Nitsch Engineering

October 24, 2018

NOTICE OF INTENT

Under the *Wetlands Protection Act* (M.G.L. c. 131, §40),
the *Rivers Protection Act* (M.G.L. c. 256, Acts of 1996)
and their Regulations (310 CMR 10.00),

For

FAN PIER PARCEL E
10 Fan Pier Boulevard
Boston, Massachusetts 02210

Prepared for:

THE FALLON COMPANY
One Marina Park Drive
Boston, MA 02210

Prepared by:

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

Nitsch Project #6266.92

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SECTION 1

NOTICE OF INTENT FORMS

WPA Form 3 - Notice of Intent
NOI Wetland Fee Transmittal Form
Climate Change Resiliency and Preparedness Checklist
Copy of Checks

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

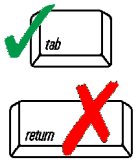
Provided by MassDEP:

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):

10 Fan Pier Boulevard — a. Street Address
Boston — b. City/Town
02110 — c. Zip Code

Latitude and Longitude:
42.354 — d. Latitude
-71.045 — e. Longitude

Ward 06 — f. Assessors Map/Plat Number
02671-027 — g. Parcel /Lot Number

2. Applicant:

Richard — a. First Name
Martini — b. Last Name
The Fallon Company — c. Organization
One Marina Park Drive — d. Street Address
Boston — e. City/Town
MA — f. State
02210 — g. Zip Code
617-737-4100 — h. Phone Number
i. Fax Number
rmartini@falloncompany.com — j. Email Address

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

Linda — a. First Name
Houston — b. Last Name
Ten Fan Pier Boulevard LLC, c/o Barings — c. Organization
One Marina Park Drive — d. Street Address
Boston — e. City/Town
MA — f. State
02210 — g. Zip Code
860-368-2813 — h. Phone Number
i. Fax Number
linda.houston@barings.com — j. Email address

4. Representative (if any):

John — a. First Name
Schmid — b. Last Name
Nitsch Engineering, Inc. — c. Company
2 Center Plaza, Suite 430 — d. Street Address
Boston — e. City/Town
MA — f. State
02108 — g. Zip Code
617-338-0063 — h. Phone Number
617-338-6472 — i. Fax Number
jschmid@nitscheng.com — j. Email address

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

$1,050* — a. Total Fee Paid
$512.50 — b. State Fee Paid
$1,500.00 (maximum per BCC) — c. City/Town Fee Paid

A. General Information (continued)

6. General Project Description:

The Project includes the demolition of a parking lot and associated pavement, landscaping, and utilities and the construction of a new 17 story building, underground parking garage, proposed roadways, and associated improvements.

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)
Suffolk	
c. Book	d. Page Number
47884	159

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.

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	1. Name of Waterway (if available) - **specify coastal or inland**	

2. Width of Riverfront Area (check one):

   ☐ 25 ft. - Designated Densely Developed Areas only

   ☐ 100 ft. - New agricultural projects only

   ☐ 200 ft. - All other projects

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

4. Proposed alteration of the Riverfront Area:

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

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

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

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

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

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

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
f. ☐ Coastal Banks	1. linear feet	
g. ☐ Rocky Intertidal Shores	1. square feet	
h. ☐ Salt Marshes	1. square feet	2. sq ft restoration, rehab., creation
i. ☐ Land Under Salt Ponds	1. square feet 2. cubic yards dredged	
j. ☐ Land Containing Shellfish	1. square feet	
k. ☐ Fish Runs	Indicate size under Coastal Banks, inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above 1. cubic yards dredged	
l. ☒ Land Subject to Coastal Storm Flowage	44,602 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

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 Notice of Intent – Required Actions (310 CMR 10.11).

Streamlined Massachusetts Endangered Species Act/Wetlands Protection Act Review

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

   a. ☐ Yes ☒ No

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

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

   b. Date of map

   If *yes*, the project is also subject to Massachusetts Endangered Species Act (MESA) review (321 CMR 10.18). To qualify for a streamlined, 30-day, MESA/Wetlands Protection Act review, please complete Section C.1.c, and include requested materials with this Notice of Intent (NOI); *OR* complete Section C.1.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.

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
1213 Purchase Street – 3rd Floor
New Bedford, MA 02740-6694
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.

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.

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.

Fan Pier Parcel E Design Drawings
a. Plan Title

Nitsch Engineering | John Schmid, PE
b. Prepared By | c. Signed and Stamped by

October 1, 2018 | 1"=20'
d. Final Revision Date | e. Scale

Stormwater Report | October 30, 2018
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:

1033 | 10/23/2018
2. Municipal Check Number | 3. Check date

1034 | 10/23/2018
4. State Check Number | 5. Check date

Ten Fan Pier Boulevard LLC
6. Payor name on check: First Name

7. Payor name on check: Last Name

F. Signatures and Submittal Requirements

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

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

1. Signature of Applicant	2. Date 10/23/18
3. Signature of Property Owner (if different) Linda Houston	4. Date 10/23/18
5. Signature of Representative (if any)	6. Date 10-24-18

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.

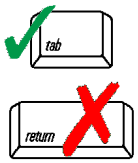
The original and copies must be sent simultaneously. Failure by the applicant to send copies in a timely manner may result in dismissal of the Notice of Intent.

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

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



A. Applicant Information

1. Location of Project:

10 Fan Pier Boulevard	Boston
a. Street Address	b. City/Town
1034	$512.50
c. Check number	d. Fee amount

2. Applicant Mailing Address:

Richard		Martini
a. First Name		b. Last Name
The Fallon Company		
c. Organization		
One Marina Park Drive		
d. Mailing Address		
Boston	MA	02210
e. City/Town	f. State	g. Zip Code
617-737-4100		rmartini@falloncompany.com
h. Phone Number	i. Fax Number	j. Email Address

3. Property Owner (if different):

Linda		Houston
a. First Name		b. Last Name
Ten Fan Pier Boulevard, LLC c/o Barings		
c. Organization		
One Marina Park Drive		
d. Mailing Address		
Boston	MA	02210
e. City/Town	f. State	g. Zip Code
860-368-2813		linda.houston@barings.com
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 3 - Building and Site	1	$1,050	$1,050

Step 5/Total Project Fee: $1,050

Step 6/Fee Payments:

Total Project Fee:	$1,050 a. Total Fee from Step 5
State share of filing Fee:	$512.50 b. 1/2 Total Fee **less $**12.50
City/Town share of filling Fee:	$1,500.00 (maximum per BCC)

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.)

SECTION 2

PROJECT NARRATIVE

PROJECT NARRATIVE CONTENTS

1.0 EXECUTIVE SUMMARY

On behalf of the Applicant, The Fallon Company, Nitsch Engineering is filing the enclosed Notice of Intent (NOI) with the City of Boston Conservation Commission for the demolition of a temporary parking lot and associated pavement, landscaping, and utilities and the construction of a new 17 story building, proposed roadways, and associated improvements, which are partially located within the buffer zone to jurisdictional wetland resource areas. The purpose of this NOI Application is to receive an Order of Conditions from the City of Boston Conservation Commission approving the proposed project under the *Wetlands Protection Act* (M.G.L. c. 131, §40), the *Rivers Protection Act* (M.G.L. c. 256, Acts of 1996) and their Regulations (310 CMR 10.00).

The Project site is approximately 59,000 square feet, or 1.35 acres located near Northern Avenue in the Fan Pier area of Boston, Massachusetts. The site is situated with the recently constructed Parcel D building and the new Fan Pier to the north, Boston Harbor to the east, the building at one Marina Park Drive to the south, and the Parcel B building to the west.

The existing site currently has a temporary parking area that has been used as a staging area for other construction in the area. Prior to the temporary parking area and fencing, the site was used as a parking lot and was completely impervious.

The Applicant is proposing the removal of the temporary parking area, and associated fencing and minor site improvements, and the construction of a new building with an underground parking garage, new roadways, and associated utilities. The proposed 17 story building will take up 20,889 square feet of the site. The building will contain both civic space and retail space on the lower floors and will contain office space on the remaining floors.

A portion of the proposed work will take place along the seawall (Coastal Bank), within the 100-foot Buffer Zone to the Coastal Bank and within Land Subject to Coastal Storm Flowage.

The proposed site improvements within jurisdictional Wetland Resource Areas include:

- Sidewalk, utility, and building within 44,602 square feet of Land Subject to Coastal Storm Flowage
- Sidewalk, utility, and building within 21,207 square feet of existing impervious within the 100-foot buffer zone to the Coastal Bank

The Project includes several mitigation measures to offset the impacts to the Land Subject to Coastal Storm Flowage, Coastal Bank and associated Buffer Zone. The proposed stormwater management system will prevent polluted waters from being discharged untreated to the wetland resource area. The stormwater management system has been designed in accordance with the Massachusetts Department of Environmental Protection (MassDEP) Stormwater Management Standards. The proposed mitigation measures are further discussed in the Stormwater Report, included as Attachment C.

2.0 EXISTING CONDITIONS

2.1 Existing Site Description

The Project site is approximately 59,000 square feet, or 1.35 acres located on Fan Pier Boulevard in the Fan Pier area of Boston, Massachusetts. The site is situated with the Boston Harbor and the new recently constructed building on Parcel D to the north, Boston Harbor to the east, and the Parcel B Vertex Office building to the west.

The existing site currently has a temporary parking area that has been used as a staging area for other construction in the area. Prior to the temporary parking area and fencing, the site was used as a parking lot and was completely impervious.

2.2 Existing Utility Infrastructure

Sanitary Sewer

There are no existing utilities located on-site, other than temporary connections for construction trailers on-site. The private water main the building is proposed to connect to is to the north, and while other utilities are located in the public way of Marina Park Drive to the west.

Water (Domestic and Fire Protection)

Connections from the private water main located in Liberty Drive (a 4" CLDI domestic service, and a 6" CLDI fire protection) are proposed to service the building on Parcel E. The private water line these connections will extend from tie into an existing 12-inch public water main.

Stormwater Management

The existing site contains minimal stormwater management. Most runoff sheet flows offsite untreated.

Natural Gas

There is no existing natural gas infrastructure is located on-site. An 8" gas main the site will connect to is located in Marina Park Drive.

Electrical/Telephone/Cable

There are temporary utility poles located on-site that will be removed as part of the work.

2.3 Soils

NRCS Soil Designations

The Soil Classification Summary (Table 1) outlines the Natural Resources Conservation Services (NRCS) designation of the soil series at the Site. All of the soils within the Project Site are classified as Urban land (Figure 5).

Table 1. Soil Classification Summary

Soil Unit	Soil Series	Hydrologic Soil Group
603	Urban land, wet substratum, 0 to 3 percent slopes	---

On-Site Soil Investigations

Preliminary subsurface explorations were conducted by McPhail Associates at the site. The investigations consisted of nine borings conducted between November 18 and December 2, 2014. The borings were mostly advanced into the natural marine sand and/or marine clay deposits to define the top of natural inorganic soil deposit across the site. Further borings are still to be completed in order to classify the soils.

For the preliminary information on the on-site soils, refer to the Geotechnical Memo included in the Stormwater Report.

2.4 Environmental Considerations

FEMA Flood Zone

Based on the Flood Insurance Rate Map (FIRM), Community Panel Number 25025C0081J, dated March 16, 2016, a majority of the site is located within Zone AE (Elevation 11 NAVD88, Elevation 17.46 BCB). (Areas of minimal flooding). Refer to Figure 4 – FEMA Floodplain Map. This portion of the site in the 100-year flood zone is classified as Land Subject to Coastal Storm Flowage.

Additional Flood Zone Considerations

The Applicant is incorporating methods to address sea level rise and flood resistance into the building and site design. (See Section 3.3 Building Design & Infrastructure later in this document.)

Water Supply Protection Area

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

Wetland Resource Areas

The project site is bordered to the east by Boston Harbor and delineated by the edge of a dock. A wetland delineation survey was not performed.

Natural Heritage and Endangered Species Program

A review of the 14th Edition of the Massachusetts Natural Heritage Atlas prepared by the Natural Heritage and Endangered Species Program (NHESP), dated August 1, 2017, indicates that the site is NOT located within a Priority Habitat of Rare Species or an Estimated Habitat of Rare Wildlife (Figure 3).

3.0 PROPOSED CONDITIONS

3.1 Overview of Proposed Work

The Fallon Company is proposing the demolition of the existing temporary parking area and associated site features and the construction of a new building in its place. The project includes a 17 story building and underground parking garage. The footprint of the proposed building is approximately 21,000 square feet, or 0.48 acres. The project includes utility work, including new drain lines, sewer lines, water lines, fire services, electrical ductbanks, and a gas service. This work is the continuation of the Fan Pier redevelopment project which has obtained an Order of Conditions and RDA for improvements in the past.

The proposed project will maintain on-site impervious area (from the original condition), as outlined in Table 2.

Table 2. Proposed land use change for Fan Pier Parcel E (in square feet)

Land Use	Existing	Proposed	Change
Roof Area	0	20,889	+20,889
Site Impervious Area	59,000		-20,889
Grass/Plantings	0	0	0
Total	59,000	59,000	---

3.2 Utilities

All proposed utility connections to the building will connect to previously constructed infrastructure currently existing in the public rights-of-way within Marina Park Drive and Liberty Drive. The water will connect to private main in Liberty Drive.

Sanitary Sewer

The sanitary sewer service will be fed from an existing 15-inch sewer line in Marina Park Drive. The proposed sewer service connects to an existing stub and continues to the main on Marina Park Drive.

Water (Domestic and Fire Protection)

The proposed domestic water service and fire protection distribution system will connect to the existing private main on Liberty Drive installed during previous construction. This private water main is fed from the 12-inch water line in Marina Park Drive. The water services will be metered from a master meter.

Stormwater Management

The project site will drain to one design point, the Boston Harbor. The roof runoff will be collected in a rainwater re-use tank, while portions of the sidewalk on the frontage of the site along Marina Park Drive will be collected and connected into a recharge system. The recharge system is comprised of 136 linear feet of 24" perforated pipe enveloped in crushed stone. All stormwater will eventually flow to a closed drainage system that discharges into the Boston Harbor. The closed drainage system discharges into the Boston Harbor. Portions of the site will sheet flow directly into the Boston Harbor. The project will reduce both the rate and volume of stormwater runoff. The water quality of runoff will also be improved. For more information on the proposed stormwater management system, refer to the Stormwater Report in Attachment C.

Gas

Gas service for the project will be fed from an 8-inch gas main in Marina Park Drive.

Electric and Telecommunications

Electrical and telecommunication services for the project will be fed from existing infrastructure in Marina Park Drive.

3.3 Building Design & Infrastructure

The building's proposed first floor elevations will be 17.75, approximately 0.3 feet above the existing FEMA 100-year flood plain elevation. The building design includes components to mitigate damage should the sea exceed the first floor elevations.

A. Flood mitigation system barriers and doors are incorporated to protect critical areas, including the transformer niche, main electrical room, water service room, fuel oil storage room, fire service room, main tel/data room, domestic water service room, and life safety room.

B. The electrical service switch will be located on the building's first floor and at an elevation greater than 17.46, the FEMA 100-year flood plain elevation.

C. The buildings sill is raised to elevation 19.5, leaving only the buildings access points vulnerable to the 100-year storm which will be protected with sand bags; and

D. All six buildings, buildings A – F, within the Fan Pier Development will be protected by "Aqua Fence" thereby creating a six building island during extreme storm events.

3.4 Snow Removal

On the existing site, snow is moved to the edge of the parking area. Snow is not removed from the property.

The proposed snow management plan will continue the existing practices with the following specific requirements:

- During typical snow plowing operations, snow shall be pushed to designated snow removal areas.
- Snow shall not be stockpiled in wetland resource areas or drainage system components.
- In severe conditions where snow cannot be stockpiled on site, the snow shall be removed from the site and properly disposed of in accordance with DEP Guideline BRP601-01.
- There will be no usage of salt-based deicing chemicals within buffer areas of the wetland resources areas.
- Deicing chemicals shall be stored in a locked room inside the building and shall be used at exterior stairs and walkways.
- Before winter begins, the property owner and the contractor shall review snow plowing, deicing, and stockpiling procedures. Areas designated for stockpiling should be cleaned of any debris.

4.0 WETLAND RESOURCE AREA IMPACTS

The impact of the proposed project on wetland resources was limited to the maximum extent practicable. However, due to the proximity of the site to the Boston Harbor, the proposed work is within Land Subject to Coastal Storm Flowage, along the Coastal Bank, and within 100-foot Buffer Zone to the Coastal Bank. Table 3 provides a summary of the wetland resource areas impacted by the proposed project.

Table 3. Wetland Resource Area Impacts

Resource Area	Proposed Impact Areas
Land Subject to Coastal Storm Flowage	44,602 SF
100-foot Buffer Zone	21,207 SF existing impervious

The proposed site improvements within the 100-foot Buffer Zone to Coastal Bank include:

- Approximately 21,207 square feet of building construction, proposed roadways, and utility work

The proposed site improvements within Land Subject to Coastal Storm Flowage include:

- Building, sidewalk, and utility work

Erosion and sediment control barriers will be placed along the perimeter of the site to protect the Coastal Bank as indicated on the site plans.

5.0 PROPOSED MITIGATION MEASURES

5.1 Construction Period Erosion and Sedimentation Controls

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

The proposed project will disturb more than one acre of land, which requires the filing of a National Pollutant Discharge Elimination System (NPDES) Stormwater Construction General Permit. To apply for coverage under this General Permit, a Notice of Intent will be submitted to the U.S. Environmental Protection Agency prior to the commencement of construction by the Contractor. The NPDES Notice of Intent requires the development and implementation of a Stormwater Pollution Prevention Plan (SWPPP) for construction activities, which will be submitted to the Conservation Commission and the DEP prior to construction by the Contractor. The SWPPP is a detailed erosion and sediment control plan that indicates the structural and non-structural erosion and sediment controls that will be employed, as appropriate, to control erosion on the construction site. A draft of the SWPPP will be provided prior to construction.

5.2 Post-Construction Stormwater Management

There will be a closed drainage system to collect the runoff from the roof and proposed roadway from the proposed project. The runoff from the roof will be collected in a rainwater re-use system, while runoff from the site and some portions of the roadway will be discharged to an underground recharge system. All runoff eventually discharges to the Boston Harbor. The overall site is designed to improve water quality. For more information on the stormwater management system, refer to the Stormwater Report included in Attachment C.

5.3 Long-Term Pollution Prevention

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

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

The project Owner has reviewed and agreed to implement the management practices outlined in the Plan and proactively conduct operations at Fan Pier Parcel E in an environmentally-responsible manner.

6.0 INTERESTS OF THE WETLANDS PROTECTION ACT

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

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

By installing stormwater best management practices on the Fan Pier Parcel E project site, the proposed project will protect the interests of the Wetlands Protection Act, including protection of private/public water supply, protection of groundwater supply, providing flood control, prevention of storm damage, and prevention of pollution.

7.0 CONCLUSION

On behalf of the Applicant, the Fallon Company, Nitsch Engineering is filing the enclosed Notice of Intent (NOI) Application with the City of Boston Conservation Commission for the construction of the new Fan Pier Parcel E. The proposed project provides numerous mitigation measures including: minimizing the disturbance within resource area boundaries, minimization of earthwork, and improving the stormwater management system to meet the DEP Stormwater Management Standards. This NOI report and associated appendices provide a thorough description of the design details and regulatory compliance in accordance with the pertinent Wetland Statutes and Regulations. The Applicant seeks an Order of Conditions approving the project as proposed

SECTION 3

Stormwater Report (under separate cover)

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

SECTION 4

DOCUMENTATION OF ABUTTER NOTIFICATION

Abutter Notification
Affidavit of Service
Certified Abutters List

NOTIFICATION TO ABUTTERS
UNDER THE MASSACHUSETTS WETLANDS PROTECTION ACT

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

A. The name of the applicant is The Fallon Company.

B. The applicant has filed a Notice of Intent (NOI) with the City of Boston Conservation Commission to do proposed work within Land Subject to Coastal Storm Flowage, Coastal Bank, and 100-foot Buffer Zone to Coastal Bank Under the Wetlands Protection Act (General Laws Chapter 131, Section 40).

C. The location of the proposed activity is 10 Fan Pier Boulevard, Boston, MA. The project, Fan Pier Parcel E, includes the demolition of a temporary parking lot and associated pavement, landscaping, and site features and the construction of a new 17 story building, underground parking garage, and associated improvements.

D. Copies of the NOI may be examined at the Conservation Commission Office – Boston City Hall, during regular business hours. For more information, call the Conservation Commission at (617) 635-3850.

E. The hearing will be held at Boston City Hall. Information regarding the date and time of this hearing may be obtained by calling the Boston Conservation Commission at (617) 635-3850 or by checking their website.

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

NOTE: Notice of the public hearing, including its date, time, and place, will be posted in Boston City Hall not less than forty-eight (48) hours in advance.

NOTE: You may contact your local Conservation Commission or the nearest Department of Environmental Protection Regional office for more information about this application or the Wetlands Protection Act. To contact DEP, call:

Central Region: 508-792-7650	Northeast Region: 978-661-7600
Southeast Region: 508-947-6557	Western Region: 413-784-1100

AFFIDAVIT OF SERVICE

Under the Massachusetts Wetlands Protection Act

I, John M. Schmid, PE, hereby certify under the pains and penalties that at least one week prior to the public hearing, I gave notification to abutters in compliance with the second paragraph of Massachusetts General Laws Chapter 131, Section 40, and the DEP guide to Abutter Notification dated October 24, 2018 in connection to the following matter:

Submission of a Notice of Intent to the Boston Conservation Commission for the work associated with the Fan Pier Parcel E Project at 10 Fan Pier Boulevard Boston, MA was filed on October 24, 2018. The Project includes the demolition of a temporary parking lot and associated pavement, landscaping, and site features and the construction of a new 17 story building, underground parking garage, and associated improvements.

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

Name

10-24-18
Date

Attachment: List of Abutters

PID	OWNER	ADDRESSEE	MLG_ADDRESS	MLG_CITYSTATE	MLG_ZIPCODE	LOC_ADDRESS	LOC_CITY	LOC_ZIPCODE
602670010	TWENTY-TWO LIBERTY	C/O THE FALLON COMPANY	1 MARINE PARK DR	BOSTON MA	2210	22 LIBERTY DR	BOSTON	2210
602670016	SUNFLOWER APARTMENT LLC	C/O LONGFELLOW MGMT SERVICES LLC	PO BOX 81505	WELLESLEY MA	2481	22 LIBERTY DR Apt 2A	BOSTON	2210
602670017	KERR FAMILY TRUST	C/O MICHAEL T KERR	22 LIBERTY DR #2E	BOSTON MA	2210	22 LIBERTY DR Apt 2E	BOSTON	2210
602670018	22 LIBERTY SS LLC	C/O 22 LIBERTY SS LLC	10102 E HUALAPAI DR	SCOTTSDALE AZ	85255	22 LIBERTY DR Apt 2F	BOSTON	2210
602670019	GABRIEL TRACEY A	C/O TRACEY A GABRIEL	22 LIBERTY DR #2G	BOSTON MA	2210	22 LIBERTY DR Apt 2G	BOSTON	2210
602670020	LINDHOLM JEFFREY	C/O JEFFREY LINDHOLM	22 LIBERTY DR #2L	BOSTON MA	2210	22 LIBERTY DR Apt 2L	BOSTON	2210
602670023	223A LIBERTY LLC	C/O 223A LIBERTY LLC	220 N MAIN ST STE 301	NATICK MA	1760	22 LIBERTY DR Apt 3A	BOSTON	2210
602670025	BOHLIN GAREN	C/O GAREN BOHLIN	22 LIBERTY DR #3D	BOSTON MA	2210	22 LIBERTY DR Apt 3D	BOSTON	2210
602670026	BRANDT WENDY J	C/O WILLEM KEYER	22 LIBERTY DR #3E	BOSTON MA	2210	22 LIBERTY DR Apt 3E	BOSTON	2210
602670028	BENDERS SHARNIECE	C/O SHARNIECE BENDERS	22 LIBERTY DR #3G	BOSTON MA	2210	22 LIBERTY DR Apt 3G	BOSTON	2210
602670030	WAKEFIELD LIBERTY TRUST	C/O ROGER H INGWERSEN	47 ALGONQUIAN DR	NATICK MA	1760	22 LIBERTY DR Apt 3J	BOSTON	2210
602670031	MICHAEL AND SUSAN NEAL 2004	C/O MICHAEL R NEAL	22 LIBERTY DR #3L	BOSTON MA	2210	22 LIBERTY DR Apt 3L	BOSTON	2210
602670032	MURPHY JOHN E	C/O JOHN E MURPHY	22 LIBERTY DR #3M	BOSTON MA	2210	22 LIBERTY DR Apt 3M	BOSTON	2210
602670035	TWENTY TWO LIBERTY DRIVE	C/O JOHN W TOULOPOULOS	22 LIBERTY DR #4B	BOSTON MA	2210	22 LIBERTY DR Apt 4B	BOSTON	2210
602670038	SAYED-FRIEL HODA	C/O HODA SAYED-FRIEL	22 LIBERTY DR #4F	BOSTON MA	2210	22 LIBERTY DR Apt 4F	BOSTON	2210
602670039	MARCHBANK ROBERT	C/O ROBERT MARCHBANK	22 LIBERTY DR #4G	BOSTON MA	2210	22 LIBERTY DR Apt 4G	BOSTON	2210
602670040	LIBERTY 4H REALTY TRUST	C/O MYRNA PUTZIGER	22 LIBERTY DR #4H	BOSTON MA	2210	22 LIBERTY DR Apt 4H	BOSTON	2210
602670045	TETON NOMINEE TRUST	C/O KELLY MCKERNAN	22 LIBERTY DR #5A	BOSTON MA	2210	22 LIBERTY DR Apt 5A	BOSTON	2210
602670046	BRIAN E HOLUB 2011 TRUST	C/O BRIAN E HOLUB	22 LIBERTY DR #5B	BOSTON MA	2210	22 LIBERTY DR Apt 5B	BOSTON	2210
602670047	NICEWICS ROBERT J	C/O ROBERT J NICEWICS	22 LIBERTY DR #5D	BOSTON MA	2210	22 LIBERTY DR Apt 5D	BOSTON	2210
602670048	HAAN BERNARD J	C/O BERNARD J HAAN	22 LIBERTY DR #5E	BOSTON MA	2210	22 LIBERTY DR Apt 5E	BOSTON	2210
602670052	SUN KE	C/O KE SUN	22 LIBERTY DR #5J	BOSTON MA	2210	22 LIBERTY DR Apt 5J	BOSTON	2210
602670053	KIRKMAN PETER A	C/O PETER A KIRKMAN	22 LIBERTY DR #5L	BOSTON MA	2210	22 LIBERTY DR Apt 5L	BOSTON	2210
602670054	STENSON RAYMOND C JR	C/O RAYMOND C STENSON JR	22 LIBERTY DR #5M	BOSTON MA	2210	22 LIBERTY DR Apt 5M	BOSTON	2210
602670012	TWENTY TWO LIBERTY LLC		22 LIBERTY DR	BOSTON MA	2210	22 LIBERTY DR Apt GARAGE	BOSTON	2210
602670014	TWENTY TWO LIBERTY LLC	C/O THE FALLON COMPANY	ONE MARINA PARK DRIVE	BOSTON MA	2210	22 LIBERTY DR Apt RETAIL	BOSTON	2210
602670021	DETORE JOHN A	C/O JOHN A DETORE	22 LIBERTY DR #2M	BOSTON MA	2210	22 LIBERTY DR Apt 2M	BOSTON	2210
602670024	MARJORY BOHLIN 2016	C/O MARJORY BOHLIN	22 LIBERTY DR #3B	BOSTON MA	2210	22 LIBERTY DR Apt 3B	BOSTON	2210
602670027	BENSON FAMILY REALTY TRUST	C/O STEVEN J BENSON	22 LIBERTY DR #3F	BOSTON MA	2210	22 LIBERTY DR Apt 3F	BOSTON	2210
602670029	KOBY A ROTSTEIN LIVING TRUST	C/O KOBY A ROTSTEIN	22 LIBERTY DR #3H	BOSTON MA	2210	22 LIBERTY DR Apt 3H	BOSTON	2210
602670034	GRENIER BART ALEXANDER	C/O BART ALEXANDER GRENIER	22 LIBERTY DR #4A	BOSTON MA	2210	22 LIBERTY DR Apt 4A	BOSTON	2210
602670036	IZOTOVA GALINA	C/O GALINA IZOTOVA	22 LIBERTY DR #4D	BOSTON MA	2210	22 LIBERTY DR Apt 4D	BOSTON	2210
602670037	REISS MARTIN H	C/O MARTIN H REISS	22 LIBERTY DR #4E	BOSTON MA	2210	22 LIBERTY DR Apt 4E	BOSTON	2210
602670041	RYAN STEPHEN J	C/O STEPHEN J RYAN	22 LIBERTY DR #4J	BOSTON MA	2210	22 LIBERTY DR Apt 4J	BOSTON	2210
602670042	RK LIBERTY LLC	C/O RK LIBERTY LLC	57 RIVER ST STE 106	WELLESLEY MA	2481	22 LIBERTY DR Apt 4L	BOSTON	2210
602670043	BARAN SHANT	C/O SHANT BARAN	22 LIBERTY DR #4M	BOSTON MA	2210	22 LIBERTY DR Apt 4M	BOSTON	2210
602670049	TWENTY TWO LIBERTY 5F	C/O TWENTY TWO LIBERTY 5F REALTY TRST	22 LIBERTY DR #5F	BOSTON MA	2210	22 LIBERTY DR Apt 5F	BOSTON	2210
602670050	GLAZER EDWARD L	C/O EDWARD L GLAZER	22 LIBERTY DR #5G	BOSTON MA	2210	22 LIBERTY DR Apt 5G	BOSTON	2210
602670051	COHEN DANIYEL	C/O DANIYEL COHEN	22 LIBERTY DR #5H	BOSTON MA	2210	22 LIBERTY DR Apt 5H	BOSTON	2210
602670057	COHEN HELENA	C/O HELENA COHEN	22 LIBERTY DR #6B	BOSTON MA	2210	22 LIBERTY DR Apt 6B	BOSTON	2210
602670058	SIMONS JANET A	C/O JANET A SIMONS	188 GLEZEN LANE	WAYLAND MA	1778	22 LIBERTY DR Apt 6D	BOSTON	2210
602670059	BRODERICK NANCY	C/O NANCY BRODERICK	22 LIBERTY DR #6E	BOSTON MA	2210	22 LIBERTY DR Apt 6E	BOSTON	2210
602670060	PEDICINI LISA C	C/O LISA C PEDICINI	22 LIBERTY DR #6F	BOSTON MA	2210	22 LIBERTY DR Apt 6F	BOSTON	2210
602670061	MOON AERI	C/O AERI MOON	22 LIBERTY DR #6G	BOSTON MA	2210	22 LIBERTY DR Apt 6G	BOSTON	2210
602670063	ZIEGER MARC	C/O MARC ZIEGER	22 LIBERTY DR #6J	BOSTON MA	2210	22 LIBERTY DR Apt 6J	BOSTON	2210
602670066	CRK BOSTON PROPERTIES LLC	C/O HARDING & CARBONE INC	1235 NORTH LOOP WEST #205	HOUSTON TX	77008	22 LIBERTY DR Apt 7A	BOSTON	2210
602670068	LENEHAN GAIL	C/O GAIL LENEHAN	22 LIBERTY DR #7D	BOSTON MA	2210	22 LIBERTY DR Apt 7D	BOSTON	2210
602670069	LEVENSON NORMAN A	C/O COPLEY GROUP	896 BEACON ST	BOSTON MA	2215	22 LIBERTY DR Apt 7E	BOSTON	2210
602670073	WAILES LYNN P	C/O LYNN P WAILES	2070 ARMORS FORD	GREENSBORO GA	30647	22 LIBERTY DR Apt 7J	BOSTON	2210
602670076	SHEARWATER NOMINEE TRUST	C/O MATTHEW J BRESETTE	22 LIBERTY DR #8A	BOSTON MA	2210	22 LIBERTY DR Apt 8A	BOSTON	2210
602670080	LEVIN DONALD L	C/O DONALD L LEVIN	22 LIBERTY DR #8F	BOSTON MA	2210	22 LIBERTY DR Apt 8F	BOSTON	2210
602670081	ROBERT A CULBERT LIVING	C/O ROBERT A CULBERT	22 LIBERTY DR #8G	BOSTON MA	2210	22 LIBERTY DR Apt 8G	BOSTON	2210
602670082	BERNSTEIN GEOFFREY T	C/O GEOFFREY T BERNSTEIN	22 LIBERTY DR #8H	BOSTON MA	2210	22 LIBERTY DR Apt 8H	BOSTON	2210
602670083	SHOPIS DAVID T	C/O DAVID T SHOPIS	1 PEBBLE BEACH DR	BLOOMFIELD CT	6002	22 LIBERTY DR Apt 8J	BOSTON	2210
602670088	ZHAO YING ZI	C/O YING ZI ZHAO	22 LIBERTY DR #9B	BOSTON MA	2210	22 LIBERTY DR Apt 9B	BOSTON	2210
602670089	J DERENZO PROPERTIES LLC	C/O J DERENZO PROPERTIES LLC	43 CHARLES STREET	NEEDHAM MA	2494	22 LIBERTY DR Apt 9D	BOSTON	2210
602670090	MURPHY LINDA T	C/O LINDA T MURPHY	22 LIBERTY DR #9E	BOSTON MA	2210	22 LIBERTY DR Apt 9E	BOSTON	2210

602670091	HENRY F OWENS III TRUST	HENRY F OWENS III	22 LIBERTY DRIVE 9F	BOSTON MA	2210	22 LIBERTY DR Apt 9F	BOSTON	2210
602670092	VANSTRY KATHERINE	C/O KATHERINE VANSTRY	22 LIBERTY DR #9G	BOSTON MA	2210	22 LIBERTY DR Apt 9G	BOSTON	2210
602670097	DIMITRIEF ALEXANDER	C/O ALEXANDER DIMITRIEF	22 LIBERTY DR #10A	BOSTON MA	2210	22 LIBERTY DR Apt 10A	BOSTON	2210
602670098	GREENBERG DEBRA P	C/O DEBRA P GREENBERG	22 LIBERTY DR #10C	BOSTON MA	2210	22 LIBERTY DR Apt 10C	BOSTON	2210
602670056	LBY 6A LLC	C/O RANDALL J LATONA	PO BOX 428	ANDOVER MA	1810	22 LIBERTY DR Apt 6A	BOSTON	2210
602670062	FLEISCHER RUSSELL L	C/O RUSSELL L FLEISCHER	22 LIBERTY DR #6H	BOSTON MA	2210	22 LIBERTY DR Apt 6H	BOSTON	2210
602670064	DESANTIS DAVIDE	C/O DAVIDE DESANTIS	22 LIBERTY DR #6M	BOSTON MA	2210	22 LIBERTY DR Apt 6M	BOSTON	2210
602670067	ZHANG TONG	C/O TONG ZHANG	77 EXETER ST	BOSTON MA	2116	22 LIBERTY DR Apt 7B	BOSTON	2210
602670070	SEVEN F LIBERTY REALTY TRUST	C/O RUSSELL N STEIN	22 LIBERTY DR #7F	BOSTON MA	2210	22 LIBERTY DR Apt 7F	BOSTON	2210
602670071	LEDEWITZ HOWARD M	C/O HOWARD M LEDEWITZ	22 LIBERTY DR #7G	BOSTON MA	2210	22 LIBERTY DR Apt 7G	BOSTON	2210
602670072	JOHN R HENSON 2011 REVOCABLE	C/O JOHN R HENSON	22 LIBERTY DR #7H	BOSTON MA	2210	22 LIBERTY DR Apt 7H	BOSTON	2210
602670074	EL-MALECKI MAGED	C/O MAGED EL-MALECKI	22 LIBERTY DR #7M	BOSTON MA	2210	22 LIBERTY DR Apt 7M	BOSTON	2210
602670077	LI LINDA	C/O LINDA LI	22 LIBERTY DR #8B	BOSTON MA	2210	22 LIBERTY DR Apt 8B	BOSTON	2210
602670078	SARAH E HANCOCK REVOCABLE	C/O SARAH E HANCOCK	22 LIBERTY DR #8D	BOSTON MA	2210	22 LIBERTY DR Apt 8D	BOSTON	2210
602670079	8E REALTY TRUST	C/O SUE ANN FARRELL	22 LIBERTY DR #8E	BOSTON MA	2210	22 LIBERTY DR Apt 8E	BOSTON	2210
602670084	SEAPORT NOMINEE TRUST	C/O KENNETH P LYONS	22 LIBERTY DR #8L	BOSTON MA	2210	22 LIBERTY DR Apt 8L	BOSTON	2210
602670085	MARTINO REALTY LLC	C/O MARTINO REALTY LLC	183 STATE ST STE 4B	BOSTON MA	2109	22 LIBERTY DR Apt 8M	BOSTON	2210
602670087	NOONAN MICHAEL J	C/O MICHAEL J NOONAN	22 LIBERTY DR #9A	BOSTON MA	2210	22 LIBERTY DR Apt 9A	BOSTON	2210
602670093	MALONE CAROL A	C/O CAROL A MALONE	22 LIBERTY DR #9H	BOSTON MA	2210	22 LIBERTY DR Apt 9H	BOSTON	2210
602670094	WILLIAMS LESLIE J	C/O LESLIE J WILLIAMS	22 LIBERTY DR #9J	BOSTON MA	2210	22 LIBERTY DR Apt 9J	BOSTON	2210
602670095	ZOURDOS DIMITRIS	C/O DIMITRIS ZOURDOS	22 LIBERTY DR #9M	BOSTON MA	2210	22 LIBERTY DR Apt 9M	BOSTON	2210
602670100	SEAPORT NOWE TRUST	C/O BEVERLY D CARLSON	22 LIBERTY DR #10E	BOSTON MA	2210	22 LIBERTY DR Apt 10E	BOSTON	2210
602670103	SHALOM DEBORAH E	C/O DEBORAH E SHALOM	22 LIBERTY DR #10H	BOSTON MA	2210	22 LIBERTY DR Apt 10H	BOSTON	2210
602670106	22 LIBERTY DRIVE UNIT 11A	C/O MICHAEL A BASS	22 LIBERTY DR #11A	BOSTON MA	2210	22 LIBERTY DR Apt 11A	BOSTON	2210
602670108	HANLON DIANE M	C/O DIANE M HANLIN	22 LIBERTY DR #11D	BOSTON MA	2210	22 LIBERTY DR Apt 11D	BOSTON	2210
602670113	WU MICHAEL	C/O MICHAEL WU	22 LIBERTY DR #11-I	BOSTON MA	2210	22 LIBERTY DR Apt 11I	BOSTON	2210
602670099	LIN WEICHIEH	C/O WEICHIEH LIN	22 LIBERTY DR #10D	BOSTON MA	2210	22 LIBERTY DR Apt 10D	BOSTON	2210
602670101	CASSIDY LIBERTY REALTY TRUST	C/O JOHN PANTEKIDIS	22 LIBERTY DR #10F	BOSTON MA	2210	22 LIBERTY DR Apt 10F	BOSTON	2210
602670102	RAMOS JOSE C GUTIERREZ	C/O JOSE C GUTIERREZ RAMOS	22 LIBERTY DR #10G	BOSTON MA	2210	22 LIBERTY DR Apt 10G	BOSTON	2210
602670104	MAR REALTY LLC	C/O MAR REALTY LLC	22 LIBERTY DR #10-I	BOSTON MA	2210	22 LIBERTY DR Apt 10I	BOSTON	2210
602670107	KECHES GEORGE N	C/O GEORGE N KECHES	22 LIBERTY DR #11C	BOSTON MA	2210	22 LIBERTY DR Apt 11C	BOSTON	2210
602670109	PLUNKETT PATRICK F	C/O PATRICK F PLUMKETT	22 LIBERTY DR #11E	BOSTON MA	2210	22 LIBERTY DR Apt 11E	BOSTON	2210
602670110	HCK 2015 REALTY TRUST	C/O HENRY W COMSTOCK JR	22 LIBERTY DR #11F	BOSTON MA	2210	22 LIBERTY DR Apt 11F	BOSTON	2210
602670111	LI NA	C/O NA LI	22 LIBERTY DR #11G	BOSTON MA	2210	22 LIBERTY DR Apt 11G	BOSTON	2210
602670112	TWENTY-TWO LIBERTY STUDIO	C/O JOSHUA BOGER	22 LIBERTY DR #11H	BOSTON MA	2210	22 LIBERTY DR Apt 11H	BOSTON	2210
602670117	KESHIAN DANIEL A	C/O DANIEL A KESHIAN	22 LIBERTY DR #12D	BOSTON MA	2210	22 LIBERTY DR Apt 12D	BOSTON	2210
602670119	LIBERTY 12F REALTY TRUST	C/O MYRNA PUTZIGER	22 LIBERTY DR #12F	BOSTON MA	2210	22 LIBERTY DR Apt 12F	BOSTON	2210
602670120	ST LAURENT MATTHEW S	C/O MATTHEW S ST LAURENT	22 LIBERTY DR #12G	BOSTON MA	2210	22 LIBERTY DR Apt 12G	BOSTON	2210
602670125	22 LIBERTY DRIVE UNIT PH1C	C/O STEVEN SARCIONE	PO BOX 962049	BOSTON MA	2196	22 LIBERTY DR Apt PH1C	BOSTON	2210
602670126	LI NA	C/O NA LI	22 LIBERTY DRIVE #PH-1D	BOSTON MA	2210	22 LIBERTY DR Apt PH1D	BOSTON	2210
602670127	ENGLISH LIBERTY REALTY TRUST	C/O PAUL M ENGLISH	22 LIBERTY DR #PH1F	BOSTON MA	2210	22 LIBERTY DR Apt PH1F	BOSTON	2210
602670128	ZBH REALTY TRUST	C/O GRETCHEN K ZELEK	22 LIBERTY DR #PH1G	BOSTON MA	2210	22 LIBERTY DR Apt PH1G	BOSTON	2210
602670129	JOANNE F SHANNON QUALIFIED	C/O JOANNE F SHANNON	22 LIBERTY DR #PH1H	BOSTON MA	2210	22 LIBERTY DR Apt PH1H	BOSTON	2210
602670131	KRAFT LIBERTY LLC	C/O KRAFT GROUP LLC	ONE PATRIOT PLACE	FOXBOROUGH MA	2035	22 LIBERTY DR Apt PH2A	BOSTON	2210
602670142	LIBERTY 12F REALTY TRUST	C/O MYRNA PUTZIGER	22 LIBERTY DR #12F	BOSTON MA	2210	22 LIBERTY DR Apt B1-1	BOSTON	2210
602670144	TWENTY TWO LIBERTY LLC	C/O FALLON COMPANY	ONE MARINA PARK DR	BOSTON MA	2110	22 LIBERTY DR Apt B1-3	BOSTON	2210
602670145	ENGISH LIBERTY REALTY TRUST	C/O PAUL M ENGLISH	22 LIBERTY DR #PH1F	BOSTON MA	2210	22 LIBERTY DR Apt B1-4	BOSTON	2210
602670147	DIMITRIEF ALEXANDER	C/O ALEXANDER DIMITRIEF	22 LIBERTY DR #10A	BOSTON MA	2210	22 LIBERTY DR Apt B1-6	BOSTON	2210
602670150	TWENTY TWO LIBERTY LLC		22 LIBERTY DR	BOSTON MA	2210	22 LIBERTY DR Apt B1-9	BOSTON	2210
602670151	TWENTY-TWO LIBERTY HOME	C/O JOSHUA BOGER	22 LIBERTY DR #PH2G	BOSTON MA	2210	22 LIBERTY DR Apt B1-10	BOSTON	2210
602670153	TWENTY-TWO LIBERTY HOME	C/O JOSHUA BOGER	22 LIBERTY DR # PH2F	BOSTON MA	2210	22 LIBERTY DR Apt B1-12	BOSTON	2210
602670156	KRAFT LIBERTY LLC	C/O KRAFT GROUP LLC	ONE PATRIOT PLACE	FOXBOROUGH MA	2035	22 LIBERTY DR Apt B1-15	BOSTON	2210
602670158	22 LIBERTY DRIVE UNIT PH1A	C/O STEVEN SARCIONE	PO BOX 962049	BOSTON MA	2196	22 LIBERTY DR Apt B1-17	BOSTON	2210
602670159	22 LIBERTY DRIVE UNIT PH1A	C/O STEVEN SARCIONE	PO BOX 962049	BOSTON MA	2196	22 LIBERTY DR Apt B1-18	BOSTON	2210
602670162	TWENTY TWO LIBERTY DRIVE	C/O JOHN W TOULOPOULOS	22 LIBERTY DR #4B	BOSTON MA	2210	22 LIBERTY DR Apt B1-21	BOSTON	2210
602670163	LI NA	C/O NA LI	22 LIBERTY DR #PH-1D	BOSTON MA	2210	22 LIBERTY DR Apt B1-22	BOSTON	2210
602670164	LI NA	C/O NA LI	22 LIBERTY DRIVE #PH-1D	BOSTON MA	2210	22 LIBERTY DR Apt B1-23	BOSTON	2210
602670165	RK LIBERTY LLC	C/O RK LIBERTY LLC	57 RIVER ST STE 106	WELLESLEY MA	2481	22 LIBERTY DR Apt B1-24	BOSTON	2210

