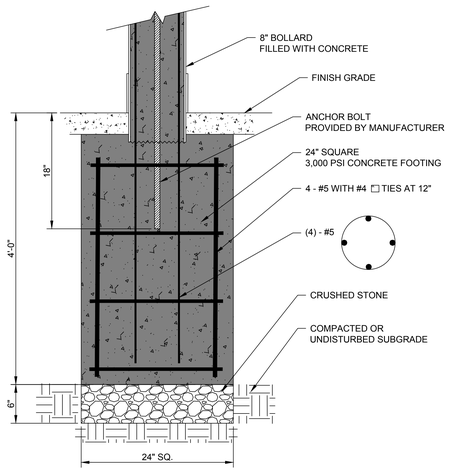
NOTES

1. PROVIDE SHOP DRAWING FOR APPROVAL.
2. GUARDRAIL MOUNTED IN RETAINING WALL B. SEE DETAIL #2 ON SHEET C-10.
3. SLOPE GUARDRAIL WITH TOP OF WALL..
4. ALL CONNECTIONS SHOP WELDED.
5. SEE SPECIFICATION FOR FINISH.

7 METAL GUARDRAIL
NOT TO SCALE



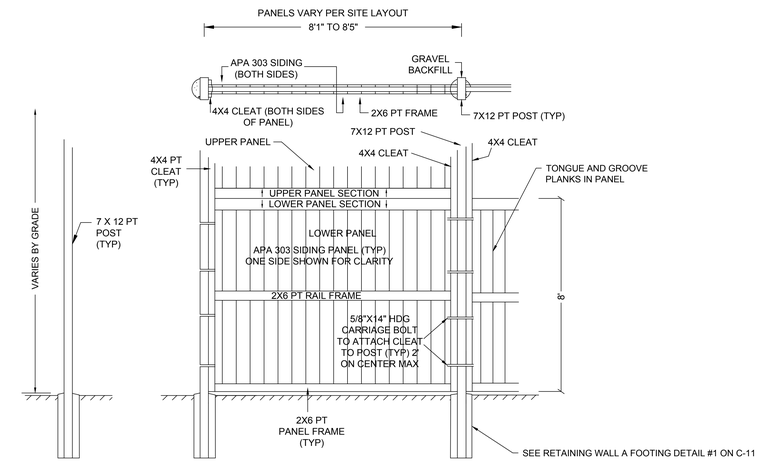
8 TYPICAL 6" BOLLARD
NOT TO SCALE



NOTES:

1. INSTALL ACCORDING TO MANUFACTURES RECOMMENDATIONS.
2. SUBMIT SHOP DRAWINGS INCLUDING ANCHOR BOLT DIAGRAM FOR APPROVAL.
3. BOLLARDS SHALL BE SET STRAIGHT AND PLUMB.

9 8" BOLLARD FOOTING DETAIL
NOT TO SCALE



10 TIMBER SOUND WALL (ON TOP OF WALL A)
NOT TO SCALE

project name/owner's name

AREA A-7 POLICE STATION - EAST BOSTON

CITY OF BOSTON

project identification number

architect

LEERS WEINZAPFEL ASSOCIATES ARCHITECTS, INC.

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COMMONWEALTH OF MASSACHUSETTS
DANIELLE H. SPICER
CIVIL
No. 46067
REGISTERED PROFESSIONAL ENGINEER
1/4/2019

revisions

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issued for

BWSC/NOI SUBMISSION

date

01/04/2019

checked by

JR

drawn by

ED

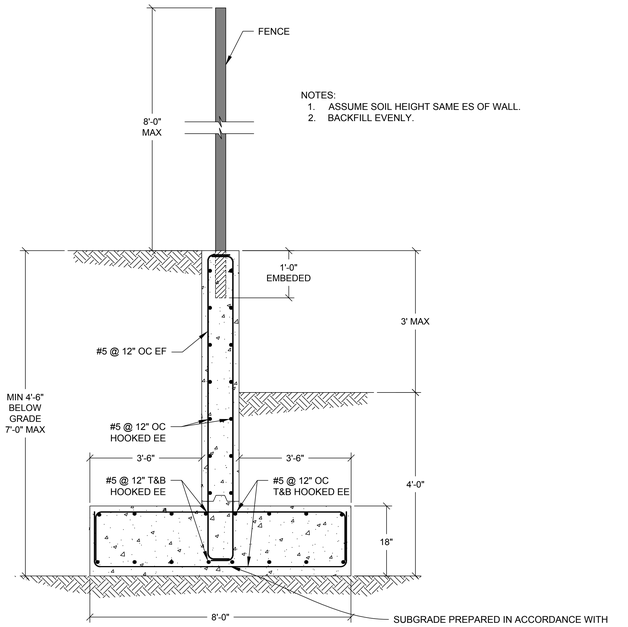
scale

sheet title

DETAILS V

sheet number

C-10

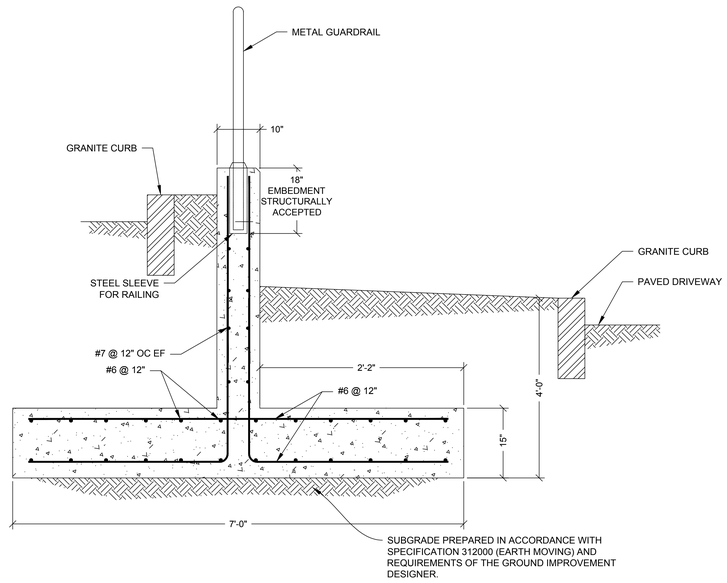


NOTE: GROUND IMPROVEMENT ELEMENTS WILL BE REQUIRED BENEATH ALL CAST-IN-PLACE CONCRETE WALLS. THE GROUND IMPROVEMENT DESIGNER IS RESPONSIBLE FOR THE LAYOUT, DIMENSIONS, AND TYPE OF GROUND IMPROVEMENT ELEMENTS. THE GROUND IMPROVEMENT DESIGNER MAY REQUIRE A MINIMUM THICKNESS OF IMPORTED GRANULAR FILL OR CRUSHED STONE BENEATH FOUNDATION ELEMENTS. REFER TO TO THE "EARTHMOVING" AND "GROUND IMPROVEMENT" SPECIFICATIONS FOR ADDITIONAL INFORMATION.

1 RETAINING WALL A

NOT TO SCALE

REVIEW BY STRUCTURAL ENGINEER FOR REINFORCING REQUIRED (LEMESSURIER)



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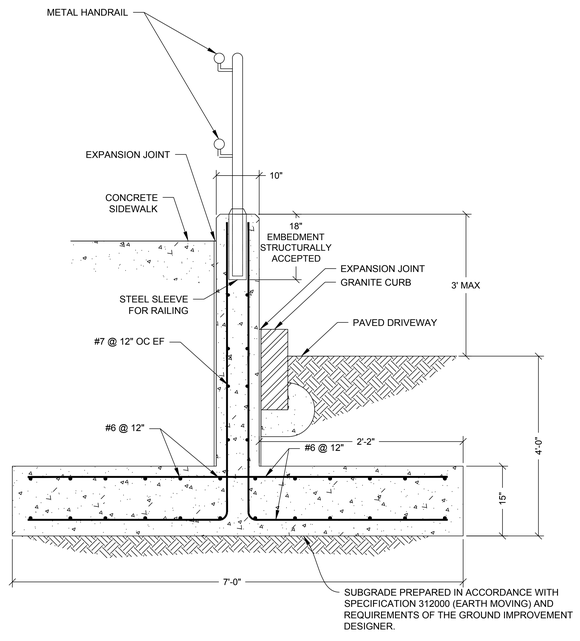
2 RETAINING WALL B

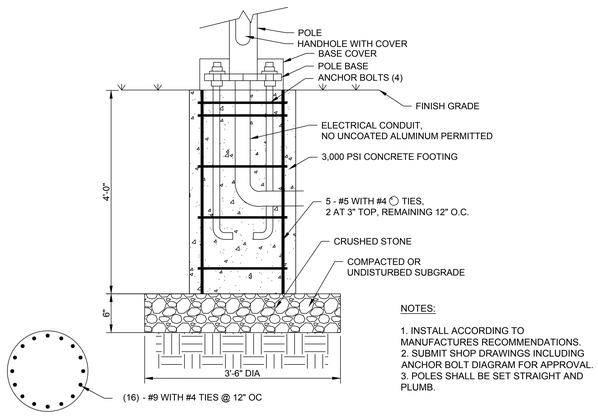
NOT TO SCALE



NOTE: GROUND IMPROVEMENT ELEMENTS WILL BE REQUIRED BENEATH ALL CAST-IN-PLACE CONCRETE WALLS. THE GROUND IMPROVEMENT DESIGNER IS RESPONSIBLE FOR THE LAYOUT, DIMENSIONS, AND TYPE OF GROUND IMPROVEMENT ELEMENTS. THE GROUND IMPROVEMENT DESIGNER MAY REQUIRE A MINIMUM THICKNESS OF IMPORTED GRANULAR FILL OR CRUSHED STONE BENEATH FOUNDATION ELEMENTS. REFER TO TO THE "EARTHMOVING" AND "GROUND IMPROVEMENT" SPECIFICATIONS FOR ADDITIONAL INFORMATION.

3 RETAINING WALL C

NOT TO SCALE

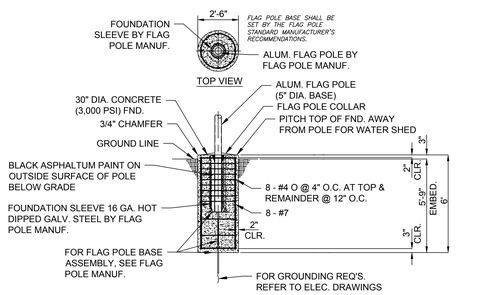


NOTES:

1. INSTALL ACCORDING TO MANUFACTURES RECOMMENDATIONS.
2. SUBMIT SHOP DRAWINGS INCLUDING ANCHOR BOLT DIAGRAM FOR APPROVAL.
3. POLES SHALL BE SET STRAIGHT AND PLUMB.

4 LIGHT POLE FOOTING DETAIL

NOT TO SCALE



NOTE: REFER TO FLAG POLE MANUFACTURER'S INSTALLATION MANUAL FOR ADDITIONAL INFO.

FLAG POLE FOUNDATION DETAIL

5 FLAGPOLE FOOTING DETAIL

NOT TO SCALE

project name/owner's name

AREA A-7 POLICE STATION - EAST BOSTON

CITY OF BOSTON

project identification number

architect

LEERS WEINZAPFEL ASSOCIATES ARCHITECTS, INC.

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Boston, Massachusetts 02111
617.423.5711

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(978) 923-0400

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7101

COMMONWEALTH OF MASSACHUSETTS
DANIELLE H. SPICER
CIVIL
No. 49367
REGISTERED PROFESSIONAL ENGINEER
1/4/2019

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date

01/04/2019

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JR

drawn by

ED

scale

sheet title

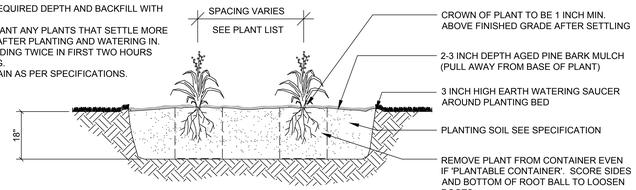
DETAILS VI

sheet number

C-11

NOTES:

1. EXCAVATE TO REQUIRED DEPTH AND BACKFILL WITH PLANTING SOIL.
2. RAISE AND REPLANT ANY PLANTS THAT SETTLE MORE THAN 2 INCHES AFTER PLANTING AND WATERING IN.
3. WATER BY FLOODING TWICE IN FIRST TWO HOURS AFTER PLANTING.
4. WATER & MAINTAIN AS PER SPECIFICATIONS.

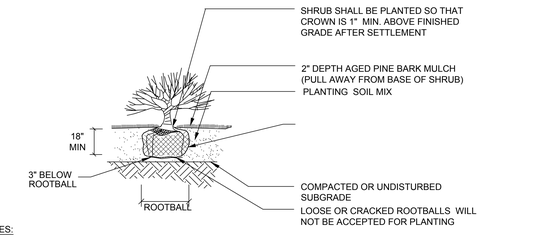


NOTES:

FOR PLANTING SOIL IN BIORETENTION AREA SEE DETAIL 7 SHEET C-14

1 GROUNDCOVER/PERENNIAL

NOT TO SCALE



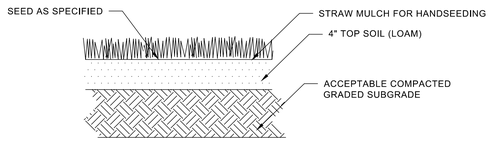
NOTES:

1. EXCAVATE TO REQUIRED DEPTH AND BACKFILL WITH PLANTING SOIL.
2. RAISE AND REPLANT ANY PLANTS THAT SETTLE MORE THAN 2 INCHES AFTER PLANTING AND WATERING IN.
3. WATER BY FLOODING TWICE IN FIRST TWO HOURS AFTER PLANTING.
4. WATER & MAINTAIN AS PER SPECIFICATIONS.

COMPLETELY REMOVE BURLAP AND LACING. NO SYNTHETIC BURLAP IS TO BE PERMITTED. FOR CONTAINERIZED PLANTS, REMOVE CONTAINER PRIOR TO PLANTING. SCORE SIDES AND BOTTOM OF ROOT BALL TO LOOSEN ROOTS.

2 TYPICAL SHRUB PLANTING

NOT TO SCALE



3 LOAM AND MEADOW SEED

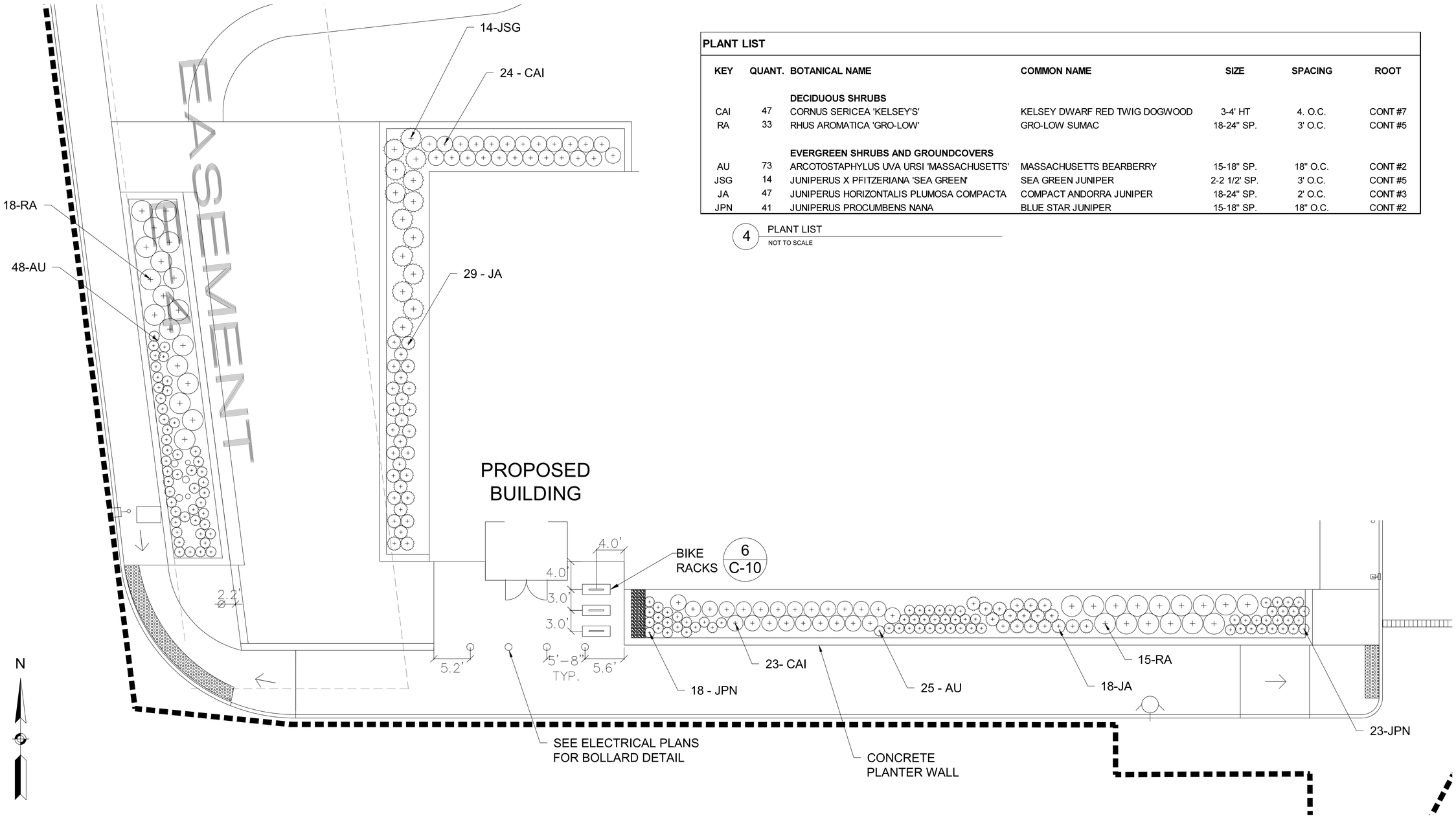
NOT TO SCALE

PLANT LIST

KEY	QUANT.	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	ROOT
		DECIDUOUS SHRUBS				
CAI	47	CORNUS SERICEA 'KELSEY'S'	KELSEY DWARF RED TWIG DOGWOOD	3-4' HT	4. O.C.	CONT #7
RA	33	RHUS AROMATICA 'GRO-LOW'	GRO-LOW SUMAC	18-24" SP.	3' O.C.	CONT #5
		EVERGREEN SHRUBS AND GROUNDCOVERS				
AU	73	ARCOTOSTAPHYLUS UVA URSI 'MASSACHUSETTS'	MASSACHUSETTS BEARBERRY	15-18" SP.	18" O.C.	CONT #2
JSG	14	JUNIPERUS X PFITZERIANA 'SEA GREEN'	SEA GREEN JUNIPER	2-2 1/2' SP.	3' O.C.	CONT #5
JA	47	JUNIPERUS HORIZONTALIS PLUMOSA COMPACTA	COMPACT ANDORRA JUNIPER	18-24" SP.	2' O.C.	CONT #3
JPN	41	JUNIPERUS PROCUMBENS NANA	BLUE STAR JUNIPER	15-18" SP.	18" O.C.	CONT #2

4 PLANT LIST

NOT TO SCALE



5 PLAN DETAIL

1"=5'

HOR. SCALE IN FEET

0 5 12.5 25

project name/owner's name

AREA A-7 POLICE STATION - EAST BOSTON

CITY OF BOSTON

project identification number

architect

LEERS WEINZAPFEL ASSOCIATES ARCHITECTS, INC.

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Boston, Massachusetts 02111
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consultant information

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7101

COMMONWEALTH OF MASSACHUSETTS
DANIELLE H. SPICER
CIVIL
No. 46067
REGISTERED PROFESSIONAL ENGINEER
1/4/2019

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key plan

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date

01/04/2019

checked by

JR

drawn by

ED

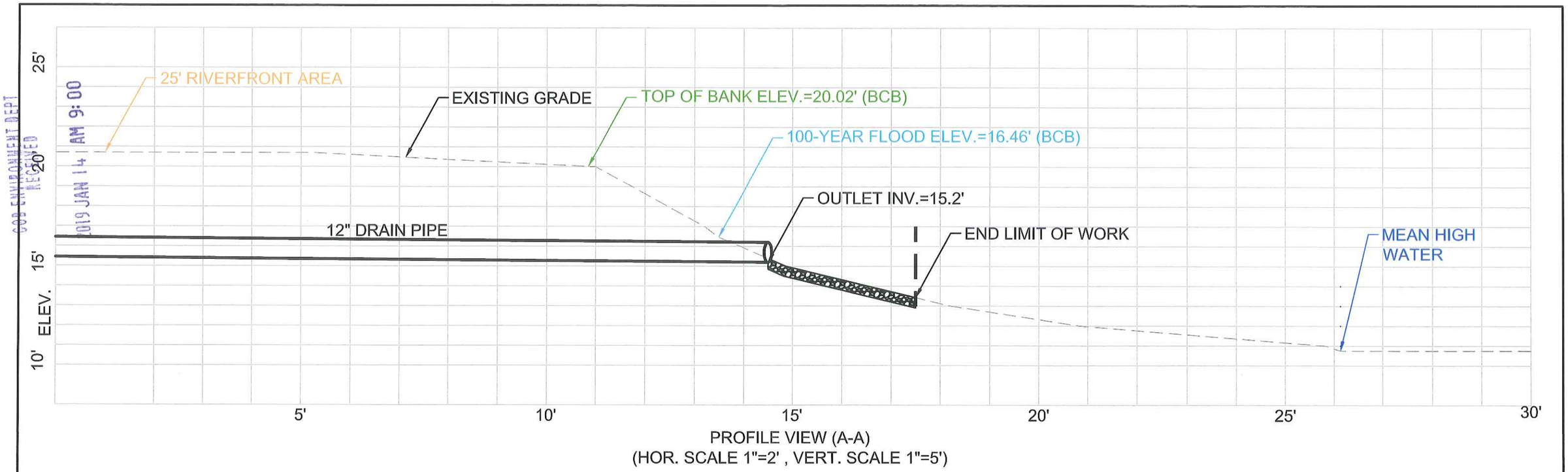
scale

sheet title

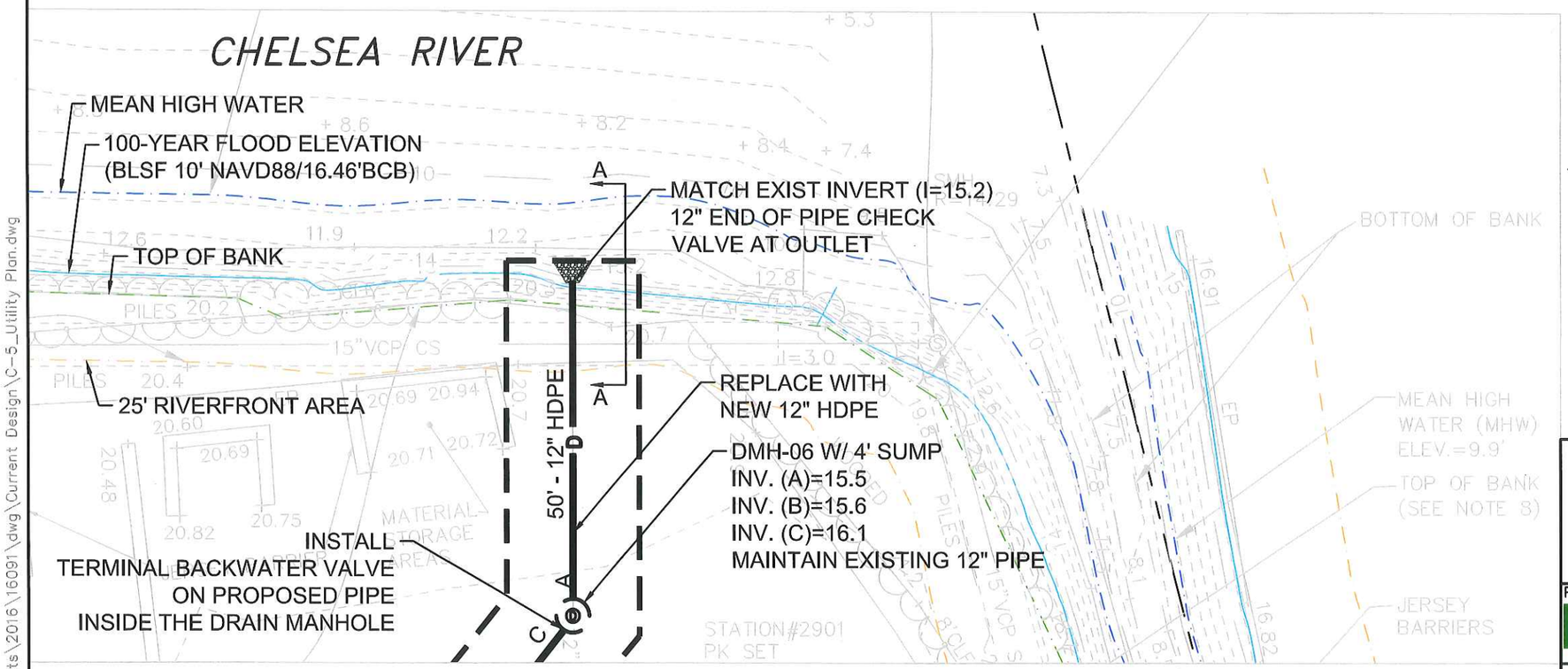
DETAILS VII

sheet number

C-12



PROFILE VIEW (A-A)
(HOR. SCALE 1"=2' , VERT. SCALE 1"=5')



PLAN VIEW

0 20 50
SCALE: 1" = 20'

N

NOTE: PIPE TO BE REPLACED IN KIND AND LAND COVER TO MATCH EXISTING GRADES.

COMMONWEALTH OF MASSACHUSETTS
DANIELLE H. SPICER
CIVIL
No. 46067
REGISTERED PROFESSIONAL ENGINEER
1/14/2019

EXISTING OUTFALL PROFILE VIEW AND PLAN VIEW

338 EAST EAGLE STREET
BOSTON, MA

PREPARED BY:
GREEN INTERNATIONAL AFFILIATES, INC.
CIVIL AND STRUCTURAL ENGINEERS
239 LITTLETON RD, WESTFORD, MA (978) 923-0400
24 ALBION RD, LINCOLN, RI (401) 305-7895

PREPARED FOR:
CITY OF BOSTON
1 CITY HALL SQUARE
BOSTON, MA 02201

SCALE: AS NOTED	PROJECT NO. 16091	FIGURE 8
DATE: 1/11/2019	DRAWN BY: ED	
REVISED:	CHECKED BY: DS	

F:\Projects\2016\16091\dwg\Current Design\C-5_Utility Plan.dwg

STORMWATER REPORT

AREA A-7 EAST BOSTON POLICE STATION
338 East Eagle Street
Boston, Massachusetts

Prepared for

City of Boston on behalf of The Leers Weinzapfel Associates Architects, Inc.

November 20, 2018

Prepared by

GREEN INTERNATIONAL AFFILIATES, INC.
Civil and Structural Engineers

Building Strong Client Relationships Through Engineering Excellence

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EXECUTIVE SUMMARY

On behalf of The City of Boston Public Facilities Department (PFD) and The Leers Weinzapfel Associates Architects, Inc, Green International Affiliates, Inc. (Green) is submitting this Stormwater Management Report to accompany the Notice of Intent Application to the Boston Conservation Commission for the proposed Area A-7 Police Station located at the intersection of East Eagle Street and Condor Street in East Boston, MA.

The project includes construction of a new 13,900 SF Area A-7 Police Station building with a sally port access. Located along the Chelsea River in East Boston, the new police station will act as a mediator between the three major use groups of that part of the city: industrial, commercial, and residential. It will be a LEED certified building and will comply with the State's Chapter 91 environmental regulations.

The new station strives to be welcoming to the public but must also be a highly secure facility, housing detective offices and a detention area. One gated sally port drive and adjacent exit-only driveway will be accessed via East Eagle Street. One ADA accessible public parking area for five spots and a separate secured parking lot for forty-nine private spots will be accessed via Condor Street. New timber fence sound barrier will separate our project site and adjacent DPW property.

The project will result in a decrease in impervious area and represents a "Redevelopment" project under the MassDEP Stormwater Management Standards and therefore subject to meet Standards 2, 3, 4, 5 and 6 to the maximum extent practicable. This project provides an opportunity to improve the quality of stormwater runoff that currently discharges via overland flow with little to no treatment directly to the Chelsea River or abutting streets.

The following report was created in accordance with the "Massachusetts Stormwater Handbook" last revised in January 2008. The report is organized into sections that correspond to the categories listed in the "Massachusetts Stormwater Report Checklist." The checklist is included in *Appendix A – Checklist for Stormwater Report* of this report. The following is a more detailed description of the existing and proposed drainage areas and the design methodology for this project.

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1.0 PROJECT DESCRIPTION

The City of Boston plans to build a new 13,900 SF Area A-7 Police Station building. The major design elements of the new site will be a new facility with new utility services tying to the existing utilities along East Eagle Street, which is to the south of the site, two new driveways, associated parking, vehicle storage area and a subsurface system beneath the parking area. *Figure 1 – USGS Map* shows the project location.

1.1 Topography, Geology and Soils

The proposed site is adjacent to the City of Boston Public Works Department auxiliary yard used for storage of equipment, vehicles, and road maintenance materials including sand, salt, and asphalt millings. East Eagle Street borders the site to the south, Condor Street to the west, an existing fabric salt shed and paved parking and yard areas, and to the north by Chelsea River. The main entrance to the new facility will be via a new driveway off Condor Street. The high point of the site is at the intersection of East Eagle Street and Condor Street at elevation 29.68, and then the site slopes down to the northeast towards Chelsea River (approximately an 8' drop in slope across the site). An aerial of the site is shown in *Figure 2 – Aerial Map.*

The Natural Resources Conservation Service (NRCS) Soil Survey of Middlesex County, Massachusetts defines majority of the soils within the limit of work as Unclassified Urban Land (Udorthents) with portion of Newport-Urban Land complex with Hydrologic Soil Group (HSG) "B". *Table 1.1 – NRCS Soil Classification* lists the soil map designations, soil names and the hydrologic soil groups present on the site.

Table 1.1 – NRCS Soil Classification

MAP DESIGNATION STATE/PUBL. SYM.	SOIL NAME	HYDROLOGIC SOIL GROUP
627C	Newport-Urban land complex, 3 to 15 percent slopes	B
603	Urban land, 0 to 3 percent slopes	
655	Udorthents, wet substratum	

The mapped soils in the vicinity of the site are shown in *Figure 3 – Soils Map*.

A comprehensive subsurface exploration program including borings, test pits and monitoring wells was conducted as part of the design in January and March 2017 by Weston and Sampson. Figure 3 provided in the W&S report was done based on an earlier layout; however, all boring and test pit info is still applicable. Ten borings and nine test pits were performed in all. In addition, Standard Penetration Tests (SPTs) were performed at the sampling intervals in general accordance with ASTM-D1586. Groundwater was encountered within all borings. The observed seasonal high groundwater in test pits within or adjacent to the subsurface system (TP-6 through TP-9) range from elevation 10 (BCB) to 12.5 (BCB) when observed. Water levels collected on June and July 2016 in monitoring wells within adjacent to the subsurface system (MW-2, MW-4 and MW-5) range from elevation 12.16 (BCB) to 12.48 (BCB). To be conservative, we used the highest elevation between both monitoring wells and test pits (12.5) as a seasonal high groundwater elevation. Refer to *Appendix E – Soil Information* for the Geotechnical Engineering Report prepared by Weston and Sampson, dated 4/05/2017 and a copy of the NRCS Soil Survey.

2.0 LOW IMPACT DEVELOPMENT MEASURES CONSIDERED

To the extent practicable, the Massachusetts Stormwater Management Regulations require that the project implement environmentally sensitive site design and Low Impact Development (LID) techniques to manage stormwater.

Key features of LID stormwater management systems include implementing practices that maintain a site's existing hydrology, using decentralized practices to manage stormwater close to the source of generation, and maximizing onsite infiltration to reduce runoff and landscape watering requirements.

The following LID techniques/best management practices are specified in the proposed development program to mitigate the increase in stormwater runoff from the Site:

- Reduce impervious area
- No permeant disturbance to adjacent wetland resource areas, and actually providing some restoration of existing outfall.

3.0 STANDARD 1: NO NEW UNTREATED DISCHARGES

The Massachusetts Stormwater Handbook requires that the project demonstrate that there are no new untreated discharges and that new discharges will not cause erosion or scour to downstream wetlands.

The Project will not discharge untreated stormwater into surface water, cause erosion to surface water or wetland resource areas. The proposed stormwater subsurface storage chambers will utilize outlet control structures to discharge upgradient of surface waters; therefore, all runoff will be treated prior to discharge.

The existing 12” outfall into Chelsea River, which is currently in poor condition, will be replaced and no new direct discharges are proposed.

4.0 STANDARD 2: PEAK RATE ATTENUATION

4.1 Existing Conditions

The existing site within the limit of work is entirely developed and consists of paved parking lot, driveway, debris and some isolated vegetated areas. The existing vegetated areas are in fair condition. The site ground surface elevations sloping steady towards Chelsea River with low point in northeastern corner (approximately an 8' grade drop diagonally from southwestern corner).

Since the project discharges to the Chelsea River, which is in a coastal area *this Standard may be waived for discharges to land subject to coastal storm flowage as defined in 310 CMR 10.04* as noted on page 5 in Volume I, Chapter 1 of the MA Stormwater Standards. However, peak rate attenuation summaries have been provided per the request of the Boston Water Sewer Commission. The following is a summary of the proposed stormwater design with regard to peak rate attenuation.

The existing site discharges runoff to three design points. The majority of site discharges to Chelsea River in the northeastern corner of the site (Design Point 1). The western part of site discharges directly into Condor Street (Design Point 2) and the southern part of site discharges directly into East Eagle Street (Design Point 3).

The existing drainage area is delineated in *Figure 6 – Existing Conditions Watershed Plan*. For this hydrologic analysis, the following assumptions were made:

- When the watershed boundary fell outside of the limit of work an arbitrary line was delineated as the watershed boundary.
- The total watershed area for the existing conditions was used as the comparison base for the watershed area in the proposed conditions.

4.1.1 Existing Tributary Areas

Brief descriptions of each tributary area are below (see *Table 4.2.1 – Existing Conditions Drainage Area Characteristics* for drainage characteristics for each drainage area):

Drainage Area EDA-1

Drainage Area EDA-1 consists of mostly paved area, some debris piles and isolated vegetated areas within the site. Stormwater runoff discharges via overland flow from the high point formed along the existing retaining wall along the west and eventually discharges into the Chelsea River. There is an existing 12" outfall that discharges directly into the Chelsea River that will be replaced in-kind for the last 50 feet.

Drainage Area EDA-2

Drainage Area EDA-2 consists of paved area and debris pile along western site boundary. Stormwater runoff discharges via overland flow from the high point formed along the existing retaining wall and discharges directly into the Condor Street, where there is an underground closed drainage system.

Drainage Area EDA-3

Drainage Area EDA-2 consists of paved area and debris pile at the southern corner along East Eagle Street. Stormwater runoff discharges via overland flow from the high point on the southern side of the parcel at East Eagle Street and discharges directly into the existing combined sewer overflow (CSO) system within East Eagle Street.

4.2 Existing Drainage Area Summary

The following tables summarizes the existing conditions drainage areas:

Table 4.2.1 – Existing Conditions Drainage Area Characteristics

DRAINAGE AREA	AREA (ACRES)	CURVE NUMBER	TC (MIN)
EDA-1	2.22	94	6.0
EDA-2	1.18	98	6.0
EDA-3	0.28	98	6.0
Total	3.679	95	-

4.2.1 Peak Discharge Runoff Rates

The existing peak flow rates, tributary to the design points, were calculated for the 2-, 10-, 25-, and 100-year storm events. Results are presented in *Table 4.3.2 – Peak Rates of Runoff*.

4.3 Proposed Conditions

4.3.1 Proposed Tributary Areas

The City of Boston plans to construct a new 13,900 SF Police Station building. The project's impervious area will consist of roof areas, sidewalks, parking, utility concrete pads, and driveway. Overall the project will result in a decrease in impervious area.

The stormwater management system has been designed to improve stormwater conditions at the site by capturing and infiltrating runoff from impervious areas during storm events. The stormwater management system has been designed to mitigate increases in the peak rate of stormwater runoff. The site is considered redevelopment and will meet the Stormwater Standards to the full extent.

The proposed drainage system is designed to maintain the characteristics of the existing watershed areas. *Figure 7 – Proposed Conditions Watershed Plan* shows the proposed drainage areas. The proposed stormwater management analysis divides the site into six watershed areas that discharge to three design points. The points of analysis are the same in the proposed condition as in the existing condition.

The following briefly describes the proposed drainage areas, as shown on *Figure 7 – Proposed Conditions Watershed Plan.*

Drainage Area PDA-1A

Drainage Area PDA-1A consists of the northernmost side of the parcel bordering the Chelsea River that contains both paved area and a grass area that will remain as is. Stormwater runoff from this area will sheet flow directly into the Chelsea River (DP-1) as is does under existing conditions.

Drainage Area PDA-1B

Drainage Area PDA-1B includes the proposed building, parking lot, driveways, and sidewalk that is adjacent to the building. Stormwater runoff is conveyed through catch basins, trench drains and a water quality proprietary pretreatment structure prior to discharging into the subsurface infiltration system. The stormwater from the infiltration system eventually discharges through an outlet control structure that will control the rate of runoff leaving the subsurface system. Runoff that is not infiltrated, will eventually discharge to the existing 12" outfall into Chelsea River located in the northeastern portion of the parcel (DP-1).

Drainage Area PDA-2A

Drainage Area PDA-2A consists of remaining paved area outside of limit of work on the Eversource parcel that will remain as is. The stormwater will continue to discharge via sheet flow into the existing stormwater system along Condor Street (DP-2).

Drainage Area PDA-2B

Drainage Area PDA-2B consists of some pavement, a landscaped area with sidewalk and a plaza area adjacent to the western side of building. Runoff from this area will discharge via a closed drainage system via catch basins, a proprietary treatment structure prior to tying into the drainage system within Condor Street (DP-2).

Drainage Area PDA-3A

Drainage Area PDA-3A consists of the paved area along the south side of the project that will sheet flow from the proposed retaining wall into the closed drainage system within East Eagle Street (DP-3).

Drainage Area PDA-3B

Drainage Area PDA-3B consists of the paved sidewalk adjacent to East Eagle Street and a portion of the driveway that the site is unable to capture and re-route through the site. Runoff will sheet flow into the closed drainage system within East Eagle Street, which is a combine sewer system that has a tide gate approximately 400' east of the project that discharges directly into the Chelsea River. .

4.4 Proposed Drainage Area Summary

The following table summarizes the proposed conditions drainage areas including the pertinent information used for the hydrologic analysis:

Table 4.3.1 – Proposed Conditions Drainage Area Characteristics

DRAINAGE AREA	AREA (ACRES)	CURVE NUMBER	TC(MIN)
PDA-1A	1.110	97	6.0
PDA-1B	1.158	98	6.0
PDA-2A	0.796	97	6.0
PDA-2B	0.252	90	6.0
PDA-3A	0.168	98	6.0
PDA-3B	0.195	97	6.0
Total	3.679	96	-

4.4.1 Peak Discharge Runoff Rates

The peak flow rates were calculated for the 2-, 10-, 25-, and 100-year storm events under existing conditions and proposed conditions. The entirety of the site is considered Redevelopment, and it is required to meet this standard to the maximum extend practical. The stormwater management system has been designed to mitigate the peak rate of stormwater runoff for the 2-, 10-, 25-, and 100-year storm.

There is a slight increase in peak rates for DP-3 (east Eagle Street) due to the widening of sidewalk that sheet flows directly into the street. It is not feasible to capture and collect this additional runoff as well as this increase is negligible and discharges into a combined sewer system within East Eagle Street that discharges to the Chelsea River approximately 300‘ downstream of our site; therefore, there will be not any downstream flooding increases. These results are demonstrated in the Hydrologic Calculations in Appendix B. The following tables represents a comparison between existing and proposed conditions of the peak rates of runoff from the proposed development site tributary to the discharge point.

Table 4.3.2 – Peak Rates of Runoff (cfs)

DESIGN POINT		2-YEAR STORM	10-YEAR STORM	25-YEAR STORM	100-YEAR STORM
DP-1 (Chelsea River)	Existing	5.98	9.09	10.85	13.47
	Proposed	3.84	7.50	9.19	11.00
DP-2 (Condor Street)	Existing	3.46	5.05	5.96	7.32
	Proposed	2.70	4.03	4.89	5.93
DP-3 (East Eagle street)	Existing	0.82	1.21	1.42	1.75
	Proposed	1.01	1.49	1.79	2.16

4.5 Methodology and Design Criteria

4.5.1 Hydrologic Model Description

The drainage analysis was performed using the Soil Conservation Service (SCS) TR-55 and TR-20 methodologies and the computer program HydroCAD 10.0 by HydroCAD Software Solutions, LLC.

4.5.2 Design Storms and Rainfall Depth

The analysis was performed on the 2-, 10-, 25-, and 100-year frequency rainfall events. Rainfall depths were taken from the TP-40 rainfall data. The events were based on the 24-hour, Type-III duration storm for Suffolk County, MA.

The following rainfall depths were used in the calculations:

Storm Event	Rainfall Depth
2-Year	3.20 inches
10-Year	4.60 inches
25-Year	5.50 inches
100-Year	6.60 inches

4.5.3 Time of Concentration

The 'time of concentration' (Tc) for each watershed was determined by finding the time necessary for runoff to travel from the hydraulically most distant point in the watershed to the point of concentration. The travel path was drawn based on the topography and the time was calculated using the SCS TR-55 Method and HydroCAD. A minimum Tc of 6.0 minutes was used.

4.5.4 Curve Numbers

Curve numbers were developed for each of the different use categories and hydrologic soil group types within each watershed area. The curve numbers were based on the SCS TR-55 methodology and are included in the HydroCAD input and output.

5.0 STANDARD 3: STORMWATER RECHARGE

Standard 3 requires that three computations or demonstrations be fulfilled in order to satisfy the stormwater recharge requirements; they are as follows:

- Impervious Area
- Required Recharge Volume
- Bottom Area Sizing for Infiltration Structures

As stated previously, this project qualifies as "Redevelopment". The proposed drainage design provides infiltration using the Static method for a specific volume based on the hydrologic soils group over the impervious areas using the Rawls Tables. The recharge calculations for the project area include the total required recharge based on the post-development impervious coverage and soil type. The recharge calculations also include a drawdown calculation showing that the infiltration BMP will drain within 72 hours. Calculations showing how the proposed development will meet the recharge requirements are included in *Appendix C – Recharge/Water Quality and TSS Calculations* of this report.

Most of the soils toward the Chelsea River side are 'Udorthents, wet substratum' based on the NRSC Soil Survey. The remaining soils are classified as Hydrologic Soil Group "B". The Geotech report is consistent with identifying the soils with a Hydrologic Soil Group of "B".

Subsurface soil and groundwater information obtained through a subsurface investigation was performed in January and March 2017 by Weston and Sampson. As noted previously in section 1.1, to be conservative, we used the highest elevation between both monitoring wells and test pits (12.5BCB) as a seasonal high groundwater elevation. The lowest grade of subsurface system (bottom of stone) is 16.5BCB exceeding 2-feet of separation to possible seasonal high groundwater.

6.0 STANDARD 4: WATER QUALITY

Standard 4 requires that all stormwater management systems be designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS). The Massachusetts Stormwater Handbook states that this standard is met when:

- Suitable practices for source control and pollution prevention are identified in a long-term pollution prevention plan, and thereafter are implemented and maintained;
- Structural stormwater best management practices are sized to capture the required water quality volume as determined in accordance with the Massachusetts Stormwater Handbook; and
- Pretreatment is provided in accordance with the Massachusetts Stormwater Handbook.

6.1 Long Term Pollution Prevention Plan

The long-term pollution prevention measures are combined with the Operation and Maintenance Plan, which includes the removal of sediment and pollutants using both structural and non-structural controls. See Section 11 of this report for additional information on Operation and Maintenance requirements for the site.

6.2 Water Quality Treatment Volume

The site is not located within an area considered a "critical area" and therefore it is subject to a "Water Quality Depth" of one-half (0.5) inch when computing the required water quality treatment volume. However, Boston Water and Sewer Commission require a water quality depth of one-inch (1"). Calculations showing the required and provided water quality volume are included in *Appendix C - Recharge/Water Quality Calculations* of this report.

6.3 TSS Removal Computations

Standard 4 requires that a minimum of 80% Total Suspended Solids (TSS) removal rate be achieved under proposed conditions. This is achieved with the installation of catch basins, proprietary structures and a subsurface infiltration basin. two bioretention areas. The TSS calculation for these watersheds is included in *Appendix C – Water Quality/Recharge Calculations*.

7.0 STANDARD 5: LAND USES WITH HIGHER POTENTIAL POLLUTANT LOADS

Because the Project does not qualify as a Land Use with Higher Potential Pollutant Loads (LUHPPL), this standard is not applicable.

8.0 STANDARD 6: CRITICAL AREAS

This standard is not applicable, as the Site does not discharge into a Zone II, IWPA of a public water supply, Outstanding Resource Area (ORW) or to any Areas of Critical Environmental Concern (ACECs) as defined on the latest DEP list of ACECs within Massachusetts.

9.0 STANDARD 7: REDEVELOPMENT

The entirety of the site is considered Redevelopment, and it is required to meet this standard to the maximum extend practical.

This project provides an opportunity to significantly improve the quality of stormwater runoff discharged to the Chelsea River. This project reduces the amount of impervious surface immediately adjacent to the River as well as incorporates several best management practices into the stormwater design. Overall, the stormwater discharged to the Chelsea River will result in an improvement in water quality. A redevelopment checklist is included as an Appendix of this report.

10.0 STANDARD 8: CONSTRUCTION PERIOD POLLUTION PREVENTION AND EROSION & 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) shall be developed and implemented.

Construction period pollution prevention and erosion and sedimentation control measures will be implemented at the project site to control construction related impacts during construction and land disturbance activities. The General Contractor for the project will be responsible for implementation of the construction period controls.

The project will disturb more than one acre of land during the construction process and will require coverage under the NPDES Construction General Permit issued by the Environmental Protection Agency. As a result, a stormwater pollution prevention plan (SWPPP) will be required. The SWPPP document will satisfy the requirements of the Construction General Permit and the construction period erosion, sedimentation, and pollution prevention plan requirements outlined in Standard 8 of the Massachusetts Stormwater Handbook. A draft SWPPP has been prepared for inclusion with this stormwater report in Appendix G.

Without proper erosion and sediment control measures, grading, filling and installation of structures may cause erosion and sedimentation, resulting in temporarily increased turbidity and suspended solid loads. Runoff from construction sites may also transport sediment to downstream watercourses, where sediment deposition and accumulation will occur as flow velocities decrease. Erosion and sedimentation controls will be employed to prevent the erosion and transport of sediment into resource areas during the earthwork and construction phases of the project. Erosion and sedimentation control measures will be installed prior to site excavation or disturbance and will be maintained throughout the construction period.

11.0 STANDARD 9: OPERATION AND MAINTENANCE/LONG-TERM POLLUTION PREVENTION PLAN

Standard 9 – A long-term operation and maintenance plan shall be developed and implemented to ensure that the stormwater management system functions as designed.

The goal of the Operation and Maintenance (O&M)/Long-Term Pollution Prevention Plan (LTPPP) is not only to protect resources on-site or nearby, but also to protect resources in the region that may be affected by the activities at the site. Water quality treatment measures and the implementation of Best Management Practices (BMPs) for structural controls will result in the treatment of site stormwater and the removal of a minimum of 80 percent of the total suspended solids (TSS) load in runoff prior to discharge from most of the site, consistent with Massachusetts DEP's TSS removal standard.

The City of Boston will be responsible for the operation and maintenance of the stormwater management system.

Non-structural pollutant controls include encouraging the use of salt substitutes for maintenance of paved areas; sweeping of pavement areas on a regular basis; use of slow-release organic fertilizers on landscaped areas to limit the amount of nutrients that could enter downstream resource areas, and employment of integrated pest management practices using biological controls and minimizing use of chemical alternatives. Structural pollutant controls include infiltration systems. Below is a description of the minimum requirements of the O&M Plan.

11.1 Non-Structural Pollutant Controls

The proposed stormwater management system is designed to protect the runoff water quality through the removal of sediment and pollutants. Non-structural pollutant controls used to separate and capture stormwater pollutants are described below.

11.1.1 Pavement/Concrete Maintenance

Long-term management practices will include regular sweeping of pavement areas on the project site. The sweeping program will remove contaminants directly from paved surfaces to prevent their release into the drainage system. Street sweeping has been shown to be an effective initial treatment for reducing pollutant loadings in stormwater.

Standard Asphalt Pavement Maintenance

Sweep standard asphalt pavement areas at least four times per year with a rotary broom sweeping unit and properly dispose of removed material. Recommended sweeping schedule:

- Feb/Mar
- Apr/May
- Aug/Sep
- Oct/Nov

More frequent sweeping of paved surfaces will result in less accumulation in catch basins, less frequent cleaning of subsurface structures, and less disposal costs.

11.1.2 Deicing Chemicals

Use of road salt (sodium chloride) for maintenance of paved areas will be limited, and use of salt substitutes, such as calcium magnesium acetate (CMA), will be encouraged. These practices will limit the amount of dissolved pollutants in runoff and minimize potential impacts of deicing chemicals on downstream resource areas.

11.2 Best Management Practices (BMPs)

Several types of structural best management practices (BMPs), in various combinations, are proposed to treat stormwater generated on the site. These measures include: deep sump catch basins, water quality control structures as pretreatment, a subsurface infiltration system and outlet control structure. Stormwater BMPs implemented at the site are briefly described below and are detailed on the Plans.

The proposed stormwater management system is designed to protect runoff water quality through the removal of sediment and pollutants. Minimum operation and maintenance requirements for the structural pollutant controls used to separate and capture stormwater pollutants are described below.

11.2.1 Catch Basins

New catch basins specified for the project are constructed to trap debris, sediments, and floating contaminants. The proper removal of sediments and associated pollutants and trash occurs only when catch basin inlets and sumps are cleaned out regularly. With proper maintenance catch basins are effective traps for large sediment, trash and debris that could otherwise be deposited in the downstream stormwater management features and/or resource areas.

11.2.2 Hydrodynamic Separators (Water Quality Structures)

The stormwater management system has two (2) proprietary water quality structures. The units efficiently and effectively lower sediment and hydrocarbon loadings from paved areas and provide 25% total suspended solids removal for pretreatment and 75% removal as treatment devices (with catch basins as pretreatment).

Regular maintenance and cleaning of this unit will assure adequate performance. Inspection of the devices will occur monthly for the first three months after construction. After the initial three-month period, all water quality units will be inspected at least twice per year and cleaned a minimum of at least once per year (when sediment reaches 8" in depth) or as the manufacturer requires. The units will be inspected immediately after any oil, fuel or chemical spill. A licensed waste management company should remove oil and sediment and dispose responsibly. Manufacturer instructions will be followed and contact with the manufacturer will occur if the units are malfunctioning.

11.2.3 Infiltration BMPs

The infiltration BMPs are used to detain and infiltrate roadway and rooftop runoff. This subsurface storage chamber system will have a water quality pre-treatment device (crushed stone diaphragm) to protect the infiltration bed from clogging. To maintain functionality, both the pre-treatment devices and subsurface infiltration systems require regular inspection and cleaning.

Inspections and Cleaning

- The subsurface infiltration systems will be inspected at least once each year by removing the manhole/access port covers and determining the thickness of sediment that has accumulated in the system.
- If sediment is more than six inches deep, it must be suspended via flushing with clean water and removed using a vactor truck.
- Emergency overflow pipes will be examined at least once each year and verified that no blockage has occurred.
- Systems will be observed after rainfalls to see if they are properly draining.

11.2.4 Stormwater Outfalls

The stormwater drainage systems share one existing outfall location where treated stormwater is discharged upgradient of surface wetlands.

- Inspect outfall location monthly for the first three months after construction to ensure proper functioning and correct any areas that have settled or experienced washouts.
- Inspect outfalls annually after initial three-month period.
- Annual inspections should be supplemented after large storms, when washouts may occur.
- Maintain vegetation around outfalls to prevent blockages at the outfall.
- Remove and dispose of any trash or debris at the outfall.

12.0 STANDARD 10: PROHIBITION OF ILLICIT DISCHARGES

Standard 10 of the Massachusetts Stormwater Handbook prohibits illicit discharges to stormwater management systems. As stated in the handbook, "The stormwater management system is the system for conveying, treating, and infiltrating stormwater on-site, including stormwater best management practices and any pipes intended to transport stormwater to the groundwater, a surface water, or municipal separate storm sewer system. Illicit discharges to the stormwater management system are discharges that are not entirely comprised of stormwater."

Proponents of projects within the jurisdiction of the Wetlands Protection Act must demonstrate compliance with this requirement by submitting to the issuing authority an Illicit Discharge Compliance Statement verifying that no illicit discharges exist on the site and by including in the pollution prevention plan measures to prevent illicit discharges to the stormwater management system.

Section 9 of this report discusses how the project will prevent illicit discharges to the stormwater management system during construction.

Standard 10 also states that "The Illicit Discharge Compliance Statement must be accompanied by a site map that is drawn to scale and that identifies the location of any systems for conveying stormwater on the site and shows that these systems do not allow the entry of any illicit discharges into the stormwater management system. The site map shall identify the location of any systems for conveying wastewater and/or groundwater on the site and show that there are no connections between the stormwater and wastewater management systems and the location of any measures taken to prevent the entry of illicit discharges into the stormwater management system." Included with the Notice of Intent Submission is a Site Utility Plan that displays the location of all of the stormwater management components as well as other utilities (existing and proposed) on the project site and conforms to requirements of a "site map" to accompany the Illicit Discharge Compliance Statement.

An Illicit Discharge Compliance Statement is included in *Appendix F – Illicit Discharge Compliance Statement* of this Report.

13.0 COMPLIANCE WITH TOTAL MAXIMUM DAILY LOADS (TMDL)

The site discharges directly to Chelsea River, which discharges to the Boston Inner Harbor (MA70-02), which is listed as a Category 5 (waters requiring a TMDL) on the Massachusetts Year 2014 Integrated List of Waters.

No TMDL data has been recorded by EPA for this waterbody. The Environmental Protection Agency's Map, *2014 Waterbody Report Assessment for Chelsea River*, is included in *Appendix D – TMDL Information*.

FIGURES

- Figure 1 – USGS Map
- Figure 2 – Aerial Map
- Figure 3 – Soils Map
- Figure 4 – FEMA Map (included in NOI only)
- Figure 5 – Protected Resource Areas Map (included in NOI only)
- Figure 6 – Existing Conditions Watershed Plan
- Figure 7 – Proposed Conditions Watershed Plan

LEGEND:

APPROXIMATE LIMIT OF WORK

SCALE IN FEET

1000 0 1000 2000

ELEVATIONS IN METERS

USGS LOCUS MAP

338 EAST EAGLE STREET
BOSTON, MA

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CIVIL AND STRUCTURAL ENGINEERS
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24 ALBION RD, LINCOLN, RI (401) 305-7895

PREPARED FOR:
CITY OF BOSTON
1 CITY HALL SQUARE
BOSTON, MA 02201

SCALE: AS NOTED	PROJECT NO. 16091	FIGURE 1
DATE: 10/17/2018 REVISED:	DRAWN BY: ED CHECKED BY: DS	

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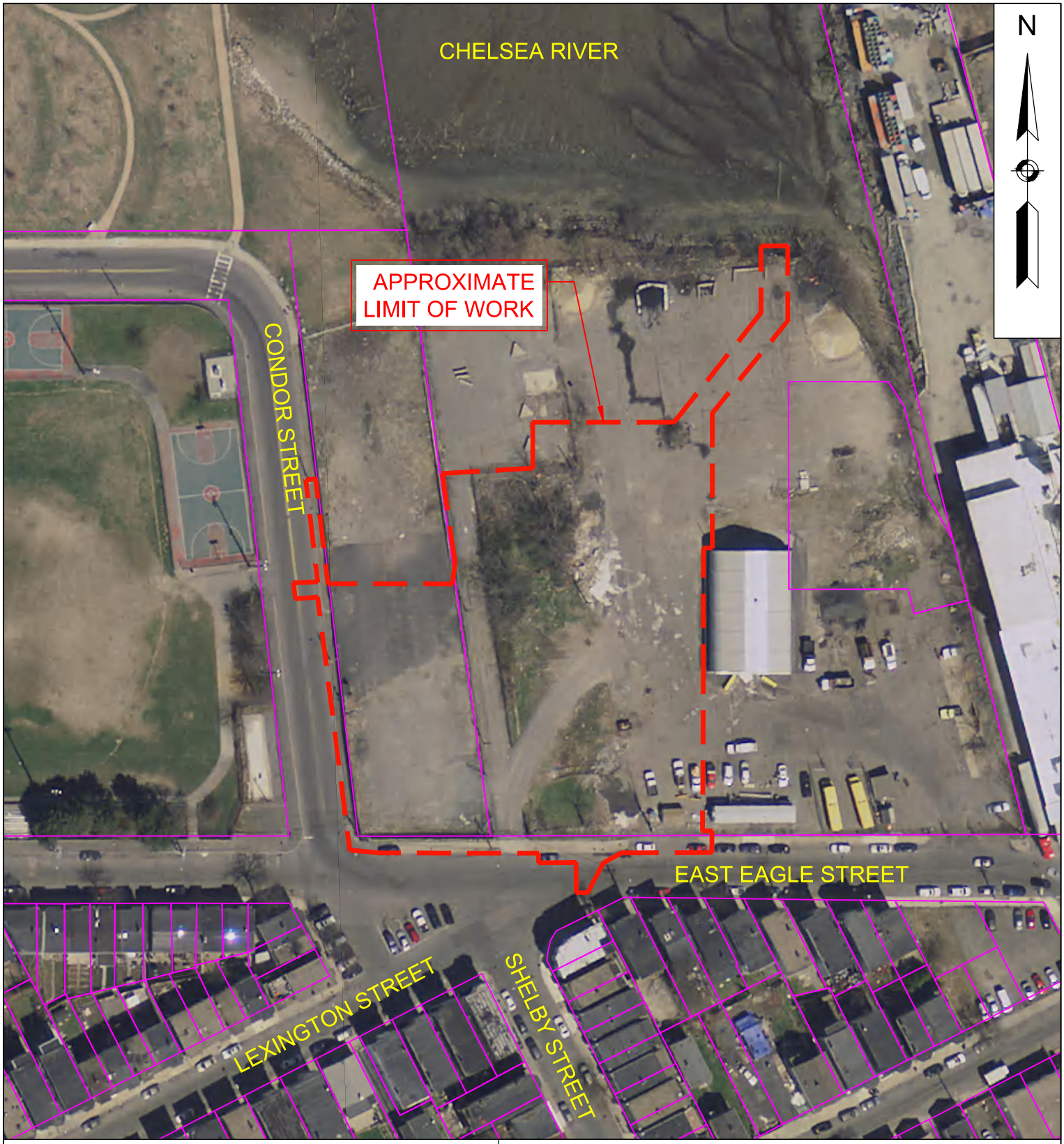

LEGEND:

APPROXIMATE LIMIT OF WORK

PARCEL BOUNDARY

NOTE: PARCEL BOUNDARY INFORMATION WAS TAKEN FROM MASSGIS WEBSITE.

HORIZONTAL GRAPHIC SCALE:

100 0 50 100

1" = 100'

AERIAL MAP

338 EAST EAGLE STREET
BOSTON, MA

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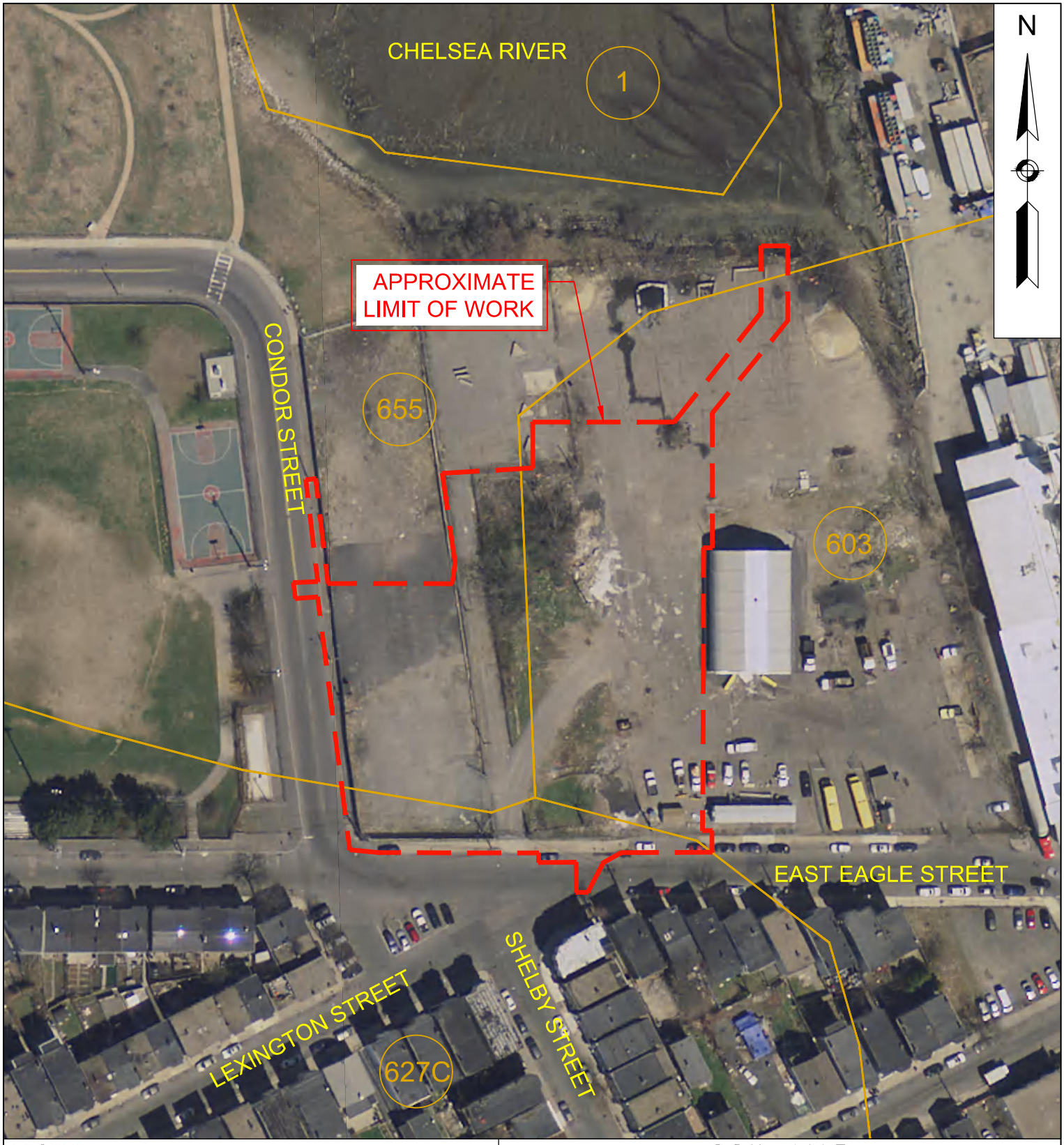
DATE: 10/17/2018 REVISED:	DRAWN BY: ED CHECKED BY: DS

FIGURE 2

F:\Projects\2016\16091\dwg\Figures\Figure 2 - Aerial Map.dwg



LEGEND:

APPROXIMATE LIMIT OF WORK

NRCS SOIL SURVEY BOUNDARY

603 NRCS SOIL SURVEY SYMBOL

NOTE: MAP INFORMATION TAKEN FROM MASSGIS AND SOILS INFORMATION TAKEN FROM NRCS WEB SOIL SURVEY FOR MIDDLESEX COUNTY, MA.

