Applicant:
33 Leyden Street LLC
20C Del Carmine Street
Wakefield, MA 01880

Project File: BOS-0102

Notice of Intent Application

Filed under M.G.L. Chapter 131, Section 40

Proposed Multi-Family Building
#33 Leyden Street
East Boston, Massachusetts

June 2019

Hayes Engineering, Inc.

603 Salem Street
Wakefield, MA 01880
Tel: (781) 246-2800
Fax: (781) 246-7596

Nantucket, MA 02554
Tel: (508) 228-7909

Checklist for Filing a Notice of Intent with Boston Conservation Commission

In order for the Boston Conservation Commission to effectively process your Notice of Intent, BCC requests that you complete the checklist below and include it with your submission. If you should need assistance please contact Commission Staff: 617-635-3850 (cc@boston.gov).

To the Conservation Commission:

- ☑ Two copies (a signed original and 1 copy) of a completed Notice of Intent (WPA Form 3)
- ☑ Two copies of plans (reduced to 11" X 17") in their final form with engineer's stamp affixed supporting calculations and other documentation necessary to completely describe the proposed work and mitigating measures. Plans must include existing conditions, the proposed project, erosion controls and mitigation measures, grading and spot elevations and all wetland resource areas and associated buffer zones. Some projects may require both an aerial view of the plans along with a profile view of plans depending on the scope of work.
- ☑ Two copies of an 8 ½" x 11" section of the USGS quadrangle map of the area, containing sufficient information for the Conservation Commission and the Department to locate the site of the work.
- ☑ (If applicable) Two copies the Federal Emergency Management Agency Flood Insurance Rate Map for the project site. FEMA Flood Maps: https://msc.fema.gov/portal.
- ☑ Two copies of the determination regarding the Natural Heritage and Endangered Species Program: Review Section C. Other Applicable Standards and Requirements of the Notice of Intent, page 4 of 8, pertaining to wildlife habitat. The Conservation Commission and the Natural Heritage & Endangered Species Program have the maps necessary to make this determination.
- ☐ (If applicable) Two hard copies of a Stormwater Report to document compliance with the Stormwater Management Standards per 310 CMR 10.05(6)(k)-(q), including associated drainage calculations for rooftops, parking lots, driveways, etc., for the required design storm events.
- ☐ (If applicable) Two hard copies of the Checklist for Stormwater Report
- ☑ Details of the stormwater management system, including: catch basins, oil separating tanks, detention basins, outfalls, sewer connections, etc.
- ☐ Any photographs related to the project representing the wetland resource areas.
- ☑ Two copies of a detailed project narrative describing the following: an overview of the entire project, the work proposed within wetland resource areas and/or buffer zones; how the performance standards specific to the wetland resource areas will be met (listing out each performance standard); construction equipment and material involved; and measures to protect wetland resource areas and mitigate impacts.
- ☑ Two copies of an Abutters List, Affidavit of Service and Abutter Notification, filed concurrently with the Notice of Intent.
- ☑ (If applicable) Two copies of the BPDA Climate Resiliency Checklist (for new buildings). This can be completed online at http://www.bostonplans.org/planning/planning-initiatives/article-37-green-building-guidelines. Please print the pdf that you will receive via email after completion and include it in your submission.
- ☑ **Electronic copies. Documents may be submitted via email, or via an email link to downloadable documents.**

To minimize the use of non-recyclable materials ***please do not include vinyl or plastic binders, bindings, folders or covers with the filing.*** Staples and binder clips are good choices.

Updated 4/29/19

NOTICE OF INTENT
PROJECT DESCRIPTION
#33 LEYDEN STREET
BOSTON, MASSACHUSETTS

June 21, 2019

LIST OF PLANS AND DOCUMENTS

Identifying Number / Letter	Title / Date
DOCUMENT A	WPA Form 3- Notice of Intent and NOI Wetland Fee Transmittal Form – Proposed Multi-Family Building, #33 Leyden Street, Boston, MA (including USGS Vicinity Map, List of Abutters (May 2019), Abutter Notification letter, Affidavit of Service, and Boston Conservation Commission Permit Checklist).
DOCUMENT B	Project Narrative, Multi-Family Building, #33 Leyden Street, Boston, MA; June 21, 2019, including National Flood Hazard Layer FIRMette and photographs obtained from Google.com and Bing.com showing site locus .
DOCUMENT C	Erosion and Sedimentation Control, #33 Leyden Street, Boston, MA; June 21, 2019
DOCUMENT D	Climate Change Resiliency and Preparedness Checklist for #33 Leyden Street, Boston, MA (6 Pages, Prepared by Hayes Engineering, Inc. on June 21, 2019).
PLANS	Site Plan No. 17255, Existing Conditions, #33 Leyden Street, Boston, Mass., Hayes Engineering, Inc.; Scale: 1"=10'; Date: May 9, 2019, revised 5/23/19 (C1, Sheet 1 of 4). Site Plan No. 17255, Grading and Drainage, #33 Leyden Street, Boston, Mass., Hayes Engineering, Inc.; Scale: 1"=10'; Date: May 9, 2019, revised 5/23/19 (C2, Sheet 2 of 4). Site Plan No. 17255, Utilities, #33 Leyden Street, Boston, Mass., Hayes Engineering, Inc.; Scale: 1"=10'; Date: May 9, 2019, revised 5/23/19 (C3, Sheet 3 of 4). Site Plan No. 17255, Details, #33 Leyden Street, Boston, Mass., Hayes Engineering, Inc.; Scale: 1"=10'; Date: May 9, 2019, revised 5/23/19 (Sheet 1 of 4)

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

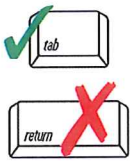
Provided by MassDEP:

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):

33 Leyden Street — a. Street Address
Boston — b. City/Town
02128 — c. Zip Code

Latitude and Longitude:
42d 23m 25s N — d. Latitude
71d 00m 38sW — e. Longitude

Parcel ID 0101800000 — f. Assessors Map/Plat Number
g. Parcel /Lot Number

2. Applicant:

a. First Name
b. Last Name
33 Leyden Street LLC c/o William Mandell, Manager — c. Organization
20C Del Carmine Street, Suite 101 — d. Street Address
Wakefield — e. City/Town
MA — f. State
01880 — g. Zip Code
(617)201-5904 — h. Phone Number
(781)479-0726 — i. Fax Number
bm@ocbuyshouses.com — j. Email Address

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

a. First Name
b. Last Name
Same as applicant — c. Organization
d. Street Address
e. City/Town
f. State
g. Zip Code
h. Phone Number
i. Fax Number
j. Email address

4. Representative (if any):

a. First Name
b. Last Name
Hayes Engineering, Inc. — c. Company
603 Salem Street — d. Street Address
Wakefield — e. City/Town
MA — f. State
01880 — g. Zip Code
(781)246-2800 — h. Phone Number
(781)246-7596 — i. Fax Number
lwallis@hayeseng.com
acapachietti@hayeseng.com

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

$2,012.50 — a. Total Fee Paid
$512.50 — b. State Fee Paid
Local fee of $1,500.00 as required by Boston ConCom.

A. General Information (continued)

6. General Project Description:

The applicant proposes to tear down the existing structure and construct a new multi-family building with associated parking lot, stormwater BMP, utilities and other appurtenances.

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:

Sufolk	
a. County	b. Certificate # (if registered land)
56261	
c. Book	d. Page Number

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

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

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

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	3124± s.f. 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 Limited Project Checklists – Required Actions (310 CMR 10.11).

Streamlined Massachusetts Endangered Species Act/Wetlands Protection Act Review

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

   a. ☐ Yes ☒ No

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

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

   MassGIS NHESP online mapping

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

   c. Submit Supplemental Information for Endangered Species Review*

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

         (a) within wetland Resource Area _____ percentage/acreage

         (b) outside Resource Area _____ percentage/acreage

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

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

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

   (b) ☐ Photographs representative of the site

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

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

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

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

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

(d) ☐ Vegetation cover type map of site

(e) ☐ Project plans showing Priority & Estimated Habitat boundaries

(f) OR Check One of the Following

1. ☐ Project is exempt from MESA review.
Attach applicant letter indicating which MESA exemption applies. (See 321 CMR 10.14, http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/mesa/mesa_exemptions.htm; the NOI must still be sent to NHESP if the project is within estimated habitat pursuant to 310 CMR 10.37 and 10.59.)

2. ☐ Separate MESA review ongoing. a. NHESP Tracking # b. Date submitted to NHESP

3. ☐ Separate MESA review completed.
Include copy of NHESP "no Take" determination or valid Conservation & Management Permit with approved plan.

3. For coastal projects only, is any portion of the proposed project located below the mean high water line or in a fish run?

a. ☐ Not applicable – project is in inland resource area only b. ☐ Yes ☒ No

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

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

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

North Shore - Hull to New Hampshire border:

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

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

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.

Refer to the accompanying document "Contents / List of Plans and Documents" for titles and dates of submitted materials.

Hayes Engineering, Inc.	Peter J. Ogren, P.E.
b. Prepared By	c. Signed and Stamped by
d. Final Revision Date	e. Scale

f. Additional Plan or Document Title — g. Date

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

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

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

8. ☒ Attach NOI Wetland Fee Transmittal Form

9. ☒ Attach Stormwater Report, if needed.

E. Fees

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

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

# 5861	6/19/19
2. Municipal Check Number	3. Check date
# 5860	6/19/19
4. State Check Number	5. Check date
MBC Ventures 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: 6/19/19

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

5. Signature of Representative (if any): Elizabeth Wallis, Hayes Engineering, Inc. — 6. Date: 6/21/19

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.

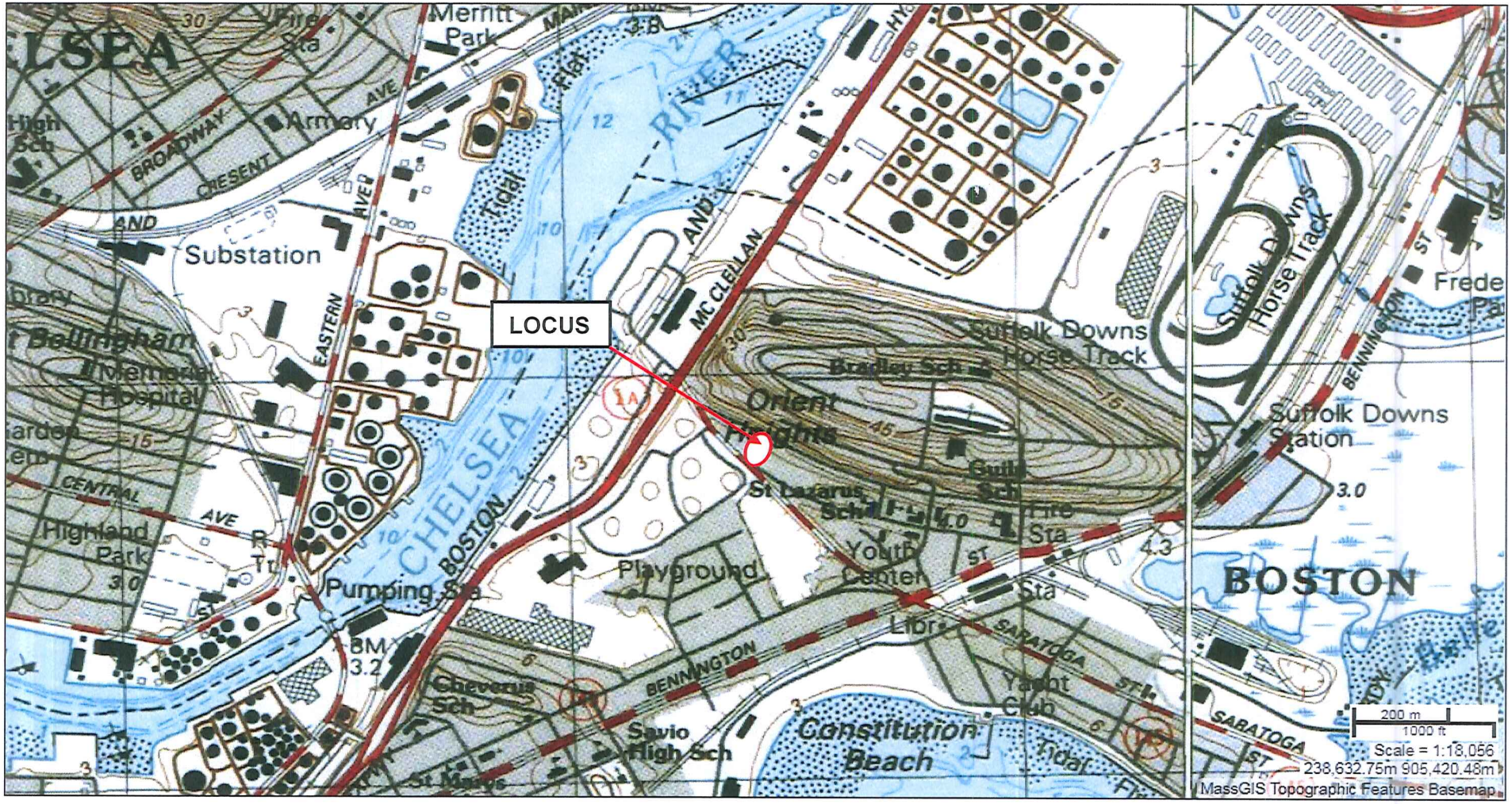
For MassDEP:
One copy of the completed Notice of Intent (Form 3), including supporting plans and documents, one copy of the NOI Wetland Fee Transmittal Form, and a **copy** of the state fee payment to the MassDEP Regional Office (see Instructions) by certified mail or hand delivery.