602670166	RK LIBERTY LLC	C/O RK LIBERTY LLC	57 RIVRE ST STE 106	WELLESLEY MA	2481	22 LIBERTY DR Apt B1-25	BOSTON	2210
602670170	HCK 2015 REALTY TRUST	C/O HENRY W COMSTOCK JR	22 LIBERTY DR #11F	BOSTON MA	2210	22 LIBERTY DR Apt B1-29	BOSTON	2210
602670171	22 LIBERTY DRIVE UNIT 11A	C/O MICHAEL A BASS	22 LIBERTY DR #11A	BOSTON MA	2210	22 LIBERTY DR Apt B1-30	BOSTON	2210
602670172	22 LIBERTY DRIVE UNIT 11A	C/O MICHAEL A BASS	22 LIBERTY DR #11A	BOSTON MA	2210	22 LIBERTY DR Apt B1-31	BOSTON	2210
602670173	GLAZER EDWARD L	C/O EDWARD L GLAZER	22 LIBERTY DR #5G	BOSTON MA	2210	22 LIBERTY DR Apt B1-32	BOSTON	2210
602670178	HANLON DIANE M	C/O DIANE M HANLON	22 LIBERTY DR #11D	BOSTON MA	2210	22 LIBERTY DR Apt B1-37	BOSTON	2210
602670179	LIN WEICHIEH	C/O WEICHIEH LIN	22 LIBERTY DR #10D	BOSTON MA	2210	22 LIBERTY DR Apt B1-38	BOSTON	2210
602670181	GLAZER EDWARD L	C/O EDWARD L GLAZER	22 LIBERTY DR # 5G	BOSTON MA	2210	22 LIBERTY DR Apt B1-40	BOSTON	2210
602670182	ZBH REALTY TRUST	C/O GRETCHEN K ZELEK	22 LIBERTY DR #PH1G	BOSTON MA	2210	22 LIBERTY DR Apt B1-41	BOSTON	2210
602670183	ST LAURENT MATTHEW S	C/O MATTHEW S ST LAURENT	22 LIBERTY DR #12G	BOSTON MA	2210	22 LIBERTY DR Apt B1-42	BOSTON	2210
602670184	WEILER ROBERT K	C/O ROBERT K WEILER	22 LIBERTY DR #12E	BOSTON MA	2210	22 LIBERTY DR Apt B1-43	BOSTON	2210
602670115	22-12A LIBERTY NOMINEE TRUST	C/O ROPES & GRAY LLP	800 BOYLSTON ST	BOSTON MA	2199	22 LIBERTY DR Apt 12A	BOSTON	2210
602670116	RT 22 LIBERTY TRUST	C/O ROBERT TRAINA	22 LIBERTY DR #12C	BOSTON MA	2210	22 LIBERTY DR Apt 12C	BOSTON	2210
602670118	WEILER ROBERT K	C/O ROBERT K WEILER	22 LIBERTY DR #12E	BOSTON MA	2210	22 LIBERTY DR Apt 12E	BOSTON	2210
602670121	TWENTY TWO LIBERTY 12H	C/O KURT R STEINKRAUSS	22 LIBERTY DR #12H	BOSTON MA	2210	22 LIBERTY DR Apt 12H	BOSTON	2210
602670122	KONA BAY GROUP- TWENTY TWO	C/O KONA BAY GROUP-TWENTY TWO LIBERTY LLC	38 PILGRIM RD	NATICK MA	1760	22 LIBERTY DR Apt 12I	BOSTON	2210
602670124	22 LIBERTY DRIVE UNIT PH1A	C/O STEVEN SARCIONE	PO BOX 962049	BOSTON MA	2196	22 LIBERTY DR Apt PH1A	BOSTON	2210
602670132	KRAFT LIBERTY LLC	C/O KRAFT GROUP LLC	ONE PATRIOT PLACE	FOXBOROUGH MA	2035	22 LIBERTY DR Apt PH2C	BOSTON	2210
602670133	RK LIBERTY LLC	C/O RK LIBERTY LLC	57 RIVER ST STE 106	WELLESLEY MA	2481	22 LIBERTY DR Apt PH2D	BOSTON	2210
602670134	TWENTY-TWO LIBERTY HOME	C/O JOSHUA BOGER	22 LIBERTY DR #PH2F	BOSTON MA	2210	22 LIBERTY DR Apt PH2F	BOSTON	2210
602670135	TWENTY-TWO LIBERTY HOME	C/O JOSHUA BOGER	22 LIBERTY DR #PH2G	BOSTON MA	2210	22 LIBERTY DR Apt PH2G	BOSTON	2210
602670143	LIBERTY 12F REALTY TRUST	C/O MYRNA PUTZIGER	22 LIBERTY DR #12F	BOSTON MA	2210	22 LIBERTY DR Apt B1-2	BOSTON	2210
602670146	ENGLISH LIBERTY REALTY TRUST	C/O PAUL M ENGLISH	22 LIBERTY DR PH1F	BOSTON MA	2210	22 LIBERTY DR Apt B1-5	BOSTON	2210
602670148	DIMITRIEF ALEXANDER	C/O ALEXANDER DIMITRIEF	22 LIBERTY DR #10A	BOSTON MA	2210	22 LIBERTY DR Apt B1-7	BOSTON	2210
602670149	TWENTY TWO LIBERTY LLC		22 LIBERTY DR	BOSTON MA	2210	22 LIBERTY DR Apt B1-8	BOSTON	2210
602670152	TWENTY-TWO LIBERTY HOME	C/O JOSHUA BOGER	22 LIBERTY DR #PH2F	BOSTON MA	2210	22 LIBERTY DR Apt B1-11	BOSTON	2210
602670154	TWENTY-TWO LIBERTY HOME	C/O JOSHUA BOGER	22 LIBERTY DR #PH2F	BOSTON MA	2210	22 LIBERTY DR Apt B1-13	BOSTON	2210
602670157	TWENTY TWO LIBERTY LLC	C/O TWENTY TWO LIBERTY LLC	ONE MARINA PARK DR	BOSTON MA	2210	22 LIBERTY DR Apt B1-16	BOSTON	2210
602670160	22 LIBERTY DRIVE UNIT PH1C	C/O STEVEN SARCIONE	PO BOX 962049	BOSTON MA	2196	22 LIBERTY DR Apt B1-19	BOSTON	2210
602670161	WILLIAMS LESLIE J	C/O LISLIE J WILLIAMS	22 LIBERTY DR #9J	BOSTON MA	2210	22 LIBERTY DR Apt B1-20	BOSTON	2210
602670167	CASSIDY LIBERTY REALTY TRUST	C/O JOHN PANTEKIDIS	22 LIBERTY DR #10F	BOSTON MA	2210	22 LIBERTY DR Apt B1-26	BOSTON	2210
602670168	CASSIDY LIBERTY REALTY TRUST	C/O JOHN PANTEKIDIS	22 LIBERTY DR #10F	BOSTON MA	2210	22 LIBERTY DR Apt B1-27	BOSTON	2210
602670186	GREENBERG DEBRA P	C/O DEBRA P GREENBERG	22 LIBERTY DR #10-C	BOSTON MA	2110	22 LIBERTY DR Apt B1-45	BOSTON	2210
602670189	KONA BAY GROUP- TWENTY TWO	KONA BAY GROUP-TWENTY TWO LIBERTY LLC	38 PILGRIM RD	NATICK MA	1760	22 LIBERTY DR Apt B1-48	BOSTON	2210
602670193	LENEHAN GAIL	C/O GAIL LENEHAN	22 LIBERTY DR #7D	BOSTON MA	2210	22 LIBERTY DR Apt B1-52	BOSTON	2210
602670194	LENEHAN GAIL	C/O GAIL LENEHAN	22 LIBERTY DR #7D	BOSTON MA	2210	22 LIBERTY DR Apt B1-53	BOSTON	2210
602670196	SARAH E HANCOCK REVOCABLE	C/O SARAH E HANCOCK	22 LIBERTY DR #8D	BOSTON MA	2210	22 LIBERTY DR Apt B1-55	BOSTON	2210
602670199	SIMONS JANET A	C/O JANET A SIMONS	188 GLEZEN LANE	WAYLAND MA	1778	22 LIBERTY DR Apt B1-58	BOSTON	2210
602670201	TWENTY TWO LIBERTY LLC		22 LIBERTY DR	BOSTON MA	2210	22 LIBERTY DR Apt B1-60	BOSTON	2210
602670203	IZOTOVA GALINA	C/O GALINA IZOTOVA	22 LIBERTY DR #4D	BOSTON MA	2210	22 LIBERTY DR Apt B1-62	BOSTON	2210
602670204	IZOTOVA GALINA	C/O GALINA IZOTOVA	22 LIBERTY DR #4D	BOSTON MA	2210	22 LIBERTY DR Apt B1-63	BOSTON	2210
602670206	ENGLISH LIBERTY REALTY TRUST	C/O PAUL M ENGLISH	22 LIBERTY DR #PH1F	BOSTON MA	2210	22 LIBERTY DR Apt B1-65	BOSTON	2210
602670209	22 LIBERTY SS LLC	C/O 22 LIBERTY SS LLC	10102 E HUALAPAI DR	SCOTTSDALE AZ	85255	22 LIBERTY DR Apt B1-68	BOSTON	2210
602670210	22 LIBERTY SS LLC	C/O 22 LIBERTY SS LLC	10102 E HUALAPAI DR	SCOTTSDALE AZ	85255	22 LIBERTY DR Apt B1-69	BOSTON	2210
602670213	TWENTY TWO LIBERTY LLC		22 LIBERTY DR	BOSTON MA	2210	22 LIBERTY DR Apt B1-72	BOSTON	2210
602670215	RAMOS JOSE C GUTIERREZ	C/O JOSE C GUTIERREZ RAMOS	22 LIBERTY DR #10G	BOSTON MA	2210	22 LIBERTY DR Apt B1-74	BOSTON	2210
602670216	RAMOS JOSE C GUTIERREZ	C/O JOSE C GUTIERREZ RAMOS	22 LIBERTY DR #10G	BOSTON MA	2210	22 LIBERTY DR Apt B1-75	BOSTON	2210
602670218	CASSIDY LIBERTY REALTY TRUST	C/O JOHN PANTEKIDIS	22 LIBERTY DR #10F	BOSTON MA	2210	22 LIBERTY DR Apt B1-77	BOSTON	2210
602670220	22-12A LIBERTY NOMINEE TRUST	C/O ROPES & GRAY LLP	800 BOYLSTON ST	BOSTON MA	2199	22 LIBERTY DR Apt B1-79	BOSTON	2210
602670221	22-12A LIBERTY NOMINEE TRUST	C/O ROPES & GRAY LLP	800 BOYLSTON ST	BOSTON MA	2199	22 LIBERTY DR Apt B1-80	BOSTON	2210
602670237	CRK BOSTON PROPERTIES LLC	C/O CRK BOSTON PROPERTIES LLC	1 CHARLES STREET SOUTH #1512	BOSTON MA	2116	22 LIBERTY DR Apt B2-4	BOSTON	2210
602670238	RT 22 LIBERTY TRUST	C/O ROBERT TRAINA	22 LIBERTY DR UNIT 12C	BOSTON MA	2210	22 LIBERTY DR Apt B2-5	BOSTON	2210
602670239	223A LIBERTY LLC	C/O 223A LIBERTY LLC	220 MAIN STREET SUITE #301	NATICK MA	1760	22 LIBERTY DR Apt B2-6	BOSTON	2210
602670244	TWENTY TWO LIBERTY LLC	C/O THE FALLON COMPANY	1 MARINA PARK DRIVE	BOSTON MA	2110	22 LIBERTY DR Apt B2-11	BOSTON	2210
602670169	HCK 2015 REALTY TRUST	C/O HENRY W COMSTOCK JR	22 LIBERTY DR #11F	BOSTON MA	2210	22 LIBERTY DR Apt B1-28	BOSTON	2210
602670174	KOBY A ROTSTEIN LIVING TRUST	C/O KOBY A ROTSTEIN	22 LIBERTY DR #3H	BOSTON MA	2210	22 LIBERTY DR Apt B1-33	BOSTON	2210
602670175	KECHES GEORGE N	C/O GEORGE N KECHES	22 LIBERTY DR #11C	BOSTON MA	2210	22 LIBERTY DR Apt B1-34	BOSTON	2210
602670176	KECHES GEORGE N	C/O GEORGE N KECHES	22 LIBERTY DR #11C	BOSTON MA	2210	22 LIBERTY DR Apt B1-35	BOSTON	2210

602670177	HANLON DIANE M	C/O DIANE M HANLON	22 LIBERTY DR #11D	BOSTON MA	2210	22 LIBERTY DR Apt B1-36	BOSTON	2210
602670180	LIN WEICHIEH	C/O WEICHIEH LIN	22 LIBERTY DR #10D	BOSTON MA	2210	22 LIBERTY DR Apt B1-39	BOSTON	2210
602670185	WEILER ROBERT K	C/O ROBERT K WEILER	22 LIBERTY DR #12E	BOSTON MA	2210	22 LIBERTY DR Apt B1-44	BOSTON	2210
602670187	GREENBERG DEBRA P	C/O DEBRA P GREENBERG	22 LIBERTY DR #10C	BOSTON MA	2210	22 LIBERTY DR Apt B1-46	BOSTON	2210
602670188	GREENBERG DEBRA P	C/O DEBRA P GREENBERG	22 LIBERTY DR #10C	BOSTON MA	2210	22 LIBERTY DR Apt B1-47	BOSTON	2210
602670190	LI NA	C/O NA LI	22 LIBERTY DR #11G	BOSTON MA	2210	22 LIBERTY DR Apt B1-49	BOSTON	2210
602670191	MARJORY BOHLIN 2016	C/O MARJORY BOHLIN	22 LIBERTY DR #3B	BOSTON MA	2210	22 LIBERTY DR Apt B1-50	BOSTON	2210
602670192	MALONE CAROL A	C/O CAROL A MALONE	22 LIBERTY DR # 9H	BOSTON MA	2210	22 LIBERTY DR Apt B1-51	BOSTON	2210
602670195	SARAH E HANCOCK REVOCABLE	C/O SARAH E HANCOCK	22 LIBERTY DR #8D	BOSTON MA	2210	22 LIBERTY DR Apt B1-54	BOSTON	2210
602670197	J DERENZO PROPERTIES LLC	C/O J DERENZO PROPERTIES LLC	43 CHARLES ST	NEEDHAM MA	2494	22 LIBERTY DR Apt B1-56	BOSTON	2210
602670198	J DERENZO PROPERTIES LLC	C/O J DERENZO PROPERTIES LLC	43 CHARLES ST	NEEDHAM MA	2494	22 LIBERTY DR Apt B1-57	BOSTON	2210
602670200	SIMONS JANET A	C/O JANET A SIMONS	188 GLEZEN LANE	WAYLAND MA	1778	22 LIBERTY DR Apt B1-59	BOSTON	2210
602670202	TWENTY TWO LIBERTY LLC		22 LIBERTY DR	BOSTON MA	2210	22 LIBERTY DR Apt B1-61	BOSTON	2210
602670205	22-12A LIBERTY NOMINEE TRUST	C/O ROPES & GRAY LLP	800 BOYLSTON ST	BOSTON MA	2199	22 LIBERTY DR Apt B1-64	BOSTON	2210
602670207	DETORE JOHN A	C/O JOHN A DETORE	22 LIBERTY DR #2M	BOSTON MA	2210	22 LIBERTY DR Apt B1-66	BOSTON	2210
602670208	DETORE JOHN A	C/O JOHN A DETORE	22 LIBERTY DR #2M	BOSTON MA	2210	22 LIBERTY DR Apt B1-67	BOSTON	2210
602670211	MURPHY JOHN E	C/O JOHN E MURPHY	22 LIBERTY DR #3M	BOSTON MA	2210	22 LIBERTY DR Apt B1-70	BOSTON	2210
602670212	MURPHY JOHN E	C/O JOHN E MURPHY	22 LIBERTY DR #3M	BOSTON MA	2210	22 LIBERTY DR Apt B1-71	BOSTON	2210
602670214	TWENTY TWO LIBERTY LLC		22 LIBERTY DR	BOSTON MA	2210	22 LIBERTY DR Apt B1-73	BOSTON	2210
602670217	TWENTY TWO LIBERTY LLC		22 LIBERTY DR	BOSTON MA	2210	22 LIBERTY DR Apt B1-76	BOSTON	2210
602670219	CASSIDY LIBERTY REALTY TRUST	C/O JOHN PANTEKIDIS	22 LIBERTY DR #10F	BOSTON MA	2210	22 LIBERTY DR Apt B1-78	BOSTON	2210
602670222	TWENTY TWO LIBERTY 12H REALT	KURT R STEINKRAUSS	22 LIBERTY DR #12H	BOSTON MA	2210	22 LIBERTY DR Apt B1-81	BOSTON	2210
602670223	TWENTY TWO LIBERTY 5F REALTY	C/O KURT R STEINKRAUSS	22 LIBERTY DR #5F	BOSTON MA	2210	22 LIBERTY DR Apt B1-82	BOSTON	2210
602670224	KRAFT LIBERTY LLC	C/O KRAFT LIBERTY LLC	22 LIBERTY DR #PH 2-A	BOSTON MA	2210	22 LIBERTY DR Apt B1-83	BOSTON	2210
602670225	KRAFT LIBERTY LLC	C/O KRAFT GROUP LLC	ONE PATRIOT PLACE	FOXBOROUGH MA	2035	22 LIBERTY DR Apt B1-84	BOSTON	2210
602670234	NOONAN MICHAEL J	C/O MICHAEL J NOONAN	22 LIBERTY DR #9A	BOSTON MA	2210	22 LIBERTY DR Apt B2-1	BOSTON	2210
602670235	NOONAN MICHAEL J	C/O MICHAEL J NOONAN	22 LIBERTY DR #9A	BOSTON MA	2210	22 LIBERTY DR Apt B2-2	BOSTON	2210
602670236	CRK BOSTON PROPERTIES LLC	C/O CRK BOSTON PROPERTIES LLC	1 CHARLES STREET SOUTH #1512	BOSTON MA	2116	22 LIBERTY DR Apt B2-3	BOSTON	2210
602670240	223A LIBERTY LLC	C/O 223A LIBERTY LLC	220 MAIN STREET SUITE #301	NATICK MA	1760	22 LIBERTY DR Apt B2-7	BOSTON	2210
602670241	BRODERICK NANCY J	C/O NANCY J BRODERICK	22 LIBERTY DR #6E	BOSTON MA	2210	22 LIBERTY DR Apt B2-8	BOSTON	2210
602670242	BRODERICK NANCY J	C/O NANCY J BRODERICK	22 LIBERTY DR #6E	BOSTON MA	2210	22 LIBERTY DR Apt B2-9	BOSTON	2210
602670243	COHEN DANIYEL	C/O DANIYEL COHEN	22 LIBERTY DR #5H	BOSTON MA	2210	22 LIBERTY DR Apt B2-10	BOSTON	2210
602670248	HAAN BERNARD J	C/O BERNARD J HAAN	22 LIBERTY DR #5E	BOSTON MA	2210	22 LIBERTY DR Apt B2-15	BOSTON	2210
602670250	BRANDT WENDY J	C/O WILLEM KEYER	22 LIBERTY DR #3E	BOSTON MA	2210	22 LIBERTY DR Apt B2-17	BOSTON	2210
602670251	LEVENSON NORMAN A	C/O COPLEY GROUP	896 BEACON ST	BOSTON MA	2215	22 LIBERTY DR Apt B2-18	BOSTON	2210
602670256	OWENS FAMILY LLC	C/O HENRY F OWENS III	22 LIBERTY DRIVE B2-23	BOSTON MA	2210	22 LIBERTY DR Apt B2-23	BOSTON	2210
602670257	OWENS FAMILY LLC	C/O HENRY F OWENS III	22 LIBERTY DRIVE B2-24	BOSTON MA	2210	22 LIBERTY DR Apt B2-24	BOSTON	2210
602670259	SUNFLOWER APARTMENT LLC	C/O LONGFELLOW MGMT SERVICES LLC	PO BOX 81505	WELLESLEY MA	2481	22 LIBERTY DR Apt B2-26	BOSTON	2210
602670260	SEAPORT NOWE TRUST	C/O BEVERLY D CARLSON	22 LIBERTY DR #10E	BOSTON MA	2210	22 LIBERTY DR Apt B2-27	BOSTON	2210
602670261	SEAPORT NOWE TRUST	C/O BEVERLY D CARLSON	22 LIBERTY DR #10E	BOSTON MA	2210	22 LIBERTY DR Apt B2-28	BOSTON	2210
602670245	TWENTY TWO LIBERTY LLC		22 LIBERTY DR	BOSTON MA	2210	22 LIBERTY DR Apt B2-12	BOSTON	2210
602670246	TWENTY TWO LIBERTY LLC		22 LIBERTY DR	BOSTON MA	2210	22 LIBERTY DR Apt B2-13	BOSTON	2210
602670247	HAAN BERNARD J	C/O BERNARD J HAAN	22 LIBERTY DR #5E	BOSTON MA	2210	22 LIBERTY DR Apt B2-14	BOSTON	2210
602670249	BRANDT WENDY J	C/O WILLEM KEYER	22 LIBERTY DR #3E	BOSTON MA	2210	22 LIBERTY DR Apt B2-16	BOSTON	2210
602670252	LEVENSON NORMAN A	C/O COPLEY GROUP	896 BEACON ST	BOSTON MA	2116	22 LIBERTY DR Apt B2-19	BOSTON	2210
602670253	MARCHBANK ROBERT	C/O ROBERT MARCHBANK	22 LIBERTY DR UNIT 4G	BOSTON MA	2210	22 LIBERTY DR Apt B2-20	BOSTON	2210
602670254	PEDICINI LISA C	C/O LISA C PEDICINI	22 LIBERTY DR #6F	BOSTON MA	2210	22 LIBERTY DR Apt B2-21	BOSTON	2210
602670255	STENSON RAYMOND C JR	C/O RAYMOND C STENSON JR	22 LIBERTY DR #5M	BOSTON MA	2210	22 LIBERTY DR Apt B2-22	BOSTON	2210
602670258	SUNFLOWER APARTMENT LLC	C/O LONGFELLOW MGMT SERVICES LLC	PO BOX 81505	WELLESLEY MA	2481	22 LIBERTY DR Apt B2-25	BOSTON	2210
602670264	LEVIN DONALD L	C/O DONALD L LEVIN	22 LIBERTY DR #8F	BOSTON MA	2210	22 LIBERTY DR Apt B2-31	BOSTON	2210
602670265	RT 22 LIBERTY TRUST	C/O ROBERT TRAINA	22 LIBERTY DR #12C	BOSTON MA	2210	22 LIBERTY DR Apt B2-32	BOSTON	2210
602670266	RT 22 LIBERTY TRUST	C/O ROBERT TRAINA	22 LIBERTY DR #12C	BOSTON MA	2210	22 LIBERTY DR Apt B2-33	BOSTON	2210
602670271	ZHAO YING ZI	C/O YING ZI ZHAO	22 LIBERTY DR #9B	BOSTON MA	2210	22 LIBERTY DR Apt B2-38	BOSTON	2210
602670272	ZHANG TONG	C/O TONG ZHANG	77 EXETER ST	BOSTON MA	2116	22 LIBERTY DR Apt B2-39	BOSTON	2210
602670273	KESHIAN DANIEL A	C/O DANIEL A KESHIAN	22 LIBERTY DR #12D	BOSTON MA	2210	22 LIBERTY DR Apt B2-40	BOSTON	2210
602670274	KESHIAN DANIEL A	C/O DANIEL A KESHIAN	22 LIBERTY DR #12D	BOSTON MA	2210	22 LIBERTY DR Apt B2-41	BOSTON	2210
602670275	SAYED-FRIEL HODA	C/O HODA SAYED-FRIEL	22 LIBERTY DR #4F	BOSTON MA	2210	22 LIBERTY DR Apt B2-42	BOSTON	2210
602670276	VANSTRY KATHERINE	C/O KATHERINE VANSTRY	22 LIBERTY DR # 9G	BOSTON MA	2210	22 LIBERTY DR Apt B2-43	BOSTON	2210

602670281	FLEISCHER RUSSELL L	C/O RUSSELL L FLEISCHER	22 LIBERTY DR #6H	BOSTON MA	2210	22 LIBERTY DR Apt B2-48	BOSTON	2210
602670282	WAKEFIELD LIBERTY TRUST	C/O ROGER H INGWERSEN	47 ALGONQUIAN DR	NATICK MA	1760	22 LIBERTY DR Apt B2-49	BOSTON	2210
602670283	BRIAN E HOLUB 2011 TRUST	C/O BRIAN E HOLUB	22 LIBERTY DR #5B	BOSTON MA	2210	22 LIBERTY DR Apt B2-50	BOSTON	2210
602670284	WAILES LYNN P	C/O LYNN P WAILES	2070 ARMORS FORD	GREENSBORO GA	30642	22 LIBERTY DR Apt B2-51	BOSTON	2210
602670289	TETON NOMINEE TRUST	C/O KELLY MCKERNAN	22 LIBERTY DR #5A	BOSTON MA	2210	22 LIBERTY DR Apt B2-56	BOSTON	2210
602670290	TETON NOMINEE TRUST	C/O KELLY MCKERNAN	22 LIBERTY DR #5A	BOSTON MA	2210	22 LIBERTY DR Apt B2-57	BOSTON	2210
602670291	PLUNKETT PATRICK F	C/O PATRICK F PLUNKETT	22 LIBERTY DR #11E	BOSTON MA	2210	22 LIBERTY DR Apt B2-58	BOSTON	2210
602670292	PLUNKETT PATRICK F	C/O PATRICK F PLUNKETT	22 LIBERTY DR #11E	BOSTON MA	2210	22 LIBERTY DR Apt B2-59	BOSTON	2210
602670295	SHEARWATER NOMINEE TRUST	C/O MATTHEW J BRESETTE	22 LIBERTY DR #8A	BOSTON MA	2210	22 LIBERTY DR Apt B2-62	BOSTON	2210
602670296	SEVEN F LIBERTY REALTY TRUST	C/O RUSSELL N STEIN	22 LIBERTY DR #7F	BOSTON MA	2210	22 LIBERTY DR Apt B2-63	BOSTON	2210
602670297	SEVEN F LIBERTY REALTY TRUST	C/O RUSSELL N STEIN	22 LIBERTY DR #7F	BOSTON MA	2210	22 LIBERTY DR Apt B2-64	BOSTON	2210
602670298	LEDEWITZ HOWARD M	C/O HOWARD M LEDEWITZ	22 LIBERTY DR #7G	BOSTON MA	2210	22 LIBERTY DR Apt B2-65	BOSTON	2210
602670304	8E REALTY TRUST	C/O SUE ANN FARRELL	22 LIBERTY DR #8E	BOSTON MA	2210	22 LIBERTY DR Apt B2-71	BOSTON	2210
602670309	MARTINO REALTY LLC	C/O MARTINO REALTY LLC	183 STATE ST STE 4B	BOSTON MA	2109	22 LIBERTY DR Apt B2-76	BOSTON	2210
602670310	BENSON FAMILY REALTY TRUST	C/O STEVEN J BENSON	22 LIBERTY DR #3F	BOSTON MA	2210	22 LIBERTY DR Apt B2-77	BOSTON	2210
602670315	DESANTIS DAVIDE	C/O DAVIDE DESANTIS	22 LIBERTY DR #6M	BOSTON MA	2210	22 LIBERTY DR Apt B2-82	BOSTON	2210
602670321	TWENTY TWO LIBERTY LLC		22 LIBERTY DR	BOSTON MA	2210	22 LIBERTY DR Apt B2-88	BOSTON	2210
602670323	KERR MICHAEL T	C/O MICHAEL T KERR	22 LIBERTY DR 2E	BOSTON MA	2210	22 LIBERTY DR Apt B2-90	BOSTON	2210
602670324	TWENTY TWO LIBERTY LLC		22 LIBERTY DR	BOSTON MA	2210	22 LIBERTY DR Apt B2-91	BOSTON	2210
602670325	ROBERT A CULBERT LIVING	C/O ROBERT A CULBERT	22 LIBERTY DR #8G	BOSTON MA	2210	22 LIBERTY DR Apt B2-92	BOSTON	2210
602670326	ROBERT A CULBERT LIVING	C/O ROBERT A CULBERT	22 LIBERTY DR #8G	BOSTON MA	2210	22 LIBERTY DR Apt B2-93	BOSTON	2210
602670327	RT 22 LIBERTY TRUST	C/O ROBERT TRAINA	22 LIBERTY DR UNIT 12C	BOSTON MA	2210	22 LIBERTY DR Apt B2-94	BOSTON	2210
602670328	WU MICHAEL	C/O MICHAEL WU	22 LIBERTY DR #11-I	BOSTON MA	2210	22 LIBERTY DR Apt B2-95	BOSTON	2210
602670331	TWENTY TWO LIBERTY LLC		22 LIBERTY DR	BOSTON MA	2210	22 LIBERTY DR Apt B2-98	BOSTON	2210
602670450	50 LIBERTY LLC	C/O THE FALLON COMPANY	ONEMARINA PARK DR	BOSTON MA	2210	50 LIBERTY DR	BOSTON	2210
602670262	REISS MARTIN H	C/O MARTIN H REISS	22 LIBERTY DR #4E	BOSTON MA	2210	22 LIBERTY DR Apt B2-29	BOSTON	2210
602670263	REISS MARTIN H	C/O MARTIN H REISS	22 LIBERTY DR #4E	BOSTON MA	2210	22 LIBERTY DR Apt B2-30	BOSTON	2210
602670267	GRENIER BART ALEXANDER	C/O BART ALEXANDER GRENIER	22 LIBERTY DR #4A	BOSTON MA	2210	22 LIBERTY DR Apt B2-34	BOSTON	2210
602670268	GRENIER BART ALEXANDER	C/O BART ALEXANDER GRENIER	22 LIBERTY DR #4A	BOSTON MA	2210	22 LIBERTY DR Apt B2-35	BOSTON	2210
602670269	LI LINDA	C/O LINDA LI	22 LIBERTY DR #8B	BOSTON MA	2210	22 LIBERTY DR Apt B2-36	BOSTON	2210
602670270	ZHAO YING ZI	C/O YING ZI ZHAO	22 LIBERTY DR #9B	BOSTON MA	2210	22 LIBERTY DR Apt B2-37	BOSTON	2210
602670277	GABRIEL TRACEY A	C/O TRACEY A GABRIEL	22 LIBERTY DR #2G	BOSTON MA	2210	22 LIBERTY DR Apt B2-44	BOSTON	2210
602670278	JOANNE F SHANNON QUALIFIED	C/O JOANNE F SHANNON	22 LIBERTY DR #PH1H	BOSTON MA	2210	22 LIBERTY DR Apt B2-45	BOSTON	2210
602670279	BERNSTEIN GEOFFREY T	C/O GEOFFREY T BERNSTEIN	22 LIBERTY DR #8H	BOSTON MA	2210	22 LIBERTY DR Apt B2-46	BOSTON	2210
602670280	JOHN R HENSON 2011 REVOCABLE	C/O JOHN R HENSON	22 LIBERTY DR #7H	BOSTON MA	2210	22 LIBERTY DR Apt B2-47	BOSTON	2210
602670285	LBY 6A LLC	C/O LBY 6A LLC/ RANDALL LATONA	PO BOX 428	ANDOVER MA	1810	22 LIBERTY DR Apt B2-52	BOSTON	2210
602670286	LBY 6A LLC	C/O LBY 61 LLC/RANDALL J LATONA	PO BOX 428	ANDOVER MA	1810	22 LIBERTY DR Apt B2-53	BOSTON	2210
602670287	EL-MALECKI MAGED	C/O MAGED EL-MALECKI	22 LIBERTY DR #7M	BOSTON MA	2210	22 LIBERTY DR Apt B2-54	BOSTON	2210
602670288	MAR REALTY LLC	C/O MAR REALTY LLC	22 LIBERTY DR #10-I	BOSTON MA	2210	22 LIBERTY DR Apt B2-55	BOSTON	2210
602670293	COHEN HELENA	C/O HELENA COHEN	22 LIBERTY DR #6B	BOSTON MA	2210	22 LIBERTY DR Apt B2-60	BOSTON	2210
602670294	SHEARWATER NOMINEE TRUST	C/O MATTHEW J BRESETTE	22 LIBERTY DR #8A	BOSTON MA	2210	22 LIBERTY DR Apt B2-61	BOSTON	2210
602670299	MOON AERI	C/O AERI MOON	22 LIBERTY DR #6G	BOSTON MA	2210	22 LIBERTY DR Apt B2-66	BOSTON	2210
602670300	BOHLIN GAREN	C/O GAREN BOHLIN	22 LIBERTY DR #3D	BOSTON MA	2210	22 LIBERTY DR Apt B2-67	BOSTON	2210
602670301	BOHLIN GAREN	C/O GAREN BOHLIN	22 LIBERTY DR #3D	BOSTON MA	2210	22 LIBERTY DR Apt B2-68	BOSTON	2210
602670302	MURPHY LINDA T	C/O LINDA T MURPHY	22 LIBERTY DR #9E	BOSTON MA	2210	22 LIBERTY DR Apt B2-69	BOSTON	2210
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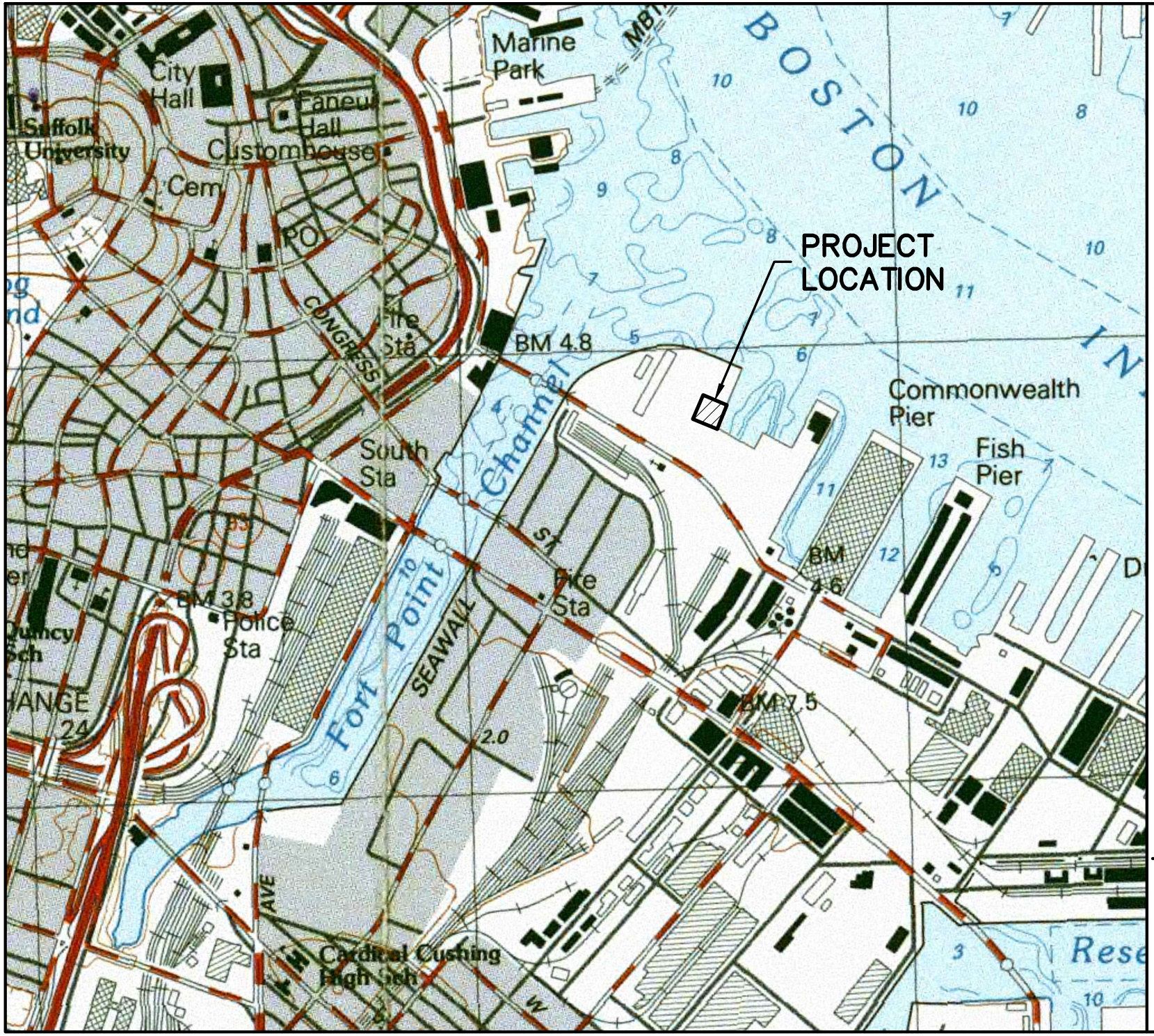
602670305	8E REALTY TRUST	C/O SUE ANN FARRELL	22 LIBERTY DR #8E	BOSTON MA	2210	22 LIBERTY DR Apt B2-72	BOSTON	2210
602670306	ZOURDOS DIMITRIS	C/O DIMITRIS ZOURDOS	22 LIBERTY DR #9M	BOSTON MA	2210	22 LIBERTY DR Apt B2-73	BOSTON	2210
602670307	ZOURDOS DIMITRIS	C/O DIMITRIS ZOURDOS	22 LIBERTY DR #9M	BOSTON MA	2210	22 LIBERTY DR Apt B2-74	BOSTON	2210
602670308	MARTINO REALTY LLC	C/O MARTINO REALTY LLC	183 STATE ST STE 4B	BOSTON MA	2109	22 LIBERTY DR Apt B2-75	BOSTON	2210
602670311	BENSON FAMILY REALTY TRUST	C/O STEVEN J BENSON	22 LIBERTY DR #3F	BOSTON MA	2210	22 LIBERTY DR Apt B2-78	BOSTON	2210
602670312	EL-MALECKI MAGED	C/O MAGED EL-MALECKI	22 LIBERTY DR #7M	BOSTON MA	2210	22 LIBERTY DR Apt B2-79	BOSTON	2210
602670313	TWENTY TWO LIBERTY LLC		22 LIBERTY DR	BOSTON MA	2210	22 LIBERTY DR Apt B2-80	BOSTON	2210
602670314	DESANTIS DAVIDE	C/O DAVIDE DESANTIS	22 LIBERTY DR #6M	BOSTON MA	2210	22 LIBERTY DR Apt B2-81	BOSTON	2210
602670316	BARAN SHANT	C/O SHANT BARAN	22 LIBERTY DR #4M	BOSTON MA	2210	22 LIBERTY DR Apt B2-83	BOSTON	2210
602670317	BARAN SHANT	C/O SHANT BARAN	22 LIBERTY DR #4M	BOSTON MA	2210	22 LIBERTY DR Apt B2-84	BOSTON	2210
602670318	TWENTY TWO LIBERTY LLC		22 LIBERTY DR	BOSTON MA	2210	22 LIBERTY DR Apt B2-85	BOSTON	2210
602670319	TWENTY TWO LIBERTY LLC		22 LIBERTY DR	BOSTON MA	2210	22 LIBERTY DR Apt B2-86	BOSTON	2210

602670320	TWENTY TWO LIBERTY LLC		22 LIBERTY DR	BOSTON	MA	2210	22 LIBERTY DR Apt B2-87	BOSTON	2210
602670322	KERR MICHAEL T	C/O MICHAEL T KERR	22 LIBERTY DR 2E	BOSTON	MA	2210	22 LIBERTY DR Apt B2-89	BOSTON	2210
602670329	STENSON RAYMOND C JR	C/O RAYMOND C STENSON JR	22 LIBERTY DR #5-M	BOSTON	MA	2210	22 LIBERTY DR Apt B2-96	BOSTON	2210
602670330	TWENTY TWO LIBERTY LLC		22 LIBERTY DR	BOSTON	MA	2210	22 LIBERTY DR Apt B2-97	BOSTON	2210
602670332	LIBERTY 4H REALTY TRUST	C/O MYRNA PUTZIGER	22 LIBERTY DR #4-H	BOSTON	MA	2210	22 LIBERTY DR Apt B2-99	BOSTON	2210
602671027	TEN FAN PIER BOULEVARD LLC	C/O THE FALLON COMPANY LLC	1 MARINA PARK DR	BOSTON	MA	2210	10 FAN PIER BL	BOSTON	2110
602671025	FAN PIER DEVELOPMENT LLC	C/O FALLON ONE MPD LLC	ONE MARINA PARK DRIVE	BOSTON	MA	2210	28 NORTHERN AV	BOSTON	2110
602670155	KRAFT LIBERTY LLC	C/O KRAFT GROUP LLC	ONE PATRIOT PLACE	FOXBOROUGH	MA	2035	22 LIBERTY DR Apt B1-14	BOSTON	2210
602671017	SNH SEAPORT LLC	C/O SNH SEAPORT LLC/TWO NEWTON PL	255 WASHINGTON ST STE 300	NEWTON	MA	2458	11 FAN PIER BL	BOSTON	2110
602671026	FAN PIER OWNERS CORPORATION	C/O THE FALLON COMPANY	ONE MARINA PARK DR	BOSTON	MA	2210	NORTHERN AV	BOSTON	2110
602671015	SNH SEAPORT LLC	C/O SNH SEAPORT LLC/TWO NEWTON PL	255 WASHINGTON ST STE 300	NEWTON	MA	2458	50 NORTHERN AV	BOSTON	2110
602671035	FALLON CORNERSTNE ONE	C/O CB RICHARD ELIS MGMT	1 MARINA PARK DRIVE	BOSTON	MA	2210	1 MARINA PARK DR	BOSTON	2210

FIGURES



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GENERAL LOCATION MAP
FAN PIER PARCEL E
10 FAN PIER BOULEVARD

PREPARED FOR:
THE FALLON COMPANY
ONE MARINA PARK DRIVE BOSTON MA 02210

PROJECT #	6266.92
FILE:	6266.92 Locus Map
SCALE:	1"=1000'
DATE:	8-23-2018
PROJECT MGR:	JMS
SURVEYOR:	NITSCH
DRAFTED BY:	WS
CHECKED BY:	

SHEET:

L-1

OF REV.

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AERIAL LOCUS MAP
FAN PIER PARCEL E
10 FAN PIER BOULEVARD

PREPARED FOR:
THE FALLON COMPANY
ONE MARINA PARK DRIVE BOSTON MA 02210

PROJECT #	6266.92
FILE:	6266.92 Locus Map
SCALE:	N.T.S.
DATE:	8-23-2018
PROJECT MGR:	JMS
SURVEYOR:	NITSCH
DRAFTED BY:	WS
CHECKED BY:	

SHEET:

L-2

OF REV.

Figure 3 - Natural Heritage Estimated and Priority Habitat Map
Fan Pier Parcel E
Boston, MA

2,000 1,000 0 2,000 Feet

Legend

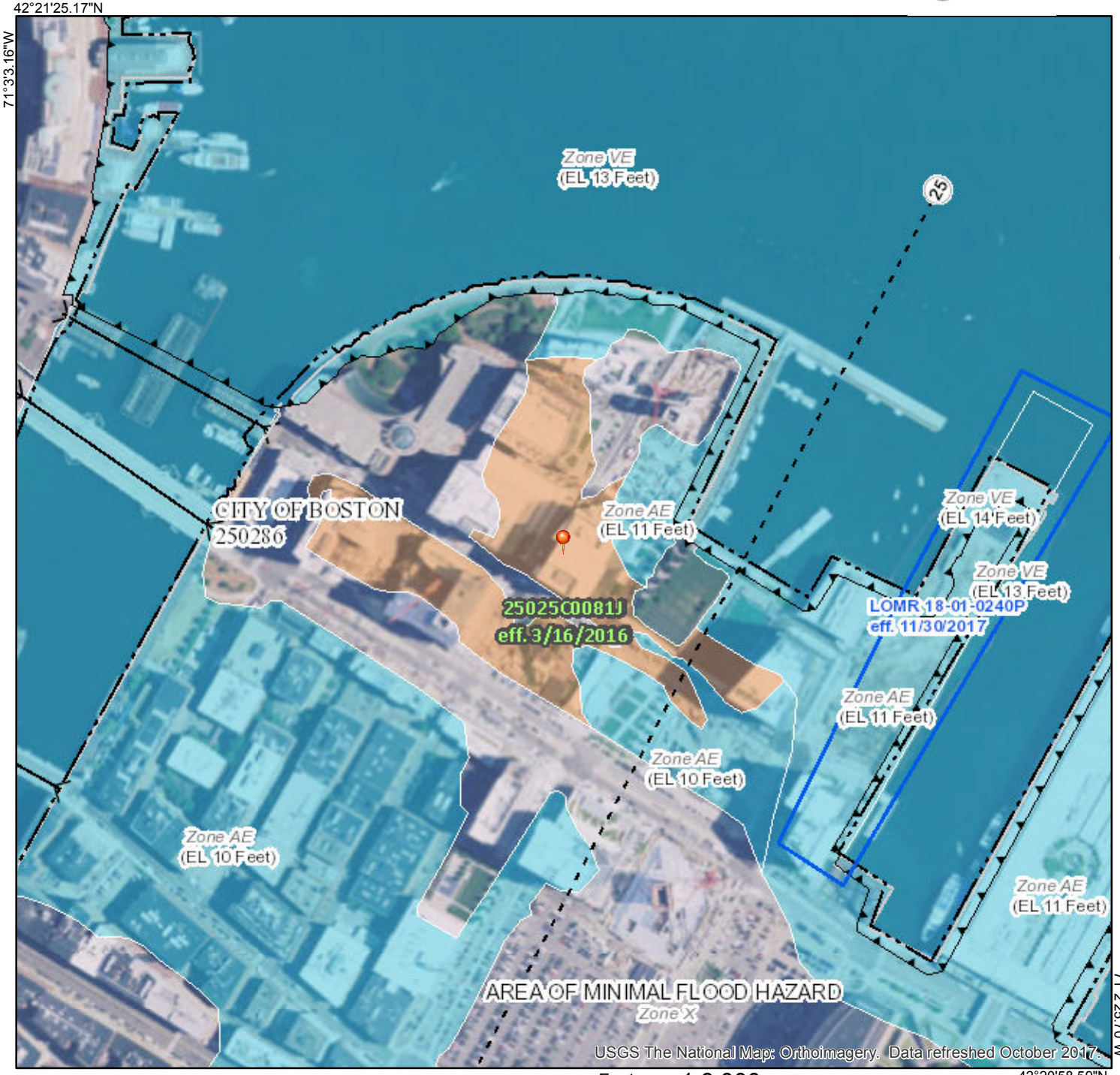
NHESP Priority Habitats of Rare Species

NHESP Estimated Habitats of Rare Wildlife

Nitsch Engineering

National Flood Hazard Layer FIRMette

FEMA



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

Legend

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

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

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

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

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

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

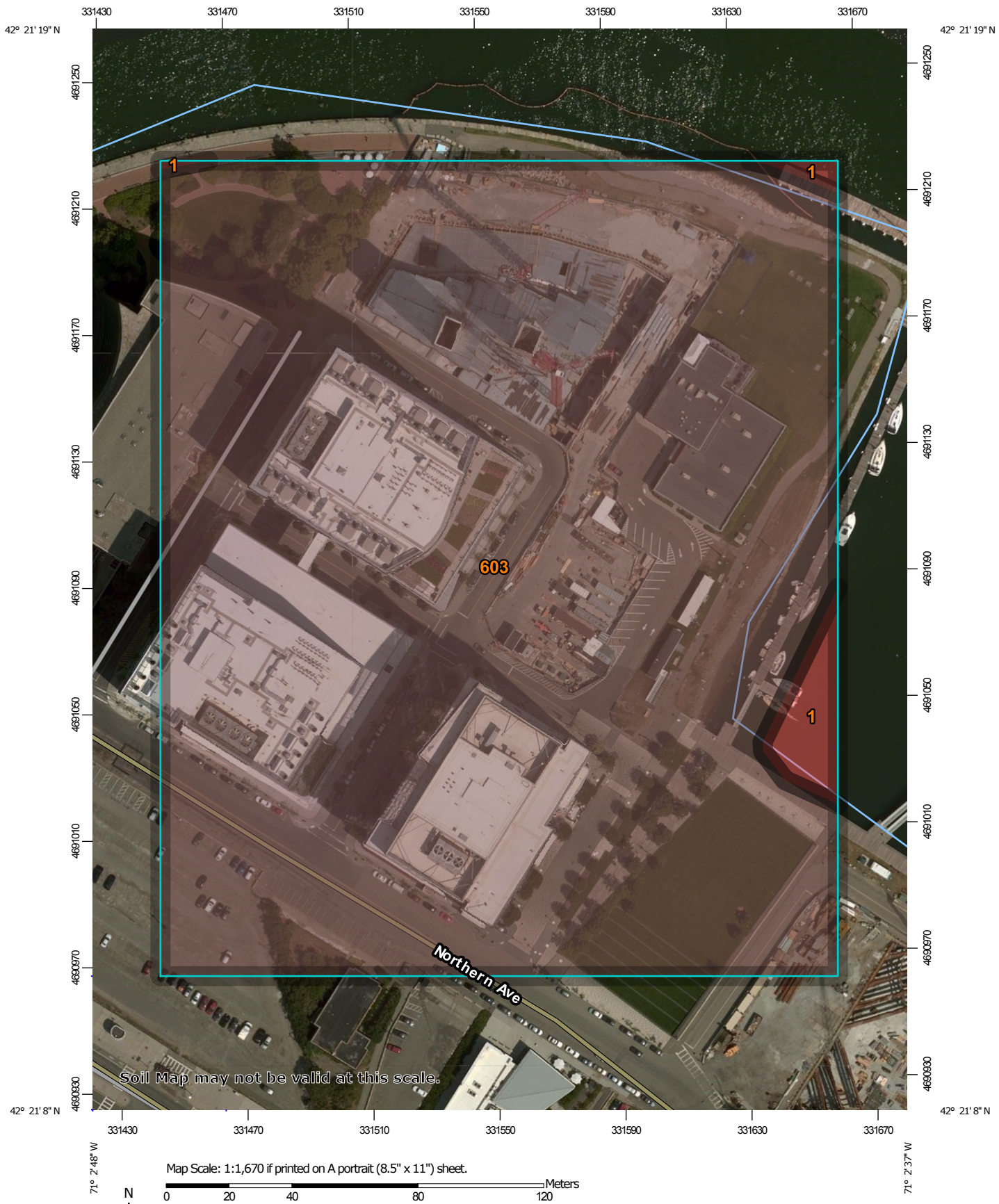
N

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

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

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 9/20/2018 at 4:38:01 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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



Map Scale: 1:1,670 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

Urban land, wet substratum, 0 to 3 percent slopes

Water

Not rated or not available

Soil Rating Lines

Urban land, wet substratum, 0 to 3 percent slopes

Water

Not rated or not available

Soil Rating Points

Urban land, wet substratum, 0 to 3 percent slopes

Water

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 13, Oct 6, 2017

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

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

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

Map Unit Name

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1	Water	Water	0.3	1.9%
603	Urban land, wet substratum, 0 to 3 percent slopes	Urban land, wet substratum, 0 to 3 percent slopes	13.5	98.1%
Totals for Area of Interest			**13.8**	**100.0%**

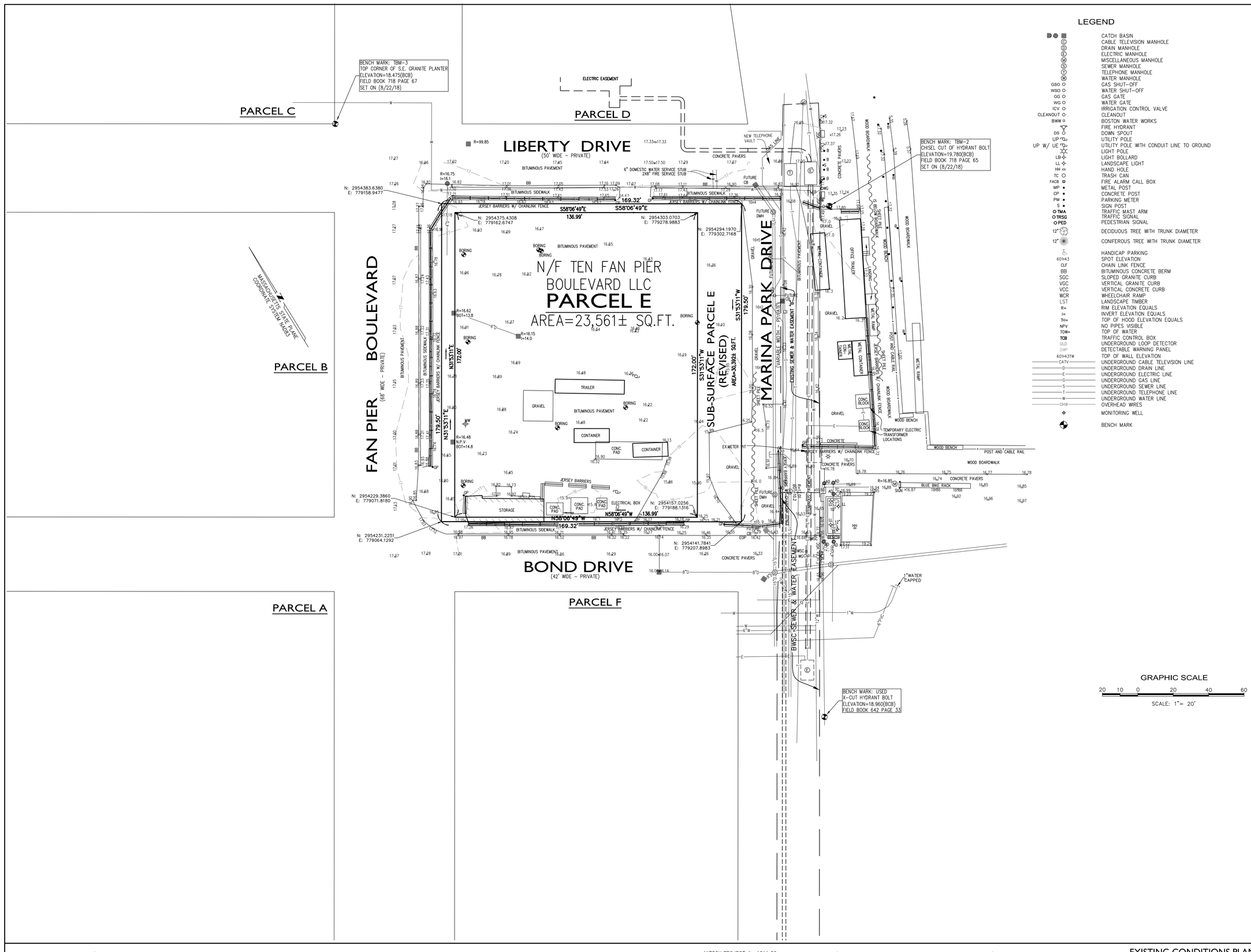
Description

A soil map unit is a collection of soil areas or nonsoil areas (miscellaneous areas) delineated in a soil survey. Each map unit is given a name that uniquely identifies the unit in a particular soil survey area.