HORIZONTAL GRAPHIC SCALE:
100 0 50 100
1" = 100'

SOIL MAP

338 EAST EAGLE STREET
BOSTON, MA

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SCALE: AS NOTED
PROJECT NO. 16091
DATE: 10/17/2018
REVISED:
DRAWN BY: ED
CHECKED BY: DS

FIGURE 3

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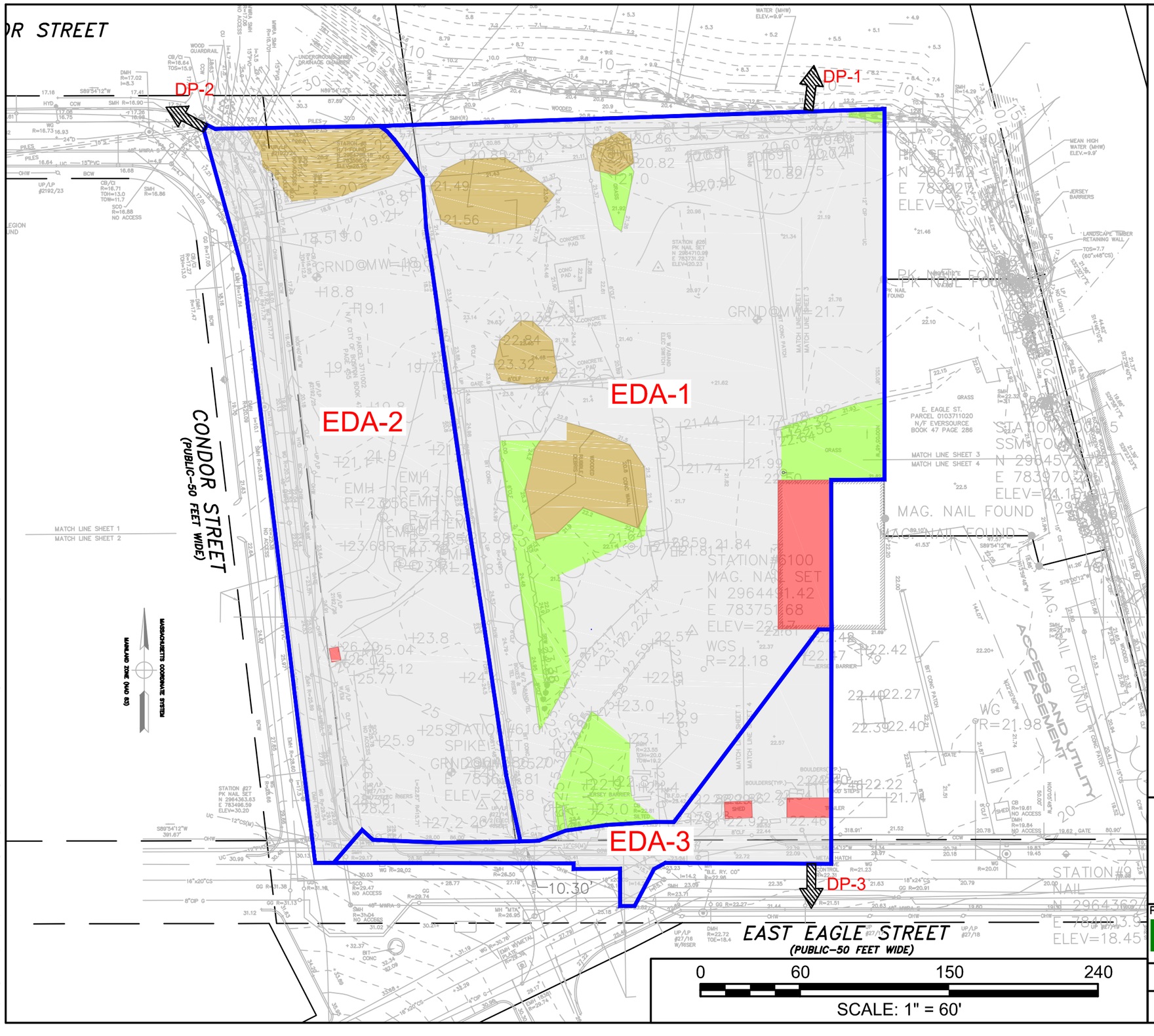

LEGEND

EXISTING WATERSHED BOUNDARY

EXISTING WATERSHED NUMBER — EDA-2

DESIGN POINT — DP-2

IMPERVIOUS AREA

PERVIOUS AREA

ROOF AREA

DEBRIS

EXISTING CONDITIONS WATERSHED PLAN

338 EAST EAGLE STREET
BOSTON, MA

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SCALE: AS NOTED	PROJECT NO. 16091
DATE: 10/19/18	DRAWN BY: ED
REVISED:	CHECKED BY: DS

FIGURE 6

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DP-2

DP-1

PDA-1A

PDA-2A

PDA-2B

PDA-1B

PDA-3A

PDA-3B

DP-3

EVERSOURCE EASEMENT

EASEMENT E-2

EASEMENT E-1

EASEMENT E-4

ACCESS AND UTILITY EASEMENT

CONDOR STREET (PUBLIC-50 FEET WIDE)

EAST EAGLE STREET (PUBLIC-50 FEET WIDE)

VEHICLE STORAGE 18'x36'

25' RIVERFRONT AREA

100' WETLAND BUFFER

MEAN HIGH WATER

HISTORIC HIGH WATER

CHELSEA RIVER

MATCH LINE SHEET 1
MATCH LINE SHEET 2

MATCH LINE SHEET 3
MATCH LINE SHEET 4

0 60 150 240

SCALE: 1" = 60'

LEGEND

APPROXIMATE LIMIT OF WORK

PROPOSED WATERSHED BOUNDARY

PROPOSED WATERSHED NUMBER — PDA-2A

DESIGN POINT — DP-2

IMPERVIOUS AREA

PERVIOUS AREA

ROOF AREA

DEBRIS

HARDSCAPE AREA

GRAVEL AREA

PROPOSED CONDITIONS WATERSHED PLAN

368 EAST EAGLE STREET
BOSTON, MA

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BOSTON, MA 02201

SCALE: AS NOTED	PROJECT NO. 16091	FIGURE 7
DATE: 10/19/18	DRAWN BY: ED	
REVISED:	CHECKED BY: DS	

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APPENDIX A - CHECKLISTS FOR STORMWATER REPORT

MASSACHUSETTS STORMWATER CHECKLIST

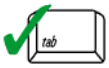
REDEVELOPMENT CHECKLIST

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

11/20/2018

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): _____

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.

Checklist for Redevelopment Projects

Redevelopment Location:
See Figure 5 – Proposed Conditions Watershed Map for location.

A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural stormwater best management practice requirements of Standards 4, 5, and 6. Existing stormwater discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions.

☒ Standard 1: (Untreated discharges)
No new stormwater conveyances (e.g., outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.

☒ Standard 2: (Peak rate control and flood prevention)
Stormwater management systems must be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates. This Standard may be waived for land subject to coastal storm flowage.

While there is a slight increase in peak rates to DP-3 (East Eagle Street), the project discharges to a coastal area and therefore *this Standard may be waived for discharges to land subject to coastal storm flowage as defined in 310 CMR 10.04.*

☒ Standard 3: (Recharge to Ground water)
Loss of annual recharge to ground water shall be eliminated or minimized through the use of infiltration measures, including environmentally sensitive site design, low impact development techniques, best management practices, and good operation and maintenance. At a minimum, the annual recharge from the post-development site shall approximate the annual recharge from the pre-development conditions based on soil type. This Standard is met when the stormwater management system is designed to infiltrate the required recharge volume as determined in accordance with the Massachusettss Stormwater Handbook.

☐ Standard 4: (80% TSS Removal)
Stormwater management systems must be designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS). This standard is met when:

a. *Suitable practices for source control and pollution prevention are identified in a long-term pollution prevention plan and thereafter are implemented and maintained;*
b. *Stormwater BMPs are sized to capture the required water quality volume determined in accordance with the Massachusetts Stormwater Handbook; and*
c. *Pretreatment is provided in accordance with the Massachusetts Stormwater Handbook.*

Runoff to DP-1 (Chelsea River) and DP-2 (Condor Street) meet the 80% TSS removal requirement; however, runoff to DP-3 (East Eagle Street) is not able to capture, collect and treat runoff prior to discharging directly into the street. This area is composed mostly of adjacent sidewalk and due to site constraints, it is not feasible to treat.

☒ Standard 5 (Higher Potential Pollutant Loads (HPPL)
Because the Project does not qualify as a Land Use with Higher Potential Pollutant Loads (LUHPPL), this standard is not applicable.

☒ Standard 6 (Critical Areas)
The site is not located within an area considered a "critical area" and therefore this standard is not applicable.

☒ Standard 8: (Erosion, Sediment 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), must be developed and implemented.

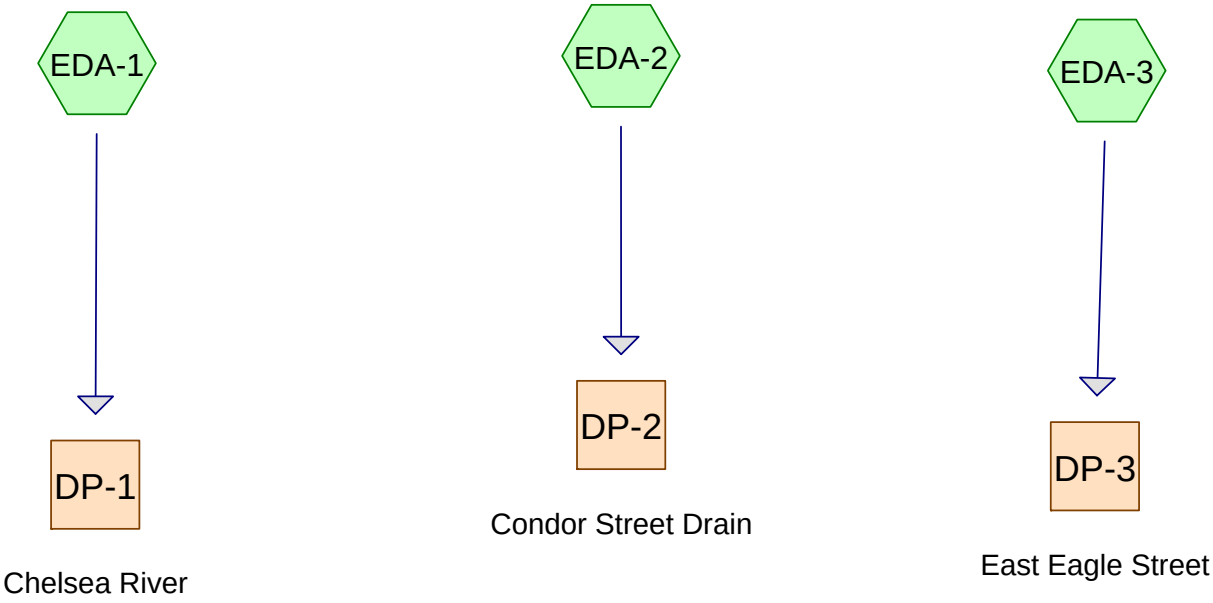
☒ Standard 9: (Operation and Maintenance)
A long-term operation and maintenance plan must be developed and implemented to ensure that stormwater management systems function as designed.

☒ Standard 10 (Illicit Discharges)
All illicit discharges to the stormwater management system are prohibited.

APPENDIX B – HYDROLOGIC CALCULATIONS

EXISTING CONDITIONS CALCULATIONS

PROPOSED CONDITIONS CALCULATIONS



Subcat Reach Pond Link

Routing Diagram for 16091_EXISTING_TP40

Prepared by E. Drizik of Green International Affiliates, Inc. , Printed 11/19/2018

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.235	56	Brush, Fair, HSG B (EDA-1)
0.248	98	Hard scape (EDA-1, EDA-2)
3.117	98	Paved parking, HSG B (EDA-1, EDA-2, EDA-3)
0.080	98	Roofs, HSG B (EDA-1, EDA-2, EDA-3)
3.679	**95**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
3.432	HSG B	EDA-1, EDA-2, EDA-3
0.000	HSG C	
0.000	HSG D	
0.248	Other	EDA-1, EDA-2
3.679		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.235	0.000	0.000	0.000	0.235	Brush, Fair	EDA-1
0.000	0.000	0.000	0.000	0.248	0.248	Hard scape	EDA-1, EDA-2
0.000	3.117	0.000	0.000	0.000	3.117	Paved parking	EDA-1, EDA-2, EDA-3
0.000	0.080	0.000	0.000	0.000	0.080	Roofs	EDA-1, EDA-2, EDA-3
0.000	**3.432**	**0.000**	**0.000**	**0.248**	**3.679**	**TOTAL AREA**	

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EDA-1: Runoff Area=96,783 sf 89.43% Impervious Runoff Depth=2.45"
Tc=6.0 min CN=94 Runoff=5.98 cfs 0.453 af

Subcatchment EDA-2: Runoff Area=51,260 sf 100.00% Impervious Runoff Depth=2.87"
Tc=6.0 min CN=98 Runoff=3.46 cfs 0.281 af

Subcatchment EDA-3: Runoff Area=12,229 sf 100.00% Impervious Runoff Depth=2.87"
Tc=6.0 min CN=98 Runoff=0.82 cfs 0.067 af

Reach DP-1: Chelsea River Inflow=5.98 cfs 0.453 af
Outflow=5.98 cfs 0.453 af

Reach DP-2: Condor Street Drain Inflow=3.46 cfs 0.281 af
Outflow=3.46 cfs 0.281 af

Reach DP-3: East Eagle Street Inflow=0.82 cfs 0.067 af
Outflow=0.82 cfs 0.067 af

Total Runoff Area = 3.679 ac Runoff Volume = 0.801 af Average Runoff Depth = 2.61"
6.38% Pervious = 0.235 ac 93.62% Impervious = 3.444 ac

Summary for Subcatchment EDA-1:

Runoff = 5.98 cfs @ 12.09 hrs, Volume= 0.453 af, Depth= 2.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
	75,990	98	Paved parking, HSG B
*	7,636	98	Hard scape
	10,231	56	Brush, Fair, HSG B
	2,926	98	Roofs, HSG B
	96,783	94	Weighted Average
	10,231		10.57% Pervious Area
	86,552		89.43% Impervious Area

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

Summary for Subcatchment EDA-2:

Runoff = 3.46 cfs @ 12.09 hrs, Volume= 0.281 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.10"

	Area (sf)	CN	Description
	48,062	98	Paved parking, HSG B
	50	98	Roofs, HSG B
*	3,148	98	Hard scape
	51,260	98	Weighted Average
	51,260		100.00% Impervious Area

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

Summary for Subcatchment EDA-3:

Runoff = 0.82 cfs @ 12.09 hrs, Volume= 0.067 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
11,734	98	Paved parking, HSG B
495	98	Roofs, HSG B
12,229	98	Weighted Average
12,229		100.00% Impervious Area

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

Summary for Reach DP-1: Chelsea River

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

Inflow Area = 2.222 ac, 89.43% Impervious, Inflow Depth = 2.45" for 2-Year event
Inflow = 5.98 cfs @ 12.09 hrs, Volume= 0.453 af
Outflow = 5.98 cfs @ 12.09 hrs, Volume= 0.453 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Reach DP-2: Condor Street Drain

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

Inflow Area = 1.177 ac,100.00% Impervious, Inflow Depth = 2.87" for 2-Year event
Inflow = 3.46 cfs @ 12.09 hrs, Volume= 0.281 af
Outflow = 3.46 cfs @ 12.09 hrs, Volume= 0.281 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Reach DP-3: East Eagle Street

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

Inflow Area = 0.281 ac,100.00% Impervious, Inflow Depth = 2.87" for 2-Year event
Inflow = 0.82 cfs @ 12.09 hrs, Volume= 0.067 af
Outflow = 0.82 cfs @ 12.09 hrs, Volume= 0.067 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EDA-1: Runoff Area=96,783 sf 89.43% Impervious Runoff Depth=3.82"
Tc=6.0 min CN=94 Runoff=9.09 cfs 0.706 af

Subcatchment EDA-2: Runoff Area=51,260 sf 100.00% Impervious Runoff Depth=4.26"
Tc=6.0 min CN=98 Runoff=5.05 cfs 0.418 af

Subcatchment EDA-3: Runoff Area=12,229 sf 100.00% Impervious Runoff Depth=4.26"
Tc=6.0 min CN=98 Runoff=1.21 cfs 0.100 af

Reach DP-1: Chelsea River Inflow=9.09 cfs 0.706 af
Outflow=9.09 cfs 0.706 af

Reach DP-2: Condor Street Drain Inflow=5.05 cfs 0.418 af
Outflow=5.05 cfs 0.418 af

Reach DP-3: East Eagle Street Inflow=1.21 cfs 0.100 af
Outflow=1.21 cfs 0.100 af

Total Runoff Area = 3.679 ac Runoff Volume = 1.224 af Average Runoff Depth = 3.99"
6.38% Pervious = 0.235 ac 93.62% Impervious = 3.444 ac

Summary for Subcatchment EDA-1:

Runoff = 9.09 cfs @ 12.09 hrs, Volume= 0.706 af, Depth= 3.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.50"

	Area (sf)	CN	Description
	75,990	98	Paved parking, HSG B
*	7,636	98	Hard scape
	10,231	56	Brush, Fair, HSG B
	2,926	98	Roofs, HSG B
	96,783	94	Weighted Average
	10,231		10.57% Pervious Area
	86,552		89.43% Impervious Area

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

Summary for Subcatchment EDA-2:

Runoff = 5.05 cfs @ 12.09 hrs, Volume= 0.418 af, Depth= 4.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.50"

	Area (sf)	CN	Description
	48,062	98	Paved parking, HSG B
	50	98	Roofs, HSG B
*	3,148	98	Hard scape
	51,260	98	Weighted Average
	51,260		100.00% Impervious Area

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

Summary for Subcatchment EDA-3:

Runoff = 1.21 cfs @ 12.09 hrs, Volume= 0.100 af, Depth= 4.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.50"

Area (sf)	CN	Description
11,734	98	Paved parking, HSG B
495	98	Roofs, HSG B
12,229	98	Weighted Average
12,229		100.00% Impervious Area

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

Summary for Reach DP-1: Chelsea River

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

Inflow Area = 2.222 ac, 89.43% Impervious, Inflow Depth = 3.82" for 10-Year event
Inflow = 9.09 cfs @ 12.09 hrs, Volume= 0.706 af
Outflow = 9.09 cfs @ 12.09 hrs, Volume= 0.706 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Reach DP-2: Condor Street Drain

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

Inflow Area = 1.177 ac,100.00% Impervious, Inflow Depth = 4.26" for 10-Year event
Inflow = 5.05 cfs @ 12.09 hrs, Volume= 0.418 af
Outflow = 5.05 cfs @ 12.09 hrs, Volume= 0.418 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Reach DP-3: East Eagle Street

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

Inflow Area = 0.281 ac,100.00% Impervious, Inflow Depth = 4.26" for 10-Year event
Inflow = 1.21 cfs @ 12.09 hrs, Volume= 0.100 af
Outflow = 1.21 cfs @ 12.09 hrs, Volume= 0.100 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EDA-1: Runoff Area=96,783 sf 89.43% Impervious Runoff Depth=4.60"
Tc=6.0 min CN=94 Runoff=10.85 cfs 0.852 af

Subcatchment EDA-2: Runoff Area=51,260 sf 100.00% Impervious Runoff Depth=5.06"
Tc=6.0 min CN=98 Runoff=5.96 cfs 0.496 af

Subcatchment EDA-3: Runoff Area=12,229 sf 100.00% Impervious Runoff Depth=5.06"
Tc=6.0 min CN=98 Runoff=1.42 cfs 0.118 af

Reach DP-1: Chelsea River Inflow=10.85 cfs 0.852 af
Outflow=10.85 cfs 0.852 af

Reach DP-2: Condor Street Drain Inflow=5.96 cfs 0.496 af
Outflow=5.96 cfs 0.496 af

Reach DP-3: East Eagle Street Inflow=1.42 cfs 0.118 af
Outflow=1.42 cfs 0.118 af

Total Runoff Area = 3.679 ac Runoff Volume = 1.467 af Average Runoff Depth = 4.79"
6.38% Pervious = 0.235 ac 93.62% Impervious = 3.444 ac

Summary for Subcatchment EDA-1:

Runoff = 10.85 cfs @ 12.09 hrs, Volume= 0.852 af, Depth= 4.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.30"

	Area (sf)	CN	Description
	75,990	98	Paved parking, HSG B
*	7,636	98	Hard scape
	10,231	56	Brush, Fair, HSG B
	2,926	98	Roofs, HSG B
	96,783	94	Weighted Average
	10,231		10.57% Pervious Area
	86,552		89.43% Impervious Area

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

Summary for Subcatchment EDA-2:

Runoff = 5.96 cfs @ 12.09 hrs, Volume= 0.496 af, Depth= 5.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.30"

	Area (sf)	CN	Description
	48,062	98	Paved parking, HSG B
	50	98	Roofs, HSG B
*	3,148	98	Hard scape
	51,260	98	Weighted Average
	51,260		100.00% Impervious Area

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

Summary for Subcatchment EDA-3:

Runoff = 1.42 cfs @ 12.09 hrs, Volume= 0.118 af, Depth= 5.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.30"

Area (sf)	CN	Description
11,734	98	Paved parking, HSG B
495	98	Roofs, HSG B
12,229	98	Weighted Average
12,229		100.00% Impervious Area

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

Summary for Reach DP-1: Chelsea River

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

Inflow Area = 2.222 ac, 89.43% Impervious, Inflow Depth = 4.60" for 25-Year event
Inflow = 10.85 cfs @ 12.09 hrs, Volume= 0.852 af
Outflow = 10.85 cfs @ 12.09 hrs, Volume= 0.852 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Reach DP-2: Condor Street Drain

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

Inflow Area = 1.177 ac,100.00% Impervious, Inflow Depth = 5.06" for 25-Year event
Inflow = 5.96 cfs @ 12.09 hrs, Volume= 0.496 af
Outflow = 5.96 cfs @ 12.09 hrs, Volume= 0.496 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Reach DP-3: East Eagle Street

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

Inflow Area = 0.281 ac,100.00% Impervious, Inflow Depth = 5.06" for 25-Year event
Inflow = 1.42 cfs @ 12.09 hrs, Volume= 0.118 af
Outflow = 1.42 cfs @ 12.09 hrs, Volume= 0.118 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EDA-1: Runoff Area=96,783 sf 89.43% Impervious Runoff Depth=5.79"
Tc=6.0 min CN=94 Runoff=13.47 cfs 1.072 af

Subcatchment EDA-2: Runoff Area=51,260 sf 100.00% Impervious Runoff Depth=6.26"
Tc=6.0 min CN=98 Runoff=7.32 cfs 0.614 af

Subcatchment EDA-3: Runoff Area=12,229 sf 100.00% Impervious Runoff Depth=6.26"
Tc=6.0 min CN=98 Runoff=1.75 cfs 0.146 af

Reach DP-1: Chelsea River Inflow=13.47 cfs 1.072 af
Outflow=13.47 cfs 1.072 af

Reach DP-2: Condor Street Drain Inflow=7.32 cfs 0.614 af
Outflow=7.32 cfs 0.614 af

Reach DP-3: East Eagle Street Inflow=1.75 cfs 0.146 af
Outflow=1.75 cfs 0.146 af

Total Runoff Area = 3.679 ac Runoff Volume = 1.833 af Average Runoff Depth = 5.98"
6.38% Pervious = 0.235 ac 93.62% Impervious = 3.444 ac

Summary for Subcatchment EDA-1:

Runoff = 13.47 cfs @ 12.09 hrs, Volume= 1.072 af, Depth= 5.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.50"

	Area (sf)	CN	Description
	75,990	98	Paved parking, HSG B
*	7,636	98	Hard scape
	10,231	56	Brush, Fair, HSG B
	2,926	98	Roofs, HSG B
	96,783	94	Weighted Average
	10,231		10.57% Pervious Area
	86,552		89.43% Impervious Area

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

Summary for Subcatchment EDA-2:

Runoff = 7.32 cfs @ 12.09 hrs, Volume= 0.614 af, Depth= 6.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.50"

	Area (sf)	CN	Description
	48,062	98	Paved parking, HSG B
	50	98	Roofs, HSG B
*	3,148	98	Hard scape
	51,260	98	Weighted Average
	51,260		100.00% Impervious Area

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

Summary for Subcatchment EDA-3:

Runoff = 1.75 cfs @ 12.09 hrs, Volume= 0.146 af, Depth= 6.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.50"

Area (sf)	CN	Description
11,734	98	Paved parking, HSG B
495	98	Roofs, HSG B
12,229	98	Weighted Average
12,229		100.00% Impervious Area

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

Summary for Reach DP-1: Chelsea River

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

Inflow Area = 2.222 ac, 89.43% Impervious, Inflow Depth = 5.79" for 100-Year event
Inflow = 13.47 cfs @ 12.09 hrs, Volume= 1.072 af
Outflow = 13.47 cfs @ 12.09 hrs, Volume= 1.072 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Reach DP-2: Condor Street Drain

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

Inflow Area = 1.177 ac,100.00% Impervious, Inflow Depth = 6.26" for 100-Year event
Inflow = 7.32 cfs @ 12.09 hrs, Volume= 0.614 af
Outflow = 7.32 cfs @ 12.09 hrs, Volume= 0.614 af, Atten= 0%, Lag= 0.0 min

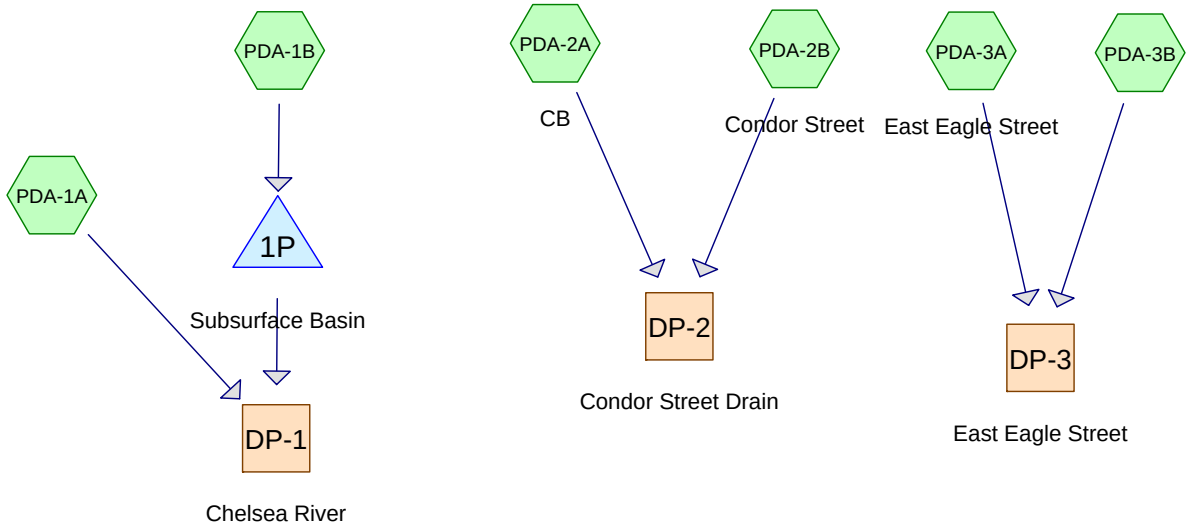
Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

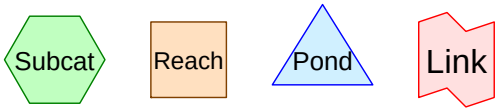
Summary for Reach DP-3: East Eagle Street

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

Inflow Area = 0.281 ac,100.00% Impervious, Inflow Depth = 6.26" for 100-Year event
Inflow = 1.75 cfs @ 12.09 hrs, Volume= 0.146 af
Outflow = 1.75 cfs @ 12.09 hrs, Volume= 0.146 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs





Routing Diagram for 16091_PROPOSED_TP40
Prepared by E. Drizik of Green International Affiliates, Inc. , Printed 11/19/2018
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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.220	61	>75% Grass cover, Good, HSG B (PDA-1A, PDA-1B, PDA-2A, PDA-2B, PDA-3B)
0.011	98	Dirt (PDA-1A)
0.025	96	Gravel surface, HSG B (PDA-1B)
0.010	98	Hard Scape (PDA-2A)
0.037	98	Hardscape (PDA-2B)
2.984	98	Paved parking, HSG B (PDA-1A, PDA-1B, PDA-2A, PDA-2B, PDA-3A, PDA-3B)
0.393	98	Roofs, HSG B (PDA-1B, PDA-3A)
3.679	**96**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
3.621	HSG B	PDA-1A, PDA-1B, PDA-2A, PDA-2B, PDA-3A, PDA-3B
0.000	HSG C	
0.000	HSG D	
0.058	Other	PDA-1A, PDA-2A, PDA-2B
3.679		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.220	0.000	0.000	0.000	0.220	>75% Grass cover, Good	PDA-1A, PDA-1B, PDA-2A, PDA-2B, PDA-3B
0.000	0.000	0.000	0.000	0.011	0.011	Dirt	PDA-1A
0.000	0.025	0.000	0.000	0.000	0.025	Gravel surface	PDA-1B
0.000	0.000	0.000	0.000	0.010	0.010	Hard Scape	PDA-2A
0.000	0.000	0.000	0.000	0.037	0.037	Hardscape	PDA-2B
0.000	2.984	0.000	0.000	0.000	2.984	Paved parking	PDA-1A, PDA-1B, PDA-2A, PDA-2B, PDA-3A, PDA-3B
0.000	0.393	0.000	0.000	0.000	0.393	Roofs	PDA-1B, PDA-3A
0.000	**3.621**	**0.000**	**0.000**	**0.058**	**3.679**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	1P	17.50	15.20	179.0	0.0128	0.013	12.0	0.0	0.0

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PDA-1A: Runoff Area=48,345 sf 93.37% Impervious Runoff Depth=2.75"
Tc=0.0 min CN=96 Runoff=3.81 cfs 0.254 af

Subcatchment PDA-1B: Runoff Area=50,438 sf 97.79% Impervious Runoff Depth=2.97"
Tc=6.0 min CN=98 Runoff=3.51 cfs 0.286 af

Subcatchment PDA-2A: CB Runoff Area=34,695 sf 96.83% Impervious Runoff Depth=2.86"
Tc=6.0 min CN=97 Runoff=2.38 cfs 0.190 af

Subcatchment PDA-2B: Condor Street Runoff Area=10,985 sf 58.34% Impervious Runoff Depth=1.61"
Tc=0.0 min CN=83 Runoff=0.55 cfs 0.034 af

Subcatchment PDA-3A: East Eagle Street Runoff Area=7,333 sf 100.00% Impervious Runoff Depth=2.97"
Tc=6.0 min CN=98 Runoff=0.51 cfs 0.042 af

Subcatchment PDA-3B: Runoff Area=8,477 sf 92.04% Impervious Runoff Depth=2.64"
Tc=0.0 min CN=95 Runoff=0.65 cfs 0.043 af

Reach DP-1: Chelsea River Inflow=3.84 cfs 0.432 af
Outflow=3.84 cfs 0.432 af

Reach DP-2: Condor Street Drain Inflow=2.70 cfs 0.223 af
Outflow=2.70 cfs 0.223 af

Reach DP-3: East Eagle Street Inflow=1.01 cfs 0.085 af
Outflow=1.01 cfs 0.085 af

Pond 1P: Subsurface Basin Peak Elev=18.83' Storage=6,205 cf Inflow=3.51 cfs 0.286 af
Outflow=1.82 cfs 0.177 af

Total Runoff Area = 3.679 ac Runoff Volume = 0.849 af Average Runoff Depth = 2.77"
6.66% Pervious = 0.245 ac 93.34% Impervious = 3.434 ac

Summary for Subcatchment PDA-1A:

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

Runoff = 3.81 cfs @ 12.00 hrs, Volume= 0.254 af, Depth= 2.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

	Area (sf)	CN	Description
	44,653	98	Paved parking, HSG B
	3,204	61	>75% Grass cover, Good, HSG B
*	488	98	Dirt
	48,345	96	Weighted Average
	3,204		6.63% Pervious Area
	45,141		93.37% Impervious Area

Summary for Subcatchment PDA-1B:

Runoff = 3.51 cfs @ 12.09 hrs, Volume= 0.286 af, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
32,532	98	Paved parking, HSG B
16,791	98	Roofs, HSG B
1,087	96	Gravel surface, HSG B
28	61	>75% Grass cover, Good, HSG B
50,438	98	Weighted Average
1,115		2.21% Pervious Area
49,323		97.79% Impervious Area

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

Summary for Subcatchment PDA-2A: CB

Runoff = 2.38 cfs @ 12.09 hrs, Volume= 0.190 af, Depth= 2.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

	Area (sf)	CN	Description
	33,175	98	Paved parking, HSG B
*	421	98	Hard Scape
	1,099	61	>75% Grass cover, Good, HSG B
	34,695	97	Weighted Average
	1,099		3.17% Pervious Area
	33,596		96.83% Impervious Area

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

Summary for Subcatchment PDA-2B: Condor Street

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

Runoff = 0.55 cfs @ 12.00 hrs, Volume= 0.034 af, Depth= 1.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

	Area (sf)	CN	Description
	4,794	98	Paved parking, HSG B
	4,576	61	>75% Grass cover, Good, HSG B
*	1,615	98	Hardscape
	10,985	83	Weighted Average
	4,576		41.66% Pervious Area
	6,409		58.34% Impervious Area

Summary for Subcatchment PDA-3A: East Eagle Street

Runoff = 0.51 cfs @ 12.09 hrs, Volume= 0.042 af, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

	Area (sf)	CN	Description
	7,009	98	Paved parking, HSG B
	324	98	Roofs, HSG B
	7,333	98	Weighted Average
	7,333		100.00% Impervious Area

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

Summary for Subcatchment PDA-3B:

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

Runoff = 0.65 cfs @ 12.00 hrs, Volume= 0.043 af, Depth= 2.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
7,802	98	Paved parking, HSG B
675	61	>75% Grass cover, Good, HSG B
8,477	95	Weighted Average
675		7.96% Pervious Area
7,802		92.04% Impervious Area

Summary for Reach DP-1: Chelsea River

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

Inflow Area = 2.268 ac, 95.63% Impervious, Inflow Depth = 2.28" for 2-Year event
Inflow = 3.84 cfs @ 12.01 hrs, Volume= 0.432 af
Outflow = 3.84 cfs @ 12.01 hrs, Volume= 0.432 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Reach DP-2: Condor Street Drain

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

Inflow Area = 1.049 ac, 87.58% Impervious, Inflow Depth = 2.56" for 2-Year event
Inflow = 2.70 cfs @ 12.07 hrs, Volume= 0.223 af
Outflow = 2.70 cfs @ 12.07 hrs, Volume= 0.223 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Reach DP-3: East Eagle Street

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

Inflow Area = 0.363 ac, 95.73% Impervious, Inflow Depth = 2.79" for 2-Year event
Inflow = 1.01 cfs @ 12.02 hrs, Volume= 0.085 af
Outflow = 1.01 cfs @ 12.02 hrs, Volume= 0.085 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Pond 1P: Subsurface Basin

Inflow Area = 1.158 ac, 97.79% Impervious, Inflow Depth = 2.97" for 2-Year event
Inflow = 3.51 cfs @ 12.09 hrs, Volume= 0.286 af
Outflow = 1.82 cfs @ 12.23 hrs, Volume= 0.177 af, Atten= 48%, Lag= 8.6 min
Primary = 1.82 cfs @ 12.23 hrs, Volume= 0.177 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 18.83' @ 12.23 hrs Surf.Area= 4,713 sf Storage= 6,205 cf

Plug-Flow detention time= 225.7 min calculated for 0.177 af (62% of inflow)
Center-of-Mass det. time= 120.0 min (876.4 - 756.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	16.50'	3,864 cf	**49.00'W x 96.18'L x 4.00'H Field A** 18,851 cf Overall - 5,972 cf Embedded = 12,878 cf x 30.0% Voids
#2A	17.50'	5,972 cf	**ADS_StormTech SC-740 +Cap** x 130 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 10 Rows of 13 Chambers
		9,836 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	17.50'	**12.0" Round Culvert** L= 179.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.50' / 15.20' S= 0.0128 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	18.40'	**24.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 1	19.50'	**3.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=1.81 cfs @ 12.23 hrs HW=18.83' (Free Discharge)
└**1=Culvert** (Passes 1.81 cfs of 3.44 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 1.81 cfs @ 2.10 fps)
└**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PDA-1A: Runoff Area=48,345 sf 93.37% Impervious Runoff Depth=4.14"
Tc=0.0 min CN=96 Runoff=5.60 cfs 0.382 af

Subcatchment PDA-1B: Runoff Area=50,438 sf 97.79% Impervious Runoff Depth=4.36"
Tc=6.0 min CN=98 Runoff=5.08 cfs 0.421 af

Subcatchment PDA-2A: CB Runoff Area=34,695 sf 96.83% Impervious Runoff Depth=4.25"
Tc=6.0 min CN=97 Runoff=3.47 cfs 0.282 af

Subcatchment PDA-2B: Condor Street Runoff Area=10,985 sf 58.34% Impervious Runoff Depth=2.81"
Tc=0.0 min CN=83 Runoff=0.95 cfs 0.059 af

Subcatchment PDA-3A: East Eagle Street Runoff Area=7,333 sf 100.00% Impervious Runoff Depth=4.36"
Tc=6.0 min CN=98 Runoff=0.74 cfs 0.061 af

Subcatchment PDA-3B: Runoff Area=8,477 sf 92.04% Impervious Runoff Depth=4.02"
Tc=0.0 min CN=95 Runoff=0.97 cfs 0.065 af

Reach DP-1: Chelsea River Inflow=7.50 cfs 0.695 af
Outflow=7.50 cfs 0.695 af

Reach DP-2: Condor Street Drain Inflow=4.03 cfs 0.341 af
Outflow=4.03 cfs 0.341 af

Reach DP-3: East Eagle Street Inflow=1.49 cfs 0.126 af
Outflow=1.49 cfs 0.126 af

Pond 1P: Subsurface Basin Peak Elev=19.15' Storage=7,190 cf Inflow=5.08 cfs 0.421 af
Outflow=3.36 cfs 0.312 af

Total Runoff Area = 3.679 ac Runoff Volume = 1.271 af Average Runoff Depth = 4.15"
6.66% Pervious = 0.245 ac 93.34% Impervious = 3.434 ac

Summary for Subcatchment PDA-1A:

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

Runoff = 5.60 cfs @ 12.00 hrs, Volume= 0.382 af, Depth= 4.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
	44,653	98	Paved parking, HSG B
	3,204	61	>75% Grass cover, Good, HSG B
*	488	98	Dirt
	48,345	96	Weighted Average
	3,204		6.63% Pervious Area
	45,141		93.37% Impervious Area

Summary for Subcatchment PDA-1B:

Runoff = 5.08 cfs @ 12.09 hrs, Volume= 0.421 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
32,532	98	Paved parking, HSG B
16,791	98	Roofs, HSG B
1,087	96	Gravel surface, HSG B
28	61	>75% Grass cover, Good, HSG B
50,438	98	Weighted Average
1,115		2.21% Pervious Area
49,323		97.79% Impervious Area

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

Summary for Subcatchment PDA-2A: CB

Runoff = 3.47 cfs @ 12.09 hrs, Volume= 0.282 af, Depth= 4.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
	33,175	98	Paved parking, HSG B
*	421	98	Hard Scape
	1,099	61	>75% Grass cover, Good, HSG B
	34,695	97	Weighted Average
	1,099		3.17% Pervious Area
	33,596		96.83% Impervious Area

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

Summary for Subcatchment PDA-2B: Condor Street

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

Runoff = 0.95 cfs @ 12.00 hrs, Volume= 0.059 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
	4,794	98	Paved parking, HSG B
	4,576	61	>75% Grass cover, Good, HSG B
*	1,615	98	Hardscape
	10,985	83	Weighted Average
	4,576		41.66% Pervious Area
	6,409		58.34% Impervious Area

Summary for Subcatchment PDA-3A: East Eagle Street

Runoff = 0.74 cfs @ 12.09 hrs, Volume= 0.061 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
	7,009	98	Paved parking, HSG B
	324	98	Roofs, HSG B
	7,333	98	Weighted Average
	7,333		100.00% Impervious Area

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

Summary for Subcatchment PDA-3B:

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

Runoff = 0.97 cfs @ 12.00 hrs, Volume= 0.065 af, Depth= 4.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
7,802	98	Paved parking, HSG B
675	61	>75% Grass cover, Good, HSG B
8,477	95	Weighted Average
675		7.96% Pervious Area
7,802		92.04% Impervious Area

Summary for Reach DP-1: Chelsea River

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

Inflow Area = 2.268 ac, 95.63% Impervious, Inflow Depth = 3.68" for 10-Year event
Inflow = 7.50 cfs @ 12.01 hrs, Volume= 0.695 af
Outflow = 7.50 cfs @ 12.01 hrs, Volume= 0.695 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Reach DP-2: Condor Street Drain

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

Inflow Area = 1.049 ac, 87.58% Impervious, Inflow Depth = 3.90" for 10-Year event
Inflow = 4.03 cfs @ 12.07 hrs, Volume= 0.341 af
Outflow = 4.03 cfs @ 12.07 hrs, Volume= 0.341 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Reach DP-3: East Eagle Street

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

Inflow Area = 0.363 ac, 95.73% Impervious, Inflow Depth = 4.18" for 10-Year event
Inflow = 1.49 cfs @ 12.02 hrs, Volume= 0.126 af
Outflow = 1.49 cfs @ 12.02 hrs, Volume= 0.126 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Pond 1P: Subsurface Basin

Inflow Area = 1.158 ac, 97.79% Impervious, Inflow Depth = 4.36" for 10-Year event
Inflow = 5.08 cfs @ 12.09 hrs, Volume= 0.421 af
Outflow = 3.36 cfs @ 12.18 hrs, Volume= 0.312 af, Atten= 34%, Lag= 5.7 min
Primary = 3.36 cfs @ 12.18 hrs, Volume= 0.312 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 19.15' @ 12.18 hrs Surf.Area= 4,713 sf Storage= 7,190 cf

Plug-Flow detention time= 185.5 min calculated for 0.312 af (74% of inflow)
Center-of-Mass det. time= 96.9 min (846.3 - 749.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	16.50'	3,864 cf	**49.00'W x 96.18'L x 4.00'H Field A** 18,851 cf Overall - 5,972 cf Embedded = 12,878 cf x 30.0% Voids
#2A	17.50'	5,972 cf	**ADS_StormTech SC-740 +Cap** x 130 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 10 Rows of 13 Chambers
		9,836 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	17.50'	**12.0" Round Culvert** L= 179.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.50' / 15.20' S= 0.0128 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	18.40'	**24.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 1	19.50'	**3.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=3.34 cfs @ 12.18 hrs HW=19.14' (Free Discharge)
└**1=Culvert** (Passes 3.34 cfs of 4.04 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 3.34 cfs @ 3.34 fps)
└**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PDA-1A: Runoff Area=48,345 sf 93.37% Impervious Runoff Depth=5.03"
Tc=0.0 min CN=96 Runoff=6.75 cfs 0.465 af

Subcatchment PDA-1B: Runoff Area=50,438 sf 97.79% Impervious Runoff Depth=5.26"
Tc=6.0 min CN=98 Runoff=6.09 cfs 0.508 af

Subcatchment PDA-2A: CB Runoff Area=34,695 sf 96.83% Impervious Runoff Depth=5.15"
Tc=6.0 min CN=97 Runoff=4.16 cfs 0.342 af

Subcatchment PDA-2B: Condor Street Runoff Area=10,985 sf 58.34% Impervious Runoff Depth=3.63"
Tc=0.0 min CN=83 Runoff=1.22 cfs 0.076 af

Subcatchment PDA-3A: East Eagle Street Runoff Area=7,333 sf 100.00% Impervious Runoff Depth=5.26"
Tc=6.0 min CN=98 Runoff=0.89 cfs 0.074 af

Subcatchment PDA-3B: Runoff Area=8,477 sf 92.04% Impervious Runoff Depth=4.92"
Tc=0.0 min CN=95 Runoff=1.17 cfs 0.080 af

Reach DP-1: Chelsea River Inflow=9.19 cfs 0.864 af
Outflow=9.19 cfs 0.864 af

Reach DP-2: Condor Street Drain Inflow=4.89 cfs 0.418 af
Outflow=4.89 cfs 0.418 af

Reach DP-3: East Eagle Street Inflow=1.79 cfs 0.154 af
Outflow=1.79 cfs 0.154 af

Pond 1P: Subsurface Basin Peak Elev=19.32' Storage=7,691 cf Inflow=6.09 cfs 0.508 af
Outflow=3.93 cfs 0.399 af

Total Runoff Area = 3.679 ac Runoff Volume = 1.544 af Average Runoff Depth = 5.04"
6.66% Pervious = 0.245 ac 93.34% Impervious = 3.434 ac

Summary for Subcatchment PDA-1A:

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

Runoff = 6.75 cfs @ 12.00 hrs, Volume= 0.465 af, Depth= 5.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

	Area (sf)	CN	Description
	44,653	98	Paved parking, HSG B
	3,204	61	>75% Grass cover, Good, HSG B
*	488	98	Dirt
	48,345	96	Weighted Average
	3,204		6.63% Pervious Area
	45,141		93.37% Impervious Area

Summary for Subcatchment PDA-1B:

Runoff = 6.09 cfs @ 12.09 hrs, Volume= 0.508 af, Depth= 5.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

Area (sf)	CN	Description
32,532	98	Paved parking, HSG B
16,791	98	Roofs, HSG B
1,087	96	Gravel surface, HSG B
28	61	>75% Grass cover, Good, HSG B
50,438	98	Weighted Average
1,115		2.21% Pervious Area
49,323		97.79% Impervious Area

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

Summary for Subcatchment PDA-2A: CB

Runoff = 4.16 cfs @ 12.09 hrs, Volume= 0.342 af, Depth= 5.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

	Area (sf)	CN	Description
	33,175	98	Paved parking, HSG B
*	421	98	Hard Scape
	1,099	61	>75% Grass cover, Good, HSG B
	34,695	97	Weighted Average
	1,099		3.17% Pervious Area
	33,596		96.83% Impervious Area

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

Summary for Subcatchment PDA-2B: Condor Street

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

Runoff = 1.22 cfs @ 12.00 hrs, Volume= 0.076 af, Depth= 3.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

	Area (sf)	CN	Description
	4,794	98	Paved parking, HSG B
	4,576	61	>75% Grass cover, Good, HSG B
*	1,615	98	Hardscape
	10,985	83	Weighted Average
	4,576		41.66% Pervious Area
	6,409		58.34% Impervious Area

Summary for Subcatchment PDA-3A: East Eagle Street

Runoff = 0.89 cfs @ 12.09 hrs, Volume= 0.074 af, Depth= 5.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

	Area (sf)	CN	Description
	7,009	98	Paved parking, HSG B
	324	98	Roofs, HSG B
	7,333	98	Weighted Average
	7,333		100.00% Impervious Area

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

Summary for Subcatchment PDA-3B:

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

Runoff = 1.17 cfs @ 12.00 hrs, Volume= 0.080 af, Depth= 4.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.50"

Area (sf)	CN	Description
7,802	98	Paved parking, HSG B
675	61	>75% Grass cover, Good, HSG B
8,477	95	Weighted Average
675		7.96% Pervious Area
7,802		92.04% Impervious Area

Summary for Reach DP-1: Chelsea River

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

Inflow Area = 2.268 ac, 95.63% Impervious, Inflow Depth = 4.57" for 25-Year event
Inflow = 9.19 cfs @ 12.01 hrs, Volume= 0.864 af
Outflow = 9.19 cfs @ 12.01 hrs, Volume= 0.864 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Reach DP-2: Condor Street Drain

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

Inflow Area = 1.049 ac, 87.58% Impervious, Inflow Depth = 4.78" for 25-Year event
Inflow = 4.89 cfs @ 12.07 hrs, Volume= 0.418 af
Outflow = 4.89 cfs @ 12.07 hrs, Volume= 0.418 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Reach DP-3: East Eagle Street

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

Inflow Area = 0.363 ac, 95.73% Impervious, Inflow Depth = 5.08" for 25-Year event
Inflow = 1.79 cfs @ 12.02 hrs, Volume= 0.154 af
Outflow = 1.79 cfs @ 12.02 hrs, Volume= 0.154 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Pond 1P: Subsurface Basin

Inflow Area = 1.158 ac, 97.79% Impervious, Inflow Depth = 5.26" for 25-Year event
Inflow = 6.09 cfs @ 12.09 hrs, Volume= 0.508 af
Outflow = 3.93 cfs @ 12.19 hrs, Volume= 0.399 af, Atten= 36%, Lag= 6.0 min
Primary = 3.93 cfs @ 12.19 hrs, Volume= 0.399 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 19.32' @ 12.19 hrs Surf.Area= 4,713 sf Storage= 7,691 cf

Plug-Flow detention time= 170.2 min calculated for 0.399 af (79% of inflow)
Center-of-Mass det. time= 89.4 min (835.9 - 746.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	16.50'	3,864 cf	**49.00'W x 96.18'L x 4.00'H Field A** 18,851 cf Overall - 5,972 cf Embedded = 12,878 cf x 30.0% Voids
#2A	17.50'	5,972 cf	**ADS_StormTech SC-740 +Cap** x 130 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 10 Rows of 13 Chambers
		9,836 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	17.50'	**12.0" Round Culvert** L= 179.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.50' / 15.20' S= 0.0128 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	18.40'	**24.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 1	19.50'	**3.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=3.91 cfs @ 12.19 hrs HW=19.32' (Free Discharge)
└**1=Culvert** (Passes 3.91 cfs of 4.17 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 3.91 cfs @ 3.91 fps)
└**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PDA-1A: Runoff Area=48,345 sf 93.37% Impervious Runoff Depth=6.13"
Tc=0.0 min CN=96 Runoff=8.14 cfs 0.566 af

Subcatchment PDA-1B: Runoff Area=50,438 sf 97.79% Impervious Runoff Depth=6.36"
Tc=6.0 min CN=98 Runoff=7.32 cfs 0.614 af

Subcatchment PDA-2A: CB Runoff Area=34,695 sf 96.83% Impervious Runoff Depth=6.24"
Tc=6.0 min CN=97 Runoff=5.01 cfs 0.414 af

Subcatchment PDA-2B: Condor Street Runoff Area=10,985 sf 58.34% Impervious Runoff Depth=4.65"
Tc=0.0 min CN=83 Runoff=1.55 cfs 0.098 af

Subcatchment PDA-3A: East Eagle Street Runoff Area=7,333 sf 100.00% Impervious Runoff Depth=6.36"
Tc=6.0 min CN=98 Runoff=1.06 cfs 0.089 af

Subcatchment PDA-3B: Runoff Area=8,477 sf 92.04% Impervious Runoff Depth=6.01"
Tc=0.0 min CN=95 Runoff=1.42 cfs 0.097 af

Reach DP-1: Chelsea River Inflow=11.00 cfs 1.071 af
Outflow=11.00 cfs 1.071 af

Reach DP-2: Condor Street Drain Inflow=5.93 cfs 0.512 af
Outflow=5.93 cfs 0.512 af

Reach DP-3: East Eagle Street Inflow=2.16 cfs 0.187 af
Outflow=2.16 cfs 0.187 af

Pond 1P: Subsurface Basin Peak Elev=19.58' Storage=8,358 cf Inflow=7.32 cfs 0.614 af
Outflow=4.34 cfs 0.505 af

Total Runoff Area = 3.679 ac Runoff Volume = 1.879 af Average Runoff Depth = 6.13"
6.66% Pervious = 0.245 ac 93.34% Impervious = 3.434 ac

Summary for Subcatchment PDA-1A:

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

Runoff = 8.14 cfs @ 12.00 hrs, Volume= 0.566 af, Depth= 6.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.60"

	Area (sf)	CN	Description
	44,653	98	Paved parking, HSG B
	3,204	61	>75% Grass cover, Good, HSG B
*	488	98	Dirt
	48,345	96	Weighted Average
	3,204		6.63% Pervious Area
	45,141		93.37% Impervious Area

Summary for Subcatchment PDA-1B:

Runoff = 7.32 cfs @ 12.09 hrs, Volume= 0.614 af, Depth= 6.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.60"

Area (sf)	CN	Description
32,532	98	Paved parking, HSG B
16,791	98	Roofs, HSG B
1,087	96	Gravel surface, HSG B
28	61	>75% Grass cover, Good, HSG B
50,438	98	Weighted Average
1,115		2.21% Pervious Area
49,323		97.79% Impervious Area

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

Summary for Subcatchment PDA-2A: CB

Runoff = 5.01 cfs @ 12.09 hrs, Volume= 0.414 af, Depth= 6.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.60"

	Area (sf)	CN	Description
	33,175	98	Paved parking, HSG B
*	421	98	Hard Scape
	1,099	61	>75% Grass cover, Good, HSG B
	34,695	97	Weighted Average
	1,099		3.17% Pervious Area
	33,596		96.83% Impervious Area

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

Summary for Subcatchment PDA-2B: Condor Street

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

Runoff = 1.55 cfs @ 12.00 hrs, Volume= 0.098 af, Depth= 4.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.60"

	Area (sf)	CN	Description
	4,794	98	Paved parking, HSG B
	4,576	61	>75% Grass cover, Good, HSG B
*	1,615	98	Hardscape
	10,985	83	Weighted Average
	4,576		41.66% Pervious Area
	6,409		58.34% Impervious Area

Summary for Subcatchment PDA-3A: East Eagle Street

Runoff = 1.06 cfs @ 12.09 hrs, Volume= 0.089 af, Depth= 6.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.60"

	Area (sf)	CN	Description
	7,009	98	Paved parking, HSG B
	324	98	Roofs, HSG B
	7,333	98	Weighted Average
	7,333		100.00% Impervious Area

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

Summary for Subcatchment PDA-3B:

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

Runoff = 1.42 cfs @ 12.00 hrs, Volume= 0.097 af, Depth= 6.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.60"

Area (sf)	CN	Description
7,802	98	Paved parking, HSG B
675	61	>75% Grass cover, Good, HSG B
8,477	95	Weighted Average
675		7.96% Pervious Area
7,802		92.04% Impervious Area

Summary for Reach DP-1: Chelsea River

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

Inflow Area = 2.268 ac, 95.63% Impervious, Inflow Depth = 5.67" for 100-Year event
Inflow = 11.00 cfs @ 12.01 hrs, Volume= 1.071 af
Outflow = 11.00 cfs @ 12.01 hrs, Volume= 1.071 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Reach DP-2: Condor Street Drain

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

Inflow Area = 1.049 ac, 87.58% Impervious, Inflow Depth = 5.86" for 100-Year event
Inflow = 5.93 cfs @ 12.07 hrs, Volume= 0.512 af
Outflow = 5.93 cfs @ 12.07 hrs, Volume= 0.512 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Reach DP-3: East Eagle Street

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

Inflow Area = 0.363 ac, 95.73% Impervious, Inflow Depth = 6.17" for 100-Year event
Inflow = 2.16 cfs @ 12.02 hrs, Volume= 0.187 af
Outflow = 2.16 cfs @ 12.02 hrs, Volume= 0.187 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Pond 1P: Subsurface Basin

Inflow Area = 1.158 ac, 97.79% Impervious, Inflow Depth = 6.36" for 100-Year event
Inflow = 7.32 cfs @ 12.09 hrs, Volume= 0.614 af
Outflow = 4.34 cfs @ 12.20 hrs, Volume= 0.505 af, Atten= 41%, Lag= 6.9 min
Primary = 4.34 cfs @ 12.20 hrs, Volume= 0.505 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 19.58' @ 12.20 hrs Surf.Area= 4,713 sf Storage= 8,358 cf

Plug-Flow detention time= 154.5 min calculated for 0.505 af (82% of inflow)
Center-of-Mass det. time= 82.6 min (826.4 - 743.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	16.50'	3,864 cf	**49.00'W x 96.18'L x 4.00'H Field A** 18,851 cf Overall - 5,972 cf Embedded = 12,878 cf x 30.0% Voids
#2A	17.50'	5,972 cf	**ADS_StormTech SC-740 +Cap** x 130 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 10 Rows of 13 Chambers
		9,836 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	17.50'	**12.0" Round Culvert** L= 179.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 17.50' / 15.20' S= 0.0128 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Device 1	18.40'	**24.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 1	19.50'	**3.5' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=4.34 cfs @ 12.20 hrs HW=19.58' (Free Discharge)
└**1=Culvert** (Barrel Controls 4.34 cfs @ 5.53 fps)
└**2=Orifice/Grate** (Passes < 4.63 cfs potential flow)
└**3=Sharp-Crested Rectangular Weir** (Passes < 0.26 cfs potential flow)

APPENDIX C – RECHARGE/WATER QUALITY AND TSS CALCULATIONS

RECHARGE VOLUME CALCULATIONS

WATER QUALITY CALCULATIONS

PROPRIETARY DEVICES CALCULATIONS

TSS CALCULATIONS

GREEN INTERNATIONAL AFFILIATES, INC.
239 LITTLETON ROAD, SUITE 3 WESTFORD, MA 01886
T: (978) 923-0400 | F: (978) 399-0033 | WWW.GREENINTL.COM

RECHARGE VOLUME CALCULATIONS

Date: October 22, 2018
Revised:
Project: East Boston Police Station
Project No: 16091
Location: Boston, MA

Prepared By: ED
Checked By: DS

Recharge Volume Design

Objective: Size infiltration BMPs that will approximate the annual recharge from the existing conditions.

Methodology: MA Department of Environmental Protection (DEP) Massachusetts Stormwater Handbook (Vol.3, Ch.1)

Design Criteria:

The required recharge volume equals a depth of runoff corresponding to the soil type times the increase in impervious areas covering that soil type at the post-development site.

Based on the Site Hydrologic Soil Group:

Hydrologic Soil Group	Soil Texture	Target Depth Factor (F)
A	Sand	0.60 inches
B	Loam	0.35 inches
C	Silty Loam	0.25 inches
D	Clay	0.10 inches

The soils are defined by the Soil Conservation Services (SCS) Soil Survey of Suffolk County of Massachusetts. The site is comprised of 'B' soils.