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.

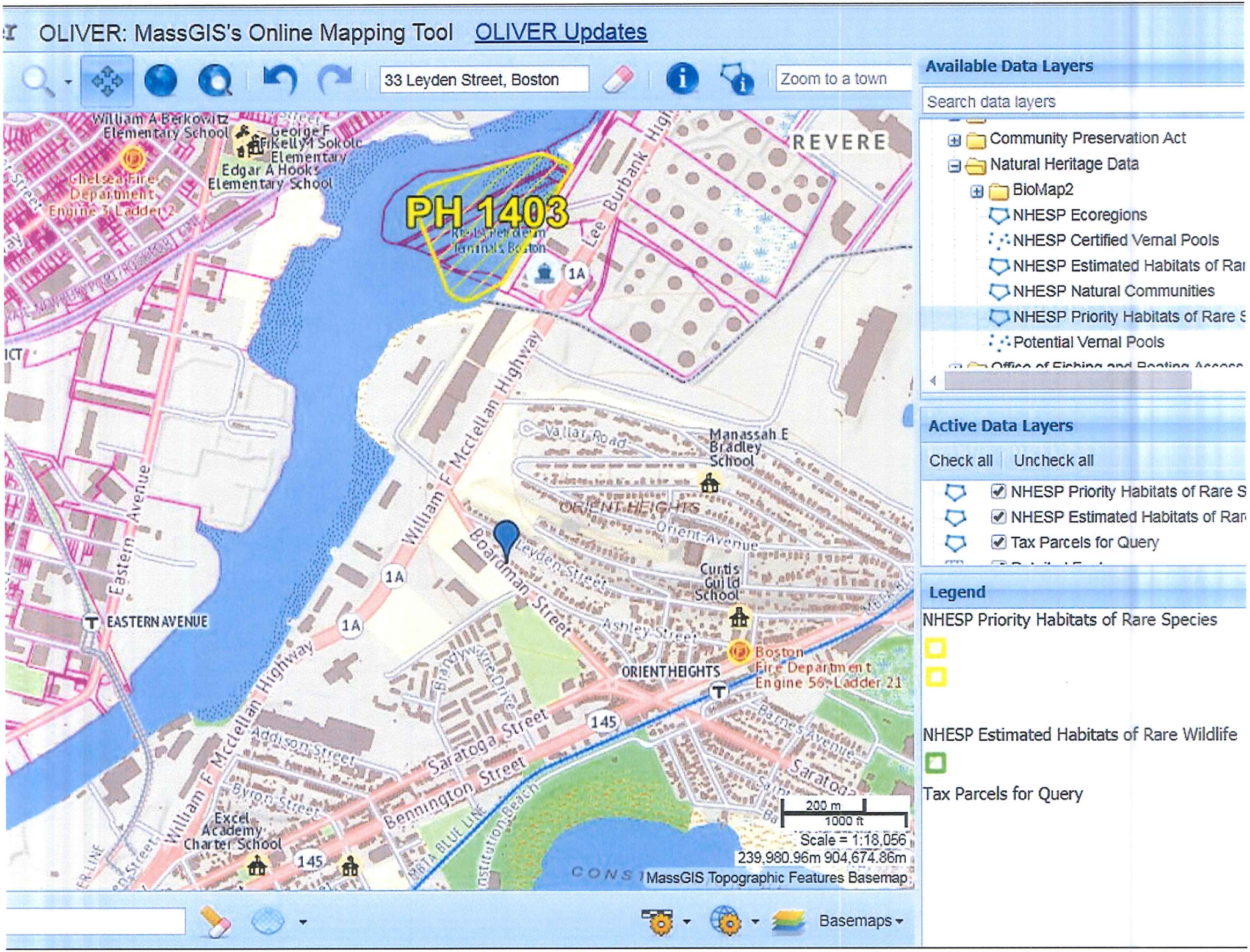
The original and copies must be sent simultaneously. Failure by the applicant to send copies in a timely manner may result in dismissal of the Notice of Intent.

HAYES ENGINEERING, INC.
CIVIL ENGINEERING &
LAND SURVEYORS

603 SALEM STREET
WAKEFIELD, MA 01880
(781) 246-2800



UNITED STATES GEOLOGICAL SURVEY MAP 25K MASSGIS QUADRANGLE (Information from "Oliver" Online Mapping)	LOCUS MAP #33 LEYDEN STREET BOSTON, MASSACHUSETTS	N ↑

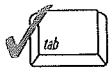

OLIVER: MassGIS's Online Mapping Tool
OLIVER Updates
33 Leyden Street, Boston
Zoom to a town
Available Data Layers
Search data layers
Community Preservation Act
Natural Heritage Data
BioMap2
NHESP Ecoregions
NHESP Certified Vernal Pools
NHESP Estimated Habitats of Rar
NHESP Natural Communities
NHESP Priority Habitats of Rare S
Potential Vernal Pools
Active Data Layers
Check all
Uncheck all
NHESP Priority Habitats of Rare S
NHESP Estimated Habitats of Rar
Tax Parcels for Query
Legend
NHESP Priority Habitats of Rare Species
NHESP Estimated Habitats of Rare Wildlife
Tax Parcels for Query
PH 1403
REVERE
William A Berkowitz Elementary School
George F Fikelly/I Sokolc Elementary
Edgar A Hooks Elementary School
Chelsea Fire Department Engine 3, Ladder 2
Lee Burbank
1A
Vallar Road
Manassah E Bradley School
ORIENT HEIGHTS
Orient Avenue
Leyden Street
Boardman Street
Curtis Guild School
Ashley Street
Boston Fire Department Engine 56, Ladder 21
Eastern Avenue
EASTERN AVENUE
William F Mcclellan Highway
Addison Street
Saratoga Street
Bennington Street
Byron Street
Excel Academy Charter School
145
Barnes Avenue
200 m
1000 ft
Scale = 1:18,056
239,980.96m 904,674.86m
MassGIS Topographic Features Basemap
Basemaps

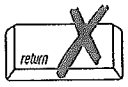
Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

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:

33 Leyden Street — a. Street Address
Boston — b. City/Town
c. Check number
d. Fee amount

2. Applicant Mailing Address:

a. First Name
b. Last Name
33 Leyden Street LLC c/o William Mandell, Manager — c. Organization
20C Del Carmine Street, Suite 101 — d. Mailing Address
Wakefield — e. City/Town
MA — f. State
01880 — g. Zip Code
(617)201-5904 — h. Phone Number
(781)479-0726 — i. Fax Number
bm@ocbuyshouses.com — j. Email Address

3. Property Owner (if different):

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

B. Fees

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

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

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

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

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

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

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

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

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

NOI Wetland Fee Transmittal Form

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

B. Fees (continued)

Step 1/Type of Activity	Step 2/Number of Activities	Step 3/Individual Activity Fee	Step 4/Subtotal Activity Fee
Multi family building (Category 3b.)		$1,050.00	$1,050.00

Step 5/Total Project Fee: $1,050.00

Step 6/Fee Payments:

Total Project Fee:	$1,050.00 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:	Local fee $1,500 as required by ConCom

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.)

THE FACE OF THIS DOCUMENT HAS A COLORED BACKGROUND ON WHITE PAPER AND ORIGINAL DOCUMENT SECURITY SCREEN ON BACK WITH PADLOCK SECURITY ICON.

5861

MBC VenturesLLC
20C Delcarmine St #101
Wakefield, MA 01880

LOWELL FIVE CENTS SVGS BK
53-7133/2133

DATE 6/19/2019

PAY TO THE ORDER OF City of Boston $ **1,500.00

One Thousand Five Hundred and 00/100********** DOLLARS

City of Boston

MEMO

AUTHORIZED SIGNATURE

Security features included. Details on back.

⑈005861⑈ ⑆211371337⑆ 4194635⑈

THE FACE OF THIS DOCUMENT HAS A COLORED BACKGROUND ON WHITE PAPER AND ORIGINAL DOCUMENT SECURITY SCREEN ON BACK WITH PADLOCK SECURITY ICON.

5860

MBC VenturesLLC
20C Delcarmine St #101
Wakefield, MA 01880

LOWELL FIVE CENTS SVGS BK
53-7133/2133

DATE 6/19/2019

PAY TO THE ORDER OF Commonwealth of MA $ **512.50

Five Hundred Twelve and 50/100********** DOLLARS

Commonwealth of MA

MEMO

AUTHORIZED SIGNATURE

Security features included. Details on back.

⑈005860⑈ ⑆211371337⑆ 4194635⑈

AFFIDAVIT OF SERVICE

Under the Massachusetts Wetlands Protection Act

(to be submitted to the Massachusetts Department of Environmental Protection and the Conservation Commission when filing a Notice of Intent)

I, Diane Benoit, hereby certify under the pains and penalties of perjury that on 6/27/19 I gave notification to abutters in compliance with the second paragraph of Massachusetts General Laws, Chapter 131, Section 40, and the **DEP Guide to Abutter Notification** dated April 8, 1994, in connection with the following matter: Multi-Family building construction within Land Subject to Coastal Storm Flowage (100-year floodplain).

A Notice of Intent has been filed under the Massachusetts Wetlands Protection Act by 33 Leyden Street LLC with the Boston Conservation Commission on 6/26/19 for property located #33 Leyden Street, East Boston, MA (Assessor's Parcel ID 0101800000).

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

Diane Benoit
Name

6/26/19
Date

NOTIFICATION TO ABUTTERS
UNDER THE MASSACHUSETTS WETLANDS PROTECTION ACT

(This form must be completed and copies sent, by certified mail or hand-delivered, to all abutters within 100 feet of the location of the project.)

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

The name of the applicant is 33 Leyden Street LLC.

Site location: #33 Leyden Street, East Boston, MA (Assessor's Parcel ID 0101800000).

The applicant has filed with the Boston Conservation Commission for a: (Please check applicable filing.)
☒ **Notice of Intent**, application seeking permission to work within the Land subject Coastal Storm Flowage resource area subject to protection under the Wetlands Protection Act.
☐ **Request to amend an existing Order of Conditions**.
☐ **Notice of Resource Area Delineation**, seeking to determine the extent of areas subject to protection under the Wetlands Protection Act.

The proposed work includes Removal of existing dwelling and construction of new multi-family building within the 100-year flood plain (Land Subject to Coastal Storm Flowage resource area).

_____

_____

—

Copies of the Notice of Intent application may be examined or obtained (for a fee) from:
(Check all that apply)
☐ **Applicant** at

_____

☒ **Representative** at Hayes Engineering, Inc., 603 Salem Street, Wakefield, MA (781)246-2800 between the hours of 8 am and 4:30 pm on the following days: Monday – Friday and by appointment.

☒ **Conservation Commission** – Plans and filings with the Commission may be viewed at the Environment Department, Boston City Hall, Room 709, from 8 AM to 4 PM Monday through Friday. For more information, call 617-635-3850 or email Amelia Croteau: cc@boston.gov , Environment@boston.gov

*Public hearing for this application is anticipated to be held on July 24, 2019 at 6.00 pm in the Piemonte Room, 5th Floor, Boston City Hall, 1 City Hall Square. Please call the Conservation office during regular business hours and check the public notices website: https://www.boston.gov/public-notices for further information and to verify meeting schedules prior to visiting.

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

*Note: Notice of the public hearing, including its date, time and place will be posted in Boston City Hall at least 48 hours prior to the public hearing date.