Rating Options

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower



LEGEND

	CATCH BASIN
C	CABLE TELEVISION MANHOLE
D	DRAIN MANHOLE
E	ELECTRIC MANHOLE
M	MISCELLANEOUS MANHOLE
S	SEWER MANHOLE
T	TELEPHONE MANHOLE
W	WATER MANHOLE
GSO	GAS SHUT-OFF
WSO	WATER SHUT-OFF
GG	GAS GATE
WG	WATER GATE
ICV	IRRIGATION CONTROL VALVE
CLEANOUT	CLEANOUT
BWW	BOSTON WATER WORKS
	FIRE HYDRANT
DS	DOWN SPOUT
UP	UTILITY POLE
UP W/ UE	UTILITY POLE WITH CONDUIT LINE TO GROUND
	LIGHT POLE
LB	LIGHT BOLLARD
LL	LANDSCAPE LIGHT
HH	HAND HOLE
TC	TRASH CAN
FACB	FIRE ALARM CALL BOX
MP	METAL POST
CP	CONCRETE POST
PM	PARKING METER
S	SIGN POST
TMA	TRAFFIC MAST ARM
TRSG	TRAFFIC SIGNAL
PED	PEDESTRIAN SIGNAL
12"	DECIDUOUS TREE WITH TRUNK DIAMETER
12"	CONIFEROUS TREE WITH TRUNK DIAMETER
	HANDICAP PARKING
60!+3	SPOT ELEVATION
CLF	CHAIN LINK FENCE
BB	BITUMINOUS CONCRETE BERM
SGC	SLOPED GRANITE CURB
VGC	VERTICAL GRANITE CURB
VCC	VERTICAL CONCRETE CURB
WCR	WHEELCHAIR RAMP
LST	LANDSCAPE TIMBER
R=	RIM ELEVATION EQUALS
I=	INVERT ELEVATION EQUALS
TH=	TOP OF HOOD ELEVATION EQUALS
NPV	NO PIPES VISIBLE
TOW=	TOP OF WATER
TCB	TRAFFIC CONTROL BOX
ULD	UNDERGROUND LOOP DETECTOR
DWP	DETECTABLE WARNING PANEL
60!+3TW	TOP OF WALL ELEVATION
CATV	UNDERGROUND CABLE TELEVISION LINE
D	UNDERGROUND DRAIN LINE
E	UNDERGROUND ELECTRIC LINE
G	UNDERGROUND GAS LINE
S	UNDERGROUND SEWER LINE
T	UNDERGROUND TELEPHONE LINE
W	UNDERGROUND WATER LINE
OHW	OVERHEAD WIRES
	MONITORING WELL
	BENCH MARK

GRAPHIC SCALE

20 10 0 20 40 60

SCALE: 1"= 20'

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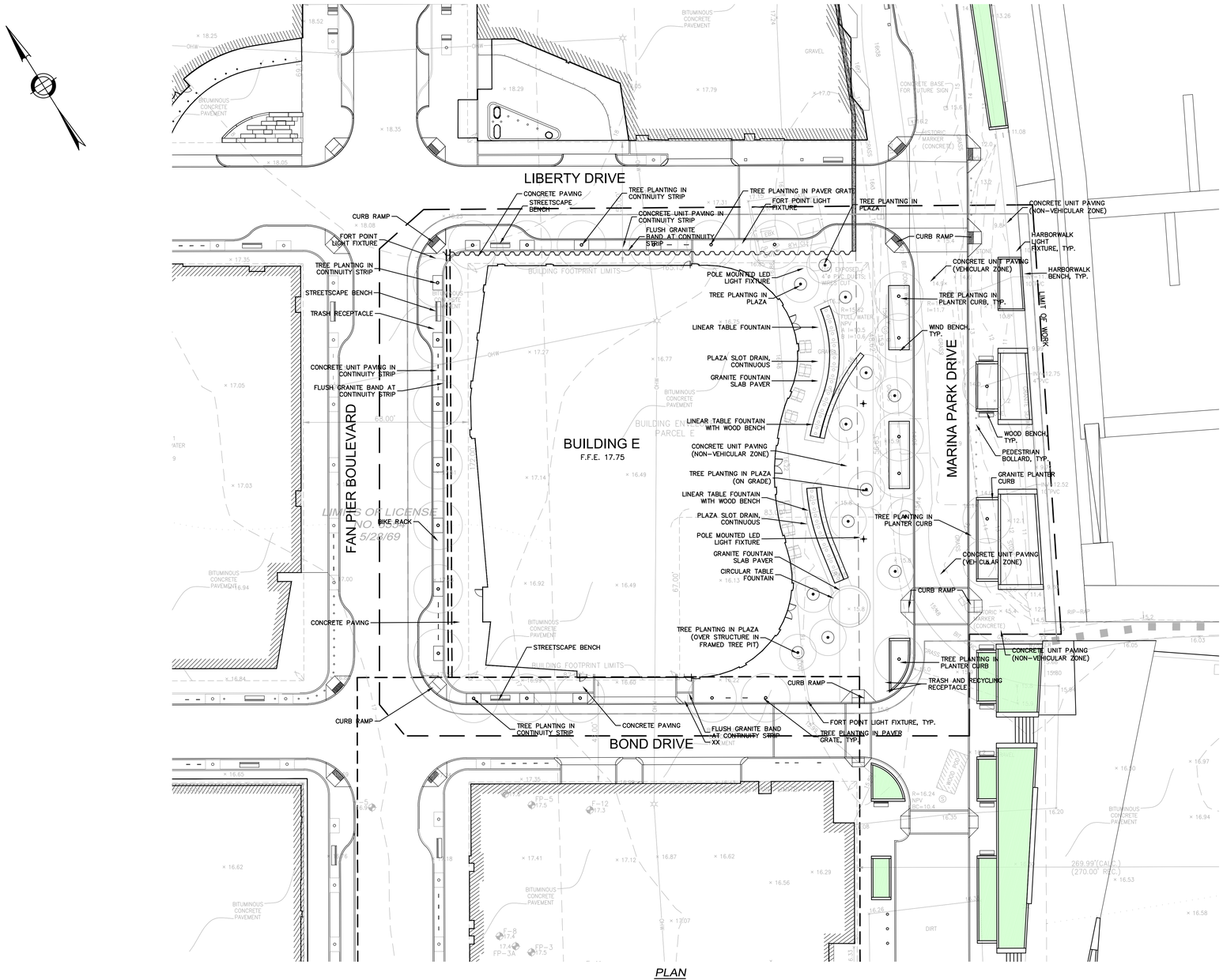
NITSCH PROJECT #	6266.92
FILE:	EXISTING CONDITIONS.DWG
SCALE:	AS NOTED
DATE:	10-24-18
PROJECT MANAGER:	JMS
SURVEYOR:	NITSCH
DRAFTED BY:	WS
CHECKED BY:	JMS

REV.	COMMENTS	DATE
	REVISIONS	

EXISTING CONDITIONS PLAN
FAN PIER PARCEL E
10 FAN PIER BOULEVARD

PREPARED FOR:
THE FALLON COMPANY
ONE MARINA PARK DRIVE

SHEET:
EX-1
OF REV.



PLAN
SCALE: 1" = 20'

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

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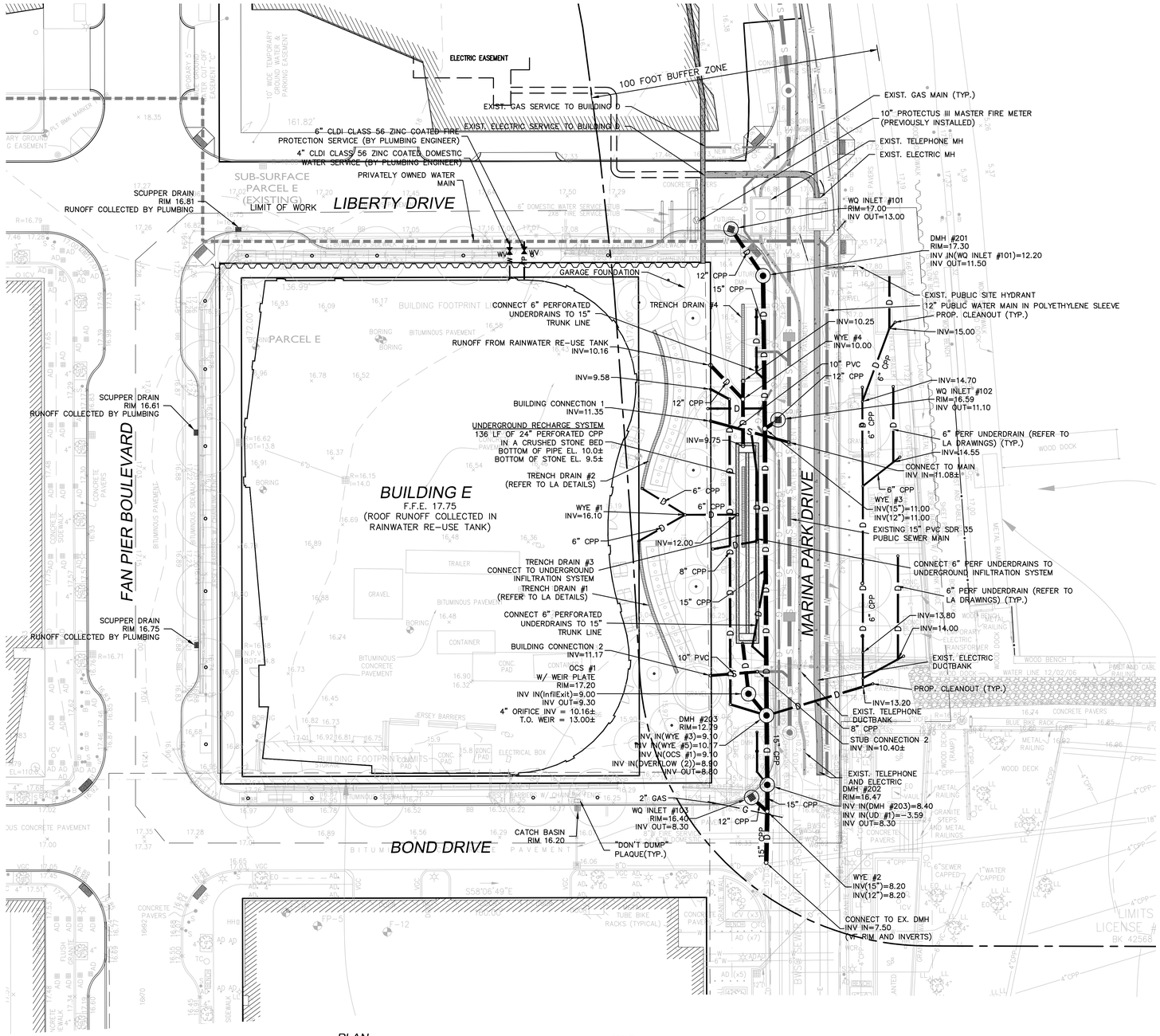
FILE:	SITE MATERIALS.DWG
SCALE:	AS NOTED
DATE:	10-24-18
PROJECT MANAGER:	JMS
SURVEYOR:	NITSCH
DRAFTED BY:	WS
CHECKED BY:	JMS

REV.	COMMENTS	DATE
	REVISIONS	

SITE MATERIALS PLAN
FAN PIER PARCEL E
10 FAN PIER BOULEVARD

PREPARED FOR:
THE FALLON COMPANY
ONE MARINA PARK DRIVE

SHEET:
C-1
OF REV.



PLAN
1" = 20'

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

LEGEND

EXISTING		PROPOSED	
▣ ● ▦	CATCH BASIN	▣	CATCH BASIN
Ⓓ	DRAIN MANHOLE	ⓓ D	DRAIN MANHOLE
Ⓔ	ELECTRIC MANHOLE		
BFD MH Ⓑ	BOSTON FIRE DEPARTMENT MANHOLE	ⓓ DW	DRYWELL
Ⓜ	MISCELLANEOUS MANHOLE		
Ⓢ	SEWER MANHOLE	ⓢ S	SANITARY SEWER MANHOLE
Ⓣ	TELEPHONE MANHOLE	ⓢ STC	STORMCEPTOR
GSO	GAS SHUT-OFF	▭▭	TRENCH DRAIN
WSO	WATER SHUT-OFF	▦	AREA DRAIN
GG	GAS GATE	●	AREA DRAIN W/DOMED GRATE
WG	WATER GATE	●CO	CLEANOUT
	FIRE HYDRANT	○W	WATER VALVE
	UTILITY POLE	ABD.	ABANDON
	LIGHT POLE		ABANDON EXISTING UTILITY/ REMOVE & DISPOSE UTILITY IF WITHIN NEW BUILDING LIMITS
■	GRANITE BLOCK	R&D	REMOVE & DISPOSE
LL	LANDSCAPE LIGHT	D	DRAIN LINE
FA	FIRE ALARM CALL BOX	S	SEWER LINE
•	BOLLARD	FP	FIRE SERVICE
PM	PARKING METER	W	WATER LINE
S	SIGN POST	DICL	CEMENT LINED DUCTILE IRON CLASS 56 PIPE
12"	DECIDUOUS TREE WITH TRUNK DIAMETER	CPP	CORRUGATED POLYETHYLENE PIPE
	BORING	PVC	POLYVINYL CHLORIDE SDR 35 PIPE
19.55	SPOT ELEVATION	RCP	REINFORCED CONCRETE PIPE
CLF	CHAIN LINK FENCE	FS	FIRE SERVICE
BB	BIT BERM	DWS	DOMESTIC WATER SERVICE
VGC	VERTICAL GRANITE CURB	INV.	INVERT
CC	CONCRETE CURB	BWSC	BOSTON WATER AND SEWER COMMISSION
WCR	WHEELCHAIR RAMP	A.P.	ANGLE POINT
LST	LANDSCAPE TIMBER	VGC	VERTICAL GRANITE CURB
R=	RIM ELEVATION EQUALS	FDC	FIRE DEPARTMENT CONNECTION
I=	INVERT ELEVATION EQUALS	C.T.E.	CONNECT TO EXISTING
TH=	TOP OF HOOD ELEVATION EQUALS	▲	PROPOSED DOOR LOCATION
NPV	NO PIPES VISIBLE		
BC=	BOTTOM OF CHAMBER ELEVATION EQUALS		
CI=	CURB INLET ELEVATION EQUALS		
TW	TOP OF WALL ELEVATION		
CATV	UNDERGROUND CABLE TELEVISION LINE		
D	UNDERGROUND DRAIN LINE		
E	UNDERGROUND ELECTRIC LINE		
G	UNDERGROUND GAS LINE		
S	UNDERGROUND SEWER LINE		
T	UNDERGROUND TELEPHONE LINE		
W	UNDERGROUND WATER LINE		
OHW	OVERHEAD WIRES		

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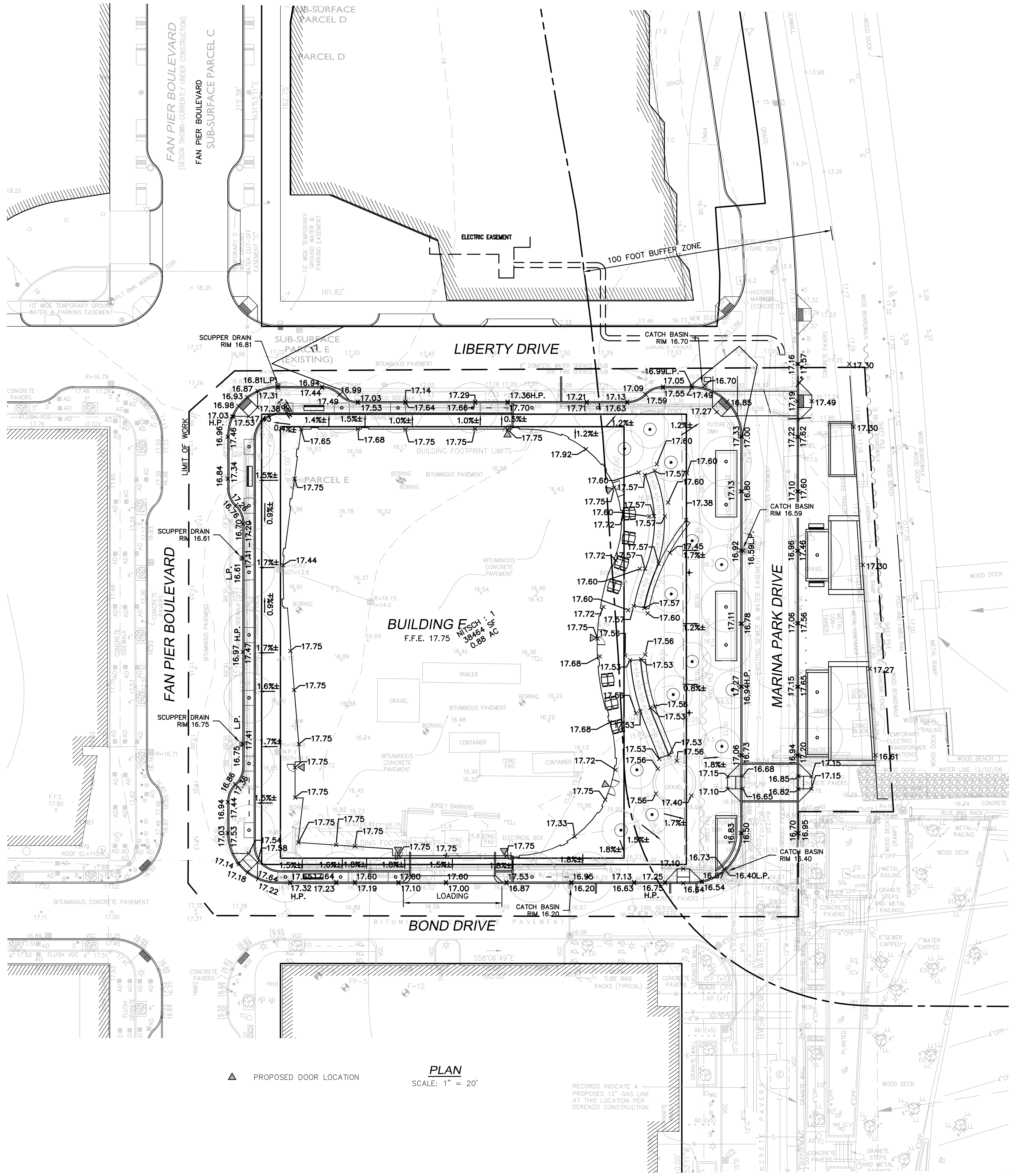
NITSCH PROJECT #	6266.92
FILE:	UTILITY.DWG
SCALE:	AS NOTED
DATE:	10-24-18
PROJECT MANAGER:	JMS
SURVEYOR:	NITSCH
DRAFTED BY:	WS
CHECKED BY:	JMS

REV.	COMMENTS	DATE
	REVISIONS	

SITE UTILITY PLAN
FAN PIER PARCEL E
10 FAN PIER BOULEVARD

PREPARED FOR:
THE FALLON COMPANY
ONE MARINA PARK DRIVE

SHEET:
C-2
OF REV.



GRADING NOTES

1. PITCH EVENLY BETWEEN SPOT GRADES.
2. ALL PAVED AREAS MUST PITCH TO DRAIN AT A MINIMUM OF ONE–EIGHTH INCH (1/8") PER FOOT.
3. WHERE NEW PAVING MEETS EXISTING PAVING, MEET LINE AND GRADE OF EXISTING.
4. FOR ALL UTILITIES, REFER TO CIVIL ENGINEER'S DRAWINGS.
5. THE GENERAL CONTRACTOR SHALL REPAIR ANY DAMAGES TO EXISTING UTILITY LINES OR STRUCTURES INCURRED DURING CONSTRUCTION OPERATIONS AT NO COST TO OWNER.
6. PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDINGS AT ALL LOCATIONS.
7. ALL PROPOSED TOP OF CURB ELEVATIONS ARE SIX INCHES ABOVE BOTTOM OF CURB UNLESS SHOWN OTHERWISE.
8. THE GENERAL CONTRACTOR SHALL PROVIDE DUST CONTROL FOR CONSTRUCTION OPERATIONS AS APPROVED BY THE ARCHITECT.
9. THE GENERAL CONTRACTOR SHALL BLEND NEW EARTHWORK SMOOTHLY INTO EXISTING EARTHWORK.
10. ALL POINTS OF EGRESS AND/OR INGRESS SHALL BE MAINTAINED TO PREVENT TRACKING OR FLOWING OF SEDIMENT ON TO PUBLIC ROADS.
11. THE CONTRACTOR SHALL VERIFY ALL EXISTING GRADES IN THE FIELD AND REPORT ANY DISCREPENCIES IMMEDIATELY TO THE ARCHITECT PRIOR TO STARTING WORK.
12. REFER TO THE EARTHWORK SECTION OF THE SPECIFICATIONS FOR SPECIFIC EXCAVATION AND FILLING PROCEDURES.
13. ANY ALTERATIONS TO THESE DRAWINGS MADE IN THE FIELD DURING CONSTRUCTIONS SHALL BE RECORDED BY THE GENERAL CONTRACTOR ON "AS–BUILT" DRAWINGS

△ PROPOSED DOOR LOCATION

PLAN
SCALE: 1" = 20'

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

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NITSCH PROJECT #	6266.92
FILE:	GRADING PLAN.DWG
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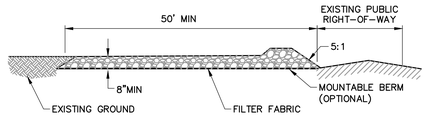
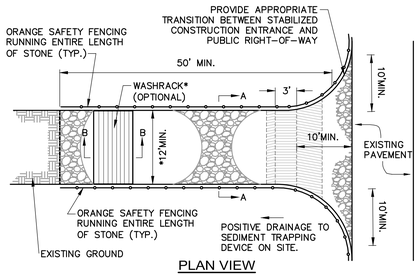
SITE GRADING PLAN
FAN PIER PARCEL E
10 FAN PIER BOULEVARD

PREPARED FOR:
THE FALLON COMPANY
ONE MARINA PARK DRIVE

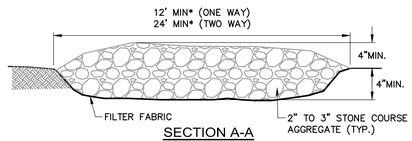
SHEET:
C-3
OF
REV.



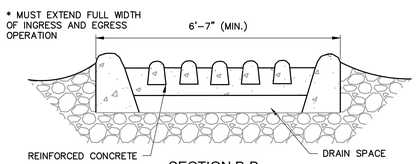
SIDE ELEVATION



PLAN VIEW



SECTION A-A



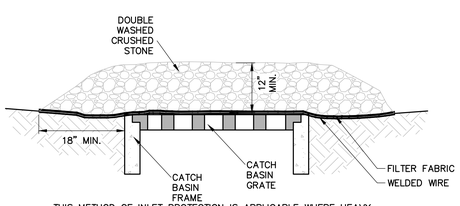
SECTION B-B

CONSTRUCTION SPECIFICATIONS

1. STONE SIZE – USE 2"TO 3" STONE.
2. LENGTH – GREATER THAN OR EQUAL TO 50 FEET
3. THICKNESS – 6"
4. WIDTH – TWELVE FOOT MINIMUM (ONE WAY), TWENTY FOUR FOOT MINIMUM (TWO WAY), BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS.
5. SURFACE WATER – ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM SHALL BE PERMITTED.
6. MAINTENANCE – THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH SHALL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
7. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED.

STABILIZED CONSTRUCTION ENTRANCE

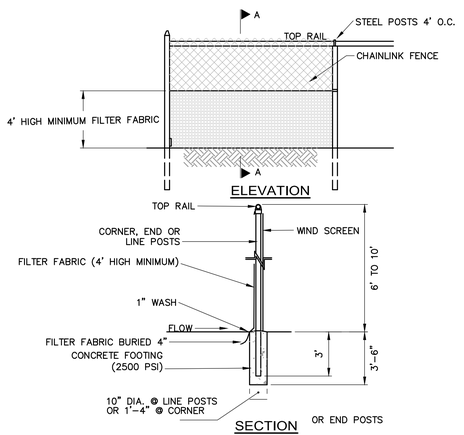
NOT TO SCALE



THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE HEAVY FLOWS ARE EXPECTED, BUT NOT WHERE PONDING AROUND THE STRUCTURE MIGHT CAUSE EXCESSIVE INCONVENIENCE OR DAMAGE TO ADJACENT STRUCTURES AND UNPROTECTED AREAS. THIS METHOD NOT ACCEPTABLE IN ACTIVE TRAFFIC AREAS.

INLET PROTECTION
CATCH BASIN W/ GRAVEL

NOT TO SCALE

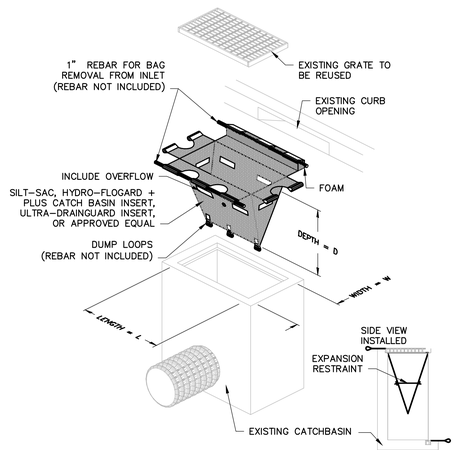


SECTION

1. CHAINLINK FENCE SHALL BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES.
2. FILTER FABRIC SHALL BE FASTENED SECURELY TO CHAINLINK FENCE WITH TIES SPACED HORIZONTALLY 24" AS THE TOP AND MIDSECTION.
3. WHEN TWO SECTIONS OF FILTER FABIRC ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY 6"
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL SHALL BE REMOVED WHEN SEDIMENT BUILD-UP REACHES 50% OF THE HEIGHT OF THE FILTER FABRIC.
5. MAINTENANCE OF SILT FENCE SHALL BE RECORDED TO IN THE SWPPP

EROSION CONTROL BARRIER
SUPER SILT FENCE

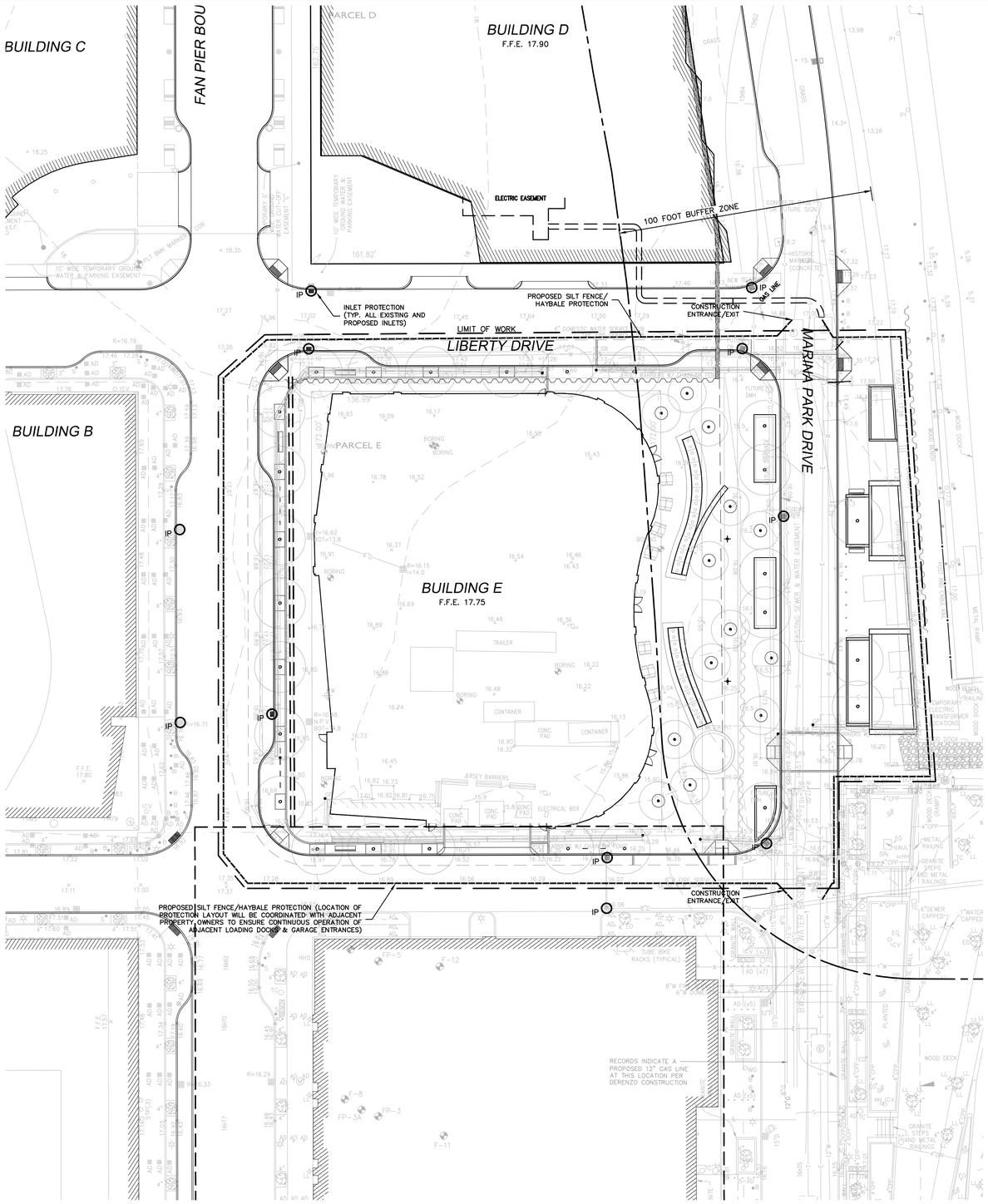
NOT TO SCALE



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

INLET PROTECTION
CATCH BASIN W/ SILTATION SACK

NOT TO SCALE



PLAN

SCALE: 1" = 20'

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CHECKED BY:	JMS

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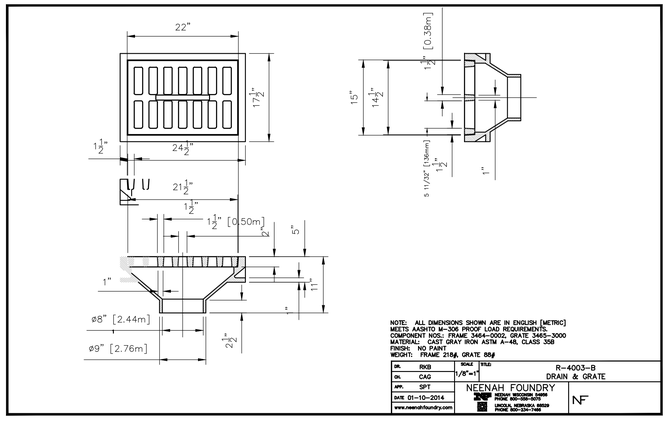
EROSION CONTROL PLAN
FAN PIER PARCEL E
10 FAN PIER BOULEVARD

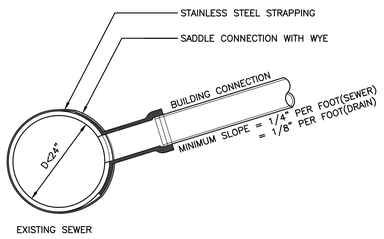
PREPARED FOR:
THE FALLON COMPANY
ONE MARINA PARK DRIVE

SHEET:
C-4
OF REV.



SCUPPER DRAIN DETAIL

N.T.S.



EXISTING SEWER

NOTES:

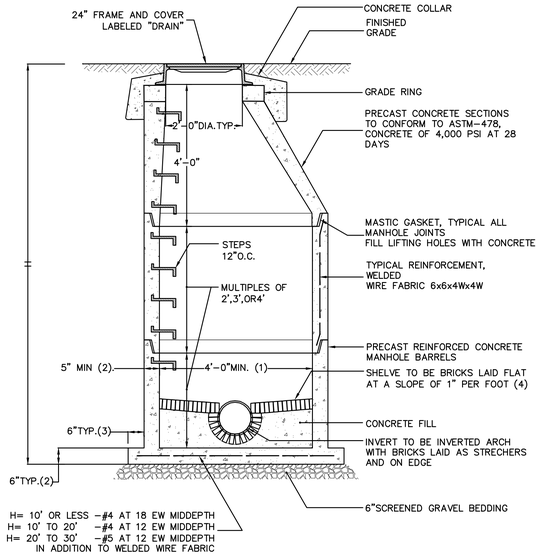
1. FULL PVC OR IRON SADDLE MAY BE USED TO CONNECT TO EXISTING PVC, CLAY, CONCRETE, OR IRON PIPE.
2. SADDLES MUST HAVE RUBBER GASKETS AND SHALL BE TIGHTENED WITH STRAPS. SADDLES WILL NOT BE CEMENTED ONTO THE PIPE.
3. FULL WYE CONNECTION FITTINGS MAY BE USED.
4. PIPE SHALL BE CUT TO CONFORM TO THE OPENING IN THE SADDLE.
5. CONNECTIONS DIRECTLY INTO THE EXISTING PIPE WITHOUT A SADDLE OR A FULL WYE FITTING ARE NOT ALLOWED.

SADDLE CONNECTION

NOT TO SCALE

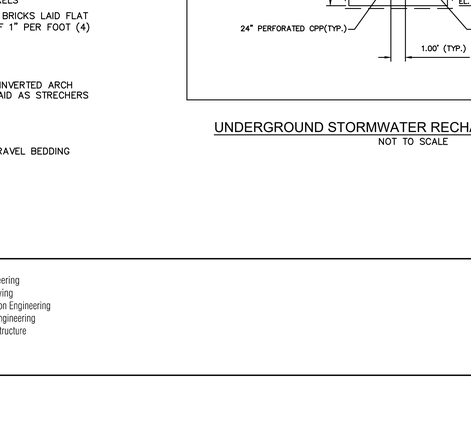
NOTES:

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.
4. CONCRETE INVERT AND SHELF MAY BE SUBSTITUTED IN STORM DRAIN MANHOLES AS DIRECTED BY THE ENGINEER.



TYPICAL PRECAST CONCRETE MANHOLE

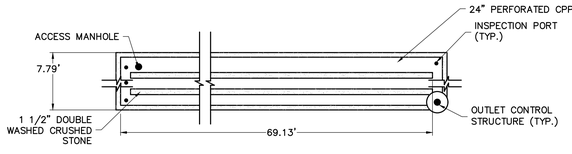
NOT TO SCALE

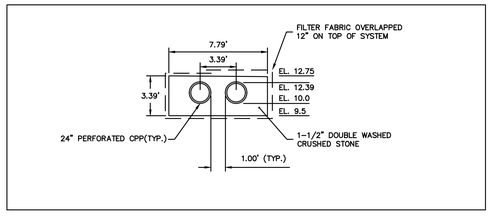


W = MAXIMUM TRENCH WIDTH
D = OUTSIDE DIAMETER
UNSHEATHED TRENCH: W = D+2' (3'–0"MIN.)
SHEATHED TRENCH: W = D+2'+ SHEATHING WIDTH:
4'–0"MIN. W/O WALERS
5'–0"MIN. W/WALERS
TRENCH BOX OR HYDRAULIC SHORING:
W = D+2'+ [WALL SHIELD WIDTH ± 8"] + 1' FOR TRENCH BOX

STANDARD TRENCH DETAIL FOR 15" SEWER PIPE

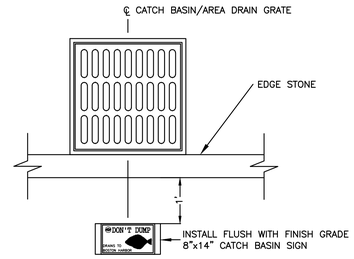
NOT TO SCALE





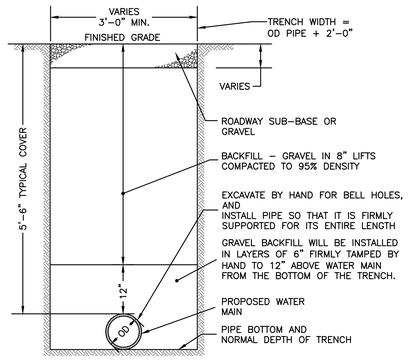
UNDERGROUND STORMWATER RECHARGE SYSTEM DETAIL

NOT TO SCALE



BWSC CATCH BASIN SIGN INSTALLATION

NOT TO SCALE



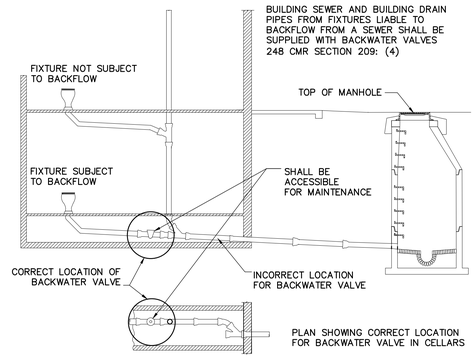
WATER TRENCH DETAIL

NOT TO SCALE

INLET	D	A	B	INLET	D	A	B
4"	3'–6"ø	3'–0"	2'–6"	8"	5'–0"ø	6'–0"	5'–0"
5"	3'–6"ø	5'–0"	4'–0"		5'–6"x 5'–6"	4'–6"	4'–0"
	3'–6"x 3'–6"	4'–0"	3'–0"		6'–0"ø	4'–0"	3'–6"
	3'–6"x 3'–6"	3'–6"	3'–0"		6'–0"x 6'–0"	3'–0"	2'–6"
	3'–6"x 3'–6"	3'–0"	2'–6"		6'–6"ø	3'–6"	3'–0"
	3'–6"x 3'–6"	3'–0"	2'–6"		6'–6"x 6'–6"	3'–0"	2'–6"
6"	4'–0"ø	5'–0"	4'–6"	10"	5'–6"ø	7'–6"	6'–6"
	4'–0"x 4'–0"	4'–0"	3'–6"		6'–0"x 6'–0"	5'–6"	4'–6"
	4'–6"ø	4'–0"	3'–6"		6'–0"ø	6'–6"	5'–6"
	4'–6"x 4'–6"	3'–6"	3'–0"		6'–6"x 6'–6"	5'–0"	4'–0"
	5'–0"ø	3'–6"	3'–0"				
	5'–0"x 5'–0"	3'–0"	2'–6"				

NOTES:

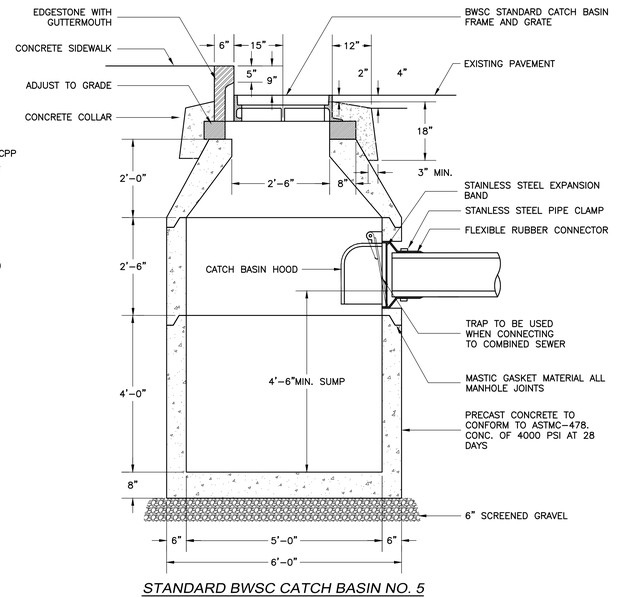
FOR INLETS LARGER THAN 10" THE DESIGN AND DIMENSIONS WILL BE DETERMINED FOR EACH PARTICULAR CASE PRE-CAST SEPARATORS ARE TO HAVE ALL SPECIFIED HOLES EITHER CORE-BORED OR CAST IN PLACE.



NOTE: ALL PLUMBING FIXTURES BELOW THE LEVEL OF THE TOP OF THE MANHOLE OF THE SEWER SERVICING THE FIXTURE(S) SHALL BE CONSIDERED AS BEING SUBJECT TO BACKFLOW AND SHALL BE SUPPLIED WITH BACKWATER VALVES.

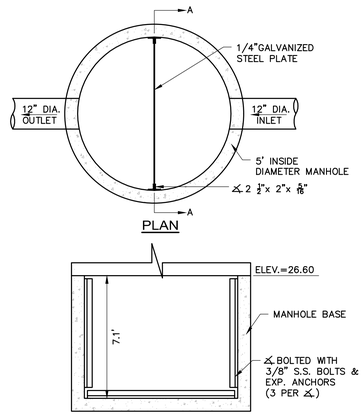
STANDARD BACKWATER VALVE

NOT TO SCALE



STANDARD BWSC CATCH BASIN NO. 5

NOT TO SCALE

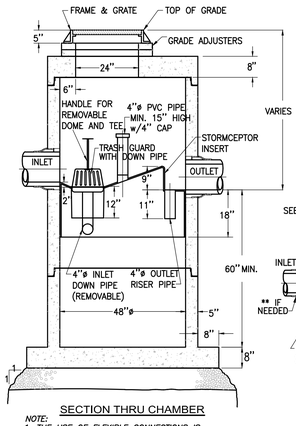


PLAN

SECTION A-A

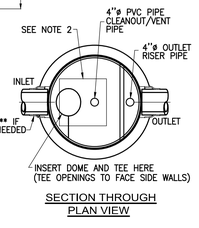
OUTLET CONTROL STRUCTURE

NOT TO SCALE



SECTION THRU CHAMBER

NOTE:
1. THE USE OF FLEXIBLE CONNECTIONS IS RECOMMENDED AT THE OUTLET WHERE APPLICABLE.
2. THE COVER SHOULD BE POSITIONED OVER THE 4"ø CLEANOUT/VENT PIPE AND THE 4" INLET DOWN PIPE.
3. CONTRACTOR TO PROVIDE CRANE TO SET UNIT (HEAVIEST SECTION WEIGHS 5000 LBS.)