Required Drawdown Time: Maximum of 72 Hours using the following equation:

$$\text{Drawdown Time} = \frac{R_v}{(K x A_{Bot})}$$

R_v = Required Recharge Volume
K = Permeability
A_{Bot} = Bottom area of basin

Calculation Results:

Designation	Volume Required (cf)	Volume Provided (cf)
Subsurface Infiltration Basin	**2,869**	**4,744**

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Recharge Volume

Required: **Total Recharge Required**

Hydrologic Soil Group	Impervious Area (SF)*	Target Depth	Volume Required
A	0	0.60	0 cf
B	70,436	0.35	2,054 cf
C	0	0.25	0 cf
D	0	0.10	0 cf
Total	70,436		2,054 cf

* impervious area within our limit of work

	Impervious Area routed through Infiltration Basin:	Capture Area Adjustment	
A	0		
B	50,438		
C	0		
D	0		
Total	50,438	1.40	2,869 cf

Recharge Volume

Provided: **METHOD USED:** STATIC

Infiltration System

Drainage Area to Subsurface infiltration Basin

R_v = storage below lowest outlet (orifice) = 4,744 cf (Elev. 18.40, see hydrocad)

A_{Bot} = bottom area of basin = 4,713 sf

R_v cf	K in/hr	A_{Bot} sf	Drawdown Time Hours		
4,744	0.52	4,713	**23.23**	**<**	**72 Hours**

Stage-Area-Storage for Pond 1P: Stormtech

Elevation (feet)	Storage (cubic-feet)
16.50	0
16.55	71
16.60	141
16.65	212
16.70	283
16.75	353
16.80	424
16.85	495
16.90	566
16.95	636
17.00	707
17.05	778
17.10	848
17.15	919
17.20	990
17.25	1,060
17.30	1,131
17.35	1,202
17.40	1,272
17.45	1,343
17.50	1,414
17.55	1,605
17.60	1,796
17.65	1,987
17.70	2,177
17.75	2,366
17.80	2,555
17.85	2,743
17.90	2,930
17.95	3,116
18.00	3,301
18.05	3,485
18.10	3,669
18.15	3,851
18.20	4,032
18.25	4,212
18.30	4,390
18.35	4,568
18.40	4,744
18.45	4,919
18.50	5,093
18.55	5,266
18.60	5,436
18.65	5,606
18.70	5,773
18.75	5,939
18.80	6,103
18.85	6,265
18.90	6,426
18.95	6,584
19.00	6,740
19.05	6,895
19.10	7,047
19.15	7,197
19.20	7,343
19.25	7,487
19.30	7,628
19.35	7,766
19.40	7,901
19.45	8,033
19.50	8,160
19.55	8,284
19.60	8,404
19.65	8,518
19.70	8,625
19.75	8,725
19.80	8,816
19.85	8,900
19.90	8,980
19.95	9,056
20.00	9,129
20.05	9,200
20.10	9,270
20.15	9,341
20.20	9,412
20.25	9,482
20.30	9,553
20.35	9,624
20.40	9,694
20.45	9,765
20.50	**9,836**

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WATER QUALITY CALCULATIONS

Date: October 22, 2018
Revised:
Project: East Boston Police Station
Project No: 16091
Location: Boston, MA

Prepared By: ED
Checked By: DS

Objective: To determine the required Water Quality Volume (WQV) for adaqute stormwater treatment

Methodology: MA Department of Environmental Protection (DEP) Stormwater Management (Vol. 3, Ch. 1)

Design Criteria: Volume to be treated =1.0" x Post Development Impervious Area

Critical Areas (include ORW, ACEC, recharge areas for public water supplies (Zone Is, Zone IIs and Interim Wellhead Protection Areas for ground water sources and Zone As for surface water sources), bathing beaches, cold water fisheries, shellfish growing areas and LUHPPL's

Volume to be treated = 1.0" x Post Development Impervious Area

All WQ calculations use 1" per BWSC requirements

Calculation results:

Designation	Volume Required (cf)	Volume Provided (cf)
Subsurface Infiltration Basin	**4,203**	**4,744**

Volume to be Treated:

Drainage to Subsurface System

Total Proposed Impervious Area (including roof): **50,438** sf
Total Volume to be treated: **4,203 cf**

Volume Provided:

Drainage to Subsurface System

WQ_v = storage below lowest outlet (orifice) = **4,744 cf** (Elev. 18.4, see hydrocad tabl

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WATER QUALITY CALCULATIONS FOR PROPRIETARY DEVICES

Date: November 12, 2018
Revised:
Project: East Boston Police Station
Project No: 16091
Location: Boston, MA

Prepared By: ED
Checked By: DS

Objective: To determine the required Water Quality Volume (WQV) for adequate stormwater treatment for Proprietary devices

Methodology: MA Department of Environmental Protection (DEP) Standard method to convert required WQV to a discharge rate for sizing flow based manufactured proprietary stormwater treatment practices, dated 10/15/2013

Design Criteria: Volume to be treated = 0.5" x Post Development Impervious

Critical Areas(include ORW, ACEC, recharge areas for public water supplies (Zone Is, Zone IIs and Interim Wellhead Protection Areas for ground water sources and Zone As for
Volume to be treated = 1.0" x Post Development Impervious

All WQ calculations will use 1.0" per BWSC Requirements

$$Q_{1.0} = (qu)(A)(WQV)$$

$Q_{1.0}$ = flow rate associated with first 1-inch of runoff
qu = the unit peak discharge, in csm/in
A = impervious surface drainage area (including roof) (in square miles)
WQV = water quality volume in watershed inches (1.0-inches in this case)

Calculation results:

Designation	Flow Rate Required (cfs)	Provided (cfs)
Drainage to WQS-1	**0.09**	**0.18**
Drainage to WQS-2	**0.70**	**1.13**

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Flow Rate to be Treated:

Drainage to WQS-1

T_c =	6.0	min	0.1	hr
qu =	774.0	csm/in	(Figure 4 - Ia/P Curve for Type III Storm Distribution)	
A =	6,409	sf	0.0002299	sm
WQV =	267	cf		
$Q_{1.0}$ =	0.09	cfs		

Drainage to WQS-2

T_c =	6.0	min	0.1	hr
qu =	774.0	csm/in	(Figure 4- Ia/P Curve for Type III Storm Distribution)	
A =	50,438	sf	0.0018092	sm
WQV =	2,102	cf		
$Q_{1.0}$ =	0.70	cfs		

Volume Provided:

Drainage Area to WQS-1

WQ Unit is = Contech CDS 1515-3 (or approved equal)

WQ_r = flow rate treated before bypass= **0.18 cfs** (see Contech Flow Rate Table)

Drainage to WQS-2

WQ Unit is = Contech CDS 2020-5 (or approved equal)

WQ_r = flow rate treated before bypass= **1.13 cfs** (see Contech Flow Rate Table)

CONTECH ENGINEERED SOLUTIONS

CDS TECHNOLOGIES

CDS ESTIMATED NET ANNUAL SOLIDS LOAD REDUCTION
BASED ON THE RATIONAL RAINFALL METHOD

EAST BOSTON POLICE STATION
BOSTON, MA

Area	**0.20 ac**	Unit Site Designation	**WQS-01**
Weighted C	**0.9**	Rainfall Station #	**69**
t_c	**5 min**		
CDS Model	**1515-3**	CDS Treatment Capacity	**1.0 cfs**

Rainfall Intensity[1] (in/hr)	Percent Rainfall Volume[1]	Cumulative Rainfall Volume	Total Flowrate (cfs)	Treated Flowrate (cfs)	Incremental Removal (%)
0.02	10.2%	10.2%	0.00	0.00	9.9
0.04	9.6%	19.8%	0.01	0.01	9.3
0.06	9.4%	29.3%	0.01	0.01	9.1
0.08	7.7%	37.0%	0.01	0.01	7.4
0.10	8.6%	45.6%	0.02	0.02	8.2
0.12	6.3%	51.9%	0.02	0.02	6.0
0.14	4.7%	56.5%	0.03	0.03	4.5
0.16	4.6%	61.2%	0.03	0.03	4.4
0.18	3.5%	64.7%	0.03	0.03	3.4
0.20	4.3%	69.1%	0.04	0.04	4.1
0.25	8.0%	77.1%	0.05	0.05	7.5
0.30	5.6%	82.7%	0.05	0.05	5.2
0.35	4.4%	87.0%	0.06	0.06	4.1
0.40	2.5%	89.5%	0.07	0.07	2.3
0.45	2.5%	92.1%	0.08	0.08	2.3
0.50	1.4%	93.5%	0.09	0.09	1.3
0.75	5.0%	98.5%	0.14	0.14	4.4
1.00	1.0%	99.5%	0.18	0.18	0.9
1.50	0.0%	99.5%	0.27	0.27	0.0
2.00	0.0%	99.5%	0.36	0.36	0.0
3.00	0.5%	100.0%	0.54	0.54	0.3
					94.7
				Removal Efficiency Adjustment[2] =	6.5%
				Predicted % Annual Rainfall Treated =	93.5%
				Predicted Net Annual Load Removal Efficiency =	**88.2%**

1 - Based on 10 years of hourly precipitation data from NCDC Station 770, Boston WSFO AP, Suffolk County, MA
2 - Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.

CONTECH ENGINEERED SOLUTIONS

CDS TECHNOLOGIES

CDS ESTIMATED NET ANNUAL SOLIDS LOAD REDUCTION
BASED ON THE RATIONAL RAINFALL METHOD

EAST BOSTON POLICE STATION
BOSTON, MA

Area	1.26 ac	Unit Site Designation	WQS-02
Weighted C	0.9	Rainfall Station #	69
t_c	5 min		
CDS Model	2020-5	CDS Treatment Capacity	**2.2 cfs**

Rainfall Intensity[1] (in/hr)	Percent Rainfall Volume[1]	Cumulative Rainfall Volume	Total Flowrate (cfs)	Treated Flowrate (cfs)	Incremental Removal (%)
0.02	10.2%	10.2%	0.02	0.02	9.8
0.04	9.6%	19.8%	0.05	0.05	9.2
0.06	9.4%	29.3%	0.07	0.07	9.0
0.08	7.7%	37.0%	0.09	0.09	7.3
0.10	8.6%	45.6%	0.11	0.11	8.0
0.12	6.3%	51.9%	0.14	0.14	5.9
0.14	4.7%	56.5%	0.16	0.16	4.3
0.16	4.6%	61.2%	0.18	0.18	4.3
0.18	3.5%	64.7%	0.20	0.20	3.2
0.20	4.3%	69.1%	0.23	0.23	3.9
0.25	8.0%	77.1%	0.28	0.28	7.1
0.30	5.6%	82.7%	0.34	0.34	4.8
0.35	4.4%	87.0%	0.40	0.40	3.7
0.40	2.5%	89.5%	0.45	0.45	2.1
0.45	2.5%	92.1%	0.51	0.51	2.1
0.50	1.4%	93.5%	0.57	0.57	1.1
0.75	5.0%	98.5%	0.85	0.85	3.6
1.00	1.0%	99.5%	1.13	1.13	0.6
1.50	0.0%	99.5%	1.70	1.70	0.0
2.00	0.0%	99.5%	2.27	2.20	0.0
3.00	0.5%	100.0%	3.40	2.20	0.1
					90.1

Removal Efficiency Adjustment[2] =	6.5%
Predicted % Annual Rainfall Treated =	93.4%
Predicted Net Annual Load Removal Efficiency =	**83.7%**

1 - Based on 10 years of hourly precipitation data from NCDC Station 770, Boston WSFO AP, Suffolk County, MA
2 - Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.

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TOTAL SUSPENDED SOLIDS (TSS) REMOVAL WORKSHEET

Project:	Area A-7 Police Station - East Boston		
Date:	July 20, 2018		
Revised:	October 23, 2018		
Project No:	16091	**Prepared By:**	KK/ED
Location:	East Boston, MA	**Checked By:**	DHS

Legend:

TSS Removal Rate Prior to an Infiltration Basin

Discharge Location: **Drainage Area PDA-1B**

	A BMP	B TSS Removal Rate	C Starting TSS Load	D Amount Removed (BxC)	E Remaining Load (C-D)	F TSS Removal Rate
PRETREATMENT	Deep Sump and Hooded Catch Basin	0.25	1.00	0.25	0.75	25%
	Proprietary Pre-treatment (WQS)	0.25	0.75	0.19	0.56	44%

	A BMP	B TSS Removal Rate	C Starting TSS Load	D Amount Removed (BxC)	E Remaining Load (C-D)	F TSS Removal Rate
TREATMENT	Subsurface Infiltration Basin w/ Pretreatment	0.80	1.00	0.80	0.20	80%
		0.00	0.20	0.00	0.20	80%
		0.00	0.20	0.00	0.20	80%
		0.00	0.20	0.00	0.20	80%

Total TSS Removal = **80%**

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TOTAL SUSPENDED SOLIDS (TSS) REMOVAL WORKSHEET

Project:	Area A-7 Police Station - East Boston		
Date:	July 20, 2018		
Revised:	October 23, 2018		
Project No:	16091	**Prepared By:**	KK/ED
Location:	East Boston, MA	**Checked By:**	DHS

Legend:

TSS Removal Rate Prior to an Infiltration Basin

Discharge Location: **Drainage Area PDA-2B (Condor St)**

	A BMP	B TSS Removal Rate	C Starting TSS Load	D Amount Removed (BxC)	E Remaining Load (C-D)	F TSS Removal Rate
PRETREATMENT	Deep Sump and Hooded Catch Basin	0.25	1.00	0.25	0.75	25%
		0.00	0.75	0.00	0.75	25%

	A BMP	B TSS Removal Rate	C Starting TSS Load	D Amount Removed (BxC)	E Remaining Load (C-D)	F TSS Removal Rate
TREATMENT	Proprietary Treatment (WQS)	0.80	1.00	0.80	0.20	80%
		0.00	0.20	0.00	0.20	80%
		0.00	0.20	0.00	0.20	80%
		0.00	0.20	0.00	0.20	80%

Total TSS Removal = **80%**

APPENDIX D – TMDL INFORMATION

Waterbody Quality Assessment Report

Return to home page

2014 Waterbody Report for Chelsea River

On This Page

State: Massachusetts
Waterbody ID: MA71-06
Location: From confluence with Mill Creek, Chelsea/Revere to confluence with Boston Inner Harbor, Chelsea/East Boston/Charlestown.
State Waterbody Type: Estuary
EPA Waterbody Type: Bays and Estuaries
Water Size: .38
Units: square miles

Watershed Name: Charles

Waterbody History Report

Data are also available for these years:
2012 2010 2006 2004 2002 1998

Water Quality Assessment Status for Reporting Year 2014

The overall status of this waterbody is Impaired.

Description of this table

Designated Use	Designated Use Group	Status
Aesthetic	Aesthetic Value	Impaired
Fish Consumption	Aquatic Life Harvesting	Impaired
Fish, Other Aquatic Life And Wildlife	Fish, Shellfish, And Wildlife Protection And Propagation	Impaired
Primary Contact Recreation	Recreation	Impaired
Secondary Contact Recreation	Recreation	Impaired
Shellfish Harvesting	Aquatic Life Harvesting	Impaired

Causes of Impairment for Reporting Year 2014

Description of this table

Cause of Impairment	Cause of Impairment Group	Designated Use(s)	State TMDL Development Status
Ammonia, Un-ionized	Ammonia	Fish, Other Aquatic Life And Wildlife	TMDL needed
Debris/Floatables/Trash	Trash	Primary Contact Recreation, Aesthetic, Secondary Contact Recreation	Non-pollutant impairment
Dissolved Oxygen	Organic Enrichment/Oxygen Depletion	Fish, Other Aquatic Life And Wildlife	TMDL needed
Fecal Coliform	Pathogens	Primary Contact Recreation, Shellfish Harvesting, Secondary Contact Recreation	TMDL needed

Other Cause	Other Cause	Fish Consumption	TMDL needed
PCB(s) in Fish Tissue	Polychlorinated Biphenyls (PCBs)	Fish Consumption	TMDL needed
Petroleum Hydrocarbons	Oil and Grease	Primary Contact Recreation, Secondary Contact Recreation, Fish, Other Aquatic Life And Wildlife, Aesthetic	TMDL needed
Sediment Screening Value (Exceedence)	Total Toxics	Fish, Other Aquatic Life And Wildlife	TMDL needed
Taste and Odor	Taste, Color and Odor	Aesthetic, Primary Contact Recreation, Secondary Contact Recreation	TMDL needed
Turbidity	Turbidity	Aesthetic, Primary Contact Recreation, Secondary Contact Recreation	TMDL needed

Probable Sources Contributing to Impairment for Reporting Year 2014

Description of this table

Probable Source	Probable Source Group	Cause(s) of Impairment
Above Ground Storage Tank Leaks (Tank Farms)	Spills/Dumping	Petroleum Hydrocarbons; Sediment Screening Value (Exceedence)
Accidental Release/Spill	Spills/Dumping	Petroleum Hydrocarbons; Sediment Screening Value (Exceedence)
Cargo Loading/Unloading	Commercial Harbor And Port Activities	Petroleum Hydrocarbons; Sediment Screening Value (Exceedence)
Combined Sewer Overflows	Municipal Discharges/Sewage	Ammonia, Un-ionized; Debris/Floatables/Trash; Dissolved Oxygen; Fecal Coliform; Petroleum Hydrocarbons; Taste and Odor; Turbidity
Contaminated Sediments	Legacy/Historical Pollutants	Ammonia, Un-ionized; Dissolved Oxygen; Other Cause; PCB(s) in Fish Tissue; Petroleum Hydrocarbons
Industrial Point Source Discharge	Industrial	Ammonia, Un-ionized; Debris/Floatables/Trash; Dissolved Oxygen; Fecal Coliform; Petroleum Hydrocarbons; Taste and Odor; Turbidity

Municipal (Urbanized High Density Area)	Urban-Related Runoff/Stormwater	Petroleum Hydrocarbons; Sediment Screening Value (Exceedence)
Source Unknown	Unknown	Fecal Coliform; Other Cause; PCB(s) in Fish Tissue
Unspecified Urban Stormwater	Urban-Related Runoff/Stormwater	Ammonia, Un-ionized; Debris/Floatables/Trash; Dissolved Oxygen; Fecal Coliform; Petroleum Hydrocarbons; Taste and Odor; Turbidity

TMDLs That Apply to this waterbody

No TMDL data have been recorded by EPA for this waterbody.

Previous Causes of Impairments Now Attaining All Uses

No causes of impairment are recorded as attaining all uses for this waterbody.

October 19, 2018

APPENDIX E – SOILS INFORMATION

NRCS SOILS REPORT (FROM NRCS WEB SOIL SURVEY)

GEOTECHNICAL REPORT BY WESTON & SAMPSON

Hydrologic Soil Group—Norfolk and Suffolk Counties, Massachusetts
(East Boston Police Station Soils)

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

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

Soil Rating Lines

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

Soil Rating Points

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

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

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

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.

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Norfolk and Suffolk Counties, Massachusetts (MA616)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
1	Water		34.5	18.7%
254B	Merrimac fine sandy loam, 3 to 8 percent slopes	A	3.9	2.1%
602	Urban land, 0 to 15 percent slopes		2.7	1.5%
603	Urban land, wet substratum, 0 to 3 percent slopes		73.8	39.9%
627C	Newport-Urban land complex, 3 to 15 percent slopes	B	42.1	22.8%
655	Udorthents, wet substratum		28.0	15.1%
Totals for Area of Interest			**184.9**	**100.0%**

Description

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

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

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

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

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

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

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

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Weston & Sampson

westonandsampson.com

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Peabody, MA 01960 (HQ)
tel: 978.532.1900

GEOTECHNICAL ENGINEERING REPORT

PROPOSED EAST BOSTON POLICE STATION
BOSTON, MASSACHUSETTS

APRIL 5, 2017

WSE Project No. 2160866

Weston & Sampson
5 Centennial Drive, Peabody, MA 01960 (HQ)
Tel: 978.532.1900

WSE Project No. 2160866

April 5, 2017

Mr. James E. Vogel, AIA, CSI, LEED AP
Senior Associate
Leers Weinzapfel Associates Architects, Inc.
75 Kneeland Street, Suite 301
Boston, MA 02111

Re: Geotechnical Engineering Report
Proposed East Boston Police Station
Boston, Massachusetts

Dear Mr. Vogel:

Weston & Sampson Engineers, Inc. (Weston & Sampson) is pleased to submit our Geotechnical Engineering Report for the referenced project. This report presents descriptions and summaries of our services, encountered subsurface conditions, geotechnical considerations, and geotechnical recommendations for design and construction of the proposed project.

We appreciate the opportunity to be of service to you. If you have questions concerning this report or require additional information please contact us at 978-532-1900 Ext. 2324.

Very truly yours,
WESTON & SAMPSON ENGINEERS, INC.

Timothy J. Blair, EIT
Engineer II

Christopher J. Palmer, PE
Geotechnical Team Leader

O:\Boston MA\East Boston Police Station\Geotechnical\Report\EBPS - Cover Letter.docx

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FIGURES

APPENDICES

EXECUTIVE SUMMARY

Based on the results of our geotechnical engineering investigations, evaluations, and analyses, the proposed site redevelopment is feasible following the recommendations contained herein. Geotechnical considerations for the proposed site redevelopment are summarized below. A more comprehensive summary of geotechnical considerations and recommendations is provided in *Section 3.1*.

Explorations in the vicinity of the proposed building encountered 6 ft. to 19 ft. of urban fill containing variable amounts of debris overlying native soils. Explorations also encountered buried structures and rubble at various locations. Undocumented fill, debris, and rubble are not suitable for support of new foundations and other rigid site improvements, such as concrete slabs, that would be adversely affected by differential settlement caused by unknown and variable fill consistency and composition. Descriptions of geotechnical explorations and encountered subsurface conditions are included in *Section 2.0*.

Proposed structures can be supported on conventional shallow spread foundations provided either the footings extend through the existing fill to bear on native soils, the fill is completely removed (over-excavated) and replaced with structural fill, or the existing fill is improved in-place using compacted stone columns (CSCs) to limit post-construction settlement. Over-excavation and replacement may be more appropriate than ground improvement where native soils are present within several feet below proposed bottom-of-footing elevations (such as at the south end of the proposed building) but is likely impractical for greater fill thicknesses as excavation volumes will increase considerably with depth and excavations can require temporary excavation support and dewatering. A discussion of foundation alternatives and ground improvement is provided in *Section 3.1*.

The primary advantage of ground improvement is that most of the existing fill soils (and contamination) can remain in place and do not require on- or off-site disposal. The primary disadvantage of CSC ground improvement at this site is the potential for refusal on large pieces of debris and buried slabs, pavement, and foundation elements. Obstructions at proposed CSC locations will need to be removed and the resulting excavation backfilled prior to installation of the CSCs. Additional descriptions and recommendations for CSCs are provided in *Section 3.4*. Recommendations for design and construction of shallow foundations supported on ground improved using CSCs are provided in *Section 3.5*.

Risks of settlement associated with undocumented fill to exterior site improvements include cracking of exterior concrete slabs, sidewalks, and curbs, differential settlement of pavements, and improper drainage including ponding of surface water. Measures to reduce these risks are discussed in *Section 3.1*.

1.0 INTRODUCTION

This report presents the results of Weston & Sampson's geotechnical engineering evaluation for the proposed East Boston Police Station in Boston, Massachusetts. The site includes portions of abutting parcels 0 Condor Street and 338 East Eagle Street. The site's location relative to surrounding physical features is shown in *Figure 1 – Locus Map*.

The site occupies approximately 1.6 acres on the south side of Chelsea Creek at the corner of East Eagle Street and Condor Street as shown in *Figure 2 – Site Plan*. Based on historical records, portions of the site were once part of Chelsea Creek and were filled to the current ground surface elevations. The site has since undergone several decades of development and redevelopment.

The site is currently used by the City of Boston Public Works Department as an auxiliary yard for storage of equipment, vehicles, and road maintenance materials including sand, salt, and asphalt millings. An approximately 330-ft. long concrete retaining wall up to 5 ft. tall is located on the property line between the Condor Street and East Eagle Street parcels. The western portion of the site (Condor Street parcel) is generally vacant with a mixture of paved an unpaved surfaces and the eastern portion of the site (East Eagle Street parcel) is developed with a fabric salt shed, trailer office, recycling sheds, and paved parking and driveway areas. The southern end of a permanent easement associated with an NSTAR Electric submarine utility corridor beneath Chelsea Creek originates in the south central portion of the Condor Street parcel and extends through the northeast corner of the East Eagle Street parcel.

Based on schematic design plans provided by Leers Weinzapfel Associates Architects, Inc. (LWAA), dated January 27, 2017, the proposed project will include a one- to three-story police station building located in the southwest corner of the site and associated site improvements including a fuel facility, multiple exterior storage structures supported on concrete pads (i.e. slabs on-grade), asphalt concrete (AC) paved parking and driveway areas, Portland cement concrete (PCC) paved pedestrian walkways, a below-grade storm water infiltration system, and landscape areas. Locations of proposed structures and site improvements are shown in *Figure 3 – Conceptual Design Plan.*

Our geotechnical evaluation is based on subsurface explorations completed at the site in January and March of 2017. Approximate exploration locations are shown in *Figure 2* and logs of the explorations are included in *Appendix A* and *Appendix B*. Previous explorations were completed at the site in 2010 and 2011 by others and in 2016 by Weston & Sampson as part of environmental site assessments of both parcels. Approximate locations of previous explorations are also included in *Figure 2* and exploration logs are included in *Appendix D*.

1.1 Project Description and Understanding

Based on the schematic design plans provided by LWAA, we understand that the proposed police station building will have an approximate footprint of 12,750 square feet and will feature modular steel frame construction with first floor concrete slabs on-grade. The three-story portion of the building will occupy the approximate southern half of the footprint and contain office space and employee facilities with a proposed finished (first) floor elevation (FFE) of El. 28. The remaining single-story portion to the north will contain a booking area and detention cells with a proposed FFE of El. 28 and a lower level vehicle maintenance garage with a proposed FFE of El. 22. Details of the proposed fuel facility were

not available at the time of this report, but we expect that the fuel facility will include a PCC vehicle fueling pad, an above ground storage tank (AST) supported on a reinforced PCC slab, and possibly an overhead canopy structure.

Based on existing and proposed grades, up to 6 feet of grade increase will be required in portions of the building footprint. Proposed grades in other areas of the site are assumed to be within one foot of existing grades. We assume that new utility depths will be less than 10 feet below existing grades.

Structural loads were not available at the time of this report, but based on our experience with similar structures, we anticipate that loads will be less than 250 kips for columns and 5 kips per lineal foot for walls. First floor slab sustained areal loads are anticipated to be less than 250 pounds per square foot.

The proposed storm water management system includes a new below grade infiltration system north of the existing salt shed and associated utility and manhole connections. Based on information provided by Green International Affiliates, Inc. and LWAA, the proposed infiltration system will likely be constructed using StormTech® infiltration chambers and will have a holding capacity of approximately 8,850 cubic feet. The base of the infiltration system is proposed approximately 5 feet below existing grades.

We understand that proposed building types, locations, elevations, site grading, utility depths, etc. were preliminary at the time of this report. The recommendations in this report are therefore based on the above stated assumptions and the information provided to us at the time this report was prepared. We should be provided with revised project information as it becomes available and have the opportunity to review and revise our recommendations as necessary if proposed conditions change or differ from our assumptions.

1.2 Purpose and Scope

The purpose of our geotechnical evaluation was to explore subsurface conditions and provide geotechnical engineering recommendations for design and construction of the proposed East Boston Police Station and related site improvements. Our scope included a field reconnaissance, subsurface explorations, geotechnical engineering analyses, geotechnical laboratory testing, and preparation of this report summarizing geotechnical considerations and recommendations.

2.0 SITE CONDITIONS

2.1 Surface Conditions

The 1.6-acre site is located at the approximate location shown in ***Figure 1*** and includes a 0.7-acre portion of the 0 Condor Street parcel to the west and a 0.9-acre portion of the 338 East Eagle Street parcel to the east. An approximately 330-ft. long concrete retaining wall aligned slightly in the north-south direction across the site divides the Condor Street and East Eagle Street parcels and has an exposed wall height (i.e. retained height) of up to 5 feet. The foundation depth and configuration of the retaining wall is unknown. Other structures at the site and in the general site vicinity include a fabric salt shed, trailer office, and recycling sheds. The site and existing features are shown in ***Figure 2***.

In general, the site is bordered to the south by East Eagle Street, to the west by Condor Street, to the east by an existing fabric salt shed and paved parking and yard areas, and to the north by remaining portions of the Condor Street and East Eagle Street parcels that extend approximately 160 feet north to Chelsea Creek. Existing driveway, parking, and storage yard areas are generally surfaced with asphalt concrete pavement. An isolated wooded area is present near the center of the site.

Surface topography is relatively flat across the site with grades on the Condor Street parcel up to 5 feet lower than those on the East Eagle Street parcel. Based on a topographic survey completed by Surveying and Mapping Consultants, dated January 18, 2017, ground surface elevations slope gently from El. 29 to El. 25 along the southern site boundary to El. 19 to El. 22 along the northern site boundary. Elevations reference the Boston City Base (BCB) vertical datum.

2.2 Site History

Based on our review of historical fire insurance maps, topographic maps, and aerial photographs of the site and surrounding areas between the years 1888 and 2012, much of the site was formerly part of Chelsea Creek and has been filled to the current ground surface elevations. The 338 East Eagle Street parcel appears to have undergone two periods of mass filling between 1888 and 1927 and several periods of development and redevelopment between 1900 and 2012.

Prior to 1888 and up to 1900, the 0 Condor Street parcel was occupied by an industrial facility and developed with several associated above ground structures and storage tanks. Between 1888 and 1900, the East Eagle Street parcel was developed by Boston Elevated Railway Company (BERC) and included an electrical power station building located at the southwest corner of the parcel, a rail car storage building located towards the center of the parcel, and a smaller storage building to the west. The power station building was eventually converted into a substation and enlarged to include a lobby addition and the rail car storage building was removed and replaced with a car and bus repair and maintenance facility following the second period of filling and prior to 1927. The Massachusetts Bay Transportation Authority (MBTA) took ownership of the East Eagle Street parcel in the late 1940s and replaced the BERC maintenance facility with a T-shaped car and bus storage building. The MBTA ceased active operations at the East Eagle parcel around 1980 and all associated and remaining structures were removed prior to 1993.

The site and surrounding areas at the East Eagle Street and Condor Street parcels appear to have been developed to the general present conditions between 2010 and 2012.

2.3 Previous Subsurface Information

The following previous subsurface information was reviewed as part of our geotechnical evaluation. Approximate exploration locations are shown in *Figure 1* and copies of the referenced exploration logs are included in *Appendix D*.

- Logs of eleven borings (labeled BOS-1 through BOS-10) and five test pits (labeled BOS-11 through BOS-15) completed at the site in 2011 by TRC Environmental Corporation (TRC).

  Borings BOS-1 through BOS-10 extended to depths up to 21 feet and encountered 8 to 16 feet of undocumented FILL that generally consisted of sand and sand-silt mixtures with variable amounts of debris underlain by strata of native SILT, SILTY SAND, and CLAYEY SAND to the depths explored. Sample descriptions noted in the logs indicate that the fill in some areas contained a larger percentage of debris than soil. Photoionization detector (PID) readings noted in the boring logs indicate elevated levels of volatile organic compounds (VOCs) in some areas.

  Test pits BOS-11 through BOS-15 were excavated to depths up to 13 feet and generally encountered undocumented FILL consisting of sand and gravel with little to some cobbles and variable amounts of debris to the depths explored. Debris observed within the fill encountered in the borings and test pits generally included coal, ash, slag, wood, and fragments of brick, glass, plastic, and metal.

- A log and subsurface profile for one boring (labeled HA-1) completed approximately 60 feet north of the site in 2010 by Haley and Aldrich, Inc. (H&A).

  Boring HA-1 extended to a depth of approximately 80 feet and encountered up to approximately 20 feet of undocumented FILL generally consisting of silty sand with little gravel and layers of organic silt underlain by strata of native CLAY, SILTY SAND, and CLAYEY SAND overlying GLACIAL TILL to the depth explored. Cobbles and boulders were noted within the native soils.

- Logs of five Geoprobe® borings (labeled SB-1 through SB-5) completed at the Condor Street parcel in 2016 by Weston & Sampson as part of an environmental site assessment. Groundwater monitoring wells were installed in SB-1, SB-3, and SB-5.

  Borings SB-1 through SB-5 extended to depths up to 20 feet and encountered 5 to 15 feet of undocumented FILL generally consisting of sand and silty sand with variable amounts of debris including coal, ash, wood and fragments of brick and concrete underlain by strata of native CLAY and SILTY SAND to the depths explored. Thicknesses of the fill generally increased to the north. PID readings noted in the logs indicate elevated VOC levels in some areas.

- Logs of nine Geoprobe® borings (labeled SB-1 through SB-9) completed at the East Eagle Street parcel in 2016 by Weston & Sampson as part of an environmental site assessment. Groundwater monitoring wells were installed in all of these borings except SB-7.

  The borings extended to depths up to 25 feet and encountered 10 to 20 feet of undocumented FILL generally consisting of sand and silty sand with variable amounts of gravel and variable amounts of debris including coal, ash, wood and fragments of brick and concrete underlain by

native CLAY to the depths explored. Thicknesses of the fill generally increased to the north. PID readings noted in the logs indicate elevated VOC levels in some areas.

2.4 Subsurface Exploration Program

Our geotechnical subsurface exploration program consisted of ten borings (B-1 through B-8, B-9A, and B-9B) and nine test pits (TP-1 through TP-9) as described in the following sections. The purpose of our test pits was to visually identify the thickness and composition of undocumented fill, collect individual (grab) samples of the fill for laboratory testing, and investigate the presence of debris. Boulders, debris, and buried foundation elements likely associated with former structures were encountered in several of our explorations as described in *Section 2.5*.

Weston & Sampson geotechnical engineering staff monitored the exploration activities in the field, measured approximate exploration locations relative to existing site features, and prepared logs for each exploration. Approximate exploration locations relative to existing and proposed site features are shown in *Figure 2* and *Figure 3*, respectively. Boring and test pit logs containing detailed descriptions and photographs of the subsurface conditions encountered in each exploration are included in *Appendix A* and *Appendix B*, respectively.

2.4.1 Borings

The borings were completed by New England Boring Contractors, Inc. of Derry, New Hampshire between January 25 and 30, 2017 using a truck-mounted drill and drive-and-wash rotary drilling methods. Borings B-1 through B-5 were advanced to depths up to 51.0 feet below the existing ground surface (BGS) in the general vicinity of the proposed building footprint and the remaining borings (B-6 through B-8, B-9A, and B-9B) were advanced to depths up to 16.0 feet BGS in proposed pavement areas.

In general, blows from a 300-pound hammer falling approximately 18 inches were used to drive a 4-inch inside diameter (ID) steel casing to sample depths. After driving and prior to sampling, soil was removed from inside the casing using a carbide-tipped roller bit and circulated water to 'wash' cuttings to the ground surface. Open-hole drilling methods (i.e. no casing advance) were used where noted in the boring logs. An auger bit was used at borings located in existing pavement areas to penetrate the asphalt concrete.

Standard penetration tests (SPTs) were completed in each boring using a standard 24-inch long by 1-3/8-inch inside diameter (2-inch outside diameter) split spoon sampler driven by blows from a 140-pound automatic hammer falling 30 inches per blow. The sampler was driven a total of 24 inches unless sampling refusal was encountered. The number of blows required to drive the sampler the middle 12 inches is referred to as the 'SPT blow count', which is correlated to soil consistencies and engineering soil properties. SPT sampling intervals ranged from continuous (every 2 feet) to 'standard' (every 5 feet). SPT (sampler) refusal is defined as more than 100 hammer blows for less than six inches of sampler penetration. Drilling refusal is defined as no discernable roller bit advance over a period of approximately five minutes.

Attempts to collect undisturbed samples of the native clay in B-5 at depths of 29 feet and 37 feet using thin-walled (shelby) tube sampling methods encountered refusal (i.e. no sampler advance at

maximum down pressure) following 12 inches and 6 inches of penetration as noted in the boring log. Undisturbed samples were not able to be recovered.

2.4.2 Test Pits

The test pits were completed by Metro Equipment Corporation of Braintree, Massachusetts on March 9, 2017 using a CASE 580 Super-N backhoe (approximately 18,000 lbs.) equipped with a toothed bucket. The test pits were excavated to depths up to 13.0 ft. BGS in the general vicinity of the proposed building (TP-1 through TP-6), proposed fuel facility (TP-7), and proposed pavement areas (TP-8 and TP-9). All test pits except TP-2 were completed in existing pavement areas.

Relative densities of the soils encountered in each test pit were evaluated based on observed resistance to excavation and resistance to penetration of a ½-inch diameter steel foundation probe at depths less than 4 ft. BGS.

2.5 Subsurface Conditions

2.5.1 General

The subsurface conditions encountered in our explorations were generally consistent with previous geotechnical and environmental explorations and the site history. Detailed descriptions of the subsurface conditions encountered in our explorations are provided in the following sections.

Explorations completed in existing pavement areas generally encountered up to 5 inches of asphalt concrete (AC) at the ground surface underlain by a 3-inch thick gravel base layer in B-2, B-9A, B-9B, TP-8, and TP-9. Subsurface conditions immediately beneath the ground surface (or pavement section where encountered) generally consisted of existing FILL containing variable amounts of debris overlying native deposits of SILTY SAND, CLAY, and CLAYEY SAND to the depths explored. More debris than soil was encountered in some areas. Fill thickness in the vicinity of the proposed building footprint (B-1 through B-5) ranged from approximately 6 ft. to 19 ft. Explorations in the proposed parking areas north of the building (B-6 through B-9) were completed to depths up to 16.0 ft. and did not penetrate the fill.

Drilling and excavation refusal on larger pieces of debris within the fill and on boulders within the native soils were encountered in several of our explorations, including those completed within the footprints of the proposed building and fuel facility.

2.5.2 Fill and Debris

Existing non-engineered FILL was encountered in all explorations as noted above and the fill thickness generally increased to the north toward Chelsea Creek. Fill depths and thicknesses encountered in the test pits were generally consistent with the depths and thicknesses encountered in adjacent borings.

Fill composition varied across site and contained variable amounts of debris including coal ash, coal fragments, brick fragments, pieces of clay pipe, wood (lumber), and variable amounts of rubble including bricks, granite blocks and cobblestones, concrete, and steel. An approximately 2- to 3-ft. thick layer of buried rubble consisting mainly of granite blocks and cobblestones was encountered in

B-1 and TP-1 immediately beneath the existing pavement. An approximately 6-inch thick layer of AC was encountered in TP-7 approximately 1-ft. beneath the remnants of a former stockpile.

The upper 4 ft. to 10 ft. of the fill was generally granular and consisted of variable mixtures of SAND and GRAVEL with debris (as noted above), trace to little silt, and occasional to few cobbles and boulders. The underlying fill encountered in B-4, B-5, TP-5, and B-6 ranged from SILT to SILTY SAND and generally contained less debris. More debris than soils was encountered below a depth of 6 ft. in B-8 and below a depth of 8 ft. in TP-8. Fill consistencies generally ranged from loose to medium dense and medium stiff to very stiff. An approximately 12-inch thick buried topsoil layer was encountered in TP-5 at a depth of 4 ft.

Refusal on buried slabs and portions of foundation elements likely associated with former structures was encountered in several explorations including TP-6, B-9A, B-9B, and TP-9 at depths ranging from 3.8 ft. to 8.5 ft. and in portions of TP-2, TP-7, and TP-8 at depths ranging from 0.5 ft. to 6.0 ft. Refusal on cobblestone pavement (possibly a former walkway or driveway) was encountered at a depth of 1.2 ft. in TP-4. Detailed descriptions and photographs of the refusal conditions are included in the exploration logs.

2.5.3 Native Soils

Native soils underlying the fill generally consisted of medium dense to very dense SILTY SAND with little to some gravel and trace to little clay, medium stiff to hard CLAY with variable amounts of sand (up to sandy) and up to some gravel, and dense to very dense CLAYEY SAND with little to some gravel. A layer of medium dense, native SAND up to 4 ft. thick containing up to some silt, 4.2% organics, and trace shell fragments was encountered in B-5 immediately beneath the fill. Explorations B-2, TP-2, and B-3 encountered refusal on boulders within the native soils at depths of 15 ft., 8 ft., and 23 ft., respectively.

2.5.4 Groundwater

Observation and measurement of groundwater levels in the borings were not possible due to the use of water as a drilling fluid. Groundwater seepage was visually observed in test pits TP-1, TP-3, TP-7, and TP-8 below depths ranging 6.5 ft. to 12.0 ft.

Based on June 2016 and July 2016 monitoring well data collected by Weston & Sampson in monitoring wells MW-1, MW-3, and MW-5 at the Condor Street parcel and MW-1 through MW-9 at the East Eagle Parcel, groundwater depths vary across the site from approximately 5 feet near the corner of Condor Street and East Eagle Street to approximately 11 feet north of the existing salt shed. Groundwater data from the above period are included in ***Appendix E.***

Groundwater levels will fluctuate with season, variations in precipitation, construction in the area, tide fluctuations, and other factors. Perched groundwater conditions could exist above the primary groundwater table, especially during and after extended periods of wet weather.

2.6 Geotechnical Laboratory Testing

Laboratory grain size determinations were completed in accordance with ASTM D422/D1140 on individual (grab) samples obtained from the fill soils encountered in TP-1, TP-2, and TP-3 to determine particle size distributions, confirm field classifications, and evaluate suitability of the material for use as fill as described in the following sections. Laboratory test results are included in *Appendix C*. Moisture and organic content determinations were completed on select samples obtained from the borings and test pits, the results of which are included in the exploration logs.

3.0 GEOTECHNICAL RECOMMENDATIONS

3.1 General

Based on the results of our geotechnical evaluation and engineering analyses, the proposed site redevelopment is feasible following the recommendations contained herein. Specific geotechnical recommendations are provided in the following sections.

All explorations encountered urban fill containing variable amounts of debris. Borings completed in the area of the proposed building were advanced through 6 ft. to 19 ft. of fill (generally increasing in thickness from south to north) and into the underlying native soils, which generally consisted of medium dense to very dense silty sand, stiff to hard clay, and dense to very dense clayey sand to the depths explored. Test pit excavations, which were completed to further evaluate the fill composition and obstructions observed in the borings, encountered large pieces of debris and buried slabs, retaining walls, foundations, and cobblestone pavement.

Geotechnical considerations for the proposed site redevelopment include the presence of non-engineered fill, debris, and buried structures associated with prior site filling and development, contaminated soils, and groundwater. The existing fill and debris are not suitable for support of new foundations, structures, interior slabs, and site improvements that would be adversely affected by differential settlement caused by unknown and variable fill consistency and composition. Support of foundations on non-engineered fill is also not allowed by the Massachusetts Building Code.

Recommended foundation alternatives include over-excavation and replacement of the existing fill with imported structural fill within the zone-of-influence beneath proposed structures and adjacent features (including sidewalks and retaining walls) and in-situ ground improvement using compacted stone columns (CSCs). The ‘zone-of-influence’ extends horizontally away from the bottom outside edges of footings, slabs, and other site improvements a distance of two feet, then down and away at a 1H:1V (horizontal:vertical) slope to the intersection with undisturbed native soil. Over-excavation and replacement may be more appropriate than ground improvement where native soils are present within several feet below proposed bottom-of-footing elevations (such as at the south end of the proposed building) but is likely impractical for greater fill thicknesses as excavation volumes will increase considerably with depth and excavations can require temporary excavation support and dewatering.

Ground improvement with CSCs consists of constructing vertical columns of compacted crushed stone installed through the entire thickness of the existing fill to improve compaction and bearing capacity and reduce settlement associated with the fill. Following properly designed and constructed ground improvement, the existing fill can be used to support conventional shallow spread footings, new structural fill (for raising grades), slabs on-grade, and other site improvements. Ground improvement is recommended in proposed foundation, slab, and fill areas associated with the proposed building and associated structures including retaining and embedded building walls. Ground improvement is also recommended beneath the concrete pad at the fuel facility and the canopy footings, if planned.

The primary advantage of ground improvement is that most of the existing fill soils (and contamination) can remain in place and do not require on- or off-site disposal. The primary disadvantage of CSC ground improvement at this site is the potential for refusal on large pieces of debris and buried slabs, pavement, and foundation elements. Obstructions at proposed CSC locations will need to be removed and the resulting excavation backfilled prior to installation of the CSC. Additional descriptions and recommendations for CSCs are provided in *Section 3.4*. Recommendations for design and construction of shallow foundations supported on ground improved using CSCs are provided in *Section 3.5*.

Ground improvement can also be used to reduce post-construction settlement and improve performance of exterior rigid site improvements including (but not limited to) concrete sidewalks and pads supporting the evidence storage, trash and recycling, and bike storage structures. Ground improvement is recommended for the fuel facility as noted above. Risks to exterior site improvements associated with differential settlement of the existing fill include cracking of sidewalks and curbs, differential settlement of pavements, and irregular drainage including ponding of surface water. If it is not economically feasible to improve the existing fill beneath exterior rigid site improvements, the risk of damage can be reduced by maintaining grades at or below existing grades, adding additional reinforcement steel to control cracking, and providing a minimum thickness of imported structural fill beneath the proposed rigid improvements. Minimum recommended structural fill thicknesses are 1 ft. beneath lightly loaded features such as sidewalks and 2 ft. for the proposed slabs supporting lightly loaded structures. It is our opinion that flexible asphalt concrete pavements will likely perform adequately if the existing fill and subgrades are prepared as recommended herein.

New foundations and utilities should be designed and constructed so that excavations into zones of influences below existing footings and site features are not required. Such excavation would require excavation support and underpinning of existing features.

3.2 Earthwork

3.2.1 Site Preparation

Prior to earthwork and foundation construction, the site should be prepared by removing existing structures and associated foundation elements and abandoned utilities if their locations conflict with proposed foundations, areas of ground improvement, and associated site improvements. Associated loose and unsuitable fill materials and debris should also be removed. Excavations resulting from the aforementioned preparation should be brought back to grade with structural fill unless specific recommendations are provided by the ground improvement contractor for areas within proposed ground improvement areas. Any existing basements, vaults, and utilities encountered during site preparation should be removed or properly abandoned using structural fill, controlled density fill (CDF), or grouting in such a manner to prevent voids.

Site preparation for earthwork will also require removal of existing pavement, debris, and surficial organic and unsuitable (e.g. soft or disturbed) soils from all proposed pavement, building, and fill areas, and a 5-foot perimeter around those areas. Explorations completed in existing pavement areas encountered up to 5 inches of asphalt concrete pavement at the ground surface.

3.2.2 Subgrade Preparation and Protection

Following site preparation, Weston & Sampson should be contacted to evaluate the exposed subgrade. Soft and/or disturbed areas will require over-excavation and backfilling with compacted angular crushed stone or compacted structural fill. A geosynthetic separation layer between the excavation subgrade and crushed stone backfill may also be required. We recommend that a geosynthetic used for stabilization consist of a woven geosynthetic with an AOS of #70 to # 100 sieve, and a minimum puncture resistance of at least 120 pounds (such as Mirafi 180N or equivalent). Subgrades exposing existing granular fill should be recompacted and evaluated by the geotechnical engineer prior to placing overlying fill.

Soils containing more than trace amounts of silt are highly susceptible to softening and disturbance by construction activity during wet or freezing weather. Subgrade protection is the responsibility of the contractor and special precautions and protective measures appropriate for the weather and traffic conditions during construction should be used during earthwork and foundation construction to preserve the integrity of subgrades.

Construction traffic should not operate directly on subgrades. If the construction schedule allows, existing pavement areas can be used as staging areas but the existing asphalt concrete pavement section should not be expected to protect subgrades from concentrated heavy construction traffic.

If footing construction is to occur in wet conditions, a few inches of crushed stone may be placed at the base of footings to reduce subgrade disturbance and softening during construction. If footing construction occurs during freezing conditions, insulating blankets, heaters, or other suitable measures should be employed to prevent foundation subgrades from freezing until the foundations are backfilled sufficiently to prevent frost from reaching the footing subgrades.

3.2.3 Excavation Considerations

Excavation will be required for site preparation, foundation construction, utility construction, etc. Groundwater and surface water should be controlled during construction and prevented from eroding slopes and disturbing excavation and subgrade materials. Excavations may encounter groundwater and moderate to severe caving should be expected where seepage is present. Flowing conditions are possible where granular soils and groundwater seepage are present.

Depending on excavation depth and amount of groundwater seepage, dewatering may be necessary. Flow rates for dewatering are likely to vary depending on location, soil type, tidal fluctuations, and the season during which the excavation occurs. The dewatering systems should be designed by the contractor and be capable of adapting to variable flows and conditions.

Temporary excavation support will likely be required for excavation depths greater than 4 feet and where ground water seepage is present. Temporary excavation support should be anticipated if excavations approach the zone-of-influence beneath existing footings, structures, site features, or property lines. As noted above, foundations and utilities should be designed and constructed so that excavations into zones of influences below footings are not required.

We recommend that the type and design of shoring and dewatering systems be the responsibility of the contractor, who is in the best position to choose a system that fits the overall plan of operation. All excavations should be made in accordance with applicable OSHA safety regulations.

Earthwork and foundation construction at this site will likely encounter buried utilities, foundation elements, debris, organics, and possibly contaminated soils and groundwater. The earthwork and foundation contractors should be advised of the potential for such materials and we recommend that the project budget and schedule include contingencies for difficult excavation, debris removal, increased backfill volumes, utility removal and/or abandonment, and handling and disposal of contaminated materials including soil, debris, and groundwater. The project Licensed Site Professional (LSP) should be consulted for requirements regarding handling and disposal of contaminated materials.

3.2.4 Removal of Existing Foundations

Several explorations encountered buried debris and foundation elements, likely associated with former structures. Existing foundation elements (or portions of elements) including footings, embedded building walls, and slabs should be completely removed if their location conflicts with new foundation elements, utilities, and other proposed site improvements. Any undocumented fill, debris, and loose or disturbed soils associated with existing elements should be removed and the resulting excavations backfilled with structural fill in a manner to prevent voids. Filling of smaller areas or voids may require use of grout or flowable fill.

We recommend that any existing foundation elements or buried structures to remain be covered with a minimum of 12 inches of granular structural fill to reduce differences in subgrade stiffness that could result in damage to overlying slabs or other features. Slabs left in place should be cracked through the full depth of the slab on approximate 3 ft. center-to-center spacing to allow drainage.

3.2.5 Trenches

Utility trenches should be excavated as recommended in Section 3.2.3, above. Pipe bedding should be installed in accordance with the pipe manufacturers' recommendations. If groundwater seepage or standing water is present in the base of utility trench excavations, we recommend over-excavating the trench by 12 to 18 inches and placing trench stabilization material in the base. Trench stabilization material should consist of well-graded, crushed stone or crushed gravel with a maximum particle size of 4 inches and be free of deleterious materials. The percent passing the U.S. Standard No. 200 Sieve should be less than 5 percent by weight when tested in accordance with ASTM C 117. It may be necessary to include a filter fabric separation layer between the stabilization material and the bottom and sides of excavations.

Trench backfill above the pipe zone should consist of well graded, angular crushed stone or sand fill with less than 10 percent passing a #200 sieve. Trench backfill should be compacted to 92 percent relative to ASTM D1557 and to 95 percent of maximum dry density as determined by ASTM D1557 within 3 feet of finished grades. Construction of hard surfaces, such as sidewalks or pavement, should not occur within two weeks of backfilling.

3.2.6 Fill

Imported well graded sand and gravel fill with less than approximately 10 percent fines (such as MassDOT M1.03.0-type B Gravel Borrow or M2.01.7 Dense-graded Crushed Stone) is recommended for use as Structural Fill within the zone of influence beneath the proposed building, slab, and associated structures and other structural site improvements. Structural Fill should be placed in maximum 10 inch thick lifts (measured prior to compaction) with each lift compacted to at least 95 percent of maximum dry density as determined by ASTM D1557 (modified proctor) for the specific fill material.

Based on the materials observed in our explorations and results of laboratory testing, reuse of on-site materials in areas outside proposed structures may be feasible provided the meet the requirements for Common Fill described below. Use of on-site materials as fill should be evaluated by case basis by the geotechnical engineer during construction.

On-site granular soils containing less than approximately 20 percent fines and free of organics, contamination (including metals, VOCs, SVOCs, etc.), and other deleterious materials may be suitable for use as fill in areas outside proposed structures (i.e. Common Fill) if properly moisture conditioned. Moisture conditioning, if required, could consist of drying by scarification and frequent mixing in thin lifts during warm, dry conditions. Once moisture contents are within 3 percent of optimum, the material should be placed in lifts not exceeding 10 inches in loose thickness and compacted to at least 92 percent relative to ASTM D1557.

In wet conditions, or if on-site material is not available or suitable for use, fill should consist of imported granular soil or dense graded crushed stone as recommended above for S.

In confined areas and where only hand-guided compaction equipment can be used, the lift thickness should be reduced to not more than six inches.

3.2.7 Slopes

Soil slopes should be excavated with a smooth excavator bucket with the surface repaired if disturbed. Surface runoff should be routed so that it does not run down the face of the slopes. Erosion control is critical to maintaining all slopes and should be in place immediately after construction of all slopes. All slopes and excavations should be constructed in accordance with applicable OSHA and local safety standards.

Temporary slopes up to 10 feet high can be inclined up to 1.5H:1V provided no seepage or sloughing is present. Equipment should not be allowed to induce vibration or infiltrate water above the slopes and no surcharges should be located within ten feet of slope crests. Temporary slopes should be expected to ravel somewhat, depending on weather conditions, soil conditions, seepage, and duration of exposure. Soft or loose fill soils and the presence of seepage may require flatter slopes, erosion control measures, drainage elements, and/or temporary excavation support.

Permanent slopes up to 5 feet high should be formed at 2H:1V or flatter. The face of fill slopes should be overbuilt and cut back into compacted materials with a smooth excavator bucket.

3.3 Seismic Design

3.3.1 Site Class

Seismic site class is determined in accordance with the International Building Code (IBC) as adapted by the Massachusetts State Building Code using a weighted average of SPT blow counts in the upper 100 feet of soil at a site. Based on the soil types and consistencies encountered in our explorations and previous explorations at and within close proximity to the site, we recommend that the subject project be evaluated using parameters associated with Site Class D.

3.3.2 Liquefaction Potential

Liquefaction can occur in loose, saturated, granular soils. Strong shaking, such as that experienced during earthquakes, can cause a sudden loss of shear strength, densification, and subsequent settlement of these soils. Based on the soil types and consistencies encountered in our explorations and the proposed foundation alternatives, the risk of structurally damaging ground deformations is low.

3.4 Compacted Stone Columns

Compacted stone columns (CSCs), also known by the trademarked names Geopiers®, Rammed Aggregate Piers®, and Vibro Piers™, consist of columns of compacted aggregate used to improve soils beneath shallow foundations, slabs, areas of structural fill, and other site improvements to meet project performance requirements for allowable bearing capacity and settlement performance. CSC design is typically completed by the CSC installer based on performance specifications (tolerable settlement, allowable bearing capacity, etc.) specified in the Contract Documents. Settlement of slabs and other improvements overlying ground improved with properly designed and constructed CSCs is expected to be less than one inch.

We recommend that proposed building foundations, interior slabs, new structural fill in the building area, site improvements immediately adjacent to and connected to the building (including but not limited to sidewalks and retaining walls), and the fuel island slab and canopy footings (if planned) be supported on ground improvement unless the existing fill is completely removed and replaced with structural fill as recommended herein. Ground improvement may also be used to reduce post-construction settlement of other site improvements as discussed in ***Section 3.1***, above.

Based on existing site grades and proposed finished first floor elevations, up to 6 feet of grade increase will be required in portions of the proposed building footprint. The ground improvement contractor should account for added loads associated with the proposed grade increases in the CSC design.

Obstructions should be anticipated during CSC construction and obstruction removal or spudding may be required. Spudding is essentially driving a heavy steel section into the ground to punch through or break up or displace obstructions to allow for CSC installation.

The ground improvement contractor should be aware of the potential for obstructions and the potential need for special installation techniques. The foundation contractor should also be aware of the

presence of contamination and the need to decontaminate equipment during and/or following CSC installation in various areas of the site. The contractor may conduct additional borings or test pits to further evaluate the potential for obstructions. The project schedule and budget should include contingencies for obstruction removal and decontamination requirements.

3.5 Shallow Foundations

The proposed structures, with the previously stated structural loads, can be supported by shallow spread footings bearing on medium dense (or dense) native SAND or SILTY SAND, existing fill soils improved using CSCs, or properly constructed structural fill overlying improved fill or suitable native soils.

Footings founded as recommended above can be designed using a preliminary allowable bearing pressure of 4,000 psf. The allowable bearing pressure can be increased to 6,000 psf to resist temporary wind and seismic loads provided the resultant of load eccentricities remain within the middle third of the footing. Resistance to lateral loads can be provided by passive lateral earth pressure at the sides of footings, ignoring the top 12 inches of embedment, and by a footing base friction coefficient of 0.45.

Foundations for proposed structures should be designed in accordance with the provisions of the current edition of the Massachusetts State Building Code. Footings should be embedded at least 4 ft. below the nearest proposed adjacent ground surface exposed to freezing. Interior foundation bearing surfaces not exposed to freezing should be embedded at least 18 inches below the lowest overlying floor slab elevation but these footings may require special frost protection measures if constructed during freezing conditions.

CSC ground improvement should be designed and constructed to limit total settlement to 1-inch and differential settlement between adjacent footings to ½-inch. The majority of foundation settlement is expected to occur during construction. We recommend that construction of settlement sensitive building elements such as dry wall and tiling be delayed as long as practicable to reduce the potential for damage due to post-construction settlements.

Undocumented fill and loose or disturbed soils should be removed from all foundation areas unless improved by CSCs. We should be contacted to observe preparation of all foundation subgrades and CSC installation. Footing subgrades in granular materials should be proof compacted with at least 5 passes of a vibratory plate compactor. All footing subgrades should be observed by Weston & Sampson prior to placement of subgrade stabilization materials, concrete forms, and rebar.

We recommend that a few inches of crushed stone be placed and compacted at the base of footing excavations to protect subgrades from disturbance during construction and wet weather conditions. If footing construction occurs during freezing conditions, insulating blankets, heaters, or other suitable measured should be employed to prevent foundation subgrades from freezing until the foundations are backfilled sufficiently to prevent frost from reaching the footing subgrades. The contractor is responsible for subgrade protection.

3.6 Slabs

Slabs on-grade should be supported over ground improved by CSCs as recommended above. First floor slabs on-grade supporting sustained dead loads up to 250 psf bearing directly on CSC-improved fill or properly constructed structural fill overlying the improved materials are expected to induce less than one inch of total settlement. A minimum of six inches of clean, angular crushed stone with no more than 6 percent passing a #200 sieve is recommended for underslab stone. We should be contacted to evaluate the subgrade prior to placement of the underslab stone. Underslab stone should be compacted to 95 percent compaction relative to ASTM D1557, and should be proof rolled as well. Any areas contaminated with fines or debris should be removed and replaced with clean stone. If the underslab stone is saturated or trapping water, the water should be removed prior to slab placement.

The project LSP should evaluate the need for special measures to prevent intrusion of potentially harmful vapors through the floor slab. Some flooring manufacturers require specific slab moisture levels and/or vapor barriers to validate the warranties on their products. A properly installed and protected vapor flow retardant can reduce slab moistures. If a vapor flow retardant is used, care should be taken not to trap moisture within the overlying granular fill and floor slab concrete.

3.7 Retaining Structures

3.7.1 General

The following recommendations are based on the assumptions that: (1) walls consist of concrete cantilevered retaining or embedded building walls, (2) wall backfill is level and consists of free draining, angular, granular material, and (3) walls are less than 10 feet in exposed height. All retaining and embedded building walls should include drainage as recommended in *Section 3.8*.

3.7.2 Lateral Earth Pressures

Lateral earth pressures on retaining walls unrestrained from rotation with level backfill and drainage provided behind the wall should be calculated using an equivalent fluid unit weight of 40 pcf. This unit weight should be increased to 60 pcf for walls that are restrained from rotation such as embedded building walls or walls connected to structures such as backfilled stem walls supporting floor slabs.

A uniform lateral pressure of 150 pounds per square foot (psf) should be added to the above pressures and applied over the full backfill height of all walls. The 150 psf lateral pressure is intended to account for vertical surcharge pressures at the tops of walls up to 300 psf. Additional lateral pressures equal to 0.5 times the additional surcharge pressure should be added to walls where surcharge pressures exceed 300 psf.

Driving forces can be resisted by passive pressure at the toe of the wall using an equivalent fluid pressure of 350 pcf (this should exclude the top 12 inches of embedment). Retaining wall foundations should be supported on ground improved by CSCs and designed as recommended in *Section 3.5*.

3.7.3 Backfill

Retaining and embedded building walls should be backfilled with clean, imported, granular soil with less than 10 percent fines, such as clean sand or crushed stone. This material should be compacted to a minimum of 92 percent relative to ASTM D-1557 (modified proctor). Within 3 feet of the wall, backfill should be compacted to not more than 90 percent relative to ASTM D-1557 using hand-operated equipment.

Retaining structures typically rotate and displace up to 1 percent of the wall height during development of active pressures behind the wall. We therefore recommend that construction of improvements adjacent to the top of walls be delayed until approximately two weeks after wall construction and backfill.

3.8 Drainage

All retaining and embedded walls regardless of height should include drainage as recommend below unless designed to resist hydrostatic pressures over the full height of the wall. Perimeter foundation drains are recommended where proposed slab elevations are below existing (pre-construction) grades.

Exterior ground surfaces should be sloped to drain away from all structures including walkways, pavements, and landscaping. Drainage elements such as catch basins or strip drains should provide drainage if sloping is not possible. Gutters and drains should be tight-lined to a suitable erosion protected discharge and maintained as free-flowing. Cleanouts and redundant drain pipes are recommended.

Foundation and retaining wall drains should consist of a two-foot wide zone of drainage stone (such as washed crushed stone) surrounding a 4-inch diameter perforated pipe (minimum six inches all around) with the stone fully encased with a non-woven filter fabric. The drainage stone should have no more than 2 percent passing a #200 sieve and should extend to within one foot of the ground surface. The geosynthetic should have an AOS of a #70 sieve, a minimum permittivity of 1.0 sec-1, and a minimum puncture resistance of 80 pounds (such as Mirafi 160N or approved equivalent). The perforated drain pipe should be installed with the crown of the pipe at least one foot below the interior building slab level or grade along the toe of the wall. Retaining wall and foundation drains should be routed to a suitable, erosion protected discharge.

3.9 Asphalt Concrete Pavement

Based on information you provided regarding the type and frequency of expected traffic, we have developed an asphalt concrete pavement thickness/section for areas exposed to one-way average daily traffic (ADT) of 300 vehicles comprised of 90% passenger cars, 5% 6-wheel trucks, 2% three-axle trucks, and 3% four-axle trucks (assumed) based on a 20-year design life and 1% annual traffic growth. Equivalency factors provided in the following table were used to normalize each vehicle type to an 18-kip equivalent single axle load (ESAL) for use in pavement design.

Our pavement recommendations are based on the assumption that construction will be completed during an extended period of dry weather, and pavement subgrades will be compacted to a minimum

of 95 percent of the material's maximum dry density (as determined by ASTM D 1557) and have a minimum resilient modulus of 6,000 psi. Subgrade soils not meeting these assumptions should be scarified and compacted. Construction during wet conditions, or when the subgrade soils cannot be adequately scarified and compacted, will require stabilization by removing unsuitable soils and replacement with compacted granular fill (e.g. base material) prepared as specified for structural fill.

Subgrades should be prepared in accordance with Section 170 of the MassDOT Standard Specifications for Highway and Bridges and the ***Earthwork*** section of this report. Prior to placing granular base material, the prepared subgrade should be proof rolled using a fully loaded 10-wheeled dump truck. We should be contacted to observe proof rolling and identify any soft, disturbed, or yielding materials. Unsuitable areas should be repaired by scarifying and compacting or by over-excavation and replacement with a well graded, angular crushed stone (or gravel subbase material) compacted as recommended for structural fill. If a stabilization geosynthetic is required, we recommend a woven geosynthetic with an AOS of #70 to #100 sieve, and a minimum puncture resistance of 120 pounds (such as Mirafi FW700 or equivalent).

Granular base material should be angular crushed stone or stone conforming to MassDOT Material Specification M2.01.7 (Dense-graded Crushed Stone). Pavement base and subbase materials should be prepared in accordance with Sections 401 through 405 of the MassDOT Standard Specifications. Asphalt concrete should conform to Section M3 of the MassDOT Material Specifications and be compacted to a minimum of 91 percent of a Rice Density.

Our pavement design is based on the aforementioned assumptions, methods contained in the 1993 *AASHTO Guide for Design of Pavement Structures,* and the design parameters and assumptions included in the following table.

Pavement Design Parameters

Reliability, R	90%
Subgrade Resilient Modulus (Mr)	6,000 psi
Initial Serviceability (Po)	4.2
Terminal Serviceability (Pt)	2.5
Base drainage coefficients	1.0
Design Life	20 years
Traffic Growth, Annual Increase	1%
Passenger Cars Traffic Per Day, ESAL Factor	270 cars, 0.0020
6 Tire Trucks Traffic Per Day, ESAL Factor	18 trucks, 0.2004
Three Axle Trucks Traffic Per Day, ESAL Factor	6 trucks, 1.13084
Four Axle Trucks Traffic Per Day, ESAL Factor	9 trucks, 3.4784
Pavement Structural Coefficients	
Asphalt, wearing course	0.42
Asphalt, base course	0.34
Base Aggregate	0.14

Based on the above parameters, the pavement section shown in the following table will provide adequate support of the aforementioned traffic loads. Design ESALs were calculated by multiplying total average annual ESALs by the design life of 20 years.

Design ESALs	AC, TOP COURSE	AC, BASE COURSE	BASE AGGREGATE
185,639	2 inches	2.5 inches	8 inches

The above recommended thicknesses are intended to be the minimum acceptable for construction during a period of dry weather. Increased aggregate thicknesses may be required for construction during wet conditions and/or to provide additional frost protection as described in the following section.

3.9.1 Frost Protection

Pavement structures are susceptible to frost (i.e. freeze-thaw cycles), which generally result in reduced pavement life and increased maintenance costs. We generally recommend a minimum total pavement structure thickness (AC + Base Aggregate) of 19 inches to provide some degree of frost protection. This minimum thickness is intended to reduce, not prevent frost damage.

The above pavement section has a total thickness of 12.5 inches. Depending on available funds, the City may consider increasing the pavement section to increase frost protection. This can be accomplished by increasing the thickness of the base aggregate layer or adding a layer of Gravel Borrow (MassDOT M1.03.0, Type b) below the base aggregate layer.

3.10 Additional Explorations

As we expect the need for obstruction removal will impact the project schedule and budget, we recommend that additional geotechnical explorations be completed as part of final design to identify the limits of known obstructions and unknown obstructions that may be present between exploration locations. Additional explorations may consist of test pits, borings, and/or probes. We can provide a scope for additional explorations if requested.