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

PID	OWNER	ADDRESSEE	MLG_ADDRESS	MLG_CITYSTATE	MLG_ZIPCOI	LOC_ADDRESS	LOC_CITY	LOC_ZIPCODE
100522000	MC-EB REALTY LLC	MC-EB REALTY LLC	PO BOX 2516	FALL RIVER MA	2722	415 WM F MCCLELLAN H	EAST BOSTO	2128
101794010	BOARDMAN PLACE CONDO	BOARDMAN PLACE CONDO	99 BOARDMAN ST	EAST BOSTON M	2128	37 -47 LEYDEN ST	EAST BOSTO	2128
101794012	WANG XIAOPING	WANG XIAOPING	47 LEYDEN ST #1	EAST BOSTON M	2128	47 LEYDEN ST #1	EAST BOSTO	2128
101794014	NOWOSIADLY CHRISTIAN D	NOWOSIADLY CHRISTIAN D	45 LEYDEN ST #2	E BOSTON MA	2128	45 LEYDEN ST #2	EAST BOSTO	2128
101794016	SEBASTIAO KIMBERLY	SEBASTIAO KIMBERLY	43 LEYDEN ST #3	EAST BOSTON M	2128	43 LEYDEN ST #3	EAST BOSTO	2128
101794018	FEALHABER SARA	FEALHABER SARA	41 LEYDEN ST #4	EAST BOSTON M	2128	41 LEYDEN ST #4	EAST BOSTO	2128
101794020	KANTARIA DIVYESH D	KANTARIA DIVYESH D	39 LEYDEN ST #5	E BOSTON MA	2128	39 LEYDEN ST #5	EAST BOSTO	2128
101794022	TIMOTHE PEGGY	TIMOTHE PEGGY	2333 INADALE AVE	DALLAS TX	75228	37 LEYDEN ST #6	EAST BOSTO	2128
101794024	ZALDUMBIDE MICHAEL	ZALDUMBIDE MICHAEL	97 BOARDMAN ST #7	E BOSTON MA	2128	97 BOARDMAN ST #7	EAST BOSTO	2128
101794026	CASTRO MARCO JAMES	CASTRO MARCO JAMES	99 BOARDMAN ST #8	E BOSTON MA	2128	99 BOARDMAN ST #8	EAST BOSTO	2128
101794028	ZHU JIEBO	ZHU JIEBO	101 BOARDMAN ST #9	EAST BOSTON M	2128	101 BOARDMAN ST #9	EAST BOSTO	2128
101794030	GOURENE VERONIQUE	GOURENE VERONIQUE	103 BOARDMAN ST #10	EAST BOSTON M	2128	103 BOARDMAN ST #10	EAST BOSTO	2128
101794032	BRASIL ROGER	BRASIL ROGER	105 BOARDMAN ST #11	EAST BOSTON M	2128	105 BOARDMAN ST #11	EAST BOSTO	2128
101794034	ZOLLA WILLIAM	ZOLLA WILLIAM	107 BOARDMAN ST #12	EAST BOSTON M	2128	107 BOARDMAN ST #12	EAST BOSTO	2128
101796000	DONNELLY JOHN ETAL	DONNELLY JOHN ETAL	111 BOARDMAN	EAST BOSTON M	2128	111 BOARDMAN ST	EAST BOSTO	2128
101797000	SKYVIEW CONDO TRUST	SKYVIEW CONDO TRUST	15 LEYDEN ST	EAST BOSTON M	2128	115 BOARDMAN ST	EAST BOSTO	2128
101797002	BOSTON HOUSING AUTH	BOSTON HOUSING AUTH	52 CHAUNCY ST	BOSTON MA	2111	115 BOARDMAN ST	EAST BOSTO	2128
101797004	BOSTON HOUSING AUTH	BOSTON HOUSING AUTH	52 CHAUNCY ST	BOSTON MA	2111	115 BOARDMAN ST	EAST BOSTO	2128
101797006	BOSTON HOUSING AUTH	BOSTON HOUSING AUTH	52 CHAUNCY ST	BOSTON MA	2111	115 BOARDMAN ST	EAST BOSTO	2128
101797008	BOSTON HOUSING AUTH	BOSTON HOUSING AUTH	52 CHAUNCY ST	BOSTON MA	2111	115 BOARDMAN ST	EAST BOSTO	2128
101797010	BOSTON HOUSING AUTH	BOSTON HOUSING AUTH	52 CHAUNCY ST	BOSTON MA	2111	115 BOARDMAN ST	EAST BOSTO	2128
101797012	BOSTON HOUSING AUTH	BOSTON HOUSING AUTH	52 CHAUNCY ST	BOSTON MA	2111	115 BOARDMAN ST	EAST BOSTO	2128
101798000	OBRIEN MARK P	OBRIEN MARK P	23 LEYDEN ST	EAST BOSTON M	2128	23 LEYDEN ST	EAST BOSTO	2128
101799000	HS LAND TRUST LLC TS	HS LAND TRUST LLC TS	404 S HUNTINGTON AV	JAMAICA PLAIN I	2130	29 LEYDEN ST	EAST BOSTO	2128
101800000	MBC VENTURES LLC	MBC VENTURES LLC	20C DELCARMINE ST SU	WAKEFIELD MA	1880	33 LEYDEN ST	EAST BOSTO	2128
101801000	TUFO MARY ELIZABETH	TUFO MARY ELIZABETH	161 SUMMIT AVE	QUINCY MA	2170	35 LEYDEN ST	EAST BOSTO	2128
102040000	BREEDS HILL TOWNHOUSE	BREEDS HILL TOWNHOUSE	58 LEYDEN	EAST BOSTON M	2128	58 38 LEYDEN ST	EAST BOSTO	2128
102040002	CORTESE SALVATORE TS	CORTESE SALVATORE TS	56 LEYDEN ST #B4	EAST BOSTON M	2128	56 LEYDEN ST #B4	EAST BOSTO	2128
102040004	BAHLOUL ISSAM M TS	BAHLOUL ISSAM M TS	54 LEYDEN ST #B3	EAST BOSTON M	2128	54 LEYDEN ST #B3	EAST BOSTO	2128
102040006	NUMIC SEDIN	NUMIC SEDIN	52 LEYDEN ST #B2	E BOSTON MA	2128	52 LEYDEN ST #B2	EAST BOSTO	2128
102040008	LETCH RICHARD A JR	LETCH RICHARD A JR	50 LEYDEN ST #B1	E BOSTON MA	2128	50 LEYDEN ST #B1	EAST BOSTO	2128
102040010	DONN MICHAEL A	DONN MICHAEL A	48 LEYDEN ST #A6	EAST BOSTON M	2128	48 LEYDEN ST #A6	EAST BOSTO	2128
102040012	CHIU ELLEN	CHIU ELLEN	46 LEYDEN ST #A5	EAST BOSTON M	2128	46 LEYDEN ST #A5	EAST BOSTO	2128
102040014	KEARNEY JAMES A	KEARNEY JAMES A	44 LEYDEN ST #A4	EAST BOSTON M	2128	44 LEYDEN ST #A4	EAST BOSTO	2128
102040016	DEROSA HEIDI	DEROSA HEIDI	42 LEYDEN ST #A3	EAST BOSTON M	2128	42 LEYDEN ST #A3	EAST BOSTO	2128
102040018	SIEGEL MORTON	SIEGEL MORTON	PO BOX 175	STOUGHTON MA	2072	40 LEYDEN ST #A2	EAST BOSTO	2128
102040020	MENDOZA MARYELLEN R	MENDOZA MARYELLEN R	38 LEYDON ST #A1	E BOSTON MA	2128	38 LEYDEN ST #A1	EAST BOSTO	2128
102046000	NOYES PROVIDENCE	NOYES PROVIDENCE	36 LEYDEN ST	EAST BOSTON M	2128	36 LEYDEN ST	EAST BOSTO	2128
102047000	ABBOTT PAUL CARMEN	ABBOTT PAUL CARMEN	30 LEYDEN ST	EAST BOSTON M	2128	30 LEYDEN ST	EAST BOSTO	2128

Abutter Mailing List Generator --- City of Boston Assessing Department

26 LEYDEN ST, 02128
29 LEYDEN ST, 02128
30 LEYDEN ST, 02128
33 LEYDEN ST, 02128
35 LEYDEN ST, 02128

Enter a Parcel ID:

0101800000

Find a Parcel

When you can see Parcels:

Click Here to Select a Parcel

Buffer Parameters:

Distance: 100

Feet

Buffer and Select

Click here to download a CSV file (Open in Notepad, not in Excel) for Mailing list.
Click here for an instruction to convert a CSV file to Mailing Labels using MS Word.

Note: Use newer versions of browser to view this site such as IE 11+ or Chrome 47+ etc.

PROJECT NARRATIVE
MULTI-FAMILY BUILDING
#33 LEYDEN STREET
EAST BOSTON, MASSACHUSETTS

June 21, 2019
Revised July 10, 2019

Existing Conditions

The subject locus is a developed 5,640± s.f. parcel bounded by Leyden Street, Boardman Street, and other residential properties, and containing a dwelling with deck, patio, parking areas, grassed yard and fences. The southern end of the property, entered via a paved driveway from Boardman Street, is located within the 100-year floodplain (FEMA Special Flood Hazard Zone AE) associated with the Chelsea River. Site features and resource area locations are shown on the accompanying July 2019 Hayes Engineering, Inc. plan set titled "Site Plan #17255, #33 Leyden Street, Boston, Mass." and attached screenshot photographs obtained from bing.com and google.com.

Project Description

General
The overall project will consist of redeveloping the property to accommodate the construction of a new 4-story multi-family residential building with garage under; associated paved parking lot; retaining walls; stormwater infiltration system; and other site amenities as shown on the above-referenced Hayes Engineering, Inc. plan. Proposed activities consist of vegetation and structure removal; excavation; retaining wall construction; filling; foundation installation; building construction; stormwater chamber system installation; utility relocation; grading; parking area paving; and loaming and seeding. Erosion control procedures will be implemented as outlined in the attached document "Erosion and Sedimentation Control". Stormwater management system details are further described below and in the accompanying "Stormwater Report". Construction work will be conducted using a variety of hand tools, dump and material delivery trucks, and machinery (e.g.: excavator, paver, lift machine), and include the use of Dumpster-type waste containers for disposal of demolition and construction debris. Project Activities will occur within the Land Subject to Coastal Storm Flowage (LSCSF) resource area as described below.

Work within the LSCSF
The sole resource area for the site is Land Subject to Coastal Storm Flowage, being land subject to inundation caused by coastal storms up to and including that caused by the 100-year storm, surge of record, or storm of record, whichever is greater. The boundary of Land subject to coastal storm flowage resource area is the extent of the Special Flood Hazard Zone AE at elevation 10' NAVD 1988 (16.49' Boston City Base) as determined from information provided on the National Flood Insurance Program's Flood Insurance Rate Map 25025C0019J and the FEMA website National Flood Hazard Layer (refer to attached National Flood Hazard Layer FIRMette with pinpointed locus) and as shown on the project plan.

Approximately 3124± s.f. of LSCSF will be altered as a result of the importation and grading of 55 cubic yards of fill, building foundation installation, wall structure construction, parking lot paving and introduction of landscaping areas along the parking lot vegetated with grass; thereby resulting in the extent of the flood plain line being relocated southerly toward Boardman Street. The building will be constructed upon a walled foundation fitted with flood panels (vents) to allow floodwaters to pass through the garage and all floors will be constructed above the 100-year flood elevation. Proposed activities within the LSCSF, generally comprised of building, wall, parking lot and stormwater BMP construction, are to be located within areas currently occupied with existing pavement, dwelling, and other manmade disturbances and so will not adversely affect resource area habitat.

A review of the MassGIS Natural Heritage and Endangered Species Program mapping revealed that there is neither Estimated Habitat of Endangered Species nor Priority Habitat on this property. All areas of bare or disturbed soil resulting from the proposed work will be loamed and vegetated with grass. There are no Performance Standards specified for Land Subject to Coastal Storm Flowage in the Massachusetts Wetlands Protection Act Regulations.

Stormwater Management System

Stormwater runoff resulting from the constructed project will be treated and controlled through the installation of a comprehensive stormwater management system designed to improve site water quality and reduce peak rates of runoff and promote groundwater recharge. Proposed treatment components for the multi-family development include roof drains and downspouts with Nyoplast® drains to a catch basin fitted with a Stormceptor® STC 450i oil and grit separator, a StormTech® SC-160 LP subsurface stormwater chamber field (located under the parking lot pavement), and all associated drain system components as shown on the Notice of Intent plan. The roof runoff Nyoplast® drains and the parking lot pretreatment catch basin components are designed to direct the site's impervious surface runoff into the StormTech® chambers for storage and infiltration. Note that the Nyoplast® drains are only being used for rooftop runoff which is considered to be clean, and therefore that runoff will not be pretreated prior to entering the StormTech® chamber system. The property owner and any designated property manager are responsible for the stormwater system maintenance and associated documentation. Maintenance and inspection requirements for these components are provided below and in the accompanying document titled "Stormwater Report, #33 Leyden Street, Boston, MA". Based on the observations made during the inspections, the property owner and or designated property manager shall determine if the stormwater management facilities are functioning properly and, if not, what steps are necessary to restore their functionality.

Operation and Maintenance Plan For StormTech® SC-160 LP Subsurface Infiltration Chamber

Recharger units are prone to failure due to clogging. Adherence to this aggressive maintenance plan and schedule preserves effectiveness of the system. Refer to the specifications outlined in the attached document titled "Isolator™ Row O & M Manual" (obtained from manufacturer's website at http://www.stormtech.com) and those provided below for system maintenance.

- The units will be inspected after every major storm for the first few months after construction and at least every 6 months for the first year of operation to ensure that proper function has been achieved. Water levels in the units should be recorded over several days to check drainage. Thereafter, the units will be inspected every other year

(inspection frequency to be adjusted based upon rate of observed sediment accumulation).

- The system shall be cleaned as specified in the manufacturer's O & M manual when the average depth of sediment in the chambers is more than 3 inches.