SECTION THROUGH
PLAN VIEW

WATER QUALITY INLET
STORMCEPTOR 450i CATCH BASIN DETAIL

NOT TO SCALE

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REV.	COMMENTS	DATE
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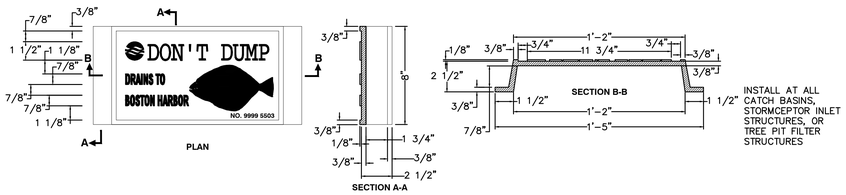
CIVIL DETAILS 1
FAN PIER PARCEL E
10 FAN PIER BOULEVARD

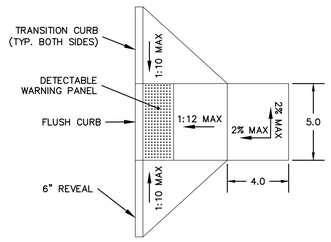
PREPARED FOR:
THE FALLON COMPANY
ONE MARINA PARK DRIVE

SHEET:
C-5
OF REV.



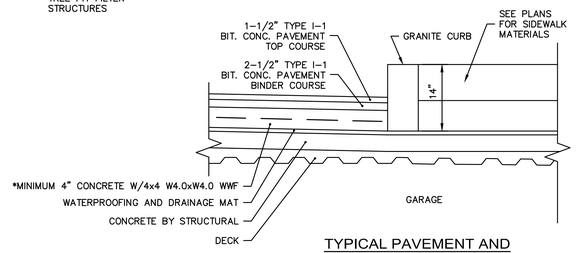
BWSC "DON'T DUMP" PLAQUE DETAIL

NOT TO SCALE



PEDESTRIAN RAMP DETAIL

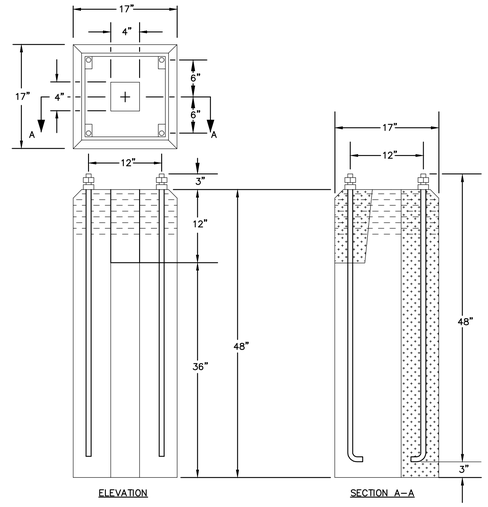
NOT TO SCALE



*CONCRETE THICKNESS SHALL BE MAXIMUM 6". IF MORE GRADIING IS REQUIRED DENSE GRADED CRUSHED STONE SHALL BE USED BETWEEN CONCRETE AND DRAINAGE MAT.

TYPICAL PAVEMENT AND VERTICAL GRANITE CURB SECTION ABOVE GARAGE

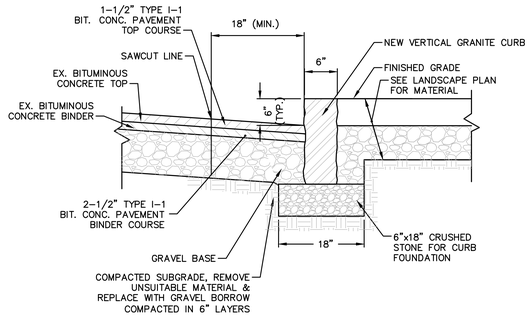
NOT TO SCALE



PRECAST POLE BASE

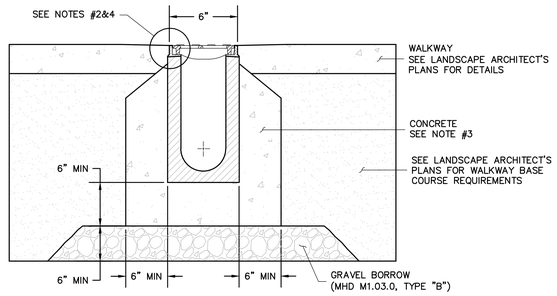
NOT TO SCALE

NOTE:
DETAIL FOR POLE BASE IN SOLID GROUND ONLY. REFER TO STRUCTURAL DRAWINGS FOR POLE BASE DETAIL OVER GARAGE.



TYPICAL GRANITE CURB SECTION DETAIL

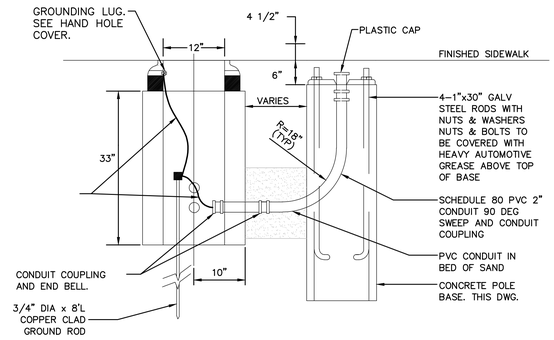
NOT TO SCALE



NOTES:
1. TRENCH DRAIN SHALL BE POLYMER CONCRETE S100K (POWERDRAIN) CHANNEL SYSTEM WITH DUCTILE IRON RAIL AND GRATE AS MANUFACTURED BY ACO POLYMER PRODUCTS, INC., CHARDON, OH., OR APPROVED EQUAL.
2. TRENCH DRAIN SYSTEM AND GRATES SHALL BE H-20 LOADING.
3. CONCRETE CRADLE FOR TRENCH DRAIN SHALL BE MINIMUM 4,000 PSI. CONCRETE SHALL BE VIBRATED TO ELIMINATE AIR POCKETS.
4. THE FINISHED LEVEL OF THE ASPHALT WALKWAY SHALL BE FLUSH WITH THE TOP OF THE CHANNEL EDGE.
5. TRENCH DRAIN GRATE SHALL BE ADA COMPLIANT.
6. TRENCH DRAIN SYSTEM SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
7. ALL TRENCH DRAINS SHALL BE PROVIDED WITH AN INLINE CATCH BASIN AT THE LOW POINT OF THE TROUGH. WIDTH OF INLINE CATCH BASIN TO MATCH WIDTH OF TRENCH DRAIN.

TRENCH DRAIN DETAIL

NOT TO SCALE



STREET POLE BASE, HANDHOLE AND POLE FOUNDATION

NOT TO SCALE

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NITSCH PROJECT #	6266.92
FILE:	DETAILS.DWG
SCALE:	AS NOTED
DATE:	10-22-18
PROJECT MANAGER:	JMS
SURVEYOR:	NITSCH
DRAFTED BY:	WS
CHECKED BY:	JMS

REV.	COMMENTS	DATE
	REVISIONS	

CIVIL DETAILS 2
FAN PIER PARCEL E
10 FAN PIER BOULEVARD

PREPARED FOR:
THE FALLON COMPANY
ONE MARINA PARK DRIVE

SHEET:
C-6
OF REV.

Boston Planning & Development Agency
Climate Resiliency Report Summary

boston planning & development agency

Submitted: 10/24/2018 14:26:52

A.1 - Project Information

Project Name:	Fan Pier Parcel E			
Project Address:	10 Fan Pier Boulevard			
Filing Type:	Initial (PNF, EPNF, NPC or other substantial filing)			
Filing Contact:	Richard Martini	The Fallon Company	wschreefer@nitscheng.com	617-737-4100
Is MEPA approval required?	No	MEPA date:		

A.2 - Project Team

Owner / Developer:	The Fallon Company
Architect:	Elkus Manfredi Architects
Engineer:	WSP USA
Sustainability / LEED:	The Green Enginering, Inc. / Energy Consulting: enviENERGY Studio
Permitting:	
Construction Management:	Turner Construction Company

A.3 - Project Description and Design Conditions

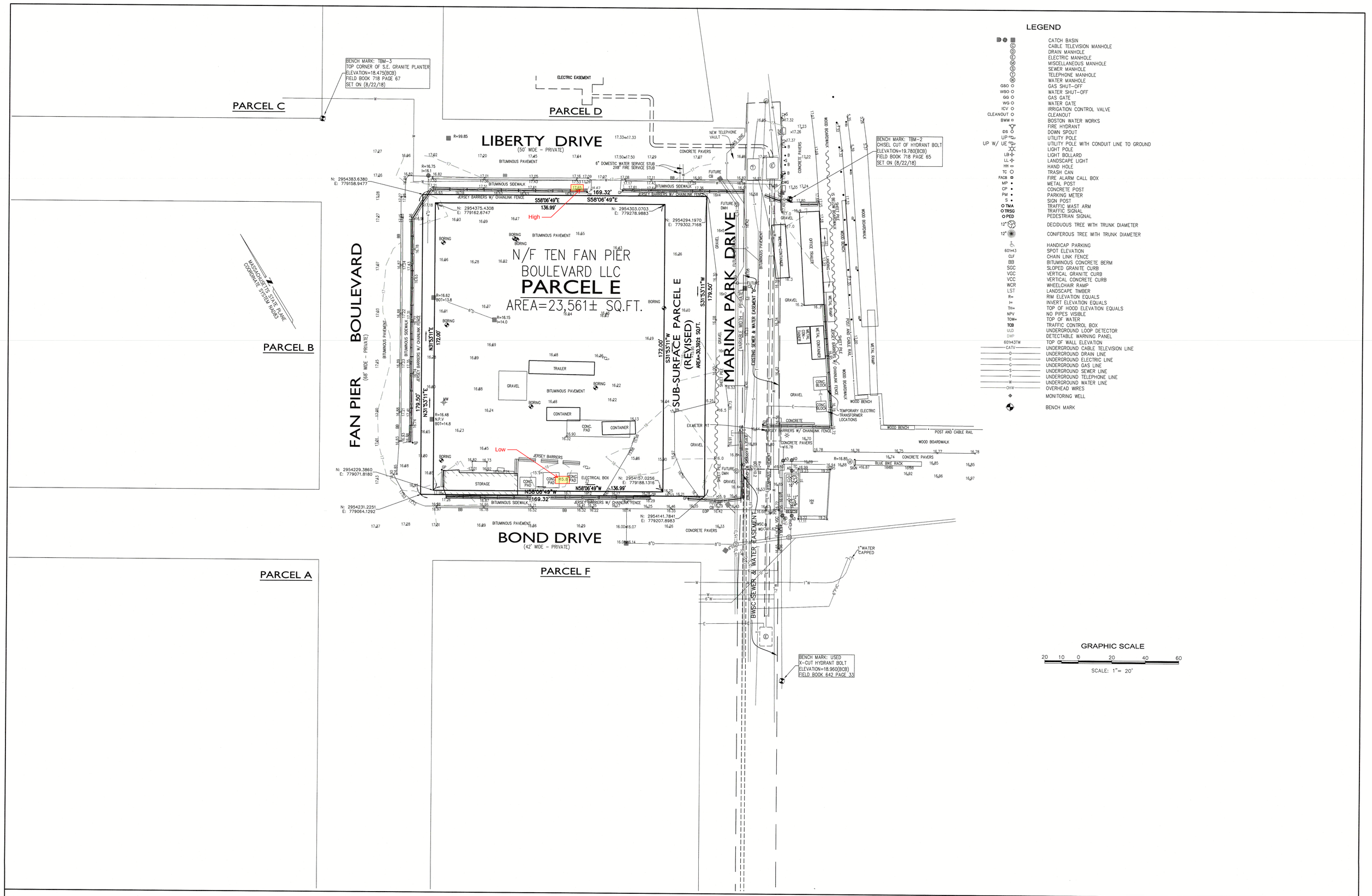
List the principal Building Uses:	Office Space
List the First Floor Uses:	Lobby, lease retail spaces, community cultural space
List any Critical Site Infrastructure and or Building Uses:	

Site and Building:

Site Area (SF):	23561	Building Area (SF):	313156
Building Height (Ft):	190	Building Height (Stories):	17
Existing Site Elevation – Low (Ft BCB):	15 15.8	Existing Site Elevation – High (Ft BCB):	16 17.65
Proposed Site Elevation – Low (Ft BCB):	16.7 17.33	Proposed Site Elevation – High (Ft BCB):	17.75 17.92
Proposed First Floor Elevation (Ft BCB):	17.75	Below grade spaces/levels (#):	3

Article 37 Green Building:

LEED Version - Rating System:	LEED - CSv4	LEED Certification:	Yes
Proposed LEED rating:	Platinum	Proposed LEED point score (Pts.):	82-85



LEGEND

	CATCH BASIN
C	CABLE TELEVISION MANHOLE
D	DRAIN MANHOLE
E	ELECTRIC MANHOLE
M	MISCELLANEOUS MANHOLE
S	SEWER MANHOLE
T	TELEPHONE MANHOLE
W	WATER MANHOLE
GSO	GAS SHUT-OFF
WSO	WATER SHUT-OFF
GG	GAS GATE
WG	WATER GATE
ICV	IRRIGATION CONTROL VALVE
CLEANOUT	CLEANOUT
BWW	BOSTON WATER WORKS
	FIRE HYDRANT
DS	DOWN SPOUT
UP	UTILITY POLE
UP W/ UE	UTILITY POLE WITH CONDUIT LINE TO GROUND
	LIGHT POLE
LB	LIGHT BOLLARD
LL	LANDSCAPE LIGHT
HH	HAND HOLE
TC	TRASH CAN
FACB	FIRE ALARM CALL BOX
MP	METAL POST
CP	CONCRETE POST
PM	PARKING METER
S	SIGN POST
TMA	TRAFFIC MAST ARM
TRSG	TRAFFIC SIGNAL
PED	PEDESTRIAN SIGNAL
12"	DECIDUOUS TREE WITH TRUNK DIAMETER
12"	CONIFEROUS TREE WITH TRUNK DIAMETER
	HANDICAP PARKING
60'#43	SPOT ELEVATION
CLF	CHAIN LINK FENCE
BB	BITUMINOUS CONCRETE BERM
SGC	SLOPED GRANITE CURB
VGC	VERTICAL GRANITE CURB
VCC	VERTICAL CONCRETE CURB
WCR	WHEELCHAIR RAMP
LST	LANDSCAPE TIMBER
R=	RIM ELEVATION EQUALS
I=	INVERT ELEVATION EQUALS
TH=	TOP OF HOOD ELEVATION EQUALS
NPV	NO PIPES VISIBLE
TOW=	TOP OF WATER
TCB	TRAFFIC CONTROL BOX
ULD	UNDERGROUND LOOP DETECTOR
DWP	DETECTABLE WARNING PANEL
60'#43TW	TOP OF WALL ELEVATION
CATV	UNDERGROUND CABLE TELEVISION LINE
D	UNDERGROUND DRAIN LINE
E	UNDERGROUND ELECTRIC LINE
G	UNDERGROUND GAS LINE
S	UNDERGROUND SEWER LINE
T	UNDERGROUND TELEPHONE LINE
W	UNDERGROUND WATER LINE
OHW	OVERHEAD WIRES
	MONITORING WELL
	BENCH MARK

GRAPHIC SCALE

20 10 0 20 40 60

SCALE: 1"= 20'

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COMMONWEALTH OF MASSACHUSETTS
JOHN M. SCHMID
CIVIL
NO. 39184
REGISTERED PROFESSIONAL ENGINEER
10-24-18

NITSCH PROJECT #	6266.92
FILE:	EXISTING CONDITIONS.DWG
SCALE:	AS NOTED
DATE:	10-24-18
PROJECT MANAGER:	JMS
SURVEYOR:	NITSCH
DRAFTED BY:	WS
CHECKED BY:	JMS

REV.	COMMENTS	DATE
	REVISIONS	

EXISTING CONDITIONS PLAN

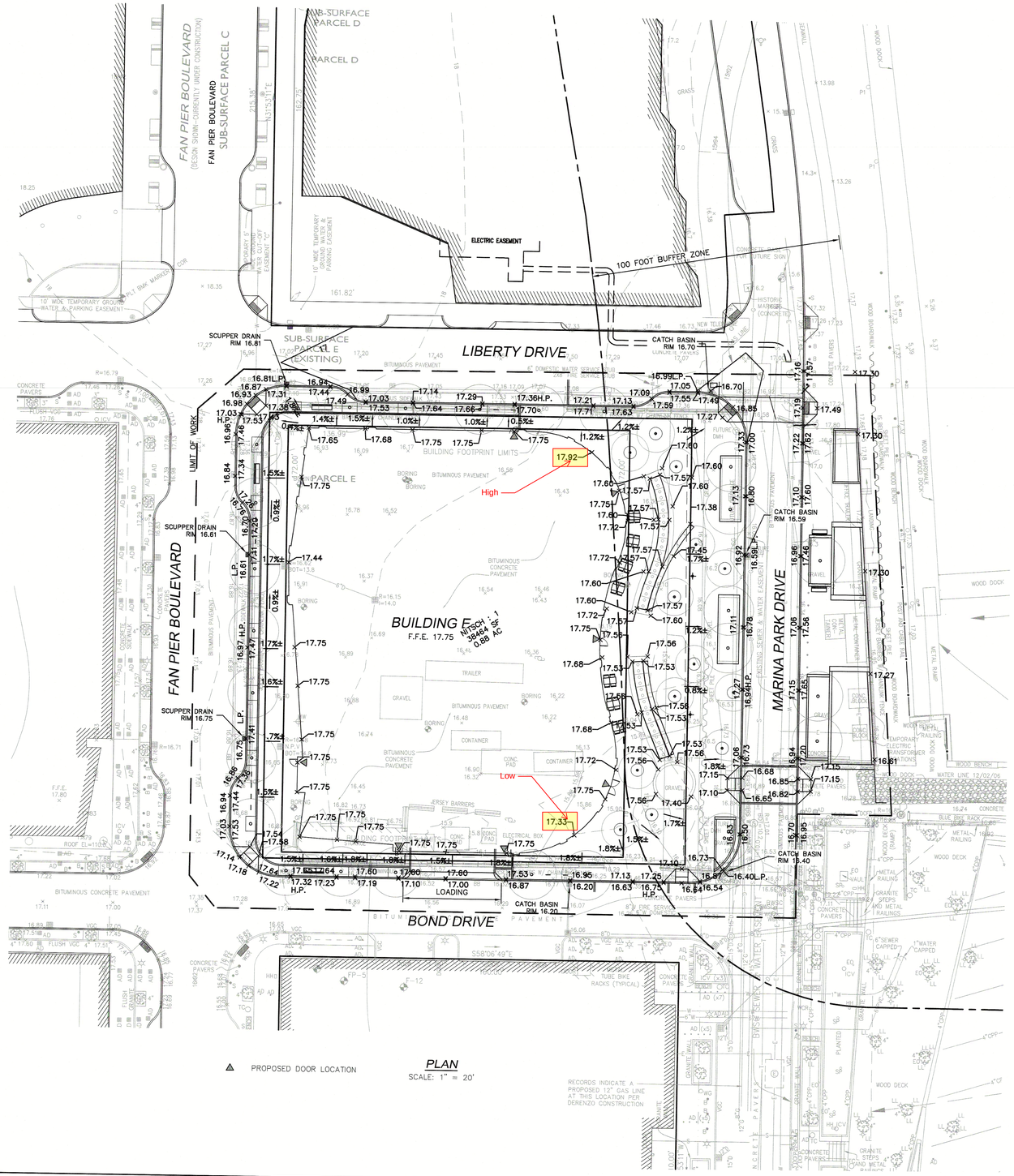
FAN PIER PARCEL E
10 FAN PIER BOULEVARD

PREPARED FOR:
THE FALLON COMPANY
ONE MARINA PARK DRIVE

SHEET:
EX-1
OF REV.

GRADING NOTES

1. PITCH EVENLY BETWEEN SPOT GRADES.
2. ALL PAVED AREAS MUST PITCH TO DRAIN AT A MINIMUM OF ONE–EIGHTH INCH (⅛") PER FOOT.
3. WHERE NEW PAVING MEETS EXISTING PAVING, MEET LINE AND GRADE OF EXISTING.
4. FOR ALL UTILITIES, REFER TO CIVIL ENGINEER'S DRAWINGS.
5. THE GENERAL CONTRACTOR SHALL REPAIR ANY DAMAGES TO EXISTING UTILITY LINES OR STRUCTURES INCURRED DURING CONSTRUCTION OPERATIONS AT NO COST TO OWNER.
6. PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDINGS AT ALL LOCATIONS.
7. ALL PROPOSED TOP OF CURB ELEVATIONS ARE SIX INCHES ABOVE BOTTOM OF CURB UNLESS SHOWN OTHERWISE.
8. THE GENERAL CONTRACTOR SHALL PROVIDE DUST CONTROL FOR CONSTRUCTION OPERATIONS AS APPROVED BY THE ARCHITECT.
9. THE GENERAL CONTRACTOR SHALL BLEND NEW EARTHWORK SMOOTHLY INTO EXISTING EARTHWORK.
10. ALL POINTS OF EGRESS AND/OR INGRESS SHALL BE MAINTAINED TO PREVENT TRACKING OR FLOWING OF SEDIMENT ON TO PUBLIC ROADS.
11. THE CONTRACTOR SHALL VERIFY ALL EXISTING GRADES IN THE FIELD AND REPORT ANY DISCREPENCIES IMMEDIATELY TO THE ARCHITECT PRIOR TO STARTING WORK.
12. REFER TO THE EARTHWORK SECTION OF THE SPECIFICATIONS FOR SPECIFIC EXCAVATION AND FILLING PROCEDURES.
13. ANY ALTERATIONS TO THESE DRAWINGS MADE IN THE FIELD DURING CONSTRUCTIONS SHALL BE RECORDED BY THE GENERAL CONTRACTOR ON "AS–BUILT" DRAWINGS



▲ PROPOSED DOOR LOCATION

PLAN
SCALE: 1" = 20'

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

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COMMONWEALTH OF MASSACHUSETTS
JOHN M. SCHMID
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REGISTERED PROFESSIONAL ENGINEER
10-24-18

NITSCH PROJECT #	6266.92
FILE:	GRADING PLAN.DWG
SCALE:	AS NOTED
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PROJECT MANAGER:	JMS
SURVEYOR:	NITSCH
DRAFTED BY:	WS
CHECKED BY:	JMS

REV.	COMMENTS / REVISIONS	DATE

SITE GRADING PLAN
FAN PIER PARCEL E
10 FAN PIER BOULEVARD

PREPARED FOR:
THE FALLON COMPANY
ONE MARINA PARK DRIVE

SHEET:
C-3
OF REV.

Nitsch Engineering

October 24, 2018

STORMWATER REPORT
FOR NOTICE OF INTENT

For

FAN PIER PARCEL E
10 Fan Pier Boulevard
Boston, Massachusetts 02210

Prepared for:

THE FALLON COMPANY
One Marina Park Drive
Boston, MA 02210

Prepared by:

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

Nitsch Project #6266.92

TABLE OF CONTENTS

FIGURES

APPENDICES

1.0 INTRODUCTION

Nitsch Engineering prepared this Stormwater Report to support the Notice of Intent (NOI) associated with the proposed Fan Pier Parcel E project located in the Fan Pier area of Boston, Massachusetts. The proposed project includes the demolition of a temporary parking area and associated pavement, landscaping, and utilities and the construction of a new 17 story building, underground parking garage, sidewalks, proposed roadways, and associated improvements. The Project includes a stormwater management system, which has been designed in accordance with the Massachusetts Department of Environmental Protection (DEP) Stormwater Management Standards and the Boston Water and Sewer Commission Regulations.

2.0 EXISTING CONDITIONS

The Project site is approximately 59,000 square feet, or 1.35 acres located near Northern Avenue in the Fan Pier area of Boston, Massachusetts. The site is situated with the new Fan Pier and newly developed Parcel D building to the north, Boston Harbor to the east, Parcel B building to the west, and 20-story building at One Marina Park Drive to the south.

The existing site currently has a temporary parking area that is being used as a staging area for the construction taking place on Fan Pier. Prior to the temporary parking area, the site was used as a parking lot and was completely impervious.

Existing Drainage Infrastructure

The existing site contains minimal stormwater management. All runoff sheet flows offsite.

2.1 Soils

NRCS Soil Designations

The Soil Classification Summary (Table 1) outlines the Natural Resources Conservation Services (NRCS) designation of the soil series at the Site. All of the soils within the Project Site are classified as Urban land (Figure 5).

Table 1. Soil Classification Summary

Soil Unit	Soil Series	Hydrologic Soil Group
603	Urban land, wet substratum, 0 to 3 percent slopes	---

On-Site Soil Investigations

Recent preliminary subsurface explorations were conducted by McPhail Associates at the site. The investigations consisted of nine borings conducted between November 18 and December 2, 2014. The borings were mostly advanced into the natural marine sand and/or marine clay deposits to define the top of natural inorganic soil deposit across the site. Further borings are still to be completed in order to classify the soils on the site.

For more information on the on-site soils, refer to the Geotechnical Memorandum included in Appendix E.

2.2 Wetland Resource Areas

The project site is bordered to the east by Boston Harbor and delineated by the edge of a dock. A wetland delineation survey was not performed. The project site contains the following wetland resource areas:

- Land Subject to Coastal Storm Flowage
- 100 ft. Buffer to Coastal Bank

2.3 FEMA Flood Zone

Based on the Flood Insurance Rate Map (FIRM), Community Panel Number 25025C0081J, dated March 16, 2016, a majority of the site is located within Zone AE (Elevation 11 NAVD88, Elevation 17.46 BCB). (Areas of minimal flooding). Refer to Figure 4 – FEMA Floodplain Map. This portion of the site in the 100-year flood zone is classified as Land Subject to Coastal Storm Flowage.

3.0 PROPOSED CONDITIONS

3.1 Project Description

The Fallon Company is proposing the demolition of the existing temporary parking area and associated site features and utilities and the construction of a new building in its place. The project includes a 17 story building and underground parking garage. The footprint of the proposed building is approximately 20,889 square feet, or 0.51 acres. The project includes utility work, including new drain lines, sewer lines, water lines, fire services, electrical ductbanks, and a gas service. This work is the continuation of the Fan Pier redevelopment project which has obtained an Order of Conditions and RDA for improvements in the past.

The proposed project will maintain on-site impervious area (from the original condition), as outlined in Table 1. Therefore, the project is considered a redevelopment under the DEP Stormwater Management Standards.

Table 1. Proposed land use change within Drainage Boundary for Fan Pier Parcel E (in square feet)

Land Use	Existing	Proposed	Change
Roof Area	0	20,889	+20,889
Site Impervious Area	59,000		-20,889
Grass/Plantings	0	0	0
Total	59,000	59,000	---

3.2 Stormwater Management System

The project site will drain to one design point, the Boston Harbor. The roof runoff will be collected in a rainwater re-use tank, while portions of the sidewalk on the frontage of the site along Marina Park Drive will be collected and connected into a small recharge system. The small recharge system is comprised of 136 linear feet of 24” perforated pipe enveloped in crushed stone. All stormwater will eventually flow to a closed drainage system that discharges into the Boston Harbor. The closed drainage system discharges into the Boston Harbor. Portions of the site will sheet flow directly into

the Boston Harbor. The project will reduce both the rate and volume of stormwater runoff. The water quality of runoff will also be improved.

4.0 STORMWATER MANAGEMENT ANALYSIS

4.1 Methodology

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

The project site will drain to one design point. For each subcatchment area, SCS Runoff Curve Numbers (CNs) were selected by using the cover type and hydrologic soil group of each area. The peak runoff rates for the 2-, 10-, and 100-year 24-hour storm events were then determined by inputting the drainage areas, CNs, and Tc paths into HydroCAD.

4.2 HydroCAD Version 10.00

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

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

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

4.3 Precipitation Data

Nitsch Engineering, Inc. used National Oceanic and Atmospheric Administration (NOAA) Atlas 14 Volume 10 Precipitation Data to estimate the rainfall for the 2-year, 10-year, 25-year and 100-year 24-hour storms. The rainfall values for Boston that will be used are as follows:

Precipitation Data

Storm Event	24-Hour Rainfall
2-year	3.20 in
10-year	5.06 in
25-year	6.23 in
100-year	8.02 in

4.4 Existing Hydrologic Conditions

The existing site drains to a closed drainage system which eventually overflows and sheet flows to the Boston Harbor.

(Figure 1- Existing Conditions Watershed Map)

4.5 Proposed Hydrologic Conditions

The proposed site maintains impervious area and is expected to reduce the proposed peak rates of runoff from the project site for the existing rates for the 2-, 10-, and 100-year, 24-hour storm events. The existing and proposed peak discharge rate calculations for the 2-, 10-, and 100-year, 24-hour storm events are provided in Appendix A and Appendix B, respectively.

Table 2: Peak Rates of Runoff (cfs)

	2-Year	10-year	25-year	100-year
Existing	4.77	7.60	9.38	12.09
Proposed	3.12	7.35	9.12	11.82

Table 3: Runoff Volume (cf)

	2-Year	10-year	25-year	100-year
Existing	13,504	21,780	27,007	34,892
Proposed	10,280	18,557	23,740	31,668

(Figure 2- Proposed Conditions Watershed Map)

5.0 MassDEP Stormwater Management Standards

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

Standard 1: No New Untreated Discharges

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

Standard 2: Peak Rate Attenuation

The proposed site maintains the amount of impervious area and is expected to reduce the proposed peak rates of runoff for the existing rates for the 2-, 10-, 25-, and 100-year, 24-hour storm events. The existing and proposed peak discharge rate calculations for the 2-, 10-, 25-, and 100-year, 24-hour storm events are provided in Appendix A and Appendix B, respectively.

Standard 3: Groundwater Recharge

The Fan Pier Parcel E project is required to comply with this standard to the maximum extent practicable. The use of structural infiltration best management practices is limited by the hydrologic soil group “D” soils and the high groundwater elevation. The recharge system was designed to recharge 1-inch of runoff over the proposed impervious area that is directed to it, and the rainwater re-use tank will capture more than 1-inch of runoff from the building.

Standard 4: Water Quality Treatment

The proposed project will be predominantly roof area on what was previously an existing bituminous concrete parking lot. Roof runoff is generally cleaner than pavement runoff. A stormwater recharge system and rainwater re-use tank are also proposed for the Project, which will provide treatment for runoff by infiltration and reduction in runoff. Therefore, the proposed project is expected to increase the quality of runoff entering Boston Harbor.

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

Standard 5: Land Uses with Higher Potential Pollutant Loads

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

Standard 6: Critical Areas

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

Standard 7: Redevelopments

The Fan Pier Parcel E project is located on a previously developed site and does not result in an increase in impervious area. Therefore, the project is considered a redevelopment under the DEP Stormwater Management Standards.

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. A redevelopment project must comply with all other requirements of the Stormwater Management Standards and improve existing conditions.

Standard 8: Construction Period Pollution Prevention and Sedimentation Control

A plan to control construction-related impacts, including erosion, sedimentation, and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention plan) will be developed and implemented during the Notice of Intent permitting process.

Since the proposed project will disturb more than one (1) acre of land, a Notice of Intent will be submitted to the Environmental Protection Agency (EPA) for coverage under the National Pollution Discharge Elimination System (NPDES) Construction General Permit. As part of this application the Applicant is required to prepare a Stormwater Pollution Prevention Plan (SWPPP) and implement the measures in the SWPPP. The SWPPP, which is to be kept on site, includes erosion and sediment controls (stabilization practices and structural practices), temporary and permanent stormwater management measures, Contractor inspection schedules and reporting of all SWPPP features, materials management, waste disposal, off-site vehicle tracking, spill prevention and response, sanitation, and non-stormwater discharges.

Standard 9: Operation and Maintenance Plan

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

Standard 10: Prohibition of Illicit Discharges

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

6.0 TOTAL MAXIMUM DAILY LOAD

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

The TMDL identifies stormwater runoff as a source of bacteria. The proposed project includes an underground recharge system which is sized to infiltrate 1-inch of runoff over the impervious area being directed to it. Therefore, it is anticipated that the bacteria load from the proposed project site will be less than the existing load, and the project will comply with the requirements of the TMDL.

7.0 CONCLUSION

In conclusion, the proposed Fan Pier Parcel E project will reduce peak runoff rates and improve the water quality of stormwater being discharged from the Project Site. The project has been designed in accordance with the MassDEP Stormwater Management Standards.

FIGURES

SCALE:
1" = 40'
20 20 0 40 80

LIMIT OF DRAINAGE ANALYSIS

LIBERTY DRIVE

BOND DRIVE

FAN PIER BOULEVARD

MARINA PARK DRIVE

BUILDING E

PARCEL E

BUILDING FOOTPRINT LIMITS

E-1

DPE 1

AREA NO

LIMITS OF LICENSE # 11907 BK 42568 PG 89

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- Structural Engineering
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EXISTING CONDITIONS WATERSHED MAP

FAN PIER PARCEL E
BOSTON, MA

PREPARED FOR:
THE FALLON GROUP
BOSTON, MA

PROJECT #	6266.92
FILE:	DAS.DWG
SCALE:	1"=40'
DATE:	10-22-18
PROJECT MGR:	JMS
SURVEYOR:	-
DRAFTED BY:	WS
CHECKED BY:	JMS

SHEET:

EX-1

OF REV.

SCALE:
1" = 40'
20 20 0 40 80

LIMIT OF DRAINAGE ANALYSIS

LIBERTY DRIVE
FAN PIER BOULEVARD
BOND DRIVE
MARINA PARK DRIVE
FAN PIER BOULEVARD SUB-SURFACE
FAN PIER
BUILDING E
BUILDING FOOTPRINT LIMITS
PARCEL E
P-2
P-1
P-3
DPP 1
AREA NO
LIMITS OF LICENSE # 11907 BK 42568 PG 89

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PROPOSED CONDITIONS WATERSHED MAP
FAN PIER PARCEL E
BOSTON, MA

PREPARED FOR:
THE FALLON GROUP
BOSTON, MA

PROJECT #	6266.92
FILE:	DAS.DWG
SCALE:	1"=40'
DATE:	10-22-18
PROJECT MGR:	JMS
SURVEYOR:	-
DRAFTED BY:	WS
CHECKED BY:	JMS

SHEET:
PR-1
OF REV.

APPENDICES

APPENDIX A

Existing Conditions – HydroCAD Calculations

To Closed Drainage

Existing Cond.

Subcat Reach Pond Link

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.342	98	Paved parking, HSG D (E-1)
1.342	**98**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
1.342	HSG D	E-1
0.000	Other	
1.342		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	1.342	0.000	1.342	Paved parking	E-1
0.000	**0.000**	**0.000**	**1.342**	**0.000**	**1.342**	**TOTAL AREA**	

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 E-1: To Closed Drainage Runoff Area=58,469 sf 100.00% Impervious Runoff Depth>2.77"
Tc=0.0 min CN=98 Runoff=4.77 cfs 0.310 af

Reach DPE-1: Existing Cond. Inflow=4.77 cfs 0.310 af
Outflow=4.77 cfs 0.310 af

Total Runoff Area = 1.342 ac Runoff Volume = 0.310 af Average Runoff Depth = 2.77"
0.00% Pervious = 0.000 ac 100.00% Impervious = 1.342 ac

Summary for Subcatchment E-1: To Closed Drainage

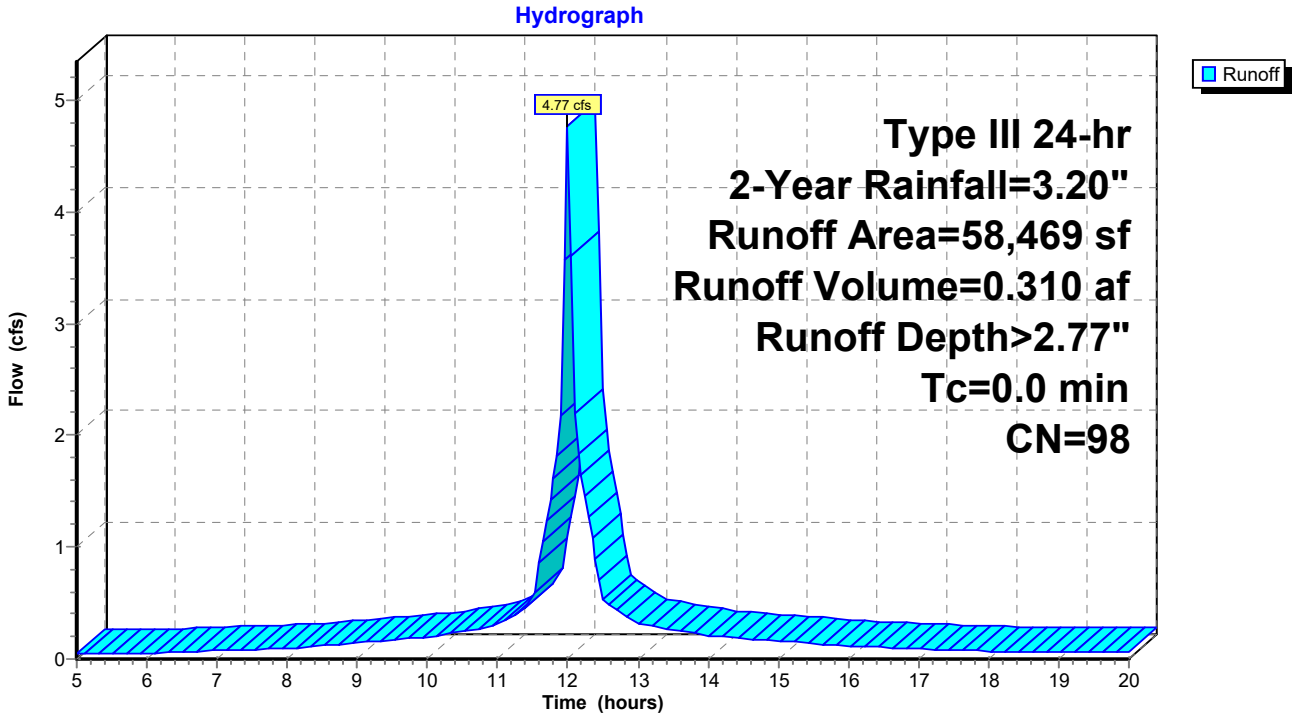
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 4.77 cfs @ 12.00 hrs, Volume= 0.310 af, Depth> 2.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
58,469	98	Paved parking, HSG D
58,469		100.00% Impervious Area

Subcatchment E-1: To Closed Drainage



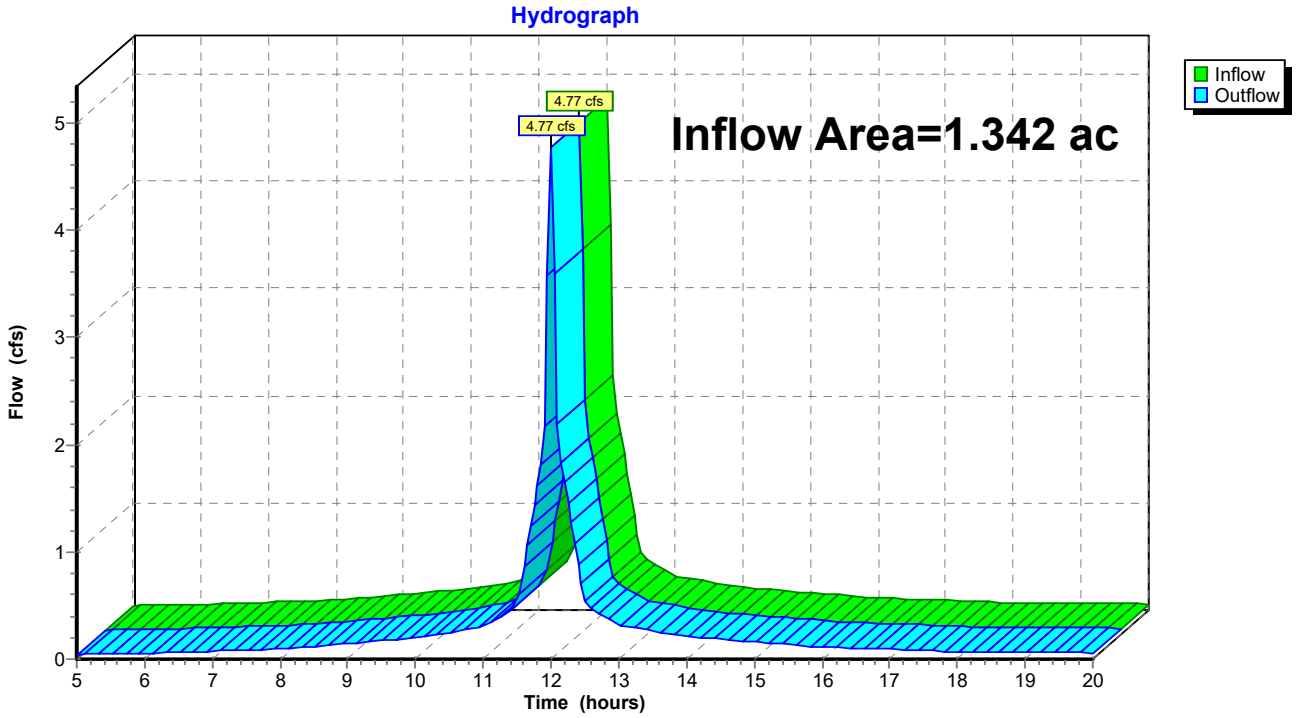
Summary for Reach DPE-1: Existing Cond.

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

Inflow Area = 1.342 ac,100.00% Impervious, Inflow Depth > 2.77" for 2-Year event
Inflow = 4.77 cfs @ 12.00 hrs, Volume= 0.310 af
Outflow = 4.77 cfs @ 12.00 hrs, Volume= 0.310 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DPE-1: Existing Cond.



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 E-1: To Closed Drainage Runoff Area=58,469 sf 100.00% Impervious Runoff Depth>4.47"
Tc=0.0 min CN=98 Runoff=7.60 cfs 0.500 af

Reach DPE-1: Existing Cond. Inflow=7.60 cfs 0.500 af
Outflow=7.60 cfs 0.500 af

Total Runoff Area = 1.342 ac Runoff Volume = 0.500 af Average Runoff Depth = 4.47"
0.00% Pervious = 0.000 ac 100.00% Impervious = 1.342 ac

Summary for Subcatchment E-1: To Closed Drainage

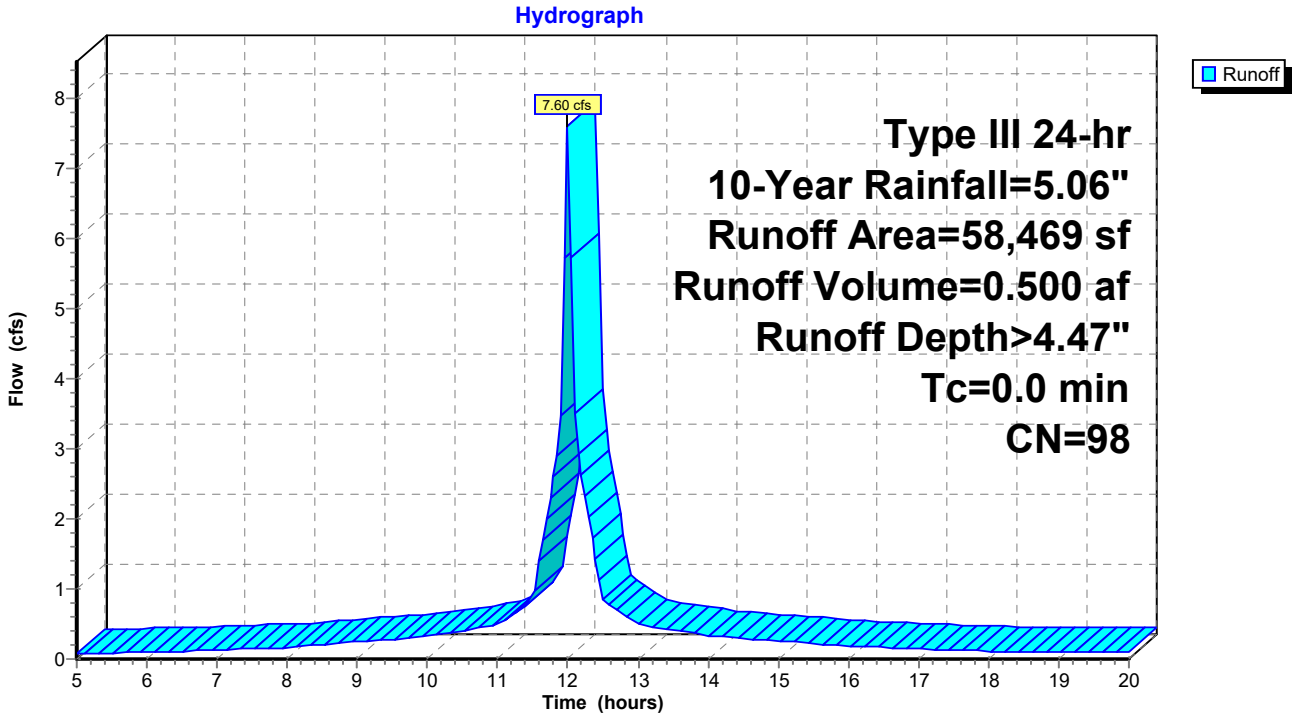
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 7.60 cfs @ 12.00 hrs, Volume= 0.500 af, Depth> 4.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.06"

Area (sf)	CN	Description
58,469	98	Paved parking, HSG D
58,469		100.00% Impervious Area

Subcatchment E-1: To Closed Drainage



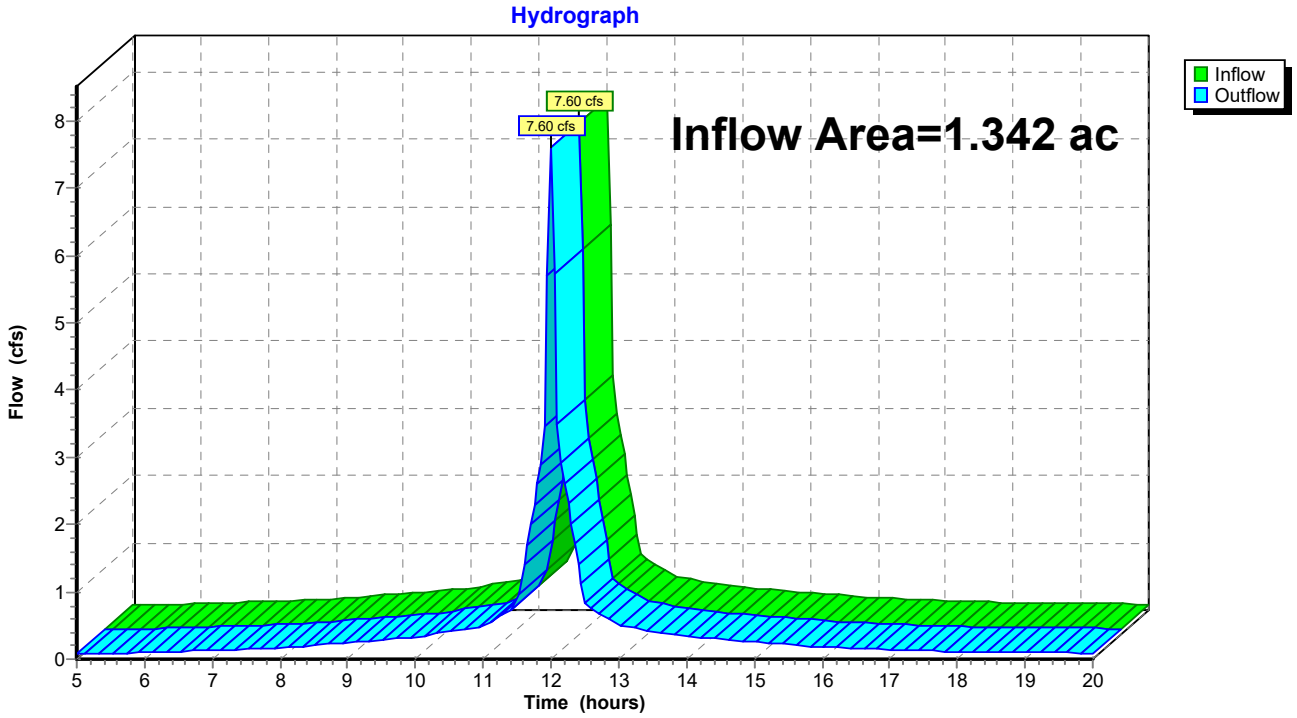
Summary for Reach DPE-1: Existing Cond.