4.0 LIMITATIONS

4.1 Observation of Construction

Satisfactory earthwork and foundation performance depends to a large degree on the quality of construction. Subsurface conditions observed during construction should be compared with those encountered during the subsurface explorations. Recognition of changed conditions often requires experience; therefore, qualified personnel should visit the site with sufficient frequency to detect whether subsurface conditions change significantly from those anticipated. In addition, sufficient monitoring of the contractor's activities is a key part of determining that the work is completed in accordance with the construction drawings and specifications. Full time observation of ground improvement (CSCs) is required by the Massachusetts State Building Code, and is generally required by the CSC design.

4.2 Variations of Subsurface Conditions and Use of Report

We have prepared this report for use by Leers Weinzapfel Associates Architects and members of the design and construction team for the subject project and sites, only. The data and report can be used for estimating purposes, but our report, conclusions, and interpretations should not be construed as a warranty of the subsurface conditions and are not applicable to other sites.

Soil borings indicate soil conditions only at specific locations and only to the depths penetrated. They do not necessarily reflect subsurface conditions that may exist between exploration locations. If subsurface conditions differing from those described are noted during the course of excavation and construction, reevaluation will be necessary.

Site development plans and design details were considered preliminary at the time this report was prepared. If changes are made in site grades, configuration, design loads, or type of construction for the structure, the conclusions and recommendations may not be applicable. If design changes are made, we should be retained to review our conclusions and recommendations and provide a written evaluation or modification. Additional geotechnical engineering explorations are recommended for final design.

Within the limitations of scope, schedule, and budget, our services have been executed in accordance with generally accepted practices in this area at the time this report was prepared. No warranty or other conditions, expressed or implied, are given.

FIGURES

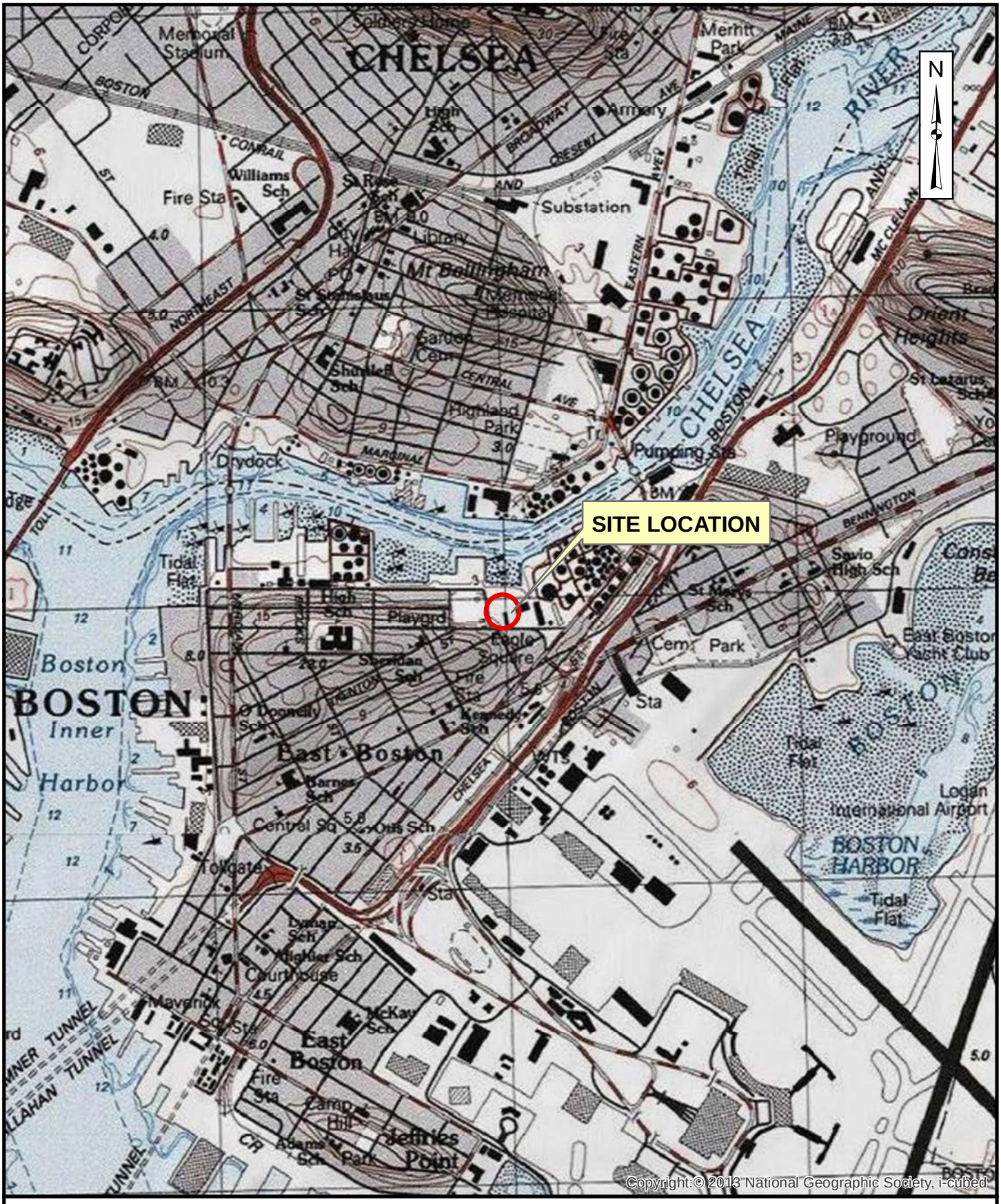

FIGURE 1

0 CONDOR STREET & 338 EAST EAGLE STREET
BOSTON, MASSACHUSETTS

LOCUS MAP

0 2,000 4,000 **Feet**

Weston&Sampson

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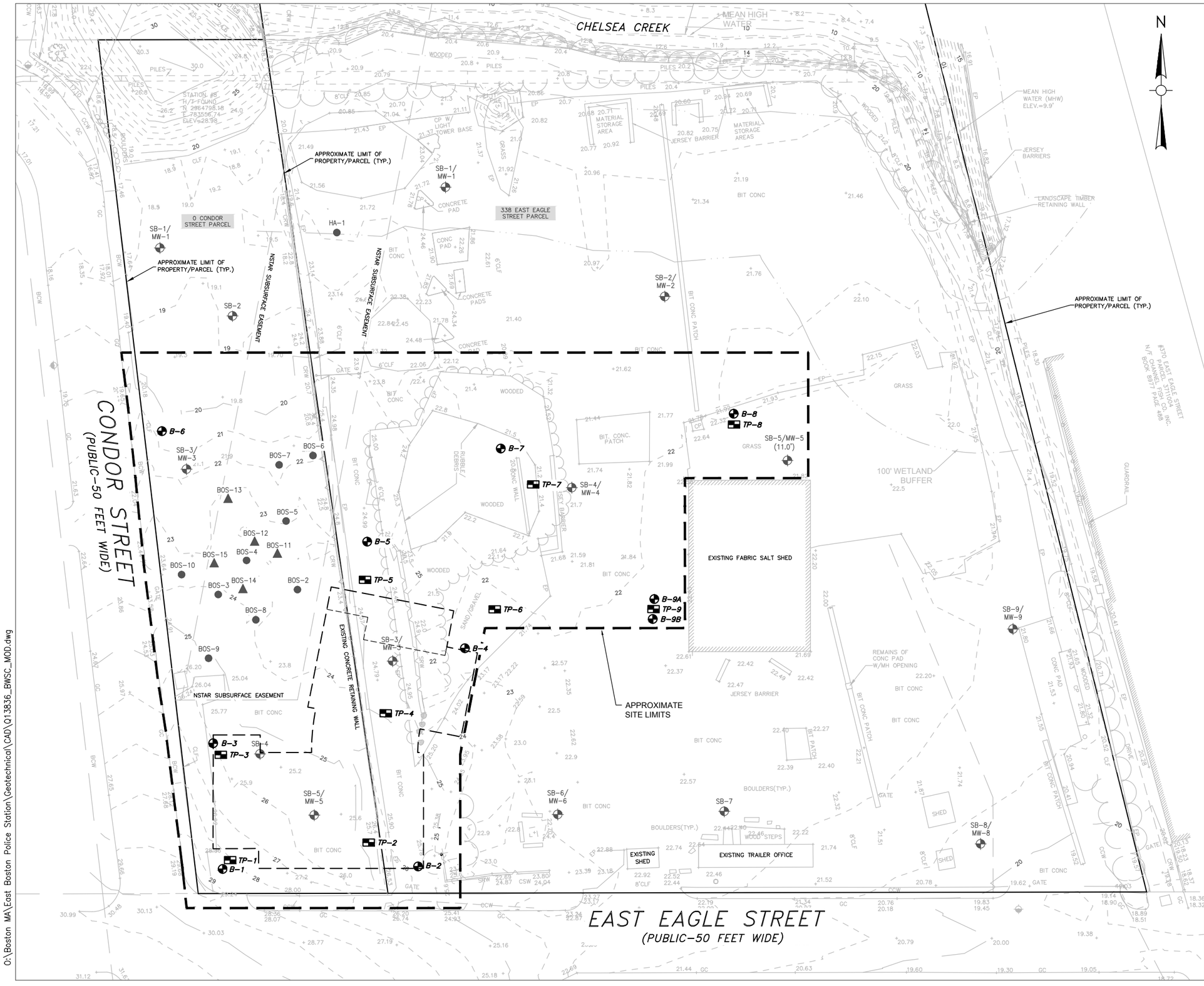

NOTES:

1. THIS DRAWING IS BASED ON AN EXISTING CONDITIONS AND TOPOGRAPHIC SURVEY PLAN PREPARED BY SURVEYING AND MAPPING CONSULTANTS OF BRAINTREE, MA, DATED JANUARY 18, 2017.
2. ELEVATIONS REFERENCE THE BOSTON CITY BASE (BCB) VERTICAL DATUM UNLESS NOTED OTHERWISE.
3. EXISTING ABOVE– AND BELOW–GRADE UTILITIES ARE NOT SHOWN FOR CLARITY.
4. BORINGS B–1 THROUGH B–8, B–9A, AND B–9B COMPLETED BY NEW ENGLAND BORING CONTRACTORS OF DERRY, NH AND OBSERVED BY WESTON & SAMPSON ENGINEERS ON JANUARY 25, 26, 27, AND 30, 2017. BORING LOCATIONS ARE APPROXIMATE AND BASED ON FIELD MEASUREMENTS RELATIVE TO EXISTING SITE FEATURES.
5. TEST PITS TP–1 THROUGH TP–9 COMPLETED BY METRO EQUIPMENT OF BRAINTREE, MA AND OBSERVED BY WESTON & SAMPSON ENGINEERS ON MARCH 9, 2017. TEST PIT LOCATIONS INDICATE THE APPROXIMATE CENTER–OF–TEST PIT AND ARE BASED ON FIELD MEASUREMENTS RELATIVE TO EXISTING SITE FEATURES.
6. GEOPROBE® BORINGS SB–1 THROUGH SB–5 AT THE 0 CONDOR STREET PARCEL AND SB–1 THROUGH SB–9 AT THE 338 EAST EAGLE STREET PARCEL OBSERVED BY WESTON & SAMPSON ON JUNE 6 AND 7, 2016.
7. BORINGS BOS–1 THROUGH BOS–10 AND BORING HA–1 COMPLETED BY OTHERS IN 2010 AND 2011.
8. TEST PITS BOS–11 THROUGH BOS–15 COMPLETED BY OTHERS IN 2011.

LEGEND:

B–X	WESTON & SAMPSON GEOTECHNICAL BORING NUMBER AND APPROXIMATE LOCATION.
TP–X	WESTON & SAMPSON GEOTECHNICAL TEST PIT NUMBER AND APPROXIMATE LOCATION.
SB–X/ MW–X	PREVIOUS WESTON & SAMPSON ENVIRONMENTAL GEOPROBE® BORING / MONITORING WELL NUMBER AND APPROXIMATE LOCATION
HA–X, BOS–X	PREVIOUS BORING NUMBER AND APPROXIMATE LOCATION (COMPLETED BY OTHERS).
BOS–X	PREVIOUS TEST PIT NUMBER AND APPROXIMATE LOCATION (COMPLETED BY OTHERS).

50 25 0 50 100

SCALE: 1"=50'

FIGURE 2 - SITE PLAN

EAST BOSTON POLICE STATION - BOSTON□MA

DESIGNED BY: T□B	CHECKED BY: C□P	DATE: MARCH 2017

Weston & Sampson℠

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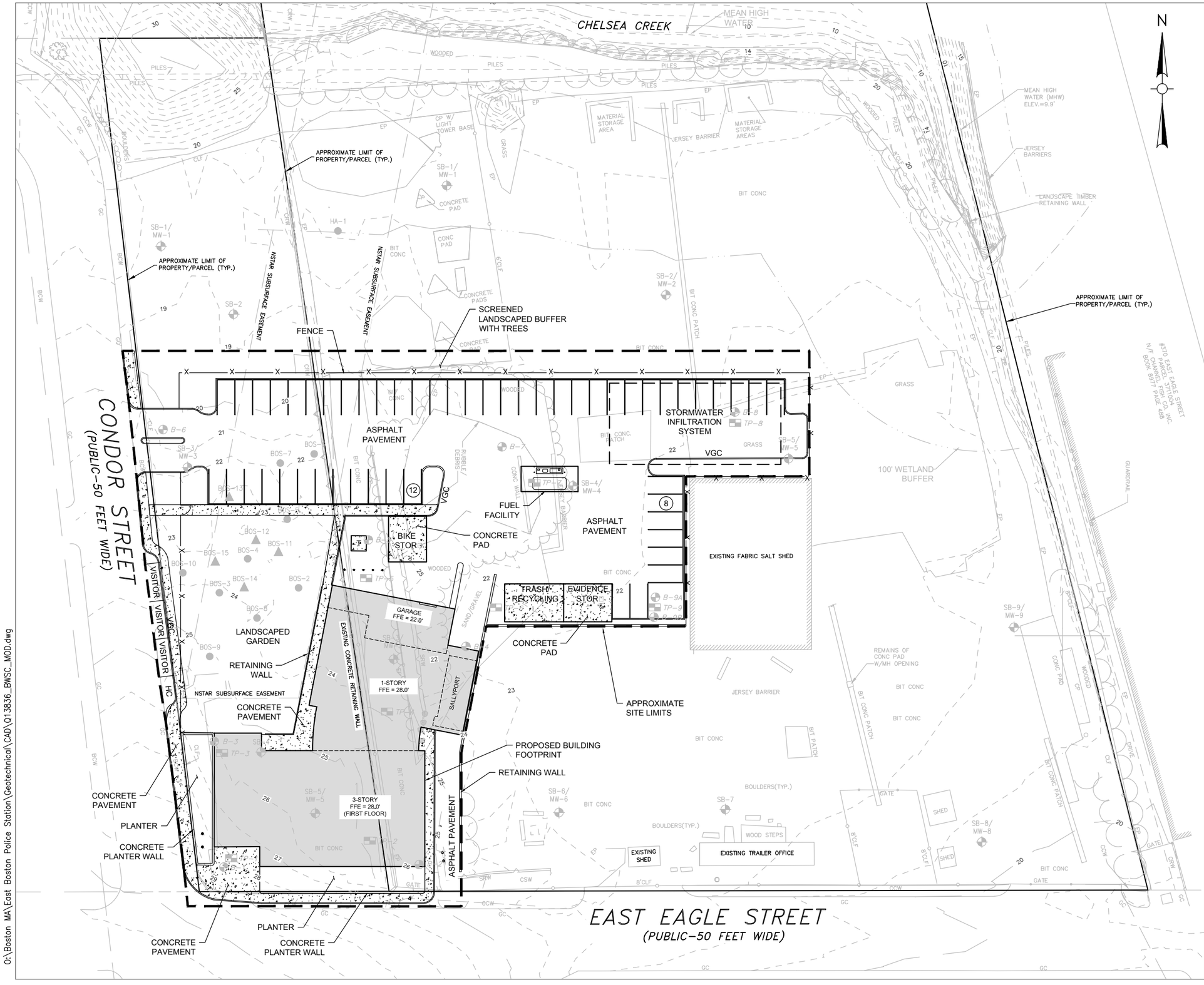

NOTES:

1. THIS DRAWING IS BASED ON A JANUARY 20, 2017 SCHEMATIC DESIGN PLAN PREPARED BY LEERS WEINZAPFEL ASSOCIATES AND PROVIDED TO WESTON & SAMPSON ON JANUARY 23, 2017.
2. LOCATIONS OF PROPOSED STRUCTURES AND SITE IMPROVEMENTS SHOULD BE CONSIDERED APPROXIMATE.
3. EXISTING ABOVE– AND BELOW–GRADE UTILITIES ARE NOT SHOWN FOR CLARITY.
4. ELEVATIONS REFERENCE THE BOSTON CITY BASE (BCB) VERTICAL DATUM UNLESS NOTED OTHERWISE.

FIGURE 3 - CONCEPTUAL DESIGN PLAN

EAST BOSTON POLICE STATION - BOSTON□MA

DESIGNED BY: T□B	CHECKED BY: C□P	DATE: MARCH 2017

Weston & Sampson℠

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APPENDIX A

Boring Logs

Weston & Sampson

PROJECT		BORING No.	B-1
East Boston Police Station		SHEET No.	1 OF 1
Boston, MA		PROJECT No.	2160866
		CHECKED BY	Chris Palmer, PE

BORING Co.	New England Boring Contractors, Inc.	BORING LOCATION	See attached plan for approximate location.		
FOREMAN	Peter Lebossier	GROUND SURFACE EL.	El. 28.5 ft. ±	DATUM	Boston City Base (BCB)
WSE REP.	TJ Blair, EIT	DATE START	01/25/17	END	01/25/17

METHODS	Drive-and-wash drilling methods with standard penetration tests (SPTs) at 2-ft. and 5-ft. intervals.
SAMPLER	Split-spoon sampler (2" OD, 1-3/8" ID) driven 24 inches with a 140-lb. automatic hammer.
OTHER	Truck-mounted drill; NWJ drill rods; 4" ID steel casing; 3-7/8" dia. carbide button roller bit.

GROUNDWATER OBSERVATIONS

DATE	TIME	WATER AT	REMARKS
01/25/17	NA	Not observable.	Water introduced for drilling below 4.0 ft.

DEPTH (ft.)	SAMPLE No.	REC. / PEN. (in.)	DEPTH (ft.)	BLOWS / 6 in.	% MOIST.	SAMPLE DESCRIPTION	COMMENTS	STRATUM
0	S1	6 / 18	0.5 - 2	12-18-23		Loose, gray, granite COBBLESTONES, trace sand, trace gravel, trace silt; moist. [FILL]	(1)	**3" AC PAVEMENT**
								COBBLESTONE FILL
	S2	3 / 24	2 - 4	18-8-6-4		Medium dense, gray-black SAND, some gravel, little silt, little debris (coal ash, brick fragments); moist. [FILL]	Poor sample recovery. Begin drive-and-wash below 4.0 ft.	**SAND FILL WITH DEBRIS**
	S3	8 / 24	4 - 6	5-7-3-4		Medium dense, gray-black SAND, some gravel, little silt, little debris (coal ash, brick); wet. [FILL]		
5	S4	3 / 24	6 - 8	8-9-8-9		Medium dense, gray-black SAND, some gravel, little silt, little debris (coal ash); wet. [FILL]	Poor sample recovery.	
	S5	12 / 24	8 - 10	26-17-10-13	11.6%	Very stiff, gray-brown CLAY, little gravel, trace fine to medium sand, trace silt; wet.		
10	S6	4 / 24	10 - 12	11-11-11-11	16.2%	Very stiff, gray-brown CLAY, some gravel, trace fine to medium sand; wet.	Poor sample recovery.	**CLAY**
	S7	12 / 24	14 - 16	30-28-31-41	13.0%	Hard, gray-brown CLAY, little gravel, trace to little fine to coarse sand; wet.	Open-hole drilling and sampling below 14.0 ft.	
15								
							Drilled through boulder from 18.0 - 19.0 ft.	**BOULDER**
	S8	14 / 24	19 - 21	7-9-12-18	11.8%	Very stiff, gray CLAY, little gravel, trace to little fine to coarse sand; wet.		**CLAY**
20								
	S9	20 / 24	24 - 26	12-13-24-23	14.3%	Hard, gray CLAY, little gravel, trace to little fine to coarse sand; wet.		
25						*Boring terminated at 26.0 ft.*		
30								
35								
40								

GRANULAR SOILS		COHESIVE SOILS	
BLOWS / ft.	DENSITY	BLOWS / ft.	CONSISTENCY
0-4	VERY LOOSE	0-2	VERY SOFT
4-10	LOOSE	2-4	SOFT
10-30	MEDIUM DENSE	4-8	MEDIUM STIFF
30-50	DENSE	8-15	STIFF
> 50	VERY DENSE	15-30	VERY STIFF
		> 30	HARD

COMMENTS:

(1) Widened borehole and removed several granite cobblestones from beneath the pavement to a depth of approximately 2 feet; sample S1 description based on visual observation of material removed. Cobblestone dimensions were approximately 8"x6"x3".

GENERAL NOTES:

1.) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.

2.) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

Weston & Sampson

PROJECT		BORING No.	B-2		
East Boston Police Station		SHEET No.	1	OF	1
Boston, MA		PROJECT No.	2160866		
		CHECKED BY	Chris Palmer, PE		

BORING Co.	New England Boring Contractors, Inc.	BORING LOCATION	See attached plan for approximate location.		
FOREMAN	Peter Lebossier	GROUND SURFACE EL.	El. 26.0 ft. ±	DATUM	Boston City Base (BCB)
WSE REP.	TJ Blair, EIT	DATE START	01/25/17	END	01/25/17

METHODS	Drive-and-wash drilling methods with standard penetration tests (SPTs) at 2-ft. and 5-ft. intervals.
SAMPLER	Split-spoon sampler (2" OD, 1-3/8" ID) driven 24 inches with a 140-lb. automatic hammer.
OTHER	Truck-mounted drill; NWJ drill rods; 4" ID steel casing; 3-7/8" dia. carbide button roller bit.

GROUNDWATER OBSERVATIONS

DATE	TIME	WATER AT	REMARKS
01/25/17	NA	Not observable.	Water introduced for drilling below 4.0 ft.

DEPTH (ft.)	SAMPLE No.	REC. / PEN. (in.)	DEPTH (ft.)	BLOWS / 6 in.	% MOIST.	SAMPLE DESCRIPTION	COMMENTS	STRATUM
0	S1	3 / 18	0.5 - 2	20-29-7		Dense, gray-black SAND, some gravel, some silt, trace debris (coal ash); moist. [FILL]	Poor sample recovery.	**3" AC PAVEMENT**
								3" CRUSHED STONE
	S2	3 / 24	2 - 4	5-4-5-6		Loose, gray-black SAND, some debris (coal ash and slag), little gravel, little silt; moist. [FILL]	Poor sample recovery. Begin drive-and-wash below 4.0 ft.	**SAND FILL WITH DEBRIS**
	S3	6 / 24	4 - 6	10-10-8-7		Medium dense, gray-black SAND, some gravel, some debris (coal ash and slag), trace silt; wet. [FILL]		
5	S4	12 / 24	6 - 8	5-5-6-12		Medium dense, brown SILTY SAND, little gravel, trace clay; wet.		**SILTY SAND**
	S5	10 / 24	8 - 10	17-31-32-30		Very dense, brown SILTY SAND, some gravel, little clay; wet.		
10	S6	14 / 24	10 - 12	28-14-13-17		Very stiff, brown, fine to medium sandy CLAY, little gravel; wet.	Open-hole drilling and sampling below 10.0 ft.	**CLAY**
	S7	1 / 2	14 - 14.2	120/2"		Brown, fine to medium sandy CLAY, some gravel; wet.	Sampler refusal. (1)	**BOULDER**
15						*Drilling refusal on boulder at 15.0 ft. (top-of-boulder encountered at 14.2 ft.)*		
20								
25								
30								
35								
40								

GRANULAR SOILS		COHESIVE SOILS	
BLOWS / ft.	DENSITY	BLOWS / ft.	CONSISTENCY
0-4	VERY LOOSE	0-2	VERY SOFT
4-10	LOOSE	2-4	SOFT
10-30	MEDIUM DENSE	4-8	MEDIUM STIFF
30-50	DENSE	8-15	STIFF
> 50	VERY DENSE	15-30	VERY STIFF
		> 30	HARD

COMMENTS:

(1) Drill cuttings observed during open-hole advancement below 14.2 ft. indicate the presence of a boulder.

GENERAL NOTES:

1.) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.

2.) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. **B-2**

Weston & Sampson

PROJECT		BORING No.	B-3
East Boston		SHEET No.	1 OF 1
Police Station		PROJECT No.	2160866
Boston, MA		CHECKED BY	Chris Palmer, PE

BORING Co.	New England Boring Contractors, Inc.	BORING LOCATION	See attached plan for approximate location.		
FOREMAN	Peter Lebossier	GROUND SURFACE EL.	El. 26.0 ft. ±	DATUM	Boston City Base (BCB)
WSE REP.	TJ Blair, EIT	DATE START	01/26/17	END	01/27/17

METHODS	Drive-and-wash drilling methods with standard penetration tests (SPTs) at 2-ft. and 5-ft. intervals.
SAMPLER	Split-spoon sampler (2" OD, 1-3/8" ID) driven 24 inches with a 140-lb. automatic hammer.
OTHER	Truck-mounted drill; NWJ drill rods; 4" ID steel casing; 3-7/8" dia. carbide button roller bit.

GROUNDWATER OBSERVATIONS

DATE	TIME	WATER AT	REMARKS
01/27/17	NA	Not observable.	Water introduced for drilling below 4.0 ft.

DEPTH (ft.)	SAMPLE No.	REC. / PEN. (in.)	DEPTH (ft.)	BLOWS / 6 in.	% MOIST.	SAMPLE DESCRIPTION	COMMENTS	STRATUM
0	S1	10 / 18	0.5 - 2	18-18-15		Dense, gray-black SAND, some silt, little gravel, trace debris (coal ash and concrete fragments); moist. [FILL]		**3" AC PAVEMENT**
	S2	24 / 24	2 - 4	20-32-88-22		Gray-black SAND, some debris (coal ash and pulverized brick), little gravel, little silt; moist. [FILL]	Sampler obstruction. (1) Begin drive-and-wash below 4.0 ft.	**SAND FILL WITH DEBRIS**
	S3	6 / 24	4 - 6	7-6-4-7		Medium dense, gay-black SAND, some debris (coal ash and slag), little gravel, little silt; wet. [FILL]		
5	S4	14 / 24	6 - 8	9-8-12-24	14.2%	Medium dense, brown SILTY SAND, little gravel, little clay; wet.		**SILTY SAND**
	S5	12 / 24	8 - 10	4-6-9-9	16.3%	Very stiff, gray CLAY, trace gravel, trace fine to coarse sand; wet.		
10	S6	24 / 24	10 - 12	9-15-14-14	19.0%	Very stiff, gray CLAY, trace fine to coarse sand; wet.	Open-hole drilling and sampling below 10.0 ft.	
	S7	24 / 24	14 - 16	8-14-15-21	17.8%	Very stiff, gray CLAY, trace fine to coarse sand; wet.	End 01/26/17	**CLAY**
15							Start 01/27/17	
	S8	8 / 24	19 - 21	15-21-31-27	12.9%	Hard, gray CLAY, some gravel, trace to little fine to coarse sand; wet.		
20							Top-of-boulder at 21.0 ft. (2)	**BOULDER**
						Drilling refusal on boulder at 23.0 ft. (top-of-boulder encountered at 21.0 ft.)		
25								
30								
35								
40								

GRANULAR SOILS		COHESIVE SOILS	
BLOWS / ft.	DENSITY	BLOWS / ft.	CONSISTENCY
0-4	VERY LOOSE	0-2	VERY SOFT
4-10	LOOSE	2-4	SOFT
10-30	MEDIUM DENSE	4-8	MEDIUM STIFF
30-50	DENSE	8-15	STIFF
> 50	VERY DENSE	15-30	VERY STIFF
		> 30	HARD

COMMENTS:

(1) Sampler driven through an approximately 2-inch thick brick at 3.5 feet; SPT blow count may not be representative of actual soil density/consistency.

(2) Drill cuttings observed during open-hole advancement below 21.0 ft. indicate the presence of a boulder.

GENERAL NOTES:

1.) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.

2.) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. **B-3**

Weston & Sampson

PROJECT		BORING No.	B-4		
East Boston Police Station		SHEET No.	1	OF	1
Boston, MA		PROJECT No.	2160866		
		CHECKED BY	Chris Palmer, PE		

BORING Co.	New England Boring Contractors, Inc.	BORING LOCATION	See attached plan for approximate location.		
FOREMAN	Peter Lebossier	GROUND SURFACE EL.	El. 23.0 ft. ±	DATUM	Boston City Base (BCB)
WSE REP.	TJ Blair, EIT	DATE START	01/26/17	END	01/26/17

METHODS	Drive-and-wash drilling methods with standard penetration tests (SPTs) at 2-ft. and 5-ft. intervals.
SAMPLER	Split-spoon sampler (2" OD, 1-3/8" ID) driven 24 inches with a 140-lb. automatic hammer.
OTHER	Truck-mounted drill; NWJ drill rods; 4" ID and 3" ID casing; 3-7/8" dia. carbide button roller bit.

GROUNDWATER OBSERVATIONS

DATE	TIME	WATER AT	REMARKS
01/26/17	NA	Not observable.	Water introduced for drilling below 4.0 ft.

DEPTH (ft.)	SAMPLE No.	REC. / PEN. (in.)	DEPTH (ft.)	BLOWS / 6 in.	% MOIST.	SAMPLE DESCRIPTION	COMMENTS	STRATUM
0	S1	10 / 24	0 - 2	13-13-17-13		Dense, gray-black SAND, some silt, little gravel, trace debris (coal ash); moist. [FILL]		
	S2	10 / 24	2 - 4	12-13-13-12		Medium dense, gray-black SAND, some gravel, little silt, little debris (coal ash, slag); moist. [FILL]		
	S3	6 / 24	4 - 6	19-70-18-12		Gray-black SAND, some silt, some debris (pulverized brick), little gravel; wet. [FILL]	Obstruction (1)	**SAND FILL WITH DEBRIS**
5							Begin drive-and-wash below 4.0 ft.	
	S4	12 / 24	6 - 8	11-9-6-6		Medium dense, gray-black SAND, some silt, trace gravel; wet. [FILL]		
	S5	0 / 12	8 - 9	12-120/0"		*Sampler refusal - no recovery.*		
	S6	0 / 0	9 - 9	120/0"		*Sampler refusal - no recovery.*	(2) (3) (4)	**CONCRETE SLAB**
10	S7	6 / 24	10 - 12	4-5-5-5		Stiff, brown SILT, some clay, little gravel, trace sand; wet. [FILL]		**SILT FILL**
	S8	8 / 24	12 - 14	2-2-3-3	17.1%	Medium stiff, brown SILT, little gravel, little sand, trace debris (concrete fragments); wet. [FILL]		
	S9	16 / 24	14 - 16	2-3-4-7	26.8%	Medium stiff, brown CLAY; wet.		
15								
	S10	24 / 24	19 - 21	7-9-15-13	20.3%	Very stiff, brownish gray CLAY; wet.	Open-hole drilling and sampling below 21.0 ft.	
20								**CLAY**
	S11	12 / 24	24 - 26	9-10-12-11	22.6%	Very stiff, dark gray, fine sandy CLAY; wet.		
25								
	S12	18 / 24	29 - 31	8-14-17-36	17.7%	*Top 12"*: very stiff, gray CLAY, trace fine sand; wet.		
30						*Bottom 6"*: dense, gray, CLAYEY SAND, some gravel; wet.		
	S13	12 / 24	34 - 46	12-16-16-18	11.6%	Dense, gray CLAYEY SAND, some gravel; wet.		**CLAYEY SAND**
35								
	S14	10 / 24	39 - 41	11-13-17-18	10.2%	Dense, gray CLAYEY SAND, some gravel; wet.		
40						*Boring terminated at 41.0 ft.*		

GRANULAR SOILS		COHESIVE SOILS	
BLOWS / ft.	DENSITY	BLOWS / ft.	CONSISTENCY
0-4	VERY LOOSE	0-2	VERY SOFT
4-10	LOOSE	2-4	SOFT
10-30	MEDIUM DENSE	4-8	MEDIUM STIFF
30-50	DENSE	8-15	STIFF
> 50	VERY DENSE	15-30	VERY STIFF
		> 30	HARD

COMMENTS:

(1) Sampler driven through obstruction (brick); SPT blow count likely not representative of actual soil density.

(2) Advanced roller bit past sampler refusal to a depth of 10.0 feet; grinding noted between depths of 9.0 and 9.5 feet with concrete fragments oberserved in wash cuttings.

(3) 4-inch casing refusal at 9 feet on burried concrete; began "telescoping" 3-inch casing inside 4-inch casing to continue drilling and sampling.

(4) Obstruction identified in TP-6 as a concrete slab.

GENERAL NOTES:

1.) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.

2.) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. **B-4**

Weston & Sampson	PROJECT East Boston Police Station Boston, MA	BORING No.	**B-5**	
		SHEET No.	1 OF 2	
		PROJECT No.	2160866	
		CHECKED BY	Chris Palmer, PE	

BORING Co.	New England Boring Contractors, Inc.	BORING LOCATION	See attached plan for approximate location.		
FOREMAN	Peter Lebossier	GROUND SURFACE EL.	El. 25.0 ft. ±	DATUM	Boston City Base (BCB)
WSE REP.	TJ Blair, EIT	DATE START	01/30/17	END	01/30/17

METHODS	Drive-and-wash drilling methods with standard penetration tests (SPTs) at 2-ft. and 5-ft. intervals.
SAMPLER	Split-spoon sampler (2" OD, 1-3/8" ID) driven 24 inches with a 140-lb. automatic hammer.
OTHER	Truck-mounted drill; NWJ drill rods; 4" ID steel casing; 3-7/8" dia. carbide button roller bit.

GROUNDWATER OBSERVATIONS

DATE	TIME	WATER AT	REMARKS
01/30/17	NA	Not observable.	Water introduced for drilling below 4.0 ft.

DEPTH (ft.)	SAMPLE No.	REC. / PEN. (in.)	DEPTH (ft.)	BLOWS / 6 in.	% MOIST.	SAMPLE DESCRIPTION	COMMENTS	STRATUM
0	S1	9 / 24	0 - 2	5-9-9-8		Medium dense, brown to black SAND, some gravel, little silt, trace debris (coal ash and slag); moist. [FILL]		**1" AC PAVEMENT**
	S2	3 / 24	2 - 4	6-8-9-8		Medium dense, brown SAND, some gravel, little silt, trace debris (brick); moist. [FILL]	Poor sample recovery. Begin drive-and-wash below 4.0 ft.	**SAND FILL WITH DEBRIS**
	S3	18 / 24	4 - 6	7-12-10-9		Medium dense, brown SAND, some silt, little gravel, trace debris (coal ash); wet. [FILL]		
5	S4	8 / 24	6 - 8	7-9-10-10		Medium dense, brown SITLY SAND, some gravel; wet. [FILL]		
	S5	10 / 24	8 - 10	16-11-10-10		Medium dense, brown SILTY SAND, some gravel; wet. [FILL]		
10	S6	6 / 24	10 - 12	9-8-7-4	16.7%	Medium dense, brown SILTY SAND, some gravel; wet. [FILL]	Organic content = 0.6%	**SILTY SAND FILL**
	S7	8 / 24	14 - 16	8-9-5-4		Medium dense, brown SILTY SAND, some gravel; wet. [FILL]		
15							Brick particles in cuttings from approx. 17 - 19 ft.	
	S8	14 / 24	19 - 21	13-7-6-8	27.2%	*Top 6"*: Medium dense, dark brown, medium SAND, some silt, trace shell fragments; wet.	Organic content = 4.2%	**SAND**
20						*Bottom 8"*: stiff, grayish brown CLAY; wet.		
	S9	24 / 24	24 - 26	5-5-7-9	29.1%	Stiff, grayish brown CLAY; wet.		
25							Open-hole drilling and sampling below 26.0 ft.	
	ST-1	0 / 12	29 - 30	PUSH		*Shelby tube refusal - no sample recovery.*	(1) (2)	**CLAY**
	S10	24 / 24	29 - 31	12-11-12-15	30.8%	*Top 12"*: very stiff, gray CLAY; wet.		
30						*Bottom 12"*: very stiff, gray, fine sandy CLAY; wet.		
	S11	24 / 24	34 - 36	2-3-3-5	26.9%	Medium stiff, gray CLAY; wet.		
35								
	ST-2	0 / 6	37 - 37.5	PUSH		*Shelby tube refusal - no sample recovery.*	(1)	
	S12	14 / 24	39 - 41	33-20-19-17	8.0%	Dense, gray CLAYEY SAND, some gravel; wet.		**CLAYEY SAND**
40								

GRANULAR SOILS		COHESIVE SOILS	
BLOWS / ft.	DENSITY	BLOWS / ft.	CONSISTENCY
0-4	VERY LOOSE	0-2	VERY SOFT
4-10	LOOSE	2-4	SOFT
10-30	MEDIUM DENSE	4-8	MEDIUM STIFF
30-50	DENSE	8-15	STIFF
> 50	VERY DENSE	15-30	VERY STIFF
		> 30	HARD

COMMENTS:
(1) Down pressure during shelby tube refusal lifted the rear tires of the drill rig off the ground.
(2) Top 12 inches of sample S10 disturbed prior to sampling by shelby tube.

GENERAL NOTES:
1.) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
2.) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. **B-5**

Weston & Sampson

PROJECT		BORING No.	B-5		
East Boston		SHEET No.	2	OF	2
Police Station		PROJECT No.	2160866		
Boston, MA		CHECKED BY	Chris Palmer, PE		

BORING Co.	New England Boring Contractors, Inc.	BORING LOCATION	See attached plan for approximate location.		
FOREMAN	Peter Lebossier	GROUND SURFACE EL.	El. 25.0 ft. ±	DATUM	Boston City Base (BCB)
WSE REP.	TJ Blair, EIT	DATE START	01/30/17	END	01/30/17

METHODS	Drive-and-wash drilling methods with standard penetration tests (SPTs) at 2-ft. and 5-ft. intervals.
SAMPLER	Split-spoon sampler (2" OD, 1-3/8" ID) driven 24 inches with a 140-lb. automatic hammer.
OTHER	Truck-mounted drill; NWJ drill rods; 4" ID steel casing; 3-7/8" dia. carbide button roller bit.

GROUNDWATER OBSERVATIONS

DATE	TIME	WATER AT	REMARKS
01/30/17	NA	Not observable.	Water introduced for drilling below 4.0 ft.

DEPTH (ft.)	SAMPLE No.	REC. / PEN. (in.)	DEPTH (ft.)	BLOWS / 6 in.	% MOIST.	SAMPLE DESCRIPTION	COMMENTS	STRATUM
40								**CLAYEY SAND**
	S13	22 / 24	44 - 46	19-26-39-41	9.9%	Very dense, gray CLAYEY SAND, little gravel; wet.		
45								
	S14	10 / 24	49 - 51	7-11-12-17	10.1%	Hard, gray, fine to medium sandy CLAY, some gravel; wet.		**CLAY**
50						*Boring terminated at 51.0 ft.*		
55								
60								
65								
70								
75								
80								

GRANULAR SOILS		COHESIVE SOILS	
BLOWS / ft.	DENSITY	BLOWS / ft.	CONSISTENCY
0-4	VERY LOOSE	0-2	VERY SOFT
4-10	LOOSE	2-4	SOFT
10-30	MEDIUM DENSE	4-8	MEDIUM STIFF
30-50	DENSE	8-15	STIFF
> 50	VERY DENSE	15-30	VERY STIFF
		> 30	HARD

COMMENTS:

GENERAL NOTES:

1.) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.

2.) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. **B-5**

Weston & Sampson

PROJECT		BORING No.	B-6
East Boston		SHEET No.	1 OF 1
Police Station		PROJECT No.	2160866
Boston, MA		CHECKED BY	Chris Palmer, PE

BORING Co.	New England Boring Contractors, Inc.	BORING LOCATION	See attached plan for approximate location.		
FOREMAN	Peter Lebossier	GROUND SURFACE EL.	El. 21.0 ft. ±	DATUM	Boston City Base (BCB)
WSE REP.	TJ Blair, EIT	DATE START	01/27/17	END	01/27/17

METHODS	Drive-and-wash drilling methods with standard penetration tests (SPTs) at 2-ft. intervals.
SAMPLER	Split-spoon sampler (2" OD, 1-3/8" ID) driven 24 inches with a 140-lb. automatic hammer.
OTHER	Truck-mounted drill; NWJ drill rods; 4" ID steel casing; 3-7/8" dia. carbide button roller bit.

GROUNDWATER OBSERVATIONS

DATE	TIME	WATER AT	REMARKS
01/27/17	NA	Not observable.	Water introduced for drilling below 4.0 ft.

DEPTH (ft.)	SAMPLE No.	REC. / PEN. (in.)	DEPTH (ft.)	BLOWS / 6 in.	% MOIST.	SAMPLE DESCRIPTION	COMMENTS	STRATUM
0	S1	8 / 24	0 - 2	5-7-23-9		Dense, brown to black SAND, some silt, little gravel, little debris (coal ash and slag); moist. [FILL]		**SAND FILL WITH DEBRIS**
	S2	13 / 24	2 - 4	5-5-7-5		Medium dense, gray-black SAND, some debris (wood, coal ash, and slag), little silt; moist. [FILL]	Begin drive-and-wash below 4.0 ft.	
	S3	12 / 24	4 - 6	3-4-3-1		Medium stiff, brown sandy SILT, trace to little gravel; wet. [FILL]		**SILT FILL**
5	S4	14 / 24	6 - 8	2-2-3-2		Medium stiff, brown sandy SILT, little gravel; wet. [FILL]		
	S5	10 / 24	8 - 10	2-2-2-2		Medium stiff, gray sandy SILT, trace gravel; wet. [FILL]		
10						*Boring terminated at 10.0 feet.*		
15								
20								
25								
30								
35								
40								

GRANULAR SOILS		COHESIVE SOILS	
BLOWS / ft.	DENSITY	BLOWS / ft.	CONSISTENCY
0-4	VERY LOOSE	0-2	VERY SOFT
4-10	LOOSE	2-4	SOFT
10-30	MEDIUM DENSE	4-8	MEDIUM STIFF
30-50	DENSE	8-15	STIFF
> 50	VERY DENSE	15-30	VERY STIFF
		> 30	HARD

COMMENTS:

GENERAL NOTES:

1.) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.

2.) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. **B-6**

Weston & Sampson

PROJECT		BORING No.	B-7
East Boston		SHEET No.	1 OF 1
Police Station		PROJECT No.	2160866
Boston, MA		CHECKED BY	Chris Palmer, PE

BORING Co.	New England Boring Contractors, Inc.	BORING LOCATION	See attached plan for approximate location.		
FOREMAN	Peter Lebossier	GROUND SURFACE EL.	El. 21.5 ft. ±	DATUM	Boston City Base (BCB)
WSE REP.	TJ Blair, EIT	DATE START	01/27/17	END	01/27/17

METHODS	Drive-and-wash drilling methods with standard penetration tests (SPTs) at 2-ft. and 5-ft. intervals.
SAMPLER	Split-spoon sampler (2" OD, 1-3/8" ID) driven 24 inches with a 140-lb. automatic hammer.
OTHER	Truck-mounted drill; NWJ drill rods; 4" ID steel casing; 3-7/8" dia. carbide button roller bit.

GROUNDWATER OBSERVATIONS

DATE	TIME	WATER AT	REMARKS
01/27/17	NA	Not observable.	Water introduced for drilling below 4.0 ft.

DEPTH (ft.)	SAMPLE No.	REC. / PEN. (in.)	DEPTH (ft.)	BLOWS / 6 in.	% MOIST.	SAMPLE DESCRIPTION	COMMENTS	STRATUM
0	S1	12 / 24	0 - 2	9-6-8-10		Medium dense, gray-black SAND, some silt, trace gravel, trace debris (coal ash and slag); moist. [FILL]	Begin drive-and-wash below 4.0 ft.	**SAND FILL WITH DEBRIS**
	S2	10 / 24	2 - 4	8-9-7-7		Medium dense, gray-black SAND, some gravel, little silt, trace debris (coal ash and slag); moist. [FILL]		
	S3	10 / 24	4 - 6	8-6-5-6		Medium dense, gray-black SAND, little gravel, little silt, little debris (coal ash and slag); wet. [FILL]		
5	S4	6 / 24	6 - 8	8-4-5-5		Loose, gray-black, SAND some gravel, little silt, little debris (coal ash and slag); wet. [FILL]		
	S5	8 / 24	8 - 10	4-4-4-3		Loose, gray-black, SAND some gravel, little silt, little debris (coal ash and slag); wet. [FILL]		
10						*Boring terminated at 10.0 feet.*		
15								
20								
25								
30								
35								
40								

GRANULAR SOILS		COHESIVE SOILS	
BLOWS / ft.	DENSITY	BLOWS / ft.	CONSISTENCY
0-4	VERY LOOSE	0-2	VERY SOFT
4-10	LOOSE	2-4	SOFT
10-30	MEDIUM DENSE	4-8	MEDIUM STIFF
30-50	DENSE	8-15	STIFF
> 50	VERY DENSE	15-30	VERY STIFF
		> 30	HARD

COMMENTS:

GENERAL NOTES:

1.) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.

2.) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

Weston & Sampson	PROJECT	BORING No.	B-8
	East Boston Police Station	SHEET No.	1 OF 1
	Boston, MA	PROJECT No.	2160866
		CHECKED BY	Chris Palmer, PE

BORING Co.	New England Boring Contractors, Inc.	BORING LOCATION	See attached plan for approximate location.		
FOREMAN	Peter Lebossier	GROUND SURFACE EL.	El. 22.0 ft. ±	DATUM	Boston City Base (BCB)
WSE REP.	TJ Blair, EIT	DATE START	01/27/17	END	01/27/17

METHODS	Drive-and-wash drilling methods with standard penetration tests (SPTs) at 2-ft. and 5-ft. intervals.
SAMPLER	Split-spoon sampler (2" OD, 1-3/8" ID) driven 24 inches with a 140-lb. automatic hammer.
OTHER	Truck-mounted drill; NWJ drill rods; 4" ID steel casing; 3-7/8" dia. carbide button roller bit.

GROUNDWATER OBSERVATIONS

DATE	TIME	WATER AT	REMARKS
01/27/17	NA	Not observable.	Water introduced for drilling below 4.0 ft.

DEPTH (ft.)	SAMPLE No.	REC. / PEN. (in.)	DEPTH (ft.)	BLOWS / 6 in.	% MOIST.	SAMPLE DESCRIPTION	COMMENTS	STRATUM
0	S1	7 / 18	0.5 - 2	14-10-6		Medium dense, gray-black SAND, some gravel, little silt, little debris (coal ash and slag); moist. [FILL]		**3" AC PAVEMENT**
								3" CRUSHED STONE
	S2	6 / 24	2 - 4	4-6-16-8		Medium dense, brown SAND, some gravel, trace silt; moist. [FILL]		**SAND FILL WITH DEBRIS**
							Begin drive-and-wash below 4.0 ft.	
	S3	4 / 24	4 - 6	3-7-8-3		Medium dense, gray-black SAND, some gravel, little debris (coal ash and slag), trace silt; wet. [FILL]		
5								
	S4	0 / 24	6 - 8	4-2-3-1		Black DEBRIS (coal ash and slag) with some gravel and sand; wet. [FILL]	(1) (2)	**DEBRIS FILL**
	3" SS	8 / 18	6 - 7.5	NA				
	S5	0 / 24	8 - 10	4-3-2-1		*No sample recovery.*		
10	S6	0 / 24	10 - 12	2-1-1-1		*No sample recovery.*	(1)	
	3" SS	6 / 18	10 - 11.5	NA		Black DEBRIS (wood, coal ash, and slag); wet. [FILL]	(2)	
	S7	0 / 24	12 - 14	5-2-2-2		*No sample recovery.*		
	S8	6 / 24	14 - 16	3-2-3-1		Black DEBRIS (wood); wet. [FILL]		
15								
						Boring terminated at 16.0 feet.		
20								
25								
30								
35								
40								

GRANULAR SOILS		COHESIVE SOILS	
BLOWS / ft.	DENSITY	BLOWS / ft.	CONSISTENCY
0-4	VERY LOOSE	0-2	VERY SOFT
4-10	LOOSE	2-4	SOFT
10-30	MEDIUM DENSE	4-8	MEDIUM STIFF
30-50	DENSE	8-15	STIFF
> 50	VERY DENSE	15-30	VERY STIFF
		> 30	HARD

COMMENTS:

(1) No sample recovery during SPT; used 3" OD (2-3/8" ID) by 18-inch long split spoon (3" SS) sampler to recover sample.

(2) Unable to maintain constant head of water in borhole during casing wash-out; possible indicator of voids in fill materials.

GENERAL NOTES:

1.) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.

2.) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. **B-8**

Weston & Sampson

PROJECT		BORING No.	B-9A
East Boston Police Station		SHEET No.	1 OF 1
Boston, MA		PROJECT No.	2160866
		CHECKED BY	Chris Palmer, PE

BORING Co.	New England Boring Contractors, Inc.	BORING LOCATION	See attached plan for approximate location.		
FOREMAN	Peter Lebossier	GROUND SURFACE EL.	El. 22.5 ft. ±	DATUM	Boston City Base (BCB)
WSE REP.	TJ Blair, EIT	DATE START	01/30/17	END	01/30/17

METHODS	Continuous sampling methods using standard penetration tests (SPTs) at 2-ft. intervals.
SAMPLER	Split-spoon sampler (2" OD, 1-3/8" ID) driven 24 inches with a 140-lb. automatic hammer.
OTHER	Truck-mounted drill; NWJ drill rods; 3-7/8" dia. carbide button roller bit.

GROUNDWATER OBSERVATIONS

DATE	TIME	WATER AT	REMARKS
01/30/17	NA	Not observed.	No wet samples observed.

DEPTH (ft.)	SAMPLE No.	REC. / PEN. (in.)	DEPTH (ft.)	BLOWS / 6 in.	% MOIST.	SAMPLE DESCRIPTION	COMMENTS	STRATUM
0	S1	6 / 18	0.5 - 2	16-22-20		Dense, brown gravelly SAND, trace silt, moist. [FILL]		**3" AC PAVEMENT**
								3" CRUSHED STONE
	S2	6 / 21	2 - 3.8	13-15-15-100/3"		Dense, brown gravelly SAND, trace silt, moist. [FILL]		**SAND FILL**
							Sampler refusal.	
						Drilling refusal at 3.8 ft. on concrete slab identified in TP-9.	Relocated boring 8 ft. north to B-9B.	
5								
10								
15								
20								
25								
30								
35								
40								

GRANULAR SOILS		COHESIVE SOILS	
BLOWS / ft.	DENSITY	BLOWS / ft.	CONSISTENCY
0-4	VERY LOOSE	0-2	VERY SOFT
4-10	LOOSE	2-4	SOFT
10-30	MEDIUM DENSE	4-8	MEDIUM STIFF
30-50	DENSE	8-15	STIFF
> 50	VERY DENSE	15-30	VERY STIFF
		> 30	HARD

COMMENTS:

GENERAL NOTES:

1.) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.

2.) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. **B-9A**

Weston & Sampson

PROJECT		BORING No.	B-9B
East Boston		SHEET No.	1 OF 1
Police Station		PROJECT No.	2160866
Boston, MA		CHECKED BY	Chris Palmer, PE

BORING Co.	New England Boring Contractors, Inc.	BORING LOCATION	See attached plan for approximate location.		
FOREMAN	Peter Lebossier	GROUND SURFACE EL.	El. 22.5 ft. ±	DATUM	Boston City Base (BCB)
WSE REP.	TJ Blair, EIT	DATE START	01/30/17	END	01/30/17

METHODS	Continuous sampling methods using standard penetration tests (SPTs) at 2-ft. intervals.
SAMPLER	Split-spoon sampler (2" OD, 1-3/8" ID) driven 24 inches with a 140-lb. automatic hammer.
OTHER	Truck-mounted drill; NWJ drill rods; 3-7/8" dia. carbide button roller bit.

GROUNDWATER OBSERVATIONS

DATE	TIME	WATER AT	REMARKS
01/30/17	NA	Not observed.	No wet samples observed.

DEPTH (ft.)	SAMPLE No.	REC. / PEN. (in.)	DEPTH (ft.)	BLOWS / 6 in.	% MOIST.	SAMPLE DESCRIPTION	COMMENTS	STRATUM
0	S1	6 / 18	0.5 - 2	17-23-20		Dense, brown gravelly SAND, trace silt, moist. [FILL]		**3" AC PAVEMENT**
								3" CRUSHED STONE
	S2	6 / 21	2 - 3.8	13-16-15-100/3"		Dense, brown gravelly SAND, trace silt, moist. [FILL]		**SAND FILL**
							Sampler refusal.	
						Drilling refusal at 3.8 ft. on concrete slab identified in TP-9.	(1)	
5								
10								
15								
20								
25								
30								
35								
40								

GRANULAR SOILS		COHESIVE SOILS	
BLOWS / ft.	DENSITY	BLOWS / ft.	CONSISTENCY
0-4	VERY LOOSE	0-2	VERY SOFT
4-10	LOOSE	2-4	SOFT
10-30	MEDIUM DENSE	4-8	MEDIUM STIFF
30-50	DENSE	8-15	STIFF
> 50	VERY DENSE	15-30	VERY STIFF
		> 30	HARD

COMMENTS:

GENERAL NOTES:

1.) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.

2.) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. **B-9B**

APPENDIX B

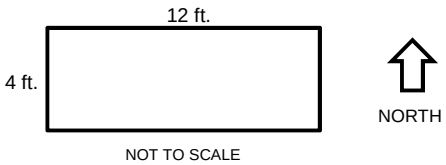
Test Pit Logs

TEST PIT LOG

PROJECT	East Boston Police Station - 2160866			**TEST PIT NUMBER**	
LOCATION	0 Condor Street / 338 East Eagle Street - Boston, MA			TP-1	
CLIENT	Leerz Weinzapfel Associates Architects			GROUND SURFACE	
CONTRACTOR	Metro Equipment Corp.	OPERATOR	Dave Huir	ELEVATION (ft.)	El. 28.0 ± (BCB)
OBSERVED BY	TJ Blair, EIT	DATE	March 9, 2017	DEPTH TO	
CHECKED BY	Chris Palmer, PE	DATE	March 31, 2017	GROUNDWATER	8.5 ft.

DEPTH BELOW GROUND SURFACE (ft.)	SOIL DESCRIPTION	STRATUM DESCRIPTION
1	3 to 5 inches of ASPHALT CONCRETE (AC) pavement at ground surface.	**AC PAVEMENT**
2	Loose, gray, GRANITE BLOCKS and COBBLESTONES; moist. Layer thickness increases from west (2 ft.) to east (3 ft.). Cobblestone dimensions generally 8"x6"x3". Blocks vary in size up to 14"x12"x8".	**GRANITE BLOCKS & COBBLESTONES**
3	Loose to medium dense, gray-black, sandy GRAVEL, little silt, little debris (coal ash, slag, bricks, pieces of clay pipe, pieces of wood/dimensional lumber), occasional cobbles, occasional boulders up to 18 inches in diameter; moist. [FILL]	
4		
5		**SANDY GRAVEL FILL WITH DEBRIS**
6		
7		
8		
9	Blue-gray, CLAY, little to some gravel, trace sand; wet.	**CLAY**
10	*Test pit terminated at 8.5 ft. - see attached* ***Photo Log.***	
11		
12		
13		
14		
15		
16		
17		
18		

TEST PIT DIAGRAM



NOT TO SCALE

GENERAL NOTES:

1 - Test pit excavated using an approximately 18,000-lb. CASE 580 Super-N backhoe with a toothed bucket.
2 - Minor to moderate caving observed.
3 - Grab sample collected from 2 ft. to 5 ft. for grain size determination.
4 - Slow groundwater seepage (less than 1 gpm) observed at 8.5 ft.
5 - Relative densities, where noted, are based on probing with a 1/2" diameter steel foundation probe.

TEST PIT NUMBER
TP-1

Weston & Sampson

TEST PIT PHOTO LOG

PROJECT	East Boston Police Station - 2160866
LOCATION	0 Condor Street / 338 East Eagle Street - Boston, MA
DATE TAKEN	March 9, 2017
PHOTOS BY	TJ Blair, EIT

TEST PIT NUMBER
TP-1

Weston & Sampson

Photo 1 - Looking south at test pit location.

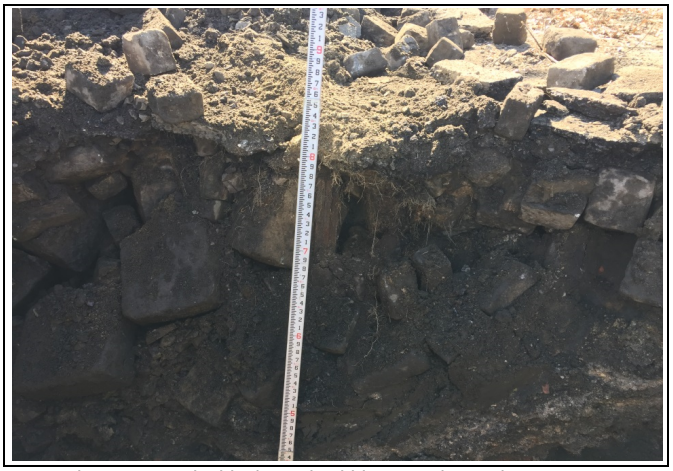


Photo 2 - Granite blocks and cobblestones beneath pavement.

Photo 3 - Granite blocks and cobblesone removed from test pit.

Photo 4 - Wood (dimensional lumber) removed from test pit.

Photo 5 - South sidewall of test pit.

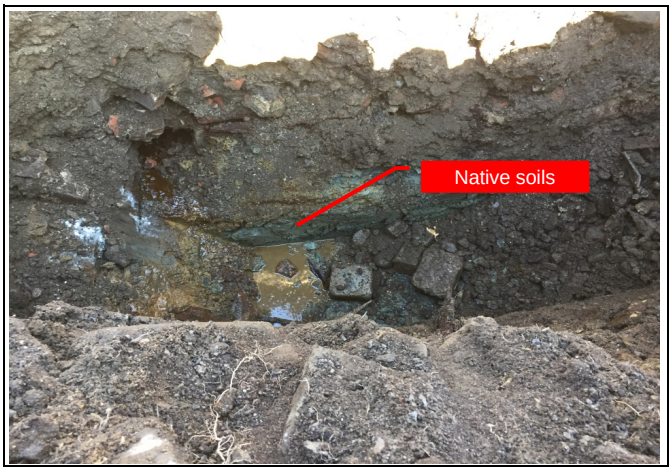


Photo 6 - North sidewall of test pit.

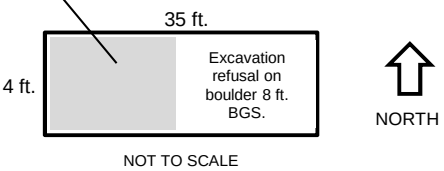
TEST PIT LOG

PROJECT	East Boston Police Station - 2160866			**TEST PIT NUMBER**	
LOCATION	0 Condor Street / 338 East Eagle Street - Boston, MA			TP-2	
CLIENT	Leerz Weinzapfel Associates Architects			GROUND SURFACE	
CONTRACTOR	Metro Equipment Corp.	OPERATOR	Dave Huir	ELEVATION (ft.)	El. 25.5 ± (BCB)
OBSERVED BY	TJ Blair, EIT	DATE	March 9, 2017	DEPTH TO	
CHECKED BY	Chris Palmer, PE	DATE	March 31, 2017	GROUNDWATER	Not observed

DEPTH BELOW GROUND SURFACE (ft.)	SOIL DESCRIPTION	STRATUM DESCRIPTION
1	3 to 6 inches of GRAVEL at ground surface.	**GRAVEL**
2	Loose to medium dense, gray-black, sandy GRAVEL, trace silt, trace debris (coal ash, slag, bricks, granite cobblestones), few cobbles; moist. [FILL]	**SANDY GRAVEL FILL WITH DEBRIS**
3	*Excavation refusal between 0.5 ft. and 1.5 ft. in western half of test pit on buried brick and concrete foundation elements.*	
4		
5	Brown, silty SAND, little to some gravel; moist.	**SILTY SAND**
6		
7		
8		
9	*Excavation refusal on boulder at 8.0 ft.- see attached* ***Photo Log*** *.*	
10		
11		
12		
13		
14		
15		
16		
17		
18		

Excavation refusal 0.5 ft. to 1.5 ft. BGS on buried foundation elements in western half of test pit (see photos).

TEST PIT DIAGRAM



NOT TO SCALE

GENERAL NOTES:

1 - Test pit excavated using an approximately 18,000-lb. CASE 580 Super-N backhoe with a toothed bucket.

2 - Minor caving observed below approximately 2 feet.

3 - Grab sample collected from 0.5 ft. to 4 ft. for grain size determination.

4 - Relative densities, where noted, are based on probing with a 1/2" diameter steel foundation probe.

TEST PIT NUMBER
TP-2

Weston & Sampson

TEST PIT PHOTO LOG

PROJECT	East Boston Police Station - 2160866
LOCATION	0 Condor Street / 338 East Eagle Street - Boston, MA
DATE TAKEN	March 9, 2017
PHOTOS BY	TJ Blair, EIT

TEST PIT NUMBER
TP-2

Weston & Sampson

Photo 1 - Looking west at test pit location. Test pit located immediately west of paved access road in gravel area.

Photo 2 - View of test pit looking west. Buried foundation elements encountered in western half of test pit.

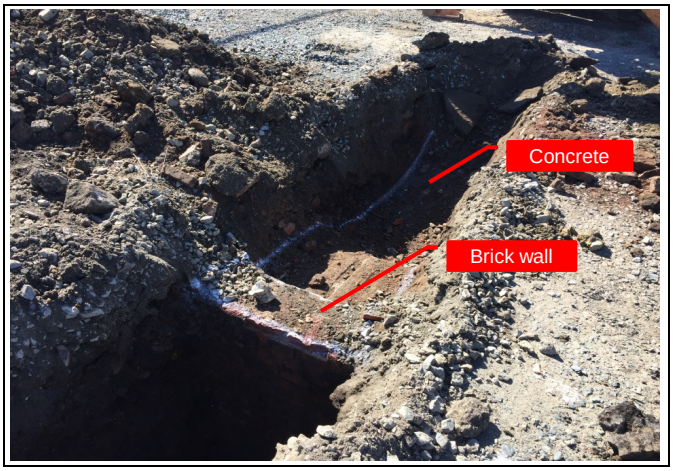


Photo 3 - Excavation refusal in western half of test pit on buried concrete (possible concrete slab).

Photo 4 - Excavation refusal on boulder at least 7 feet in diameter.