- Any required sediment cleaning or other action will be documented in a maintenance log kept by the property owner.

- Ponded water inside the units (as visible from the inspection ports) after 24 hours or several days most likely indicates the bottoms of the units are clogged.

Operation and Maintenance Plan For Stormceptor STC 450i

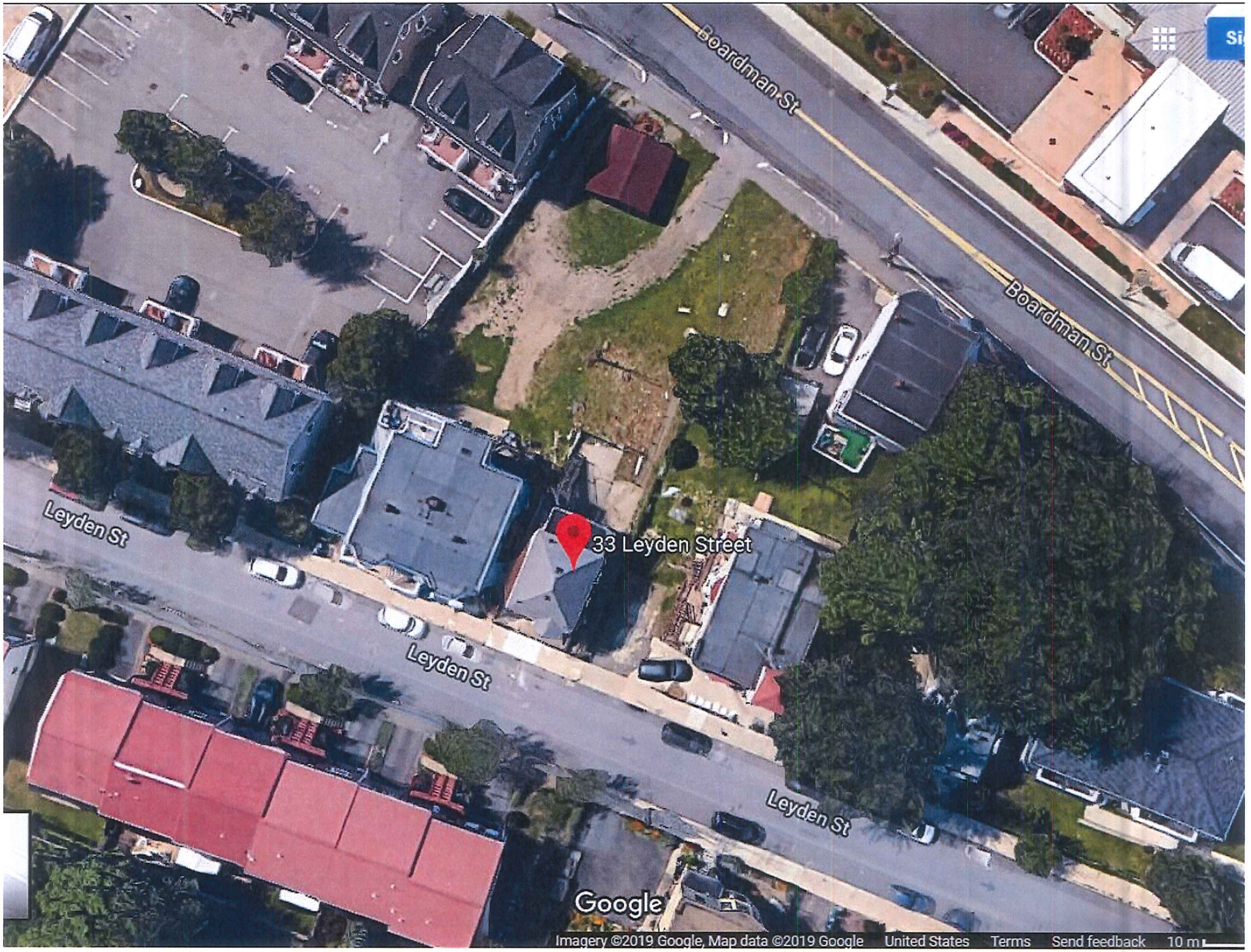
Regulating the sediment and petroleum product input to the proposed subsurface chamber water quality system is the priority maintenance activity. Sediments and any oil spillage should be trapped and removed before they reach the chambers.

- Stormceptor chamber maintenance shall be performed on a regular basis as recommended by the manufacturer (described in the attached excerpt from the Stormceptor Maintenance Brochure obtained from the Stormceptor website (www.stormceptor.com) and as summarized herein.

- Sediment removal is recommended annually, but is likely to vary widely based on site conditions and loadings. Typical maintenance cleaning can be done with a vacuum truck. Inspection for each of the Stormceptor units will include a quantification of the sediment load and oil and grease volumes. This is easily made from the surface with a tube dipstick with ball valve inserted through the cleanout pipe or other access port. Depths of sediment indicating maintenance are presented in the following table for the various models. Inspection of the internal structure should be part of the routine inspection plan. The units are designed to accept 15% of their capacity in solids annually based on maximum drainage area loading. Removal of sediment, oils and grease from the system will depend on rates of accumulation. All sediment and oil waste materials shall be disposed of in accordance with all Federal, State and Local regulations.

Volume Report EXISTING TO FINISH #33 LEYDEN
Comparing Grid: M:\BOS69\EX(190709).grd
and Grid: M:\BOS69\PR(190709).grd
Grid corner locations: 4940.31,4991.75 to 5122.31,5185.75
Grid resolution X: 182, Y: 194 Grid cell size X: 1.00, Y: 1.00
Area in Cut : 1,878.7 S.F.
Area in Fill: 3,766.1 S.F.
Total inclusion area: 5,644.8 S.F.
Cut to Fill ratio: 0.76
Average Cut Depth: 2.52 Average Fill Depth: 1.65
Max Cut Depth: 8.39 Max Fill Depth: 7.67
Cut (C.Y.) / Area (acres): 1354.52
Fill (C.Y.) / Area (acres): 1777.23
Cut volume: 175.53 C.Y.
Fill volume: 230.31 C.Y.

NET 55 CY FILL


Boardman St
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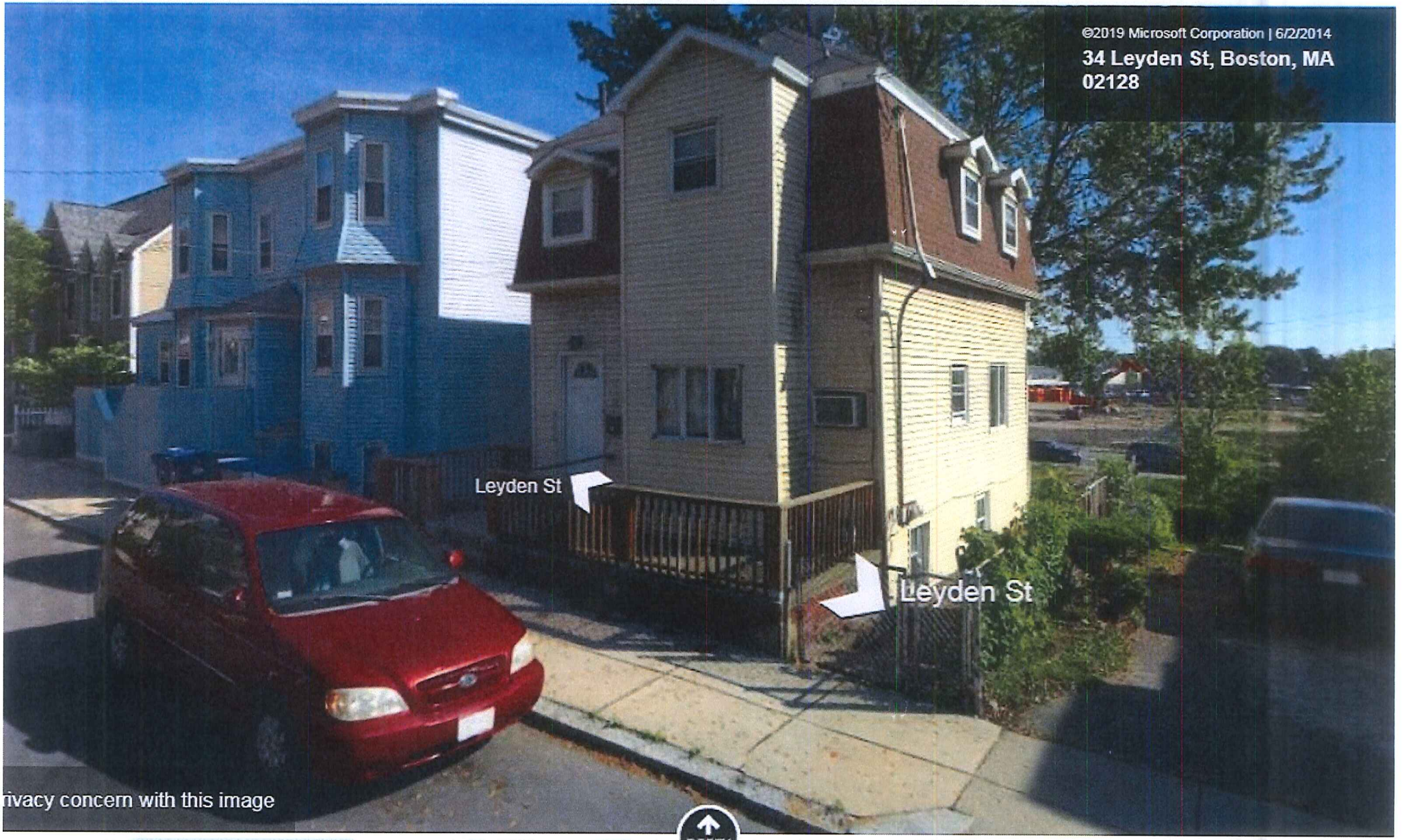


500 feet

© 2019 HERE, © Oper
© 2019 M

EROSION AND SEDIMENTATION CONTROL
#33 LEYDEN STREET
EAST BOSTON, MASSACHUSETTS

JUNE 21, 2019

PART I - GENERAL

A. The applicant and site contractors shall be responsible for reviewing, and taking steps to meet, all requirements contained in the Order of Conditions issued by the Boston Conservation Commission for this project.

B. Follow siltation control methods as outlined below, shown on the plan and as directed by Engineer.

C. Operations will be restricted to areas of work indicated on drawings (and clearly marked on site) and to areas that must be entered for construction of temporary or permanent facilities.

D. Siltation controls along areas of grading shall be checked frequently and maintained in functioning condition throughout the duration of site work to prevent encroachment upon adjacent resource areas. If siltation control barriers are damaged or washed away, contact the Conservation Commission and Engineer, and repair /remove materials and silt accumulations from fouled areas as directed.

E. Conservation Commission has authority to direct immediate permanent or temporary pollution control measures to prevent contamination of wetlands, including construction of temporary berms, sediment basins, sediment traps, slope drains and use of temporary mulches, mats or other control devices or methods as necessary to control erosion.

F. Temporary storage areas for demolition materials and mechanized equipment shall be kept as far away from adjacent resource areas as possible.

G. Equipment and trucks shall be routed only over the existing access and workers shall avoid foot traffic in vegetated areas adjacent to the work area.

PART 2 – POLLUTION CONTROL MEASURES

A. Sedimentation control devices (i.e. SiltSoxx, Silt Bag or other approved stormwater water filter device) shall be installed within nearby street catch basins to prevent sediments generated by the project from entering the municipal drainage system. These devices shall be inspected frequently and maintained in functioning condition throughout site construction.

B. Discharge silt-laden water from excavations onto dewatering bags, filter fabric mats, and/or baled hay or straw sediment traps to ensure that only sediment-free water is

released from this operation. Sediment traps, if needed, should be constructed by standard methods.

C. Do not pile soil backfill material within or adjacent to resource areas without proper siltation controls or otherwise preventing the soil from washing away by high water or runoff.

D. Do not dump any materials into any streams, wetlands, surface waters, or unspecified locations.

E. Do not pump silt-laden water from trenches or excavations into surface waters, streams, wetlands or natural or man-made channels leading thereto.

F. Do not dispose of or bury trees, brush, debris, paints, chemicals, asphalt products, concrete curing compounds, fuels, lubricants, insecticides, wash water from concrete trucks or hydroseeders, or any other pollutant on site or within any streams, wetlands, surface waters or natural or man-made channels leading thereto, or unspecified locations.

G. No disturbance or alteration of any kind allowed beyond the specified limit of work

H. Prevent any operation of equipment outside the designated limit of work (silt fence).

I. Take preventative measures to ensure that sediments generated by site work do not wash into catch basins and other components of the drainage system.

PART 4 – STABILIZATION TECHNIQUES

A. Protecting and Minimizing Exposed Areas

Steps shall be taken to minimize area of bare earth exposure by preserving existing vegetation and providing soil stabilization. Equipment and trucks shall be routed only over the proposed work areas and workers shall minimize foot traffic in vegetated areas adjacent to the work area as much as possible. During site work, utilization of stabilization techniques are necessary for controlling erosion on exposed areas, including grading, seeding and otherwise stabilizing the areas.