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

Inflow Area = 1.342 ac,100.00% Impervious, Inflow Depth > 4.47" for 10-Year event
Inflow = 7.60 cfs @ 12.00 hrs, Volume= 0.500 af
Outflow = 7.60 cfs @ 12.00 hrs, Volume= 0.500 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DPE-1: Existing Cond.



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 E-1: To Closed Drainage Runoff Area=58,469 sf 100.00% Impervious Runoff Depth>5.54"
Tc=0.0 min CN=98 Runoff=9.38 cfs 0.620 af

Reach DPE-1: Existing Cond. Inflow=9.38 cfs 0.620 af
Outflow=9.38 cfs 0.620 af

Total Runoff Area = 1.342 ac Runoff Volume = 0.620 af Average Runoff Depth = 5.54"
0.00% Pervious = 0.000 ac 100.00% Impervious = 1.342 ac

Summary for Subcatchment E-1: To Closed Drainage

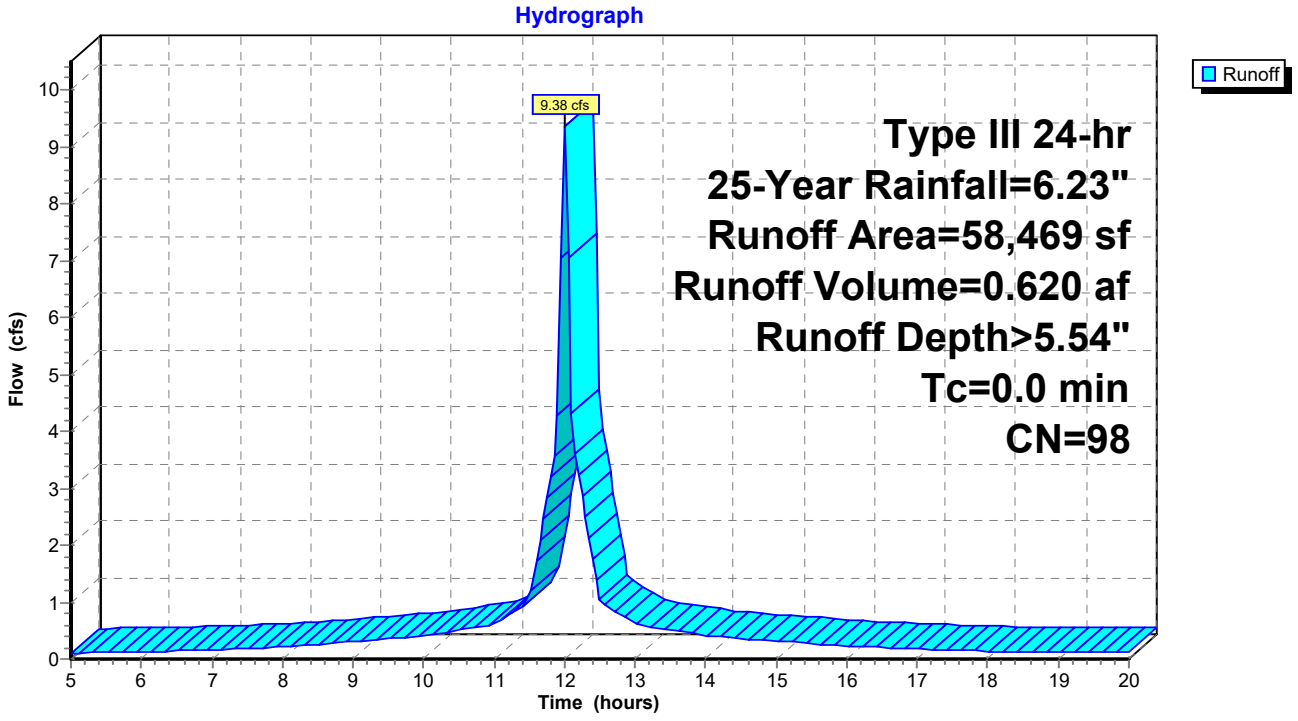
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 9.38 cfs @ 12.00 hrs, Volume= 0.620 af, Depth> 5.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.23"

Area (sf)	CN	Description
58,469	98	Paved parking, HSG D
58,469		100.00% Impervious Area

Subcatchment E-1: To Closed Drainage



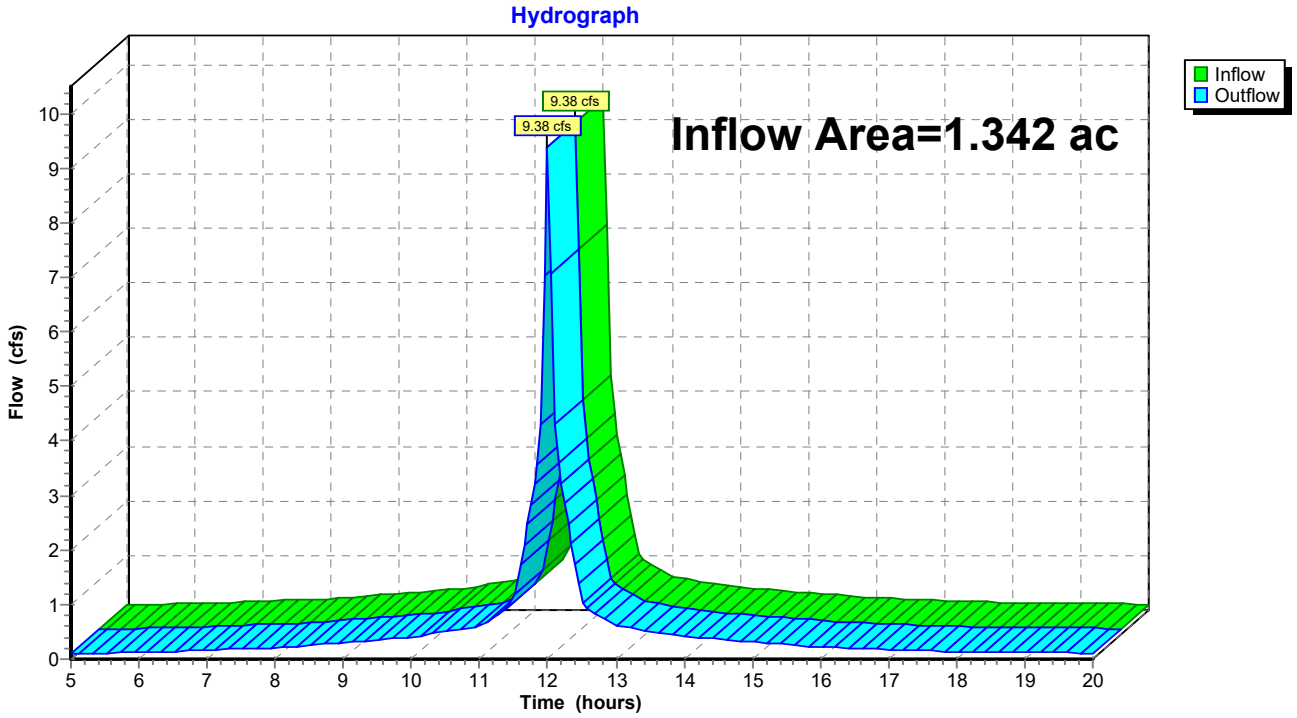
Summary for Reach DPE-1: Existing Cond.

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

Inflow Area = 1.342 ac,100.00% Impervious, Inflow Depth > 5.54" for 25-Year event
Inflow = 9.38 cfs @ 12.00 hrs, Volume= 0.620 af
Outflow = 9.38 cfs @ 12.00 hrs, Volume= 0.620 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DPE-1: Existing Cond.



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 E-1: To Closed Drainage Runoff Area=58,469 sf 100.00% Impervious Runoff Depth>7.16"
Tc=0.0 min CN=98 Runoff=12.09 cfs 0.801 af

Reach DPE-1: Existing Cond. Inflow=12.09 cfs 0.801 af
Outflow=12.09 cfs 0.801 af

Total Runoff Area = 1.342 ac Runoff Volume = 0.801 af Average Runoff Depth = 7.16"
0.00% Pervious = 0.000 ac 100.00% Impervious = 1.342 ac

Summary for Subcatchment E-1: To Closed Drainage

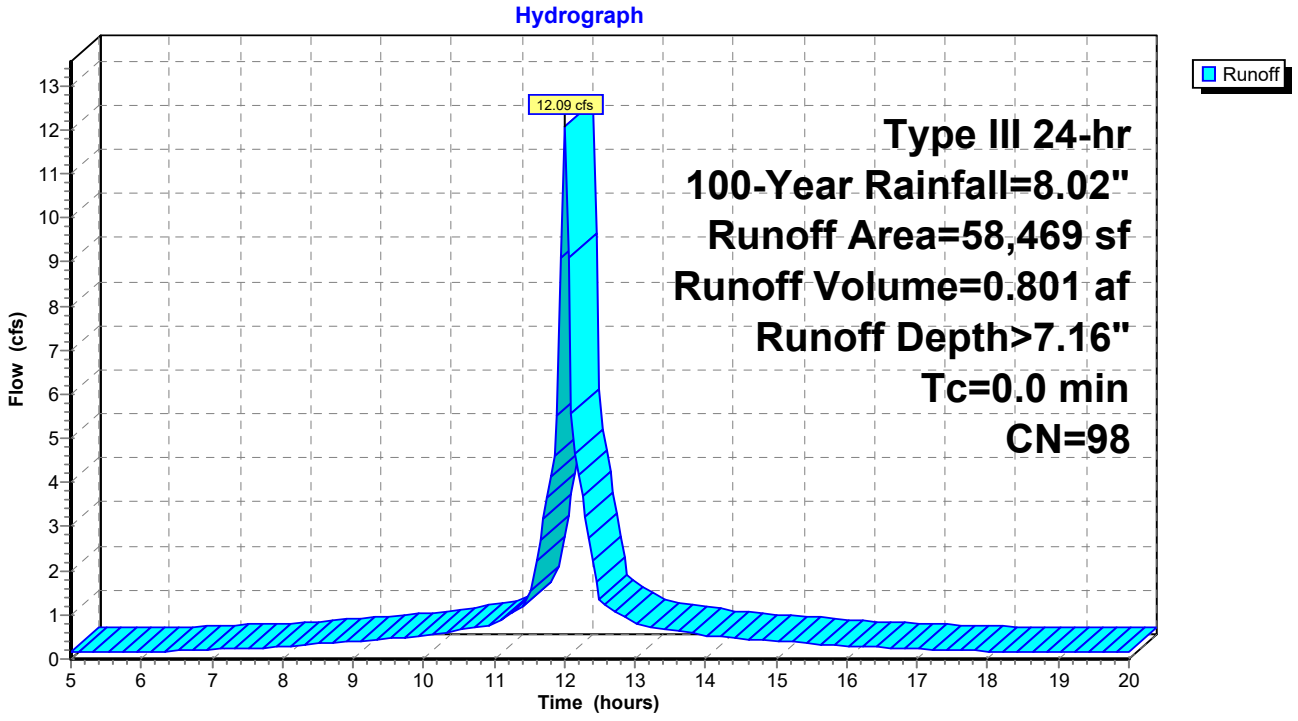
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 12.09 cfs @ 12.00 hrs, Volume= 0.801 af, Depth> 7.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.02"

Area (sf)	CN	Description
58,469	98	Paved parking, HSG D
58,469		100.00% Impervious Area

Subcatchment E-1: To Closed Drainage



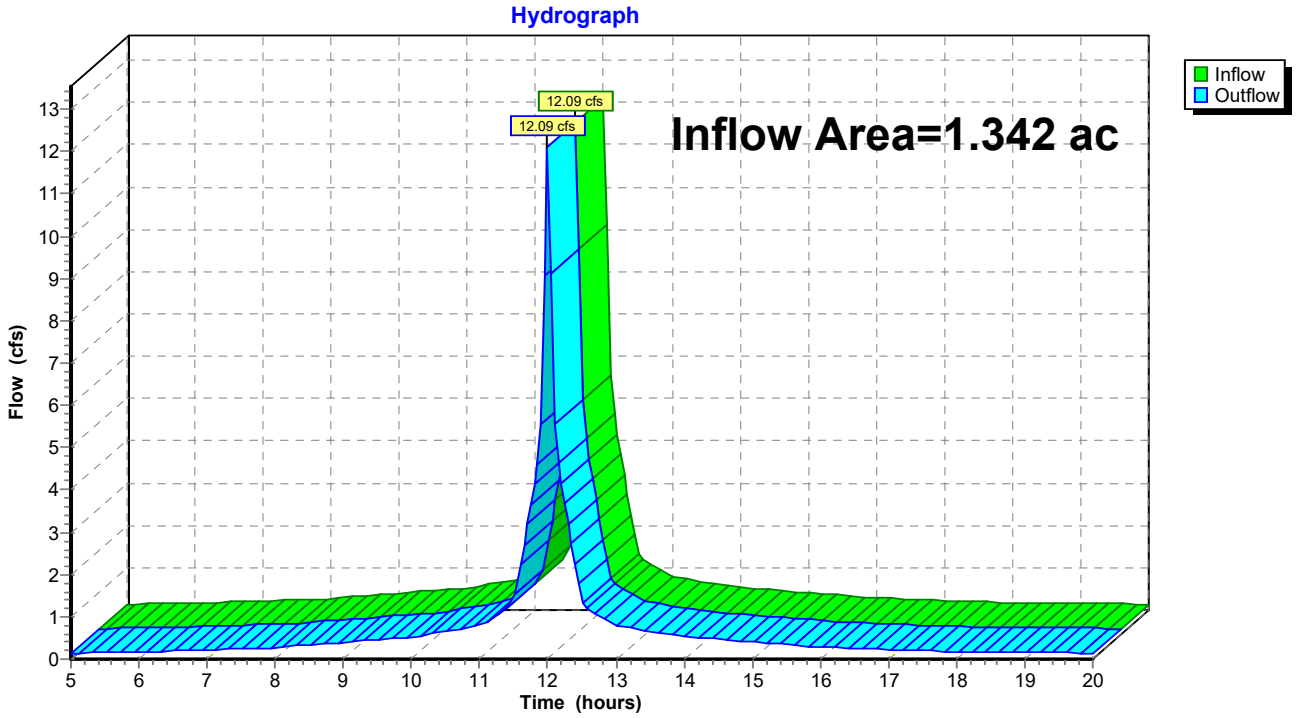
Summary for Reach DPE-1: Existing Cond.

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

Inflow Area = 1.342 ac,100.00% Impervious, Inflow Depth > 7.16" for 100-Year event
Inflow = 12.09 cfs @ 12.00 hrs, Volume= 0.801 af
Outflow = 12.09 cfs @ 12.00 hrs, Volume= 0.801 af, Atten= 0%, Lag= 0.0 min

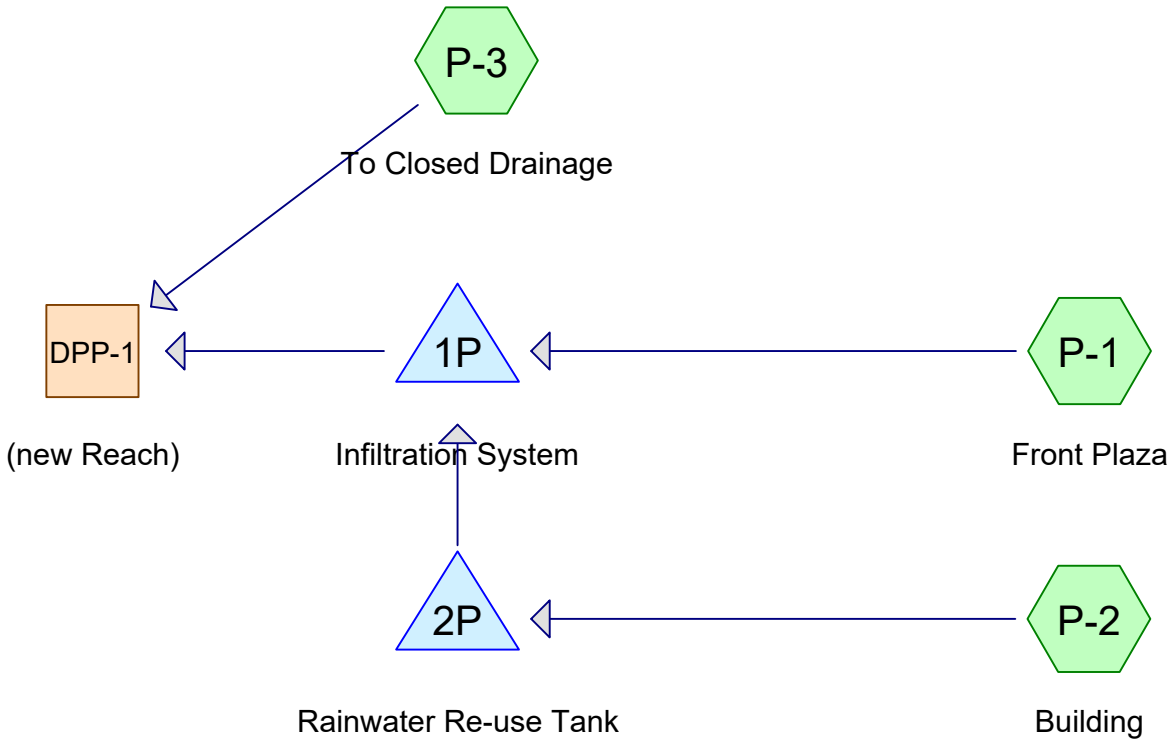
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DPE-1: Existing Cond.



APPENDIX B

Proposed Conditions – HydroCAD Calculations



Subcat Reach Pond Link

Routing Diagram for 6266.92 Ex Pr
Prepared by {enter your company name here}, Printed 10/23/2018

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.863	98	Paved parking, HSG D (P-1, P-3)
0.480	98	Roofs, HSG D (P-2)
1.342	**98**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
1.342	HSG D	P-1, P-2, P-3
0.000	Other	
1.342		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.863	0.000	0.863	Paved parking	P-1, P-3
0.000	0.000	0.000	0.480	0.000	0.480	Roofs	P-2
0.000	**0.000**	**0.000**	**1.342**	**0.000**	**1.342**	**TOTAL AREA**	

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 P-1: Front Plaza Runoff Area=8,491 sf 100.00% Impervious Runoff Depth>2.77"
Tc=0.0 min CN=98 Runoff=0.69 cfs 0.045 af

Subcatchment P-2: Building Runoff Area=20,889 sf 100.00% Impervious Runoff Depth>2.77"
Tc=0.0 min CN=98 Runoff=1.70 cfs 0.111 af

Subcatchment P-3: To Closed Drainage Runoff Area=29,089 sf 100.00% Impervious Runoff Depth>2.77"
Tc=0.0 min CN=98 Runoff=2.37 cfs 0.154 af

Reach DPP-1: (new Reach) Inflow=3.20 cfs 0.236 af
Outflow=3.20 cfs 0.236 af

Pond 1P: Infiltration System Peak Elev=12.51' Storage=0.020 af Inflow=1.41 cfs 0.101 af
Outflow=1.45 cfs 0.082 af

Pond 2P: Rainwater Re-use Tank Peak Elev=10.52' Storage=2,519 cf Inflow=1.70 cfs 0.111 af
Outflow=1.06 cfs 0.055 af

Total Runoff Area = 1.342 ac Runoff Volume = 0.310 af Average Runoff Depth = 2.77"
0.00% Pervious = 0.000 ac 100.00% Impervious = 1.342 ac

Summary for Subcatchment P-1: Front Plaza

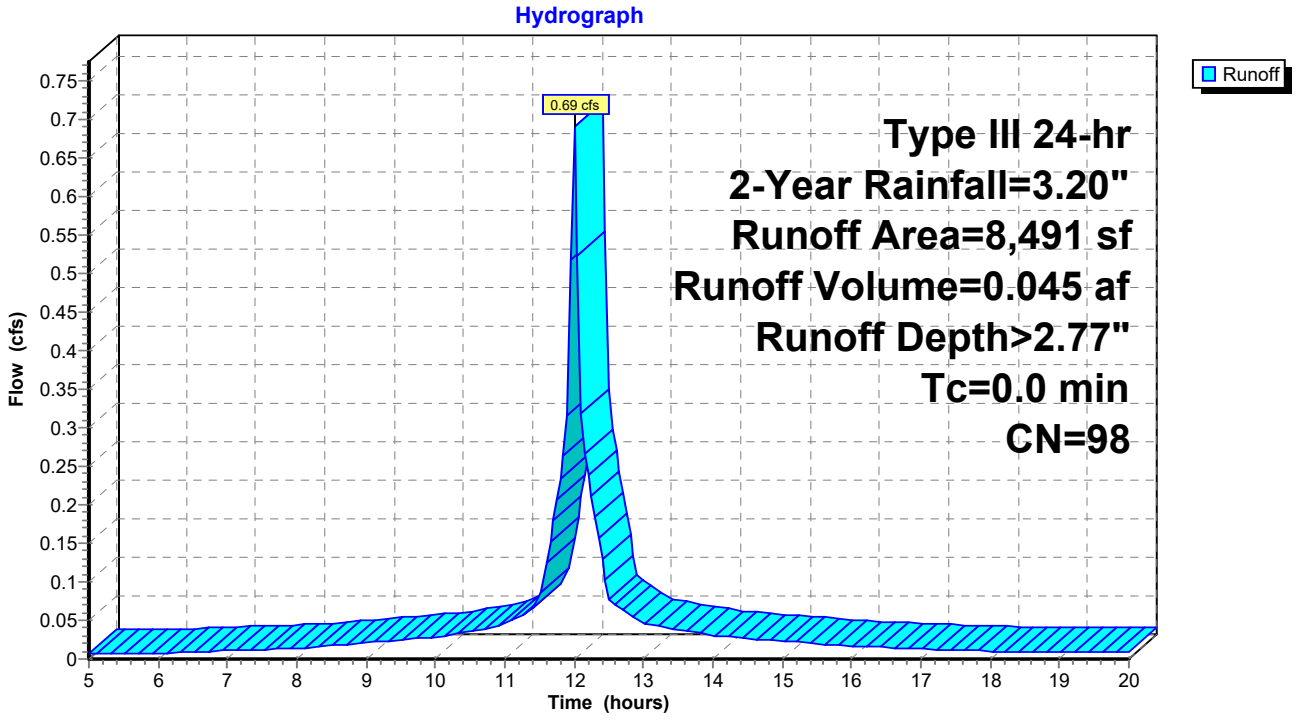
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.69 cfs @ 12.00 hrs, Volume= 0.045 af, Depth> 2.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
8,491	98	Paved parking, HSG D
8,491		100.00% Impervious Area

Subcatchment P-1: Front Plaza



Summary for Subcatchment P-2: Building

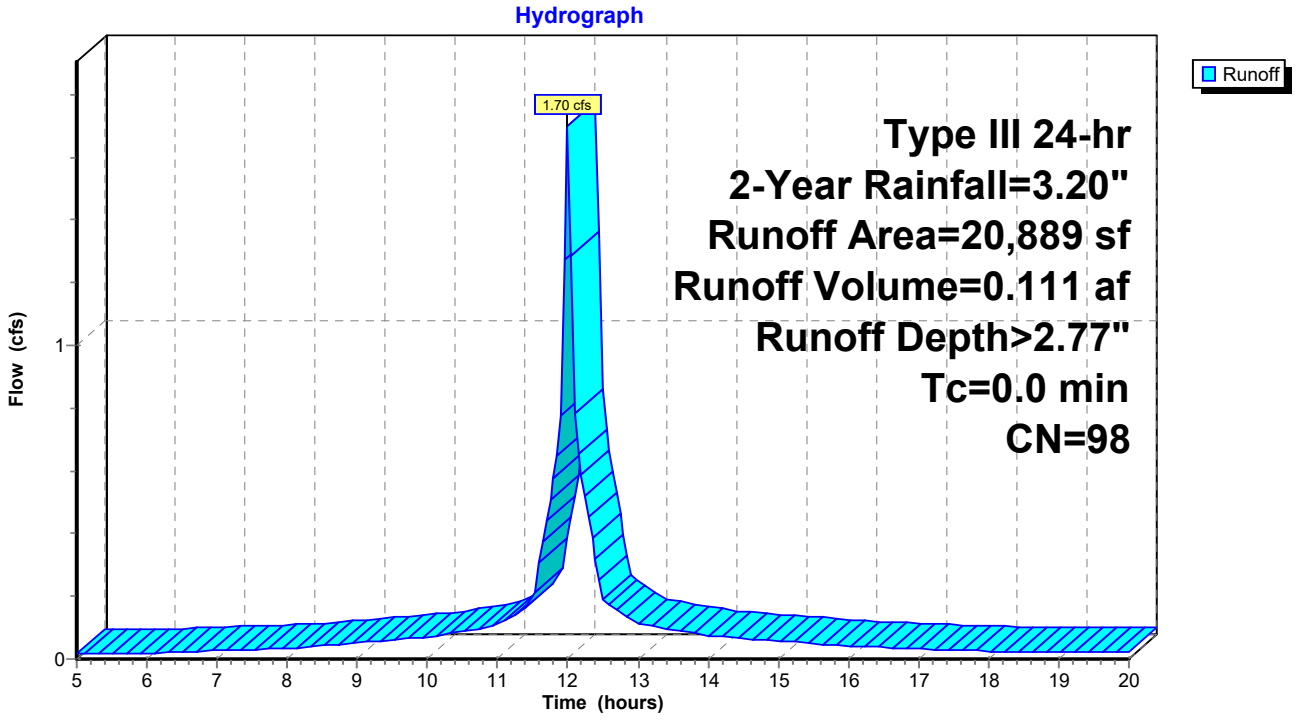
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 1.70 cfs @ 12.00 hrs, Volume= 0.111 af, Depth> 2.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
20,889	98	Roofs, HSG D
20,889		100.00% Impervious Area

Subcatchment P-2: Building



Summary for Subcatchment P-3: To Closed Drainage

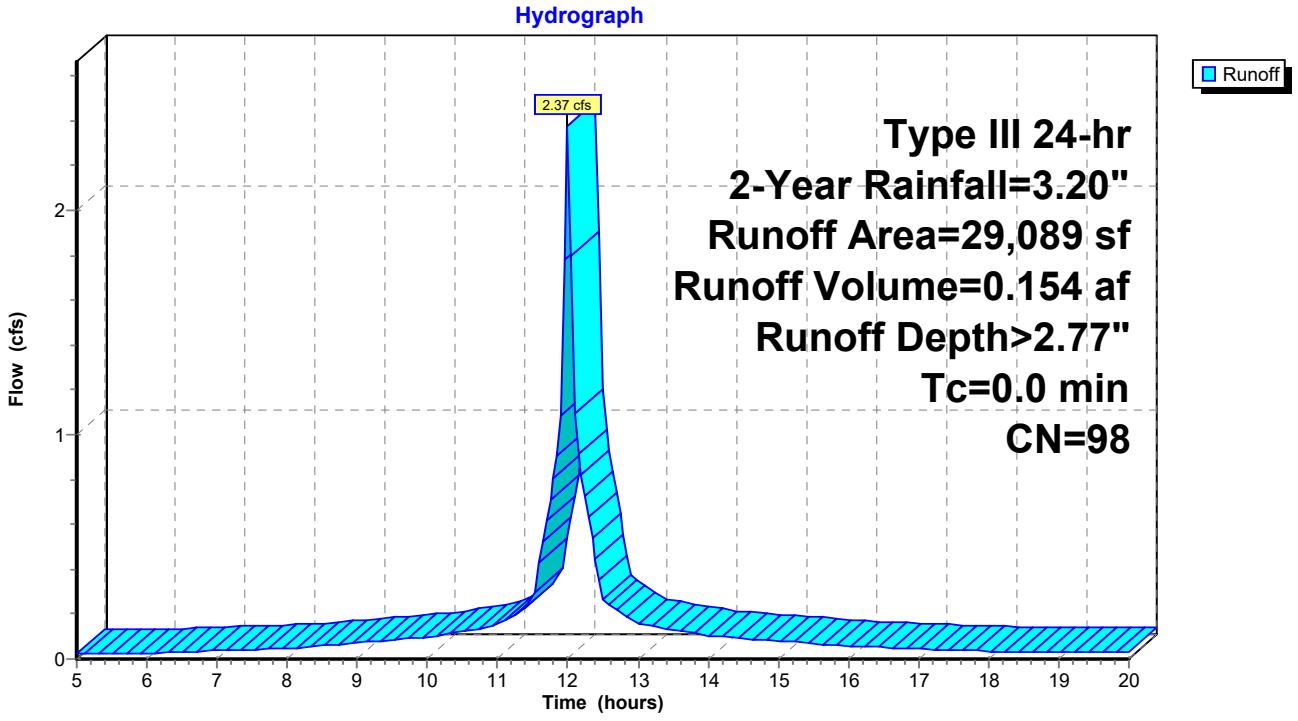
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 2.37 cfs @ 12.00 hrs, Volume= 0.154 af, Depth> 2.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
29,089	98	Paved parking, HSG D
29,089		100.00% Impervious Area

Subcatchment P-3: To Closed Drainage



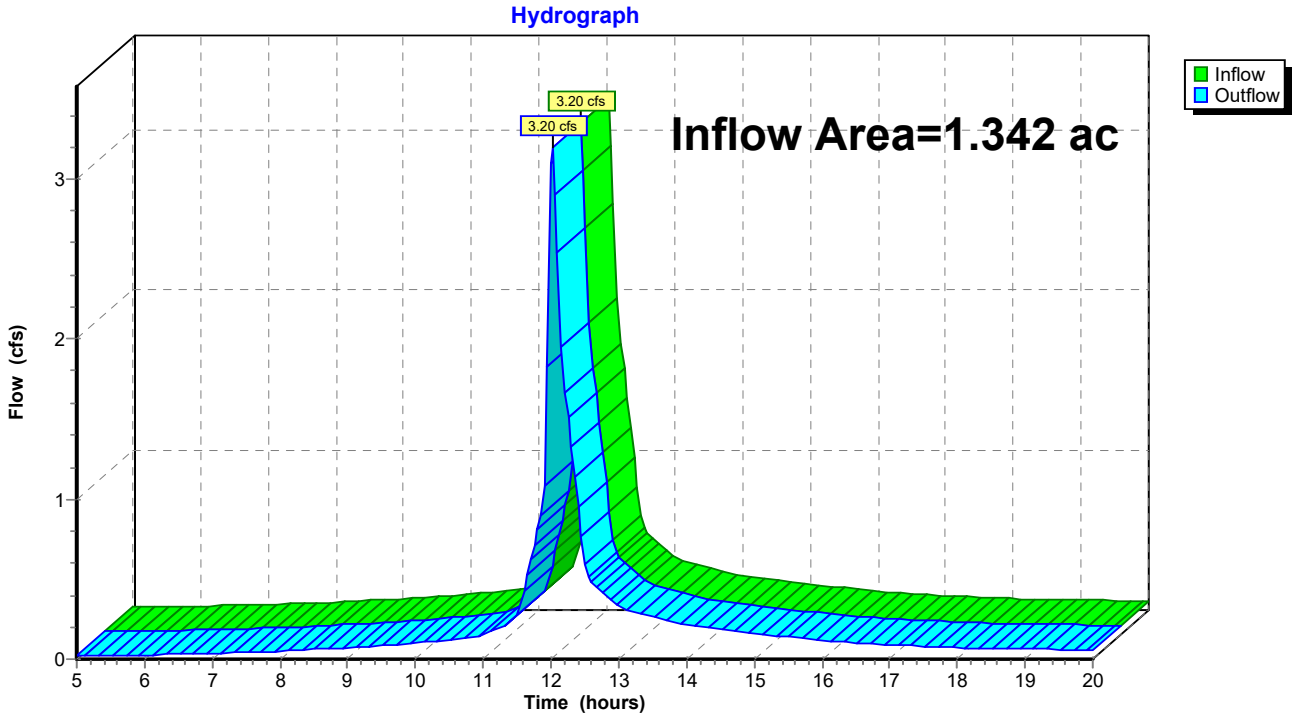
Summary for Reach DPP-1: (new Reach)

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

Inflow Area = 1.342 ac,100.00% Impervious, Inflow Depth > 2.11" for 2-Year event
Inflow = 3.20 cfs @ 12.02 hrs, Volume= 0.236 af
Outflow = 3.20 cfs @ 12.02 hrs, Volume= 0.236 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DPP-1: (new Reach)



Summary for Pond 1P: Infiltration System

[82] Warning: Early inflow requires earlier time span
[88] Warning: Qout>Qin may require smaller dt or Finer Routing
[81] Warning: Exceeded Pond 2P by 2.29' @ 11.95 hrs

Inflow Area = 0.674 ac,100.00% Impervious, Inflow Depth > 1.79" for 2-Year event
Inflow = 1.41 cfs @ 12.08 hrs, Volume= 0.101 af
Outflow = 1.45 cfs @ 12.10 hrs, Volume= 0.082 af, Atten= 0%, Lag= 1.0 min
Primary = 1.45 cfs @ 12.10 hrs, Volume= 0.082 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 12.51' @ 12.10 hrs Surf.Area= 0.014 ac Storage= 0.020 af

Plug-Flow detention time= 92.0 min calculated for 0.081 af (81% of inflow)
Center-of-Mass det. time= 38.5 min (825.8 - 787.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	9.50'	0.014 af	**8.53'W x 69.13'L x 4.39'H Field A** 0.059 af Overall - 0.013 af Embedded = 0.047 af x 30.0% Voids
#2A	10.50'	0.013 af	**CPP single-wall 24"** x 6 Inside #1 Inside= 24.0"W x 24.0"H => 4.02 sf x 20.00'L = 80.4 cf Outside= 28.7"W x 28.7"H => 4.02 sf x 20.00'L = 80.4 cf Row Length Adjustment= +2.35' x 4.02 sf x 2 rows 6.53' Header x 4.02 sf x 2 = 52.5 cf Inside
		0.027 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	12.30'	**5.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=1.43 cfs @ 12.10 hrs HW=12.51' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 1.43 cfs @ 1.35 fps)

Pond 1P: Infiltration System - Chamber Wizard Field A

Chamber Model = CPP single-wall 24" (Single-wall corrugated HDPE pipe)
Inside= 24.0"W x 24.0"H => 4.02 sf x 20.00'L = 80.4 cf
Outside= 28.7"W x 28.7"H => 4.02 sf x 20.00'L = 80.4 cf
Row Length Adjustment= +2.35' x 4.02 sf x 2 rows

28.7" Wide + 21.0" Spacing = 49.7" C-C Row Spacing

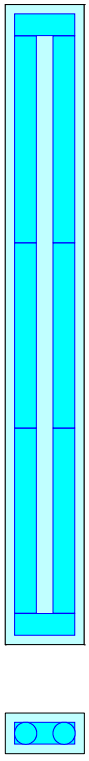
3 Chambers/Row x 20.00' Long +2.35' Row Adjustment +2.39' Header x 2 = 67.13' Row Length +12.0" End Stone x 2 = 69.13' Base Length
2 Rows x 28.7" Wide + 21.0" Spacing x 1 + 12.0" Side Stone x 2 = 8.53' Base Width
12.0" Base + 28.7" Chamber Height + 12.0" Cover = 4.39' Field Height

6 Chambers x 80.4 cf +2.35' Row Adjustment x 4.02 sf x 2 Rows + 6.53' Header x 4.02 sf x 2 = 553.6 cf Chamber Storage

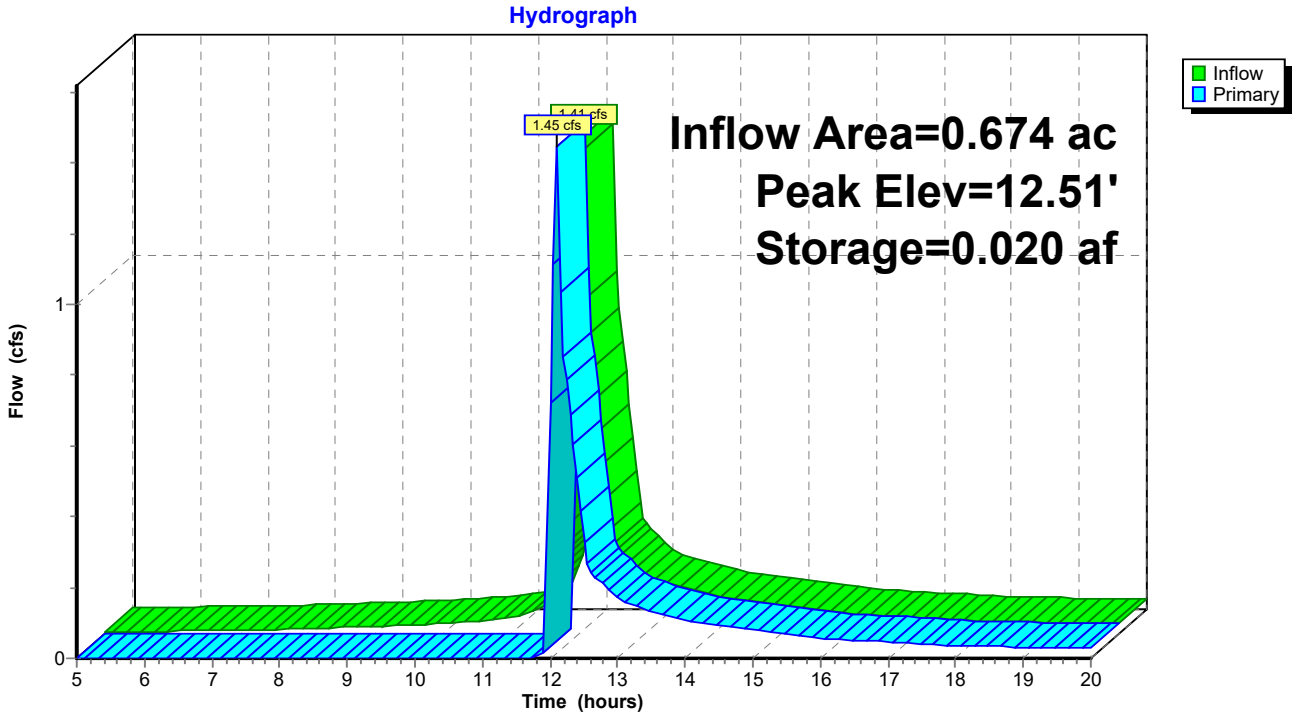
2,590.8 cf Field - 553.6 cf Chambers = 2,037.2 cf Stone x 30.0% Voids = 611.2 cf Stone Storage

Chamber Storage + Stone Storage = 1,164.8 cf = 0.027 af
Overall Storage Efficiency = 45.0%
Overall System Size = 69.13' x 8.53' x 4.39'

6 Chambers
96.0 cy Field
75.5 cy Stone



Pond 1P: Infiltration System



Summary for Pond 2P: Rainwater Re-use Tank

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.480 ac,100.00% Impervious, Inflow Depth > 2.77" for 2-Year event
Inflow = 1.70 cfs @ 12.00 hrs, Volume= 0.111 af
Outflow = 1.06 cfs @ 12.10 hrs, Volume= 0.055 af, Atten= 38%, Lag= 5.7 min
Primary = 1.06 cfs @ 12.10 hrs, Volume= 0.055 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 10.52' @ 12.10 hrs Surf.Area= 1,000 sf Storage= 2,519 cf

Plug-Flow detention time= 189.8 min calculated for 0.055 af (50% of inflow)
Center-of-Mass det. time= 96.3 min (830.4 - 734.1)

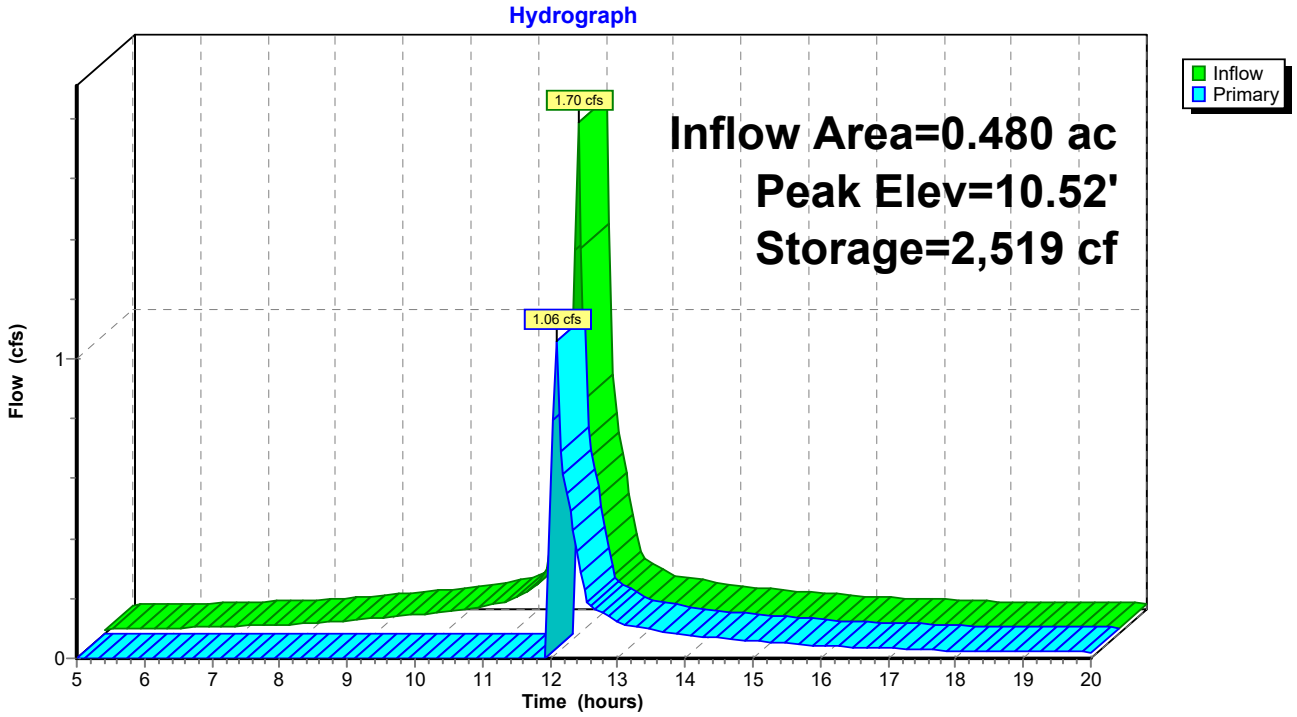
Volume	Invert	Avail.Storage	Storage Description
#1	8.00'	4,000 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
8.00	1,000	0	0
12.00	1,000	4,000	4,000

Device	Routing	Invert	Outlet Devices
#1	Primary	10.41'	**10.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=1.03 cfs @ 12.10 hrs HW=10.52' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 1.03 cfs @ 0.96 fps)

Pond 2P: Rainwater Re-use Tank



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 P-1: Front Plaza Runoff Area=8,491 sf 100.00% Impervious Runoff Depth>4.47"
Tc=0.0 min CN=98 Runoff=1.10 cfs 0.073 af

Subcatchment P-2: Building Runoff Area=20,889 sf 100.00% Impervious Runoff Depth>4.47"
Tc=0.0 min CN=98 Runoff=2.72 cfs 0.179 af

Subcatchment P-3: To Closed Drainage Runoff Area=29,089 sf 100.00% Impervious Runoff Depth>4.47"
Tc=0.0 min CN=98 Runoff=3.78 cfs 0.249 af

Reach DPP-1: (new Reach) Inflow=7.35 cfs 0.426 af
Outflow=7.35 cfs 0.426 af

Pond 1P: Infiltration System Peak Elev=12.69' Storage=0.022 af Inflow=3.67 cfs 0.196 af
Outflow=3.61 cfs 0.177 af

Pond 2P: Rainwater Re-use Tank Peak Elev=10.61' Storage=2,609 cf Inflow=2.72 cfs 0.179 af
Outflow=2.58 cfs 0.123 af

Total Runoff Area = 1.342 ac Runoff Volume = 0.500 af Average Runoff Depth = 4.47"
0.00% Pervious = 0.000 ac 100.00% Impervious = 1.342 ac

Summary for Subcatchment P-1: Front Plaza

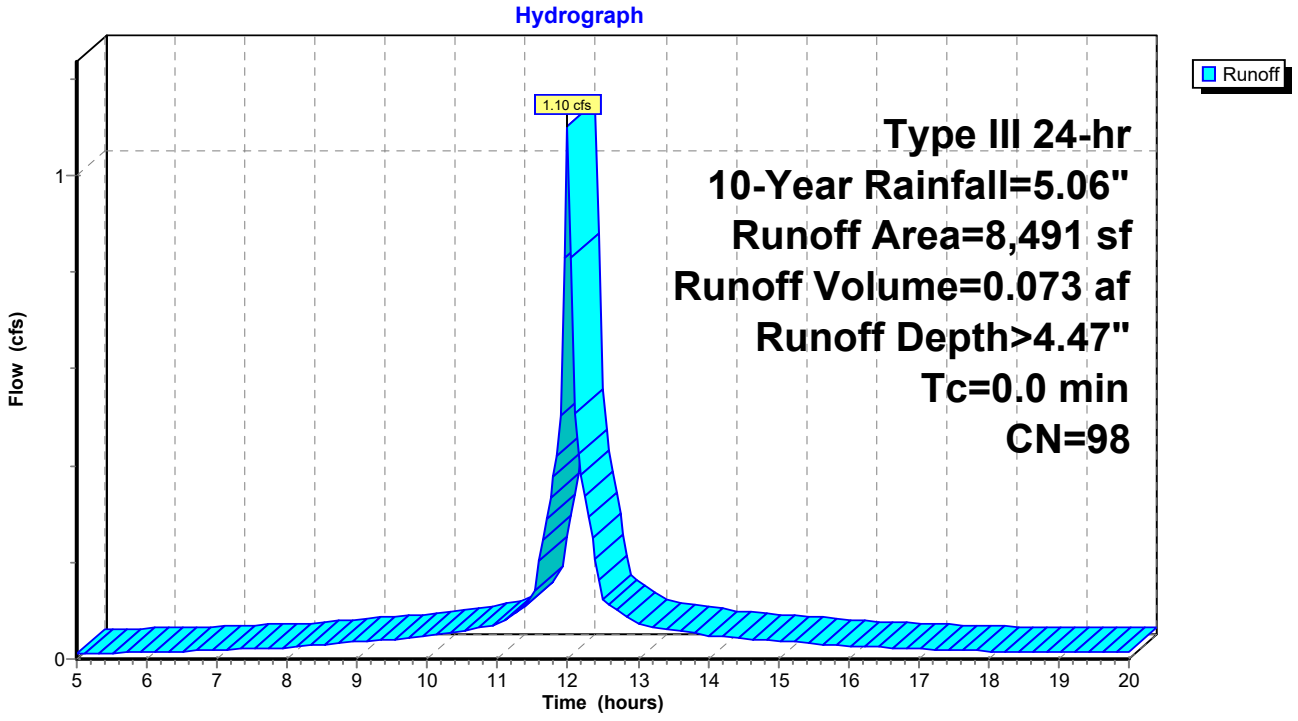
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 1.10 cfs @ 12.00 hrs, Volume= 0.073 af, Depth> 4.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.06"