Photo 5 - Looking east from west end of test pit.

Photo 6 - South sidewall of test pit.

TEST PIT LOG

PROJECT	East Boston Police Station - 2160866			**TEST PIT NUMBER**	
LOCATION	0 Condor Street / 338 East Eagle Street - Boston, MA			TP-3	
CLIENT	Leerz Weinzapfel Associates Architects			GROUND SURFACE	
CONTRACTOR	Metro Equipment Corp.	OPERATOR	Dave Huir	ELEVATION (ft.)	El. 26.0 ± (BCB)
OBSERVED BY	TJ Blair, EIT	DATE	March 9, 2017	DEPTH TO	
CHECKED BY	Chris Palmer, PE	DATE	March 31, 2017	GROUNDWATER	6.5 ft.

DEPTH BELOW GROUND SURFACE (ft.)	SOIL DESCRIPTION	STRATUM DESCRIPTION
	3 to 5 inches of ASPHALT CONCRETE (AC) pavement at ground surface.	**AC PAVEMENT**
1	Loose to medium dense, gray-black, gravelly SAND, some silt, little debris (coal ash, slag, bricks, pieces of clay pipe, pieces of dimensional lumber), few cobbles, occasional granite blocks and cobblestones; moist. [FILL]	**GRAVELLY SAND FILL WITH DEBRIS**
2		
3		
4		
5		
6	Brown, silty SAND, little to some gravel; moist.	**SILTY SAND**
	Blue-gray, CLAY, little to some gravel, trace fine to medium sand; wet.	**CLAY**
7	*Test pit terminated at 6.5 ft. - see attached* ***Photo Log*** *.*	
8		
9		
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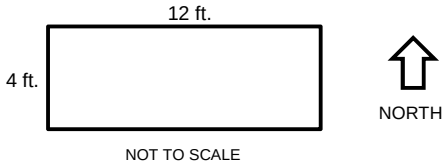
11		
12		
13		
14		
15		
16		
17		
18		

TEST PIT DIAGRAM



NOT TO SCALE

GENERAL NOTES:

1 - Test pit excavated using an approximately 18,000-lb. CASE 580 Super-N backhoe with a toothed bucket.
2 - Minor caving observed.
3 - Grab sample collected from 0.5 ft. to 5 ft. for grain size determination.
4 - Slow groundwater seepage (less than 1 gpm) observed at 6.5 ft.
5 - Relative densities, where noted, are based on probing with a 1/2" diameter steel foundation probe.

TEST PIT NUMBER
TP-3

Weston & Sampson

TEST PIT PHOTO LOG

PROJECT	East Boston Police Station - 2160866
LOCATION	0 Condor Street / 338 East Eagle Street - Boston, MA
DATE TAKEN	March 9, 2017
PHOTOS BY	TJ Blair, EIT

TEST PIT NUMBER
TP-3

Weston & Sampson

Photo 1 - Looking north at test pit location.

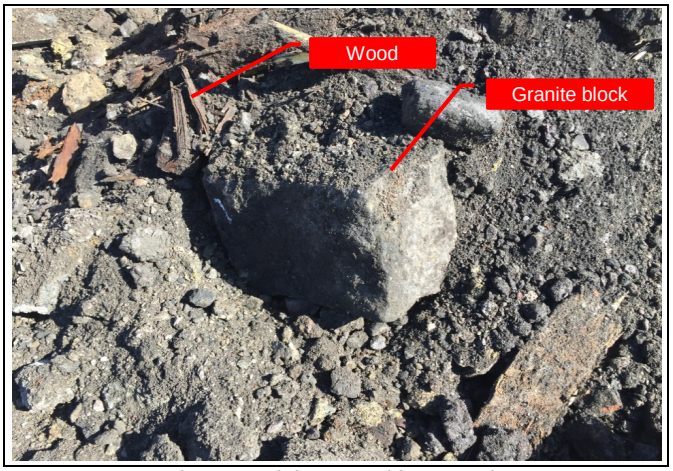


Photo 2 - Debris removed from test pit.

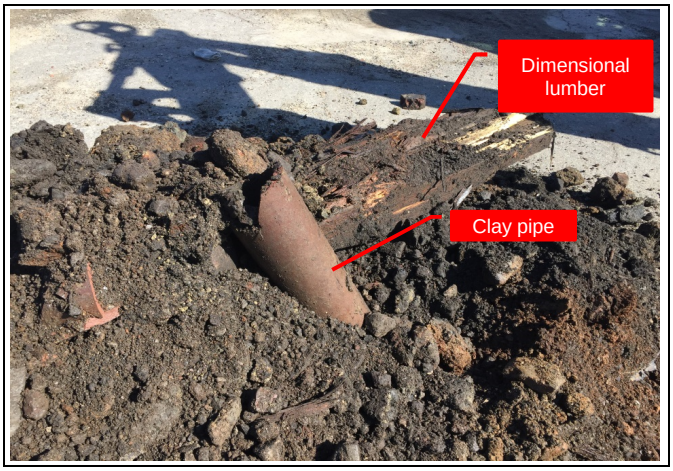


Photo 3 - Debris removed from test pit.

Photo 4 - Dimensional lumber removed from test pit at depth of approximately 4 ft.

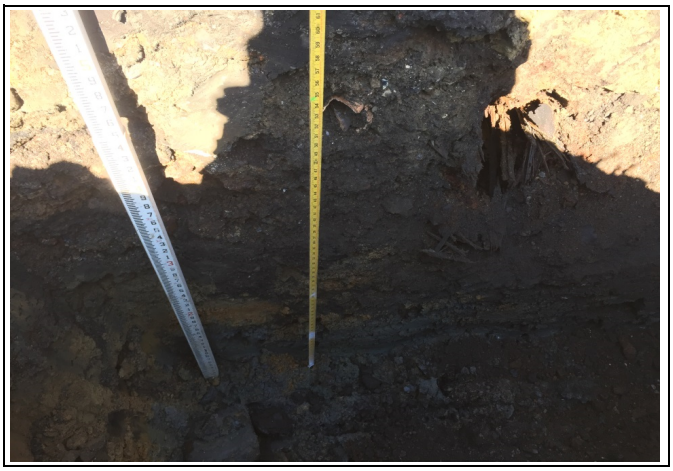


Photo 5 - North sidewall of test pit.

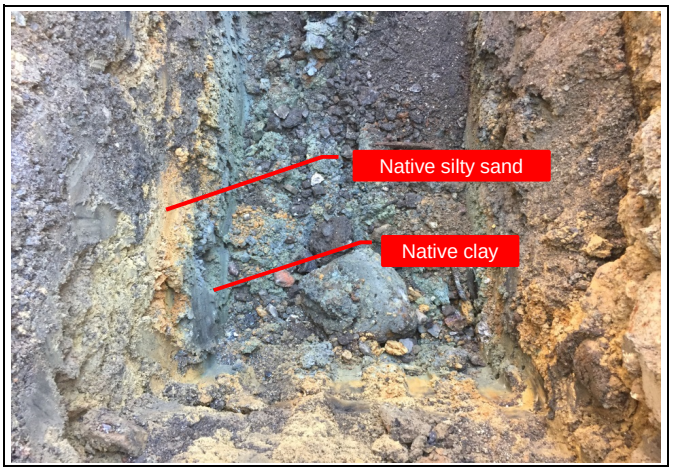


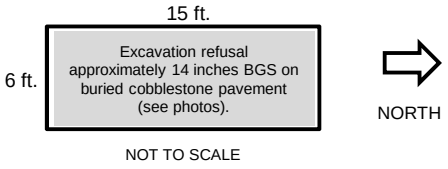
Photo 6 - Native soils at bottom of test pit.

TEST PIT LOG

PROJECT	East Boston Police Station - 2160866			**TEST PIT NUMBER**	
LOCATION	0 Condor Street / 338 East Eagle Street - Boston, MA			TP-4	
CLIENT	Leerz Weinzapfel Associates Architects			GROUND SURFACE	
CONTRACTOR	Metro Equipment Corp.	OPERATOR	Dave Huir	ELEVATION (ft.)	El. 25.0 ± (BCB)
OBSERVED BY	TJ Blair, EIT	DATE	March 9, 2017	DEPTH TO	
CHECKED BY	Chris Palmer, PE	DATE	March 31, 2017	GROUNDWATER	Not observed

DEPTH BELOW GROUND SURFACE (ft.)	SOIL DESCRIPTION	STRATUM DESCRIPTION
	3 inches of ASPHALT CONCRETE (AC) pavement at ground surface.	**AC PAVEMENT**
1	Medium dense, gray-black, gravelly SAND, little debris (coal ash, slag, brick fragments), little silt, few cobbles; moist. [FILL]	**GRAVELLY SAND FILL WITH DEBRIS**
2	*Excavation refusal on cobblestone pavement at 1.2 ft. - see attached* ***Photo Log*** *.*	
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		

TEST PIT DIAGRAM



NOT TO SCALE

GENERAL NOTES:

1 - Test pit excavated using an approximately 18,000-lb. CASE 580 Super-N backhoe with a toothed bucket.

2 - Relative densities, where noted, are based on probing with a 1/2" diameter steel foundation probe.

TEST PIT NUMBER
TP-4

Weston & Sampson

TEST PIT PHOTO LOG

PROJECT	East Boston Police Station - 2160866
LOCATION	0 Condor Street / 338 East Eagle Street - Boston, MA
DATE TAKEN	March 9, 2017
PHOTOS BY	TJ Blair, EIT

TEST PIT NUMBER
TP-4

Weston & Sampson

Photo 1 - Looking south at test pit location.

Photo 2 - Looking north at test pit location.

Photo 3 - Bured cobblestone pavement.

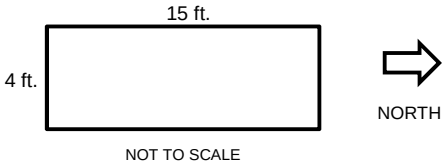
Photo 4 - Cobblestone pavement approximately14 inches below ground surface.

TEST PIT LOG

PROJECT	East Boston Police Station - 2160866			**TEST PIT NUMBER**	
LOCATION	0 Condor Street / 338 East Eagle Street - Boston, MA			TP-5	
CLIENT	Leerz Weinzapfel Associates Architects			GROUND SURFACE	
CONTRACTOR	Metro Equipment Corp.	OPERATOR	Dave Huir	ELEVATION (ft.)	El. 25.0 ± (BCB)
OBSERVED BY	TJ Blair, EIT	DATE	March 9, 2017	DEPTH TO	
CHECKED BY	Chris Palmer, PE	DATE	March 31, 2017	GROUNDWATER	Not observed

DEPTH BELOW GROUND SURFACE (ft.)	SOIL DESCRIPTION	STRATUM DESCRIPTION
	3 to 4 inches of ASPHALT CONCRETE (AC) pavement at ground surface.	**AC PAVEMENT**
1	Medium dense, brown, gravelly SAND, some silt, few cobbles, trace debris (coal ash, brick fragments); moist. [FILL]	**SAND FILL WITH DEBRIS**
2		
3		
4		
5	Loose, black, fine to medium SAND, some silt, little organics; moist. [FILL] (possible buried topsoil layer, 12 inches thick)	
6	Medium dense, brown, SILTY SAND, some gravel, occasional cobbles, trace brick particles; moist. [FILL]	**SILTY SAND FILL**
7		
8		
9		
10		
11		
12		
13		
14	*Test pit terminated at 13.0 ft. (maximum backhoe reach) - see attached* ***Photo Log.***	
15		
16		
17		
18		

TEST PIT DIAGRAM



GENERAL NOTES:

1 - Test pit excavated using an approximately 18,000-lb. CASE 580 Super-N backhoe with a toothed bucket.

2 - Minor to moderate caving observed below approximately 4 feet.

3 - Organic content = 16%, moisture content = 39.6%

4 - Relative densities, where noted, are based on probing with a 1/2" diameter steel foundation probe.

TEST PIT NUMBER
TP-5

Weston & Sampson

TEST PIT PHOTO LOG

PROJECT	East Boston Police Station - 2160866
LOCATION	0 Condor Street / 338 East Eagle Street - Boston, MA
DATE TAKEN	March 9, 2017
PHOTOS BY	TJ Blair, EIT

TEST PIT NUMBER
TP-5

Weston & Sampson

Photo 1 - Looking south at test pit location.

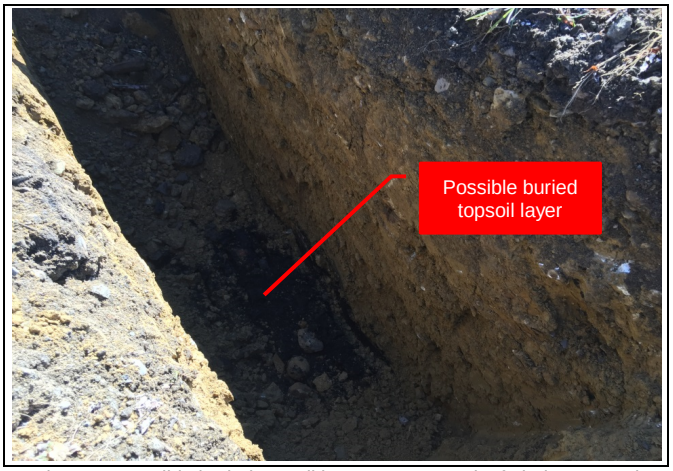


Photo 2 - Possible buried topsoil layer encountered 4 ft. below ground surface.

Photo 3 - Possible buried topsoil layer exposed.

Photo 4 - Close up of possible buried topsoil.

Photo 5 - Bottom of test pit.

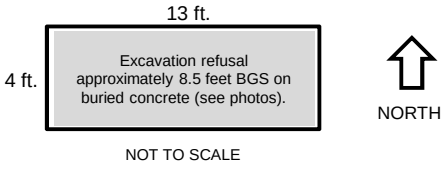
Photo 6 - East sidewall of test pit.

TEST PIT LOG

PROJECT	East Boston Police Station - 2160866			**TEST PIT NUMBER**	
LOCATION	0 Condor Street / 338 East Eagle Street - Boston, MA			TP-6	
CLIENT	Leerz Weinzapfel Associates Architects			GROUND SURFACE	
CONTRACTOR	Metro Equipment Corp.	OPERATOR	Dave Huir	ELEVATION (ft.)	El. 22.5 ± (BCB)
OBSERVED BY	TJ Blair, EIT	DATE	March 9, 2017	DEPTH TO	
CHECKED BY	Chris Palmer, PE	DATE	March 31, 2017	GROUNDWATER	Not observed

DEPTH BELOW GROUND SURFACE (ft.)	SOIL DESCRIPTION	STRATUM DESCRIPTION
1	3 to 6 inches of GRAVEL at ground surface.	**GRAVEL**
2	Medium dense, gray-black, sandy GRAVEL, little debris (coal ash, slag, bricks, pieces of clay pipe, pieces of concrete), trace silt, few cobbles, occasional boulders up to 18 inches in diameter; moist. [FILL]	**SANDY GRAVEL FILL WITH DEBRIS**
3		
4		
5		
6		
7		
8		
9	*Excavation refusal on concrete at 8.5 ft. - see attached* ***Photo Log.***	
10		
11		
12		
13		
14		
15		
16		
17		
18		

TEST PIT DIAGRAM



NOT TO SCALE

GENERAL NOTES:

1 - Test pit excavated using an approximately 18,000-lb. CASE 580 Super-N backhoe with a toothed bucket.

2 - Minor to moderate caving observed below approximately 4 feet.

3 - Relative densities, where noted, are based on probing with a 1/2" diameter steel foundation probe.

TEST PIT NUMBER
TP-6

Weston & Sampson

TEST PIT PHOTO LOG

PROJECT	East Boston Police Station - 2160866
LOCATION	0 Condor Street / 338 East Eagle Street - Boston, MA
DATE TAKEN	March 9, 2017
PHOTOS BY	TJ Blair, EIT

TEST PIT NUMBER
TP-6

Weston & Sampson

Photo 1 - Looking west at test pit location.

Photo 2 - Boulders removed from test pit.

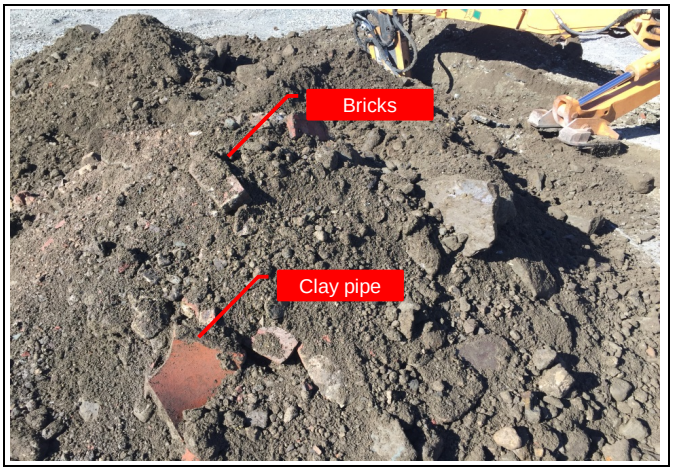


Photo 3 - Debris removed from test pit.

Photo 4 - Debris removed from test pit.

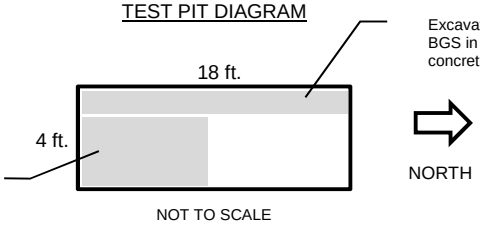

Photo 5 - Excavation refusal on buried concrete (possible concrete slab).

TEST PIT LOG

PROJECT	East Boston Police Station - 2160866			**TEST PIT NUMBER**	
LOCATION	0 Condor Street / 338 East Eagle Street - Boston, MA			TP-7	
CLIENT	Leerz Weinzapfel Associates Architects			GROUND SURFACE	
CONTRACTOR	Metro Equipment Corp.	OPERATOR	Dave Huir	ELEVATION (ft.)	El. 21.0 ± (BCB)
OBSERVED BY	TJ Blair, EIT	DATE	March 9, 2017	DEPTH TO	
CHECKED BY	Chris Palmer, PE	DATE	March 31, 2017	GROUNDWATER	8.5 ft.

DEPTH BELOW GROUND SURFACE (ft.)	SOIL DESCRIPTION	STRATUM DESCRIPTION
1	Loose, brown, medium SAND, little gravel, trace silt; moist. [FILL] (former stockpile) *Excavation refusal at 0.5 ft. in west side of test pit on top-of-concrete wall.*	**SAND FILL**
2	ASPHALT CONCRETE (AC) pavement, 6 inches thick.	**AC PAVEMENT**
3	Medium dense, brown, fine to coarse SAND, some gravel, little silt, trace debris (brick fragments, pieces of concrete, pieces of steel), trace organics (branches, roots); becomes wet at 8.5 ft. [FILL]	**SAND FILL WITH DEBRIS**
4		
5	*Buried concrete debris (4-inch thick by 6-ft. diameter portion of concrete) removed from north end of test pit at approximately 4 ft.*	
6		
7	*Excavation refusal at 6 ft. in southern half of test pit on buried concrete.*	
8		
9		
10		
11		
12	Blue-gray, CLAY, little to some gravel, trace sand; wet.	**CLAY**
13	*Test pit terminated at 12.0 ft. - see attached* ***Photo Log.***	
14		
15		
16		
17		
18		

TEST PIT DIAGRAM



Excavation refusal approximately 0.5 ft. BGS in west side of test pit on top-of-concrete wall (see photos).

Excavation refusal approximately 6 ft. BGS in southern half of test pit on concrete.

GENERAL NOTES:

1 - Test pit excavated using an approximately 18,000-lb. CASE 580 Super-N backhoe with a toothed bucket.

2 - Minor to moderate caving observed below approximately 4 feet.

3 - Rapid groundwater seepage (greater than 50 gpm) observed below approximately 8.5 feet.

4 - Relative densities, where noted, are based on probing with a 1/2" diameter steel foundation probe.

TEST PIT NUMBER
TP-7

Weston & Sampson

TEST PIT PHOTO LOG

PROJECT	East Boston Police Station - 2160866
LOCATION	0 Condor Street / 338 East Eagle Street - Boston, MA
DATE TAKEN	March 9, 2017
PHOTOS BY	TJ Blair, EIT

TEST PIT NUMBER
TP-7

Weston & Sampson

Photo 1 - Looking south at test pit location.

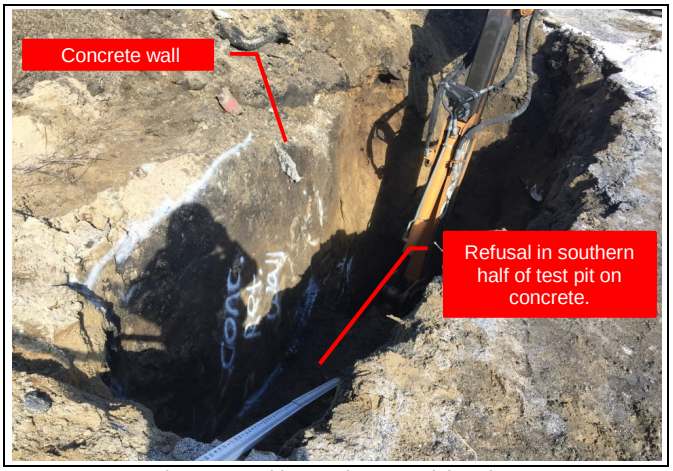


Photo 2 - Looking north at test pit location.

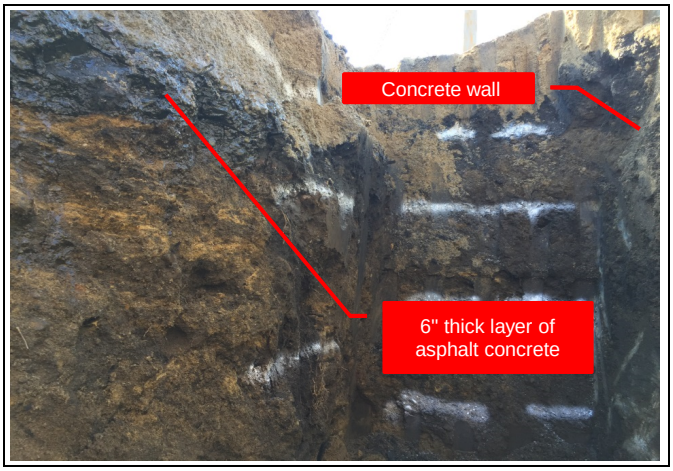


Photo 3 - Southern half of test pit.


Photo 4 - West sidewall of test pit exposing concrete wall.


Photo 5 - Buried concrete debris removed from northern half of test pit.


Photo 6 - Northern half of test pit.

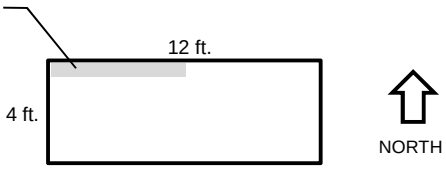
TEST PIT LOG

PROJECT	East Boston Police Station - 2160866			**TEST PIT NUMBER**	
LOCATION	0 Condor Street / 338 East Eagle Street - Boston, MA			TP-8	
CLIENT	Leerz Weinzapfel Associates Architects			GROUND SURFACE	
CONTRACTOR	Metro Equipment Corp.	OPERATOR	Dave Huir	ELEVATION (ft.)	El. 22.0 ± (BCB)
OBSERVED BY	TJ Blair, EIT	DATE	March 9, 2017	DEPTH TO	
CHECKED BY	Chris Palmer, PE	DATE	March 31, 2017	GROUNDWATER	12 ft.

DEPTH BELOW GROUND SURFACE (ft.)	SOIL DESCRIPTION	STRATUM DESCRIPTION
1	3 inches of ASPHALT CONCRETE (AC) pavement at ground surface over 3 inches of gravel (base layer).	**AC PAVEMENT & GRAVEL BASE**
2	*Excavation refusal on concrete footing at 0.5 ft. in south side of test pit.* Medium dense, brown, medium to coarse SAND, some gravel, trace silt, trace debris (brick fragments, coal fragments), few cobbles, occasional boulders up to 18 inches in diameter; moist. [FILL]	**SAND FILL WITH DEBRIS**
3		
4		
5	*Buried concrete debris observed in north end of test pit at approximately 4 ft.*	
6		
7		
8		
9	Black, DEBRIS (coal ash, coal fragments, brick fragments, slag, pieces of wood), little silt, little gravel; moist. [FILL]	**DEBRIS**
10		
11		
12		
13	*Becomes wet at 12 ft.*	
14	*Test pit terminated at 13.0 ft. (maximum backhoe reach) - see attached* ***Photo Log.***	
15		
16		
17		
18		

Vertical shaft-supported footing encountered in sidewall of western half of test pit (see photos). One 24-inch diameter shaft observed.

TEST PIT DIAGRAM



NOT TO SCALE

GENERAL NOTES:

1 - Test pit excavated using an approximately 18,000-lb. CASE 580 Super-N backhoe with a toothed bucket.

2 - Moderate to severe caving observed below approximately 8 feet.

3 - Rapid groundwater seepage (greater than 50 gpm) observed below approximately 12 feet.

4 - Relative densities, where noted, are based on probing with a 1/2" diameter steel foundation probe.

TEST PIT NUMBER
TP-8

Weston & Sampson

TEST PIT PHOTO LOG

PROJECT	East Boston Police Station - 2160866
LOCATION	0 Condor Street / 338 East Eagle Street - Boston, MA
DATE TAKEN	March 9, 2017
PHOTOS BY	TJ Blair, EIT

TEST PIT NUMBER
TP-8

Weston & Sampson

Photo 1 - Looking south at test pit location.

Photo 2 - Upper half of test pit looking west.


Photo 3 - Cobbles and boulders removed from test pit.

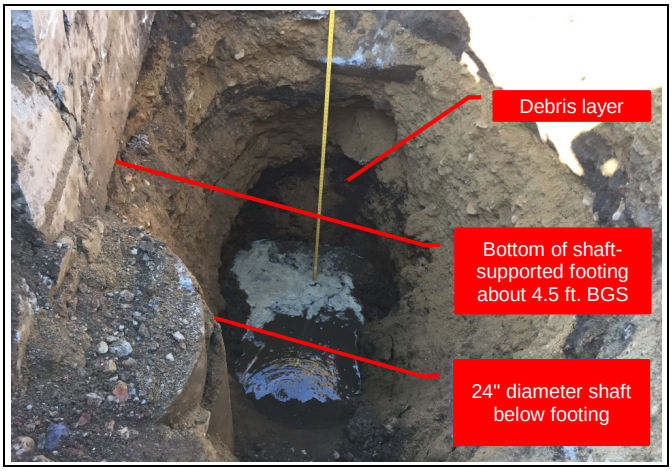


Photo 4 - Lower half of test pit looking west.


Photo 5 - Close up of debris layer encountered below a depth of 8 ft.

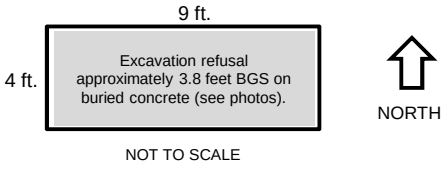

Photo 6 - Debris removed from test pit below a depth of 8 ft. (mostly ash and slag)

TEST PIT LOG

PROJECT	East Boston Police Station - 2160866			**TEST PIT NUMBER**	
LOCATION	0 Condor Street / 338 East Eagle Street - Boston, MA			TP-9	
CLIENT	Leerz Weinzapfel Associates Architects			GROUND SURFACE	
CONTRACTOR	Metro Equipment Corp.	OPERATOR	Dave Huir	ELEVATION (ft.)	El. 22.5 ± (BCB)
OBSERVED BY	TJ Blair, EIT	DATE	March 9, 2017	DEPTH TO	
CHECKED BY	Chris Palmer, PE	DATE	March 31, 2017	GROUNDWATER	Not observed

DEPTH BELOW GROUND SURFACE (ft.)	SOIL DESCRIPTION	STRATUM DESCRIPTION
1	3 inches of ASPHALT CONCRETE (AC) pavement at ground surface over 3 inches of gravel (base layer).	**AC PAVEMENT & GRAVEL BASE**
2	Medium dense, brown, medium to coarse SAND, some gravel, trace silt, trace debris (brick fragments, coal fragments, pieces of metal), few cobbles; moist.	**SAND FILL WITH DEBRIS**
3		
4		
5	*Excavation refusal on concrete at 3.8 ft. - see attached* ***Photo Log*** *.*	
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		

TEST PIT DIAGRAM



NOT TO SCALE

GENERAL NOTES:

1 - Test pit excavated using an approximately 18,000-lb. CASE 580 Super-N backhoe with a toothed bucket.

2 - Minor caving observed below approximately 2 feet.

3 - Groundwater seepage not observed.

4 - Relative densities, where noted, are based on probing with a 1/2" diameter steel foundation probe.

TEST PIT NUMBER

TP-9

Weston & Sampson

TEST PIT PHOTO LOG

PROJECT	East Boston Police Station - 2160866
LOCATION	0 Condor Street / 338 East Eagle Street - Boston, MA
DATE TAKEN	March 9, 2017
PHOTOS BY	TJ Blair, EIT

TEST PIT NUMBER
TP-9

Weston & Sampson

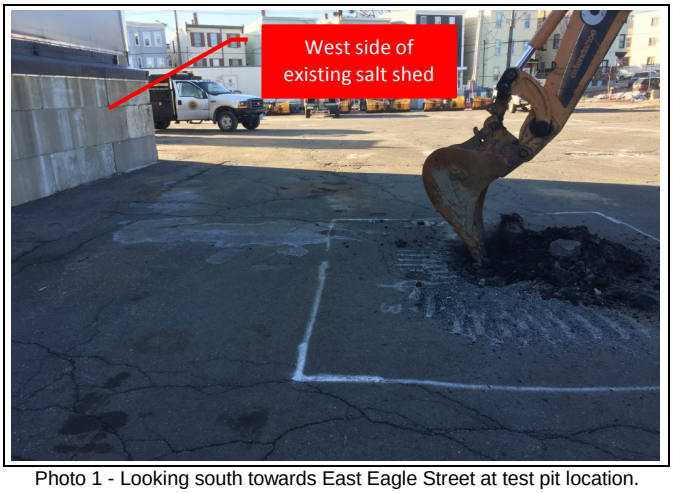


Photo 1 - Looking south towards East Eagle Street at test pit location.


Photo 2 - East sidewall of test pit.

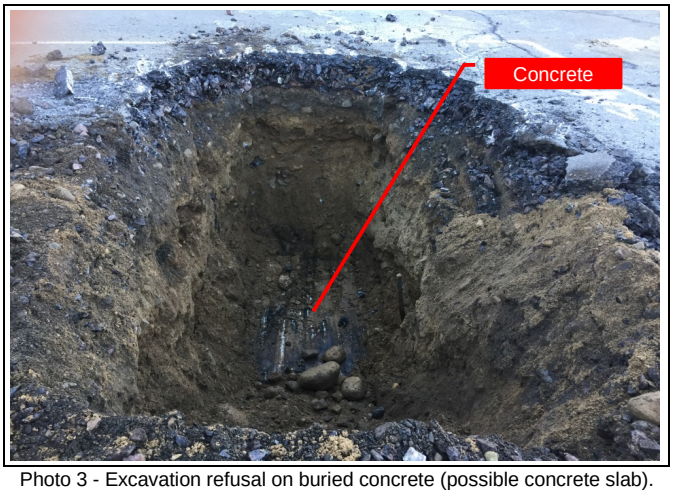


Photo 3 - Excavation refusal on buried concrete (possible concrete slab).


Photo 4 - Material removed from test pit.

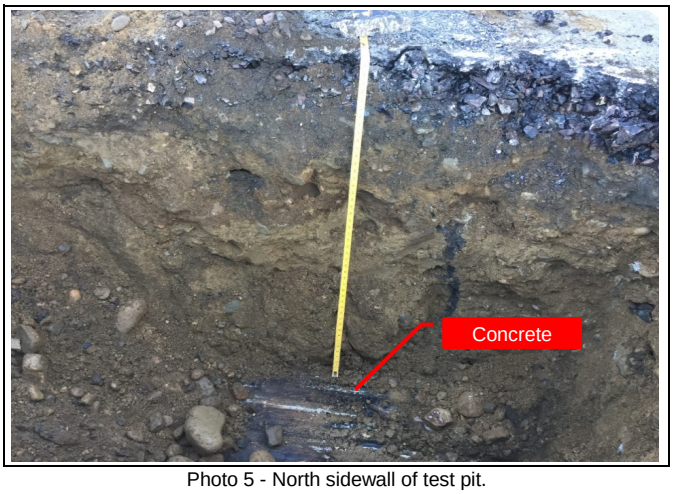


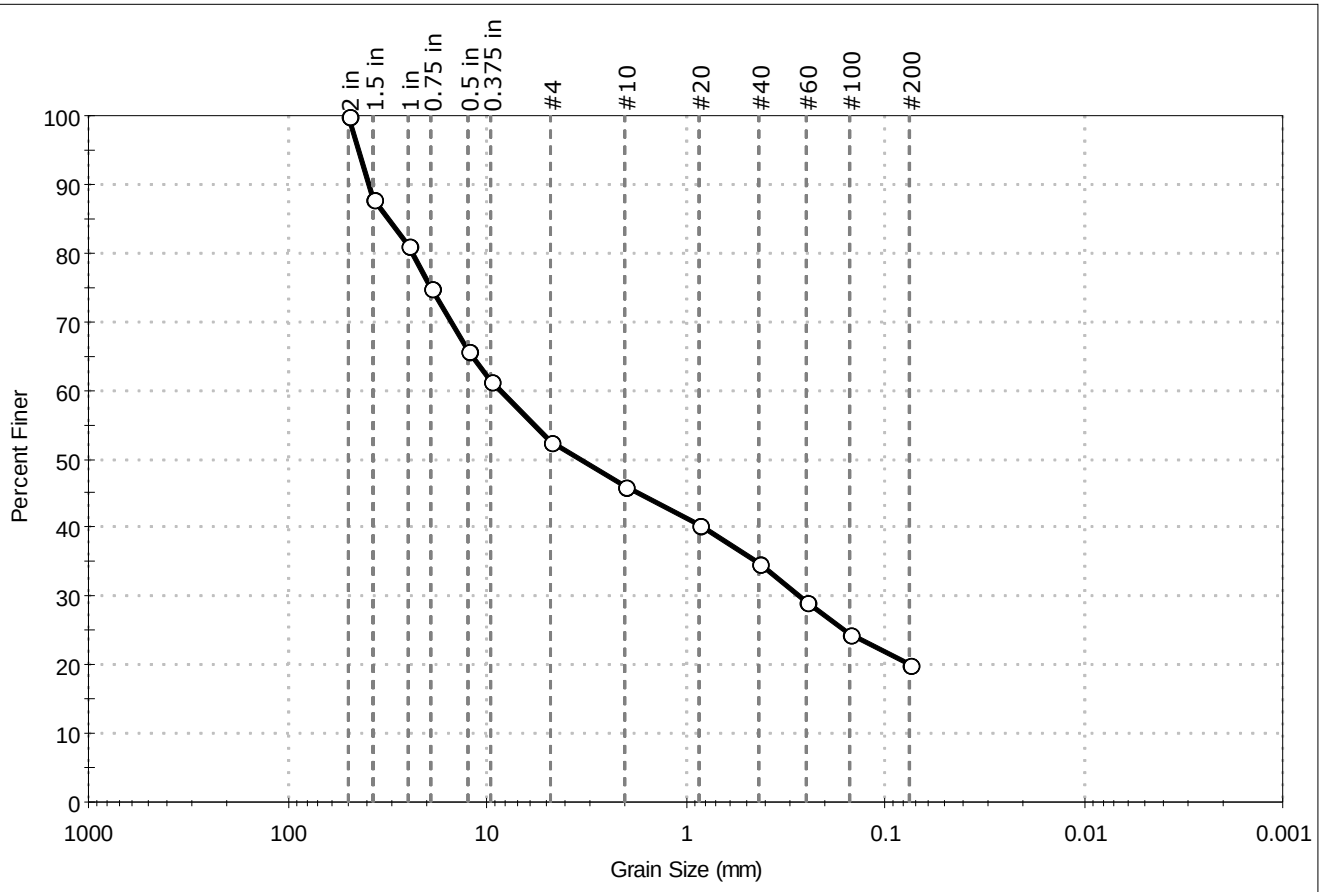
Photo 5 - North sidewall of test pit.

APPENDIX C

Laboratory Test Results

Client:	Weston & Sampson Engineers				
Project:	East Boston Police Station				
Location:	Boston, MA			Project No:	GTX-306159
Boring ID:	TP-1	Sample Type:	bag	Tested By:	jbr
Sample ID:	2-5 ft	Test Date:	03/23/17	Checked By:	emm
Depth :	2-5 ft	Test Id:	406589		
Test Comment:	---				
Visual Description:	Moist, very dark grayish brown silty gravel with sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
–	47.4	32.6	20.0

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
2 in	50.00	100		
1.5 in	37.50	88		
1 in	25.00	81		
0.75 in	19.00	75		
0.5 in	12.50	66		
0.375 in	9.50	61		
#4	4.75	53		
#10	2.00	46		
#20	0.85	40		
#40	0.42	35		
#60	0.25	29		
#100	0.15	24		
#200	0.075	20		

Coefficients

D_{85} =31.5095 mm	D_{30} =0.2675 mm
D_{60} =8.5269 mm	D_{15} =N/A
D_{50} =3.3976 mm	D_{10} =N/A
C_u =N/A	C_c =N/A

Classification

ASTM N/A

AASHTO Stone Fragments, Gravel and Sand (A-1-b (0))

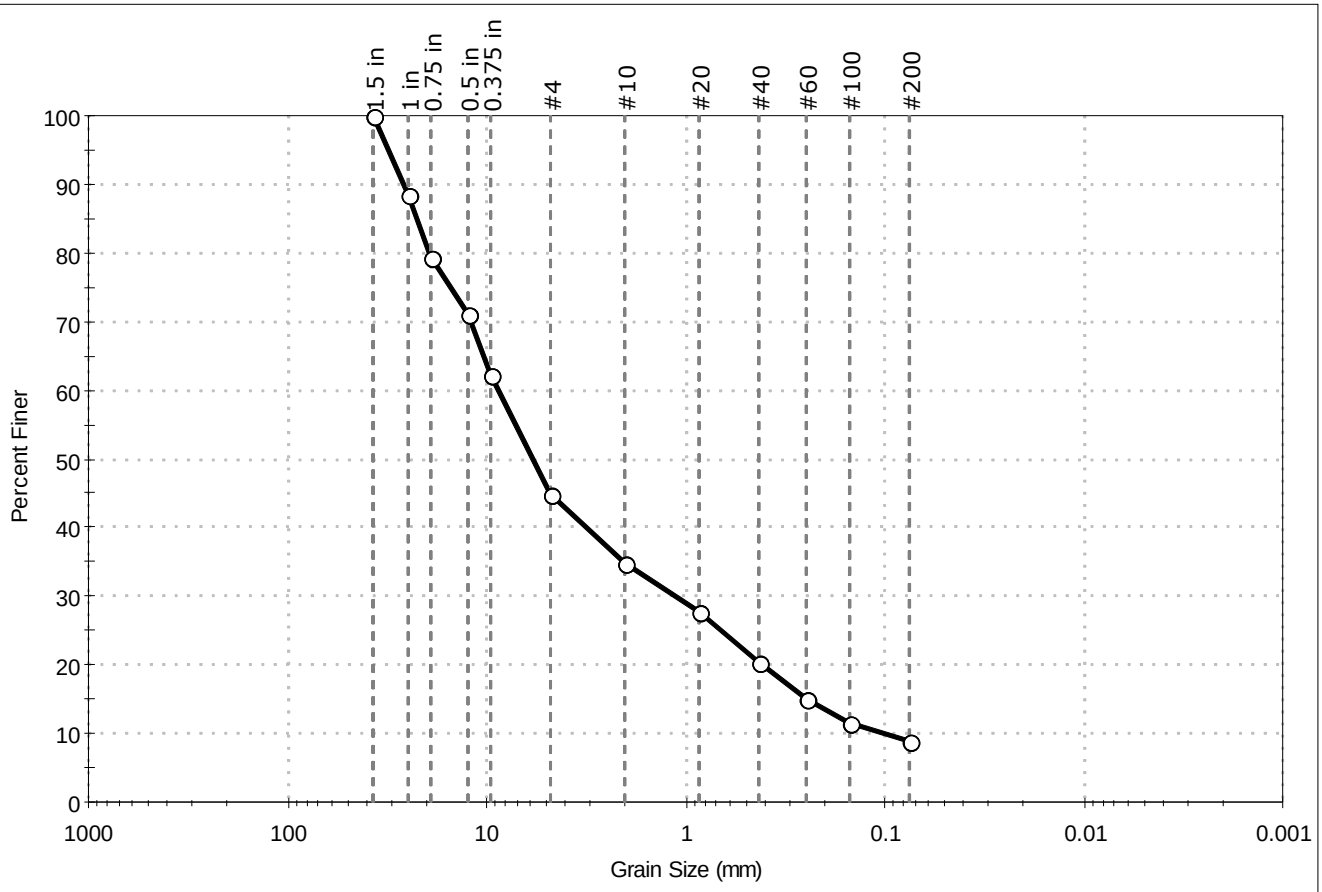
Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Client:	Weston & Sampson Engineers				
Project:	East Boston Police Station				
Location:	Boston, MA			Project No:	GTX-306159
Boring ID:	TP-2	Sample Type:	bag	Tested By:	jbr
Sample ID:	0.5-4 ft	Test Date:	03/22/17	Checked By:	emm
Depth :	0.5-4 ft	Test Id:	406590		
Test Comment:	---				
Visual Description:	Moist, very dark gray gravel with silt and sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	55.2	35.9	8.9

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1.5 in	37.50	100		
1 in	25.00	88		
0.75 in	19.00	79		
0.5 in	12.50	71		
0.375 in	9.50	62		
#4	4.75	45		
#10	2.00	35		
#20	0.85	28		
#40	0.42	20		
#60	0.25	15		
#100	0.15	12		
#200	0.075	8.9		

Coefficients

D_{85} = 22.5308 mm	D_{30} = 1.1227 mm
D_{60} = 8.6694 mm	D_{15} = 0.2465 mm
D_{50} = 5.8392 mm	D_{10} = 0.1004 mm
C_u = 86.349	C_c = 1.448

Classification

ASTM N/A

AASHTO Stone Fragments, Gravel and Sand (A-1-a (1))

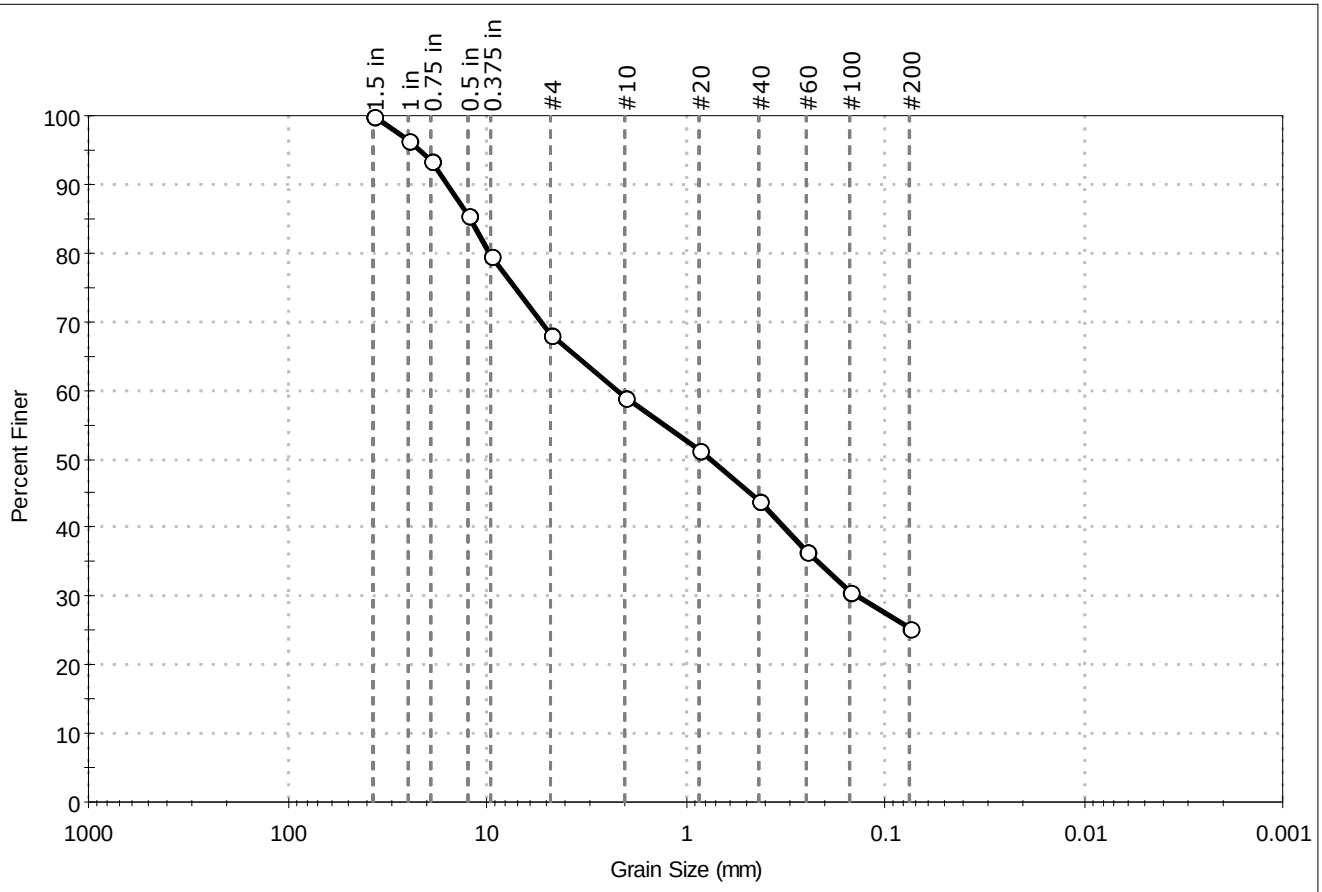
Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Client:	Weston & Sampson Engineers				
Project:	East Boston Police Station				
Location:	Boston, MA			Project No:	GTX-306159
Boring ID:	TP-3	Sample Type:	bag	Tested By:	jbr
Sample ID:	0.5-5 ft	Test Date:	03/23/17	Checked By:	emm
Depth :	0.5-5 ft	Test Id:	406591		
Test Comment:	---				
Visual Description:	Moist, dark brown silty sand with gravel				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	31.8	42.8	25.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1.5 in	37.50	100		
1 in	25.00	96		
0.75 in	19.00	93		
0.5 in	12.50	86		
0.375 in	9.50	80		
#4	4.75	68		
#10	2.00	59		
#20	0.85	51		
#40	0.42	44		
#60	0.25	36		
#100	0.15	31		
#200	0.075	25		

Coefficients

D_{85} = 12.1363 mm D_{30} = 0.1384 mm

D_{60} = 2.2229 mm D_{15} = N/A

D_{50} = 0.7543 mm D_{10} = N/A

C_u = N/A C_c = N/A

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

APPENDIX D

Previous Subsurface Information

Wannalancit Mills
650 Suffolk Street
Lowell MA
Telephone: 978-970-5600
Fax: 978-453-1995

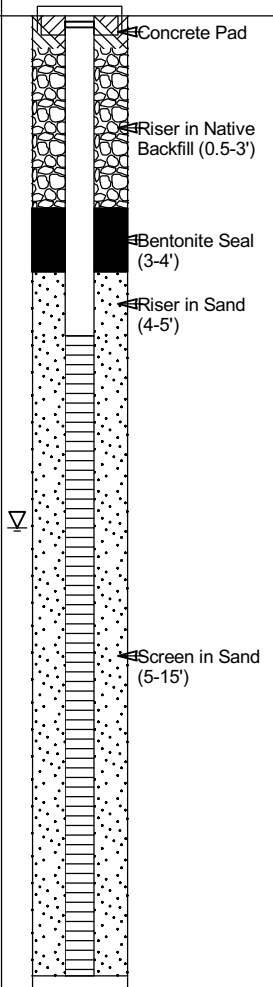
BORING/WELL CONSTRUCTION LOG

CLIENT/PROJECT NUMBER NSTAR / 112558
BORING/WELL NUMBER BOS-1
TRC GEOLOGIST K. Kitchin
DRILLING CONTRACTOR/FOREMAN Geosearch/Ken
DATE DRILLED 4/19/11
LOCATION Location of Western HDD drill point.
SAMPLING METHOD 24 inch Split spoon
DRILLING METHOD Hollow Stem Auger
NOTES Samples collected for waste characterization/COM-97 Parameters

SCREEN TYPE/SLOT 2 inch Schedule 40 Slotted PVC (0.010-inch)
FILTER PACK TYPE #2 Sand
SEAL TYPE Bentonite
DEPTH TO WATER (Approximate Feet) 8
TOTAL DEPTH (Feet) 20
GROUND ELEVATION (Feet) TBD
REFERENCE ELEVATION (Feet) TBD

DEPTH (ft. BGL)	BLOW COUNTS	PEN/REC (INCHES)	CORE #	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	Field Testing (ppm)	SAMPLE ID/ TIME
0	29 7 15 2	24/8	SS-1		0-3" TOPSOIL GRAVEL.		
1					3-8" ASHY FILL, little coal.	0.0	
2	3 4 7 7	24/10	SS-2		0-7" ASHY FILL, little coal.	0.0	BOS-1(0-6) 0850
4	20 25 17 12	24/12	SS-3		7-10" Black fine SAND and SILT, no odor. Same as above (7-10").	0.0	
6	10 15 7 8	24/3	SS-4		Brown fine SAND and SILT, some fine to medium gravel, no odor, no staining. 0-3" Pulverized GRAVEL.	0.0	BOS-1(6) 0845
8	4 4 4 5	24/7	SS-5		0-7" Dark brown fine SAND and GRAVEL, little silt, wet, no odor, no staining.	0.0	
10	2 2 3 5	24/6	SS-6		0-6" Fine to coarse GRAVEL, little fine to medium sand, wet.	0.0	
12	6 5 5 4	24/3	SS-7		0-3" Same as above.	0.0	
14	2 6 7 3	24/5	SS-8		0-5" Dark grey fine to medium SAND and GRAVEL, wet, no odor, no staining.	0.0	
16	4 5 6 13	24/8	SS-9		0-8" Brownish grey CLAYEY SILT, trace organic matter, no odor, no staining.	0.0	
18	20 25 25 28	24/18	SS-10		0-18" Brownish grey CLAYEY SILT, wet, no odor, no staining.	0.0	
20					End of Boring - Terminated @ 20 feet.		

WELL DIAGRAM



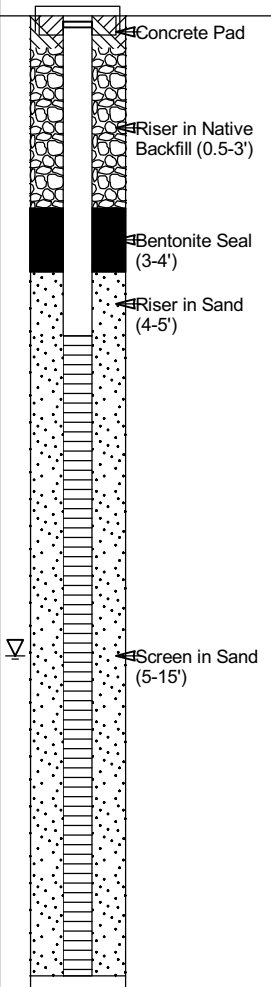
Wannalancit Mills
650 Suffolk Street
Lowell MA
Telephone: 978-970-5600
Fax: 978-453-1995

BORING/WELL CONSTRUCTION LOG

CLIENT/PROJECT NUMBER NSTAR / 112558
BORING/WELL NUMBER BOS-2
TRC GEOLOGIST K. Kitchin
DRILLING CONTRACTOR/FOREMAN Geosearch/Ken
DATE DRILLED 4/18/11
LOCATION Location of Eastern HDD Manhole
SAMPLING METHOD 24 inch Split spoon
DRILLING METHOD Hollow Stem Auger
NOTES Samples collected for waste characterization/COM-97 Parameters

SCREEN TYPE/SLOT 2 inch Schedule 40 Slotted PVC (0.010-inch)
FILTER PACK TYPE #2 Sand
SEAL TYPE Bentonite
DEPTH TO WATER (Approximate Feet) 10
TOTAL DEPTH (Feet) 20
GROUND ELEVATION (Feet) TBD
REFERENCE ELEVATION (Feet) TBD

DEPTH (ft. BGL)	BLOW COUNTS	PEN/REC (INCHES)	CORE #	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	Field Testing (ppm)	SAMPLE ID/ TIME
1	NA 16 26 28	18/10	SS-1		0-6" ASPHALT. 0-10" Brown to black SILT and fine SAND, some medium to coarse gravel, trace coal and brick, no odor, no staining.	0.0	
2 3	5 5 6 5	24/8	SS-2		0-8" Brown to black fine SAND, some silt and fine to coarse gravel, trace brick, wood in cutting shoe, no odor, no staining.	0.0	BOS-2(0.5-6) 1055
4 5	6 5 3 4	24/10	SS-3		0-10" Dark brown to black fine to medium SAND, some silt and fine gravel, trace coal slag, no odor.	0.0	
6 7	4 3 4 7	24/18	SS-4		0-18" Dark brown to black fine to medium SAND, some silt and fine gravel, trace coal slag, trace brick, no odor.	0.0	BOS-2(6) 1050
8 9 10	9 9 4 3	24/8	SS-5		0-3" Dark brown to black fine to medium SAND, some silt and fine gravel, trace coal slag, trace brick, no odor. 3-5" Pulverized brick. 5-8" Brown fine to coarse SAND, moist to wet, little silt and fine gravel, no odor, no staining.	0.0	BOS-2(6-13) 1115
11	4 2 3 3	24/8	SS-6		0-8" Light brown to grey SILTY SAND, wet, no odor, no staining.	0.0	BOS-2(10) 1110
12 13	4 6 8 5	24/9	SS-7		0-7" grey SILT, some clay and fine sand, wet, no odor, no staining.	0.0	
14 15	6 6 11 15	24/6	SS-8		0-6" Grey CLAYEY SILT.	0.0	
16 17	6 17 23 27	24/15	SS-9		0-15" Grey CLAYEY SILT, wet, no odor, no staining.	0.0	
18 19	20 23 15 18	24/12	SS-10		0-12" Grey CLAYEY SILT, wet, no odor, no staining.	0.0	
20					End of Boring - Terminated @ 20 feet.		



Wannalancit Mills
650 Suffolk Street
Lowell MA
Telephone: 978-970-5600
Fax: 978-453-1995

BORING/WELL CONSTRUCTION LOG

CLIENT/PROJECT NUMBER NSTAR / 112558
BORING/WELL NUMBER BOS-3
TRC GEOLOGIST K. Kitchin
DRILLING CONTRACTOR/FOREMAN Geosearch/Ken
DATE DRILLED 4/19/11
LOCATION Location of Western HDD Manhole
SAMPLING METHOD 24 inch Split spoon
DRILLING METHOD Hollow Stem Auger
NOTES Samples collected for waste characterization/COM-97 Parameters

SCREEN TYPE/SLOT NA
FILTER PACK TYPE NA
SEAL TYPE NA
DEPTH TO WATER (Approximate Feet) 12
TOTAL DEPTH (Feet) 20
GROUND ELEVATION (Feet) TBD
REFERENCE ELEVATION (Feet) TBD

DEPTH (ft. BGL)	BLOW COUNTS	PEN/REC (INCHES)	CORE #	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	Field Testing (ppm)	SAMPLE ID/ TIME	WELL DIAGRAM
0	17	24/13	SS-1		0-4" ASPHALT.			
1	25 35 10				4-8" Dark brown to black fine SAND and SILT, some fine to coarse gravel, no odor, no staining.	0.0		
2					8-13" ASHY FILL, little coal.			
	17	24/24	SS-2		0-8" Dark grey fine SAND and SILT, some fine to coarse gravel, trace ash.			
3	25 25 20				8-13" FILL (brick).	0.0	BOS-3(0.5-6) 1040	
4					13-24" Dark brown to black fine to medium SAND and GRAVEL, some silt, no odor, no staining.			
	9	24/20	SS-3		0-20" FILL (coal, slag, klinker, ash, coal ash) some fine to medium sand and gravel, no odor.			
5	8 5 4					0.0		
6								
	2	24/10	SS-4		0-10" FILL (coal, slag, klinker, ash, coal ash) some fine to medium gravel, little fine to medium sand, no odor.		BOS-3(6) 1035	
7	2 2 3					0.0		
8								No Monitoring well installed
	4	24/0	SS-5		No recovery (loose material).			
9	4 4 4					NA		
10								
	8	24/5	SS-6		0-5" FILL (slag and gravel), no sampleable material.			
11	8 12 14					NA		
12								▽
	25	24/8	SS-7		0-8" Brownish grey SILT, wet, no odor, no staining.			
13	25 7 14					0.0		
14								
	1	24/2	SS-8		0-2" Dark grey to lack fine to medium SAND, some silt and fine gravel, wet, no odor, no staining.			
15	3 12 6					0.0		
16								
	4	24/11	SS-9		0-11" Brownish grey CLAYEY SILT, little organic material, wet, no odor, no staining.			
17	6 13 20					0.0		
18								
	8	24/18	SS-10		0-18" Brownish grey CLAYEY SILT, little organic material, wet, no odor, no staining.			
19	3 10 15					0.0		
20					End of Boring - Terminated @ 20 feet.			

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BORING/WELL CONSTRUCTION LOG

CLIENT/PROJECT NUMBER NSTAR / 112558
BORING/WELL NUMBER BOS-4
TRC GEOLOGIST K. Kitchin
DRILLING CONTRACTOR/FOREMAN Geosearch/Ken
DATE DRILLED 4/19/11
LOCATION Location of center HDD drill point
SAMPLING METHOD 24 inch Split spoon
DRILLING METHOD Hollow Stem Auger
NOTES Samples collected for waste characterization/COM-97 Parameters

SCREEN TYPE/SLOT NA
FILTER PACK TYPE NA
SEAL TYPE NA
DEPTH TO WATER (Approximate Feet) 12
TOTAL DEPTH (Feet) 20
GROUND ELEVATION (Feet) TBD
REFERENCE ELEVATION (Feet) TBD

DEPTH (ft. BGL)	BLOW COUNTS	PEN/REC (INCHES)	CORE #	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	Field Testing (ppm)	SAMPLE ID/ TIME	WELL DIAGRAM
0	120/1	1/0	SS-1		No Recovery; Augered through obstuction to 2'.			
1	- - -					0.0		
2	8 12 44 48	24/16	SS-2		0-11" Dark brown fine SAND and SILT, some fine to coarse gravel, no odor, no staining.	0.0	BOS-4(0.5-6) 1220	
3					11-13" Brick.			
4	9 9 4 4	24/6	SS-3		13-16" Brown fine to medium SAND, some silt, trace brick, no odor, no staining.			
5					0-3" SILT LENSE.	0.0		
6	8 6 5 6	24/8	SS-4		3-6" Dark brown to black fineto medium SAND and GRAVEL, no odor, no staining.		BOS-4(6) 1215	
7					0-8" Black SLAG and GRAVEL, little fine to medium sand and silt, no odor, no staining.	0.0		
8	5 6 5 7	24/3	SS-5		0-3" Black SLAG and GRAVEL, little silt, no odor, no staining.			No Monitoring well installed
9						0.0		
10	6 6 3 9	24/6	SS-6		0-6" Black SLAG and GRAVEL, little silt, no odor, no staining.			
11						0.0		
12	9 18 7 7	24/10	SS-7		0-10" Dark grey to brown fine to medium SAND and GRAVEL with SLAG, wet, no odor, no staining.			▽
13						0.0		
14	6 4 3 6	24/6	SS-8		0-6" Dark grey to brown fine to medium SAND and GRAVEL with SLAG, wet, no odor, no staining.			
15						0.0		
16	7 9 19 22	24/20	SS-9		0-20" Grey CLAYEY SILT, wet, trace organic matter, no odor, no staining.			
17						0.0		
18	11 3 12 22	24/18	SS-10		0-18 Grey CLAYEY SILT, wet, trace organic matter, no odor, no staining.			
19						0.0		
20					End of Boring - Terminated @ 20 feet.			

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BORING/WELL CONSTRUCTION LOG

CLIENT/PROJECT NUMBER NSTAR / 112558
BORING/WELL NUMBER BOS-5
TRC GEOLOGIST K. Kitchin
DRILLING CONTRACTOR/FOREMAN Geosearch/Ken
DATE DRILLED 4/18/11
LOCATION Location of center HDD drill point
SAMPLING METHOD 24 inch Split spoon
DRILLING METHOD Hollow Stem Auger
NOTES Samples collected for waste characterization/COM-97 Parameters

SCREEN TYPE/SLOT NA
FILTER PACK TYPE NA
SEAL TYPE NA
DEPTH TO WATER (Approximate Feet) 10
TOTAL DEPTH (Feet) 20
GROUND ELEVATION (Feet) TBD
REFERENCE ELEVATION (Feet) TBD

DEPTH (ft. BGL)	BLOW COUNTS	PEN/REC (INCHES)	CORE #	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	Field Testing (ppm)	SAMPLE ID/ TIME	WELL DIAGRAM
0					0-4" ASPHALT.			
1	NA		SS-1		4-5" Black FILL (brick, coal, ash, glass).	0.0		
2	9 8 5 2	24/10	SS-2		0-10" FILL (ash, coal, brick, glass, wood), little fine sand.	0.0	BOS-5(0.5-6) 1300	
4	1 1 2 2	24/10	SS-3		0-10" Black and dark brown fine SAND and SILT, little fill (slag, glass), trace fine gravel, trace plastic shards, moist, no odor.	0.0		
6	1 1 1 1	24/12	SS-4		0-5" Black and dark brown fine SAND and SILT, little fill (slag, glass) trace fine gravel, trace plastic shards, moist, no odor.	0.0	BOS-5(6) 1255	
7					5-12" Dark brown to lack SILT, little fine sand, trace wood debris.			No Monitoring well installed
8			SS-5		0-4" Brown to black fine SAND and SILT, some fine to coarse gravel, trace brick and plastic, moist, no odor, no staining.	0.0		
10	3 4 3 4	24/8	SS-6		0-8" BRICK and GRAVEL, little fine to medium sand, wet, no odor, no staining.	0.0	BOS-5(6-13) 1315 BOS-5(10) 1310	▽
12	12 12 4 4	24/9	SS-7		0-9" BRICK and GRAVEL, little fine to medium sand, wet, no odor, no staining.	0.0		
14	9 7 2 6	24/7	SS-8		0-7" BRICK and GRAVEl, little fine to medium sand, wet, no odor, no staining.	0.0		
16	19 10 8 17	24/6	SS-9		0-6" Grey to blueish-grey CLAYEY SILT, wet, no odor, no staining.	0.0		
18	2 1 13 15	24/15	SS-10		0-15" Grey to blueish-grey CLAYEY SILT, wet, no odor, no staining.	0.0		
20					End of Boring - Terminated @ 20 feet.			