B. Sediment And Erosion Control

Prior to any construction occurring adjacent to identified resource areas (shown on the plan and/or marked in the field, proper erosion and siltation barriers will be installed so that throughout and until completion of construction, those areas will be afforded maximum protection. Temporary stockpiles of soil shall be surrounded with an erosion control barrier to prevent sediments from exiting the subject property. All erosion control barriers are to be maintained and periodically inspected until areas of bare soil (if any) are stabilized to ensure that they are in functioning condition. Mirafi (or equivalent fabric) fencing and hay bales shall be installed along the limit of work as shown on the above-mentioned plan. Any accumulations of sediments present along erosion control barriers

shall be removed as soon as possible after deposition in order to ensure the effectiveness of all sedimentation controls.

C. Vegetational Covers

1. Temporary Vegetational Cover

Any area proposed for removal of vegetation where soil will be exposed for more than 10 days shall be mulched or otherwise treated to prevent erosion. On sediment-producing areas in the buffer zone, where the period of exposure will be more than 30 days, the following procedures should be followed for a cover of annual rye. When bare soils are not completely graded and vegetated by September 30 of any year, winter rye shall be planted as specified in table and mulched with three (3) inches of hay or straw.

a. Install needed surface water control measures.

b. Perform all cultural operations at right angles to the slope.

c. Establish grass or other ground cover species as recommended in the attached excerpt (pgs 144 -146) from Massachusetts Erosion and Sedimentation Guidelines for Urban and Suburban Areas, 2003.

2. Permanent Vegetational Cover

To reduce damages from the potential incidence of sedimentation and runoff to other properties, and to avoid erosion on the site itself, a permanent type cover shall be established in disturbed areas located adjacent to resource areas immediately upon completion of grading. Seeding herbaceous cover is usually the most economical and practical way to stabilize any large area. For this site, all disturbed areas where lawns are desired will be seeded in Fall during the period of August 1 to October 1; or in spring by May 15 with a commercial lawn mixture utilizing standard landscape methods and as recommended by the seed manufacturer. Grass sod or landscape plantings may be used instead of seed, if preferred. Where moderate to steep slopes have been loamed and seeded, multiple lines of erosion control fencing or biodegradable erosion control mats shall be installed from top to bottom of slope to stabilize soil and seed layers.

In upland/ buffer zone areas, outside of lawn locations, where an erosion control - wildlife seed mixture is desired, prepare soil and use one of grass seed mixes #1 through #6 as recommended in the attached excerpts (pgs 136-137) from Massachusetts Erosion and Sedimentation Guidelines for Urban and Suburban Areas 2003, to establish a stable, permanent cover.

REFERENCES

Department of Environmental Protection, Bureau of Resource Protection and U.S. Environmental Protection Agency, Massachusetts Erosion and Sedimentation Guidelines for Urban and Suburban Areas: A Guide for Planners, Designers and Municipal Officials.

Massachusetts Executive Office of Environmental Affairs, Boston, Massachusetts, Reprint: May 2003.

Use low-maintenance native species wherever possible.

Planting should be timed to minimize the need for irrigation.

Sheet erosion, caused by the impact of rain on bare soil, is the source of most fine particles in sediment. To reduce this sediment load in runoff, the soil surface itself should be protected. The most efficient and economical means of controlling sheet and rill erosion is to establish vegetative cover. Annual plants which sprout rapidly and survive for only one growing season are suitable for establishing temporary vegetative cover. Temporary seeding is effective when combined with construction phasing so bare areas of the site are minimized at all times.

Temporary seeding may prevent costly maintenance operations on other erosion control systems. For example, sediment basin clean-outs will be reduced if the drainage area of the basin is seeded where grading and construction are not taking place. Perimeter dikes will be more effective if not choked with sediment.

Proper seedbed preparation and the use of quality seed are important in this practice just as in permanent seeding. Failure to carefully follow sound agronomic recommendations will often result in an inadequate stand of vegetation that provides little or no erosion control.

Soil that has been compacted by heavy traffic or machinery may need to be loosened. Successful growth usually requires that the soil be tilled before the seed is applied. Topsoiling is not necessary for temporary seeding; however, it may improve the chances of establishing temporary vegetation in an area.

Planting Procedures

Time of Planting

Planting should preferably be done between April 1 and June 30, and September 1 through September 30. If planting is done in the months of July and August, irrigation may be required. If planting is done between October 1 and March 31, mulching should be applied immediately after planting. If seeding is done during the summer months, irrigation of some sort will probably be necessary.

Site Preparation

Before seeding, install needed surface runoff control measures such as gradient terraces, interceptor dike/swales, level spreaders, and sediment basins.

Seedbed Preparation

The seedbed should be firm with a fairly fine surface.

Perform all cultural operations across or at right angles to the slope. See **Topsoiling** and **Surface Roughening** for more information on seedbed preparation. A minimum of 2 to 4 inches of tilled topsoil is required.

Annual ryegrass used for temporary seeding
Ryegrass reseeds itself and makes it difficult to establish a good cover of permanent vegetation.
Seed not broadcast evenly or rate too low
Results in patchy growth and erosion.

Maintenance

Inspect within 6 weeks of planting to see if stands are adequate. Check for damage after heavy rains. Stands should be uniform and dense. Fertilize, reseed, and mulch damaged and sparse areas immediately. Tack or tie down mulch as necessary.

Seeds should be supplied with adequate moisture. Furnish water as needed, especially in abnormally hot or dry weather or on adverse sites. Water application rates should be controlled to prevent runoff.

References

Massachusetts Department of Environmental Protection, Office of Watershed Management, Nonpoint Source Program, Massachusetts ***Nonpoint Source Management Manual,*** Boston, Massachusetts, June, 1993.

North Carolina Department of Environment, Health, and Natural Resources,, ***Erosion and Sediment Control Field Manual***, Raleigh, NC, February 1991.

U.S. Environmental Protection Agency, ***Storm Water Management For Construction Activities***, EPA-832-R- 92-005, Washington, DC, September, 1992.

Washington State Department of Ecology, ***Stormwater Management Manual for the Puget Sound Basin***, Olympia, WA, February, 1992.

Silt Curtain

A temporary sediment barrier installed parallel to the bank of a stream or lake. Used to contain the sediment produced by construction operations on the bank of a stream or lake and allow for its removal.

Where Practice Applies

The silt curtain is used along the banks of streams or lakes where sediment could pollute or degrade the stream or lake.

Seeding Dates

Seeding operations should be performed as an early spring seeding (April 1-May 15) with the use of cold treated seed. A late fall early winter dormant seeding (November 1 - December 15) can also be made, however the seeding rate will need to be increased by 50%.

Seeding Methods

Seeding should be performed by one of the following methods:

- Drill seedings (de-awned or de-bearded seed should be used unless the drill is equipped with special features to accept awned seed).
- Broadcast seeding with subsequent rolling, cultipacking or tracking the seeding with small track construction equipment. Tracking should be oriented up and down the slope.
- Hydroseeding with subsequent tracking. If wood fiber mulch is used, it should be applied as a separate operation after seeding and tracking to assure good seed to soil contact.

Mulch

Mulch the seedings with straw applied at the rate of ½ tons per acre. Anchor the mulch with erosion control netting or fabric on sloping areas.

Seed Mixtures for Permanent Cover

Recommended mixtures for permanent seeding are provided on the following pages. Select plant species which are suited to the site conditions and planned use. Soil moisture conditions, often the major limiting site factor, are usually classified as follows:

Dry - Sands and gravels to sandy loams. No effective moisture supply from seepage or a high water table.

Moist - Well drained to moderately well drained sandy loams, loams, and finer; or coarser textured material with moderate influence on root zone from seepage or a high water table.

Wet - All textures with a water table at or very near the soil surface, or with enduring seepage.

When other factors strongly influence site conditions, the plants selected must also be tolerant of these conditions.

Permanent Seeding Mixtures

Mix	Site	Seed Mixture	Seed, Pounds per: Acre	1,000 sf	Remarks
1	Dry	Little Bluestem or Broomsedge	10	0.25	* Use Warm Season planting procedure. * Roadsides
		Tumble Lovegrass*	1	0.10	* Sand and Gravel Stabilization
		Switchgrass	10	0.25	* Clover requires inoculation with nitrogen-fixing bacteria
		Bush Clover*	2	0.10	
		Red Top	1	0.10	* Rates for this mix are for PLS.
2	Dry	Deertongue	15	0.35	* Use Warm Season planting procedures.
		Broomsedge	10	0.25	* Acid sites/Mine spoil
		Bush Clover*	2	0.10	* Clover requires inoculation with nitrogen-fixing bacteria.
		Red Top	1	0.10	*Rates for this mix are for PLS.
3	Dry	Big Bluestem	10	0.25	* Use Warm Season planting procedures.
		Indian Grass	10	0.25	* Eastern Prairie appearance
		Switchgrass	10	0.25	* Sand and Gravel pits.
		Little Bluestem	10	0.25	* Golf Course Wild Areas
		Red Top or	1	0.10	* Sanitary Landfill Cover seeding
		Perennial Ryegrass	10	0.25	* Wildlife Areas *OK to substitute Poverty Dropseed in place of Red Top/Ryegrass. *Rates for this mix are for PLS.
4	Dry	Flat Pea	25	0.60	* Use Cool Season planting procedures
		Red Top or	2	0.10	* Utility Rights-of-Ways (tends to suppress
		Perennial Ryegrass	15	0.35	woody growth)
5	Dry	Little Bluestem	5	0.10	* Use Warm Season planting procedures.
		Switchgrass	10	0.25	* Coastal sites
		Beach Pea*	20	0.45	* Rates for Bluestein and Switchgrass are for
		Perennial Ryegrass	10	0.25	PLS.
6	Dry - Moist	Red Fescue	10	0.25	* Use Cool Season planting procedure.
		Canada Bluegrass	10	0.25	* Provides quick cover but is non-aggressive;
		Perennial Ryegrass	10	0.25	will tend to allow indigenous plant colonization.
		Red Top	1	0.10	* General erosion control on variety of sites, including forest roads, skid trails and landings.
7	Moist-Wet	Switchgrass	10	0.25	* Use Warm Season planting procedure.
		Virginia Wild Rye	5	0.10	* Coastal plain/flood plain
		Big Bluestem	15	0.35	* Rates for Bluestem and Switchgrass are for
		Red Top	1	0.10	PLS.

Boston Planning & Development Agency
Climate Resiliency Report Summary

boston planning & development agency

Submitted: 07/11/2019 12:59:41

A.1 - Project Information

Project Name:	Multi-family Building			
Project Address:	#33 Leyden Street, Boston, MA 02128			
Filing Type:	Design / Building Permit (prior to final design approval)			
Filing Contact:	Elizabeth Wallis	Hayes Engineering, Inc.	lwallis@hayeseng.com	(781)246-2800
Is MEPA approval required?	No	MEPA date:		

A.2 - Project Team

Owner / Developer:	33 Leyden Street LLC,/ Ocean City Development LLC Bill Mandell, Manager
Architect:	Joy Street Design
Engineer:	Hayes Engineering, Inc.
Sustainability / LEED:	
Permitting:	Hayes Engineering, Inc.
Construction Management:	Ocean City Development LLC and Hayes Engineering, Inc.

A.3 - Project Description and Design Conditions

List the principal Building Uses:	Multi-family Residential
List the First Floor Uses:	Residential Unit
List any Critical Site Infrastructure and or Building Uses:	None

Site and Building:

Site Area (SF):	5640	Building Area (SF):	2343
Building Height (Ft):	36	Building Height (Stories):	3
Existing Site Elevation – Low (Ft BCB):	14.90	Existing Site Elevation – High (Ft BCB):	30.46
Proposed Site Elevation – Low (Ft BCB):	14.90	Proposed Site Elevation – High (Ft BCB):	28.0
Proposed First Floor Elevation (Ft BCB):	18.0	Below grade spaces/levels (#):	1

Article 37 Green Building:

LEED Version - Rating System:		LEED Certification:	
Proposed LEED rating:		Proposed LEED point score (Pts.):	

Boston Planning & Development Agency
Climate Resiliency Report Summary

boston planning & development agency

Building Envelope:

When reporting R values, differentiate between R discontinuous and R continuous. For example, use "R13" to show R13 discontinuous and use R10c.i. to show R10 continuous. When reporting U value, report total assembly U value including supports and structural elements.