Area (sf)	CN	Description
8,491	98	Paved parking, HSG D
8,491		100.00% Impervious Area

Subcatchment P-1: Front Plaza



Summary for Subcatchment P-2: Building

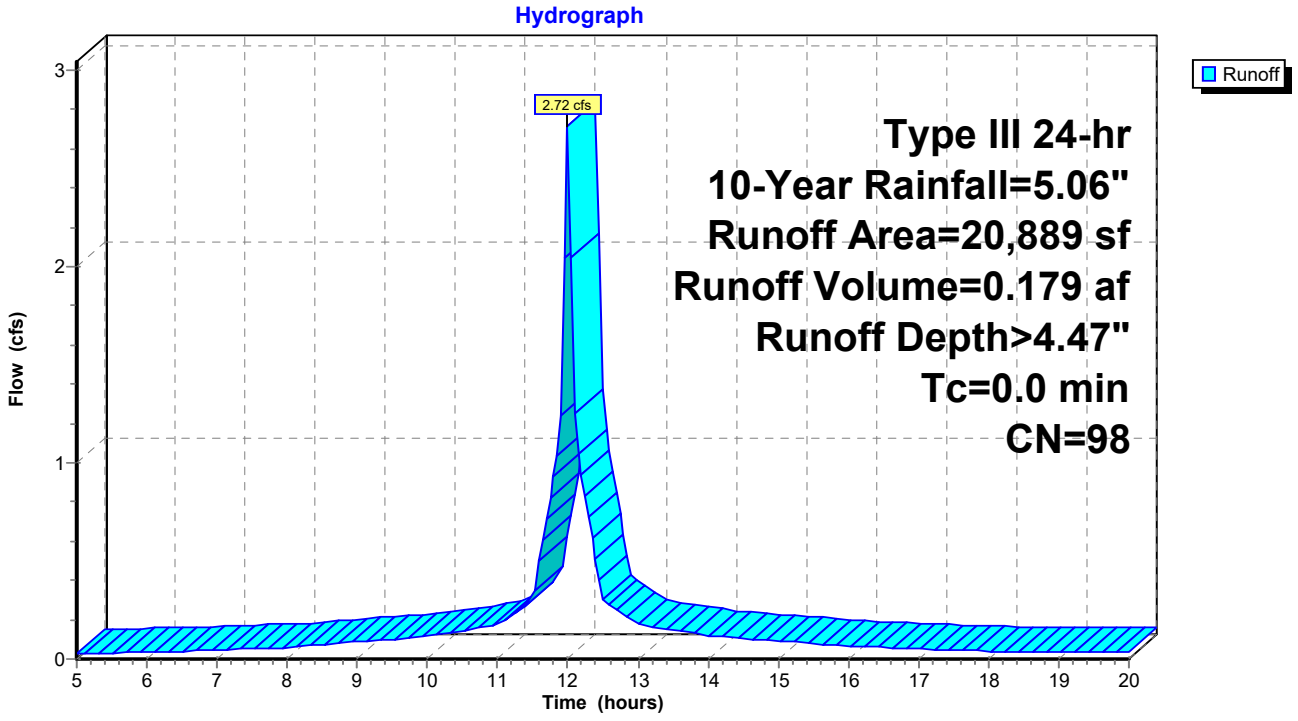
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 2.72 cfs @ 12.00 hrs, Volume= 0.179 af, Depth> 4.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.06"

Area (sf)	CN	Description
20,889	98	Roofs, HSG D
20,889		100.00% Impervious Area

Subcatchment P-2: Building



Summary for Subcatchment P-3: To Closed Drainage

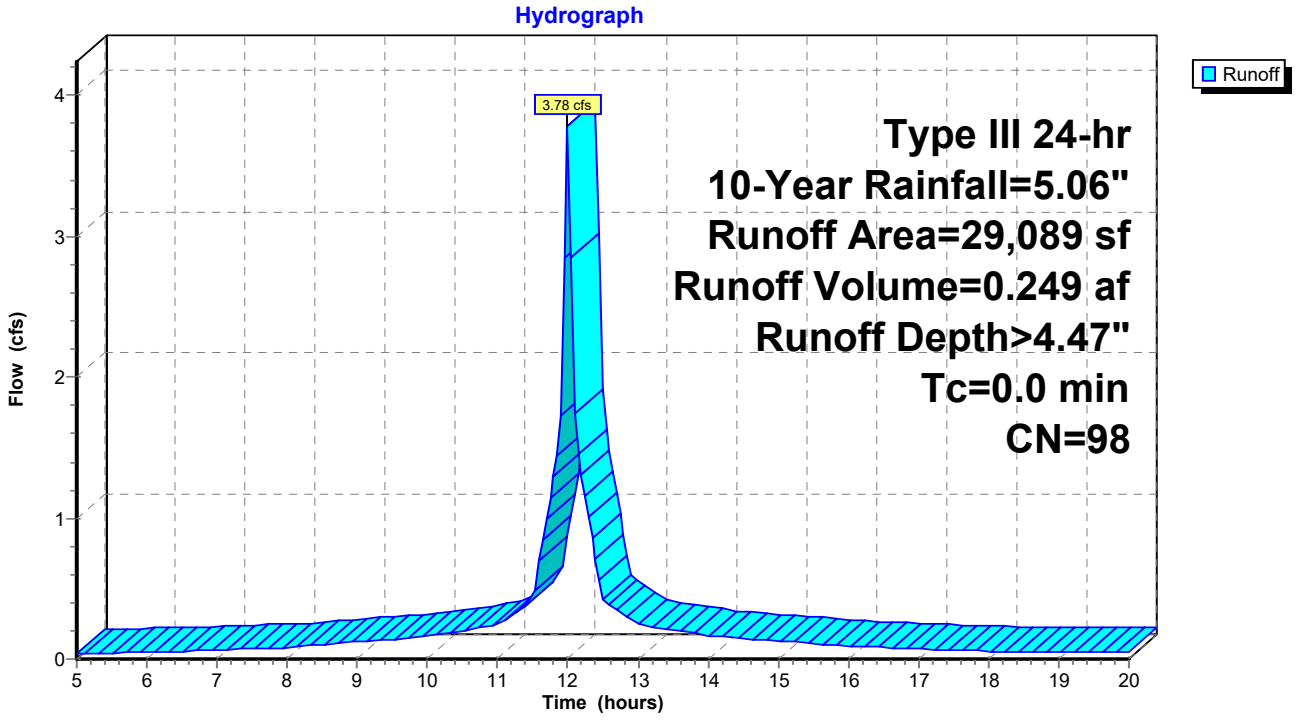
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 3.78 cfs @ 12.00 hrs, Volume= 0.249 af, Depth> 4.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.06"

Area (sf)	CN	Description
29,089	98	Paved parking, HSG D
29,089		100.00% Impervious Area

Subcatchment P-3: To Closed Drainage



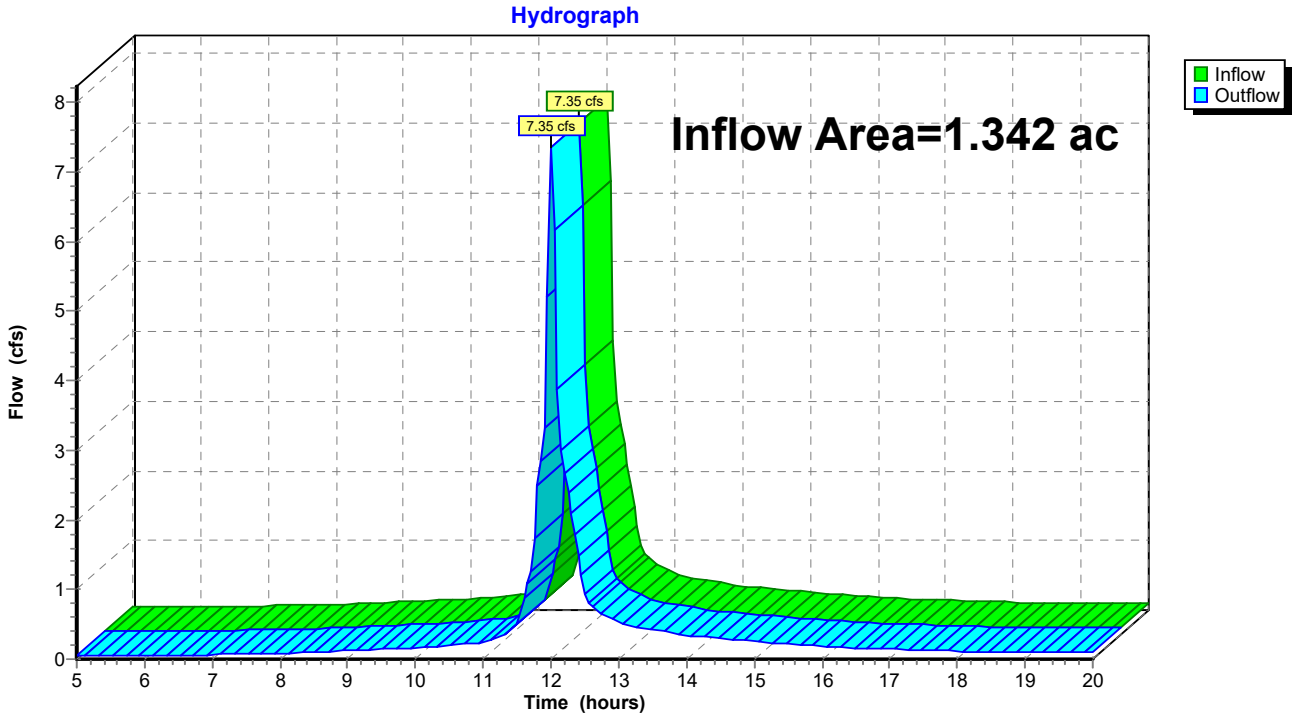
Summary for Reach DPP-1: (new Reach)

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

Inflow Area = 1.342 ac,100.00% Impervious, Inflow Depth > 3.81" for 10-Year event
Inflow = 7.35 cfs @ 12.01 hrs, Volume= 0.426 af
Outflow = 7.35 cfs @ 12.01 hrs, Volume= 0.426 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DPP-1: (new Reach)



Summary for Pond 1P: Infiltration System

[82] Warning: Early inflow requires earlier time span
[81] Warning: Exceeded Pond 2P by 2.30' @ 11.50 hrs

Inflow Area = 0.674 ac,100.00% Impervious, Inflow Depth > 3.49" for 10-Year event
Inflow = 3.67 cfs @ 12.01 hrs, Volume= 0.196 af
Outflow = 3.61 cfs @ 12.02 hrs, Volume= 0.177 af, Atten= 2%, Lag= 0.5 min
Primary = 3.61 cfs @ 12.02 hrs, Volume= 0.177 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 12.69' @ 12.02 hrs Surf.Area= 0.014 ac Storage= 0.022 af

Plug-Flow detention time= 55.1 min calculated for 0.177 af (90% of inflow)
Center-of-Mass det. time= 23.0 min (795.6 - 772.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	9.50'	0.014 af	**8.53'W x 69.13'L x 4.39'H Field A** 0.059 af Overall - 0.013 af Embedded = 0.047 af x 30.0% Voids
#2A	10.50'	0.013 af	**CPP single-wall 24"** x 6 Inside #1 Inside= 24.0"W x 24.0"H => 4.02 sf x 20.00'L = 80.4 cf Outside= 28.7"W x 28.7"H => 4.02 sf x 20.00'L = 80.4 cf Row Length Adjustment= +2.35' x 4.02 sf x 2 rows 6.53' Header x 4.02 sf x 2 = 52.5 cf Inside
		0.027 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	12.30'	**5.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=3.46 cfs @ 12.02 hrs HW=12.68' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 3.46 cfs @ 1.81 fps)

Pond 1P: Infiltration System - Chamber Wizard Field A

Chamber Model = CPP single-wall 24" (Single-wall corrugated HDPE pipe)
Inside= 24.0"W x 24.0"H => 4.02 sf x 20.00'L = 80.4 cf
Outside= 28.7"W x 28.7"H => 4.02 sf x 20.00'L = 80.4 cf
Row Length Adjustment= +2.35' x 4.02 sf x 2 rows

28.7" Wide + 21.0" Spacing = 49.7" C-C Row Spacing

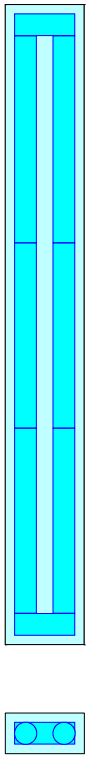
3 Chambers/Row x 20.00' Long +2.35' Row Adjustment +2.39' Header x 2 = 67.13' Row Length +12.0" End Stone x 2 = 69.13' Base Length
2 Rows x 28.7" Wide + 21.0" Spacing x 1 + 12.0" Side Stone x 2 = 8.53' Base Width
12.0" Base + 28.7" Chamber Height + 12.0" Cover = 4.39' Field Height

6 Chambers x 80.4 cf +2.35' Row Adjustment x 4.02 sf x 2 Rows + 6.53' Header x 4.02 sf x 2 = 553.6 cf Chamber Storage

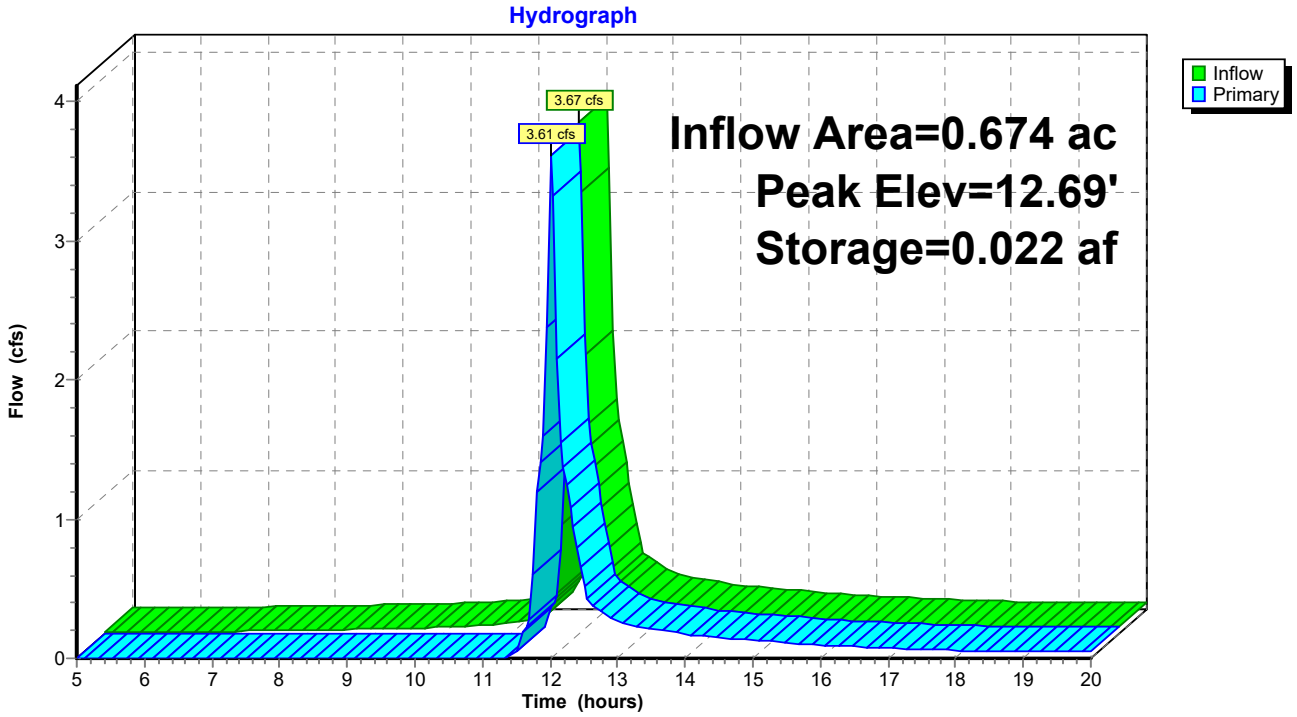
2,590.8 cf Field - 553.6 cf Chambers = 2,037.2 cf Stone x 30.0% Voids = 611.2 cf Stone Storage

Chamber Storage + Stone Storage = 1,164.8 cf = 0.027 af
Overall Storage Efficiency = 45.0%
Overall System Size = 69.13' x 8.53' x 4.39'

6 Chambers
96.0 cy Field
75.5 cy Stone



Pond 1P: Infiltration System



Summary for Pond 2P: Rainwater Re-use Tank

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.480 ac,100.00% Impervious, Inflow Depth > 4.47" for 10-Year event
Inflow = 2.72 cfs @ 12.00 hrs, Volume= 0.179 af
Outflow = 2.58 cfs @ 12.02 hrs, Volume= 0.123 af, Atten= 5%, Lag= 0.9 min
Primary = 2.58 cfs @ 12.02 hrs, Volume= 0.123 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 10.61' @ 12.02 hrs Surf.Area= 1,000 sf Storage= 2,609 cf

Plug-Flow detention time= 136.8 min calculated for 0.123 af (69% of inflow)
Center-of-Mass det. time= 66.7 min (797.4 - 730.6)

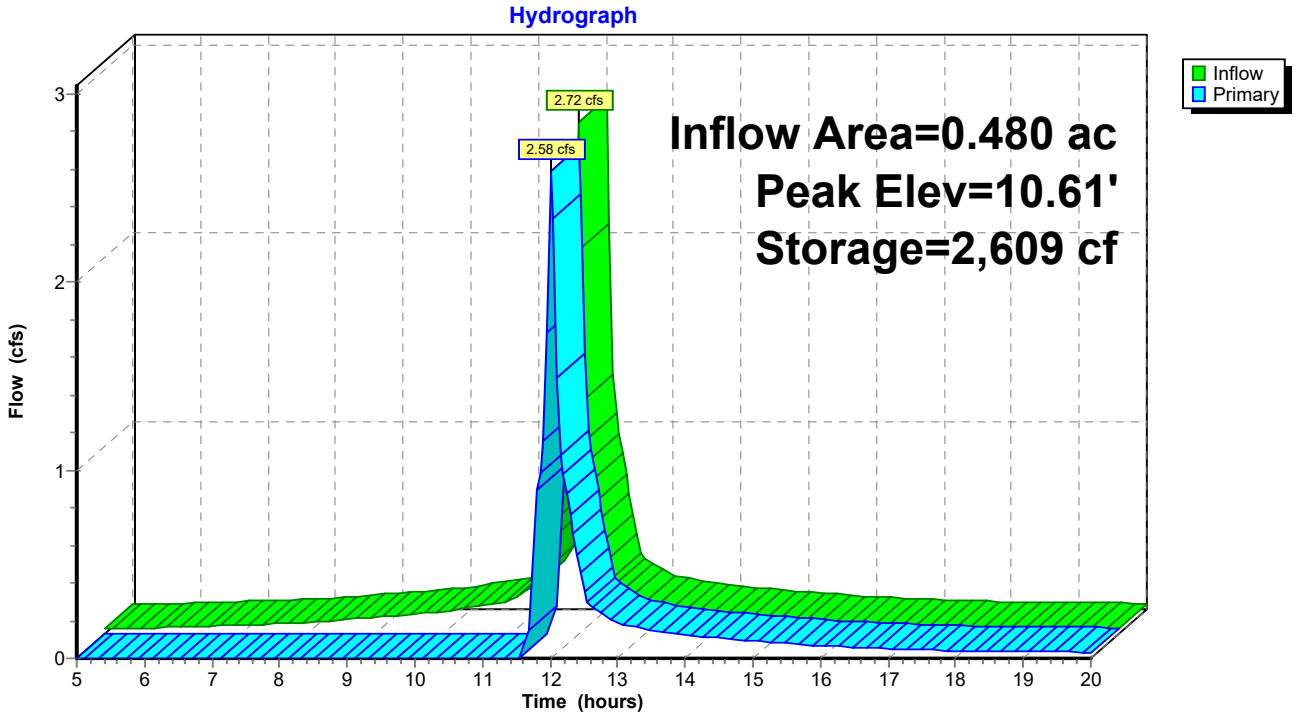
Volume	Invert	Avail.Storage	Storage Description
#1	8.00'	4,000 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
8.00	1,000	0	0
12.00	1,000	4,000	4,000

Device	Routing	Invert	Outlet Devices
#1	Primary	10.41'	**10.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=2.47 cfs @ 12.02 hrs HW=10.60' (Free Discharge)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 2.47 cfs @ 1.28 fps)

Pond 2P: Rainwater Re-use Tank



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 P-1: Front Plaza Runoff Area=8,491 sf 100.00% Impervious Runoff Depth>5.54"
Tc=0.0 min CN=98 Runoff=1.36 cfs 0.090 af

Subcatchment P-2: Building Runoff Area=20,889 sf 100.00% Impervious Runoff Depth>5.54"
Tc=0.0 min CN=98 Runoff=3.35 cfs 0.221 af

Subcatchment P-3: To Closed Drainage Runoff Area=29,089 sf 100.00% Impervious Runoff Depth>5.54"
Tc=0.0 min CN=98 Runoff=4.67 cfs 0.308 af

Reach DPP-1: (new Reach) Inflow=9.12 cfs 0.545 af
Outflow=9.12 cfs 0.545 af

Pond 1P: Infiltration System Peak Elev=12.76' Storage=0.022 af Inflow=4.55 cfs 0.256 af
Outflow=4.50 cfs 0.237 af

Pond 2P: Rainwater Re-use Tank Peak Elev=10.64' Storage=2,639 cf Inflow=3.35 cfs 0.221 af
Outflow=3.20 cfs 0.166 af

Total Runoff Area = 1.342 ac Runoff Volume = 0.620 af Average Runoff Depth = 5.54"
0.00% Pervious = 0.000 ac 100.00% Impervious = 1.342 ac

Summary for Subcatchment P-1: Front Plaza

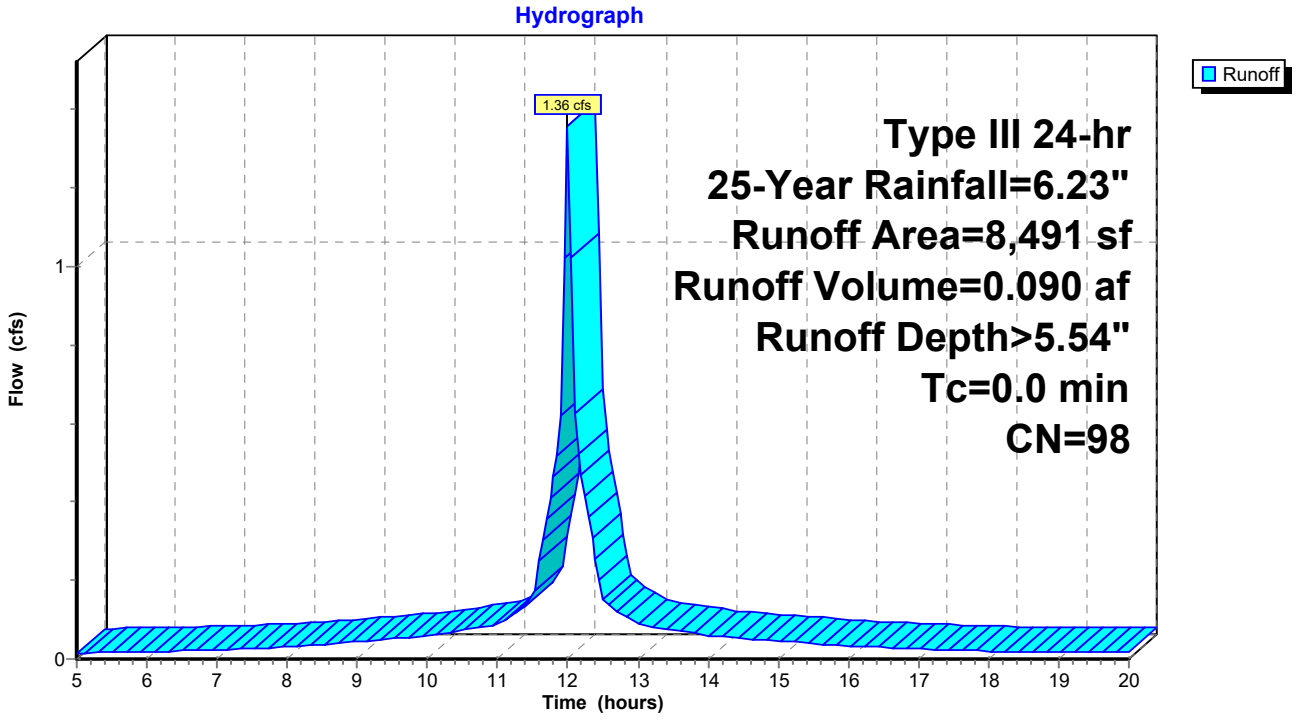
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 1.36 cfs @ 12.00 hrs, Volume= 0.090 af, Depth> 5.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.23"

Area (sf)	CN	Description
8,491	98	Paved parking, HSG D
8,491		100.00% Impervious Area

Subcatchment P-1: Front Plaza



Summary for Subcatchment P-2: Building

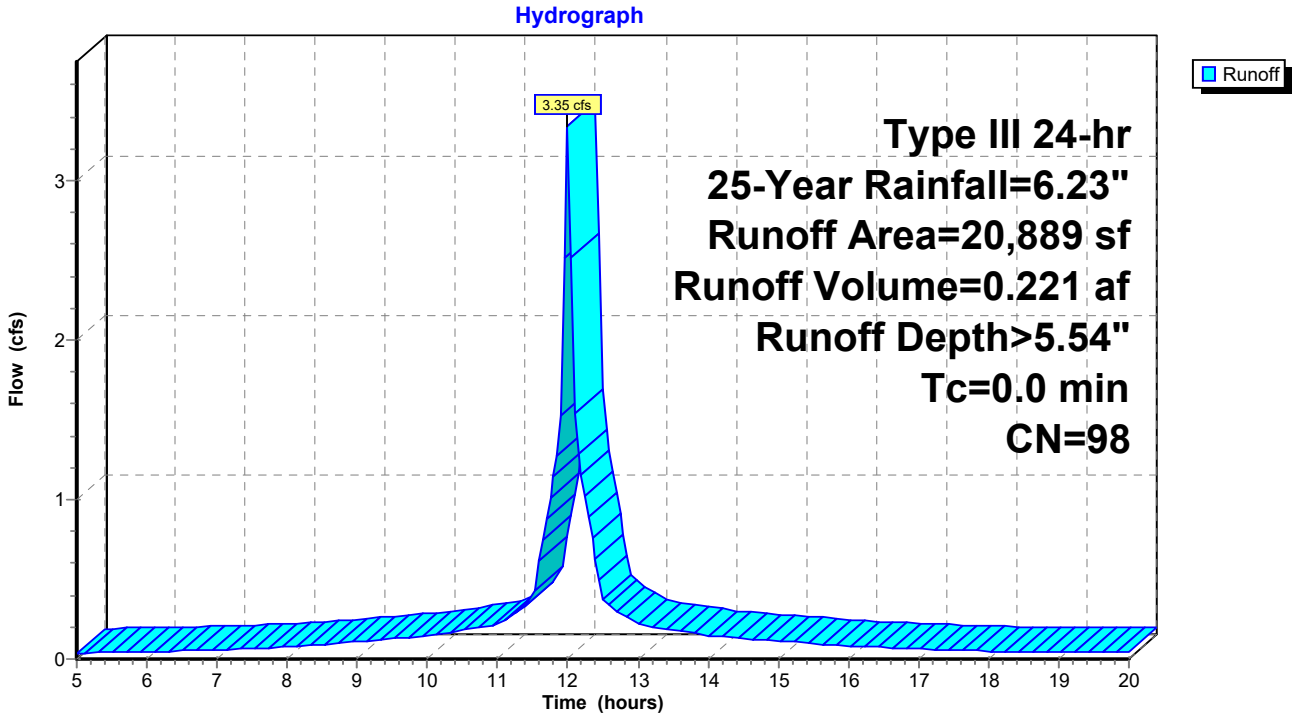
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 3.35 cfs @ 12.00 hrs, Volume= 0.221 af, Depth> 5.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.23"

Area (sf)	CN	Description
20,889	98	Roofs, HSG D
20,889		100.00% Impervious Area

Subcatchment P-2: Building



Summary for Subcatchment P-3: To Closed Drainage

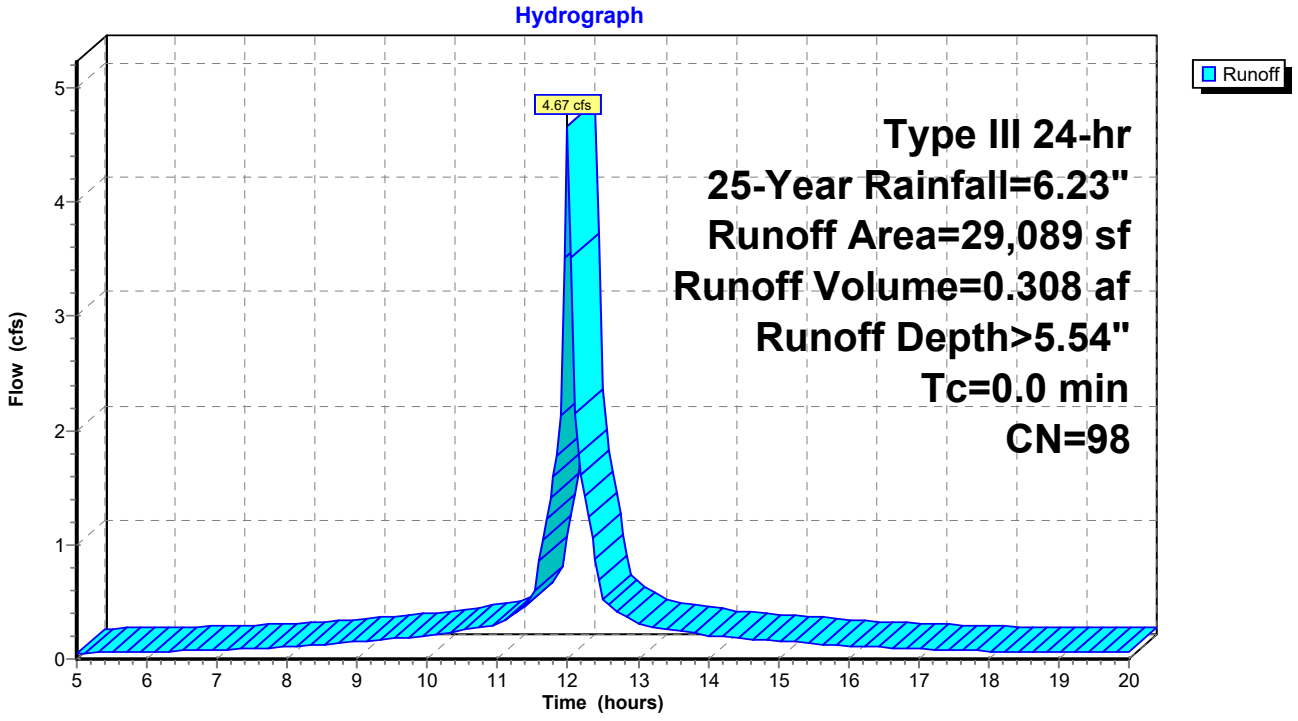
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 4.67 cfs @ 12.00 hrs, Volume= 0.308 af, Depth> 5.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.23"

Area (sf)	CN	Description
29,089	98	Paved parking, HSG D
29,089		100.00% Impervious Area

Subcatchment P-3: To Closed Drainage



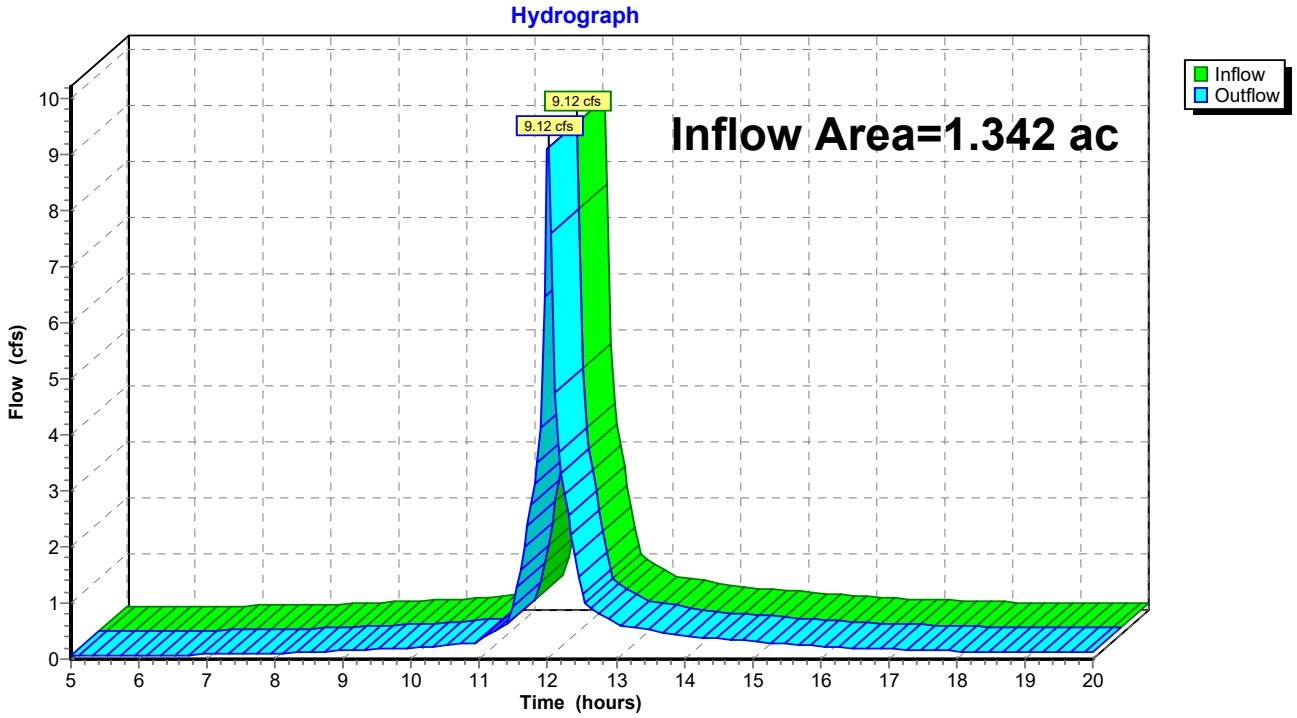
Summary for Reach DPP-1: (new Reach)

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

Inflow Area = 1.342 ac,100.00% Impervious, Inflow Depth > 4.87" for 25-Year event
Inflow = 9.12 cfs @ 12.01 hrs, Volume= 0.545 af
Outflow = 9.12 cfs @ 12.01 hrs, Volume= 0.545 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DPP-1: (new Reach)



Summary for Pond 1P: Infiltration System

[82] Warning: Early inflow requires earlier time span
[81] Warning: Exceeded Pond 2P by 2.30' @ 11.00 hrs

Inflow Area = 0.674 ac,100.00% Impervious, Inflow Depth > 4.55" for 25-Year event
Inflow = 4.55 cfs @ 12.01 hrs, Volume= 0.256 af
Outflow = 4.50 cfs @ 12.02 hrs, Volume= 0.237 af, Atten= 1%, Lag= 0.4 min
Primary = 4.50 cfs @ 12.02 hrs, Volume= 0.237 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 12.76' @ 12.02 hrs Surf.Area= 0.014 ac Storage= 0.022 af

Plug-Flow detention time= 44.9 min calculated for 0.236 af (92% of inflow)
Center-of-Mass det. time= 19.4 min (787.4 - 768.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	9.50'	0.014 af	**8.53'W x 69.13'L x 4.39'H Field A** 0.059 af Overall - 0.013 af Embedded = 0.047 af x 30.0% Voids
#2A	10.50'	0.013 af	**CPP single-wall 24"** x 6 Inside #1 Inside= 24.0"W x 24.0"H => 4.02 sf x 20.00'L = 80.4 cf Outside= 28.7"W x 28.7"H => 4.02 sf x 20.00'L = 80.4 cf Row Length Adjustment= +2.35' x 4.02 sf x 2 rows 6.53' Header x 4.02 sf x 2 = 52.5 cf Inside
		0.027 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	12.30'	**5.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=4.30 cfs @ 12.02 hrs HW=12.74' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 4.30 cfs @ 1.94 fps)

Pond 1P: Infiltration System - Chamber Wizard Field A

Chamber Model = CPP single-wall 24" (Single-wall corrugated HDPE pipe)
Inside= 24.0"W x 24.0"H => 4.02 sf x 20.00'L = 80.4 cf
Outside= 28.7"W x 28.7"H => 4.02 sf x 20.00'L = 80.4 cf
Row Length Adjustment= +2.35' x 4.02 sf x 2 rows

28.7" Wide + 21.0" Spacing = 49.7" C-C Row Spacing

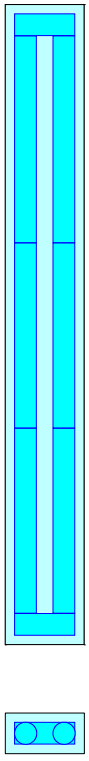
3 Chambers/Row x 20.00' Long +2.35' Row Adjustment +2.39' Header x 2 = 67.13' Row Length +12.0" End Stone x 2 = 69.13' Base Length
2 Rows x 28.7" Wide + 21.0" Spacing x 1 + 12.0" Side Stone x 2 = 8.53' Base Width
12.0" Base + 28.7" Chamber Height + 12.0" Cover = 4.39' Field Height

6 Chambers x 80.4 cf +2.35' Row Adjustment x 4.02 sf x 2 Rows + 6.53' Header x 4.02 sf x 2 = 553.6 cf Chamber Storage

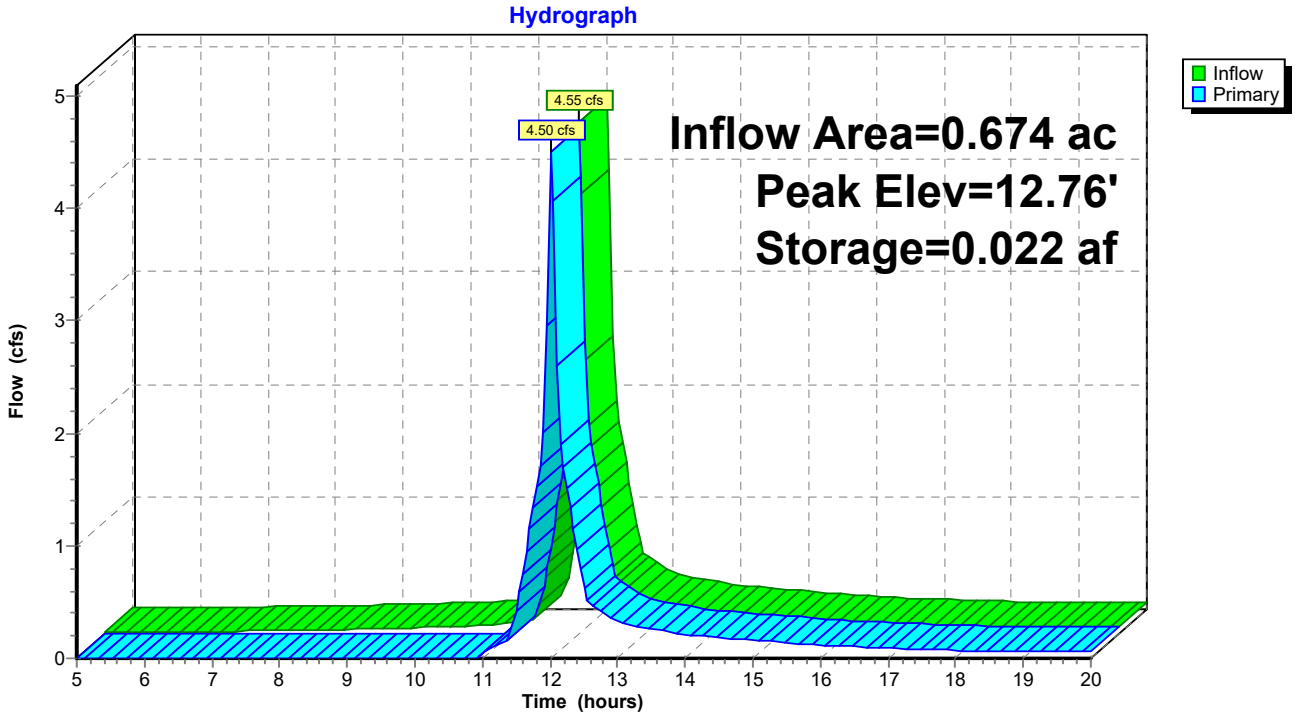
2,590.8 cf Field - 553.6 cf Chambers = 2,037.2 cf Stone x 30.0% Voids = 611.2 cf Stone Storage

Chamber Storage + Stone Storage = 1,164.8 cf = 0.027 af
Overall Storage Efficiency = 45.0%
Overall System Size = 69.13' x 8.53' x 4.39'

6 Chambers
96.0 cy Field
75.5 cy Stone



Pond 1P: Infiltration System



Summary for Pond 2P: Rainwater Re-use Tank

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.480 ac,100.00% Impervious, Inflow Depth > 5.54" for 25-Year event
Inflow = 3.35 cfs @ 12.00 hrs, Volume= 0.221 af
Outflow = 3.20 cfs @ 12.01 hrs, Volume= 0.166 af, Atten= 4%, Lag= 0.9 min
Primary = 3.20 cfs @ 12.01 hrs, Volume= 0.166 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 10.64' @ 12.01 hrs Surf.Area= 1,000 sf Storage= 2,639 cf

Plug-Flow detention time= 121.1 min calculated for 0.165 af (75% of inflow)
Center-of-Mass det. time= 59.3 min (789.0 - 729.6)

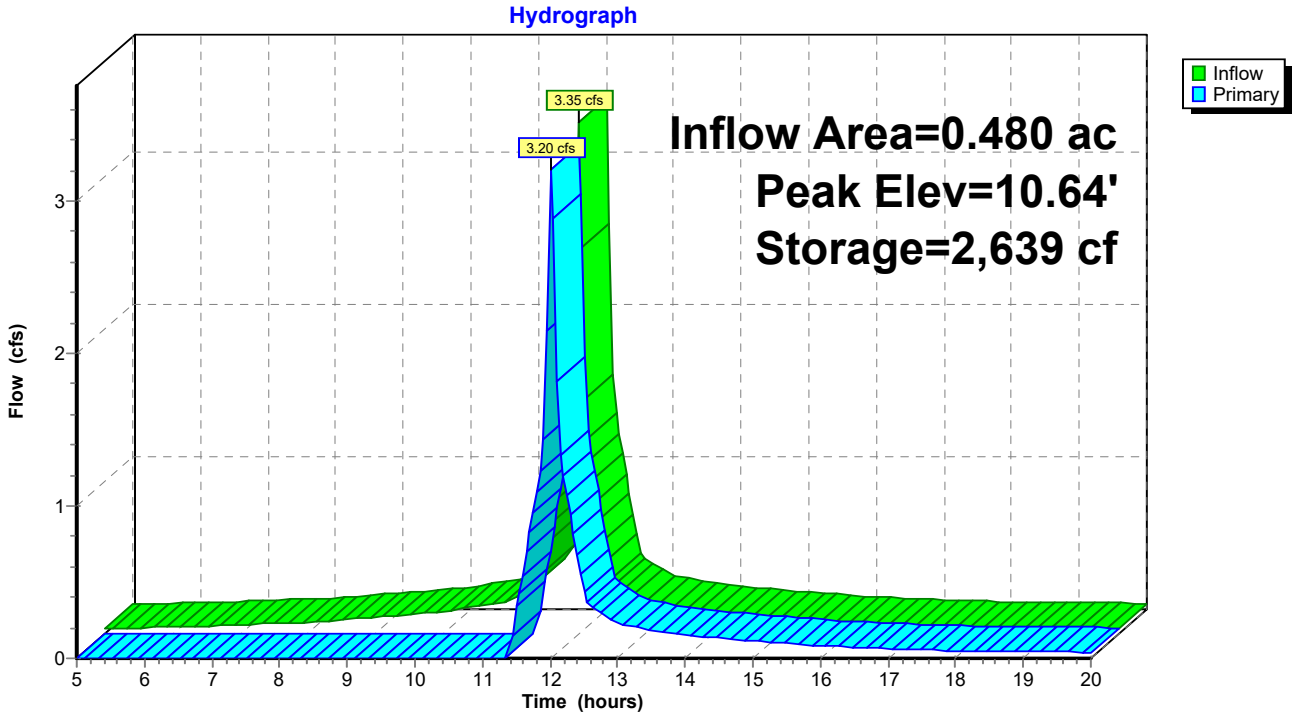
Volume	Invert	Avail.Storage	Storage Description
#1	8.00'	4,000 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
8.00	1,000	0	0
12.00	1,000	4,000	4,000

Device	Routing	Invert	Outlet Devices
#1	Primary	10.41'	**10.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=3.07 cfs @ 12.01 hrs HW=10.63' (Free Discharge)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 3.07 cfs @ 1.38 fps)

Pond 2P: Rainwater Re-use Tank



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 P-1: Front Plaza Runoff Area=8,491 sf 100.00% Impervious Runoff Depth>7.16"
Tc=0.0 min CN=98 Runoff=1.76 cfs 0.116 af

Subcatchment P-2: Building Runoff Area=20,889 sf 100.00% Impervious Runoff Depth>7.16"
Tc=0.0 min CN=98 Runoff=4.32 cfs 0.286 af

Subcatchment P-3: To Closed Drainage Runoff Area=29,089 sf 100.00% Impervious Runoff Depth>7.16"
Tc=0.0 min CN=98 Runoff=6.02 cfs 0.399 af

Reach DPP-1: (new Reach) Inflow=11.82 cfs 0.727 af
Outflow=11.82 cfs 0.727 af

Pond 1P: Infiltration System Peak Elev=12.84' Storage=0.022 af Inflow=5.88 cfs 0.347 af
Outflow=5.85 cfs 0.328 af