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BORING/WELL CONSTRUCTION LOG

CLIENT/PROJECT NUMBER NSTAR / 112558
BORING/WELL NUMBER BOS-6
TRC GEOLOGIST K. Kitchin
DRILLING CONTRACTOR/FOREMAN Geosearch/Ken
DATE DRILLED 4/18/11
LOCATION Location of Eastern HDD drill point
SAMPLING METHOD 24 inch Split spoon
DRILLING METHOD Hollow Stem Auger
NOTES Samples collected for waste characterization/COM-97 Parameters

SCREEN TYPE/SLOT NA
FILTER PACK TYPE NA
SEAL TYPE NA
DEPTH TO WATER (Approximate Feet) 8
TOTAL DEPTH (Feet) 20
GROUND ELEVATION (Feet) TBD
REFERENCE ELEVATION (Feet) TBD

DEPTH (ft. BGL)	BLOW COUNTS	PEN/REC (INCHES)	CORE #	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	Field Testing (ppm)	SAMPLE ID/ TIME	WELL DIAGRAM
1	18 33 18 12	24/10	SS-1		0-8" Black fine SAND and SILT, some fine to coarse gravel, dump, very slight odor.	0.0		
2					8-11" Brick.			
3	- - - -	0/0			No Recovery. Augered through obstruction.	-	BOS-6(0-6) 1620	
4	13 8 3 4	24/6	SS-2		0-6" Dark grey CLAYEY SILT, some fine to medium sand and gravel, moist, slight odor, slight staining.	6.3		
5								
6	6 4 4 2	24/5	SS-3		0-5" ASHY FILL, trace brick.	0	BOS-6(6) 1615	
7								
8	3 5 7 5	24/12	SS-4		0-12" Brownish-grey fine to coarse SAND and SILT, some fine to medium gravel, wet, no odor, no staining.	0	BOS-6(9) 1625	▽ No Monitoring well installed
9								
10	2 3 4 4	24/23	SS-5		0-22" Grey fine to coarse SAND and GRAVEL, some silt, wet, no odor, no staining.	0.0	BOS-6(6-13) 1630	
11								
12	5 7 8 6	24/6	SS-6		0-6" Fine to coarse GRAVEL.	0.0		
13								
14	7 6 7 6	24/7	SS-7		0-7" Fine to coarse GRAVEL.	0.0		
15								
16	4 4 4 11	24/11	SS-8		0-11" Black to dark grey fine to coarse GRAVEL and SILT, wet.	0.0		
17								
18	10 10 13 18	24/11	SS-9		0-11" Grey CLAYEY SILT, wet, no odor, no staining.	0.0		
19								
20					End of Boring - Terminated @ 20 feet.			

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BORING/WELL CONSTRUCTION LOG

CLIENT/PROJECT NUMBER NSTAR / 112558
BORING/WELL NUMBER BOS-7
TRC GEOLOGIST K. Kitchin
DRILLING CONTRACTOR/FOREMAN Geosearch/Ken
DATE DRILLED 4/18/11
LOCATION Location of center HDD drill point
SAMPLING METHOD 24 inch Split spoon
DRILLING METHOD Hollow Stem Auger
NOTES Samples collected for waste characterization/COM-97 Parameters

SCREEN TYPE/SLOT NA
FILTER PACK TYPE NA
SEAL TYPE NA
DEPTH TO WATER (Approximate Feet) 9
TOTAL DEPTH (Feet) 20
GROUND ELEVATION (Feet) TBD
REFERENCE ELEVATION (Feet) TBD

DEPTH (ft. BGL)	BLOW COUNTS	PEN/REC (INCHES)	CORE #	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	Field Testing (ppm)	SAMPLE ID/ TIME	WELL DIAGRAM
1	18 33 18 12	24/10	SS-1		0-5" Black fine to medium SAND, some silt and fine to medium gravel, no odor, no staining.			
					5-10" Brownish-grey fine to medium SAND, some fine to coarse gravel, no odor, no staining.	0.0		
2	7 13 15 17	24/7	SS-2		0-3" Brownish-grey fine to medium SAND, some fine to coarse gravel, trace fill (vinyl/ rubber material), no odor, no staining.			
3					3-7" Grey SILT, little fine to medium sand, no odor, no staining.	14.4	BOS-7(0-6) 1450 BOS-7(3) 1445	
4	7 7 3 4	24/6	SS-3		0-6" Grey SILT, little fine to medium sand, with fill (ash and brick) no odor, no staining.			
5						0.5		
6	2 4 2 1	24/11	SS-4		0-11" Dark brown (slightly red) fine to medium SAND, some silt, little fine gravel, trace ash, moist, no odor, no staining.			
7						8.3	BOS-7(7) 1505	
8	2 1 1 1	24/12	SS-5		0-12" Brown fine SAND and SILT, wet, no odor, no staining.			No Monitoring well installed
9						.1	BOS-7(6-13) 1510	▽
10	7 5 5 6	24/4	SS-6		0-4" Brown fine SAND and SILT, some fine to coarse gravel, wet, no odor, no staining.			
11						0.0		
12	5 3 4 9	24/8	SS-7		0-8" Brown fine to coarse SAND and GRAVEL, little silt, wet, no odor, no staining.			
13						0.0		
14	10 8 10 8	24/9	SS-8		0-9" Dark brown to black fine to medium SAND and GRAVEL, little silt, wet, no odor, no staining.			
15						0.0		
16	4 11 6 9	24/6	SS-9		0-6" Grey CLAYEY SILT, some organic material, wet, no odor, no staining.			
17						0.0		
18	11 15 17 23	24/10	SS-10		0-10" Brownish-grey CLAYEY SILT, wet, no odor, no staining.			
19						0.0		
20					End of Boring - Terminated @ 20 feet.			

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BORING/WELL CONSTRUCTION LOG

CLIENT/PROJECT NUMBER NSTAR / 112558
BORING/WELL NUMBER BOS-8
TRC GEOLOGIST K. Kitchin
DRILLING CONTRACTOR/FOREMAN Geosearch/Ken
DATE DRILLED 4/18/11
LOCATION Location of center HDD drill point
SAMPLING METHOD 24 inch Split spoon
DRILLING METHOD Hollow Stem Auger
NOTES Samples collected for waste characterization/COM-97 Parameters

SCREEN TYPE/SLOT NA
FILTER PACK TYPE NA
SEAL TYPE NA
DEPTH TO WATER (Approximate Feet) 10
TOTAL DEPTH (Feet) 20
GROUND ELEVATION (Feet) TBD
REFERENCE ELEVATION (Feet) TBD

DEPTH (ft. BGL)	BLOW COUNTS	PEN/REC (INCHES)	CORE #	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	Field Testing (ppm)	SAMPLE ID/ TIME	WELL DIAGRAM
0	9	24/10	SS-1		0-4" ASPHALT.			
1	13 120 2				0-10" FILL (dark brown to black fine SAND, trace brick, coal, ash) no odor.	0.0		
2	9	24/8	SS-2		0-8" FILL (dark brown to black fine SAND, trace brick, coal, ash), no odor.			
3	1 1 7					0.0	BOS-8(0.5-6) 0855	
4	7	24/13	SS-3		0-13" Black to Dark brown fine SAND and SILT, some fill material (brick, coal, glass) some fine to medium gravel, moist, no odor, no staining.			
5	7 6 5					0.0		
6	7	24/16	SS-4		0-13" Black / Dark brown fine SAND and SILT, some fill material (brick, coal, glass) some fine to medium gravel, trace ash, moist, no odor, no staining.		BOS-8(6) 0850	
7	4 8 11					0.0		
8					13-16" Grey CLAYEY SILT, little fine to medium gravel.			No Monitoring well installed
9	12 7 21 15	24/10	SS-5		0-10" Dark brown to black fine to medium SAND, some silt and fine to coarse gravel, trace coal, and glass, moist, no odor, no staining.	0.0	BOS-8(6-13) 0920	
10	11	24/8	SS-6		0-8" Brownish grey medium to coarse GRAVELLY SILT with SAND, wet, no odor, no staining.		BOS-8(10) 0915	▽
11	8 10 11					0.0		
12	9	24/7	SS-7		0-7" Black to dark brown fine to medium GRAVELLY SAND, wet, no odor, no staining.			
13	4 9 4					0.0		
14	1	24/6	SS-8		0-16" Grey CLAYEY SILT, some organic material, organic breakdown odor.			
15	3 8 16					0.0		
16	5	24/10	SS-9		0-10" Grey CLAYEY SILT, some organic material, organic breakdown odor.			
17	17 26 30					0.0		
18	8	24/22	SS-10		0-22" Grey SILTY, some clay, no odor, no staining.			
19	16 20 24					0.0		
20					End of Boring - Terminated @ 20 feet.			

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BORING/WELL CONSTRUCTION LOG

CLIENT/PROJECT NUMBER NSTAR / 112558
BORING/WELL NUMBER BOS-9
TRC GEOLOGIST K. Kitchin
DRILLING CONTRACTOR/FOREMAN Geosearch/Ken
DATE DRILLED 4/19/11
LOCATION Location of center HDD duct line
SAMPLING METHOD 24 inch Split spoon
DRILLING METHOD Hollow Stem Auger
NOTES Samples collected for waste characterization/COM-97 Parameters

SCREEN TYPE/SLOT NA
FILTER PACK TYPE NA
SEAL TYPE NA
DEPTH TO WATER (Approximate Feet) 12
TOTAL DEPTH (Feet) 21
GROUND ELEVATION (Feet) TBD
REFERENCE ELEVATION (Feet) TBD

DEPTH (ft. BGL)	BLOW COUNTS	PEN/REC (INCHES)	CORE #	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	Field Testing (ppm)	SAMPLE ID/ TIME	WELL DIAGRAM
1	25 25 25 30	24/20	SS-1		0-20" Black fine to medium SAND, some silt and fine to coarse gravel, petroleum-like odor and staining.	943		
2	50 50 50 50	24/18	SS-2		0-18" Black fine SAND and SILT, some fine to coarse gravel, dense, some petroleum-like odor.	645	BOS-9(2) 1350 BOS-9(0.5-6) 1415	
4	- - -	0/0	SS-3		4-5' No recovery, rock in shoe.	-		
5	- - -	24/16	SS-4		0-6" Black SLAG and GRAVEL (fill).			
6	15 15 16 17				6-10" Tan SILT, some fine to coarse gravel, no odor, no staining.	5.9		
7	7 5 5 9	24/10	SS-5		0-10" Tan SILT, some fine to coarse gravel, no odor, no staining.	0.0		No Monitoring well installed
9	3 3 2 2	24/10	SS-6		0-10" Black SLAG and GRAVEL (fill), little fine to medium sand, no odor, no staining.	0.0	BOS-9(6-13) 1430	
11	3 3 3 3	24/8	SS-7		0-8" Grey SILT, some clay and organic material, slight petroleum-like odor.	30.9	BOS-9(12) 1425	▽
13	6 7 9 11	24/13	SS-8		0-13" Brownish grey CLAYEY SILT, some organic material, no odor, no staining.	0.0		
15	11 16 20 21	24/13	SS-9		0-13" Brownish grey CLAYEY SILT, some organic material, no odor, no staining.	0.0		
17	7 7 9 11	24/11	SS-10		0-11" Brownish grey CLAYEY SILT, some organic material, no odor, no staining.	0.0		
19	23 47 55 40	24/12	SS-11		0-12" Brownish grey CLAYEY SILT, some organic material, no odor, no staining.	0.0		
21					End of Boring - Terminated @ 21 feet.			

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BORING/WELL CONSTRUCTION LOG

CLIENT/PROJECT NUMBER NSTAR / 112558
BORING/WELL NUMBER BOS-10
TRC GEOLOGIST K. Kitchin
DRILLING CONTRACTOR/FOREMAN Geosearch/Ken
DATE DRILLED 4/19/11
LOCATION Location of center HDD drill point
SAMPLING METHOD 24 inch Split spoon
DRILLING METHOD Hollow Stem Auger
NOTES Samples collected for waste characterization/COM-97 Parameters

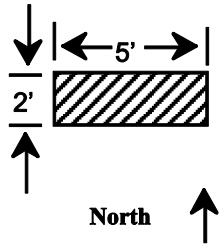
SCREEN TYPE/SLOT NA
FILTER PACK TYPE NA
SEAL TYPE NA
DEPTH TO WATER (Approximate Feet) 10
TOTAL DEPTH (Feet) 20
GROUND ELEVATION (Feet) TBD
REFERENCE ELEVATION (Feet) TBD

DEPTH (ft. BGL)	BLOW COUNTS	PEN/REC (INCHES)	CORE #	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	Field Testing (ppm)	SAMPLE ID/ TIME	WELL DIAGRAM
0	7	24/12	SS-1		0-6" ASPHALT.			
1	7 7 7				6-12" Brown to dark brown fine SAND and SILT, some fine to coarse gravel, no odor, no staining.	0.0		
2	7	24/16	SS-2		0-16" Same as above with FILL (Brick, coal, slag) no odor, no staining.			
3	5 6 20					0.0	BOS-10(0.5-6) 1640	
4	9	24/15	SS-3		0-13" Same as above.			
5	8 17 32					0.0		
6					13-15" Brownish grey SILT (lense).			
	8	24/0	SS-4		No Recovery (rock in shoe).		BOS-10(6) 1635	
7	10 10 12					-		No Monitoring well installed
8								
9	3 8 5 3	24/12	SS-5		0-12" Brown fine SAND and SILT, some fine to coarse gravel, trace clay, moist, no odor, no staining.	0.0	BOS-10(9) 1655 BOS-10(6-13) 1700	▽
10								
11	2 2 2 3	24/20	SS-6		0-20" Same as above, more silt, wet.	0.0		
12								
13	9 18 7 7	24/12	SS-7		0-12" Brown SILT, little fine to medium sand.	0.0		
14	7	24/0	SS-8		No Recovery; material slipped out of sampling spoon during retraction. Replaced cone catcher.			
15	5 7 13					-		
16								
17	9 10 17 10	24/11	SS-9		0-11" Brownish grey SILT some fine sand and clay, little fine to coarse gravel, wet, no odor, no staining.	0.0		
18								
19	25 25 25 25	24/16	SS-10		0-16" Brownish grey CLAYEY SILT, wet, no odor, no staining.	0.0		
20					End of Boring - Terminated @ 20 feet.			

TRC Test Pit Log	Project: NSTAR Chelsea - 112558	Date/Time: 7/21/11	Sheet 1 of 1
	Contractor Personnel: Danny (McCourt)	TRC Personnel: Z. Richards	
Equipment/Contractor Used: Mini Excavator / McCourt	Location: HDD-2 in East Boston	Test Pit Number: BOS-11	
Reach/Capacity: 14 feet	Total Depth: 11 feet	Piezometer Installed? NO	
Depth to Ground Water: Unknown	Weather: ~ 80° partly cloudy	Elevation: NA	Top of Pit: NA

Depth	Sample Number	Stratigraphic Description	REMARKS:
1		0 – 0.5' ASPHALT 0.5 – 3' Dark-grey to black medium-coarse SAND and GRAVEL, some cobbles, trace brick and slag.	
2			
3	BOS-11 (0-6') @1320	3 – 6' Dark-grey to black medium-coarse SAND and GRAVEL, little cobbles and fill (brick, metal, slag).	
4			
5			
6		6 – 10' Dark-grey to black medium-coarse SAND and GRAVEL, little cobbles, trace slag, saturated @ 10'.	
7			
8	BOS-11 (6-11') @1340		
9		10 – 11' Dark-grey to black medium-coarse SAND and GRAVEL, little cobbles, trace slag, wet, odor.	
10			

TEST PIT PLAN



Vol. = ~1 cu. yd.

Test Pit Sketch

See Photographs

Notes

Sample BOS-11 (0-6') analyzed for TCLP Pb and Total Pb.

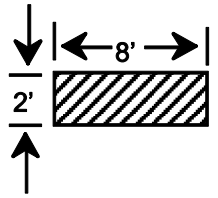
Sample BOS-11 (6-11') analyzed for TCLP Pb and Total Pb.

Test pit backfilled and covered with crushed asphalt at surface.

TRC Test Pit Log	Project: NSTAR Chelsea - 112558	Date/Time: 7/22/11	Sheet 1 of 1
	Contractor Personnel: Danny (McCourt)	TRC Personnel: Z. Richards	
Equipment/Contractor Used: Mini Excavator / McCourt	Location: HDD-2 in East Boston	Test Pit Number: BOS-12	
Reach/Capacity: 14 feet	Total Depth: 13 feet	Piezometer Installed? NO	
Depth to Ground Water: Unknown	Weather: ~ 80° partly cloudy	Elevation: NA	Top of Pit: NA

Depth	Sample Number	Stratigraphic Description	REMARKS:
1		0 – 0.5' ASPHALT 0.5 – 3' Dark-grey to black medium-coarse SAND and GRAVEL, some cobbles, trace brick and slag.	
2			
3	BOS-12 (0-6') @0900	3 – 6' Dark-brown to black medium-coarse SAND and GRAVEL, some cobbles and fill (metal, slag).	
4			
5			
6		6 – 10' Dark-brown to black medium-coarse SAND and GRAVEL, little cobbles, trace slag and brick, saturated @ 10', odor.	
7			
8	BOS-12 (6-13') @0925		
9			
10		10 – 13' Dark-grey to black medium-coarse SAND and GRAVEL, little cobbles, trace slag, wet, odor.	

TEST PIT PLAN



Vol. = ~3 cu. yd.

Test Pit Sketch

See Photographs

Notes

Sample BOS-12 (0-6') analyzed for TCLP Pb and Total Pb.

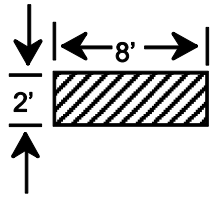
Sample BOS-12 (6-13') analyzed for TCLP Pb and Total Pb.

Test pit backfilled and covered with crushed asphalt at surface.

TRC Test Pit Log	Project: NSTAR Chelsea - 112558	Date/Time: 7/22/11	Sheet 1 of 1
	Contractor Personnel: Danny (McCourt)	TRC Personnel: Z. Richards	
Equipment/Contractor Used: Mini Excavator / McCourt	Location: HDD-3 in East Boston	Test Pit Number: BOS-13	
Reach/Capacity: 14 feet	Total Depth: 13 feet	Piezometer Installed? NO	
Depth to Ground Water: Unknown	Weather: ~ 80° partly cloudy	Elevation: NA	Top of Pit: NA

Depth	Sample Number	Stratigraphic Description	REMARKS:
1		0 – 0.5' ASPHALT 0.5 – 3.5' Dark-grey to black medium-coarse SAND and GRAVEL, some cobbles and pockets of ashy fill, trace slag.	
2			
3	BOS-13 (0-6') @0950		
4		3.5 – 6' Dark-brown to black medium-coarse SAND and GRAVEL, some pockets of light-brown silty clay, little cobbles and ashy fill.	
5			
6			
7		6 – 11' Brown SILTY CLAY, pockets of ashy fill, some sand and gravel, trace slag, saturated @ 11'.	
8			
9	BOS-13 (6-13') @1000		
10		11 – 13' Brown SILTY CLAY, pockets of rounded coarse sand (well-sorted), wet.	

TEST PIT PLAN



Vol. = ~3 cu. yd.

Test Pit Sketch

See Photographs

Notes

Sample BOS-13 (0-6') analyzed for TCLP Pb and Total Pb.

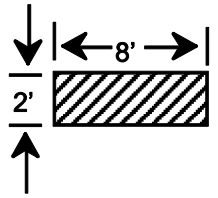
Sample BOS-13 (6-13') analyzed for TCLP Pb and Total Pb.

Test pit backfilled and covered with crushed asphalt at surface.

TRC Test Pit Log	Project: NSTAR Chelsea - 112558	Date/Time: 7/22/11	Sheet 1 of 1
	Contractor Personnel: Danny (McCourt)	TRC Personnel: Z. Richards	
Equipment/Contractor Used: Mini Excavator / McCourt	Location: HDD-2 in East Boston	Test Pit Number: BOS-14	
Reach/Capacity: 14 feet	Total Depth: 6 feet	Piezometer Installed? NO	
Depth to Ground Water: Unknown	Weather: ~ 80° partly cloudy	Elevation: NA	Top of Pit: NA

Depth	Sample Number	Stratigraphic Description	REMARKS:
1	BOS-14 (0-6') @1020	0 – 0.5' ASPHALT 0.5 – 3.5' Dark-grey to black medium-coarse SAND and GRAVEL, some cobbles and granite blocks, trace slag. 3.5 – 6' Dark-brown to black medium-coarse SAND and GRAVEL, little cobbles, trace ashy fill.	
2			
3			
4			
5			
6			
7			
8			
9			
10			

TEST PIT PLAN



North

Vol. = ~3 cu. yd.

Test Pit Sketch

See Photographs

Notes

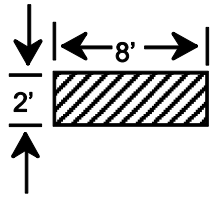
Sample BOS-14 (0-6') analyzed for TCLP Pb and Total Pb.

Test pit backfilled and covered with crushed asphalt at surface.

TRC Test Pit Log	Project: NSTAR Chelsea - 112558	Date/Time: 7/22/11	Sheet 1 of 1
	Contractor Personnel: Danny (McCourt)	TRC Personnel: Z. Richards	
Equipment/Contractor Used: Mini Excavator / McCourt	Location: HDD-2 in East Boston	Test Pit Number: BOS-15	
Reach/Capacity: 14 feet	Total Depth: 6 feet	Piezometer Installed? NO	
Depth to Ground Water: Unknown	Weather: ~ 80° partly cloudy	Elevation: NA	Top of Pit: NA

Depth	Sample Number	Stratigraphic Description	REMARKS:
1 2 3 4 5 6 7 8 9 10	BOS-15 (0-6') @1115	0 – 0.5' ASPHALT 0.5 – 2.5' Light-brown to brown medium-coarse SAND and GRAVEL, little cobbles, trace slag. 2.5 – 3.5' Ashy FILL (glass, metal, slag), some sand and gravel. 3.5 – 6' Light-brown to brown medium-coarse SAND and GRAVEL, little ashy fill.	

TEST PIT PLAN



North

Vol. = ~3 cu. yd.

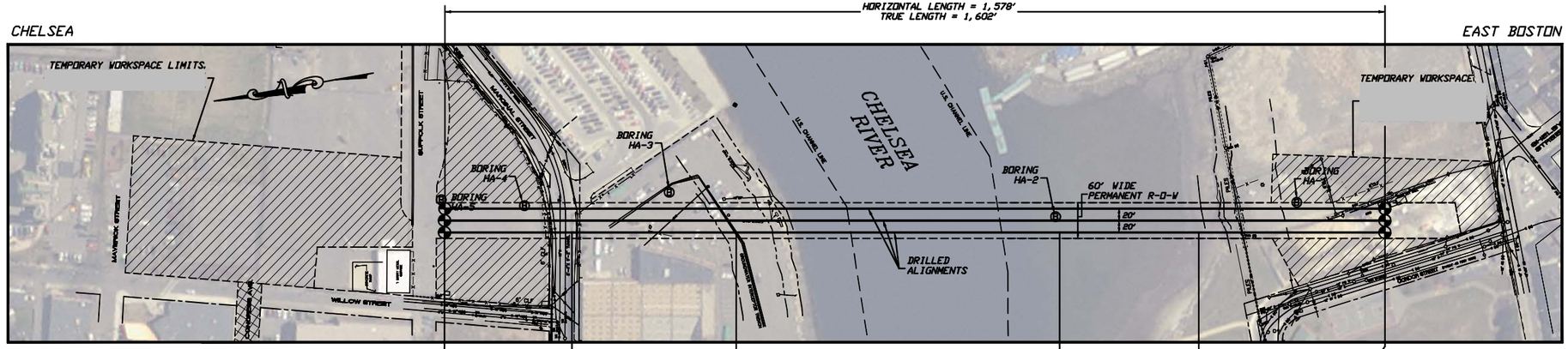
Test Pit Sketch

See Photographs

Notes

Sample BOS-15 (0-6') analyzed for TCLP Pb and Total Pb.

Test pit backfilled and covered with crushed asphalt at surface.



NOTE: REFER TO SHEET 4 FOR HDD END POINT COORDINATES IN NORTHINGS AND EASTINGS REFERENCED TO MASSACHUSETTS COORDINATE SYSTEM, MAINLAND ZONE.

HDD END POINT @ 16°
0+00, 14.02

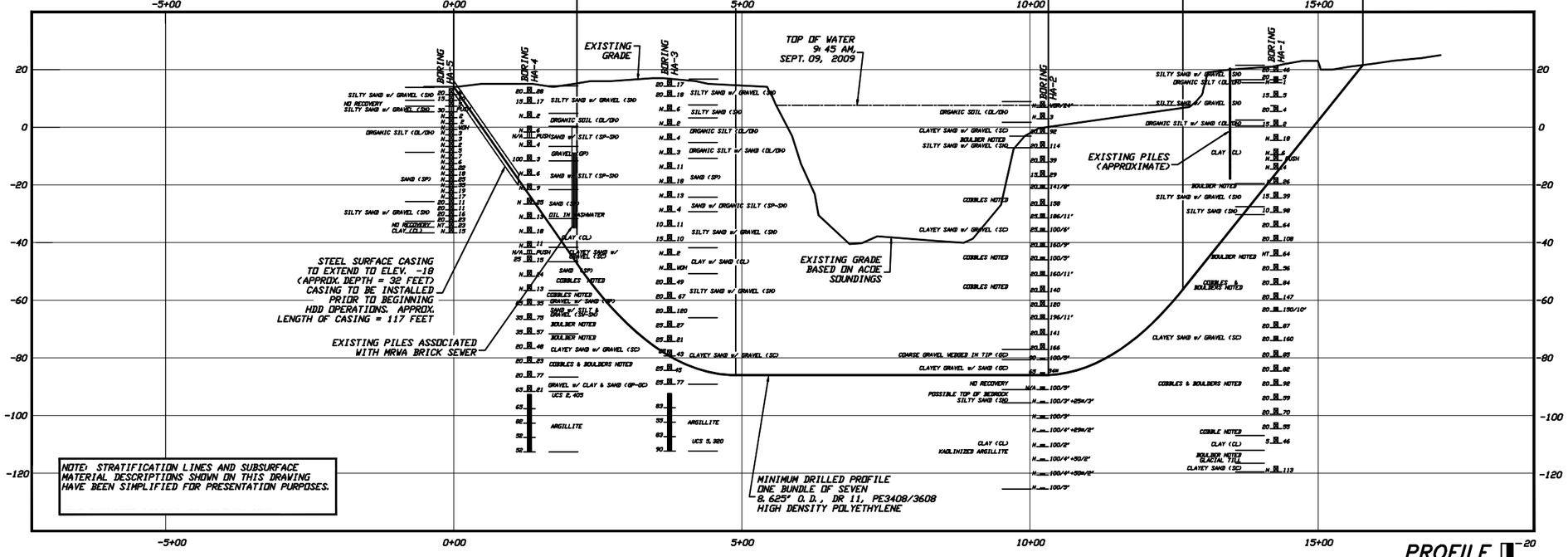
P.C. 16° SAG BEND
2+13.72, -47.26
RADIUS = 1,000 FEET

P.T. 16° SAG BEND
4+89.35, -86.00

P.C. 14° SAG BEND
10+23.39, -86.00
RADIUS = 1,000 FEET

P.T. 14° SAG BEND
12+65.31, -56.30

HDD END POINT @ 14°
15+77.61, 21.57



PROFILE
SCALE: 1"=100' HORIZONTAL
1"= 20' VERTICAL

CROSS SECTION SHOWING APPROXIMATE HORIZONTAL DIRECTIONAL DRILLING LOCATION

GENERAL LEGEND
- DRILLED PATH ENTRY/EXIT POINT

GEOTECHNICAL LEGEND
- BORING LOCATION

SPLIT SPOON SAMPLE
- 53 / 23 — PENETRATION RESISTANCE IN BLOWS PER FOOT FOR A 140 POUND HAMMER FALLING 30 INCHES
- PERCENTAGE OF GRAVEL BY WEIGHT FOR SAMPLES CONTAINING GRAVEL

CORE BARREL SAMPLE
- UCS 6,250 — UNCONFINED COMPRESSIVE STRENGTH (PSI)
- 53 / 6 — MOHS HARDINESS
- ROCK QUALITY DESIGNATION (PERCENT)

GEOTECHNICAL NOTES

1. GEOTECHNICAL DATA PROVIDED BY HALEY & ALDRICH, INC., BOSTON, MASSACHUSETTS.

TOPOGRAPHIC SURVEY NOTES

1. BASE MAPPING DATA PROVIDED BY SURVEYORS AND MAPPING CONSULTANTS, BRAINTREE, MASSACHUSETTS.
2. ELEVATIONS ARE IN FEET AND REFERENCED TO MEAN LOWER LOW WATER (MLLW)

REFERENCE DRAWINGS

NO.	REVISION	DATE	BY	CK	P.E. STAMPED	P.E. No.

CLIENT APPROVAL
APPROVED BY
NSTAR COMPANY
DATE

JMS DESIGNED
DLB DRAWN
JMS CHECKED
JMS APPROVED
REVIEWED

NSTAR ELECTRIC
NORTHERN DIVISION
CHELSEA RIVER SUBMARINE CONDUIT INSTALLATION PROJECT
CHELSEA and EAST BOSTON, MASSACHUSETTS
HDD PLAN AND PROFILE

TRC 124 GROVE STREET SUITE 205 FRANKLIN, MA 02038
SCALE: AS-SHOWN DATE: 06/18/10

DRAWING NUMBER FIGURE 2
REV. 0

TRC 124 GROVE STREET, SUITE 205 FRANKLIN, MA 02038
PROJECT NO: 112558 | CONTRACT DWG NO: 112558-HDD1 | FILENAME: CHELSEA_RO

Weston & Sampson

PROJECT: 0 Condor Street

REPORT OF BORING No. SB-1

SHEET 1 OF 1

Project No. 2160370

CHKD BY Joseph Spencer

BORING Co. N.E. Geotech | BORING LOCATION See attached plan

FOREMAN Maynard | GROUND SURFACE ELEV. | DATUM

WSE GEOLOGIST: Sephera Michailides | DATE START 6/6/16 | DATE END 6/6/16

SAMPLER: Geoprobe 6610DT track mounted rig
DT 22 Sampler 2.25 inch

CASING: DT 22 2.25 inch PVC liners w/o catcher

CASING SIZE: 2.25 Method Direct Push

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME

DEPTH (feet)	CASING (lb/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	SAMPLE PID depth	PID (ppm)	SAMPLE DESCRIPTION Burmister Classification	NOTES	STRATUM DESCRIPTION
			25"	0-5	0-3	0.4	Light brown fine to coarse sand, trace coal, gravel		FILL
					3-6	0.3			
5			27"	5-10	6-9	0.4	Brown silty clay, trace coal, coal ash; wet @7'		
					9-12	0.4			
10			15"	10-15			Dark brown to black silty clay, little wood; wet		
					12-15	0.7			
15					15-18	0.6			
			20"	15-20			Gray silty clay		CLAY
					18-20	0.1			
20							EOB @ 20'		
25									
30									
35									

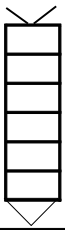
GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

REMARKS:

Well set @ 15'

SB-1 (0-3') @ 0910

SB-1 (9-12') @ 0930



screen @ 5'

GW @ 7'

15'

NOTES:

1) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.

2) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. SB-1

Weston & Sampson

PROJECT: 0 Condor Street

REPORT OF BORING No. SB-2

SHEET 1 OF 1

Project No. 2160370

CHKD BY Joseph Spencer

BORING Co. N.E. Geotech

FOREMAN Maynard

WSE GEOLOGIST: Sephera Michailides

BORING LOCATION See attached plan

GROUND SURFACE ELEV. DATUM

DATE START 6/6/16 DATE END 6/6/16

SAMPLER: Geoprobe 6610DT track mounted rig
DT 22 Sampler 2.25 inch

CASING: DT 22 2.25 inch PVC liners w/o catcher

CASING SIZE: 2.25 Method Direct Push

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME

DEPTH (feet)	CASING (lb/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	PID depth	PID (ppm)	SAMPLE DESCRIPTION Burmister Classification	NOTES	STRATUM DESCRIPTION
			25"	0-5	0-3	0.2	Brown to light brown fine to coarse sand, trace gravel, coal, coal ash		FILL
					3-6	0.1			
5			20"	5-10	6-9	0.2	Light brown fine to medium sand, little silt, trace gravel; wet @ 8'		
					9-12	0.1			
10			20"	10-15			Light brown to gray fine to coarse silty sand		
					12-15	0.2			
15					15-18	0.0			
			30"	15-20			Gray silty clay; very tight		CLAY
					18-20	0.0			
20							EOB @ 20'		
25									
30									
35									

GRANULAR SOILS BLOWS/FT	GRANULAR SOILS DENSITY	COHESIVE SOILS BLOWS/FT	COHESIVE SOILS DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

REMARKS:

No well

NOTES:

1) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. SB-2

Weston & Sampson

PROJECT: 0 Condor Street

REPORT OF BORING No. SB-3

SHEET 1 OF 1

Project No. 2160370

CHKD BY Joseph Spencer

BORING Co. N.E. Geotech | BORING LOCATION See attached plan

FOREMAN Maynard | GROUND SURFACE ELEV. | DATUM

WSE GEOLOGIST: Sephera Michailides | DATE START 6/6/16 | DATE END 6/6/16

SAMPLER: Geoprobe 6610DT track mounted rig
DT 22 Sampler 2.25 inch

CASING: DT 22 2.25 inch PVC liners w/o catcher

CASING SIZE: 2.25 Method Direct Push

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME

DEPTH (feet)	CASING (lb/ft)	SAMPLE No.	REC/PEN (in)	DEPTH (ft)	PID depth	PID (ppm)	SAMPLE DESCRIPTION Burmister Classification	NOTES	STRATUM DESCRIPTION
			20"	0-5	0-3	0.4	Brown fine to coarse sand, some gravel, coal, coal ash, wood		FILL
					3-6	0.3			
5			18"	5-10	6-9	0.2	Light brown fine to coarse sand, some silt, gravel; wet @ 8'		
					9-12	0.3			
10			25"	10-15			Light brown fine to coarse silty sand with gravel		
					12-15	0.3			
							Dark brown medium to coarse sand and gravel, trace wood		
15					15-18	0.0			
			28"	15-20			Light brown silty clay		CLAY
					18-20	0.0			
20							EOB @ 20'		
25									
30									
35									

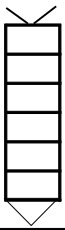
GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

REMARKS:

Well set @ 15'

SB-3 (0-3') @ 1025

SB-3 (9-12') @ 1040



NOTES:

1) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. SB-3

Weston & Sampson

PROJECT: 0 Condor Street

REPORT OF BORING No. SB-4

SHEET 1 OF 1

Project No. 2160370

CHKD BY Joseph Spencer

BORING Co. N.E. Geotech | BORING LOCATION See attached plan

FOREMAN Maynard | GROUND SURFACE ELEV. | DATUM

WSE GEOLOGIST: Sephera Michailides | DATE START 6/6/16 | DATE END 6/6/16

SAMPLER: Geoprobe 6610DT track mounted rig
DT 22 Sampler 2.25 inch

CASING: DT 22 2.25 inch PVC liners w/o catcher

CASING SIZE: 2.25 Method Direct Push

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME

DEPTH (feet)	CASING (lb/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	SAMPLE PID depth	PID (ppm)	SAMPLE DESCRIPTION Burmister Classification	NOTES	STRATUM DESCRIPTION
			15"	0-5	0-3	0.9	Dark brown fine to coarse sand, trace black wood; slight creosote odor		FILL
					3-6	0.8			
5			15"	5-10	6-9	0.0	Dark brown fine to coarse sand, trace brick; slight creosote odor		
					9-12	0.0	Gray silty clay		CLAY
10			20"	10-15					
					12-15	0.0	Gray fine to medium silty sand and clay		
15							EOB @ 15'		
20									
25									
30									
35									

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

REMARKS:

No well

SB-4 (0-3') 1120

SB-4 (3-6') 1135------DUP-1

NOTES:

1) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.

2) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. SB-4

Weston & Sampson

PROJECT: 0 Condor Street

REPORT OF BORING No. SB-5

SHEET 1 OF 1

Project No. 2160370

CHKD BY Joseph Spencer

BORING Co. N.E. Geotech | BORING LOCATION See attached plan

FOREMAN Maynard | GROUND SURFACE ELEV. | DATUM

WSE GEOLOGIST: Sephera Michailides | DATE START 6/6/16 | DATE END 6/6/16

SAMPLER: Geoprobe 6610DT track mounted rig
DT 22 Sampler 2.25 inch

CASING: DT 22 2.25 inch PVC liners w/o catcher

CASING SIZE: 2.25 Method Direct Push

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME

DEPTH (feet)	CASING (lb/ft)	SAMPLE No.	REC/PEN (in)	DEPTH (ft)	PID depth	PID (ppm)	SAMPLE DESCRIPTION Burmister Classification	NOTES	STRATUM DESCRIPTION
			20"	0-5	0-3	0.5	Dark brown fine to coarse sand, little asphault, brick, concrete, wet @5'		FILL
					3-6	0.3			
5			25"	5-10	6-9	0.4			
					9-12	0.1	Light brown fine to coarse silty sand, trace gravel; very tight		TILL
10			28"	10-15					
					12-15	0.0			
15							EOB @ 15'		
20									
25									
30									
35									

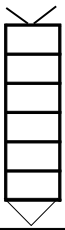
GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

REMARKS:

Well set @ 15'

SB-5 (0-3') @1150

SB-5 (6-9') @ 1205



NOTES:

1) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. SB-5

Weston & Sampson

PROJECT: E. Eagle Street

REPORT OF BORING No. SB-1

SHEET 1 OF 9

Project No. 2160370

CHKD BY Joseph Spencer

BORING Co. N.E. Geotech | BORING LOCATION See attached plan

FOREMAN Maynard | GROUND SURFACE ELEV. | DATUM

WSE GEOLOGIST: Sephera Michailides | DATE START 6/6/16 | DATE END 6/6/16

SAMPLER: Geoprobe 6610DT track mounted rig
DT 22 Sampler 2.25 inch

CASING: DT 22 2.25 inch PVC liners w/o catcher

CASING SIZE: 2.25 Method Direct Push

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME

DEPTH (feet)	CASING (lb/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	PID depth	PID (ppm)	SAMPLE DESCRIPTION Burmister Classification	NOTES	STRATUM DESCRIPTION
			28"	0-5	0-3	0.5			
					3-6	0.3			
5							Brown fine to coarse sand, some gravel, cobbles, fractured rock, trace coal fragments		
			14"	5-10	6-9	0.2			
					9-12	0.3			
10									FILL
			8"	10-15					
					12-15	0.4	Brown fine to coarse silty sand, trace gravel; wet GW @ 13'		
15					15-18	0.3			
				15-20					
					18-21	0.5	Gray to dark gray fine to coarse sand, trace gravel, fractured rock; wet		
20									
				20-25	21-24	0.1			
							Gray silty clay; dense, wet		CLAY
					24-25	0.0			
25									
							EOB @ 25'		
30									
35									

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

REMARKS:

GW @ 13'

SB-1 (0-3') @ 1415

SB-1 (18-21') 1445

NOTES:

1) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. SB-1

Weston & Sampson

PROJECT: E. Eagle Street

REPORT OF BORING No. SB-2

SHEET 2 OF 9

Project No. 2160370

CHKD BY Joseph Spencer

BORING Co. N.E. Geotech | BORING LOCATION See attached plan

FOREMAN Maynard | GROUND SURFACE ELEV. | DATUM

WSE GEOLOGIST: Sephera Michailides | DATE START 6/6/16 | DATE END 6/6/16

SAMPLER: Geoprobe 6610DT track mounted rig

DT 22 Sampler 2.25 inch

CASING: DT 22 2.25 inch PVC liners w/o catcher

CASING SIZE: 2.25 Method Direct Push

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME

DEPTH (feet)	CASING (lb/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	SAMPLE PID depth	PID (ppm)	SAMPLE DESCRIPTION Burmister Classification	NOTES	STRATUM DESCRIPTION
			21"	0-5	0-3	4.3			
					3-6	2.6			
5							Brown fine to coarse sand and silt, trace gravel, brick, fractured rock		FILL
			21"	5-10	6-9	1.3			
					9-12	0.1			
10									
			16"	10-15			Light brown fine silty sand, trace gravel GW @ 11'		
					12-15	0.4			
15					15-18	37	Gray fine silty sand; wet		SAND
			14"	15-20					
					18-21	1.0	Gray to black silty clay, slight petroleum odor; wet		
20									CLAY
			7"	20-25	21-24	1.0	EOB @ 20'		
25									
30									
35									

GRANULAR SOILS BLOWS/FT	GRANULAR SOILS DENSITY	COHESIVE SOILS BLOWS/FT	COHESIVE SOILS DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

REMARKS:

GW @ 11'

SB-2 (0-3) @ 1540 *ON HOLD*

SB-2 (15-18') @ 1610

SB-2 (21-24') @ 1625

NOTES:

1) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.

2) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. SB-2

Weston & Sampson

PROJECT: E. Eagle Street

REPORT OF BORING No. SB-3

SHEET 3 OF 9

Project No. 2160370

CHKD BY Joseph Spencer

BORING Co. N.E. Geotech | BORING LOCATION See attached plan

FOREMAN Maynard | GROUND SURFACE ELEV. | DATUM

WSE GEOLOGIST: Sephera Michailides | DATE START 6/7/16 | DATE END 6/7/16

SAMPLER: Geoprobe 6610DT track mounted rig
DT 22 Sampler 2.25 inch

CASING: DT 22 2.25 inch PVC liners w/o catcher

CASING SIZE: 2.25 Method Direct Push

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME

DEPTH (feet)	CASING (lb/ft)	SAMPLE No.	REC/PEN (in)	DEPTH (ft)	PID depth	PID (ppm)	SAMPLE DESCRIPTION Burmister Classification	NOTES	STRATUM DESCRIPTION
			28"	0-5	0-3	0.1	Light brown to brown fine to coarse sand, little gravel, fractured rock, brick fragments		FILL
					3-6	0.2			
5									
			28"	5-10	6-9	0.1	Light brown to brown fine to coarse sand, little gravel, trace coal fragments		
					9-12	0.2			
10									
			30"	10-15			Dark brown to black fine to coarse sand, with silt, little gravel, trace wood fragments, shell fragments GW @ 10'		
					12-15	0.8			
15					15-18	0.0			
			50"	15-20			Brown fine to coarse sand, trace silt; wet		
					18-20	0.0	Brown fine silty sand; wet		SAND
20							Light brown silty clay; wet		CLAY
							EOB @ 20'		
25									
30									
35									

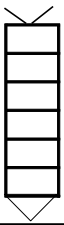
GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

REMARKS:

GW @ 10'

SB-3 (0-3') @ 1245

SB-3 (6-9') @ 1300 + DUP-1



NOTES:

1) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.

2) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. SB-3

Weston & Sampson

PROJECT: E. Eagle Street

REPORT OF BORING No. SB-4

SHEET 4 OF 9

Project No. 2160370

CHKD BY Joseph Spencer

BORING Co. N.E. Geotech | BORING LOCATION See attached plan

FOREMAN Maynard | GROUND SURFACE ELEV. | DATUM

WSE GEOLOGIST: Sephera Michailides | DATE START 6/7/16 | DATE END 6/7/16

SAMPLER: Geoprobe 6610DT track mounted rig

DT 22 Sampler 2.25 inch

CASING: DT 22 2.25 inch PVC liners w/o catcher

CASING SIZE: 2.25 Method Direct Push

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME

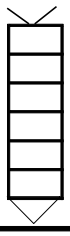
DEPTH (feet)	CASING (lb/ft)	SAMPLE No.	REC/PEN (in)	DEPTH (ft)	PID depth	PID (ppm)	SAMPLE DESCRIPTION Burmister Classification	NOTES	STRATUM DESCRIPTION
			18"	0-5	0-3		Brown fine to coarse sand, iron staining		FILL
					3-6				
5			21"	5-10	6-9		Brown fine to course sand, little gravel, trace concrete fragments		
					9-12				
10							Brown fine to coarse sand, trace coal fragments, coal ash		
			5"	10-15			Dark brown fine to coarse sand GW @ 11'		
					12-15				
15					15-18				
			60"	15-20			Gray fine to coarse silty sand; wet		SAND
					18-21				
20							Dark gray silty clay, trace shells; organic odor, wet		CLAY
			60"	20-25	21-24		Gray silty clay; dense, wet		
25									
							EOB @ 25'		
30									
35									

GRANULAR SOILS BLOWS/FT	GRANULAR SOILS DENSITY	COHESIVE SOILS BLOWS/FT	COHESIVE SOILS DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

REMARKS:

GW @ 11'

SB-4 (0-3') @ 1030



NOTES:

1) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. SB-4

Weston & Sampson

PROJECT: E. Eagle Street

REPORT OF BORING No. SB-5

SHEET 5 OF 9

Project No. 2160370

CHKD BY Joseph Spencer

BORING Co. N.E. Geotech | BORING LOCATION See attached plan

FOREMAN Maynard | GROUND SURFACE ELEV. | DATUM

WSE GEOLOGIST: Sephera Michailides | DATE START 6/7/16 | DATE END 6/7/16

SAMPLER: Geoprobe 6610DT track mounted rig
DT 22 Sampler 2.25 inch

CASING: DT 22 2.25 inch PVC liners w/o catcher

CASING SIZE: 2.25 Method Direct Push

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME

DEPTH (feet)	CASING (lb/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	PID depth	PID (ppm)	SAMPLE DESCRIPTION Burmister Classification	NOTES	STRATUM DESCRIPTION
			28"	0-5	0-3	0.1	Brown fine to coarse sand, little gravel, trace concrete fragments		FILL
					3-6	0.1			
5			25"	5-10	6-9	0.1	Brown fine to coarse sand, trace concrete fragments		
					9-12	0.1			
10			14"	10-15			Light brown fine to coarse sand		SAND
					12-15	0.1			
15					15-18	3.2			
			32"	15-20			Light brown fine to coarse sand; petroleum odor GW @ 15'		
					18-21	1.1			
20			28"	20-25	21-24	0.0	Gray silty clay; wet		CLAY
25							EOB @ 25'		
30									
35									

GRANULAR SOILS BLOWS/FT	GRANULAR SOILS DENSITY	COHESIVE SOILS BLOWS/FT	COHESIVE SOILS DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

REMARKS:

GW @ 13'

SB-5 (0-3') @ 0950

SB-5 (15-18') @ 0930

NOTES:

1) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. SB-5

Weston & Sampson

PROJECT: E. Eagle Street

REPORT OF BORING No. SB-6

SHEET 6 OF 9

Project No. 2160370

CHKD BY Joseph Spencer

BORING Co. N.E. Geotech | BORING LOCATION See attached plan

FOREMAN Maynard | GROUND SURFACE ELEV. | DATUM

WSE GEOLOGIST: Sephera Michailides | DATE START 6/7/16 | DATE END 6/7/16

SAMPLER: Geoprobe 6610DT track mounted rig
DT 22 Sampler 2.25 inch

CASING: DT 22 2.25 inch PVC liners w/o catcher

CASING SIZE: 2.25 Method Direct Push

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME

DEPTH (feet)	CASING (lb/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	PID depth	PID (ppm)	SAMPLE DESCRIPTION Burmister Classification	NOTES	STRATUM DESCRIPTION
			28"	0-5	0-3	0.1	Brown fine to coarse sand, little gravel, trace silt, brick fragments		FILL
					3-6	0.2			
5			30"	5-10	6-9	0.1	Brown fine to coarse sand, little brick, concrete, trace fractured rock		
					9-12	0.1			
10			35"	10-15			Light brown silty clay GW @ 9'		CLAY
					12-15	0.0			
15							EOB @ 15'		
20									
25									
30									
35									

GRANULAR SOILS BLOWS/FT	GRANULAR SOILS DENSITY	COHESIVE SOILS BLOWS/FT	COHESIVE SOILS DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

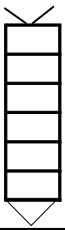
REMARKS:

GW @ 9'

SB (0-3') @ 1405

SB (5-7') @ 1415

Refusal at 6-7' twice



NOTES:

1) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. SB-6

Weston & Sampson

PROJECT: E. Eagle Street

REPORT OF BORING No. SB-7

SHEET 7 OF 9

Project No. 2160370

CHKD BY Joseph Spencer

BORING Co. N.E. Geotech

FOREMAN Maynard

WSE GEOLOGIST: Sephera Michailides

BORING LOCATION See attached plan

GROUND SURFACE ELEV. DATUM

DATE START 6/7/16 DATE END 6/7/16

SAMPLER: Geoprobe 6610DT track mounted rig

DT 22 Sampler 2.25 inch

CASING: DT 22 2.25 inch PVC liners w/o catcher

CASING SIZE: 2.25 Method Direct Push

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME

DEPTH (feet)	CASING (lb/ft)	SAMPLE No.	REC/PEN (in)	DEPTH (ft)	PID depth	PID (ppm)	SAMPLE DESCRIPTION Burmister Classification	NOTES	STRATUM DESCRIPTION
			15"	0-5	0-3	0.1	Asphault and concrete top 6"		
					3-6	0.1	Brown fine to coarse sand, little gravel, silt		
5			20"	5-10	6-9	0.1	Brown fine to coarse sand, little gravel, fractured rock		FILL
					9-12	0.2	Brown fine to coarse sand, little gravel, silt		
10			32"	10-15					
					12-15	0.1	Light brown silty clay; dense GW @ 11'		CLAY
15							EOB @ 15'		
20									
25									
30									
35									

GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

REMARKS:

GW @ 11'

SB-7 (0-3') 1750

SB-7 (6-9') 1800

No well

NOTES:

1) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.

2) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. SB-7

Weston & Sampson

PROJECT: E. Eagle Street

REPORT OF BORING No. SB-8

SHEET 8 OF 9

Project No. 2160370

CHKD BY Joseph Spencer

BORING Co. N.E. Geotech | BORING LOCATION See attached plan

FOREMAN Maynard | GROUND SURFACE ELEV. | DATUM

WSE GEOLOGIST: Sephera Michailides | DATE START 6/7/16 | DATE END 6/7/16

SAMPLER: Geoprobe 6610DT track mounted rig
DT 22 Sampler 2.25 inch

CASING: DT 22 2.25 inch PVC liners w/o catcher

CASING SIZE: 2.25 Method Direct Push

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME

DEPTH (feet)	CASING (lb/ft)	SAMPLE No.	SAMPLE REC/PEN (in)	SAMPLE DEPTH (ft)	PID depth	PID (ppm)	SAMPLE DESCRIPTION Burmister Classification	NOTES	STRATUM DESCRIPTION
			28"	0-5	0-3	0.1	Brown fine to coarse brown sand, little gravel, fractured rock, trace orgainc silt		FILL
					3-6	0.1			
5			25"	5-10	6-9	0.1	Gray fine to coarse gray sand, trace silt, gravel GW @ 9'		
					9-12	0.0			
10			30"	10-15			Gray fine to coarse sand; wet		SAND
					12-15	0.0			
							Light brown silty clay; dense, wet		CLAY
15							EOB @ 15'		
20									
25									
30									
35									

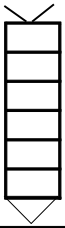
GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

REMARKS:

GW @ 9'

SB-8 (0-3') 1700

SB-8 (6-9') 1710



NOTES:

1) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. SB-8

Weston & Sampson

PROJECT: E. Eagle Street

REPORT OF BORING No. SB-9

SHEET 9 OF 9

Project No. 2160370

CHKD BY Joseph Spencer

BORING Co. N.E. Geotech

FOREMAN Maynard

WSE GEOLOGIST: Sephera Michailides

BORING LOCATION See attached plan

GROUND SURFACE ELEV. _____ DATUM _____

DATE START 6/7/16 DATE END 6/7/16

SAMPLER: Geoprobe 6610DT track mounted rig
DT 22 Sampler 2.25 inch

CASING: DT 22 2.25 inch PVC liners w/o catcher

CASING SIZE: 2.25 Method Direct Push

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION TIME

DEPTH (feet)	CASING (lb/ft)	SAMPLE No.	REC/PEN (in)	DEPTH (ft)	PID depth	PID (ppm)	SAMPLE DESCRIPTION Burmister Classification	NOTES	STRATUM DESCRIPTION
			30"	0-5	0-3	1037	Concrete pad		
					3-6	1048	Brown fine to coarse sand, trace gravel, brick fragments; petroleum odor and sheen		
5			28"	5-10	6-9	1065	Gray fine to coarse sand, trace gravel, coal fragments		FILL
10					9-12	916.9			
			28"	10-15	12-15	684	Gray fine to coarse sand, little gravel, fractured rock, silt, trace coal; slight petroleum odor GW @ 11'		
15					15-18	12.0			
			15"	15-20			Light brown silty clay; wet		CLAY
20							EOB @ 20'		
25									
30									
35									

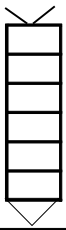
GRANULAR SOILS		COHESIVE SOILS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY
0-4	V. LOOSE	0-2	V. SOFT
4-10	LOOSE	2-4	SOFT
10-30	M. DENSE	4-8	M. STIFF
30-50	DENSE	8-15	STIFF
> 50	V. DENSE	15-30	V. STIFF
		> 30	HARD

REMARKS:

GW @ 11'

SB-9 (0-3') @ 1605

SB-9 (9-12) @ 1615



screen @ 8'

GW @ 11'

18'

NOTES:

1) THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES. TRANSITIONS MAY BE GRADUAL.
2) WATER LEVEL READINGS HAVE BEEN MADE IN THE DRILL HOLES AT TIMES AND UNDER CONDITIONS STATED ON THIS BORING LOG. FLUCTUATIONS IN THE LEVEL OF GROUNDWATER MAY OCCUR DUE TO OTHER FACTORS THAN THOSE PRESENT AT THE TIME MEASUREMENTS ARE MADE.

BORING No. SB-9

APPENDIX E

Groundwater Data

Table 4

Groundwater Elevation Table

0 Condor Street

Boston, Massachusetts

Location	Top of PVC Riser	6/16/2016		7/1/2016	
		Measured Depth to Groundwater	Groundwater Elevation	Measured Depth to Groundwater	Groundwater Elevation
MW-1	13.73	6.26	7.47	6.97	6.76
MW-3	15.88	8.76	7.12	8.95	6.93
MW-5	18.85	4.81	14.04	4.95	13.90

Notes:
Elevations are relative.

Table 1

Summary of Groundwater Elevation Survey

338 East Eagle Street

East Boston, MA

Location	Top of PVC Riser	Measured Depth to Groundwater	Groundwater Elevation
MW-1	12.82	11.53	1.29
MW-2	12.25	10.16	2.09
MW-3	13.73	11.54	2.19
MW-4	11.46	9.60	1.86
MW-5	13.19	11.01	2.18
MW-6	11.95	7.11	4.84
MW-8	11.2	8.53	2.67
MW-9	12.01	10.90	1.11

O:\Boston MA\DND Contract 2013\338 East Eagle Street\Tables\[Table 1- 338 E Eagle Street - SB-Rev.xlsx]soil_results

Notes:

All elevations are in feet relative to mean sea level.

An arbitrary benchmark of 10 feet above mean sea level was set at MW-1.

Gauging data collected June 16, 2016.

Table 4

Groundwater Elevation Table

0 Condor Street

Boston, Massachusetts

Location	Top of PVC Riser	6/16/2016		7/1/2016	
		Measured Depth to Groundwater	Groundwater Elevation	Measured Depth to Groundwater	Groundwater Elevation
MW-1	20.06	6.26	13.80	6.97	13.09
MW-3	22.21	8.76	13.45	8.95	13.26
MW-5	25.18	4.81	20.37	4.95	20.23

Notes:

Elevations are referenced to Boston City Base (BCB) Vertial Datum.

Table 1

Summary of Groundwater Elevation Survey

338 East Eagle Street

East Boston, MA

Location	Top of PVC Riser	Measured Depth to Groundwater	Groundwater Elevation
MW-1	23.15	11.53	11.59
MW-2	22.58	10.16	12.39
MW-3	24.06	11.54	12.49
MW-4	21.79	9.60	12.16
MW-5	23.52	11.01	12.48
MW-6	22.28	7.11	15.14
MW-8	21.53	8.53	12.97
MW-9	22.34	10.90	11.41

C:\Users\SpencerJ\Documents\Active Projects\Condor St\To Green\[Groundwater Elevation Table East Eagle Rev.xlsx]Sheet1

Notes:

Elevations are referenced to Boston City Base (BCB) Vertial Datum.

Gauging data collected June 16, 2016.

APPENDIX F – ILLICIT DISCHARGE COMPLIANCE STATEMENT

Illicit Discharge Compliance Statement

Per Standard 10 of the Massachusetts Stormwater Handbook, the following is an Illicit Discharge Compliance Statement:

The design plans submitted for the Notice of Intent have been designed in full compliance with current standards.

The Long-Term Pollution Prevention Plan is part of the Operation and Maintenance Plan and includes measures to prevent illicit discharges. The proposed sewer and drainage utilities within the site is separated. There is an existing combined sewer overflow within East Eagle Street. There are no known combined sewer outfalls on-site and to the best of our knowledge all closed stormwater systems discharge per Massachusetts DEP requirements. Based on observations during a site visit in April 2018, the site does not contain any known existing illicit discharges.

Registered Professional Engineer Block and Signature

11/20/2018

Signature and Date

APPENDIX G – DRAFT SWPPP

APPENDIX H – DESIGN PLANS (UNDER SEPARATE COVER)

Stormwater Pollution Prevention Plan (SWPPP)

For Construction Activities At:

Area A-7 Police Station
338 East Eagle Street
Boston, MA 02128
Project/Site Telephone Number TBD

SWPPP Prepared For:

Public Facilities Department c/o City of Boston
Brian Melia
26 Court St, 10th Floor
Boston, MA 02108
T: 617-635-0412
brian.melia@boston.gov

SWPPP Prepared By:

Green International Affiliates, Inc
Danielle Spicer
239 Littleton Road, Suite 3
Westford, MA 01886
T: 978-923-0400
dspicer@greenintl.com

SWPPP Preparation Date:

xx/xx/2018

Estimated Project Dates:

Project Start Date: April 2019

Project Completion Date: February 2021

Contents

SECTION 1: CONTACT INFORMATION/RESPONSIBLE PARTIES

1.1 Operator(s) / Subcontractor(s)

Instructions (see definition of "operator" at CGP Part 1.1.1):

- Identify the operator(s) who will be engaged in construction activities at the site. Indicate respective responsibilities, where appropriate. Also include the 24-hour emergency contact.
- List subcontractors expected to work on-site. Notify subcontractors of stormwater requirements applicable to their work.
- Consider using Subcontractor Agreements such as the type included as a sample in Appendix G of the Template.

Operator(s):

Public Facilities Department c/o City of Boston
Brian Melia
26 Court St, 10th Floor
Boston, MA 02108
T: 617.635.0542
F: 617.635.0555
brian.melia@boston.gov
OWNER

Insert Company or Organization Name
Insert Name
Insert Address
Insert City, State, Zip Code
Insert Telephone Number
Insert Fax/Email
CONTRACTOR

Subcontractor(s): TBD

Insert Company or Organization Name
Insert Name
Insert Address
Insert City, State, Zip Code
Insert Telephone Number
Insert Fax/Email
Insert area of control (if more than one operator at site)

Emergency 24-Hour Contact: TBD

Insert Company or Organization Name
Insert Name
Insert Telephone Number

1.2 Stormwater Team

Instructions (see CGP Part 7.2.2):

- Identify the individuals (by name or position) that are part of the project's stormwater team, their individual responsibilities, and which members are responsible for inspections. At a minimum the stormwater team is comprised of individuals who are responsible for overseeing the development of the SWPPP, any later modifications to it, and for compliance with the permit requirements (i.e., installing and maintaining stormwater controls, conducting site inspections, and taking corrective actions where required).
- Each member of the stormwater team must have ready access to either an electronic or paper copy of applicable portions of the 2017 CGP and the SWPPP.

Stormwater Team		
Name and/or position, and contact	Responsibilities	I Have Read the CGP and Understand the Applicable Requirements
Insert name of responsible person Insert Position Insert Telephone Number Insert Email	Insert Responsibility	☐ Yes Date: Click here to enter a date.

SECTION 2: SITE EVALUATION, ASSESSMENT, AND PLANNING

2.1 Project/Site Information

Instructions (see "Project/Site Information" section of Appendix J – NOI form):

- In this section, you are asked to compile basic site information that will be helpful when you file your NOI.

Project Name and Address

Project/Site Name: Area A-7 Police Station
Project Street/Location: 338 East Eagle Street
City: Boston
State: Massachusetts
ZIP Code: 02128
County or Similar Subdivision: Suffolk

Business days and hours for the project: M-F 7AM – 5 PM

Project Latitude/Longitude

Latitude: 42.381667º N (decimal degrees)

Longitude: - 71.027778 º W (decimal degrees)

Latitude/longitude data source:

☐ Map ☐ GPS ☒ Other (please specify): https://www.latlong.net/

Horizontal Reference Datum:

☐ NAD 27 ☒ NAD 83 ☐ WGS 84

Additional Project Information

Are you requesting permit coverage as a "federal operator" as defined in Appendix A of the 2017 CGP? ☐ Yes ☒ No

Is the project/site located on Indian country lands, or located on a property of religious or cultural significance to an Indian tribe? ☐ Yes ☒ No

If yes, provide the name of the Indian tribe associated with the area of Indian country (including the name of Indian reservation if applicable), or if not in Indian country, provide the name of the Indian tribe associated with the property: Insert Text Here

If you are conducting earth-disturbing activities in response to a public emergency, document the cause of the public emergency *(e.g., natural disaster, extreme flooding conditions)*, information substantiating its occurrence *(e.g., state disaster declaration)*, and a description of the construction necessary to reestablish effective public services: Insert Text Here

2.2 Discharge Information

Instructions (see "Discharge Information" section of Appendix J – NOI form):

- In this section, include information relating to your site's discharge. This information corresponds to the "Discharge Information" section of the NOI form.
- List all of the stormwater points of discharge from your site. Identify each point of discharge with a unique 3-digit ID (e.g., 001, 002).
- For each unique point of discharge you list, specify the name of the first water of the U.S. that receives stormwater directly from the point of discharge and/or from the MS4 that the point of discharge discharges to. You may have multiple points of discharge that discharge to the same receiving water.
- Next, specify whether any waters of the U.S. that you discharge to are listed as "impaired" as defined in Appendix A, and the pollutants causing the impairment. Identify any Total Maximum Daily Loads (TMDL) that have been completed for any of the waters of the U.S. that you discharge to and the pollutants for which there is a TMDL. For more information on impaired waters and TMDLs, including a list of TMDL contacts and links by state, visit https://www.epa.gov/tmdl.
- Finally, indicate whether any water of the U.S. that you discharge to is designated as a Tier 2, Tier 2.5, or Tier 3 water and if so, what the designation is (2, 2.5, or 3). A list of Tier 2, 2.5, and 3 waters is provided in Appendix F.