Roof:		Exposed Floor :	
Foundation Wall:		Slab Edge (at or below grade):	

Vertical Above-grade Assemblies (%'s are of total vertical area and together should total 100%):

Area of Opaque Curtain Wall & Spandrel Assembly:		Wall & Spandrel Assembly Value:	
Area of Framed & Insulated / Standard Wall:		Wall Value:	
Area of Vision Window:		Window Glazing Assembly Value:	
		Window Glazing SHGC:	
Area of Doors:		Door Assembly Value :	

Energy Loads and Performance

For this filing – describe how energy loads & performance were determined			
Annual Electric (kWh):		Peak Electric (kW):	
Annual Heating (MMbtu/hr):		Peak Heating (MMbtu):	
Annual Cooling (Tons/hr):		Peak Cooling (Tons):	
Energy Use - Below ASHRAE 90.1 - 2013 (%):		Have the local utilities reviewed the building energy performance?:	
Energy Use - Below Mass. Code (%):		Energy Use Intensity (kBtu/SF):	

Back-up / Emergency Power System

Electrical Generation Output (kW):		Number of Power Units:	
System Type (kW):		Fuel Source:	

Emergency and Critical System Loads (in the event of a service interruption)

Electric (kW):		Heating (MMbtu/hr):	
		Cooling (Tons/hr):	

B – Greenhouse Gas Reduction and Net Zero / Net Positive Carbon Building Performance

Reducing greenhouse gas emissions is critical to avoiding more extreme climate change conditions. To achieve the City's goal of carbon-neutrality by 2050 the performance of new buildings will need to progressively improve to carbon net zero and net positive.

B.1 – GHG Emissions - Design Conditions

For this filing - Annual Building GHG Emissions (Tons):

For this filing - describe how building energy performance has been integrated into project planning, design, and engineering and any supporting analysis or modeling:

Describe building specific passive energy efficiency measures including orientation, massing, building envelop, and systems:

Describe building specific active energy efficiency measures including high performance equipment, controls, fixtures, and systems:

Describe building specific load reduction strategies including on-site renewable energy, clean energy, and storage systems:

Describe any area or district scale emission reduction strategies including renewable energy, central energy plants, distributed energy systems, and smart grid infrastructure:

Describe any energy efficiency assistance or support provided or to be provided to the project:

B.2 - GHG Reduction - Adaptation Strategies

Describe how the building and its systems will evolve to further reduce GHG emissions and achieve annual carbon net zero and net positive performance (e.g. added efficiency measures, renewable energy, energy storage, etc.) and the timeline for meeting that goal (by 2050):

C - Extreme Heat Events

Annual average temperature in Boston increased by about 2˚F in the past hundred years and will continue to rise due to climate change. By the end of the century, the average annual temperature could be 56° (compared to 46° now) and the number of days above 90° (currently about 10 a year) could rise to 90.

C.1 – Extreme Heat - Design Conditions

Temperature Range - Low (Deg.):		Temperature Range - High (Deg.):	
Annual Heating Degree Days:		Annual Cooling Degree Days	

What Extreme Heat Event characteristics will be / have been used for project planning

Days - Above 90° (#):		Days - Above 100° (#):	
Number of Heatwaves / Year (#):		Average Duration of Heatwave (Days):	

Describe all building and site measures to reduce heat-island effect at the site and in the surrounding area:

C.2 - Extreme Heat – Adaptation Strategies

Describe how the building and its systems will be adapted to efficiently manage future higher average temperatures, higher extreme temperatures, additional annual heatwaves, and longer heatwaves:

Describe all mechanical and non-mechanical strategies that will support building functionality and use during extended interruptions of utility services and infrastructure including proposed and future adaptations:

D - Extreme Precipitation Events

From 1958 to 2010, there was a 70 percent increase in the amount of precipitation that fell on the days with the heaviest precipitation. Currently, the 10-Year, 24-Hour Design Storm precipitation level is 5.25". There is a significant probability that this will increase to at least 6" by the end of the century. Additionally, fewer, larger storms are likely to be accompanied by more frequent droughts.

D.1 – Extreme Precipitation - Design Conditions

What is the project design precipitation level? (In. / 24 Hours)	4.6

Describe all building and site measures for reducing storm water run-off:

Site design includes a stormwater management system for the building and parking lot impervious areas (Nyoplast drains, Stormceptor oil/grit separator, StormTech infiltration chambers). Site grades will be predominantly elevated above floodplain.

D.2 - Extreme Precipitation - Adaptation Strategies

Describe how site and building systems will be adapted to efficiently accommodate future more significant rain events (e.g. rainwater harvesting, on-site storm water retention, bio swales, green roofs):

The foundation will have installed flood panels (flaps) to allow flood waters to flow through the basement/garage area of the building.

E – Sea Level Rise and Storms

Under any plausible greenhouse gas emissions scenario, the sea level in Boston will continue to rise throughout the century. This will increase the number of buildings in Boston susceptible to coastal flooding and the likely frequency of flooding for those already in the floodplain.

Is any portion of the site in a FEMA Special Flood Hazard Area?	Yes	What Zone:	AE
What is the current FEMA SFHA Zone Base Flood Elevation for the site (Ft BCB)?			16.49
Is any portion of the site in the BPDA Sea Level Rise Flood Hazard Area (see SLR-FHA online map)?	Yes		

If you answered YES to either of the above questions, please complete the following questions.
Otherwise you have completed the questionnaire; thank you!

E.1 – Sea Level Rise and Storms – Design Conditions

Proposed projects should identify immediate and future adaptation strategies for managing the flooding scenario represented by the Sea Level Rise Flood Hazard Area (SLR-FHA), which includes 3.2' of sea level rise above 2013 tide levels, an additional 2.5" to account for subsidence, and the 1% Annual Chance Flood. After using the SLR-FHA to identify a project's Sea Level Rise Base Flood Elevation, proponents should calculate the Sea Level Rise Design Flood Elevation by adding 12" of freeboard for buildings, and 24" of freeboard for critical facilities and infrastructure and any ground floor residential units.

What is the Sea Level Rise - Base Flood Elevation for the site (Ft BCB)?	19.5		
What is the Sea Level Rise - Design Flood Elevation for the site (Ft BCB)?	20.86	First Floor Elevation (Ft BCB):	18.0
What are the Site Elevations at Building (Ft BCB)?	17.50- 28.0	What is the Accessible Route Elevation (Ft BCB)?	

Describe site design strategies for adapting to sea level rise including building access during flood events, elevated site areas, hard and soft barriers, wave / velocity breaks, storm water systems, utility services, etc.:

Access to the building first floor at the Leyden Street entrance (at elevation 28.0') would still be available during a flood event since this portion of the building is considerably higher than the existing flood elevation of 16.49' and anticipated sea level rise base flood elevation of 19.5'.

Describe how the proposed Building Design Flood Elevation will be achieved including dry / wet flood proofing, critical systems protection, utility service protection, temporary flood barriers, waste and drain water back flow prevention, etc.:

The foundation will have installed flood panels (flaps) to allow flood waters to flow through the basement/garage area of the building.

Describe how occupants might shelter in place during a flooding event including any emergency power, water, and waste water provisions and the expected availability of any such measures:

Describe any strategies that would support rapid recovery after a weather event:

E.2 – Sea Level Rise and Storms – Adaptation Strategies

Describe future site design and or infrastructure adaptation strategies for responding to sea level rise including future elevating of site areas and access routes, barriers, wave / velocity breaks, storm water systems, utility services, etc.:

Describe future building adaptation strategies for raising the Sea Level Rise Design Flood Elevation and further protecting critical systems, including permanent and temporary measures:

Thank you for completing the Boston Climate Change Checklist!

For questions or comments about this checklist or Climate Change best practices, please contact:
John.Dalzell@boston.gov

Applicant:
33 Leyden Street LLC
20C Del Carmine Street
Wakefield, MA 01880

Project File: BOS-0102

Stormwater Report:
Proposed Multi-family Building
#33 Leyden Street
Boston, Massachusetts

July 2019

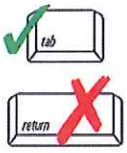
Hayes Engineering, Inc

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.

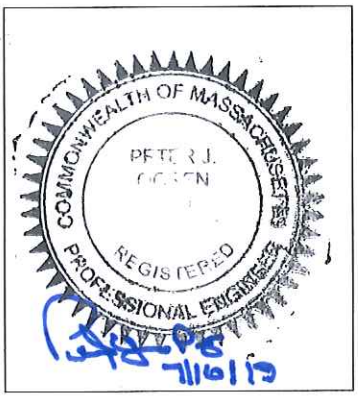
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the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



PE 7/10/13

Signature and Date

Checklist

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

☐ New development

☐ Redevelopment

☒ Mix of New Development and Redevelopment

Checklist for Stormwater Report

Checklist (continued)

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

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

Standard 1: No New Untreated Discharges

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

Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

☐ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.

☒ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.

☐ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

☒ Soil Analysis provided.

☒ Required Recharge Volume calculation provided.

☐ Required Recharge volume reduced through use of the LID site Design Credits.

☐ Sizing the infiltration, BMPs is based on the following method: Check the method used.

☐ Static ☒ Simple Dynamic ☐ Dynamic Field[1]

☐ Runoff from all impervious areas at the site discharging to the infiltration BMP.

☒ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.

☒ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.

☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:

- ☐ Site is comprised solely of C and D soils and/or bedrock at the land surface
- ☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
- ☐ Solid Waste Landfill pursuant to 310 CMR 19.000
- ☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.

☐ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.

☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

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

Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

☐ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.

☐ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

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

- Good housekeeping practices;
- Provisions for storing materials and waste products inside or under cover;
- Vehicle washing controls;
- Requirements for routine inspections and maintenance of stormwater BMPs;
- Spill prevention and response plans;
- Provisions for maintenance of lawns, gardens, and other landscaped areas;
- Requirements for storage and use of fertilizers, herbicides, and pesticides;
- Pet waste management provisions;
- Provisions for operation and management of septic systems;
- Provisions for solid waste management;
- Snow disposal and plowing plans relative to Wetland Resource Areas;
- Winter Road Salt and/or Sand Use and Storage restrictions;
- Street sweeping schedules;
- Provisions for prevention of illicit discharges to the stormwater management system;
- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.

☒ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.

☐ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:

- ☐ is within the Zone II or Interim Wellhead Protection Area
- ☐ is near or to other critical areas
- ☐ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
- ☐ involves runoff from land uses with higher potential pollutant loads.

☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.

☐ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.

Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

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

- ☒ The ½" or 1" Water Quality Volume or
- ☐ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.

☒ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.

☐ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

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

☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.

☐ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted ***prior to*** the discharge of stormwater to the post-construction stormwater BMPs.

☐ The NPDES Multi-Sector General Permit does ***not*** cover the land use.

☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.

☐ All exposure has been eliminated.

☐ All exposure has ***not*** been eliminated and all BMPs selected are on MassDEP LUHPPL list.

☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

☐ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.

☐ Critical areas and BMPs are identified in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

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

☒ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:

☐ Limited Project

☒ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.

☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area

☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff

☐ Bike Path and/or Foot Path

☐ Redevelopment Project

☒ Redevelopment portion of mix of new and redevelopment.

☐ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.

☒ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

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

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

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures;
- Erosion and Sedimentation Control Plan Drawings;
- Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan;
- Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls;
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.

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

Checklist for Stormwater Report

Checklist (continued)

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

☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has ***not*** been included in the Stormwater Report but will be submitted ***before*** land disturbance begins.

☒ The project is ***not*** covered by a NPDES Construction General Permit.

☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.

☐ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

☒ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:

- ☒ Name of the stormwater management system owners;
- ☒ Party responsible for operation and maintenance;
- ☒ Schedule for implementation of routine and non-routine maintenance tasks;
- ☒ Plan showing the location of all stormwater BMPs maintenance access areas;
- ☐ Description and delineation of public safety features;
- ☐ Estimated operation and maintenance budget; and
- ☒ Operation and Maintenance Log Form.

☐ The responsible party is ***not*** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:

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

Standard 10: Prohibition of Illicit Discharges

☐ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;

☐ An Illicit Discharge Compliance Statement is attached;

☒ NO Illicit Discharge Compliance Statement is attached but will be submitted ***prior to*** the discharge of any stormwater to post-construction BMPs.