Pond 2P: Rainwater Re-use Tank Peak Elev=10.68' Storage=2,683 cf Inflow=4.32 cfs 0.286 af
Outflow=4.15 cfs 0.231 af

Total Runoff Area = 1.342 ac Runoff Volume = 0.801 af Average Runoff Depth = 7.16"
0.00% Pervious = 0.000 ac 100.00% Impervious = 1.342 ac

Summary for Subcatchment P-1: Front Plaza

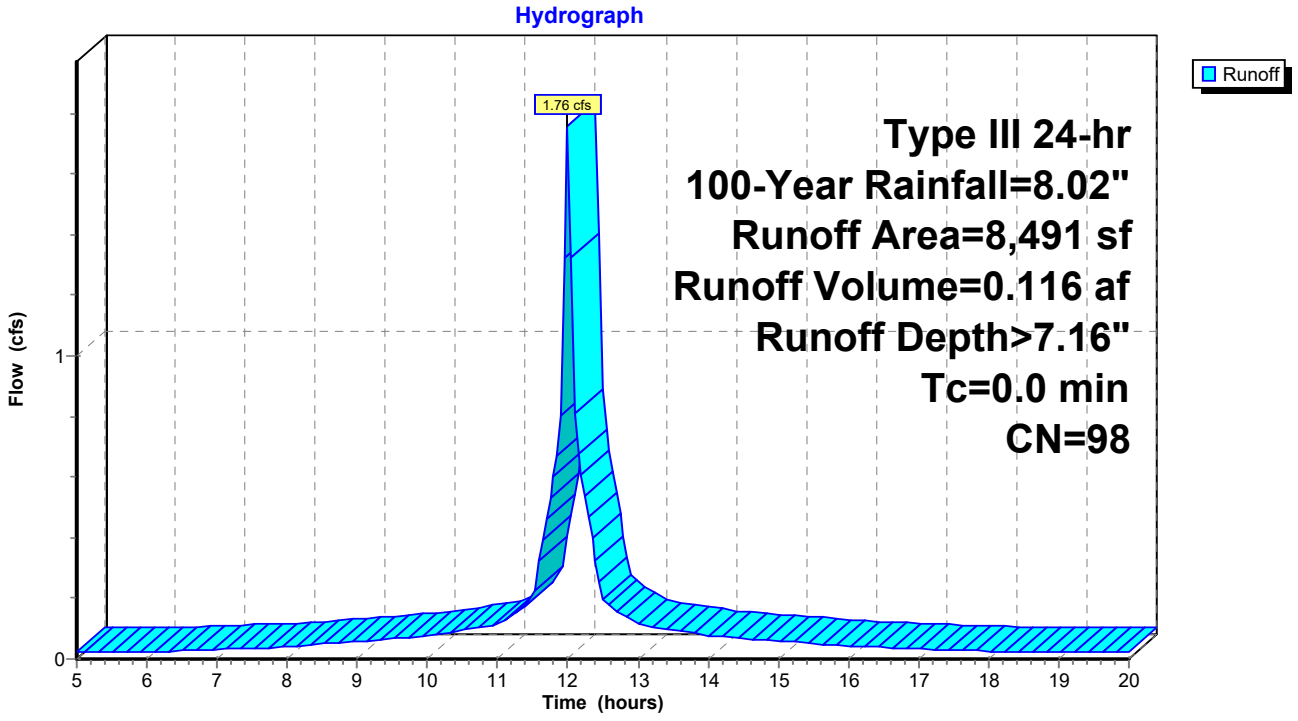
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 1.76 cfs @ 12.00 hrs, Volume= 0.116 af, Depth> 7.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.02"

Area (sf)	CN	Description
8,491	98	Paved parking, HSG D
8,491		100.00% Impervious Area

Subcatchment P-1: Front Plaza



Summary for Subcatchment P-2: Building

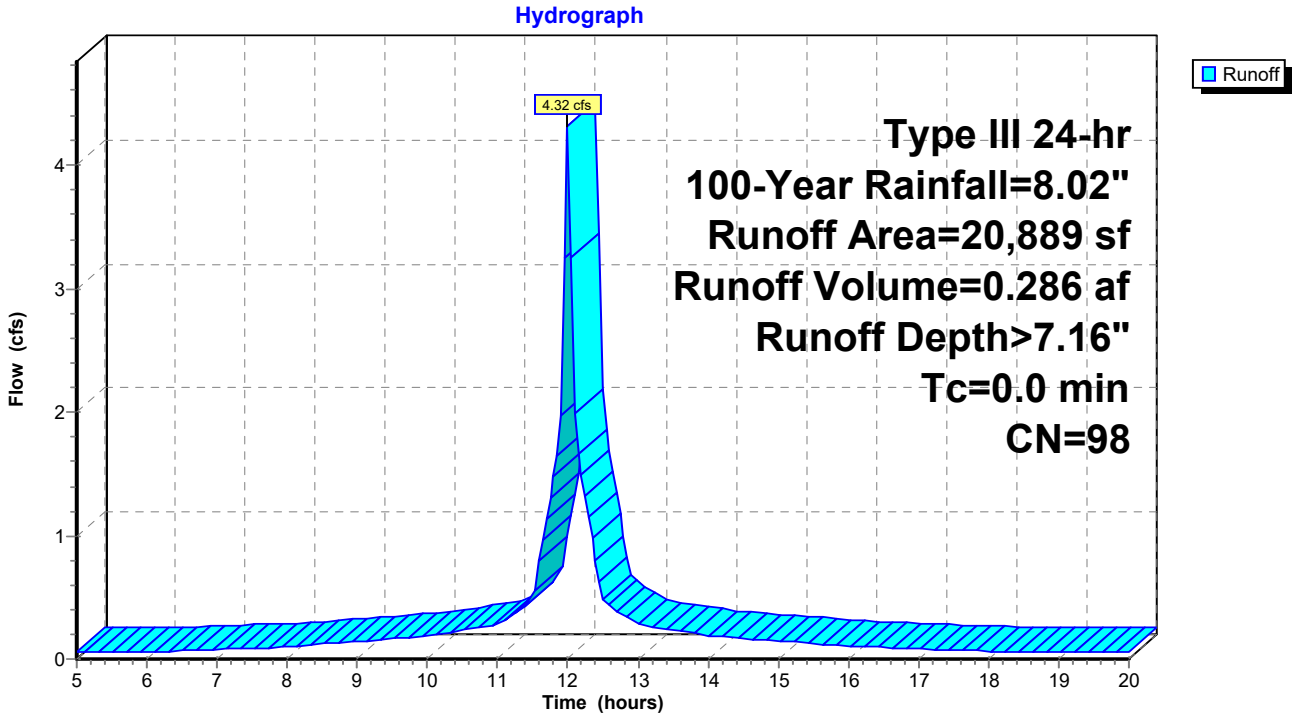
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 4.32 cfs @ 12.00 hrs, Volume= 0.286 af, Depth> 7.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.02"

Area (sf)	CN	Description
20,889	98	Roofs, HSG D
20,889		100.00% Impervious Area

Subcatchment P-2: Building



Summary for Subcatchment P-3: To Closed Drainage

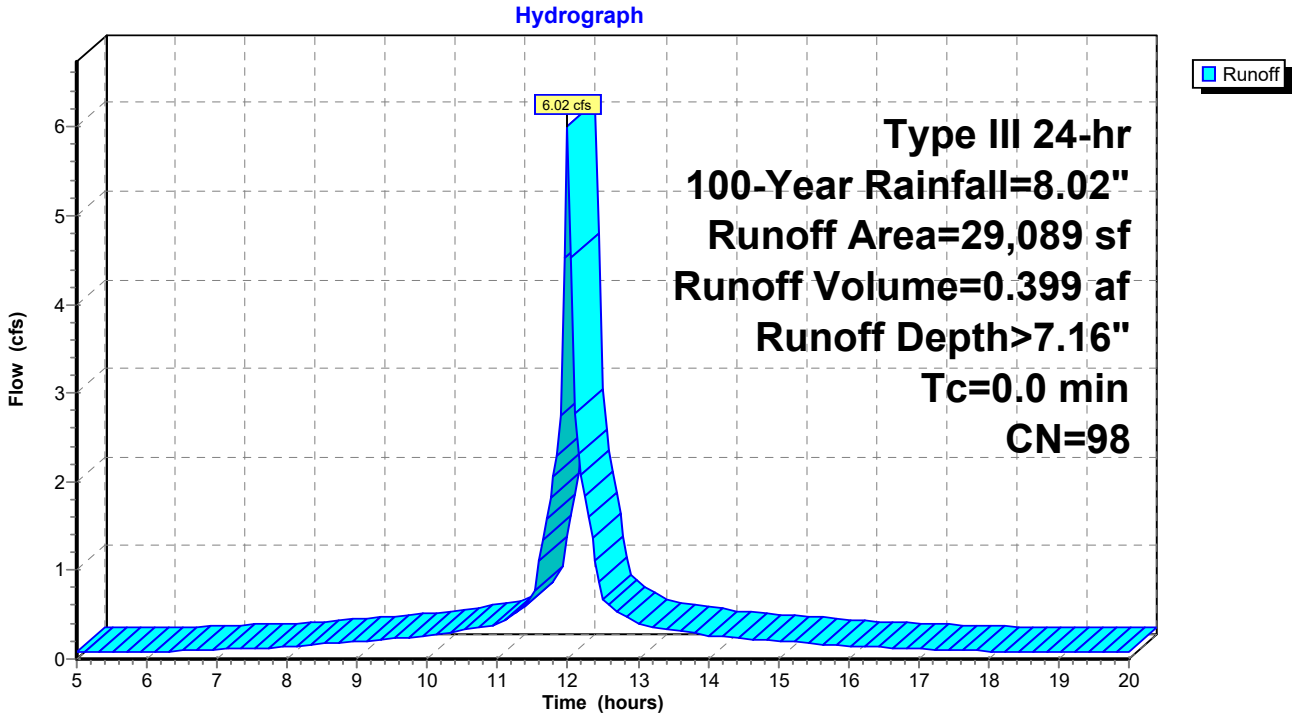
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 6.02 cfs @ 12.00 hrs, Volume= 0.399 af, Depth> 7.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.02"

Area (sf)	CN	Description
29,089	98	Paved parking, HSG D
29,089		100.00% Impervious Area

Subcatchment P-3: To Closed Drainage



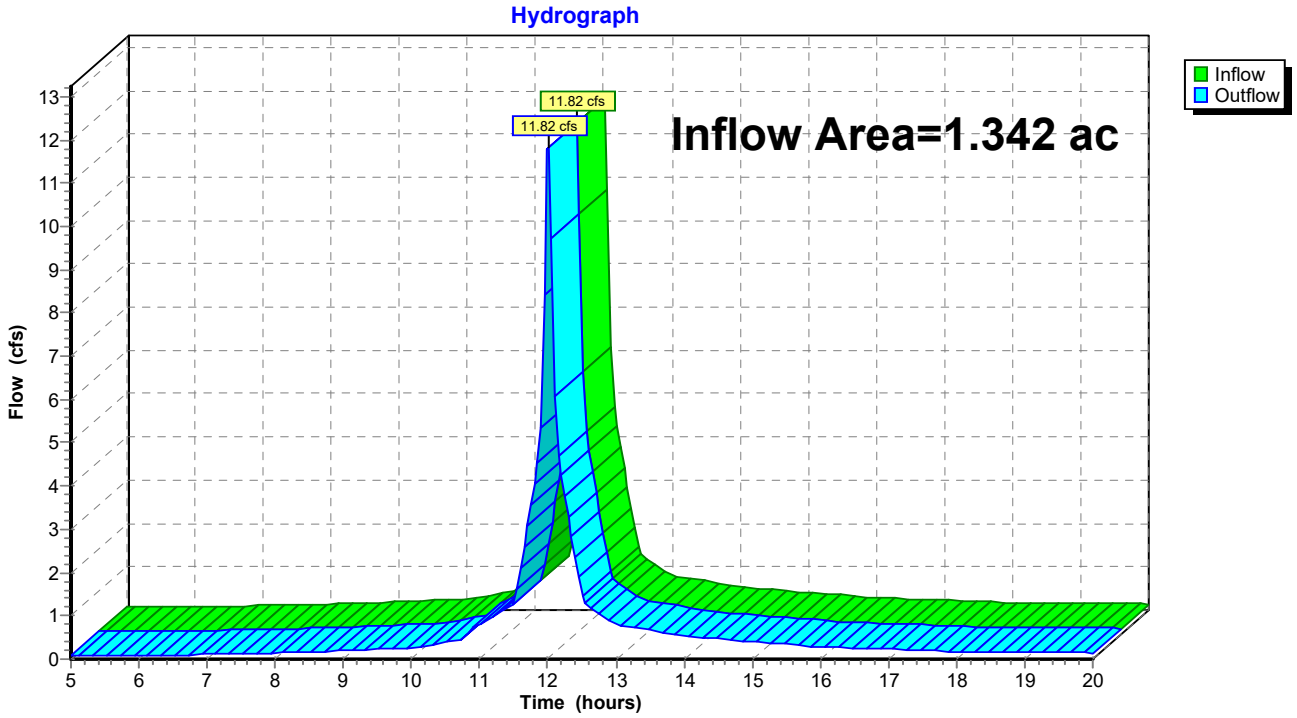
Summary for Reach DPP-1: (new Reach)

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

Inflow Area = 1.342 ac,100.00% Impervious, Inflow Depth > 6.50" for 100-Year event
Inflow = 11.82 cfs @ 12.01 hrs, Volume= 0.727 af
Outflow = 11.82 cfs @ 12.01 hrs, Volume= 0.727 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DPP-1: (new Reach)



Summary for Pond 1P: Infiltration System

[82] Warning: Early inflow requires earlier time span
[81] Warning: Exceeded Pond 2P by 2.30' @ 10.30 hrs

Inflow Area = 0.674 ac,100.00% Impervious, Inflow Depth > 6.17" for 100-Year event
Inflow = 5.88 cfs @ 12.01 hrs, Volume= 0.347 af
Outflow = 5.85 cfs @ 12.01 hrs, Volume= 0.328 af, Atten= 1%, Lag= 0.3 min
Primary = 5.85 cfs @ 12.01 hrs, Volume= 0.328 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 12.84' @ 12.01 hrs Surf.Area= 0.014 ac Storage= 0.022 af

Plug-Flow detention time= 36.2 min calculated for 0.328 af (95% of inflow)
Center-of-Mass det. time= 15.8 min (778.7 - 762.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	9.50'	0.014 af	**8.53'W x 69.13'L x 4.39'H Field A** 0.059 af Overall - 0.013 af Embedded = 0.047 af x 30.0% Voids
#2A	10.50'	0.013 af	**CPP single-wall 24"** x 6 Inside #1 Inside= 24.0"W x 24.0"H => 4.02 sf x 20.00'L = 80.4 cf Outside= 28.7"W x 28.7"H => 4.02 sf x 20.00'L = 80.4 cf Row Length Adjustment= +2.35' x 4.02 sf x 2 rows 6.53' Header x 4.02 sf x 2 = 52.5 cf Inside
		0.027 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	12.30'	**5.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=5.61 cfs @ 12.01 hrs HW=12.82' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 5.61 cfs @ 2.14 fps)

Pond 1P: Infiltration System - Chamber Wizard Field A

Chamber Model = CPP single-wall 24" (Single-wall corrugated HDPE pipe)
Inside= 24.0"W x 24.0"H => 4.02 sf x 20.00'L = 80.4 cf
Outside= 28.7"W x 28.7"H => 4.02 sf x 20.00'L = 80.4 cf
Row Length Adjustment= +2.35' x 4.02 sf x 2 rows

28.7" Wide + 21.0" Spacing = 49.7" C-C Row Spacing

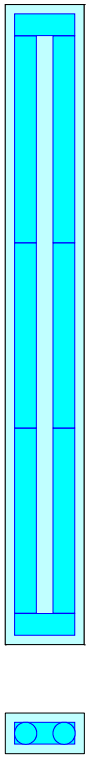
3 Chambers/Row x 20.00' Long +2.35' Row Adjustment +2.39' Header x 2 = 67.13' Row Length +12.0" End Stone x 2 = 69.13' Base Length
2 Rows x 28.7" Wide + 21.0" Spacing x 1 + 12.0" Side Stone x 2 = 8.53' Base Width
12.0" Base + 28.7" Chamber Height + 12.0" Cover = 4.39' Field Height

6 Chambers x 80.4 cf +2.35' Row Adjustment x 4.02 sf x 2 Rows + 6.53' Header x 4.02 sf x 2 = 553.6 cf Chamber Storage

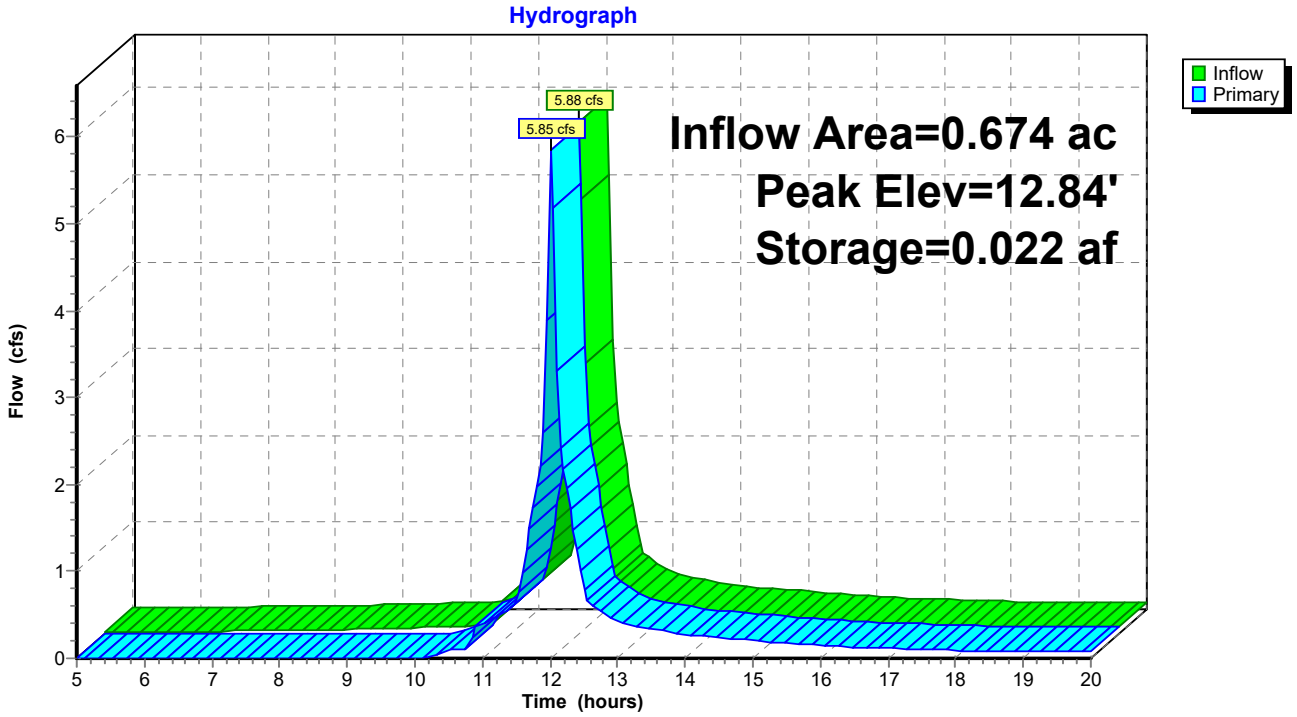
2,590.8 cf Field - 553.6 cf Chambers = 2,037.2 cf Stone x 30.0% Voids = 611.2 cf Stone Storage

Chamber Storage + Stone Storage = 1,164.8 cf = 0.027 af
Overall Storage Efficiency = 45.0%
Overall System Size = 69.13' x 8.53' x 4.39'

6 Chambers
96.0 cy Field
75.5 cy Stone



Pond 1P: Infiltration System



Summary for Pond 2P: Rainwater Re-use Tank

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.480 ac,100.00% Impervious, Inflow Depth > 7.16" for 100-Year event
Inflow = 4.32 cfs @ 12.00 hrs, Volume= 0.286 af
Outflow = 4.15 cfs @ 12.01 hrs, Volume= 0.231 af, Atten= 4%, Lag= 0.8 min
Primary = 4.15 cfs @ 12.01 hrs, Volume= 0.231 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 10.68' @ 12.01 hrs Surf.Area= 1,000 sf Storage= 2,683 cf

Plug-Flow detention time= 104.7 min calculated for 0.230 af (80% of inflow)
Center-of-Mass det. time= 51.4 min (780.1 - 728.7)

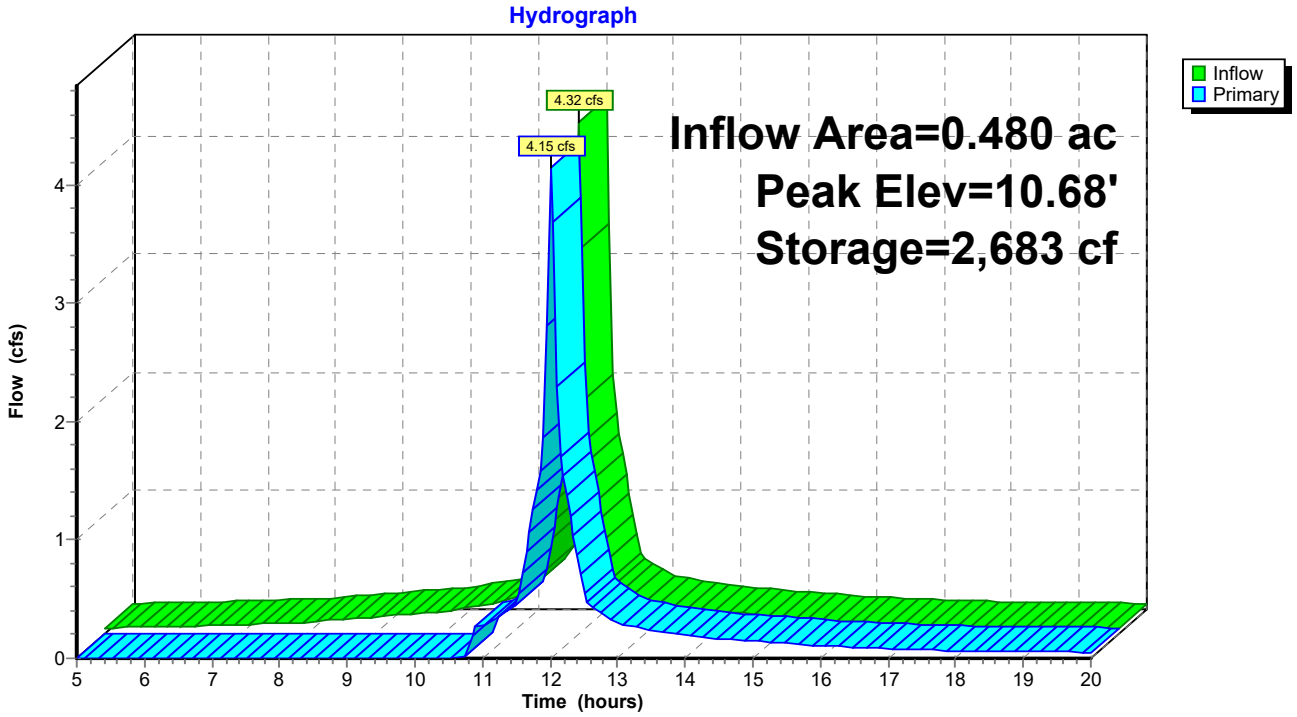
Volume	Invert	Avail.Storage	Storage Description
#1	8.00'	4,000 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
8.00	1,000	0	0
12.00	1,000	4,000	4,000

Device	Routing	Invert	Outlet Devices
#1	Primary	10.41'	**10.0' long (Profile 1) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 2.92 3.37 3.59

Primary OutFlow Max=3.98 cfs @ 12.01 hrs HW=10.67' (Free Discharge)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 3.98 cfs @ 1.50 fps)

Pond 2P: Rainwater Re-use Tank



APPENDIX C

Long-Term Pollution Prevention and Stormwater Operation and Maintenance Plan

LONG-TERM POLLUTION PREVENTION PLAN AND STORMWATER OPERATION AND MAINTENANCE PLAN

Fan Pier Parcel E, Boston, MA

TABLE OF CONTENTS

INTRODUCTION

The purpose of this document is to specify the pollution prevention measures and stormwater management system operation and maintenance for the Fan Pier Parcel E site. The Responsible Party indicated below shall implement the management practices outlined in this document and proactively conduct operations at the project site in an environmentally responsible manner. Compliance with this Manual does not in any way dismiss the responsible party, owner, property manager, or occupants from compliance with other applicable federal, state or local laws.

Responsible Party: The Fallon Company
One Marina Park Drive
Boston, MA 02210

This Document has been prepared in compliance with Standards 4 and 9 of the 2008 Massachusetts Department of Environmental Protection (MassDEP) Stormwater Management Standards, which state:

Standard 4:
The Long Term Pollution Prevention Plan shall include the proper procedures for the following:

- Good housekeeping
- Storing materials and waste products inside or under cover
- Vehicle washing
- Routine inspections of stormwater best management practices
- Spill prevention and response
- Maintenance of lawns, gardens, and other landscaped areas
- Pet waste management
- Operation and management of septic systems
- Proper management of deicing chemicals and snow

Standard 9:
The Long-Term Operation and Maintenance Plan shall at a minimum include:

- Stormwater management system(s) owner(s)
- The party or parties responsible for operation and maintenance, including how future property owners shall be notified of the presence of the stormwater management system and the requirement for operation and maintenance
- The routine and non-routine maintenance tasks to be undertaken after construction is complete and a schedule for implementing those tasks
- A plan that is drawn to scale and shows the location of all stormwater BMPs in each treatment train along with the discharge point
- A description of public safety features
- An estimated operations and maintenance budget

1.0 LONG-TERM POLLUTION PREVENTION PLAN

The Responsible Party shall implement the following good housekeeping procedures at the project site to reduce the possibility of accidental releases and to reduce safety hazards.

1.1 Storage of Hazardous Materials

To prevent leaks and spills, keep hazardous materials and waste products under cover or inside. Use drip pans or spill containment systems to prevent chemicals from entering the drainage system. Inspect storage areas for materials and waste products at least once per year to determine amount and type of the material on site, and if the material requires disposal.

Securely store liquid petroleum products and other liquid chemicals in federally- and state-approved containers. Restrict access to maintenance personnel and administrators.

1.2 Storage of Waste Products

Collect and store all waste materials in securely lidded dumpster(s) or other secure containers as applicable to the material. Keep dumpster lids closed and the areas around them clean. Do not fill the dumpsters with liquid waste or hose them out. Sweep areas around the dumpster regularly and put the debris in the garbage, instead of sweeping or hosing it into the parking lot. Legally dispose of collected waste on a regular basis.

Segregate liquid wastes, including motor oil, antifreeze, solvents, and lubricants, from solid waste and recycle through hazardous waste disposal companies, whenever possible. Separate oil filters, batteries, tires, and metal filings from grinding and polishing metal parts from common trash items and recycle. These items are not trash and are illegal to dump. Contact a hazardous waste hauler for proper disposal to a hazardous waste collection center.

1.3 Spill Prevention and Response

Implement spill response procedures for releases of significant materials such as fuels, oils, or chemical materials onto the ground or other area that could reasonably be expected to discharge to surface or groundwater.

- For minor spills, keep fifty (50) gallon spill control kits and Speedy Dry at all shop and work areas.
- Immediately contact applicable Federal, State, and local agencies for reportable quantities as required by law.
- Immediately perform applicable containment and cleanup procedures following a spill release.
- Promptly remove and dispose of all material collected during the response in accordance with Federal, State and local requirements. A licensed emergency response contractor may be required to assist in cleanup of releases depending on the amount of the release, and the ability of the Contractor to perform the required response.
- Reportable quantities of chemicals, fuels, or oils are established under the Clean Water Act and enforced through Massachusetts Department of Environmental Protection (DEP).

1.4 Minimize Soil Erosion

Soil erosion facilitates mechanical transport of nutrients, pathogens, and organic matter to surface water bodies. Repair all areas where erosion is occurring throughout the project site. Stabilize bare soil with riprap, seed, mulch, or vegetation.

1.5 Maintenance of Lawns, Gardens, and other Landscaped Areas

Pesticides and fertilizers shall not be used in the landscaped areas associated with the project site and shall not be stored on-site. Dumping of lawn wastes, brush or leaves or other materials or debris is not permitted in any Resource Area. Grass clippings, pruned branches and any other landscaped waste should be disposed of or composted in an appropriate location.

1.6 Management of Deicing Chemicals and Snow

The qualified contractor selected for snow plowing and deicing shall be made fully aware of the requirements of this section.

No road salt (sodium chloride) shall be stored on-site. The use of magnesium chloride de-icing product with a 0.5 to 1.0 percent sodium chloride mix for snow and ice treatment is permitted. The product shall be stored in a locked room inside the building and shall be used at exterior stairs and walkways. The snow plow contractor shall adhere to these magnesium chloride use and storage requirements.

During typical snow plowing operations, snow shall be pushed to the designated snow removal areas. Snow shall not be stockpiled in wetland resource areas or the 100-foot Buffer Zone or catch basins. In severe conditions where snow cannot be stockpiled on site, the snow shall be removed from the site and properly disposed of in accordance with DEP Guideline BRP601-01.

Use of sand is permitted only for roadways.

Before winter begins, the property owner and the contractor shall review snow plowing, deicing, and stockpiling procedures. Areas designated for stockpiling should be cleaned of any debris. Street and parking lot sweeping should be followed in accordance with the Operation and Maintenance Plan.

1.7 Coordination with other Permits and Requirements

Certain conditions of other approvals affecting the long term management of the property shall be considered part of this Long Term Pollution Prevention Plan. The Owner shall become familiar with those documents and comply with the guidelines set forth in those documents.

2.0 STORMWATER MANAGEMENT SYSTEM OPERATION AND MAINTENANCE PLAN

2.1 Introduction

This Operation and Maintenance Plan (O&M Plan) for the Fan Pier Parcel E site is required under Standard 9 of the 2008 MassDEP Stormwater Handbook to provide best management practices for implementing maintenance activities for the stormwater management system in a manner that minimizes impacts to wetland resource areas.

The Owner shall implement this O&M Plan and proactively conduct operations at the site in an environmentally responsible manner. Compliance with this O&M Plan does not in any way dismiss the Owner from compliance with other applicable Federal, State or local laws.

Routine maintenance during construction and post-development phases of the project, as defined in the Operation and Maintenance Plan, shall be permitted without amendment to the Order of Conditions. A continuing condition in the Certificate of Compliance shall ensure that maintenance can be performed without triggering further filings under the Wetlands Protection Act.

All stormwater best management practices (BMPs) shall be operated and maintained in accordance with the design plans and the Operation and Maintenance Plan approved by the issuing authority. The Owner shall:

a. Maintain an operation and maintenance log for the last three years, including inspections, repairs, replacement and disposal (for disposal the log shall indicate the type of material and the disposal location). This is a rolling log in which the responsible party records all operation and maintenance activities for the past three years.

b. Make this log available to MassDEP and the Conservation Commissions upon request; and

c. Allow members and agents of the MassDEP and the Conservation Commissions to enter and inspect the premises to evaluate and ensure that the Owner complies with the Operation and Maintenance requirements for each BMP.

2.2 Stormwater Operation and Maintenance Requirements

Inspect and maintain the stormwater management system as directed below. Repairs to any component of the system shall be made as soon as possible to prevent any potential pollutants (including silt) from entering the resource areas.

<u>Deep Sump and Hooded Catch Basins</u>

Inspect catch basins four times per year, including after the foliage season. Other inspection and maintenance requirements include:

- Remove organic material, sediment and hydrocarbons four times per year or whenever the depth of deposits is greater than or equal to one half the depth from the bottom of the invert of the lowest pipe in the basin.
- Always clean out catch basins after street sweeping. If any evidence of hydrocarbons is found during inspection, the material immediately remove using absorbent pads or other suitable measures and dispose of legally. Remove other accumulated debris as necessary.
- Transport and disposal of accumulated sediment off-site shall be in accordance with applicable local, state and federal guidelines and regulations.

<u>Subsurface Infiltration System</u>

- Inspect subsurface infiltration system twice per year. Inspect the inlets and observation ports to determine if there is accumulated sediment within the system. Remove all debris and accumulated sediment that may clog the system.

2.3 Street Sweeping

Perform street sweeping at least twice per year, whenever there is significant debris present on roads and parking lots. Street sweeping shall occur in the spring and fall. Sweepings must be handled and disposed of properly according to the Boston Conservation Commission.

2.4 Repair of the Stormwater Management System

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

STORMWATER MANAGEMENT SYSTEM INSPECTION FORM

Fan Pier Parcel E
Boston, MA

Inspected by:_____
Date:_____

Component	Status/Inspection	Action Taken
Deep Sump Catch Basins and Drain Manholes		
Subsurface Infiltration System		
General site conditions – evidence of erosion, etc.		

APPENDIX D

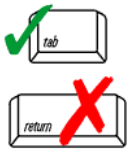
MassDEP Checklist for Stormwater Report and Illicit Discharge Compliance Statement

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.

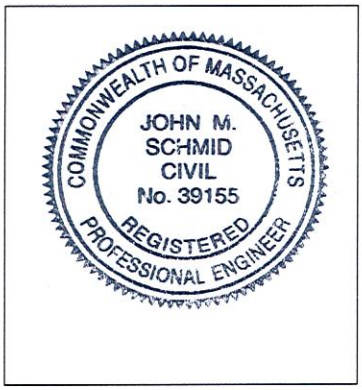
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the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



10-24-18

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): Subsurface Infiltration System, Rainwater re-use system

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.

October 24, 2018

FAN PIER PARCEL E
10 Fan Pier Boulevard
Boston, Massachusetts 02210

STANDARD 10: Illicit Discharge Compliance Statement

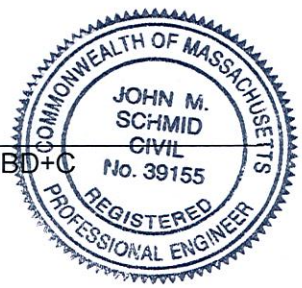
Standard 10 states: All illicit discharges to the stormwater management system are prohibited.

This is to verify:

1. Based on the information available there are no known or suspected illicit discharges to the stormwater management system at the FAN PIER PARCEL E project site as defined in the DEP Stormwater Handbook.

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

John M Schmid, PE, LEED AP BD+C



10-24-18
Date

APPENDIX E

Geotechnical Memorandum

Memorandum

Date:	May 14, 2015
Recipient:	Fan Pier Development, LLC James Heighton
Copy To:	
Sender:	Benjamin E. Downing, Jonathan W. Patch, P.E.
Project:	Fan Pier Parcel D; Boston, MA
Project No:	4426.2.2D
Subject:	Preliminary Foundation Design and Temporary Earth Support Recommendations

As requested, this memorandum summarizes our preliminary foundation design and temporary earth support recommendations for the proposed development of Fan Pier Parcel D located on the South Boston Waterfront in Boston, Massachusetts.

Proposed Construction

It is understood that the proposed development of Parcel D includes the construction of a 14-story building with one mechanical penthouse and three levels of below-grade parking. Above-grade levels 1 and 2 will occupy approximate 23,500 square-foot plan areas and levels 3 through 14 will occupy approximate 19,000 square-foot plan areas. The below-grade garage will occupy an approximate 40,000 square-foot footprint. The lowest level slab within the garage will be at about Elevation -15.5.

Subsurface Information

A subsurface exploration program consisting of nine (9) borings (D17 through D23, D24A and D24B) was conducted at the project site during the period of November 18 through December 2, 2014. Logs of the borings are attached and approximate exploration locations are as indicated on the enclosed Subsurface Exploration Plan. The Subsurface Exploration Plan also contains the proposed locations of borings still to be completed at the subject site.

The completed borings were generally advanced into the natural marine sand and/or marine clay deposits to define the top of natural inorganic soil deposit across the site and to obtain soil samples to submit for chemical testing to classify the soil within the limits of the proposed excavation for off-site disposal.

Foundation Design Recommendations

For preliminary design, we recommend that the proposed structure be supported by a foundation system consisting of combined footings and/or structural mats. The combined

footings and/or structural mats should bear directly on the undisturbed, natural, inorganic deposits of marine sand or marine clay, or on lean concrete placed directly over the marine sand or marine clay deposit following removal of the overlying unsuitable fill. A maximum allowable design bearing pressure of six (6) kips per square-foot (ksf) is recommended.

The surface of the natural, inorganic marine deposit is anticipated to be at or above the level of the proposed lowest level slab outside the footprint of the former slip, which is generally to the east of column line d3. Within the former slip, or to the west of column line d3, the surface of the natural, inorganic soil is anticipated to slope downward from east to west from about Elevation -12 to Elevation -38, respectively. It is anticipated that the bottom of an assumed 5-foot thick structural mat for the 14-story tower will be at approximately Elevation -22. Therefore, overexcavation of the existing fill and replacement with lean concrete will be required for a portion of the structural mat and also for some footings located within the limits of the former slip. Specifically, overexcavation is anticipated to the west of column line d2.

It is also recommended that the north and east perimeter wall footings be continuous and be founded a minimum of 1-foot below the surface of the relatively impermeable marine clay deposit to provide a permanent groundwater cut-off. If the surface of the marine clay deposit is located below the foundation bearing level, it will be necessary to overexcavate the fill and/or marine sand deposits from under the perimeter foundation wall footing a minimum of 1-foot below the surface of the clay deposit and replace them with lean concrete. The perimeter foundations should then be cast directly on the surface of the marine clay or lean concrete to form a groundwater cut-off. No crushed stone should be placed over the perimeter wall footing bearing surface.

The lowest level slab of the proposed structure should be designed as a conventional slab-on-grade which is directly underlain by a polyethylene vapor barrier spread over a minimum 12-inch thickness of 3/4-inch crushed stone. A network of 6-inch diameter perforated PVC drain pipes spaced on approximate 30-foot intervals should be located within the crushed stone drainage layer and be surrounded by a minimum 6-inch thickness of crushed stone. The crushed stone should be underlain by a thickness of filter fabric such as Mirafi 140N placed directly over the excavation subgrade. The underslab drain lines should begin at an invert elevation no higher than 12 inches below the underside of the lowest level floor slab and should be laid flat.

Seismic Design Considerations

For the purposes of determining parameters for structural seismic design, this site is considered to be a Site Class D as defined in Section 1613.5.5 of the Code. Further, the bearing stratum on the proposed site is not considered to be subject to liquefaction during an earthquake based on the criterion of Section 1806.4 of the Code.

Temporary Excavation Support

For the approximate 40-foot deep excavation required for construction of the below-grade portion of the proposed building, the most cost effective method to provide the required temporary excavation support and groundwater control is considered to be with a braced, continuously interlocking steel sheet pile wall that is advanced into the underlying low permeability marine clay deposit. The steel sheet pile walls would be installed along the north, east and south sides of the site, with the west side sheet pile wall comprised of the existing sheet piling of Parcels B and C. To allow for conventional double-sided forming of the perimeter foundation walls, the inside face of the new sheet pile walls should be located 5 feet from the outside face of the adjacent perimeter foundation wall. Thus, the west end of the north side sheet piling would terminate at the existing north side sheet pile wall of Parcel C and the west end of the south side sheet piling would terminate at the existing east side sheet pile wall of Parcel B. At these two locations, it is expected that a small gap will occur between the existing and new sheet piling. Prior to excavation, the gaps should be grouted over the entire length of the sheeting to reduce the groundwater seepage at the gaps.

It is expected that most groundwater seepage will occur through the sheet pile interlocks and at tieback penetrations located below the groundwater level. Due to the tighter interlock of a hot-rolled sheet pile section, less seepage should occur through its interlock as compared to the looser interlock of a cold-formed sheet pile section. Hot-rolled sheet piling carries a modest premium compared to the cost of cold-formed sheeting. At previously developed Fan Pier parcels, it has been the practice to require the use of hot-rolled sheet piling for the excavation support walls that do not abut adjacent Fan Pier parcels, since these walls will comprise the final sheet pile perimeter of the completed block of Parcel A through F. For excavation support walls that abut adjacent Fan Pier parcels, the use of cold-formed sheet piling is allowed, since this sheet piling is removed over the depth of excavation at the abutting developed parcel. Accordingly, the temporary excavation support walls for Parcel D should consist of hot-rolled sheet piling for the north and east sides and may consist of cold-formed sheet piling for the south side where it will abut the planned future Parcel E construction.

For preliminary planning, it is recommended that two bracing options for the sheet pile walls be considered, with each option consisting of three levels of bracing to restrain the north, east and south sides and a fourth level of internal bracing to restrain the north and south sides in the former slip. The first option is comprised of three levels of internal bracing to restrain the north, east and south sides. The second option is comprised of tiebacks for the first and second bracing levels and internal bracing for the third level. A fourth level of internal bracing would be provided to restrain the portion of the north and south side sheeting in the former slip for either option.

For the first option, the first and second bracing levels would likely consist of a combination of corner braces and cross-lot struts. The third bracing level may consist of a combination of corner braces, cross-lot struts as well as rakers that react to steel posts installed in the mat foundation for the building. The localized fourth bracing level would consist of rakers

that react to steel posts in the mat foundation. The use of rakers would result in additional mat pours at the perimeter due to the need for a temporary berm to be in place against the sheet piling as part of the raker installation sequence.

For the second option, tiebacks with a capacity of about 100 kips would provide bracing at the top and middle bracing levels on the north, east and south sides. Similar to the first option, the third bracing level along the north, east and south sides may consist of a combination of corner braces, cross-lot struts as well as rakers that react to steel posts installed in the mat foundation for the building. The fourth bracing level would be the same as described for the first option.

In general, the use of internal bracing would require box-outs in the perimeter foundation walls at the brace locations, and bracing removal would occur after the overlying framed slab is constructed. For the third and fourth bracing levels, it may be possible to avoid wall box-outs and bracing removal below a completed slab by structurally connecting the mat foundation, the interior footings and perimeter wall footings with a network of tie beams. The interconnected foundations would serve to brace the sheet piling to allow unobstructed removal of the third and fourth bracing level.

Regarding the feasibility of tiebacks in the area of the former slip, the recent tieback experience at Parcel C indicated that tieback installation for the top two levels of tiebacks proceeded without much difficulty due to seepage through the tieback penetrations. Due to significant seepage through tieback penetrations at the third tieback level, the use of tiebacks were abandoned at the third and fourth levels and replaced with raker bracing to posts in the mat foundations. For these reasons, tiebacks for Parcel D should only be considered for the top and middle bracing levels.

Final Comments

Additional borings are still to be performed at the Parcel D site for both geotechnical and geoenvironmental purposes. Following the completion of these borings, a Foundation Engineering Report would be prepared for the project.

We trust that the above information is sufficient for your present requirements. Should you have any questions concerning the preliminary recommendations presented herein, please do not hesitate to call us.

F:\WP5\JOBS\4426 Fan Pier\Parcel D\Memorandums\4426 Parcel D Prelim Foundation Recs 051415.docx

APPROXIMATE LIMITS OF FORMER PIER 1 / PIER 2 SLIP

APPROXIMATE LIMITS OF PROPOSED BELOW-GRADE PARCEL D BUILDING

APPROXIMATE LIMITS OF PROPOSED ABOVE-GRADE PARCEL D BUILDING

APPROXIMATE FOOTPRINT OF EXISTING LOUIS BOSTON BUILDING

NORTH

LEGEND

- — APPROXIMATE LOCATION OF BORING PERFORMED BY CARR-DEE CORP. DURING NOVEMBER AND DECEMBER 2014 FOR McPHAIL ASSOCIATES, LLC
- — APPROXIMATE LOCATION OF PROPOSED BORING
- — APPROXIMATE LOCATION OF BORING PERFORMED BY CARR-DEE CORP. DURING DECEMBER 2012 AND JANUARY 2013 FOR McPHAIL ASSOCIATES, LLC
- — APPROXIMATE LOCATION OF BORING PERFORMED BY CARR-DEE CORP. IN JANUARY AND FEBRUARY 2011 FOR McPHAIL ASSOCIATES, LLC
- — APPROXIMATE LOCATION OF BORING PERFORMED BY OTHERS
- (OW) — INDICATES OBSERVATION WELL INSTALLED WITHIN COMPLETED BOREHOLE

REFERENCE: THIS PLAN WAS PREPARED FROM A 20-SCALE DRAWING ENTITLED, "TOPOGRAPHIC PLAN OF LAND" DATED JANUARY 17, 2007 BY NITSCH ENGINEERING, A 50-SCALE DRAWING ENTITLED, "ELEVATION CONTOURS OF TOP NATURAL INORGANIC SOIL" DATED MARCH 1, 2004 PREPARED BY HALEY AND ALDRICH, INC. AND SCHEMATIC PRICING DRAWINGS DATED MARCH 27, 2015 PREPARED BY ELKUS / MANFREDI ARCHITECTS

GRAPHIC SCALE

20 0 20 40 80

McPHAIL ASSOCIATES, LLC
Geotechnical and Geoenvironmental Engineers
2269 Massachusetts Avenue
Cambridge, MA 02140
617/868-1420
617/868-1423 (Fax)
www.mcphailgeo.com

FAN PIER PARCEL D

BOSTON MASSACHUSETTS

SUBSURFACE EXPLORATION PLAN

FOR

FAN PIER DEVELOPMENT, LLC

BY

McPHAIL ASSOCIATES, LLC

Date: MAY 2015	Dwn: M.B.S.	Chkd: B.E.D.	Scale: 1" = 20'
Project No: 4426			FIGURE 3

FILE NAME: H:\Acad\JOBS\4426\Parcel D\Building D\FER\4426-F03.dwg

CARR-DEE CORP.

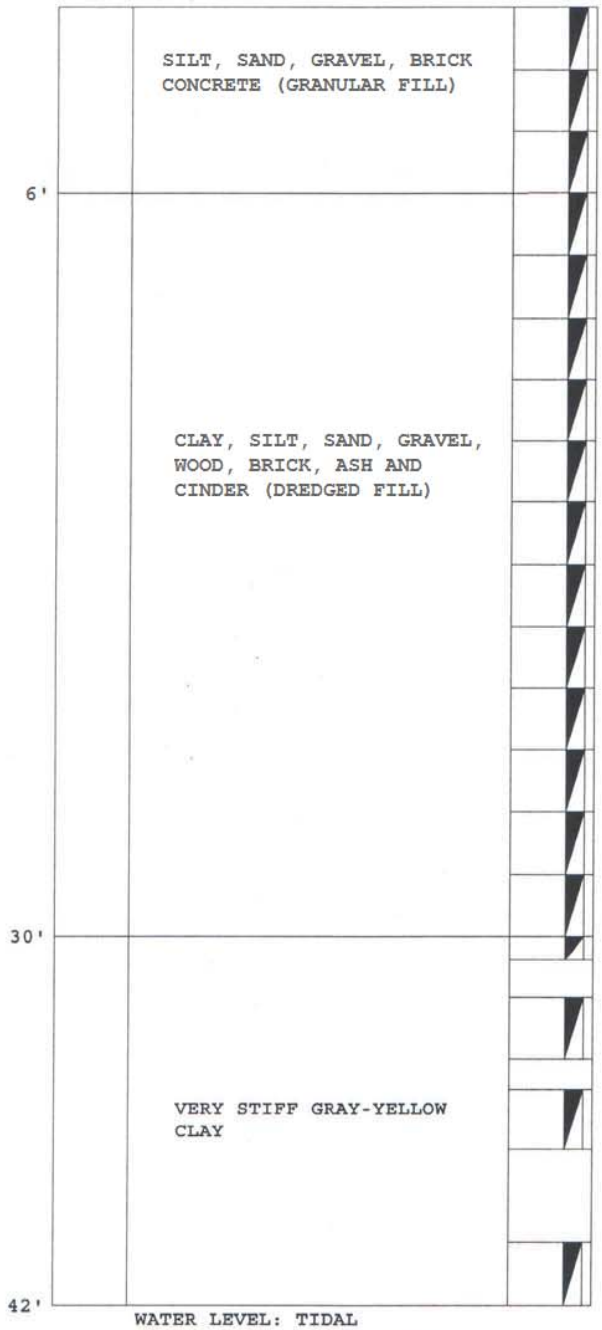
37 LINDEN STREET MEDFORD, MA 02155-0001 Telephone (781) 391-4500

To: MCPHAIL ASSOC., LLC, 2269 MASS. AVE., CAMBRIDGE, MA Date: 12-3-2014 Job No.: 2014-168

Location: FAN PIER PARCEL D, SOUTH BOSTON, MA Scale: 1 in.= 6 ft.