Does your project/site discharge stormwater into a Municipal Separate Storm Sewer System (MS4)? ☒ Yes ☐ No

Are there any waters of the U.S. within 50 feet of your project's earth disturbances? ☒ Yes ☐ No

For each point of discharge, provide a point of discharge ID (a unique 3-digit ID, e.g., 001, 002), the name of the first water of the U.S. that receives stormwater directly from the point of discharge and/or from the MS4 that the point of discharge discharges to, and the following receiving water information, if applicable:								
Point of Discharge ID	Name of receiving water:	Is the receiving water impaired (on the CWA 303(d) list)?	If yes, list the pollutants that are causing the impairment:	Has a TMDL been completed for this receiving waterbody?	If yes, list TMDL Name and ID:	Pollutant(s) for which there is a TMDL:	Is this receiving water designated as a Tier 2, Tier 2.5, or Tier 3 water?	If yes, specify which Tier (2, 2.5, or 3)?
DP-1	Chelsea River	☒ Yes ☐ No	Ammonia, Debris/Floatables/Trash, Dissolved Oxygen, Fecal Coliform, PSB(s) in Fish Tissue, Petroleum Hydrocarbons, Sediment Screening Value (Exceedance), Taste and Odor, Turbidity	☐ Yes ☒ No			☐ Yes ☒ No	
DP-2	Condor Street MS4	☐ Yes ☐ No	N/A	☐ Yes ☐ No			☐ Yes ☐ No	
DP-3	East Eagle Street MS4	☐ Yes ☐ No	N/A	☐ Yes ☐ No			☐ Yes ☐ No	

2.3 Nature of the Construction Activities

Instructions (see CGP Parts 1.2.1.c and 7.2.3):

- Provide a general description of the nature of the construction activities at your site.
- Describe the size of the property (in acres or in miles if a linear construction site), the total area expected to be disturbed by the construction activities (to the nearest quarter acre or quarter mile if a linear construction site), and the maximum area expected to be disturbed at any one time.
- Indicate the type of construction site, whether there will be certain demolition activities, and whether the predevelopment land use was for agriculture.
- Provide a list and description of all pollutant-generating activities (e.g., paving operations; concrete, paint, and stucco washout and waste disposal; solid waste storage and disposal; and dewatering operations) and indicate for each activity the type of pollutant that will be generated (e.g., sediment, fertilizers, pesticides, paints, caulks, sealants, fluorescent light ballasts, contaminated substrates, solvents, fuels) and could be discharged in stormwater from your site.
- Describe the construction support activities covered by this permit (see Part 1.2.1.c of the permit).

General Description of Project

Provide a general description of the nature of your construction activities, including the age dates of past renovations for structures that are undergoing demolition:

The project includes construction of a new 13,900 SF Area A-7 Police Station building with a sally port access. Located along the Chelsea River in East Boston, the new police station will act as a mediator between the three major use groups of that part of the city: industrial, commercial, and residential. It will be a LEED certified building and will comply with the State's Chapter 91 environmental regulations.

Size of Construction Site

Size of Property	7.3 ACRES
Total Area Expected to be Disturbed by Construction Activities	1.9 ACRES
Maximum Area Expected to be Disturbed at Any One Time	1 ACRE

Type of Construction Site *(check all that apply):*

☐ Single-Family Residential ☐ Multi-Family Residential ☐ Commercial ☐ Industrial

☒ Institutional ☐ Highway or Road ☐ Utility ☐ Other _____

Will there be demolition of any structure built or renovated before January 1, 1980? ☐ Yes ☒ No

If yes, do any of the structures being demolished have at least 10,000 square feet of floor space? ☐ Yes ☐ No ☒ N/A

Was the pre-development land use used for agriculture (see Appendix A for definition of "agricultural land")? ☐ Yes ☒ No

Pollutant-Generating Activities

List and describe all pollutant-generating activities and indicate for each activity the type of pollutant that will be generated. Take into account where potential spills and leaks could occur that contribute pollutants to stormwater discharges, and any known hazardous or toxic substances, such as PCBs and asbestos, that will be disturbed during construction.

Pollutant-Generating Activity (e.g., paving operations; concrete, paint, and stucco washout and waste disposal; solid waste storage and disposal; and dewatering operations)	**Pollutants or Pollutant Constituents** (e.g., sediment, fertilizers, pesticides, paints, caulks, sealants, fluorescent light ballasts, contaminated substrates, solvents, fuels)
TBD BY CONTRACTOR	

Construction Support Activities *(only provide if applicable)*

Describe any construction support activities for the project (e.g., concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, borrow areas): TBD

Contact information for construction support activity: TBD

INSERT NAME
INSERT TELEPHONE NO.
INSERT EMAIL
INSERT ADDRESS AND/OR LATITUDE/LONGITUDE

2.4 Sequence and Estimated Dates of Construction Activities

Instructions (see CGP Part 7.2.5):

- Describe the intended construction sequence and duration of major activities.
- For each portion or phase of the construction site, include the following:
  - ✓ Commencement and duration of construction activities, including clearing and grubbing, mass grading, demolition activities, site preparation (i.e., excavating, cutting and filling), final grading, and creation of soil and vegetation stockpiles requiring stabilization;
  - ✓ Temporary or permanent cessation of construction activities;
  - ✓ Temporary or final stabilization of areas of exposed soil. The dates for stabilization must reflect the applicable deadlines to which you are subject to in Part 2.2.14; and
  - ✓ Removal of temporary stormwater controls and construction equipment or vehicles, and cessation of any pollutant-generating activities.
- The construction sequence must reflect the following requirements:
  - ✓ Part 2.1.3 (installation of stormwater controls); and
  - ✓ Parts 2.2.14 (stabilization deadlines).

Phase

The following is a broad outline of the sequence of the major activities that disturb the soil at the site.

Estimated Timeline of Activity	Construction Activity and BMP Descriptions
TBD BY CONTRACTOR	Install all erosion and sediment perimeter controls as shown on the design plans including compost filter tubes, silt fence, filter bag inlet protection, slope stabilization controls and stabilized construction entrances.
TBD BY CONTRACTOR	Site clearing and removal of existing debris.
TBD BY CONTRACTOR	Site grading/earthwork operations.
TBD BY CONTRACTOR	Construct proposed utility systems (drainage, sewer, electric).
TBD BY CONTRACTOR	Building construction.
TBD BY CONTRACTOR	Install gravel base, curbing, and binder course in parking areas.
TBD BY CONTRACTOR	Install pathways at the plaza.
TBD BY CONTRACTOR	Loam, seed, and plantings.
TBD BY CONTRACTOR	The site shall be permanently stabilized and temporary erosion and sediment controls removed.

2.5 Authorized Non-Stormwater Discharges

Instructions (see CGP Parts 1.2.2 and 7.2.5):

- Identify all authorized sources of non-stormwater discharges. The authorized non-stormwater discharges identified in Part 1.2.2 of the 2017 CGP include:
  - ✓ Discharges from emergency fire-fighting activities;
  - ✓ Fire hydrant flushings;
  - ✓ Landscape irrigation;
  - ✓ Waters used to wash vehicles and equipment, provided that there is no discharge of soaps, solvents, or detergents used for such purposes;
  - ✓ Water used to control dust;
  - ✓ Potable water including uncontaminated water line flushings;
  - ✓ External building washdown, provided soaps, solvents and detergents are not used, and external surfaces do not contain hazardous substances (e.g., paint or caulk containing PCBs);
  - ✓ Pavement wash waters provided spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and detergents are not used. You are prohibited from directing pavement wash waters directly into any water of the U.S., storm drain inlet, or stormwater conveyance, unless the conveyance is connected to a sediment basin, sediment trap, or similarly effective control;
  - ✓ Uncontaminated air conditioning or compressor condensate;
  - ✓ Uncontaminated, non-turbid discharges of ground water or spring water;
  - ✓ Foundation or footing drains where flows are not contaminated with process materials such as solvents or contaminated ground water; and
  - ✓ Construction dewatering water discharged in accordance with Part 2.4.

List of Authorized Non-Stormwater Discharges Present at the Site

Type of Authorized Non-Stormwater Discharge	Likely to be Present at Your Site?
Discharges from emergency fire-fighting activities	☒ Yes ☐ No
Fire hydrant flushings	☒ Yes ☐ No
Landscape irrigation	☒ Yes ☐ No
Waters used to wash vehicles and equipment	☐ Yes ☒ No
Water used to control dust	☒ Yes ☐ No
Potable water including uncontaminated water line flushings	☒ Yes ☐ No
External building washdown (soaps/solvents are not used and external surfaces do not contain hazardous substances)	☐ Yes ☒ No
Pavement wash waters	☐ Yes ☒ No
Uncontaminated air conditioning or compressor condensate	☐ Yes ☒ No
Uncontaminated, non-turbid discharges of ground water or spring water	☐ Yes ☒ No
Foundation or footing drains	☒ Yes ☐ No
Construction dewatering water	☒ Yes ☐ No

(Note: You are required to identify the likely locations of these authorized non-stormwater discharges on your site map. See Section 2.6, below, of the SWPPP Template.)

2.6 Site Maps

Instructions (see CGP Part 7.2.4):

- Attach site maps in Appendix A of the Template. For most projects, a series of site maps is necessary and recommended. The first should show the undeveloped site and its current features. An additional map or maps should be created to show the developed site or, for more complicated sites, show the major phases of development.

These maps must include the following features:

- Boundaries of the property and of the locations where construction will occur, including:
  - ✓ Locations where earth-disturbing activities will occur, noting any phasing of construction activities and any demolition activities;
  - ✓ Approximate slopes before and after major grading activities. Note areas of steep slopes, as defined in CGP Appendix A;
  - ✓ Locations where sediment, soil, or other construction materials will be stockpiled;
  - ✓ Locations of any crossings of waters of the U.S.;
  - ✓ Designated points where vehicles will exit onto paved roads;
  - ✓ Locations of structures and other impervious surfaces upon completion of construction; and
  - ✓ Locations of on-site and off-site construction support activity areas covered by this permit (see Part 1.2.1.c).
- Locations of all waters of the U.S., including wetlands, on your site and within one mile downstream of the site's discharge point. Indicate which waterbodies are listed as impaired, and which are identified by your state, tribe, or EPA as Tier 2, Tier 2.5, or Tier 3 waters.
- Areas of federally-listed critical habitat for endangered or threatened species within the site and/or at discharge locations.
- Type and extent of pre-construction cover on the site (e.g., vegetative cover, forest, pasture, pavement, structures)
- Drainage pattern(s) of stormwater and authorized non-stormwater before and after major grading activities.
- Stormwater and authorized non-stormwater discharge locations, including:
  - ✓ Locations where stormwater and/or authorized non-stormwater will be discharged to storm drain inlets; and
  - ✓ Locations where stormwater or allowable non-stormwater will be discharged to waters of the U.S. (including wetlands).
- Locations of all potential pollutant-generating activities.
- Locations of stormwater controls, including natural buffer areas and any shared controls utilized to comply with the permit.
- Locations where polymers, flocculants, or other treatment chemicals will be used and stored.

SECTION 3: DOCUMENTATION OF COMPLIANCE WITH OTHER FEDERAL REQUIREMENTS

3.1 Endangered Species Protection

Instructions (see CGP Parts 1.1.5, 7.2.9.a, Appendix D, and the "Endangered Species Protection" section of the Appendix J – NOI form):

Using the instructions in Appendix D of the permit, determine under which criterion listed below (A-F) you are eligible for coverage under this permit with respect to the protection of endangered species. To make this determination, you must use information from **BOTH** the National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS). Both the NMFS and USFWS maintain lists of Endangered Species Act-listed (ESA-listed) species and designated critical habitat. Operators must consult both when determining their eligibility.

- Check only 1 box, include the required information and provide a sound basis for supporting the criterion selected. Select the most conservative criterion that applies
- Include documentation supporting your determination of eligibility.
- A step-by-step guide and flow-chart on ESA provisions for EPA's CGP is available at https://www.epa.gov/npdes/stormwater-discharges-construction-activities#species

Eligibility Criterion

Under which criterion listed in Appendix D are you eligible for coverage under this permit?

☒ **Criterion A**: No ESA-listed species and/or designated critical habitat present in action area. Using the process outlined in Appendix D of this permit, you certify that ESA-listed species and designated critical habitat(s) under the jurisdiction of the USFWS or NMFS are not likely to occur in your site's "action area" as defined in Appendix A of this permit.

Basis statement content/Supporting documentation: A basis statement supporting the selection of Criterion A should identify the USFWS and NMFS information sources used. Attaching aerial image(s) of the site to your NOI is helpful to EPA, USFWS, and NMFS in confirming eligibility under this criterion. Please Note: NMFS' jurisdiction includes ESA-listed marine and estuarine species that spawn in inland rivers. Check the applicable source(s) of information you relied upon:

☐ Specific communication with staff of the USFWS and/or NMFS. INSERT DATE OF COMMUNICATION AND WHO YOU SPOKE WITH

☒ Species list from USFWS and/or NMFS. See the CGP ESA webpage, Step 2 for available websites. Federally Listed and Endangered and Threatened Species list in MA which can be found at http://www.fws.gov/newengland/pdfs/MA%20species%20by%20town.pdf and is also included in Appendix K of this report.

☐ **Criterion B:** Eligibility requirements met by another operator under the 2017 CGP. The construction site's discharges and discharge-related activities were already addressed in another operator's valid certification of eligibility for your "action area" under eligibility Criterion A, C, D, E, or F of the 2017 CGP and you have confirmed that no additional ESA-listed species and/or designated critical habitat under the jurisdiction of USFWS and/or NMFS not considered in the that certification may be present or located in the "action area." To certify your eligibility under this criterion, there must be no lapse of NPDES permit coverage in the other CGP operator's certification. By certifying eligibility under this

criterion, you agree to comply with any conditions upon which the other CGP operator's certification was based. You must include in your NOI the NPDES ID from the other 2017CGP operator's notification of authorization under this permit. If your certification is based on another 2017 CGP operator's certification under criterion C, you must provide EPA with the relevant supporting information required of existing dischargers in criterion C in your NOI form.

Basis statement content/Supporting documentation: A basis statement supporting the selection of Criterion B should identify the eligibility criterion of the other CGP NOI, the authorization date, and confirmation that the authorization is effective.

- ✓ Provide the 9-digit NPDES ID number from the other operator's NOI under the 2017 CGP: _ _ _ _ _ _ _ _ _
- ✓ Authorization date of the other 2017 CGP operator: INSERT AUTHORIZATION DATE OF OTHER OPERATOR
- ✓ Eligibility criterion of the other 2017 CGP operator: ☐A ☐C ☐D ☐E ☐F
- ✓ Provide a brief summary of the basis the other operator used for selecting criterion A, C, D, E, or F: INSERT TEXT HERE

☐ **Criterion C:** Discharges not likely to adversely affect ESA-listed species and/or designated critical habitat. ESA-listed species and/or designated critical habitat(s) under the jurisdiction of the USFWS and/or NMFS are likely to occur in or near your site's "action area," and you certify to EPA that your site's discharges and discharge-related activities are not likely to adversely affect ESA-listed threatened or endangered species and/or designated critical habitat. This certification may include consideration of any stormwater controls and/or management practices you will adopt to ensure that your discharges and discharge-related activities are not likely to adversely affect ESA-listed species and/or designated critical habitat. To certify your eligibility under this criterion, indicate 1) the ESA-listed species and/or designated habitat located in your "action area" using the process outlined in Appendix D of this permit; 2) the distance between the site and the listed species and/or designated critical habitat in the action area (in miles); and 3) a rationale describing specifically how adverse effects to ESA-listed species will be avoided from the discharges and discharge-related activities. You must also include a copy of your site map from your SWPPP showing the upland and in-water extent of your "action area" with this NOI.

Basis statement content/Supporting documentation: A basis statement supporting the selection of Criterion C should identify the information resources and expertise (e.g., state or federal biologists) used to arrive at this conclusion. Any supporting documentation should explicitly state that both ESA-listed species and designated critical habitat under the jurisdiction of the USFWS and/or NMFS were considered in the evaluation.

- ✓ Resources used to make determination: INSERT RESOURCES YOU USED TO DETERMINE THAT DISCHARGES ARE NOT LIKELY TO ADVERSELY AFFECT ESA-LISTED SPECIES OR DESIGNATED CRITICAL HABITAT
- ✓ ESA-listed Species/Critical Habitat in action area: INSERT LIST OF ESA-LISTED SPECIES OR DESIGNATED CRITICAL HABITAT LOCATED IN YOUR ACTION AREA
- ✓ Distance between site and ESA-listed Species/Critical Habitat: INSERT DISTANCE BETWEEN YOUR SITE AND THE ESA-LISTED SPECIES OR CRITICAL HABITAT (in miles)
- ✓ How adverse effects will be avoided: DESCRIBE SPECIFICALLY HOW ADVERSE EFFECTS TO ESA-LISTED SPECIES WILL BE AVOIDED FROM THE DISCHARGES AND DISCHARGE-RELATED ACTIVITIES

☐ **Criterion D**: Coordination with USFWS and/or NMFS has successfully concluded.

Coordination between you and the USFWS and/or NMFS has concluded. The coordination must have addressed the effects of your site's discharges and discharge-related activities on ESA-listed species and/or designated critical habitat under the jurisdiction of USFWS and/or NMFS, and resulted in a written concurrence from USFWS and/or NMFS that your site's discharges and discharge-related activities are not likely to adversely affect listed species and/or critical habitat. You must include copies of the correspondence with the participating agencies in your SWPPP and this NOI.

Basis statement content/Supporting documentation: A basis statement supporting the selection of Criterion D should identify whether USFWS or NMFS or both agencies participated in coordination, the field office/regional office(s) providing that coordination, and the date that coordination concluded.

- ✓ Agency coordinated with: ☐USFWS ☐ NMFS
- ✓ Field/regional office(s) providing coordination: INSERT FIELD/REGIONAL OFFICE(S) PROVIDING COORDINATION
- ✓ Date coordination concluded: INSERT DATE COORDINATION CONCLUDED
- ✓ Attach copies of any letters or other communication between you and the U.S. Fish & Wildlife Service or National Marine Fisheries Service concluding coordination activities.

☐ **Criterion E:** ESA Section 7 consultation has successfully concluded. Consultation between a Federal Agency and the USFWS and/or NMFS under section 7 of the ESA has concluded. The consultation must have addressed the effects of the construction site's discharges and discharge-related activities on ESA-listed species and/or designated critical habitat under the jurisdiction of USFWS and/or NMFS. To certify eligibility under this criterion, Indicate the result of the consultation:

- ☐ Biological opinion from USFWS and/or NMFS that concludes that the action in question (taking into account the effects of your site's discharges and discharge-related activities) is not likely to jeopardize the continued existence of listed species, nor the destruction or adverse modification of critical habitat; or
- ☐ Written concurrence from USFWS and/or NMFS with a finding that the site's discharges and discharge-related activities are not likely to adversely affect ESA-listed species and/or designated critical habitat. You must include copies of the correspondence between yourself and the USFWS and/or NMFS in your SWPPP and this NOI.

Basis statement content/Supporting documentation: A basis statement supporting the selection of Criterion E should identify the federal action agency(ies) involved, the field office/regional office(s) providing that consultation, any tracking numbers of identifiers associated with that consultation (e.g., IPaC number, PCTS number), and the date the consultation was completed.

- ✓ Federal agency(ies) involved: INSERT FEDERAL AGENCY(IES) INVOLVED
- ✓ Field/regional office(s) providing consultation: INSERT FIELD/REGIONAL OFFICE(S) PROVIDING CONSULTATION
- ✓ Tracking numbers associated with consultation: INSERT CONSULTATION TRACKING NUMBER(S)
- ✓ Date consultation completed: INSERT DATE CONSULTATION COMPLETED

- ✓ Attach copies of any letters or other communication between you and the U.S. Fish & Wildlife Service or National Marine Fisheries Service concluding consultation.

☐ **Criterion F:** Issuance of section 10 permit. Potential take is authorized through the issuance of a permit under section 10 of the ESA by the USFWS and/or NMFS, and this authorization addresses the effects of the site's discharges and discharge-related activities on ESA-listed species and designated critical habitat. You must include copies of the correspondence between yourself and the participating agencies in your SWPPP and your NOI.

Basis statement content/Supporting documentation: A basis statement supporting the selection of Criterion F should identify whether USFWS or NMFS or both agencies provided a section 10 permit, the field office/regional office(s) providing permit(s), any tracking numbers of identifiers associated with that consultation (e.g., IPaC number, PCTS number), and the date the permit was granted.

- ✓ Agency providing section 10 permit: ☐USFWS ☐NMFS
- ✓ Field/regional office(s) providing permit: INSERT FIELD/REGIONAL OFFICE(S) PROVIDING PERMIT
- ✓ Tracking numbers associated with consultation: INSERT CONSULTATION TRACKING NUMBER(S)
- ✓ Date permit granted: INSERT DATE PERMIT GRANTED
- ✓ Attach copies of any letters or other communication between you and the U.S. Fish & Wildlife Service or National Marine Fisheries Service.

3.2 Historic Preservation

Instructions (see CGP Part 1.1.6, 7.2.9.b, Appendix E, and the "Historic Preservation" section of the Appendix J – NOI form):

Follow the screening process in Appendix E of the permit for determining whether your installation of subsurface earth-disturbing stormwater controls will have an effect on historic properties.

- Include documentation supporting your determination of eligibility.
- To contact your applicable state or tribal historic preservation office, information is available at *www.achp.gov/programs/html*.

Appendix E, Step 1

Do you plan on installing any of the following stormwater controls at your site? Check all that apply below, and proceed to Appendix E, Step 2.

- ☐ Dike
- ☐ Berm
- ☒ Catch Basin
- ☐ Pond
- ☐ Stormwater Conveyance Channel (e.g., ditch, trench, perimeter drain, swale, etc.)
- ☐ Culvert
- ☒ Other type of ground-disturbing stormwater control: Subsurface Infiltration System

(Note: If you will not be installing any ground-disturbing stormwater controls, no further documentation is required for Section 3.2 of the Template.)

Appendix E, Step 2

If you answered yes in Step 1, have prior surveys or evaluations conducted on the site already determined that historic properties do not exist, or that prior disturbances at the site have precluded the existence of historic properties? ☐ YES ☒ NO

- If yes, no further documentation is required for Section 3.2 of the Template.
- If no, proceed to Appendix E, Step 3.

Appendix E, Step 3

If you answered no in Step 2, have you determined that your installation of subsurface earth-disturbing stormwater controls will have no effect on historic properties? ☒ YES ☐ NO

If yes, provide documentation of the basis for your determination. The site is currently disturbed. A review of the MACRIS website and MACRIS maps did not indicate any historical properties or entities within the site. There is a historic property located at 370 East Eagle Street (BOS 12873); however, this is not within or adjacent to our limit of work.

If no, proceed to Appendix E, Step 4.

Appendix E, Step 4

If you answered no in Step 3, did the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Office (THPO), or other tribal representative (whichever applies) respond to you within 15 calendar days to indicate whether the subsurface earth disturbances caused by the installation of stormwater controls affect historic properties? ☐ YES ☐ NO

If no, no further documentation is required for Section 3.2 of the Template.

If yes, describe the nature of their response:

☐ Written indication that no historic properties will be affected by the installation of stormwater controls. INSERT COPIES OF LETTERS, EMAILS, OR OTHER COMMUNICATION BETWEEN YOU AND THE APPLICABLE SHPO, THPO, OR OTHER TRIBAL REPRESENTATIVE

☐ Written indication that adverse effects to historic properties from the installation of stormwater controls can be mitigated by agreed upon actions. INSERT COPIES OF LETTERS, EMAILS, OR OTHER COMMUNICATION BETWEEN YOU AND THE APPLICABLE SHPO, THPO, OR OTHER TRIBAL REPRESENTATIVE

☐ No agreement has been reached regarding measures to mitigate effects to historic properties from the installation of stormwater controls. INSERT COPIES OF LETTERS, EMAILS, OR OTHER COMMUNICATION BETWEEN YOU AND THE APPLICABLE SHPO, THPO, OR OTHER TRIBAL REPRESENTATIVE

☐ Other: INSERT COPIES OF LETTERS, EMAILS, OR OTHER COMMUNICATION BETWEEN YOU AND THE APPLICABLE SHPO, THPO, OR OTHER TRIBAL REPRESENTATIVE

3.3 Safe Drinking Water Act Underground Injection Control Requirements

Instructions (see CGP Part 7.2.9.c):

- If you will use any of the identified controls in this section, include documentation of contact between you and the applicable state agency or EPA Regional Office responsible for implementing the requirements for underground injection wells in the Safe Drinking Water Act and EPA's implementing regulations at 40 CFR Parts 144-147. \
- For state UIC program contacts, refer to the following EPA website: https://www.epa.gov/uic.

Do you plan to install any of the following controls? Check all that apply below.

☐ Infiltration trenches (if stormwater is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system)

☒ Commercially manufactured pre-cast or pre-built proprietary subsurface detention vaults, chambers, or other devices designed to capture and infiltrate stormwater flow

☐ Drywells, seepage pits, or improved sinkholes (if stormwater is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system)

IF YES, INSERT COPIES OF LETTERS, EMAILS, OR OTHER COMMUNICATION BETWEEN YOU AND THE STATE AGENCY OR EPA REGIONAL OFFICE

SECTION 4: EROSION AND SEDIMENT CONTROLS

General Instructions (See CGP Parts 2.2 and 7.2.6):

- Describe the erosion and sediment controls that will be installed and maintained at your site.
- Describe any applicable stormwater control design specifications (including references to any manufacturer specifications and/or erosion and sediment control manuals/ordinances relied upon).
- Describe any routine stormwater control maintenance specifications.
- Describe the projected schedule for stormwater control installation/implementation.

4.1 Natural Buffers or Equivalent Sediment Controls

Instructions (see CGP Parts 2.2.1 and 7.2.6.b.i, and Appendix G):

This section only applies to you if a water of the U.S. is located within 50 feet of your site's earth disturbances. If this is the case, consult CGP Part 2.2.1 and Appendix G for information on how to comply with the buffer requirements.

- Describe the compliance alternative (CGP Part 2.2.1.a.i, ii, or iii) that was chosen to meet the buffer requirements, and include any required documentation supporting the alternative selected. The compliance alternative selected must be maintained throughout the duration of permit coverage. However, if you select a different compliance alternative during your period of permit coverage, you must modify your SWPPP to reflect this change.
- If you qualify for one of the exceptions in CGP Part 2.2.1.b, include documentation related to your qualification for such exceptions.

Buffer Compliance Alternatives

Are there any waters of the U.S. within 50 feet of your project's earth disturbances? ☒ YES ☐ NO

(Note: If no, no further documentation is required for Part 4.1 in the SWPPP Template. Continue on to Part 4.2.)

Check the compliance alternative that you have chosen:

☐ (i) I will provide and maintain a 50-foot undisturbed natural buffer.

(Note (1): You must show the 50-foot boundary line of the natural buffer on your site map.)

(Note (2): You must show on your site map how all discharges from your construction disturbances through the natural buffer area will first be treated by the site's erosion and sediment controls. Also, show on the site map any velocity dissipation devices used to prevent erosion within the natural buffer area.)

☐ (ii) I will provide and maintain an undisturbed natural buffer that is less than 50 feet and is supplemented by additional erosion and sediment controls, which in combination achieves the sediment load reduction equivalent to a 50-foot undisturbed natural buffer.

(Note (1): You must show the boundary line of the natural buffer on your site map.)

(Note (2): You must show on your site map how all discharges from your construction disturbances through the natural buffer area will first be treated by the site's erosion and

sediment controls. Also, show on the site map any velocity dissipation devices used to prevent erosion within the natural buffer area.)

- INSERT WIDTH OF NATURAL BUFFER TO BE RETAINED
- INSERT EITHER ONE OF THE FOLLOWING:

  (1) THE ESTIMATED SEDIMENT REMOVAL FROM A 50-FOOT BUFFER USING APPLICABLE TABLES IN APP. G, ATTACHMENT 1. INCLUDE INFORMATION ABOUT THE BUFFER VEGETATION AND SOIL TYPE THAT PREDOMINATE AT YOUR SITE

  OR

  (2) IF YOU CONDUCTED A SITE-SPECIFIC CALCULATION FOR THE ESTIMATED SEDIMENT REMOVAL OF A 50-FOOT BUFFER, PROVIDE THE SPECIFIC REMOVAL EFFICIENCY, AND INFORMATION YOU RELIED UPON TO MAKE YOUR SITE-SPECIFIC CALCULATION.
- INSERT DESCRIPTION OF ADDITIONAL EROSION AND SEDIMENT CONTROLS TO BE USED IN COMBINATION WITH NATURAL BUFFER AREA
- INSERT THE FOLLOWING INFORMATION:
  - (1) SPECIFY THE MODEL OR OTHER TOOL USED TO ESTIMATE SEDIMENT LOAD REDUCTIONS FROM THE COMBINATION OF THE BUFFER AREA AND ADDITIONAL EROSION AND SEDIMENT CONTROLS INSTALLED AT YOUR SITE, AND
  - (2) INCLUDE THE RESULTS OF CALCULATIONS SHOWING THAT THE COMBINATION OF YOUR BUFFER AREA AND THE ADDITIONAL EROSION AND SEDIMENT CONTROLS INSTALLED AT YOUR SITE WILL MEET OR EXCEED THE SEDIMENT REMOVAL EFFICIENCY OF A 50-FOOT BUFFER

☐ (iii) It is infeasible to provide and maintain an undisturbed natural buffer of any size, therefore I will implement erosion and sediment controls that achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer.

- INSERT RATIONALE FOR CONCLUDING THAT IT IS INFEASIBLE TO PROVIDE AND MAINTAIN A NATURAL BUFFER OF ANY SIZE
- INSERT EITHER ONE OF THE FOLLOWING:

  (1) THE ESTIMATED SEDIMENT REMOVAL FROM A 50-FOOT BUFFER USING APPLICABLE TABLES IN APP. G, ATTACHMENT 1. INCLUDE INFORMATION ABOUT THE BUFFER VEGETATION AND SOIL TYPE THAT PREDOMINATE AT YOUR SITE

  OR

  (2) IF YOU CONDUCTED A SITE-SPECIFIC CALCULATION FOR THE ESTIMATED SEDIMENT REMOVAL OF A 50-FOOT BUFFER, PROVIDE THE SPECIFIC REMOVAL EFFICIENCY, AND INFORMATION YOU RELIED UPON TO MAKE YOUR SITE-SPECIFIC CALCULATION.
- INSERT DESCRIPTION OF ADDITIONAL EROSION AND SEDIMENT CONTROLS TO BE USED IN COMBINATION WITH NATURAL BUFFER AREA
- INSERT THE FOLLOWING INFORMATION:
  - (1) SPECIFY THE MODEL OR OTHER TOOL USED TO ESTIMATE SEDIMENT LOAD REDUCTIONS FROM THE EROSION AND SEDIMENT CONTROLS INSTALLED AT YOUR SITE, AND
  - (2) INCLUDE THE RESULTS OF CALCULATIONS SHOWING THAT THE ADDITIONAL EROSION AND SEDIMENT CONTROLS INSTALLED AT YOUR SITE WILL MEET OR EXCEED THE SEDIMENT REMOVAL EFFICIENCY OF A 50-FOOT BUFFER

☒ I qualify for one of the exceptions in Part 2.2.1.b. (If you have checked this box, provide information on the applicable buffer exception that applies, below.)

Buffer Exceptions

Which of the following exceptions to the buffer requirements applies to your site?

☐ There is no discharge of stormwater to the water of the U.S. that is located 50 feet from my construction disturbances.

(Note: If this exception applies, no further documentation is required for Section 4.1 of the Template.)

☒ No natural buffer exists due to preexisting development disturbances that occurred prior to the initiation of planning for this project.

There is a small existing buffer between the top of bank of the Chelsea River and the existing edge of pavement. The proposed project will maintain this existing buffer and erosion sediment controls will be installed.

☐ For a "linear construction sites" (defined in Appendix A), site constraints (e.g., limited right-of-way) make it infeasible to meet any of the CGP Part 2.2.1.a compliance alternatives. INCLUDE DOCUMENTATION HERE OF THE FOLLOWING: (1) WHY IT IS INFEASIBLE FOR YOU TO MEET ONE OF THE BUFFER COMPLIANCE ALTERNATIVES, AND (2) BUFFER WIDTH RETAINED AND/OR SUPPLEMENTAL EROSION AND SEDIMENT CONTROLS TO TREAT DISCHARGES TO THE SURFACE WATER

☐ The project qualifies as "small residential lot" construction (defined in Appendix A) (see Appendix G, Part G.3.2).

☐ For Alternative 1:

- INSERT WIDTH OF NATURAL BUFFER TO BE RETAINED
- INSERT APPLICABLE REQUIREMENTS BASED ON TABLE G-1
- INSERT DESCRIPTION OF HOW YOU WILL COMPLY WITH THESE REQUIREMENTS

☐ For Alternative 2:

- INSERT (1) THE ASSIGNED RISK LEVEL BASED ON APP. G APPLICABLE TABLE G-2 THROUGH G-6 AND (2) THE PREDOMINANT SOIL TYPE AND AVERAGE SLOPE AT YOUR SITE
- INSERT APPLICABLE REQUIREMENTS BASED ON APP. G, TABLE G-7
- INSERT DESCRIPTION OF HOW YOU WILL COMPLY WITH THESE REQUIREMENTS

☐ Buffer disturbances are authorized under a CWA Section 404 permit. INSERT DESCRIPTION OF ANY EARTH DISTURBANCES THAT WILL OCCUR WITHIN THE BUFFER AREA

(Note (1): If this exception applies, no further documentation is required for Section 4.1 of the Template.)

(Note (2): This exception only applies to the limits of disturbance authorized under the Section 404 permit, and does not apply to any upland portion of the construction project.)

☐ Buffer disturbances will occur for the construction of a water-dependent structure or water access area (e.g., pier, boat ramp, and trail). INSERT DESCRIPTION OF ANY EARTH DISTURBANCES THAT WILL OCCUR WITHIN THE BUFFER AREA

(Note (1): If this exception applies, no further documentation is required for Section 4.1 of the Template.)

4.2 Perimeter Controls

Instructions (see CGP Parts 2.2.3 and 7.2.6.b.ii):

- Describe sediment controls that will be used (e.g., silt fences, filter berms, temporary diversion dikes, or fiber rolls) to meet the Part 2.2.3 requirement to "install sediment controls along any perimeter areas of the site that will receive pollutant discharges."
- For linear projects, where you have determined that the use of perimeter controls in portions of the site is infeasible, document other practices that you will implement.

General

- Combination silt fence with compost filter tube BMP will be installed downgradient of disturbed areas over the course of construction.
- Temporary sediment basin BMP will be installed downgradient of disturbed areas over the course of construction.
- Silt sacks will be installed in all catch basins within the limit of work.

Specific Perimeter Controls

PERIMETER CONTROL #1	
Description: COMBINATION SILT FENCE/COMPOST FILTER TUBE	
Installation	Will be installed prior to any earth disturbing activities and expanded as needed thereafter to accommodate expansion of work areas.
Maintenance Requirements	Sediment shall be removed upon reaching one-half of the exposed height of the compost filter tube. Portions of the silt fence/compost filter tube damaged by construction operations, vandalism, or wildlife will be replaced in kind.
Design Specifications	See Specifications Section 312500

4.3 Sediment Track-Out

Instructions (see CGP Parts 2.2.4 and 7.2.6.b.iii):

- Describe stormwater controls that will be used to minimize sediment track-out.
- Describe location(s) of vehicle exit(s), procedures to remove accumulated sediment off-site (e.g., vehicle tracking), and stabilization practices (e.g., stone pads or wash racks or both) to minimize off-site vehicle tracking of sediment. Also include the design, installation, and maintenance specifications for each control.

General

- Construction entrance will be installed at exit from work areas where ground disturbance will take place.

Specific Track-Out Controls

TRACK-OUT CONTROL #1	
Description: TEMPORARY CONTSRUCTION ENTRANCE/EXIT	
Installation	To be installed prior to construction period
Maintenance Requirements	Construction entrance will be inspected weekly as part of regular stormwater inspections to check on depth of stone and amount of entrapped sediment. When inspections note track-out of sediment on pavements outside the work area the sediment will be cleaned off the pavement using shoveling or

	sweeping or vacuuming of the pavement. Cleaning must occur on the same work day as the track-out was observed, or, if observed on a non-work day, then by the end of the following work day. Sediments will be collected for legal disposal and not discarded into/washed into storm drains or stormwater conveyances.
Design Specifications	See Specifications Section 312500

4.4 Stockpiled Sediment or Soil

Instructions (see CGP Parts 2.2.5 and 7.2.6):

- Describe stormwater controls and other measures you will take to minimize the discharge of sediment or soil particles from stockpiled sediment or soil. Include a description of structural practices (e.g., diversions, berms, ditches, storage basins), including design, installation, and maintenance specifications, used to divert flows from stockpiled sediment or soil, retain or detain flows, or otherwise limit exposure and the discharge of pollutants from stockpiled sediment or soil.
- For piles that will be unused for 14 or more days, describe what cover or other appropriate temporary stabilization will be used.
- Also, describe any controls or procedures used to minimize exposure resulting from adding to or removing materials from the pile.

General

- Topsoil sediments stripped from the immediate area will be stockpiled in an area that will not interfere with construction phases and away from areas of concentrated flows. Stockpiles to be covered.

Specific Stockpile Controls

STOCKPILE CONTROL #1	
Description: The slopes of stockpiles will not exceed 2:1 to prevent erosion. A silt fence will be installed around the perimeter of the stockpile(s), and/or each stockpile will be covered by plastic tarpaulins. Plastic tarpaulins will be weighted down or otherwise secured. Different materials will be stockpiled separately.	
Installation	To be installed during construction.
Maintenance Requirements	The area will be inspected weekly for erosion and immediately after storm events. Areas on or around the stockpile that have eroded will be stabilized immediately with erosion controls. Eroded materials will be swept up and disposed of. No wash-away of eroded stockpile material will be allowed.
Design Specifications	See Specifications Section 312500 and refer to Detail #5 on Sheet C-6 Details I.

4.5 Minimize Dust

Instructions (see CGP Parts 2.2.6 and 7.2.6):

Describe controls and procedures you will use at your site to minimize the generation of dust.

General

- Dust control for this project will utilize water or calcium chloride as needed.

Specific Dust Controls

DUST CONTROL #1	
Description: Water for Dust Control shall be trucked to site and sprayed on affected surfaces as needed, from the start of the project onwards, in accordance with Project Specifications Section 312500. Water shall be sprayed in the amount needed to make surfaces moist, but without generating runoff, at locations and rates of application as directed by Foreman.	
Installation	Water for Dust Control shall be trucked to site and sprayed on affected surfaces as needed, from the start of the project onwards.
Maintenance Requirements	N/A
Design Specifications	See Specifications Section 312500

4.6 Minimize Steep Slope Disturbances

Instructions (see CGP Parts 2.2.7 and 7.2.6):

- Describe how you will minimize the disturbance to steep slopes (as defined by CGP Appendix A).
- Describe controls (e.g., erosion control blankets, tackifiers), including design, installation and maintenance specifications, that will be implemented to minimize sediment discharges from slope disturbances.

General

- **Existing steep slope areas will be left undisturbed as long as possible. Existing and proposed steep slope areas will be stabilized as quickly as possible as construction operations permit. Slopes in excess of 3:1 will be provided with either erosion control fiber mesh or erosion control blanket.**

Specific Steep Slope Controls

STEEP SLOPE CONTROL # 1	
Description: Plan and conduct all steep slope disturbing activities to minimize the area of steep slopes exposed at any one time and the periods of exposure	
Installation	To be installed during construction as needed.
Maintenance Requirements	N/A
Design Specifications	See Specifications Section 312500 and refer to Detail #9 on Sheet C-6 Details I.

4.7 Topsoil

Instructions (see CGP Parts 2.2.8 and 7.2.6):

- Describe how topsoil will be preserved and identify these areas and associated control measures on your site map(s).
- If it is infeasible for you to preserve topsoil on your site, provide an explanation for why this is the case.

General

- Topsoil that is determined to have characteristics allowing future placement at/around the site will be stockpiled at locations to be arranged by Contractor in accordance with Section 4.4 of the CGP.

Specific Topsoil Controls

TOPSOIL CONTROL # 1	
Description: Stockpile usable topsoil in accordance with Section 4.4 of the CGP.	
Installation	To be installed during construction as needed.
Maintenance Requirements	N/A
Design Specifications	See Specifications SectionS 311000 and 312000

4.8 Soil Compaction

Instructions (see CGP Parts 2.2.9 and 7.2.6):

- In areas where final vegetative stabilization will occur or where infiltration practices will be installed, describe the controls, including design, installation, and maintenance specifications that will be used to restrict vehicle or equipment access or condition the soil for seeding or planting.

General

- Restrict vehicle/equipment use in existing and proposed vegetated area.

Specific Soil Compaction Controls

SOIL COMPACTION CONTROL # #1	
Description: Use construction fencing to encircle existing and proposed vegetated areas.	
Installation	To be installed during construction as needed.
Maintenance Requirements	N/A
Design Specifications	See Specifications Section 312000

4.9 Storm Drain Inlets

Instructions (see CGP Parts 2.2.10 and 7.2.6):

– Describe controls (e.g., inserts, rock-filled bags, or block and gravel) including design, installation, and maintenance specifications that will be implemented to protect all inlets that carry stormwater flow from your site to a water of the U.S., provided you have the authority to access the storm drain inlet.

General

- All existing and proposed storm drain inlets in the project area will be equipped with temporary inlet sediment filters to capture sediment that stormwater flow conveys to their inlet grates. Existing inlets will remain so equipped until they are removed from service. Proposed inlets will be provided with temporary inlet sediment filters once their installation is completed. The temporary inlet sediment filters will be removed from the new storm drain inlets once their contributing areas from the construction site have been permanently stabilized.

Specific Storm Drain Inlet Controls

STORM DRAIN INLET CONTROL # 1	
Description: Temporary inlet sediment filters for existing storm drain inlets will be sized and configured to fit round or square/rectangular inlets as needed. Temporary inlet sediment filters for proposed storm drain inlets will be sized and configured to fit the square/rectangular frames and grates for the new structures. Temporary inlet sediment filters will be geotextile fabric held in place within the throats of the storm drain using polypropylene boot held in place by the weight of the grate.	
Installation	Temporary inlet sediment filters installations will begin prior to construction and will continue throughout the duration of construction of the new site storm drain system, as new inlets are constructed and brought on-line. These new inlets will also be provided with temporary inlet sediment filters or other similar devices as they are completed and brought on-line.
Maintenance Requirements	Temporary inlet sediment filters will be inspected weekly as part of regular stormwater inspections to check on sediment depth inside the inset and proper placement of the temporary inlet sediment filters. When accumulated sediment reaches the mid-height level of the temporary inlet sediment filters, the temporary inlet sediment filters will be removed, emptied, and re-used if, upon examination of the empty temporary inlet sediment filters, the unit is found to be sound, without tears or holes in the fabric. Temporary inlet sediment filters will be removed from the new storm drain inlets and discarded once their contributing areas from the construction site have been permanently stabilized. (Note: At a minimum, you must comply with following requirement in CGP Part 2.2.10.b: "Clean, or remove and replace the protection measures as sediment accumulates, the filter becomes clogged, and/or performance is compromised. Where there is evidence of sediment accumulation adjacent to the inlet protection measure, remove the deposited sediment by the end of the same business day in which it is found or by the end of the following business day if removal by the same business day is not feasible.")
Design Specifications	Described in Project Specifications Section 312500.

4.10 Stormwater Conveyance Channels

Instructions (see CGP Parts 2.2.11 and 7.2.6):

If you will be installing a stormwater conveyance channel, describe control practices (e.g., velocity dissipation devices), including design specifications and details (volume, dimensions, outlet structure), that will be implemented at the construction site.

General

- TBD BY CONTRACTOR

Specific Conveyance Channel Controls

TBD BY CONTRACTOR	
Description:	
Installation	
Maintenance Requirements	
Design Specifications	

4.11 Sediment Basins

Instructions (see CGP Parts 2.2.12 and 7.2.6.b.iv):

If you will install a sediment basin, include design specifications and other details (volume, dimensions, outlet structure) that will be implemented in conformance with CGP Part 2.2.12.

- Sediment basins must be situated outside waters of the U.S. and any natural buffers established under CGP Part 2.2.1; and designed to avoid collecting water from wetlands.
- At a minimum, sediment basins provide storage for either (1) the calculated volume of runoff from the 2-year, 24-hour storm (see CGP App. H), or (2) 3,600 cubic feet per acre drained
- Sediment basins must also utilize outlet structures that withdraw water from the surface, unless infeasible

General

- A temporary sediment basin will be provided. This basin shall provide a minimum of 3,600 cf of storage per acre drainage, as required by the EPA.

Specific Sediment Basin Controls

SEDIMENT BASIN CONTROL # 1	
Description: Sediment Basin will be installed for dewatering the site.	
Installation	Temporary sediment basins shall be installed prior to grading activities.
Maintenance Requirements	Temporary sediment basins shall be inspected weekly and following storms. Sediment shall be removed when it reaches a depth of one foot. Damage to basin embankments and slopes shall be repaired.

	(Note: At a minimum, you must comply with following requirement in CGP Part 2.2.12.f: "Remove accumulated sediment to maintain at least one-half of the design capacity and conduct all other appropriate maintenance to ensure the basin or impoundment remains in effective operating condition.")
Design Specifications	Refer to Project Specifications Section 312500.

4.12 Chemical Treatment

Instructions (see CGP Parts 2.2.13 and 7.2.6.v):

If you are using treatment chemicals at your site, provide details for each of the items below. This information is required as part of the SWPPP requirements in CGP Part 7.2.6.v.

N/A - CHEMICAL TREATMENT WILL BE PROHIBITED AT THE WORK SITE OVER THE DURATION OF CONSTRUCTION.

Soil Types
List all the soil types (including soil types expected to be found in fill material) that are expected to be exposed during construction in areas of the project that will drain to chemical treatment systems: INSERT TEXT HERE

Treatment Chemicals
List all treatment chemicals that will be used at the site and explain why these chemicals are suited to the soil characteristics: INSERT TEXT HERE
Describe the dosage of all treatment chemicals you will use at the site or the methodology you will use to determine dosage: INSERT TEXT HERE

Provide information from any applicable Safety Data Sheets (SDS): INSERT TEXT HERE

Describe how each of the chemicals will stored: INSERT TEXT HERE

Include references to applicable state or local requirements affecting the use of treatment chemicals, and copies of applicable manufacturer's specifications regarding the use of your specific treatment chemicals and/or chemical treatment systems: INSERT TEXT HERE

Special Controls for Cationic Treatment Chemicals (if applicable)
If the applicable EPA Regional Office authorized you to use cationic treatment chemicals, include the official EPA authorization letter or other communication, and identify the specific controls and implementation procedures designed to ensure that your use of cationic treatment chemicals will not lead to an exceedance of water quality standards: INSERT (1) ANY LETTERS OR OTHER DOCUMENTS SENT FROM THE EPA REGIONAL OFFICE CONCERNING YOUR USE OF CATIONIC TREATMENT CHEMICALS, AND (2) DESCRIPTION OF ANY SPECIFIC CONTROLS YOU ARE REQUIRED TO IMPLEMENT

Schematic Drawings of Stormwater Controls/Chemical Treatment Systems
Provide schematic drawings of any chemically-enhanced stormwater controls or chemical treatment systems to be used for application of treatment chemicals: INSERT DRAWINGS HERE

Training
Describe the training that personnel who handle and apply chemicals have received prior to permit coverage, or will receive prior to the use of treatment chemicals: INSERT TEXT HERE

4.13 Dewatering Practices

Instructions (see CGP Parts 2.4 and 7.2.6):

If you will be discharging ground water or accumulated stormwater that is removed from excavations, trenches, foundations, vaults, or other similar points of accumulation, include design specifications and details of all dewatering practices that are installed and maintained to comply with CGP Part 2.4.

General

- Water from dewatering of excavations at the project site will be routed through a sedimentation structure.

Specific Dewatering Practices

DEWATERING PRACTICE # 1	
Description: Dewatering control measures include, but are not limited to, dewatering sedimentation basins or sediment traps, sediment socks, dewatering tanks and bags, or filtration systems (e.g. bag or sand filters) that are designed to remove sediment. Uncontaminated, non-turbid dewatering water can be discharged on-site without being routed to a control.	
Installation	Installation of dewatering controls will be done on an as needed basis and will continue throughout the duration of construction until all earth disturbing activities are completed.
Maintenance Requirements	Dewatering controls will be examined daily for sediment accumulation and checked to assure no sheen appears in discharged water. Sediment from structure will be cleaned out and legally disposed of when sediments reach the appropriate level.
Design Specifications	See Specifications Section 312319

4.14 Other Stormwater Controls

Instructions:

– Describe any other stormwater controls that do not fit into the above categories.

General

Specific Stormwater Control Practices

Description:	
Installation	
Maintenance Requirements	
Design Specifications	

4.15 Site Stabilization

Instructions (see CGP Parts 2.2.14 and 7.2.6.vi):

The CGP requires you to immediately initiate stabilization when work in an area of your site has permanently or temporarily stopped, and to complete certain stabilization activities within prescribed deadlines. Construction projects disturbing more than 5 acres at any one time have a different deadline than projects disturbing 5 acres or less at any one time. See CGP Part 2.2.14.a. The CGP also requires that stabilization measures meet certain minimum criteria. See CGP Part 2.2.14.b. For your SWPPP, you must include the following:

- Describe the specific vegetative and/or non-vegetative practices that will be used to stabilize exposed soils where construction activities have temporarily or permanently ceased. Avoid using impervious surfaces for stabilization whenever possible.
- The stabilization deadline(s) that will be met in accordance with Part 2.2.14.a
- Once you begin construction, consider using the Grading/Stabilization Activities log in Appendix H of the Template to document your compliance with the stabilization requirements in CGP Part 2.2.14.

Total Amount of Land Disturbance Occurring at Any One Time

☒ *Five Acres or less*

☐ *More than Five Acres*

Use this template box if you are <u>not</u> located in an arid, semi-arid, or drought-stricken area

SITE STABILIZATION PRACTICE #1	
☒ *Vegetative* ☒ *Non-Vegetative* ☒ *Temporary* ☒ *Permanent*	
Description: ▪ Temporary vegetative cover shall be established using hydroseeding for areas of exposed soil (including stockpiles) where construction will cease for more than 14 days and seeded surfaces. ▪ Slope stabilization, permanent erosion control and rip rap where specified.	
Installation	During Construction Period
Completion	During Construction Period
Maintenance Requirements	N/A
Design Specifications	See Specifications Section 312500

Use this template box if unforeseen circumstances have delayed the initiation and/or completion of vegetative stabilization. Note: You will not be able to include this information in your initial SWPPP. If you are affected by circumstances such as those described in CGP Part 2.2.14.a.iii, you will need to modify your SWPPP to include this information.

INSERT NAME OF SITE STABILIZATION PRACTICE	
☐ *Vegetative* ☐ *Temporary* ☐ *Permanent*	
Description: ▪ INSERT DESCRIPTION OF STABILIZATION PRACTICE TO BE INSTALLED ▪ NOTE HOW DESIGN WILL MEET REQUIREMENTS OF PART 2.2.14.b	
Justification	INSERT DESCRIPTION OF CIRCUMSTANCES THAT PREVENT YOU FROM MEETING THE DEADLINES REQUIRED IN CGP PARTS 2.2.14.a
Installation and completion schedule	**Vegetative Measures:** DESCRIBE THE SCHEDULE YOU WILL FOLLOW FOR INITIATING AND COMPLETING VEGETATIVE STABILIZATION ▪ Approximate installation date: INSERT APPROXIMATE DATE ▪ Approximate completion date: INSERT APPROXIMATE DATE
	Non-Vegetative Measures: *(must be completed within 14 days of the cessation of construction if disturbing 5 acres or less; within 7 days if disturbing more than 5 acres)* ▪ Approximate installation date: INSERT APPROXIMATE DATE ▪ Approximate completion date: INSERT APPROXIMATE DATE
Maintenance Requirements	INSERT MAINTENANCE REQUIREMENTS FOR THE STABILIZATION PRACTICE
Design Specifications	INCLUDE COPIES OF DESIGN SPECIFICATIONS HERE

SECTION 5: POLLUTION PREVENTION STANDARDS

5.1 Potential Sources of Pollution

Instructions (see CGP Part 7.2.3.g):

- Identify and describe all pollutant-generating activities at your site (e.g., paving operations; concrete, paint, and stucco washout and waste disposal; solid waste storage and disposal).
- For each pollutant-generating activity, include an inventory of pollutants or pollutant constituents associated with that activity (e.g., sediment, fertilizers, and/or pesticides, paints, solvents, fuels), which could be exposed to rainfall or snowmelt, and could be discharged from your construction site. You must take into account where potential spills and leaks could occur that contribute pollutants to stormwater discharges, and any known hazardous or toxic substances, such as PCBs and asbestos, that will be disturbed or removed during construction.

Construction Site Pollutants

Pollutant-Generating Activity	**Pollutants or Pollutant Constituents** (that could be discharged if exposed to stormwater)	**Location on Site** (or reference SWPPP site map where this is shown)
Paving operations	Muriatic Acid, Oils, Petroleum Distillates, Limestone, Sand	New driveways and pathways throughout the site
Fueling/maintenance of equipment/vehicles	Oil, Grease, Gasoline, Antifreeze, Coolants	TBD
Washing of equipment/ vehicles	Detergents, Oil, Grease, Sediment, Hydraulic Fluids	TBD
Storage/Handling/Disposal of Construction Materials	Plaster, Concrete	TBD
Storage/Handling/Disposal of Construction Products	Fertilizers, Insecticides, Fungicides, Pesticides	TBD
Storage/Handling/Disposal of Construction Wastes	Debris, Sanitary Wastes	TBD
Washing of applicators/ containers for paint, concrete/other materials	Paints, Curing Compounds	TBD

5.2 Spill Prevention and Response

Instructions (see CGP Parts 2.3.6 and 7.2.6.vii):

- Describe procedures you will use to prevent and respond to leaks, spills, and other releases. You must implement the following at a minimum:
  - ✓ Procedures for expeditiously stopping, containing, and cleaning up spills, leaks, and other releases. Identify the name or title of the employee(s) responsible for detection and response of spills or leaks; and
  - ✓ Procedures for notification of appropriate facility personnel, emergency response agencies, and regulatory agencies where a leak, spill, or other release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity consistent with Part 2.3.6 and established under either 40 CFR Part 110, 40 CFR Part 117, or 40 CFR Part 302, occurs during a 24-hour period. Contact information must be in locations that are readily accessible and available.
- Some projects/site may be required to develop a Spill Prevention Control and Countermeasure (SPCC) plan under a separate regulatory program (40 CFR 112). If you are required to develop an SPCC plan, or you already have one, you should include references to the relevant requirements from your plan.

- Spill Prevention and Response Procedures will be reviewed and discussed bi-weekly at "tailgate sessions" prior to the start of work for the day.
- Hazardous materials will be stored in construction storage trailers or other secure covered location.
- Materials will be stored in labeled re-sealable containers in protected areas to avoid accidental breakage of containers.
- Local, state and federal regulations governing storage of these materials will be complied with.
- A spill kit with gloves, absorbents, and other materials will be positioned in proximity to these materials.
- Spills of reportable quantities will be reported to Boston Fire Department – District 1 (dial 911), and the Massachusetts Dept. of Environmental Protection's Emergency Response Program (888)304-1133 within two (2) hours of initial discovery of the spill.
- Spills large enough to be discharged from the site will also be reported to the EPA National Response Center at 1-800-424-8802.
- Hazardous Material Safety Data Sheets, a materials inventory, and emergency contact information will be maintained at the Project Office.

5.3 Fueling and Maintenance of Equipment or Vehicles

Instructions (see CGP Parts 2.3.1 and 7.2.6):

- Describe equipment/vehicle fueling and maintenance practices that will be implemented to eliminate the discharge of spilled or leaked chemicals (e.g., providing secondary containment *(examples: spill berms, decks, spill containment pallets)* and cover where appropriate, and/or having spill kits readily available.)

General

- Allow only minor equipment/vehicle fueling and maintenance on the work site and prohibit major vehicle/equipment fueling and maintenance activities on the work site.

Specific Pollution Prevention Practices

POLLUTION PREVENTION PRACTICE #1	
Description: All major equipment/vehicle fueling and maintenance will be performed off-site. Only minor equipment maintenance will occur onsite. All equipment fluids generated from maintenance activities will be disposed of into designated drums stored on spill pallets. Absorbent, spill-cleanup materials and spill kits will be available at materials storage construction containers. Drip pans will be placed under all equipment receiving maintenance and vehicles and equipment parked overnight.	
Installation	During Construction Period
Maintenance Requirements	Equipment/ vehicle storage areas and the on-site portable fuel tank will be inspected weekly and after storm events. Vehicles and equipment will be inspected on each day of use. Leaks will be repaired immediately, or the problem vehicle(s) or equipment will be removed from the project site. Ample supply of spill-cleanup materials will be kept on-site and spills will be cleaned up and materials will be disposed of properly.
Design Specifications	

5.4 Washing of Equipment and Vehicles

Instructions (see CGP Parts 2.3.2 and 7.2.6):

- Describe equipment/vehicle washing practices that will be used to minimize the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other types of wash waters (e.g., locating activities away from waters of the U.S. and stormwater inlets or conveyances and directing wash waters to a sediment basin or sediment trap, using filtration devices, such as filter bags or sand filters, or using other similarly effective controls).
- Describe how you will prevent the discharge of soaps, detergents, or solvents by providing either (1) cover (*examples: plastic sheeting or temporary roofs*) to prevent these detergents from coming into contact with rainwater, or (2) a similarly effective means designed to prevent the discharge of pollutants from these areas.

General

- Washing of vehicles and equipment will be prohibited at the work site over the duration of construction.

Specific Pollution Prevention Practices

Description:	
Installation	
Maintenance Requirements	
Design Specifications	

5.5 Storage, Handling, and Disposal of Building Products, Materials, and Wastes

Instructions (see CGP Parts 2.3.3 and 7.2.6):

- For any of the types of building products, materials, and wastes below in Sections 5.5.1-5.5.6 below that you expect to use or store at your site, provide the information on how you will comply with the corresponding CGP provision and the specific practices that you will be employ.

5.5.1 Building Products

(Note: Examples include asphalt sealants, copper flashing, roofing materials, adhesives, concrete admixtures, and gravel and mulch stockpiles.)

General

- Building products will be stored in construction trailers or other secured covered locations.

Specific Pollution Prevention Practices

SPECIFIC POLLUTION PREVENTION PRACTICE #1	
Description: Store building products in construction trailer or other secure location.	
Installation	During Construction Period
Maintenance Requirements	Storage locations will be inspected weekly for cover integrity and proper storage of building products.
Design Specifications	N/A

5.5.2 Pesticides, Herbicides, Insecticides, Fertilizers, and Landscape Materials

General

- Proper storage and disposal of chemicals.

Specific Pollution Prevention Practices

SPECIFIC POLLUTION PREVENTION PRACTICE #1	
Description: Materials will be stored in re-sealable containers inside of temporary construction trailers/containers. This will cover them from contact with rainwater. All application and disposal requirements included on the registered pesticide, herbicide, insecticide, and fertilizer label will be complied with.	
Installation	During Construction Period
Maintenance Requirements	Storage locations will be inspected weekly for cover integrity and proper storage of materials.

Design Specifications	N/A

5.5.3 Diesel Fuel, Oil, Hydraulic Fluids, Other Petroleum Products, and Other Chemicals

General

- Proper storage and disposal of chemicals.

Specific Pollution Prevention Practices

POLLUTION PREVENTION PRACTICE #1	
Description: Chemicals will be stored in water-tight containers and cover from rainwater will be provided by construction containers. Spill kits will also be provided. Spills will be cleaned up immediately using dry clean-up methods where possible and used materials will be disposed of properly. The source of any spills will be eliminated.	
Installation	During Construction Period
Maintenance Requirements	Chemical storage will be checked weekly.
Design Specifications	N/A

5.5.4 Hazardous or Toxic Waste

(Note: Examples include paints, solvents, petroleum-based products, wood preservatives, additives, curing compounds, acids.)

General

- Hazardous material will be stored in secure covered locations in labeled re-sealable containers compatible with the material/liquid to be contained.

Specific Pollution Prevention Practices

POLLUTION PREVENTION PRACTICE #1
Description: ▪ Hazardous materials will be stored in construction storage trailer or other secure covered location. ▪ Materials will be stored in labeled re-sealable containers in protected areas to avoid accidental breakage of containers. ▪ Local, state and federal regulations governing storage of these materials will be complied with. ▪ A spill kit with gloves, absorbents, and other materials will be positioned in proximity to these materials. ▪ Spills of reportable quantities will be reported to Boston Fire Department – District 1 (dial 911), and the Massachusetts Dept. of Environmental Protection's Emergency Response Program (888)304-1133 within two (2) hours of initial discovery of the spill. ▪ Spills large enough to be discharged from the site will also be reported to the EPA National Response Center at 1-800-424-8802. ▪ Spills will be cleaned up using dry clean-up methods as much as possible and used materials will be properly disposed of. ▪ No hosedowns of spill areas will be allowed unless water is recovered before entering any storm drain. ▪ Hazardous Material Safety Data Sheets, a materials inventory, and emergency contact information will be maintained at the Project Office.

Installation	During Construction Period
Maintenance Requirements	Hazardous material storage locations will be checked for any container leakage/breakage. Minor spills of hazardous material will be cleaned using spill control implements. Used spill control implements will be disposed of in accordance with governing local, state and federal regulations. Hazardous materials no longer required on the site will be promptly removed from the site.
Design Specifications	N/A

5.5.5 Construction and Domestic Waste

(Note: Examples include packaging materials, scrap construction materials, masonry products, timber, pipe and electrical cuttings, plastics, styrofoam, concrete, and other trash or building materials.)

General

- Construction waste will be disposed of in dumpsters and trash receptacles to be emptied a minimum of three times a week. Overflowing trash dumpsters and trash receptacles will be collected and correctly disposed of immediately.

Specific Pollution Prevention Practices

POLLUTION PREVENTION PRACTICE #1	
Description: Provide waste containers on site	
Installation	TBD with adjustments to the number of dumpsters on site so that more or fewer dumpsters are brought on site as needed to accommodate the amount of waste generated
Maintenance Requirements	Collection of waste three times a week at a minimum. Check dumpsters/receptacles regularly to ensure that no breaches to bottom/sides of containers have occurred.
Design Specifications	N/A

5.5.6 Sanitary Waste

General

- Installation of portable toilets

Specific Pollution Prevention Practices

POLLUTION PREVENTION PRACTICE #1	
Description: Portable toilets will be trucked to the site and installed so that they are secure and accessible for maintenance and located on stable surfaces so that portable toilet units cannot be tipped or knocked over.	
Installation	During Construction Period
Maintenance Requirements	Portable toilet units will be maintained and cleaned a minimum of three times a week, with wastes handled by a licensed service provider and legally disposed of.
Design Specifications	N/A

5.6 Washing of Applicators and Containers used for Paint, Concrete or Other Materials

Instructions (see CGP Parts 2.3.4 and 7.2.6):

– Describe how you will comply with the CGP Part 2.3.4 requirement for washing applications and containers.