Applicant:
33 Leyden Street LLC
20C Del Carmine Street
Wakefield, MA 01880

Project File: BOS-0102

Drainage Calculations:
Proposed Multi-family Building
#33 Leyden Street
Boston, Massachusetts

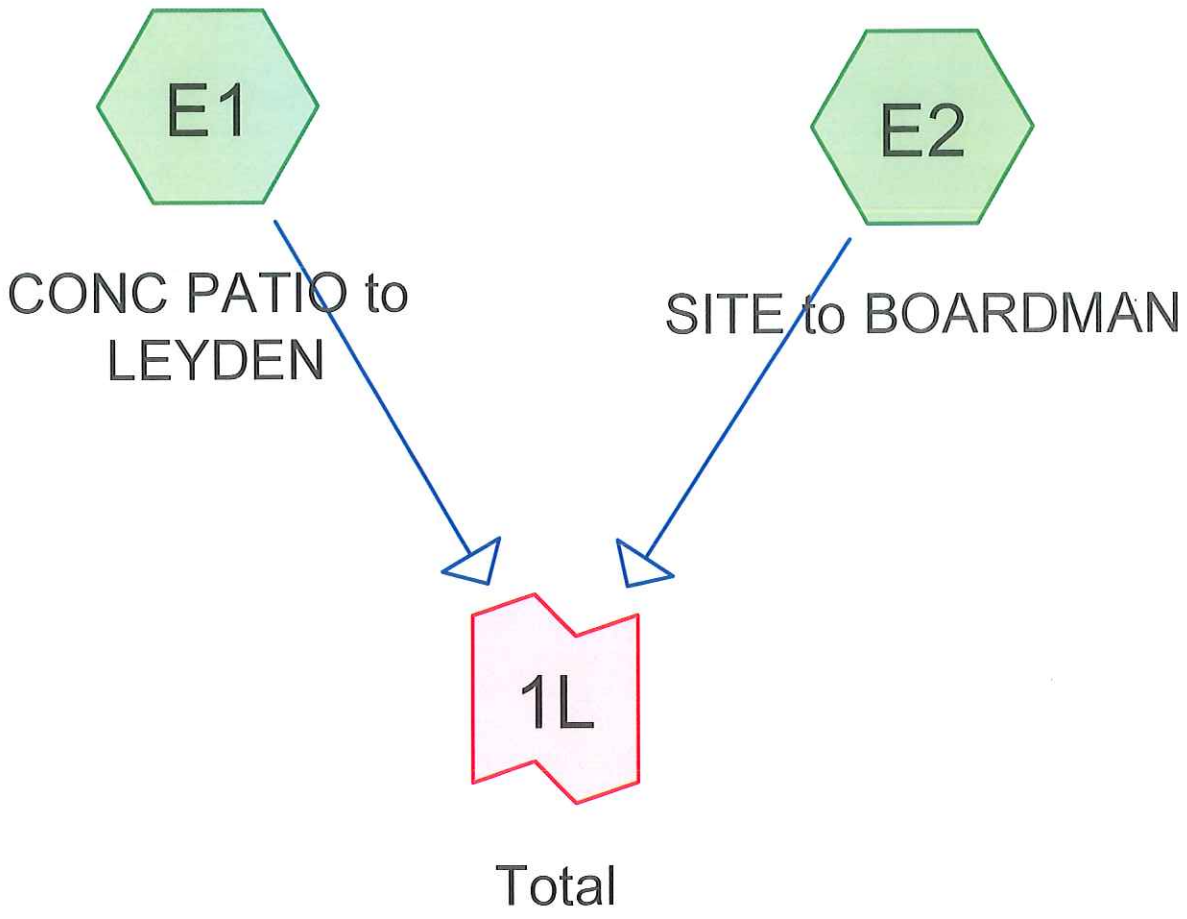
July 2019

Hayes Engineering, Inc

#33 Leyden Street
Boston, MA
Runoff Sumary

Total

Storm	Existing Q (C.F.S.)	Proposed Q (C.F.S.)	Change Q (C.F.S.)	Existing Volume (C.F.)	Proposed Volume (C.F)	Change Volume (C.F.)
2 Year	0.14	0.06	-0.08	483	204	-279
10 Year	0.31	0.29	-0.02	996	597	-399



Subcat Reach Pond Link

Routing Diagram for EX-33LEYDEN
Prepared by Microsoft, Printed 7/10/2019
HydroCAD® 10.00-24 s/n 03206 © 2018 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
3,529	61	>75% Grass cover, Good, HSG B (E2)
2,116	98	Paved parking, HSG B (E1, E2)
5,645	**75**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
5,645	HSG B	E1, E2
0	HSG C	
0	HSG D	
0	Other	
5,645		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover
0	3,529	0	0	0	3,529	>75% Grass cover, Good
0	2,116	0	0	0	2,116	Paved parking
0	**5,645**	**0**	**0**	**0**	**5,645**	**TOTAL AREA**

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 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 E1: CONC PATIO to LEYDEN Runoff Area=165 sf 100.00% Impervious Runoff Depth=2.87"
Tc=6.0 min CN=98 Runoff=0.01 cfs 39 cf

Subcatchment E2: SITE to BOARDMAN Runoff Area=5,480 sf 35.60% Impervious Runoff Depth=0.97"
Tc=6.0 min CN=74 Runoff=0.13 cfs 444 cf

Link 1L: Total Inflow=0.14 cfs 483 cf
Primary=0.14 cfs 483 cf

Total Runoff Area = 5,645 sf Runoff Volume = 483 cf Average Runoff Depth = 1.03"
62.52% Pervious = 3,529 sf 37.48% Impervious = 2,116 sf

Summary for Subcatchment E1: CONC PATIO to LEYDEN

Runoff = 0.01 cfs @ 12.09 hrs, Volume= 39 cf, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Rainfall=3.10"

Area (sf)	CN	Description
165	98	Paved parking, HSG B
165		100.00% Impervious Area

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

Summary for Subcatchment E2: SITE to BOARDMAN

Runoff = 0.13 cfs @ 12.10 hrs, Volume= 444 cf, Depth= 0.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Rainfall=3.10"

Area (sf)	CN	Description
1,951	98	Paved parking, HSG B
3,529	61	>75% Grass cover, Good, HSG B
5,480	74	Weighted Average
3,529		64.40% Pervious Area
1,951		35.60% Impervious Area

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

Summary for Link 1L: Total

Inflow Area = 5,645 sf, 37.48% Impervious, Inflow Depth = 1.03" for 2 Year event
Inflow = 0.14 cfs @ 12.10 hrs, Volume= 483 cf
Primary = 0.14 cfs @ 12.10 hrs, Volume= 483 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 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 E1: CONC PATIO to LEYDEN Runoff Area=165 sf 100.00% Impervious Runoff Depth=4.36"
Tc=6.0 min CN=98 Runoff=0.02 cfs 60 cf

Subcatchment E2: SITE to BOARDMAN Runoff Area=5,480 sf 35.60% Impervious Runoff Depth=2.05"
Tc=6.0 min CN=74 Runoff=0.29 cfs 936 cf

Link 1L: Total Inflow=0.31 cfs 996 cf
Primary=0.31 cfs 996 cf

Total Runoff Area = 5,645 sf Runoff Volume = 996 cf Average Runoff Depth = 2.12"
62.52% Pervious = 3,529 sf 37.48% Impervious = 2,116 sf

Summary for Subcatchment E1: CONC PATIO to LEYDEN

Runoff = 0.02 cfs @ 12.09 hrs, Volume= 60 cf, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.60"

Area (sf)	CN	Description
165	98	Paved parking, HSG B
165		100.00% Impervious Area

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

Summary for Subcatchment E2: SITE to BOARDMAN

Runoff = 0.29 cfs @ 12.10 hrs, Volume= 936 cf, Depth= 2.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.60"

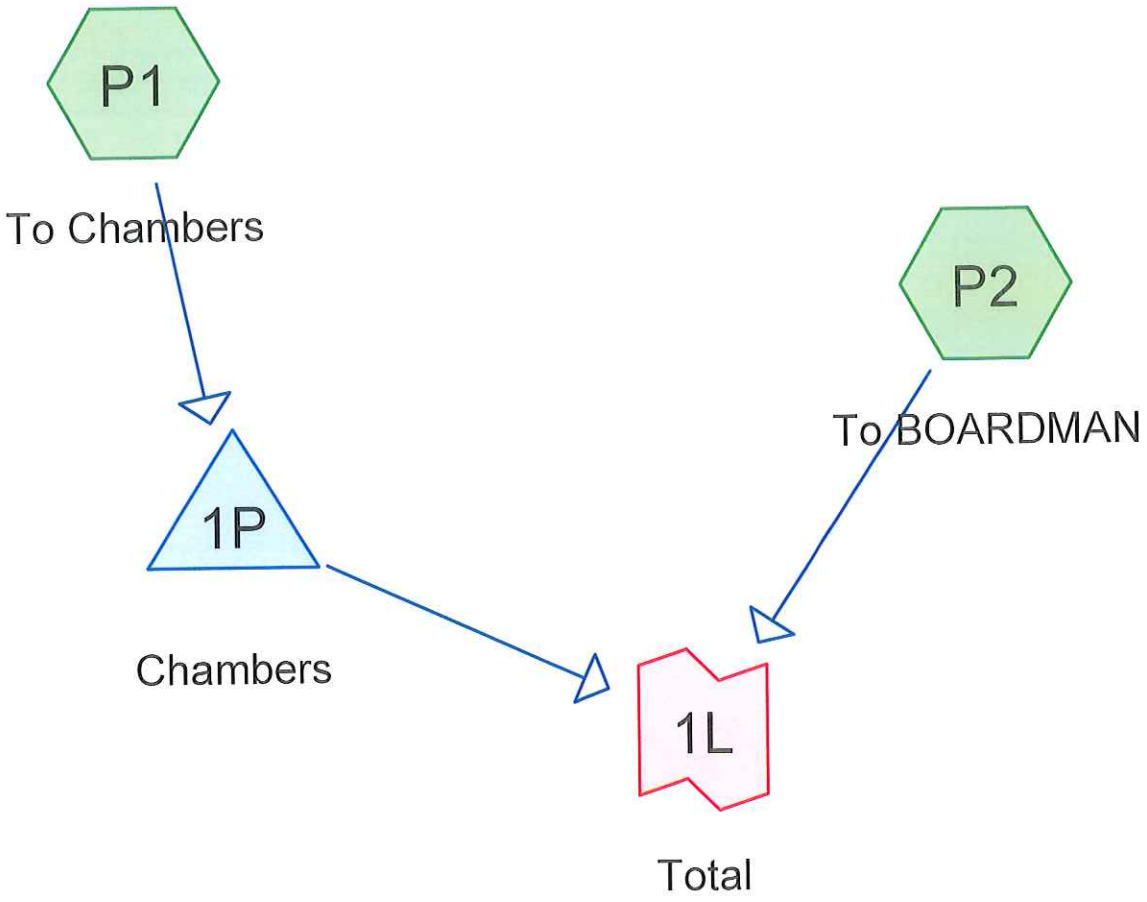
Area (sf)	CN	Description
1,951	98	Paved parking, HSG B
3,529	61	>75% Grass cover, Good, HSG B
5,480	74	Weighted Average
3,529		64.40% Pervious Area
1,951		35.60% Impervious Area

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

Summary for Link 1L: Total

Inflow Area = 5,645 sf, 37.48% Impervious, Inflow Depth = 2.12" for 10 Year event
Inflow = 0.31 cfs @ 12.10 hrs, Volume= 996 cf
Primary = 0.31 cfs @ 12.10 hrs, Volume= 996 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs



Subcat Reach Pond Link

Routing Diagram for PR-33LEYDEN
Prepared by Microsoft, Printed 7/10/2019
HydroCAD® 10.00-24 s/n 03206 © 2018 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
875	61	>75% Grass cover, Good, HSG B (P1, P2)
3,829	98	Paved parking, Building HSG B (P1)
941	98	Paved parking, HSG B (P2)
5,645	**92**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
5,645	HSG B	P1, P2
0	HSG C	
0	HSG D	
0	Other	
5,645		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover
0	875	0	0	0	875	>75% Grass cover, Good
0	941	0	0	0	941	Paved parking
0	3,829	0	0	0	3,829	Paved parking, Building
0	**5,645**	**0**	**0**	**0**	**5,645**	**TOTAL AREA**

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 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 P1: To Chambers Runoff Area=3,964 sf 96.59% Impervious Runoff Depth=2.76"
Tc=6.0 min CN=97 Runoff=0.26 cfs 911 cf

Subcatchment P2: To BOARDMAN Runoff Area=1,681 sf 55.98% Impervious Runoff Depth=1.46"
Tc=6.0 min CN=82 Runoff=0.06 cfs 204 cf

Pond 1P: Chambers Peak Elev=11.91' Storage=432 cf Inflow=0.26 cfs 911 cf
Discarded=0.01 cfs 911 cf Primary=0.00 cfs 0 cf Outflow=0.01 cfs 911 cf

Link 1L: Total Inflow=0.06 cfs 204 cf
Primary=0.06 cfs 204 cf

Total Runoff Area = 5,645 sf Runoff Volume = 1,115 cf Average Runoff Depth = 2.37"
15.50% Pervious = 875 sf 84.50% Impervious = 4,770 sf

Summary for Subcatchment P1: To Chambers

Runoff = 0.26 cfs @ 12.09 hrs, Volume= 911 cf, Depth= 2.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Rainfall=3.10"

	Area (sf)	CN	Description
	135	61	>75% Grass cover, Good, HSG B
*	3,829	98	Paved parking, Building HSG B
	3,964	97	Weighted Average
	135		3.41% Pervious Area
	3,829		96.59% Impervious Area

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

Summary for Subcatchment P2: To BOARDMAN

Runoff = 0.06 cfs @ 12.09 hrs, Volume= 204 cf, Depth= 1.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Rainfall=3.10"

Area (sf)	CN	Description
941	98	Paved parking, HSG B
740	61	>75% Grass cover, Good, HSG B
1,681	82	Weighted Average
740		44.02% Pervious Area
941		55.98% Impervious Area

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

Summary for Pond 1P: Chambers

Inflow Area = 3,964 sf, 96.59% Impervious, Inflow Depth = 2.76" for 2 Year event
Inflow = 0.26 cfs @ 12.09 hrs, Volume= 911 cf
Outflow = 0.01 cfs @ 10.45 hrs, Volume= 911 cf, Atten= 95%, Lag= 0.0 min
Discarded = 0.01 cfs @ 10.45 hrs, Volume= 911 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 11.91' @ 14.32 hrs Surf.Area= 552 sf Storage= 432 cf