GROUND SURFACE +18.0

BORING D-17



S#1, 0' to 2' (3-9-10-4) RECOVERED 14 in.
S#2, 2' to 4' (3-52-10-14) RECOVERED 16 in.
S#3, 4' to 6' (32-30-10-11) RECOVERED 18 in.
S#4, 6' to 8' (3-3-4-3) RECOVERED 16 in.
S#5, 8' to 10' (3-2-4-3) RECOVERED 18 in.
S#6, 10' to 12' (5-4-8-7) RECOVERED 18 in.
S#7, 12' to 14' (1-2-1-21) RECOVERED 14 in.
S#8, 14' to 16' (13-18-10-9) RECOVERED 16 in.
S#9, 16' to 18' (6-10-10-22) RECOVERED 16 in.
S#10, 18' to 20' (10-10-11-16) RECOVERED 12 in.
S#11, 20' to 22' (17-29-26-12) RECOVERED 6 in.
S#12, 22' to 24' (5-5-4-5) RECOVERED 6 in.
S#13, 24' to 26' (6-42-19027) RECOVERED 7 in.
S#14, 26' to 28' (13-9-19-28) RECOVERED 12 in.
S#15, 28' to 30' (37-31-19-8) RECOVERED 18 in.
S#16, 30' to 30'9" (9-100/3") RECOVERED 9 in.
S#17, 32' to 34' (10-13-12-10) RECOVERED 18 in.
S#18, 35' to 37' (9-10-12-13) RECOVERED 20 in.
S#19, 40' to 42' (5-7-8-7) RECOVERED 24 in.

WATER LEVEL: TIDAL
SIZE OF CASING: NW, LENGTH: 32'0"
DRILLER: J. DESIMONE, INSPECTOR: T. CORMICAN
DATE STARTED & COMPLETED: 11-25-26-2014

All samples have been visually classified by DRILLER. Unless otherwise specified, water levels noted were observed at completion of borings, and do not necessarily represent permanent ground water levels. Figures in parenthesis indicate the number of blows required to drive Two-inch Split Sampler 6 inches using 140 lb. weight falling 30 inches(±). Figures in column to left (if noted) indicate number of blows to drive casing one foot, using 300 lb. weight falling 24 inches (±).

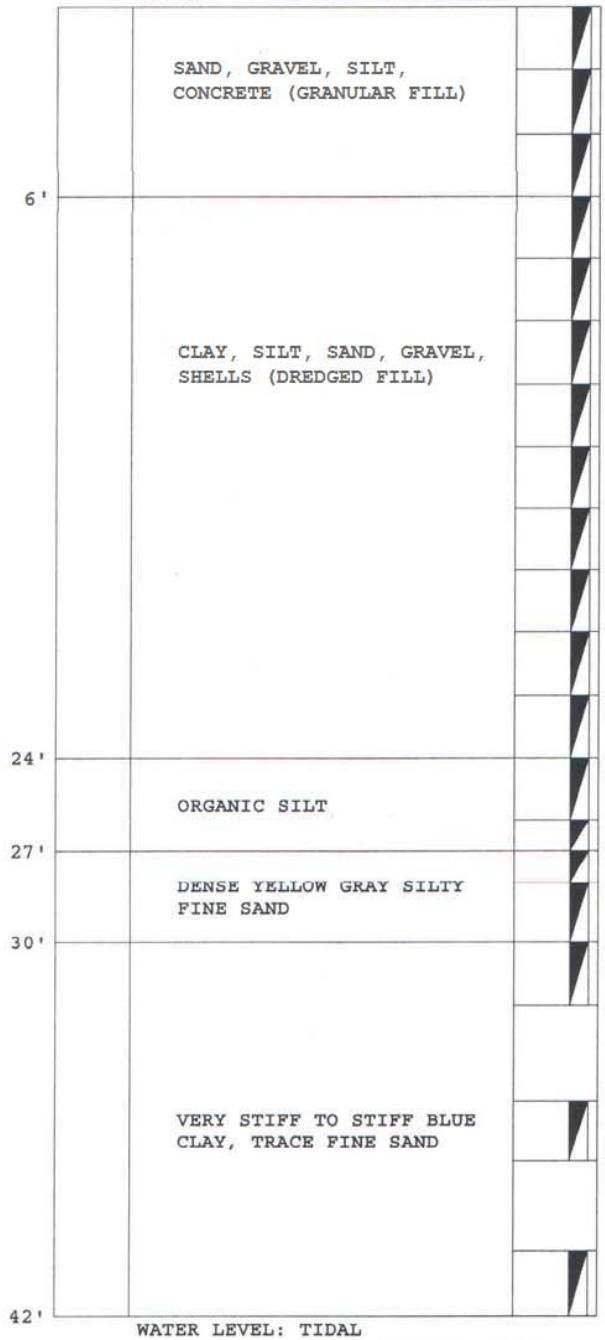
CARR-DEE CORP.

37 LINDEN STREET MEDFORD, MA 02155-0001 Telephone (781) 391-4500

To: MCPHAIL ASSOC., LLC, 2269 MASS. AVE., CAMBRIDGE, MA Date: 12-3-2014 Job No.: 2014-168

Location: FAN PIER PARCEL D, SOUTH BOSTON, MA Scale: 1 in.= 6 ft.

BORING D-18



S#1,	0' to 2'	(2-9-26-31) RECOVERED 23 in.
S#2,	2' to 4'	(6-7-1-1) RECOVERED 10 in.
S#3,	4' to 6'	(3-3-3-6) RECOVERED 6 in.
S#4,	6' to 8'	(19-10-8-10) RECOVERED 22 in.
S#5,	8' to 10'	(7-11-9-11) RECOVERED 6 in.
S#6,	10' to 12'	(3-4-3-6) RECOVERED 10 in.
S#7,	12' to 14'	(2-4-10-6) RECOVERED 12 in.
S#8,	14' to 16'	(10-9-31-13) RECOVERED 6 in.
S#9,	16' to 18'	(59-37-14-13) RECOVERED 6 in.
S#10,	18' to 20'	(9-16-7-7) RECOVERED 6 in.
S#11,	20' to 22'	(7-9-9-8) RECOVERED 6 in.
S#12,	22' to 24'	(19-12-5-2) RECOVERED 6 in.
S#13,	24' to 26'	(8-5-6-8) RECOVERED 10 in.
S#14,	26' to 27'	(6-8) RECOVERED 10 in.
S#14A,	27' to 28'	(14-19) RECOVERED 10 in.
S#15,	28' to 30'	(22-20-22-18) RECOVERED 14 in.
S#16,	30' to 32'	(6-9-13-13) RECOVERED 18 in.
S#17,	35' to 37'	(4-3-5-6) RECOVERED 24 in.
S#18,	40' to 42'	(4-4-5-8) RECOVERED 24 in.

WATER LEVEL: TIDAL
SIZE OF CASING: NW, LENGTH: 26'0"
DRILLER: J. DESIMONE, INSPECTOR: T. CORMICAN
DATE STARTED & COMPLETED: 11-21-24-2014

All samples have been visually classified by DRILLER. Unless otherwise specified, water levels noted were observed at completion of borings, and do not necessarily represent permanent ground water levels. Figures in parenthesis indicate the number of blows required to drive Two-inch Split Sampler 6 inches using 140 lb. weight falling 30 inches(±). Figures in column to left (if noted) indicate number of blows to drive casing one foot, using 300 lb. weight falling 24 inches (±).

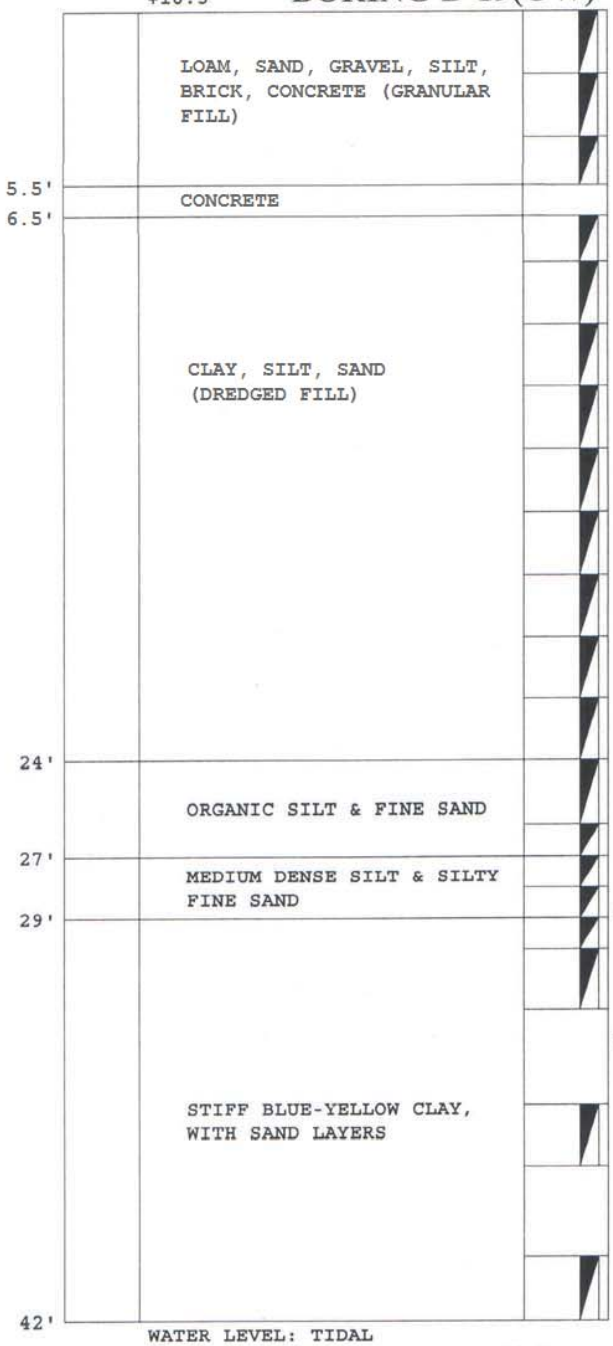
CARR-DEE CORP.

37 LINDEN STREET MEDFORD, MA 02155-0001 Telephone (781) 391-4500

To: MCPHAIL ASSOC., LLC, 2269 MASS. AVE., CAMBRIDGE, MA Date: 12-3-2014 Job No.: 2014-168

Location: FAN PIER PARCEL D, SOUTH BOSTON, MA Scale: 1 in.= 6 ft.

BORING D-19(OW)



S#1, 0' to 2' (9-27-63-84) RECOVERED 20 in.
S#2, 2' to 4' (65-47-32-21) RECOVERED 18 in.
S#3, 4' to 5'6" (16-32-51-100/0") RECOVERED 14 in.
S#4, 6'6" to 8' (7-6-6) RECOVERED 6 in.
S#5, 8' to 10' (5-4-3-5) RECOVERED 18 in.
S#6, 10' to 12' (2-3-4-5) RECOVERED 16 in.
S#7, 12' to 14' (2-2-4-4) RECOVERED 12 in.
S#8, 14' to 16' (4-3-4-3) RECOVERED 24 in.
S#9, 16' to 18' (3-3-2-3) RECOVERED 24 in.
S#10, 18' to 20' (2-2-4-3) RECOVERED 20 in.
S#11, 20' to 22' (3-3-4-5) RECOVERED 18 in.
S#12, 22' to 24' (1-2-2-4) RECOVERED 26 in.
S#13, 24' to 26' (3-4-4-5) RECOVERED 14 in.
S#14, 26' to 27' (4-5) RECOVERED 10 in.
S#14A, 27' to 28' (10-14) RECOVERED 10 in.
S#15, 28' to 29' (10-11) RECOVERED 10 in.
S#15A, 29' to 30' (7-8) RECOVERED 10 in.
S#16, 30' to 32' (4-6-6-7) RECOVERED 24 in.
S#17, 35' to 37' (4-4-5-4) RECOVERED 24 in.
S#18, 40' to 42' (2-3-4-6) RECOVERED 24 in.

WATER LEVEL: TIDAL
SIZE OF CASING: NW, LENGTH: 15'0"
DRILLER: J. DESIMONE, INSPECTOR: T. CORMICAN
DATE STARTED & COMPLETED: 11-21-2014

All samples have been visually classified by DRILLER. Unless otherwise specified, water levels noted were observed at completion of borings, and do not necessarily represent permanent ground water levels. Figures in parenthesis indicate the number of blows required to drive Two-inch Split Sampler 6 inches using 140 lb. weight falling 30 inches(±). Figures in column to left (if noted) indicate number of blows to drive casing one foot, using 300 lb. weight falling 24 inches (±).

CARR-DEE CORP.

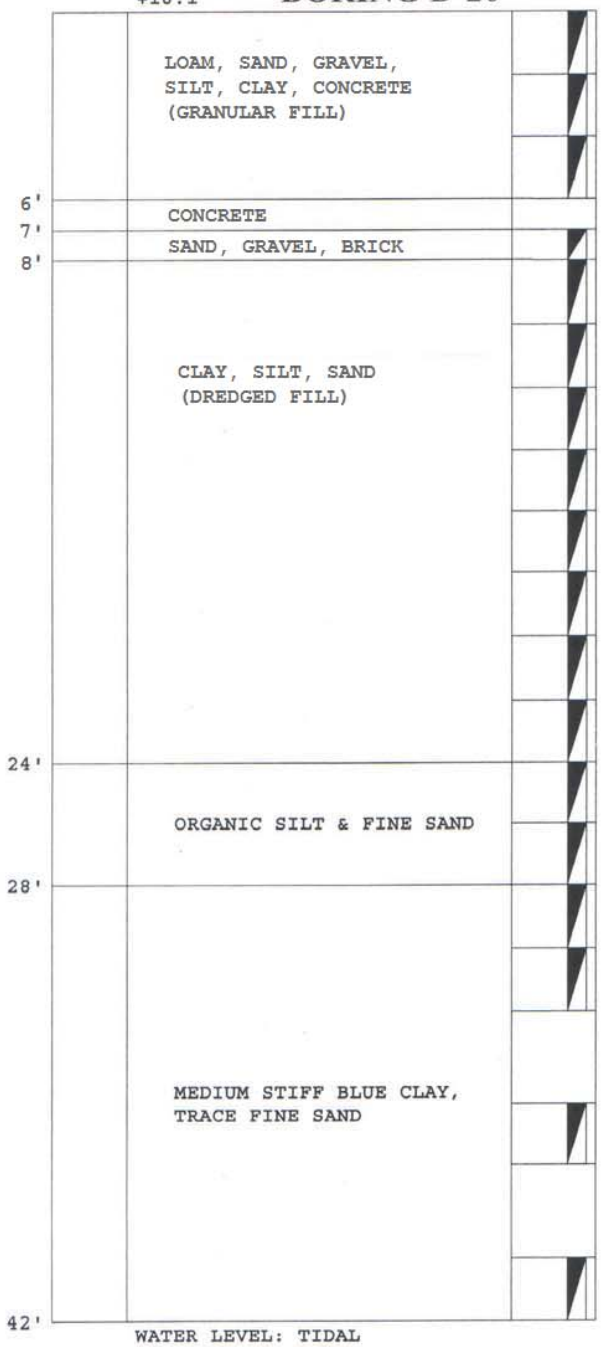
37 LINDEN STREET MEDFORD, MA 02155-0001 Telephone (781) 391-4500

To: MCPHAIL ASSOC., LLC, 2269 MASS. AVE., CAMBRIDGE, MA Date: 12-3-2014 Job No.: 2014-168

Location: FAN PIER PARCEL D, SOUTH BOSTON, MA Scale: 1 in.= 6 ft.

GROUND SURFACE +18.1

BORING D-20



S#1, 0' to 2' (9-23-58-72) RECOVERED 11 in.
S#2, 2' to 4' (23-41-17-11) RECOVERED 20 in.
S#3, 4' to 6' (9-10-14-16) RECOVERED 18 in.
S#4, 7' to 8' (40-31) RECOVERED 4 in.
S#5, 8' to 10' (2-2-2-3) RECOVERED 20 in.
S#6, 10' to 12' (1-2-2-2) RECOVERED 24 in.
S#7, 12' to 14' (1-1-2-2) RECOVERED 24 in.
S#8, 14' to 16' (1-2-1-2) RECOVERED 24 in.
S#9, 16' to 18' (1-2-1-2) RECOVERED 24 in.
S#10, 18' to 20' (3-3-2-2) RECOVERED 24 in.
S#11, 20' to 22' (2-2-1-1) RECOVERED 24 in.
S#12, 22' to 24' (2-2-3-3) RECOVERED 24 in.
S#13, 24' to 26' (2-2-4-3) RECOVERED 12 in.
S#14, 26' to 28' (7-8-10-6) RECOVERED 12 in.
S#15, 28' to 30' (5-6-5-6) RECOVERED 20 in.
S#16, 30' to 32' (4-3-3-5) RECOVERED 24 in.
S#17, 35' to 37' (3-4-5-5) RECOVERED 24 in.
S#18, 40' to 42' (2-3-4-7) RECOVERED 24 in.

WATER LEVEL: TIDAL
SIZE OF CASING: NW, LENGTH: 15 '0"
DRILLER: J. DESIMONE, INSPECTOR: T. CORMICAN
DATE STARTED & COMPLETED: 11-19-2014

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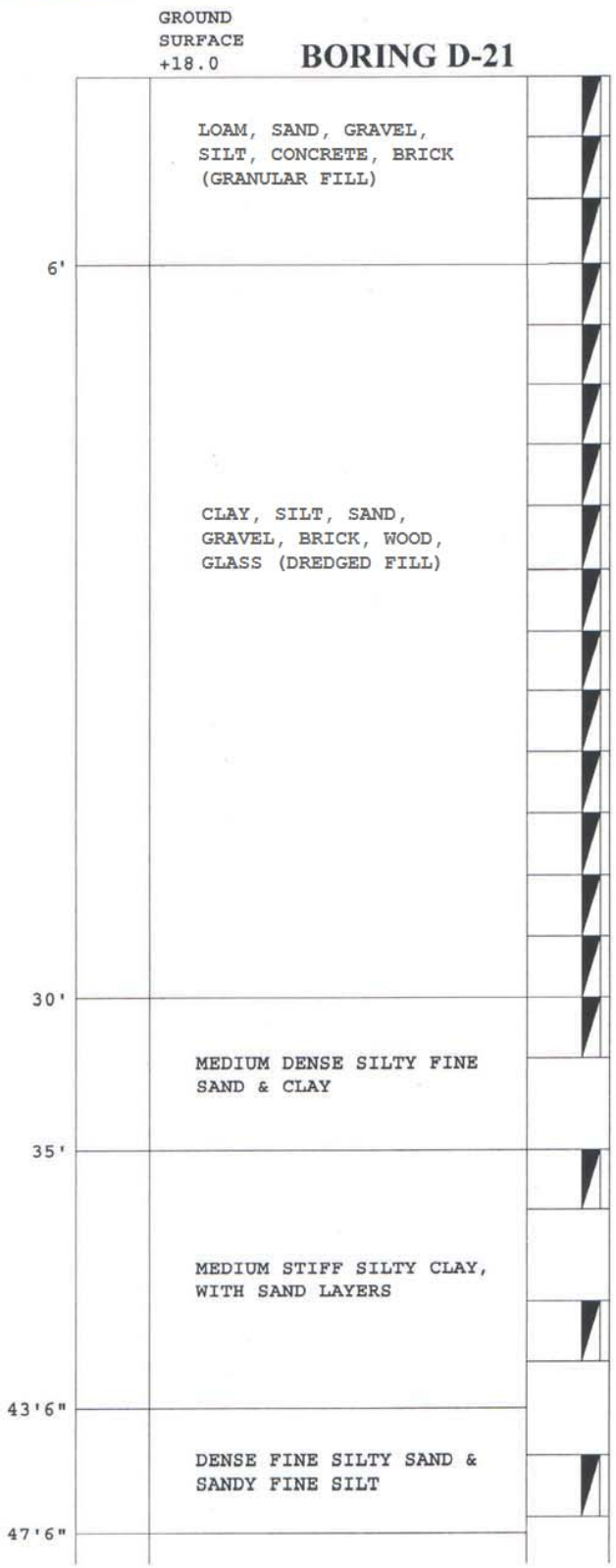
CARR-DEE CORP.

37 LINDEN STREET MEDFORD, MA 02155-0001 Telephone (781) 391-4500

To: MCPHAIL ASSOC., LLC, 2269 MASS. AVE., CAMBRIDGE, MA Date: 12-3-2014 Job No.: 2014-168

Location: FAN PIER PARCEL D, SOUTH BOSTON, MA Scale: 1 in.= 6 ft.

BORING D-21



S#1, 0' to 2' (3-17-37-62) RECOVERED 16 in.
S#2, 2' to 4' (37-42-29-31) RECOVERED 13 in.
S#3, 4' to 6' (10-22-27-15) RECOVERED 12 in.
S#4, 6' to 8' (10-11-8-10) RECOVERED 16 in.
S#5, 8' to 10' (7-5-7-5) RECOVERED 24 in.
S#6, 10' to 12' (7-5-6-7) RECOVERED 24 in.
S#7, 12' to 14' (7-11-5-4) RECOVERED 18 in.
S#8, 14' to 16' (5-9-13-9) RECOVERED 24 in.
S#9, 16' to 18' (2-4-3-4) RECOVERED 15 in.
S#10, 18' to 20' (2-2-3-2) RECOVERED 7 in.
S#11, 20' to 22' (3-4-10-11) RECOVERED 18 in.
S#12, 22' to 24' (8-9-9-5) RECOVERED 8 in.
S#13, 24' to 26' (5-6-8-22) RECOVERED 6 in.
S#14, 26' to 28' (9-9-9-8) RECOVERED 18 in.
S#15, 28' to 30' (6-7-4-3) RECOVERED 18 in.
S#16, 30' to 32' (7-10-10-12) RECOVERED 24 in.
S#17, 35' to 37' (3-4-4-4) RECOVERED 24 in.
S#18, 40' to 42' (2-4-4-3) RECOVERED 24 in.
S#19, 45' to 47' (13-17-19-21) RECOVERED 16 in.

All samples have been visually classified by DRILLER. Unless otherwise specified, water levels noted were observed at completion of borings, and do not necessarily represent permanent ground water levels. Figures in parenthesis indicate the number of blows required to drive Two-inch Split Sampler 6 inches using 140 lb. weight falling 30 inches(±). Figures in column to left (if noted) indicate number of blows to drive casing one foot, using 300 lb. weight falling 24 inches (±).

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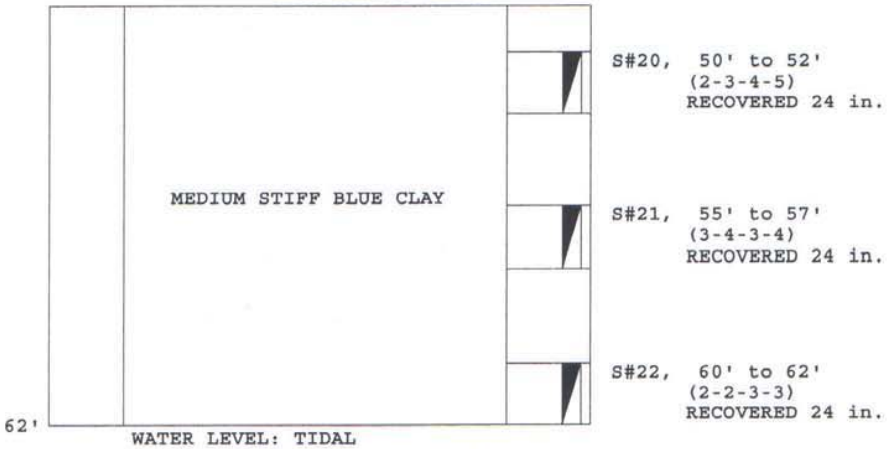
Location: FAN PIER PARCEL D, SOUTH BOSTON, MA Scale: 1 in.= 6 ft.

BORING D-21



WATER LEVEL: TIDAL
SIZE OF CASING: NW, LENGTH: 30'0"
DRILLER: J. DESIMONE, INSPECTOR: T. CORMICAN
DATE STARTED & COMPLETED: 11-26, 12-1-2014

All samples have been visually classified by DRILLER. Unless otherwise specified, water levels noted were observed at completion of borings, and do not necessarily represent permanent ground water levels. Figures in parenthesis indicate the number of blows required to drive Two-inch Split Sampler 6 inches using 140 lb. weight falling 30 inches(±). Figures in column to left (if noted) indicate number of blows to drive casing one foot, using 300 lb. weight falling 24 inches (±).

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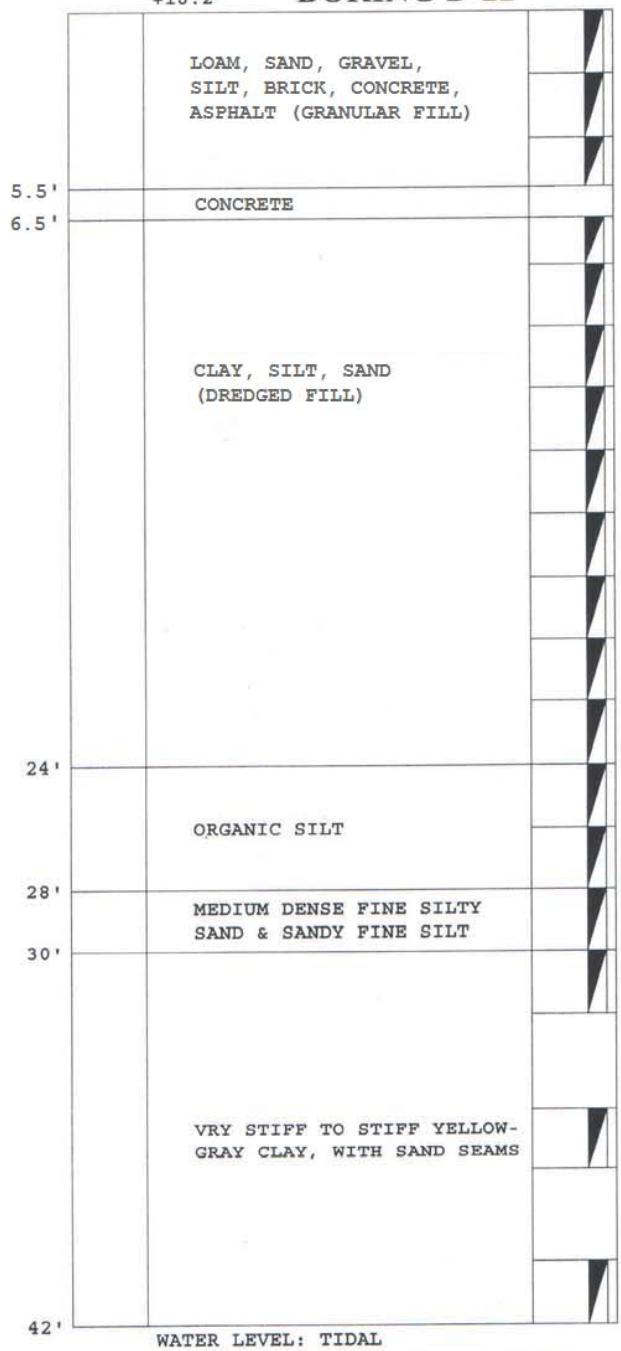
To: MCPHAIL ASSOC., LLC, 2269 MASS. AVE., CAMBRIDGE, MA Date: 12-3-2014 Job No.: 2014-168

Location: FAN PIER PARCEL D, SOUTH BOSTON, MA Scale: 1 in.= 6 ft.

GROUND SURFACE +18.2

BORING D-22



S#1, 0' to 2' (3-21-33-50) RECOVERED 20 in.

S#2, 2' to 4' (22-36-44-69) RECOVERED 6 in.

S#3, 4' to 5'6" (40-19-21-100/0") RECOVERED 11 in.

S#4, 6'6" to 8' (9-10-4) RECOVERED 8 in.

S#5, 8' to 10' (2-2-6-8) RECOVERED 12 in.

S#6, 10' to 12' (3-2-3-2) RECOVERED 8 in.

S#7, 12' to 14' (2-2-2-2) RECOVERED 24 in.

S#8, 14' to 16' (1-1-1-4) RECOVERED 10 in.

S#9, 16' to 18' (4-4-4-4) RECOVERED 20 in.

S#10, 18' to 20' (3-4-5-4) RECOVERED 20 in.

S#11, 20' to 22' (4-4-4-4) RECOVERED 12 in.

S#12, 22' to 24' (7-5-6-8) RECOVERED 16 in.

S#13, 24' to 26' (4-2-3-3) RECOVERED 18 in.

S#14, 26' to 28' (4-4-5-5) RECOVERED 22 in.

S#15, 28' to 30' (10-14-11-10) RECOVERED 12 in.

S#16, 30' to 32' (9-11-13-16) RECOVERED 24 in.

S#17, 35' to 37' (3-4-5-6) RECOVERED 24 in.

S#18, 40' to 42' (3-4-4-4) RECOVERED 24 in.

WATER LEVEL: TIDAL
SIZE OF CASING: NW, LENGTH: 25'0"
DRILLER: J. DESIMONE, INSPECTOR: T. CORMICAN
DATE STARTED & COMPLETED: 11-24-25-2014

All samples have been visually classified by DRILLER. Unless otherwise specified, water levels noted were observed at completion of borings, and do not necessarily represent permanent ground water levels. Figures in parenthesis indicate the number of blows required to drive Two-inch Split Sampler 6 inches using 140 lb. weight falling 30 inches(±). Figures in column to left (if noted) indicate number of blows to drive casing one foot, using 300 lb. weight falling 24 inches (±).

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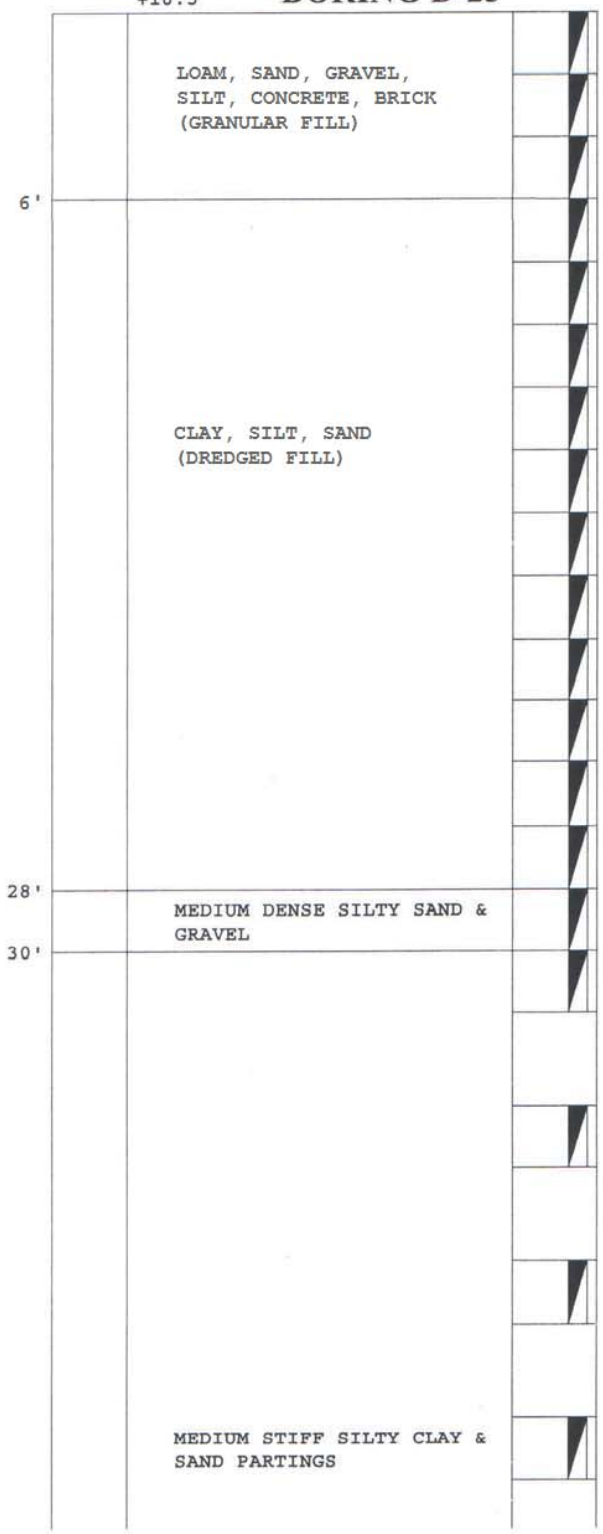
To: MCPHAIL ASSOC., LLC, 2269 MASS. AVE., CAMBRIDGE, MA Date: 12-3-2014 Job No.: 2014-168

Location: FAN PIER PARCEL D, SOUTH BOSTON, MA Scale: 1 in.= 6 ft.

BORING D-23



S#1, 0' to 2' (3-25-56-51) RECOVERED 22 in.
S#2, 2' to 4' (26-41-74-63) RECOVERED 11 in.
S#3, 4' to 6' (47-39-9-8) RECOVERED 10 in.
S#4, 6' to 8' (39-53-4-4) RECOVERED 16 in.
S#5, 8' to 10' (1-2-2-2) RECOVERED 22 in.
S#6, 10' to 12' (1-1-2-1) RECOVERED 24 in.
S#7, 12' to 14' (2-2-2-2) RECOVERED 24 in.
S#8, 14' to 16' (2-3-4-6) RECOVERED 24 in.
S#9, 16' to 18' (2-2-1-3) RECOVERED 24 in.
S#10, 18' to 20' (2-2-3-3) RECOVERED 18 in.
S#11, 20' to 22' (3-4-4-4) RECOVERED 24 in.
S#12, 22' to 24' (3-4-4-5) RECOVERED 18 in.
S#13, 24' to 26' (5-6-5-6) RECOVERED 18 in.
S#14, 26' to 28' (2-4-5-6) RECOVERED 18 in.
S#15, 28' to 30' (5-6-9-9) RECOVERED 18 in.
S#16, 30' to 32' (3-3-4-6) RECOVERED 24 in.
S#17, 35' to 37' (2-3-4-5) RECOVERED 24 in.
S#18, 40' to 42' (2-2-4-6) RECOVERED 24 in.
S#19, 45' to 47' (13-11-10-6) RECOVERED 24 in.

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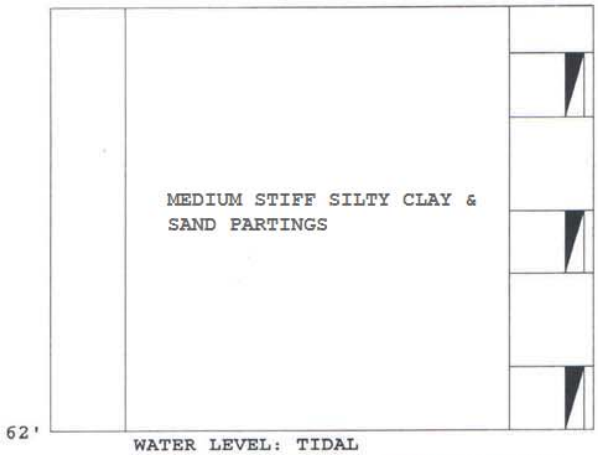
To: MCPHAIL ASSOC., LLC, 2269 MASS. AVE., CAMBRIDGE, MA Date: 12-3-2014 Job No.: 2014-168

Location: FAN PIER PARCEL D, SOUTH BOSTON, MA Scale: 1 in.= 6 ft.

BORING D-23



S#20, 50' to 52'
(2-2-3-5)
RECOVERED 24 in.

S#21, 55' to 57'
(3-2-3-3)
RECOVERED 24 in.

S#22, 60' to 62'
(1-2-2-3)
RECOVERED 24 in.

WATER LEVEL: TIDAL
SIZE OF CASING: NW, LENGTH: 15 '0"
DRILLER: J. DESIMONE, INSPECTOR: T. CORMICAN
DATE STARTED & COMPLETED: 11-18-2014

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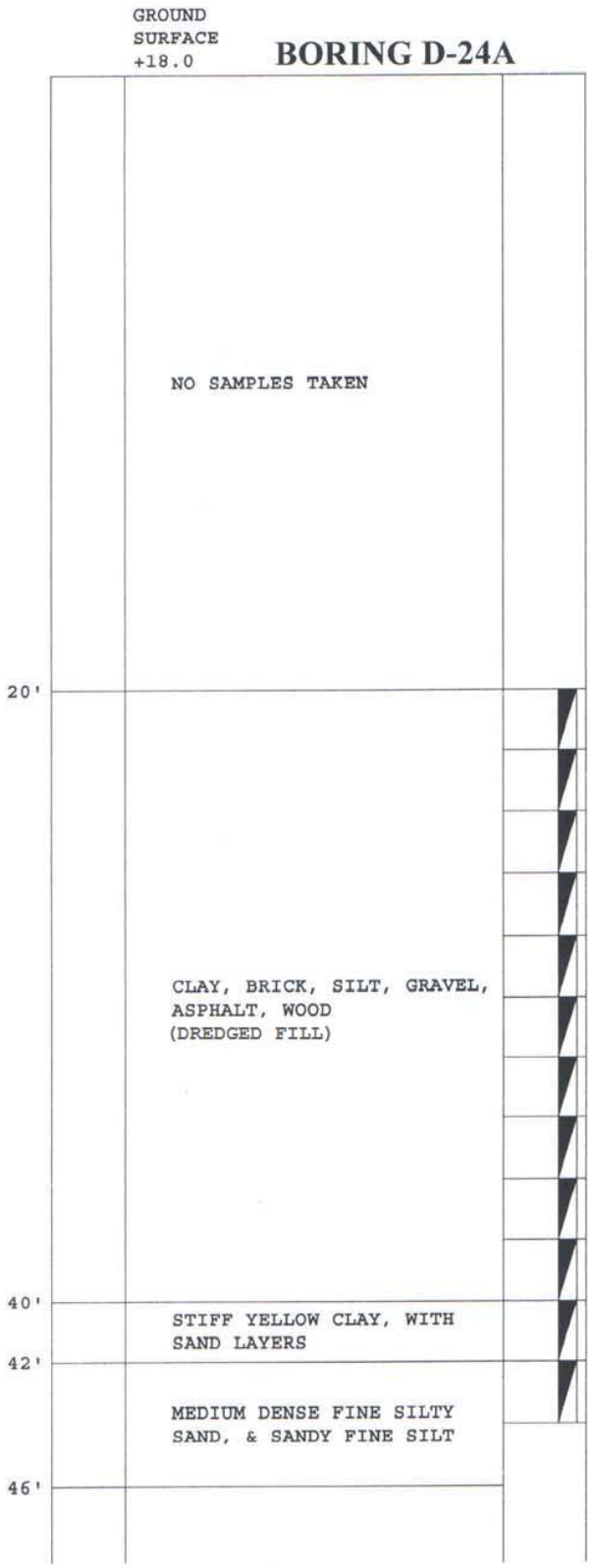
To: MCPHAIL ASSOC., LLC, 2269 MASS. AVE., CAMBRIDGE, MA Date: 12-3-2014 Job No.: 2014-168

Location: FAN PIER PARCEL D, SOUTH BOSTON, MA Scale: 1 in.= 6 ft.

BORING D-24A



S#1, 20' to 22' (4-5-14-16) RECOVERED 11 in.
S#2, 22' to 24' (9-12-8-7) RECOVERED 8 in.
S#3, 24' to 26' (5-7-4-4) RECOVERED 2 in.
S#4, 26' to 28' (3-22-42-57) RECOVERED 10 in.
S#5, 28' to 30' (39-44-19-19) RECOVERED 6 in.
S#6, 30' to 32' (77-18-6-8) RECOVERED 8 in.
S#7, 32' to 34' (22-17-24-16) RECOVERED 10 in.
S#8, 34' to 36' (19-15-9-5) RECOVERED 6 in.
S#9, 36' to 38' (7-6-23-8) RECOVERED 6 in.
S#10, 38' to 40' (7-5-6-7) RECOVERED 24 in.
S#11, 40' to 42' (6-6-9-13) RECOVERED 18 in.
S#12, 42' to 44' (5-7-6-6) RECOVERED 16 in.

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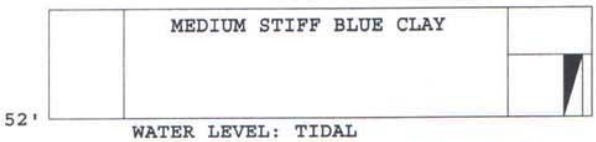
To: MCPHAIL ASSOC., LLC, 2269 MASS. AVE., CAMBRIDGE, MA Date: 12-3-2014 Job No.: 2014-168

Location: FAN PIER PARCEL D, SOUTH BOSTON, MA Scale: 1 in.= 6 ft.

BORING D-24A



S#13, 50' to 52'
(3-3-3-5)
RECOVERED 24 in.

WATER LEVEL: TIDAL
SIZE OF CASING: NW, LENGTH: 40'0"
DRILLER: J. DESIMONE, INSPECTOR: T. CORMICAN
DATE STARTED & COMPLETED: 12-1-2-2014

All samples have been visually classified by DRILLER. Unless otherwise specified, water levels noted were observed at completion of borings, and do not necessarily represent permanent ground water levels. Figures in parenthesis indicate the number of blows required to drive Two-inch Split Sampler 6 inches using 140 lb. weight falling 30 inches(±). Figures in column to left (if noted) indicate number of blows to drive casing one foot, using 300 lb. weight falling 24 inches (±).

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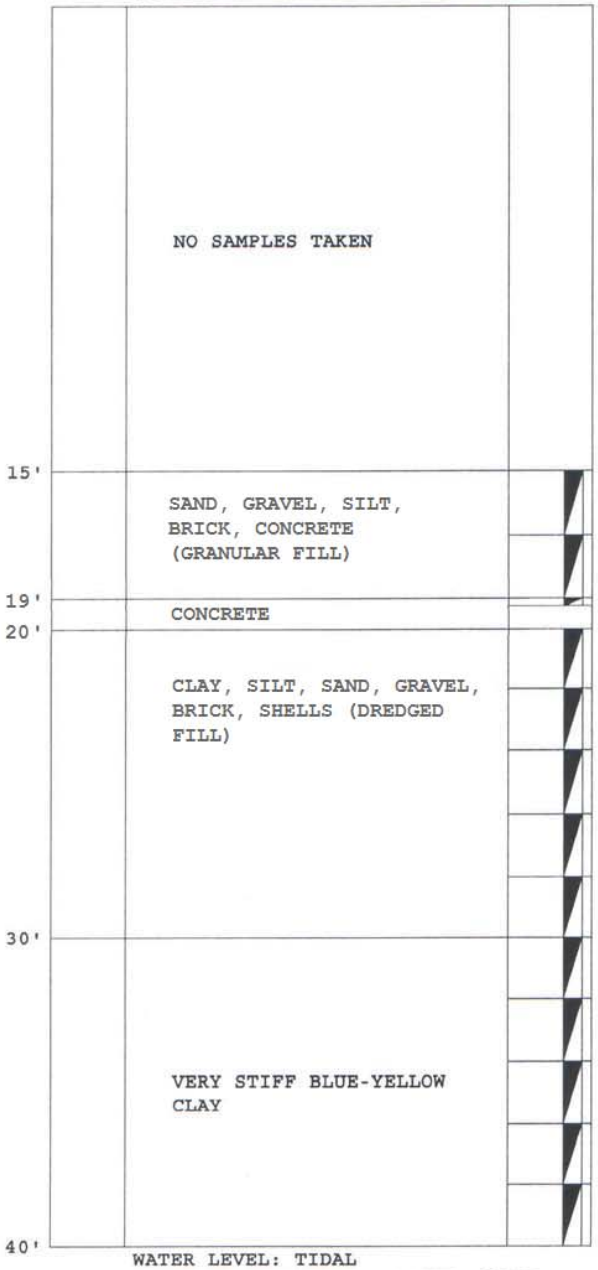
To: MCPHAIL ASSOC., LLC, 2269 MASS. AVE., CAMBRIDGE, MA Date: 12-3-2014 Job No.: 2014-168

Location: FAN PIER PARCEL D, SOUTH BOSTON, MA Scale: 1 in.= 6 ft.

BORING D-24B



S#1, 15' to 17' (20-36-9-3) RECOVERED 13 in.
S#2, 17' to 19' (3-4-22-136) RECOVERED 10 in.
S#3, 19' to 19'3" (120/3") RECOVERED 3 in.
S#4, 20' to 22' (5-7-7-14) RECOVERED 12 in.
S#5, 22' to 24' (3-2-2-2) RECOVERED 6 in.
S#6, 24' to 26' (2-3-3-14) RECOVERED 12 in.
S#7, 26' to 28' (9-8-14-9) RECOVERED 14 in.
S#8, 28' to 30' RECOVERED 24 in.
S#9, 30' to 32' (9-9-9-10) RECOVERED 20 in.
S#10, 32' to 34' (8-10-10-14) RECOVERED 24 in.
S#11, 34' to 36' (12-12-15-12) RECOVERED 24 in.
S#12, 36' to 38' RECOVERED 24 in.
S#13, 38' to 40' (6-8-6-8) RECOVERED 24 in.

WATER LEVEL: TIDAL
SIZE OF CASING: NW, LENGTH: 28'0"
DRILLER: G, SMITH INSPECTOR: T. CORMICAN
DATE STARTED & COMPLETED: 11-26-2014

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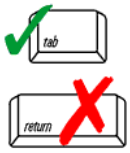
Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

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.

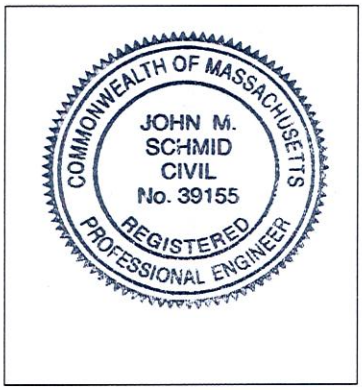
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the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



10-24-18

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): Subsurface Infiltration System, Rainwater re-use system

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.