General

- Concrete trucks will not be allowed to wash out or discharge surplus concrete or drum wash water on the worksite. Cleaning of applicators, spray guns, brushes and other such devices will utilize adsorbents or spill containers to prevent contaminants from accumulating on paved surfaces.

Specific Pollution Prevention Practices

POLLUTION PREVENTION PRACTICE #1	
Description: Concrete truck wash-outs or discharges of surplus concrete or drum wash water will be prohibited at worksite.	
Installation	N/A
Maintenance Requirements	N/A
Design Specifications	N/A

5.7 Fertilizers

Instructions (CGP Parts 2.3.5 and 7.2.6.ix):

Describe how you will comply with the CGP Part 2.3.5 requirement for the application of fertilizers.

General

- Fertilizer will be applied at a rate or amount based on manufacturer's specifications and applied at the appropriate time of year and timed to coincide as closely as possible to the period of maximum vegetation uptake and growth. Application of fertilizer before heavy rains and to frozen ground will be avoided. All other state and local requirements regarding fertilizer application will be adhered to.

Specific Pollution Prevention Practices

FERTILIZER APPLICATION BEST PRACTICE #1	
Description: Fertilizer application best practice	
Installation	During Construction Period
Maintenance Requirements	N/A
Design Specifications	N/A

5.8 Other Pollution Prevention Practices

Instructions:

Describe any additional pollution prevention practices that do not fit into the above categories.

General

- N/A

Specific Pollution Prevention Practices

N/A	
Description: N/A	
Installation	N/A
Maintenance Requirements	N/A
Design Specifications	N/A

SECTION 6: INSPECTION, MAINTENANCE, AND CORRECTIVE ACTION

6.1 Inspection Personnel and Procedures

Instructions (see CGP Parts 3.2, 4, 5, and 7.2.7):

Describe the procedures you will follow for conducting inspections in accordance with CGP Parts 3.2, 4, 5, and 7.2.7.

Personnel Responsible for Inspections

The Contractor's project manager shall be responsible for ensuring the requirements for the SWPPP are followed based on inspections performed at the minimum frequency described in the BMP sections.

Note: All personnel conducting inspections must be considered a "qualified person." CGP Part 4.1 clarifies that a "qualified person" is a person knowledgeable in the principles and practices of erosion and sediment controls and pollution prevention, who possesses the appropriate skills and training to assess conditions at the construction site that could impact stormwater quality, and the appropriate skills and training to assess the effectiveness of any stormwater controls selected and installed to meet the requirements of this permit.

Inspection Schedule

Select the inspection frequency(ies) that applies, based on CGP Parts 4.2, 4.3, or 4.4

(Note: you may be subject to different inspection frequencies in different areas of the site. Check all that apply)

Standard Frequency:
☒ Every 7 days ☐ Every 14 days and within 24 hours of a 0.25" rain or the occurrence of runoff from snowmelt sufficient to cause a discharge
Increased Frequency (if applicable):
For areas of sites discharging to sediment or nutrient-impaired waters or to waters designated as Tier 2, Tier 2.5, or Tier 3 ☐ Every 7 days and within 24 hours of a 0.25" rain
Reduced Frequency (if applicable)
For stabilized areas ☐ Twice during first month, no more than 14 calendar days apart; then once per month after first month; ▪ SPECIFY LOCATIONS WHERE STABILIZATION STEPS HAVE BEEN COMPLETED ▪ INSERT DATE THAT THEY WERE COMPLETED (Note: It is likely that you will not be able to include this in your initial SWPPP. If you qualify for this reduction (see CGP Part 4.4.1), you will need to modify your SWPPP to include this information.)
For stabilized areas on "linear construction sites" ☐ Twice during first month, no more than 14 calendar days apart; then once more within 24 hours of a 0.25" rain ▪ SPECIFY LOCATIONS WHERE STABILIZATION STEPS HAVE BEEN COMPLETED ▪ INSERT DATE THAT THEY WERE COMPLETED

(Note: It is likely that you will not be able to include this in your initial SWPPP. If you qualify for this reduction (see CGP Part 4.4.1), you will need to modify your SWPPP to include this information.)

For arid, semi-arid, or drought-stricken areas during seasonally dry periods or during drought

☐ Once per month and within 24 hours of a 0.25" rain

Insert beginning and ending dates of the seasonally-defined dry period for your area or the valid period of drought:

- Beginning date of seasonally dry period: INSERT APPROXIMATE DATE
- Ending date of seasonally dry period: INSERT APPROXIMATE DATE

For frozen conditions where earth-disturbing activities are being conducted

☐ Once per month

Insert beginning and ending dates of frozen conditions on your site:

- Beginning date of frozen conditions: INSERT APPROXIMATE DATE
- Ending date of frozen conditions: INSERT APPROXIMATE DATE

Rain Gauge Location (if applicable)

Boston Logan Airport,
1 Harborside Dr, Boston, MA 02128

Inspection Report Forms

See Appendix D

(Note: EPA has developed a sample inspection form that CGP operators can use. The form is available at https://www.epa.gov/npdes/stormwater-discharges-construction-activities#resources)

6.2 Corrective Action

Instructions (CGP Parts 5 and 7.2.7):

- Describe the procedures for taking corrective action in compliance with CGP Part 5.

Personnel Responsible for Corrective Actions

For corrective actions identified, CONTRACTOR shall be responsible for initiating the corrective action within 24 hours of the report and completing maintenance as soon as possible or before the next storm event. For any corrective actions requiring a SWPPP amendment or change to a stormwater conveyance or control design, CONTRACTOR shall notify Shawmut Design and Construction, as soon as possible, before initiating the corrective action.

Corrective Action Forms

See Appendix E

(Note: EPA has developed a sample corrective action form that CGP operators can use. The form is available at https://www.epa.gov/npdes/stormwater-discharges-construction-activities#resources)

6.3 Delegation of Authority

Instructions:

- Identify the individual(s) or positions within the company who have been delegated authority to sign inspection reports.
- Attach a copy of the signed delegation of authority (see example in Appendix J of the Template.)
- For more on this topic, see Appendix I, Subsection 11 of EPA's CGP.

Duly Authorized Representative(s) or Position(s):

Insert Company or Organization Name
Insert Name
Insert Address
Insert City, State, Zip Code
Insert Telephone Number
Insert Fax/Email

SECTION 7: TRAINING

Instructions (see CGP Part 6 and 7.2.8):

- Complete the table below to provide documentation that the personnel required to be trained in CGP Part 6 completed the appropriate training
- If personnel will be taking course training (which is not required as part of the CGP), consider using Appendix I of this SWPPP template to track completion of this training
- The following personnel, at a minimum, must receive training, and therefore should be listed out individually in the table below:
  - ✓ Personnel who are responsible for the design, installation, maintenance, and/or repair of stormwater controls (including pollution prevention measures);
  - ✓ Personnel responsible for the application and storage of treatment chemicals (if applicable);
  - ✓ Personnel who are responsible for conducting inspections as required in Part 4.1; and
  - ✓ Personnel who are responsible for taking corrective actions as required in Part 5.
- CGP Part 6 requires that the required personnel must be trained to understand the following if related to the scope of their job duties:
  - ✓ The permit deadlines associated with installation, maintenance, and removal of stormwater controls and with stabilization;
  - ✓ The location of all stormwater controls on the site required by this permit, and how they are to be maintained;
  - ✓ The proper procedures to follow with respect to the permit's pollution prevention requirements; and
  - ✓ When and how to conduct inspections, record applicable findings, and take corrective actions.

Table 7-1: Documentation for Completion of Training

Name	Describe Training	Date Training Completed

SECTION 8: CERTIFICATION AND NOTIFICATION

Instructions (CGP Appendix I, Part I.11.b):

- The following certification statement must be signed and dated by a person who meets the requirements of Appendix I, Part I.11.b.
- This certification must be re-signed in the event of a SWPPP Modification.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: _____ Title: _____

Signature: _____ Date: _____

[Repeat as needed for multiple construction operators at the site.]

SWPPP APPENDICES

Attach the following documentation to the SWPPP:

Appendix A – Site Maps

Appendix B – Copy of 2017 CGP

Appendix C – NOI and EPA Authorization Email

Appendix D – Inspection Form

Appendix E – Corrective Action Form

Appendix F – SWPPP Amendment Log

Appendix G – Subcontractor Certifications/Agreements

Appendix H – Grading and Stabilization Activities Log

Appendix I – Training Log

Appendix J – Delegation of Authority Form

Appendix K – Endangered Species Documentation

Appendix L – Historic Preservation Documentation

Appendix M – TMDL Documentation

Appendix N – Rainfall Gauge Recording

Appendix O – Specifications

Appendix P – Permits for the Project (Order of Conditions)

Appendix A – Site Maps

Appendix B – Copy of 2017 CGP

(Note: The 2017 CGP is available at https://www.epa.gov/npdes/epas-2017-construction-general-permit-cgp-and-related-documents)

National Pollutant Discharge Elimination System
General Permit for Discharges from
Construction Activities

In compliance with the provisions of the Clean Water Act, 33 U.S.C. §1251 et. seq., (hereafter CWA), as amended by the Water Quality Act of 1987, P.L. 100-4, "operators" of construction activities (defined in Appendix A) that meet the requirements of Part 1.1 of this National Pollutant Discharge Elimination System (NPDES) general permit, are authorized to discharge pollutants in accordance with the effluent limitations and conditions set forth herein. Permit coverage is required from the "commencement of construction activities" (see Appendix A) until one of the conditions for terminating CGP coverage has been met (see Part 8.2).

This permit becomes effective on **February 16, 2017**.

This permit and the authorization to discharge expire at 11:59pm, **February 16, 2022.**

Signed and issued this 11th day of January 2017

Deborah Szaro,
Acting Regional Administrator, EPA Region 1

Signed and issued this 11th day of January 2017

William K. Honker, P.E.,
Director, Water Division, EPA Region 6

Signed and issued this 11th day of January 2017

Javier Laureano, Ph.D.,
Director, Clean Water Division, EPA Region 2

Signed and issued this 11th day of January 2017

Karen Flournoy,
Director, Water, Wetlands, and Pesticides Division, EPA Region 7

Signed and issued this 11th day of January 2017

Jose C. Font,
Acting Director, Caribbean Environmental Protection Division, EPA Region 2.

Signed and issued this 11th day of January 2017

Darcy O'Connor,
Assistant Regional Administrator, Office of Water Protection, EPA Region 8

Signed and issued this 11th day of January 2017

Dominique Lueckenhoff,
Acting Director, Water Protection Division, EPA Region 3

Signed and issued this 11th day of January 2017

Kristin Gullatt
Deputy Director, Water Division, EPA Region 9

Signed and issued this 11th day of January 2017

César A. Zapata,
Deputy Director, Water Protection Division, EPA Region 4

Signed and issued this 11th day of January 2017

Daniel D. Opalski,
Director, Office of Water and Watersheds, EPA Region 10

Signed and issued this 11th day of January 2017

Christopher Korleski,
Director, Water Division, EPA Region 5

Appendix C – Copy of NOI and EPA Authorization email

Appendix D – Copy of Inspection Form

(Note: EPA has developed a sample inspection form that CGP operators can use. The form is available at https://www.epa.gov/npdes/stormwater-discharges-construction-activities#resources)

2017 Construction General Permit
Inspection Report Template – Electronic Version

Purpose
This Inspection Report Template (or "template") is to assist you in preparing inspection reports for EPA's 2017 Construction General Permit (CGP). If you are covered under the 2017 CGP, you can use this template to create an inspection report form that is customized to the specific circumstances of your site and that complies with the minimum reporting requirements of Part 4.7 of the permit. Note that the use of this form is optional; you may use your own inspection report form provided it includes the minimum information required in Part 4.7 of the CGP.

If you are covered under a state CGP, this template may be helpful in developing a form that can be used for that permit; however, it will need to be modified to meet the specific requirements of that permit. If your permitting authority requires you to use a specific inspection report form, you should not use this form.

Notes:
While EPA has made every effort to ensure the accuracy of all instructions contained in the Inspection Report Template, it is the permit, not the template, that determines the actual obligations of regulated construction stormwater discharges. In the event of a conflict between the Inspection Report Template and any corresponding provision of the 2017 CGP, you must abide by the requirements in the permit. EPA welcomes comments on the Inspection Report Template at any time and will consider those comments in any future revision of this document. You may contact EPA for CGP-related inquiries at cgp@epa.gov.

Overview of Inspection Requirements (see CGP Part 4)
Construction operators covered under the 2017 CGP are subject to the following inspection requirements:

Person(s) Responsible for Inspecting the Site (see Part 4.1)
The person(s) inspecting your site must be a "qualified person" who may be either on your staff or a third party you hire to conduct such inspections.

- A "qualified person" is a person knowledgeable in the principles and practice of erosion and sediment controls and pollution prevention, who possesses the appropriate skills and training to assess conditions at the construction site that could impact stormwater quality, and the appropriate skills and training to assess the effectiveness of any stormwater controls selected and installed to meet the requirements of this permit.

Inspection Frequency (see Part 4.2)
You are required to conduct inspections either:

- Once every 7 calendar days; or
- Once every 14 calendar days and within 24 hours of a storm event of 0.25 inches or greater or the occurrence of runoff from snowmelt sufficient to cause a discharge.

Your inspection frequency is increased if the site discharges to a sensitive water. See Part 4.3. Your inspection frequency may be decreased to account for stabilized areas, or for arid, semi-arid, or drought-stricken conditions, or for frozen conditions. See Part 4.4.

Areas That Need to Be Inspected (see Part 4.5)
During each inspection, you must inspect the following areas of your site:

- Cleared, graded, or excavated areas of the site;
- Stormwater controls (e.g., perimeter controls, sediment basins, inlets, exit points etc.) and pollution prevention practices (e.g., pollution prevention practices for vehicle fueling/maintenance and washing, construction product storage, handling, and disposal, etc.) at the site;
- Material, waste, or borrow areas covered by the permit, and equipment storage and maintenance areas;
- Areas where stormwater flows within the site;
- Stormwater discharge points; and
- Areas where stabilization has been implemented.

What to Check For During Your Inspection (see Part 4.6)
During your site inspection, you are required to check:

- Whether stormwater controls or pollution prevention practices are properly installed, require maintenance or corrective action, or whether new or modified controls are required;
- For the presence of conditions that could lead to spills, leaks, or other pollutant accumulations and discharges;
- For locations where new or modified stormwater controls are necessary to meet requirements of the permit;
- Whether there are visible signs of erosion and sediment accumulation at points of discharge and to the channels and streambanks that are in the immediate vicinity of the discharge;
- If a stormwater discharge is occurring at the time of the inspection, whether there are obvious, visual signs of

pollutant discharges; and
- If any permit violations have occurred on the site.

Inspection Reports (see Part 4.7)
Within 24 hours of completing each inspection, you are required to complete an inspection report that includes:
- Date of inspection;
- Names and titles of person(s) conducting the inspection;
- Summary of inspection findings;
- Rain gauge or weather station readings if your inspection is triggered by the 0.25-inch storm threshold; and
- If you determine that a portion of your site is unsafe to access for the inspection, documentation of what conditions prevented the inspection and where these conditions occurred on the site

Instructions for Using This Template
This Electronic Version of the Inspection Report Template is intended to be filled out electronically. If you will be filling out the Inspection Report Template by hand (i.e., you will be filling this form out in the field), please use the Field Version of the Inspection Report Template available at https://www.epa.gov/npdes/stormwater-discharges-construction-activities#resources.

Keep in mind that this document is a template and not an "off-the-shelf" inspection report that is ready to use without some modification. You must first customize this form to include the specifics of your project in order for it to be useable for your inspection reports. The template includes text fields that direct you to populate the form with your specific site information (e.g., specific BMPs installed at your site, specific locations where they are installed). Once you have entered all of your site-specific information into these fields, you may use the completed form to complete inspection reports.

The following tips for using this template will help you ensure that the minimum permit requirements are met:

- **Review the inspection requirements.** Before you start developing your inspection report form, read the CGP's Part 4 inspection requirements. This will ensure that you have a working understanding of the permit's underlying inspection requirements.
- **Complete all required text fields.** Fill out all text fields (marked with blue font). Only by filling out all fields will the template be compliant with the requirements of the permit. (Note: Where you do not need the number of rows provided in the template form for your inspection, you may delete these as you see fit. Or, if you need more space to document your findings, you may insert additional rows.) Specific instructions on what information to include in each text field is included in each text field. The fields were developed so that the instructions disappear once you start typing.
- **Use your site map to document inspection findings.** In several places in the template, you are directed to specify the location of certain features of your site, including where stormwater controls are installed and where you will be stabilizing exposed soil. You are also asked to fill in location information for unsafe conditions and the locations of any discharges occurring during your inspections. Where you are asked for location information, EPA encourages you to reference the point on your SWPPP site map that corresponds to the requested location on the inspection form. Using the site map as a tool in this way will help you conduct efficient inspections, will assist you in evaluating problems found, and will ensure proper documentation.
- **Sign and certify each inspection report.** The operator or a duly authorized representative (see Appendix I, Part I.11.2) must sign and certify each inspection report for it to be considered complete. Where a contractor or subcontractor carries out your inspections, it is recommended that you also have the inspector sign and certify the form, in addition to the signature and certification required of the permitted operator. The template includes a signature block for both parties.
- **Include the inspection form with your SWPPP.** Once your form is complete, make sure to include a copy of the inspection form in your SWPPP in accordance with Part 7.2.7.e of the CGP.
- **Retain copies of all inspection reports with your records.** You must also retain in your records copies of all inspection reports in accordance with the requirements in Part 4.7.3 of the 2017 CGP. These reports must be retained for at least 3 years from the date your permit coverage expires or is terminated.

Section-by-Section Instructions
You will find specific instructions corresponding to each section of the report form at the end of this template. These instructions provide you with more details in terms of what EPA expects to be documented in these reports.

Inspection Report for [Insert project name]
NPDES ID No.: [Enter the NPDES ID number that was assigned to your NOI for permit coverage]
Inspection Date: [Click here to select date from drop-down calendar]

General Information					
Weather conditions during inspection	[Enter the weather conditions occurring during the inspection]	**Inspection start time**	[Enter the time you started the inspection.]	**Inspection end time**	[Enter the time you ended the inspection.]
Inspector Name, Title & Contact Information	[Enter the inspector's name, title, and contact information (company name, address, email, and phone).]				
Present Phase of Construction	[Specify the current phase of the project.]				
Inspection Location	[If multiple inspections are required for this project, specify location where this inspection is being conducted. If necessary, complete additional forms for each location.]				

Inspection Frequency *(Note: you may be subject to different inspection frequencies in different areas of the site. Check all that apply)*
Standard Frequency:

☐ Every 7 days

☐ Every 14 days and within 24 hours of a 0.25" rain or the occurrence of runoff from snowmelt sufficient to cause a discharge

Increased Frequency:

☐ Every 7 days and within 24 hours of a 0.25" rain (for areas of sites discharging to sediment or nutrient-impaired waters or to waters designated as Tier 2, Tier 2.5, or Tier 3)

Reduced Frequency:

☐ Twice during first month, no more than 14 calendar days apart; then once per month after first month; (for stabilized areas)

☐ Twice during first month, no more than 14 calendar days apart; then once more within 24 hours of a 0.25" rain (for stabilized areas on "linear construction sites")

☐ Once per month and within 24 hours of a 0.25" rain (for arid, semi-arid, or drought-stricken areas during seasonally dry periods or during drought)

☐ Once per month (for frozen conditions where earth-disturbing activities are being conducted)

Was this inspection triggered by a 0.25" storm event? ☐ Yes ☐ No

If yes, how did you determined whether a 0.25" storm event has occurred?

☐ Rain gauge on site ☐ Weather station representative of site. Specify weather station source: [Enter the source for your weather station data.]

Total rainfall amount that triggered the inspection: [Specify rainfall amount (in inches)]

Was this inspection triggered by the occurrence of runoff from snowmelt sufficient to cause a discharge? ☐ Yes ☐ No

Unsafe Conditions for Inspection

Did you determine that any portion of your site was unsafe for inspection per CGP Part 4.1.5? ☐ Yes ☐ No

If "yes", complete the following:

- Describe the conditions that prevented you from conducting the inspection in this location: [Provide short description of the conditions preventing the inspection.]
- Location where conditions were found: [Specify location(s) on the site where unsafe conditions were found.]

Inspection Report for [Insert project name]
NPDES ID No.: [Enter the NPDES ID number that was assigned to your NOI for permit coverage]
Inspection Date: [Click here to select date from drop-down calendar]

Condition and Effectiveness of Erosion and Sediment (E&S) Controls (CGP Part 2.2)				
Type/Location of E&S Control [insert additional rows if applicable]	**Maintenance Needed?***	**Corrective Action Required?***	**Date on Which Maintenance or Corrective Action First Identified?**	**Notes**
1. [E&S control] [Location]	☐Yes ☐No	☐Yes ☐No	[Enter date]	[Enter notes here]
2. [E&S control] [Location]	☐Yes ☐No	☐Yes ☐No	[Enter date]	[Enter notes here]
3. [E&S control] [Location]	☐Yes ☐No	☐Yes ☐No	[Enter date]	[Enter notes here]
4. [E&S control] [Location]	☐Yes ☐No	☐Yes ☐No	[Enter date]	[Enter notes here]
5. [E&S control] [Location]	☐Yes ☐No	☐Yes ☐No	[Enter date]	[Enter notes here]
6. [E&S control] [Location]	☐Yes ☐No	☐Yes ☐No	[Enter date]	[Enter notes here]
7. [E&S control] [Location]	☐Yes ☐No	☐Yes ☐No	[Enter date]	[Enter notes here]
8. [E&S control] [Location]	☐Yes ☐No	☐Yes ☐No	[Enter date]	[Enter notes here]
9. [E&S control] [Location]	☐Yes ☐No	☐Yes ☐No	[Enter date]	[Enter notes here]
10. [E&S control] [Location]	☐Yes ☐No	☐Yes ☐No	[Enter date]	[Enter notes here]

*** Note:** The permit differentiates between conditions requiring routine maintenance, and those requiring corrective action. The permit requires maintenance in order to keep controls in effective operating condition. Corrective actions are triggered only for specific conditions, which include: 1) A stormwater control needs repair or replacement (beyond routine maintenance) if it is not operating as intended; 2) A stormwater control necessary to comply with the permit was never installed or was installed incorrectly; 3) You become aware that the stormwater controls you have installed and are maintaining are not effective enough for the discharge to meet applicable water quality standards or applicable requirements in Part 3.1; 4) One of the prohibited discharges in Part 1.3 is occurring or has occurred; or 5) EPA requires corrective actions as a result of a permit violation found during an inspection carried out under Part 4.8. If a condition on your site requires a corrective action, you must also fill out a corrective action form found at https://www.epa.gov/npdes/stormwater-discharges-construction-activities#resources. See Part 5 of the permit for more information.

Inspection Report for [Insert project name]
NPDES ID No.: [Enter the NPDES ID number that was assigned to your NOI for permit coverage]
Inspection Date: [Click here to select date from drop-down calendar]

Condition and Effectiveness of Pollution Prevention (P2) Practices (CGP Part 2.3)				
Type/Location of P2 Practices [insert additional rows if applicable]	**Maintenance Needed?***	**Corrective Action Required?***	**Date on Which Maintenance or Corrective Action First Identified?**	**Notes**
1. [P2 practice] [Location]	☐Yes ☐No	☐Yes ☐No	[Enter date]	[Enter notes here]
2. [P2 practice] [Location]	☐Yes ☐No	☐Yes ☐No	[Enter date]	[Enter notes here]
3. [P2 practice] [Location]	☐Yes ☐No	☐Yes ☐No	[Enter date]	[Enter notes here]
4. [P2 practice] [Location]	☐Yes ☐No	☐Yes ☐No	[Enter date]	[Enter notes here]
5. [P2 practice] [Location]	☐Yes ☐No	☐Yes ☐No	[Enter date]	[Enter notes here]
6. [P2 practice] [Location]	☐Yes ☐No	☐Yes ☐No	[Enter date]	[Enter notes here]
7. [P2 practice] [Location]	☐Yes ☐No	☐Yes ☐No	[Enter date]	[Enter notes here]
8. [P2 practice] [Location]	☐Yes ☐No	☐Yes ☐No	[Enter date]	[Enter notes here]
9. [P2 practice] [Location]	☐Yes ☐No	☐Yes ☐No	[Enter date]	[Enter notes here]
10. [P2 practice] [Location]	☐Yes ☐No	☐Yes ☐No	[Enter date]	[Enter notes here]

*** Note:** The permit differentiates between conditions requiring routine maintenance, and those requiring corrective action. The permit requires maintenance in order to keep controls in effective operating condition. Corrective actions are triggered only for specific conditions, which include: 1) A stormwater control needs repair or replacement (beyond routine maintenance) if it is not operating as intended; 2) A stormwater control necessary to comply with the permit was never installed or was installed incorrectly; 3) You become aware that the stormwater controls you have installed and are maintaining are not effective enough for the discharge to meet applicable water quality standards or applicable requirements in Part 3.1; 4) One of the prohibited discharges in Part 1.3 is occurring or has occurred; or 5) EPA requires corrective actions as a result of a permit violation found during an inspection carried out under Part 4.8. If a condition on your site requires a corrective action, you must also fill out a corrective action form found at https://www.epa.gov/npdes/stormwater-discharges-construction-activities#resources. See Part 5 of the permit for more information.

Inspection Report for [Insert project name]
NPDES ID No.: [Enter the NPDES ID number that was assigned to your NOI for permit coverage]
Inspection Date: [Click here to select date from drop-down calendar]

Stabilization of Exposed Soil (CGP Part 2.2.14)			
Stabilization Area [insert additional rows if applicable]	**Stabilization Method**	**Have You Initiated Stabilization?**	**Notes**
1. [Specific location that has been stabilized or to be stabilized]	[Specify type of stabilization]	☐Yes [Enter date] ☐No	[Enter notes here]
2. [Specific location that has been stabilized or to be stabilized]	[Specify type of stabilization]	☐Yes [Enter date] ☐No	[Enter notes here]
3. [Specific location that has been stabilized or to be stabilized]	[Specify type of stabilization]	☐Yes [Enter date] ☐No	[Enter notes here]
4. [Specific location that has been stabilized or to be stabilized]	[Specify type of stabilization]	☐Yes [Enter date] ☐No	[Enter notes here]
5. [Specific location that has been stabilized or to be stabilized]	[Specify type of stabilization]	☐Yes [Enter date] ☐No	[Enter notes here]

Description of Discharges (CGP Part 4.6.6)	
Was a stormwater discharge or other discharge occurring from any part of your site at the time of the inspection? ☐Yes ☐No **If "yes", provide the following information for each point of discharge:**	
Discharge Location [insert additional discharge locations if applicable]	**Observations**
1. [Specify locations on the site where a discharge is occurring.]	Describe the discharge: [Enter text here.] At points of discharge and the channels and banks of surface waters in the immediate vicinity, are there any visible signs of erosion and/or sediment accumulation that can be attributed to your discharge? ☐Yes ☐No If yes, describe what you see, specify the location(s) where these conditions were found, and indicate whether modification, maintenance, or corrective action is needed to resolve the issue: [Enter text here.]
1. [Specify locations on the site where a discharge is occurring.]	Describe the discharge: [Enter text here.] At points of discharge and the channels and banks of surface waters in the immediate vicinity, are there any visible signs of erosion and/or sediment accumulation that can be attributed to your discharge? ☐Yes ☐No If yes, describe what you see, specify the location(s) where these conditions were found, and indicate whether modification, maintenance, or corrective action is needed to resolve the issue: [Enter text here.]

Inspection Report for [Insert project name]
NPDES ID No.: [Enter the NPDES ID number that was assigned to your NOI for permit coverage]
Inspection Date: [Click here to select date from drop-down calendar]

Contractor or Subcontractor Signature and Certification
"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations." **Signature of Contractor or Subcontractor:** _____ **Date:** **Printed Name and Affiliation:** _____

Operator Signature and Certification
"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations." **Signature of Operator or "Duly Authorized Representative":** _____ **Date:** **Printed Name and Affiliation:** _____

Instructions for Filling Out "General Information" Section on Page 1

Weather Conditions During Inspection
Enter the weather conditions occurring during the inspection, e.g., sunny, overcast, light rain, heavy rain, snowing, icy, windy.

Inspection start and end times
Enter the time you started and ended the inspection.

Inspector Name, Title & Contact Information
Provide the name of the person(s) (either a member of your company's staff or a contractor or subcontractor) that conducted this inspection. Provide the inspector's name, title, and contact information as directed in the form.

Present Phase of Construction
If this project is being completed in more than one phase, indicate which phase it is currently in.

Inspection Location
If your project has multiple locations where you conduct separate inspections, specify the location where this inspection is being conducted. If only one inspection is conducted for your entire project, enter "Entire Site." If necessary, complete additional inspection report forms for each separate inspection location.

Inspection Frequency
Check the box that describes the inspection frequency that applies to you. Note that you may be subject to different inspection frequencies in different areas of your site. If your project does not discharge to a "sensitive water" (i.e., a water impaired for sediment or nutrients, or listed as Tier 2, 2.5, or 3 by your state or tribe) and you are not affected by any of the circumstances described in CGP Part 4.4, then you can choose your frequency based on CGP Part 4.2 – either every 7 calendar days, or every 14 calendar days and within 24 hours of a 0.25-inch storm event. For any portion of your site that discharges to a sensitive water, your inspection frequency for that area is fixed under CGP Part 4.3 at every 7calendar days and within 24 hours of a 0.25-inch storm event. If portions of your site are stabilized, are located in arid, semi-arid, or drought-stricken areas, or are subject to frozen conditions, consult CGP Part 4.4 for the applicable inspection frequency. Check all the inspection frequencies that apply to your project.

Was This Inspection Triggered by a 0.25 Inch Storm Event or the occurrence of runoff from snowmelt sufficient to cause a discharge?
If you were required to conduct this inspection because of a 0.25-inch (or greater) rain event, indicate whether you relied on an on-site rain gauge or a nearby weather station (and where the weather station is located). Also, specify the total amount of rainfall for this specific storm event. If you were required to conduct this inspection because of the occurrence of runoff from snowmelt, then check the appropriate box.

Unsafe Conditions for Inspection
Inspections are not required where a portion of the site or the entire site is subject to unsafe conditions. See CGP Part 4.5. These conditions should not regularly occur, and should not be consistently present on a site. Generally, unsafe conditions are those that render the site (or a portion of it) inaccessible or that would pose a significant probability of injury to applicable personnel. Examples could include severe storm or flood conditions, high winds, and downed electrical wires.

If your site, or a portion of it, is affected by unsafe conditions during the time of your inspection, provide a description of the conditions that prevented you from conducting the inspection and what parts of the site were affected. If the entire site was considered unsafe, specify the location as "Entire site"

Instructions for Filling Out the "Erosion and Sediment Control" Table on Page 2

Type and Location of E&S Controls
Provide a list of all erosion and sediment (E&S) controls that your SWPPP indicates will be installed and implemented at your site. This list must include at a minimum all E&S controls required by CGP Part 2.2. Include also any natural buffers established under CGP Part 2.2.1. Buffer requirements apply if your project's earth-disturbing activities will occur within 50 feet of a water of the U.S. You may group your E&S controls on your form if you have several of the same type of controls (e.g., you may group "Inlet Protection Measures", "Perimeter Controls", and "Stockpile Controls" together on one line), but if there are any problems with a specific control, you must separately identify the location of the control, whether maintenance or corrective action is necessary, and in the notes section you must describe the specifics about the problem you observed.

Maintenance Needed?
Answer "yes" if the E&S control requires maintenance due to normal wear and tear in order for the control to continue operating effectively. At a minimum, maintenance is required in the following specific instances: (1) for perimeter controls, whenever sediment has accumulated to half or more the above-ground height of the control (CGP Part 2.2.3.a); (2) where sediment has been tracked-out onto the surface of off-site streets or other paved areas (CGP Part 2.2.4); (3) for inlet protection measures, when sediment accumulates, the filter becomes clogged, and/or performance is compromised (CGP Part 2.2.10); and (4) for sediment basins, as necessary to maintain at least half of the design capacity of the basin (CGP Part 2.2.12.f). Note: In many cases, "yes" answers are expected and indicate a project with an active operation and maintenance program. You should also answer "yes" if work to fix the problem is still ongoing from the previous inspection.

Corrective Action Needed?
Answer "yes" if during your inspection you found any of the following conditions to be present (CGP, Part 5.1): (1) a required E&S control needs repair or replacement (beyond routine maintenance required under Part 2.1.4); (2) a require E&S control was never installed or was installed incorrectly; (3) you become aware that the inadequacy of the E&S control has led to an exceedance of an applicable water quality standard; (4) one of the prohibited discharges in Part 1.3 is occurring or has occurred; or (5) EPA requires corrective action for an E&S control as a result of a permit violation found during an inspection carried out under Part 4.8. If you answer "yes", you must take corrective action and complete a corrective action report, found at https://www.epa.gov/npdes/stormwater-discharges-construction-activities#resources.. Note: You should answer "yes" if work to fix the problem from a previous inspection is still ongoing.

Date on Which Maintenance or Corrective Action First Identified?
Provide the date on which the condition that triggered the need for maintenance or corrective action was first identified. If the condition was just discovered during this inspection, enter the inspection date. If the condition is a carryover from a previous inspection, enter the original date of the condition's discovery.

Notes
For each E&S control and the area immediately surrounding it, note whether the control is properly installed and whether it appears to be working to minimize sediment discharge. Describe any problem conditions you observed such as the following, and why you think they occurred as well as actions (e.g., maintenance or corrective action) you will take or have taken to fix the problem:

1. Failure to install or to properly install a required E&S control
2. Damage or destruction to an E&S control caused by vehicles, equipment, or personnel, a storm event, or other event
3. Mud or sediment deposits found downslope from E&S controls
4. Sediment tracked out onto paved areas by vehicles leaving construction site
5. Noticeable erosion at discharge outlets or at adjacent streambanks or channels
6. Erosion of the site's sloped areas (e.g., formation of rills or gullies)
7. E&S control is no longer working due to lack of maintenance

For buffer areas, make note of whether they are marked off as required, whether there are signs of construction disturbance within the buffer, which is prohibited under the CGP, and whether there are visible signs of erosion resulting from discharges through the area.

If maintenance or corrective action is required, briefly note the reason. If maintenance or corrective action have been completed, make a note of the date it was completed and what was done. *If corrective action is required, note that you will need to complete a separate corrective action report describing the condition and your work to fix the problem*.

Instructions for Filling Out the "Pollution Prevention (P2) Practice" Table on Page 3

Type and Location of P2 Controls
Provide a list of all pollution prevention (P2) practices that are implemented at your site. This list must include all P2 practices required by Part 2.3, and those that are described in your SWPPP.

Maintenance Needed?
Answer "yes" if the P2 practice requires maintenance due to normal wear and tear in order for the control to continue operating effectively. Note: In many cases, "yes" answers are expected and indicate a project with an active operation and maintenance program.

Corrective Action Needed?
Answer "yes" if during your inspection you found any of the following conditions to be present (CGP, Part 5.1): (1) a required P2 practice needs repair or replacement (beyond routine maintenance required under Part 2.1.4); (2) a require P2 practice was never installed or was installed incorrectly; (3) you become aware that the inadequacy of the P2 practice has led to an exceedance of an applicable water quality standard; (4) one of the "prohibited discharges" listed in CGP Part 1.3 is occurring or has occurred, or (5) EPA requires corrective action for a P2 practice as a result of a permit violation found during an inspection carried out under Part 4.8. If you answer "yes", you must take corrective action and complete a corrective action report (see https://www.epa.gov/npdes/stormwater-discharges-construction-activities#resources). Note: You should answer "yes" if work to fix the problem from a previous inspection is still ongoing.

Date on Which Maintenance or Corrective Action First Identified?
Provide the date on which the condition that triggered the need for maintenance or corrective action was first identified. If the condition was just discovered during this inspection, enter the inspection date. If the condition is a carryover from a previous inspection, enter the original date of the condition's discovery.

Notes
For each P2 control and the area immediately surrounding it, note whether the control is properly installed, whether it appears to be working to minimize or eliminate pollutant discharges, and whether maintenance or corrective action is required. Describe problem conditions you observed such as the following, and why you think they occurred, as well as actions you will take or have taken to fix the problem:

1. Failure to install or to properly install a required P2 control
2. Damage or destruction to a P2 control caused by vehicles, equipment, or personnel, or a storm event
3. Evidence of a spill, leak, or other type of pollutant discharge, or failure to have properly cleaned up a previous spill, leak, or other type of pollutant discharge
4. Spill response supplies are absent, insufficient, or not where they are supposed to be located
5. Improper storage, handling, or disposal of chemicals, building materials or products, fuels, or wastes
6. P2 practice is no longer working due to lack of maintenance

If maintenance or corrective action is required, briefly note the reason. If maintenance or corrective action have been completed, make a note of the date it was completed and what was done. *If corrective action is required, note that you will need to complete a separate corrective action report describing the condition and your work to fix the problem*.

Instructions for Filling Out the "Stabilization of Exposed Soil" Table on Page 4

Stabilization Area
List all areas where soil stabilization is required to begin because construction work in that area has permanently stopped or temporarily stopped (i.e., work will stop for 14 or more days), and all areas where stabilization has been implemented.

Stabilization Method
For each area, specify the method of stabilization (e.g., hydroseed, sod, planted vegetation, erosion control blanket, mulch, rock).

Have You Initiated Stabilization
For each area, indicate whether stabilization has been initiated.

Notes
For each area where stabilization has been initiated, describe the progress that has been made, and what additional actions are necessary to complete stabilization. Note the effectiveness of stabilization in preventing erosion. If stabilization has been initiated but not completed, make a note of the date it is to be completed. If stabilization has been completed, make a note of the date it was completed. If stabilization has not yet been initiated, make a note of the date it is to be initiated, and the date it is to be completed.

Instructions for Filling Out the "Description of Discharges" Table on Page 4

You are only required to complete this section if a discharge is occurring at the time of the inspection.

Was a Stormwater Discharge Occurring From Any Part of Your Site At The Time of the Inspection?
During your inspection, examine all points of discharge from your site, and determine whether a discharge is occurring. If there is a discharge, answer "yes" and complete the questions below regarding the specific discharge. If there is not a discharge, answer "no" and skip to the next page.

Discharge Location (repeat as necessary if there are multiple points of discharge)
Location of discharge. Specify the location on your site where the discharge is occurring. The location may be an outlet from a stormwater control or constructed stormwater channel, a discharge into a storm sewer inlet, or a specific point on the site. Be as specific as possible; it is recommended that you refer to a precise point on your site map.

Describe the discharge. Include a specific description of any noteworthy characteristics of the discharge such as color; odor; floating, settled, or suspended solids; foam; oil sheen; and other obvious pollution indicators.

Are there visible signs of erosion or sediment accumulation? At each point of discharge and the channel and streambank in the immediate vicinity, visually assess whether there are any obvious signs of erosion and/or sediment accumulation that can be attributed to your discharge. If you answer "yes", include a description in the space provided of the erosion and sediment deposition that you have found, specify where on the site or in the water of the U.S. it is found, and indicate whether modification, maintenance, or corrective action is needed to resolve the issue.

Instructions for Signature/Certification on Page 5

Each inspection report must be signed and certified to be considered complete.

Contractor or Subcontractor Signature and Certification
Where you rely on a contractor or subcontractor to carry out the inspection and complete the inspection report, you should require the inspector to sign and certify each report. Note that this does not relieve you, the permitted operator, of the requirement to sign and certify the inspection report as well.

Operator Signature and Certification
At a minimum, the inspection report must be signed by either (1) the person who signed the NOI, or (2) a duly authorized representative of that person. The following requirements apply to scenarios (1) and (2):

If the signatory will be the person who signed the NOI for permit coverage, as a reminder, that person must be one of the following types of individuals:

- *For a corporation*: A responsible corporate officer. For the purpose of this subsection, a responsible corporate officer means: (i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.
- *For a partnership or sole proprietorship*: A general partner or the proprietor, respectively.
- *For a municipality, state, federal, or other public agency*: Either a principal executive officer or ranking elected official. For purposes of this subsection, a principal executive officer of a federal agency includes (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrator of EPA).

If the signatory will be a duly authorized representative, the following requirements must be met:

- The authorization is made in writing by the person who signed the NOI (see above);
- The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and
- The signed and dated written authorization is included in the SWPPP. A copy must be submitted to EPA, if requested.

Appendix E – Copy of Corrective Action Form

(Note: EPA has developed a sample corrective action form that CGP operators can use. The form is available at https://www.epa.gov/npdes/stormwater-discharges-construction-activities#resources)

2017 Construction General Permit
Corrective Action Report Form – Electronic Version

Purpose
This Corrective Action Report Form is to assist you in preparing corrective action reports for EPA's 2017 Construction General Permit (CGP). If you are covered under EPA's 2017 CGP, you can use this form to create a corrective action report that complies with the minimum reporting requirements of Part 5.4 of the permit.

You are only required to fill out this form if one of the conditions triggering corrective action in Part 5.1 or 5.3 occurs on your site. Routine maintenance is generally not considered to trigger corrective action. Corrective actions are triggered only for specific conditions that are identified below in the "Overview of Corrective Action Requirements."

If you are covered under a state CGP, this form may be helpful in developing a report that can be used for that permit; however, it will need to be modified to meet the specific requirements of the permit. If your permitting authority requires you to use a specific corrective action report form, you should not use this form.

Notes
While EPA has made every effort to ensure the accuracy of all instructions contained in the Corrective Action Report Form, it is the permit, not the form, that determines the actual obligations of regulated construction stormwater discharges. In the event of a conflict between the Corrective Action Report Form and any corresponding provision of the 2017 CGP, you must abide by the requirements in the permit. EPA welcomes comments on the Corrective Action Report Form at any time and will consider those comments in any future revision of this document. You may contact EPA for CGP-related inquiries at cgp@epa.gov.

Overview of Corrective Action Requirements
Construction operators covered under the 2017 CGP are required to conduct corrective actions and report on progress made in correcting the problem condition(s) in accordance with the following requirements:

Conditions Triggering Corrective Action (Parts 5. 1 and 5.3)
Corrective action is required whenever any of the following conditions occur at your site:

- A stormwater control needs repair or replacement (beyond routine maintenance required under Part 2.1.4); or
- A stormwater control necessary to comply with the requirements of this permit was never installed, or was installed incorrectly; or
- Discharges are causing an exceedance of applicable water quality standards; or
- A Part 1.3 prohibited discharge has occurred; or
- EPA requires corrective action as a result of permit violations found during an inspection carried out under Part 4.8.

Deadlines for Completing Corrective Actions (Part 5.2)
For any condition triggering corrective action:

- You must immediately take all reasonable steps to address the condition (e.g. cleaning up contaminated surfaces so the material(s) is not discharged in subsequent storm events);
- If the problem does not require a new or replacement control or significant repair, you must complete the corrective action by the close of the next business day
- If the problem does require a new or replacement control or significant repair, you must complete corrective action (e.g., installing and making operational any new or modified control, completing repairs) by no later than 7 calendar days from the time of discovery of the condition. If infeasible to complete the installation or repair within 7 calendar days, you must document why it is infeasible and document your schedule for completing the corrective action as soon as practicable. If any of these actions result in changes to the stormwater controls documented in your SWPPP, you must modify your SWPPP within 7 calendar days.

Deadlines for Documenting Corrective Actions in a Report (Part 5.4)

You are required to complete a corrective action report for each corrective action you take in accordance with the following deadlines.

- Within 24 hours of *identifying* the corrective action condition, you must document the following:
  - The condition identified at your site; and
  - The date and time you identified the condition

- Within 24 hours of completing the corrective action, you must document the following:
  - The actions you took to address the condition, and
  - Whether any SWPPP modifications are required.

Instructions for Using This Report Form

This Electronic Version of the Corrective Action Report Form is intended to be filled out electronically. If you will be filling out the Corrective Action Report Form by hand (i.e., you will be filling this form out in the field), please use the Field Version of the Corrective Action Report Form available at https://www.epa.gov/npdes/stormwater-discharges-construction-activities#resources.

The following tips for using this form will help you ensure that the minimum permit requirements are met:

- **Review the corrective action requirements.** Before you fill out this corrective action report form, read the CGP's Part 5 corrective action requirements. This will ensure that you have a working understanding of the permit's underlying corrective action requirements.

- **Complete a separate report for each condition that triggers corrective action.** For each triggering condition on your site, you will need to fill out a separate corrective action report form.

- **Complete all required text fields.** Fill out all text fields (marked with blue font). Only by filling out all fields will the form be compliant with the requirements of the permit. (Note: Where you do not need the number of rows provided in the corrective action report form, you may delete these as you see fit. Or, if you need more space to document your findings, you may insert additional rows.) Specific instructions on what information to include is indicated in each text field. The fields were developed so that the instructions disappear once you start typing.
- **Sign and certify each corrective action report.** The operator or a duly authorized representative (see Appendix I, Part I.11.2) must sign and certify each corrective action report form for it to be considered complete. Where a contractor or subcontractor carries out your corrective actions, it is recommended that you also have that individual sign and certify the form, in addition to the signature and certification required of the permitted operator. The form includes a signature block for both parties.
- **Include the corrective action report form with your SWPPP.** Once your form is complete, make sure to include a copy of the corrective action report form in your SWPPP in accordance with Part 7.2.7.eof the CGP.
- **Retain copies of all corrective action reports with your records.** You must retain copies of your corrective action reports in your records in accordance with the requirements in Part 5.4.4 of the 2017 CGP. These reports must be retained for at least 3 years from the date your permit coverage expires or is terminated.

Section-by-Section Instructions

You will find specific instructions corresponding to each section of the report form at the end of this form. These instructions were written in order to provide you with more details in terms of what EPA expects to be documented in these reports.

Corrective Action Report for [Insert project name]
NPDES ID No.: [Enter the NPDES ID number that was assigned to your NOI for permit coverage]
Date: [Click here to select today's date from drop-down calendar]

Section A – Initial Report (CGP Part 5.4.1)

(Complete this section within 24 hours of discovering the condition that triggered corrective action)

Date problem first discovered: [Enter date]

Time discovered: [Enter time]

Name and contact information of individual completing this form: [Enter the individual's name, title, and contact information (company name, address, email, and phone).]

What site conditions triggered the requirement to conduct corrective action *(check the box that applies)*:

- ☐ A stormwater control needs repair or replacement (beyond routine maintenance required under Part 2.1.4)
- ☐ A stormwater control necessary to comply with the requirements of this permit was never installed, or was installed incorrectly
- ☐ A discharge is causing an exceedance of applicable water quality standards
- ☐ A Part 1.3 prohibited discharge has occurred
- ☐ EPA requires corrective action as a result of permit violations found during an EPA inspection carried out under Part 4.8

Provide a description of the problem: [Provide description of the specific problem that triggered the need for corrective action, and the specific location where it was found. If you have already provided this explanation in an inspection report, you can refer to that report.]

Deadline for completing corrective action *(check the box that applies)*:

- ☐ Immediately take all reasonable steps to address the condition, including cleaning up any contaminated surfaces so the material will not discharge in subsequent storm events
- ☐ Complete by close of the next business day when problem does not require a new or replacement control or significant repair
- ☐ No later than 7 calendar days from the time of discovery for problems that require a new or replacement control or significant repair
- ☐ Infeasible to complete the installation or repair within 7 calendar days. Explain why it is infeasible and document schedule for installing control:

Enter date of corrective action completion: _____

Section B – Corrective Action Completion (CGP Part 5.4.2)

(Complete this section no later than 24 hours after completing the corrective action)

Section B.1 – Why the Problem Occurred

Cause(s) of Problem (Insert additional rows if applicable)	**How You Determined the Cause and the Date You Determined the Cause**
1. [State what you determined to be the cause of the problem]	[Specify what you did to come to your conclusion] [Enter date]
2. [State what you determined to be the cause of the problem]	[Specify what you did to come to your conclusion] [Enter date]

Section B.2 – Stormwater Control Modifications Implemented to Correct the Problem

List of Stormwater Control Modification(s) Needed to Correct Problem (insert additional rows if applicable)	**Date of Completion**	**SWPPP Update Necessary?**	**Notes**
1. [Specific modification to be implemented]	[Enter date]	☐ Yes ☐ No [If yes, specify date SWPPP modified]	[Enter text here]

2. [Specific modification to be implemented]	[Enter date]	☐ Yes ☐ No [If yes, specify date SWPPP modified]	[Enter text here]

Section C –Signature and Certification (CGP Part 5.4.3)

Section C.1 – Contractor or Subcontractor Signature and Certification

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature of Contractor or Subcontractor: _____

Date:

Printed Name and Affiliation: _____

Section C.2 – Operator Signature and Certification

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature of Operator or "Duly Authorized Representative": _____

Date:

Printed Name and Affiliation: _____

Instructions for Filling Out the Initial Report (Section A) on Page 1

You must complete Section A of the report form within 24 hours of discovering the condition that triggered corrective action

Date/Time Problem First Discovered
Specify the date on which the triggering condition was first discovered. Also specify the time of the discovery.

Name/Contact Information
Provide the individual's name, title, and contact information as directed in the form.

Site Condition That Triggered Corrective Action
Under the CGP, corrective action is required when one of 4 triggering conditions occurs at your site or when EPA requires a corrective action as a result of a permit violation found during an EPA inspection. See CGP Parts 5.1 and 5.3. Check the box that corresponds to the condition that triggered this corrective action.

Description of the Site Condition
Provide a summary description of the condition you found that triggered corrective action under CGP Part 5.2.1. and the specific location where it was found. Be as specific as possible about the location; it is recommended that you refer to a precise point on your site map. If you have already provided this explanation in an inspection report, you can refer to that report.

Deadline for Completing Corrective Action
This deadline is fixed in CGP Part 5.2. For all projects, the deadlines are: (1) immediately take all reasonable steps; (2) by the close of the next business day when the problem does not require significant repair or replacement; (3) no more than 7 calendar days after the date you discovered the problem when the problem does require significant repair or replacement, or (4) if it is infeasible to complete work within the first 7 days, as soon as practicable following the 7th day. If your estimated date of completion falls after the 7-day deadline consistent with (3), above, explain (a) why you believe it is infeasible to complete work within 7 days, and (b) why the date you have established for making the new or modified stormwater control operational is the soonest practicable timeframe.

Instructions for Filling Out the Corrective Action Completion Table (Section B) on Page 1

You must complete Section B of the report form no later than 24 hours after completing the correction action.

Section B.1 – Why the Problem Occurred
After you have had the opportunity to examine the problem more closely, provide details as to what you believe to be the cause of the problem, and specify the follow-up actions you took (along with the dates of such actions) to diagnose the problem. This is consistent with CGP Part 5.4.2.1.

Section B.2 – Stormwater Control Modifications Implemented
Provide a list of modifications you made to your stormwater controls to correct the problem and the date you completed such work. Keep in mind that your work must be completed within the timeline specified in Section A for the completion of corrective action work.

Also, if a SWPPP modification is necessary consistent with Part 7.4.1.a in order to reflect changes implemented at your site, indicate the date you modified your SWPPP. Keep in mind that SWPPP changes must be made within 7 days of discovering the problem that triggered this corrective action.

Space is provided for you to include additional notes or observations regarding the change that you implemented at your site to correct the problem.

Instructions for Signature and Certification (Section C) on Page 2

Each corrective action report must be signed and certified to be considered complete.

Section C.1 – Contractor or Subcontractor Signature and Certification
Where you rely on a contractor or subcontractor to complete this report and the associated corrective action, you should require the individual(s) to sign and certify each report. Note that this does not relieve you, the permitted operator, of the requirement to sign and certify the report as well.

Section C.2 – Operator Signature and Certification
At a minimum, the corrective action report form must be signed by either (1) the person who signed the NOI, or (2) a duly authorized representative of that person. The following requirements apply to scenarios (1) and (2):

If the signatory will be the person who signed the NOI for permit coverage, as a reminder, that person must be one of the following types of individuals:

- *For a corporation*: A responsible corporate officer. For the purpose of this subsection, a responsible corporate officer means: (i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.
- *For a partnership or sole proprietorship*: A general partner or the proprietor, respectively.
- *For a municipality, state, federal, or other public agency*: Either a principal executive officer or ranking elected official. For purposes of this subsection, a principal executive officer of a federal agency includes (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrator of EPA).

If the signatory will be a duly authorized representative, the following requirements must be met:

- The authorization is made in writing by the person who signed the NOI (see above);
- The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and
- The signed and dated written authorization is included in the SWPPP. A copy must be submitted to EPA, if requested.

Appendix F – SWPPP Amendment Log

Instructions (see CGP Part 7.4):

- Create a log here of changes and updates to the SWPPP. You may use the table below to track these modifications.
- SWPPP modifications are required pursuant to CGP Part 7.4.1 in the following circumstances:
  - ✓ Whenever new operators become active in construction activities on your site, or you make changes to your construction plans, stormwater controls, or other activities at your site that are no longer accurately reflected in your SWPPP;
  - ✓ To reflect areas on your site map where operational control has been transferred (and the date of transfer) since initiating permit coverage;
  - ✓ If inspections or investigations determine that SWPPP modifications are necessary for compliance with this permit;
  - ✓ Where EPA determines it is necessary to install and/or implement additional controls at your site in order to meet requirements of the permit; and
- To reflect any revisions to applicable federal, state, tribal, or local requirements that affect the stormwater control measures implemented at the site.
- If applicable, if a change in chemical treatment systems or chemically-enhanced stormwater control is made, including use of a different treatment chemical, different dosage rate, or different area of application.

No.	Description of the Amendment	Date of Amendment	Amendment Prepared by [Name(s) and Title]

Appendix G – Subcontractor Certifications/Agreements

SUBCONTRACTOR CERTIFICATION
STORMWATER POLLUTION PREVENTION PLAN

Project Number: _____

Project Title: ***Area A-7 Police Station*** _____

Operator(s): _____

As a subcontractor, you are required to comply with the Stormwater Pollution Prevention Plan (SWPPP) for any work that you perform on-site. Any person or group who violates any condition of the SWPPP may be subject to substantial penalties or loss of contract. You are encouraged to advise each of your employees working on this project of the requirements of the SWPPP. A copy of the SWPPP is available for your review at the office trailer.

Each subcontractor engaged in activities at the construction site that could impact stormwater must be identified and sign the following certification statement:

I certify under the penalty of law that I have read and understand the terms and conditions of the SWPPP for the above designated project and agree to follow the practices described in the SWPPP.

This certification is hereby signed in reference to the above named project:

Company: _____

Address: _____

Telephone Number: _____

Type of construction service to be provided: _____

_____

_____

Signature: _____

Title: _____

Date: _____

Appendix H – Grading and Stabilization Activities Log

Date Grading Activity Initiated	**Description of Grading Activity**	**Description of Stabilization Measure and Location**	**Date Grading Activity Ceased** (Indicate Temporary or Permanent)	**Date When Stabilization Measures Initiated**
			☐ Temporary ☐ Permanent	
			☐ Temporary ☐ Permanent	
			☐ Temporary ☐ Permanent	
			☐ Temporary ☐ Permanent	
			☐ Temporary ☐ Permanent	
			☐ Temporary ☐ Permanent	
			☐ Temporary ☐ Permanent	
			☐ Temporary ☐ Permanent	

Appendix I – SWPPP Training Log

Stormwater Pollution Prevention Training Log

Project Name: **Area A-7 Police Station**

Project Location: **338 East Eagle Street, Boston, MA 02128**

Instructor's Name(s):

Instructor's Title(s):

Course Location: _____ Date: _____

Course Length (hours): _____

Stormwater Training Topic: *(check as appropriate)*

- ☐ **Sediment and Erosion Controls**
- ☐ **Stabilization Controls**
- ☐ **Pollution Prevention Measures**
- ☐ **Emergency Procedures**
- ☐ **Inspections/Corrective Actions**

Specific Training Objective:_____

_____

Attendee Roster: *(attach additional pages as necessary)*

No.	Name of Attendee	Company
1		
2		
3		
4		
5		
6		
7		
8		

Appendix J – Delegation of Authority Form

Delegation of Authority

I, _____ (name), hereby designate the person or specifically described position below to be a duly authorized representative for the purpose of overseeing compliance with environmental requirements, including the Construction General Permit (CGP), at the _____ construction site. The designee is authorized to sign any reports, stormwater pollution prevention plans and all other documents required by the permit.

_____ (name of person or position)
_____ (company)
_____ (address)
_____ (city, state, zip)
_____ (phone)

By signing this authorization, I confirm that I meet the requirements to make such a designation as set forth in Appendix I of EPA's CGP, and that the designee above meets the definition of a "duly authorized representative" as set forth in Appendix I.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: _____

Company: _____

Title: _____

Signature: _____

Date: _____

Appendix K – Endangered Species Documentation

Appendix L – Historic Preservation Documentation

Appendix M – TMDL Documentation

Waterbody Quality Assessment Report

Return to home page

2014 Waterbody Report for Chelsea River

On This Page

State: Massachusetts
Waterbody ID: MA71-06
Location: From confluence with Mill Creek, Chelsea/Revere to confluence with Boston Inner Harbor, Chelsea/East Boston/Charlestown.
State Waterbody Type: Estuary
EPA Waterbody Type: Bays and Estuaries
Water Size: .38
Units: square miles

Watershed Name: Charles

Waterbody History Report

Data are also available for these years:
2012 2010 2006 2004 2002 1998

Water Quality Assessment Status for Reporting Year 2014

The overall status of this waterbody is Impaired.

Description of this table

Designated Use	Designated Use Group	Status
Aesthetic	Aesthetic Value	Impaired
Fish Consumption	Aquatic Life Harvesting	Impaired
Fish, Other Aquatic Life And Wildlife	Fish, Shellfish, And Wildlife Protection And Propagation	Impaired
Primary Contact Recreation	Recreation	Impaired
Secondary Contact Recreation	Recreation	Impaired
Shellfish Harvesting	Aquatic Life Harvesting	Impaired

Causes of Impairment for Reporting Year 2014

Description of this table

Cause of Impairment	Cause of Impairment Group	Designated Use(s)	State TMDL Development Status
Ammonia, Un-ionized	Ammonia	Fish, Other Aquatic Life And Wildlife	TMDL needed
Debris/Floatables/Trash	Trash	Primary Contact Recreation, Aesthetic, Secondary Contact Recreation	Non-pollutant impairment
Dissolved Oxygen	Organic Enrichment/Oxygen Depletion	Fish, Other Aquatic Life And Wildlife	TMDL needed
Fecal Coliform	Pathogens	Primary Contact Recreation, Shellfish Harvesting, Secondary Contact Recreation	TMDL needed

Other Cause	Other Cause	Fish Consumption	TMDL needed
PCB(s) in Fish Tissue	Polychlorinated Biphenyls (PCBs)	Fish Consumption	TMDL needed
Petroleum Hydrocarbons	Oil and Grease	Primary Contact Recreation, Secondary Contact Recreation, Fish, Other Aquatic Life And Wildlife, Aesthetic	TMDL needed
Sediment Screening Value (Exceedence)	Total Toxics	Fish, Other Aquatic Life And Wildlife	TMDL needed
Taste and Odor	Taste, Color and Odor	Aesthetic, Primary Contact Recreation, Secondary Contact Recreation	TMDL needed
Turbidity	Turbidity	Aesthetic, Primary Contact Recreation, Secondary Contact Recreation	TMDL needed

Probable Sources Contributing to Impairment for Reporting Year 2014

Description of this table

Probable Source	Probable Source Group	Cause(s) of Impairment
Above Ground Storage Tank Leaks (Tank Farms)	Spills/Dumping	Petroleum Hydrocarbons; Sediment Screening Value (Exceedence)
Accidental Release/Spill	Spills/Dumping	Petroleum Hydrocarbons; Sediment Screening Value (Exceedence)
Cargo Loading/Unloading	Commercial Harbor And Port Activities	Petroleum Hydrocarbons; Sediment Screening Value (Exceedence)
Combined Sewer Overflows	Municipal Discharges/Sewage	Ammonia, Un-ionized; Debris/Floatables/Trash; Dissolved Oxygen; Fecal Coliform; Petroleum Hydrocarbons; Taste and Odor; Turbidity
Contaminated Sediments	Legacy/Historical Pollutants	Ammonia, Un-ionized; Dissolved Oxygen; Other Cause; PCB(s) in Fish Tissue; Petroleum Hydrocarbons
Industrial Point Source Discharge	Industrial	Ammonia, Un-ionized; Debris/Floatables/Trash; Dissolved Oxygen; Fecal Coliform; Petroleum Hydrocarbons; Taste and Odor; Turbidity

Municipal (Urbanized High Density Area)	Urban-Related Runoff/Stormwater	Petroleum Hydrocarbons; Sediment Screening Value (Exceedence)
Source Unknown	Unknown	Fecal Coliform; Other Cause; PCB(s) in Fish Tissue
Unspecified Urban Stormwater	Urban-Related Runoff/Stormwater	Ammonia, Un-ionized; Debris/Floatables/Trash; Dissolved Oxygen; Fecal Coliform; Petroleum Hydrocarbons; Taste and Odor; Turbidity

TMDLs That Apply to this waterbody

No TMDL data have been recorded by EPA for this waterbody.

Previous Causes of Impairments Now Attaining All Uses

No causes of impairment are recorded as attaining all uses for this waterbody.

October 19, 2018

Appendix N – Rainfall Gauge Recording

Use the table below to record the rainfall gauge readings at the beginning and end of each work day. An example table follows.

Month/Year			Month/Year			Month/Year		
Day	Start time	End time	Day	Start time	End time	Day	Start time	End time
1			1			1		
2			2			2		
3			3			3		
4			4			4		
5			5			5		
6			6			6		
7			7			7		
8			8			8		
9			9			9		
10			10			10		
11			11			11		
12			12			12		
13			13			13		
14			14			14		
15			15			15		
16			16			16		
17			17			17		
18			18			18		
19			19			19		
20			20			20		
21			21			21		
22			22			22		
23			23			23		
24			24			24		
25			25			25		
26			26			26		
27			27			27		
28			28			28		
29			29			29		
30			30			30		
31			31			31		

Example Rainfall Gauge Recording

April 2017			May 2017			June 2017		
Day	7:00 am	4:400 pm	Day	7:00 am	4:00 pm	Day	7:00 am	4:00 pm
1	--	--	1	0.2	0	1	0	0.4
2	--	--	2	0	0	2	0	0
3	0	0	3	0.1	0.3	3	--	--
4	0	0.3	4	0	0	4	--	--
5	0	0	5	0	0	5	0	0

In this example (for only partial months), 0.25-inch rainfall inspections would have been conducted on April 4 and June 1.

Appendix O – Specifications

Appendix P – Permits