Plug-Flow detention time= 287.0 min calculated for 911 cf (100% of inflow)
Center-of-Mass det. time= 286.9 min (1,053.7 - 766.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	10.50'	360 cf	**14.50'W x 38.07'L x 2.00'H Field A** 1,104 cf Overall - 205 cf Embedded = 899 cf x 40.0% Voids
#2A	11.00'	205 cf	**ADS_StormTech SC-160LP +Cap** x 30 Inside #1 Effective Size= 18.0"W x 12.0"H => 0.96 sf x 7.12'L = 6.8 cf Overall Size= 25.0"W x 12.0"H x 7.56'L with 0.44' Overlap 30 Chambers in 6 Rows
		565 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	10.50'	**1.020 in/hr Exfiltration over Surface area**
#2	Primary	14.80'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.01 cfs @ 10.45 hrs HW=10.54' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=10.50' (Free Discharge)
↑**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Link 1L: Total

Inflow Area = 5,645 sf, 84.50% Impervious, Inflow Depth = 0.43" for 2 Year event
Inflow = 0.06 cfs @ 12.09 hrs, Volume= 204 cf
Primary = 0.06 cfs @ 12.09 hrs, Volume= 204 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 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 P1: To Chambers Runoff Area=3,964 sf 96.59% Impervious Runoff Depth=4.25"
Tc=6.0 min CN=97 Runoff=0.40 cfs 1,403 cf

Subcatchment P2: To BOARDMAN Runoff Area=1,681 sf 55.98% Impervious Runoff Depth=2.72"
Tc=6.0 min CN=82 Runoff=0.12 cfs 382 cf

Pond 1P: Chambers Peak Elev=14.91' Storage=565 cf Inflow=0.40 cfs 1,403 cf
Discarded=0.01 cfs 1,188 cf Primary=0.24 cfs 216 cf Outflow=0.25 cfs 1,403 cf

Link 1L: Total Inflow=0.29 cfs 597 cf
Primary=0.29 cfs 597 cf

Total Runoff Area = 5,645 sf Runoff Volume = 1,785 cf Average Runoff Depth = 3.79"
15.50% Pervious = 875 sf 84.50% Impervious = 4,770 sf

Summary for Subcatchment P1: To Chambers

Runoff = 0.40 cfs @ 12.09 hrs, Volume= 1,403 cf, Depth= 4.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.60"

	Area (sf)	CN	Description
	135	61	>75% Grass cover, Good, HSG B
*	3,829	98	Paved parking, Building HSG B
	3,964	97	Weighted Average
	135		3.41% Pervious Area
	3,829		96.59% Impervious Area

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

Summary for Subcatchment P2: To BOARDMAN

Runoff = 0.12 cfs @ 12.09 hrs, Volume= 382 cf, Depth= 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.60"

Area (sf)	CN	Description
941	98	Paved parking, HSG B
740	61	>75% Grass cover, Good, HSG B
1,681	82	Weighted Average
740		44.02% Pervious Area
941		55.98% Impervious Area

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

Summary for Pond 1P: Chambers

Inflow Area = 3,964 sf, 96.59% Impervious, Inflow Depth = 4.25" for 10 Year event
Inflow = 0.40 cfs @ 12.09 hrs, Volume= 1,403 cf
Outflow = 0.25 cfs @ 12.35 hrs, Volume= 1,403 cf, Atten= 36%, Lag= 15.7 min
Discarded = 0.01 cfs @ 9.10 hrs, Volume= 1,188 cf
Primary = 0.24 cfs @ 12.35 hrs, Volume= 216 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 14.91' @ 12.35 hrs Surf.Area= 552 sf Storage= 565 cf

Plug-Flow detention time= 327.3 min calculated for 1,402 cf (100% of inflow)
Center-of-Mass det. time= 327.4 min (1,084.9 - 757.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	10.50'	360 cf	**14.50'W x 38.07'L x 2.00'H Field A** 1,104 cf Overall - 205 cf Embedded = 899 cf x 40.0% Voids
#2A	11.00'	205 cf	**ADS_StormTech SC-160LP +Cap** x 30 Inside #1 Effective Size= 18.0"W x 12.0"H => 0.96 sf x 7.12'L = 6.8 cf Overall Size= 25.0"W x 12.0"H x 7.56'L with 0.44' Overlap 30 Chambers in 6 Rows
		565 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	10.50'	**1.020 in/hr Exfiltration over Surface area**
#2	Primary	14.80'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.01 cfs @ 9.10 hrs HW=10.54' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.23 cfs @ 12.35 hrs HW=14.90' (Free Discharge)
└**2=Orifice/Grate** (Weir Controls 0.23 cfs @ 1.05 fps)

Summary for Link 1L: Total

Inflow Area = 5,645 sf, 84.50% Impervious, Inflow Depth = 1.27" for 10 Year event
Inflow = 0.29 cfs @ 12.35 hrs, Volume= 597 cf
Primary = 0.29 cfs @ 12.35 hrs, Volume= 597 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Pond 1P: Chambers - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-160LP +Cap (ADS StormTech® SC-160LP with cap length)
Effective Size= 18.0"W x 12.0"H => 0.96 sf x 7.12'L = 6.8 cf
Overall Size= 25.0"W x 12.0"H x 7.56'L with 0.44' Overlap

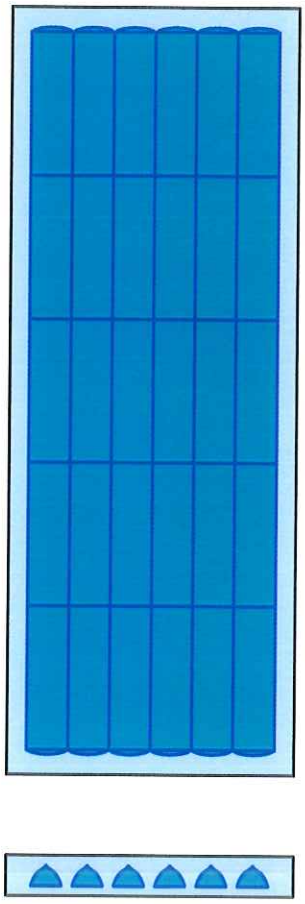
5 Chambers/Row x 7.12' Long +0.23' Cap Length x 2 = 36.07' Row Length +12.0" End Stone x 2 = 38.07' Base Length
6 Rows x 25.0" Wide + 12.0" Side Stone x 2 = 14.50' Base Width
6.0" Base + 12.0" Chamber Height + 6.0" Cover = 2.00' Field Height

30 Chambers x 6.8 cf = 205.1 cf Chamber Storage

1,103.9 cf Field - 205.1 cf Chambers = 898.8 cf Stone x 40.0% Voids = 359.5 cf Stone Storage

Chamber Storage + Stone Storage = 564.6 cf = 0.013 af
Overall Storage Efficiency = 51.1%
Overall System Size = 38.07' x 14.50' x 2.00'

30 Chambers
40.9 cy Field
33.3 cy Stone



Soil Map—Norfolk and Suffolk Counties, Massachusetts
(33 Leyden Street, Boston, MA)

Map Scale: 1:506 if printed on A landscape (11" x 8.5") sheet.

Meters: 0 5 10 20 30

Feet: 0 20 40 80 120

N

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

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Norfolk and Suffolk Counties, Massachusetts
Survey Area Data: Version 14, Sep 12, 2018

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

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

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
603	Urban land, wet substratum, 0 to 3 percent slopes	0.6	100.0%
Totals for Area of Interest		**0.6**	**100.0%**

Norfolk and Suffolk Counties, Massachusetts

603—Urban land, wet substratum, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: vkyl
Mean annual precipitation: 32 to 50 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 120 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Parent material: Excavated and filled land over herbaceous organic material and/or alluvium and/or marine deposits

Minor Components

Udorthents

Percent of map unit: 13 percent
Hydric soil rating: Unranked

Beaches

Percent of map unit: 2 percent
Hydric soil rating: Unranked

Data Source Information

Soil Survey Area: Norfolk and Suffolk Counties, Massachusetts
Survey Area Data: Version 14, Sep 12, 2018

CONSTRUCTION POLLUTION PREVENTION PLAN
AND EROSION AND SEDIMENTATION CONTROL
#33 LEYDEN STREET
BOSTON, MASSACHUSETTS

June 27, 2019

Project Name: Multi-family Building
#33 Leyden Street
Boston, MA 02128

Owner's Name: 33 Leyden Street LLC c/o William Mandell, Manager
#20C Del Carmine Street, Suite 101
Wakefield, MA 01880

Applicant's Name: 33 Leyden Street LLC c/o William Mandell, Manager
#20C Del Carmine Street, Suite 101
Wakefield, MA 01880

Party Responsible for Construction Pollution Prevention:

The Developer and Property Owner will be responsible for managing on-site prevention of construction pollution and erosion and sedimentation controls for the duration of project construction as outlined below. Upon completion of construction and stabilization of all disturbed areas, maintenance responsibility will transfer to the Homeowner's Association (if any) or other Property Owner designated Property Manager - Owner Entity.

Project Description:

The project consists of dwelling removal, multi-family building construction, parking lot construction, stormwater management system installation, and associated site work as shown on the accompanying Notice of Intent plan. Soil disturbing activities include: removal of existing structures, building construction, utility installation, parking lot grading, retention wall construction, installing stormwater management BMPs, walkway construction, and application of bituminous pavement. The area of the project is in a developed condition with existing building, driveway and other impervious surfaces.

Erosion and Sedimentation Control Measures During Construction Activities:

Storm Drain Inlet Protection

A temporary storm inlet protection filter (e.g. silt bag) will be placed in all catch on-site and near-site basin units. The purpose of the filter is to prevent the inflow of sediment into the closed drainage system(s). The filters shall remain in place until a permanent vegetative cover is established and the transport of sediment is no longer visibly apparent. The filter shall be inspected and maintained on a weekly basis and after significant storm events. Significant storm events are those having greater than one-quarter (1/4) inch of precipitation in a 24-hour period.

Subsurface Storage Facilities

No construction period runoff should be directed into subsurface facilities. The performance of these facilities shall be checked weekly and after significant storm events throughout construction.

Surface Stabilization

The surface of all disturbed areas shall be stabilized with during and after construction as outlined in the Erosion and Sedimentation Control Specifications below. Temporary measures shall be taken during construction to prevent erosion and sedimentation. No construction sediment shall be allowed to enter stormwater basin or chamber areas. All disturbed slopes shall be stabilized with a permanent vegetative cover. Some or all of the following measures can be used on the Project as conditions may warrant:

- Temporary Seeding
- Temporary Mulching
- Placement of Hay
- Placement of Geo-Synthetic Fabrics
- Hydroseeding
- Permanent Seeding
- Placement of Sod

Erosion and Sedimentation Control Specifications

PART I - GENERAL

A. The applicant and site contractors shall be responsible for reviewing, and taking steps to meet, all requirements contained in the Order of Conditions issued by the Boston Conservation Commission for this project.

B. Follow siltation control methods as outlined below, shown on the plan and as directed by Engineer.

C. Operations will be restricted to areas of work indicated on drawings (and clearly marked on site) and to areas that must be entered for construction of temporary or permanent facilities.

D. Siltation controls along areas of grading shall be checked frequently and maintained in functioning condition throughout the duration of site work to prevent encroachment upon adjacent resource areas. If siltation control barriers are damaged or washed away, contact the Conservation Commission and Engineer, and repair /remove materials and silt accumulations from fouled areas as directed.

E. Conservation Commission has authority to direct immediate permanent or temporary pollution control measures to prevent water quality contamination, including construction of temporary berms, sediment basins, sediment traps, slope drains and use of temporary mulches, mats or other control devices or methods as necessary to control erosion.

F. Temporary storage areas for demolition materials and mechanized equipment shall be kept as far away from adjacent resource areas as possible. Demolition materials shall be placed in appropriate containers for proper disposal off-site.

G. Equipment and trucks shall be routed only over the existing access and workers shall avoid foot traffic in vegetated areas adjacent to the work area.

PART 2 – POLLUTION CONTROL MEASURES

A. Sedimentation control devices (i.e. SiltSoxx, Silt Bag or other approved stormwater water filter device) shall be installed within existing on-site and nearby drainage catch basins to prevent sediments generated by the project from entering the site and municipal drainage systems. These devices shall be inspected frequently and maintained in functioning condition throughout site construction.

B. Discharge silt-laden water from excavations onto dewatering bags, filter fabric mats, and/or baled hay or straw sediment traps to ensure that only sediment-free water is released from this operation. Sediment traps, if needed, should be constructed by standard methods.

C. Do not pile soil backfill material without proper siltation controls or otherwise preventing the soil from washing away by high water or runoff.

D. Do not dump any materials into any catch basins, streams, wetlands, surface waters, or unspecified locations.

E. Do not pump silt-laden water from trenches or excavations into any catch basins, surface waters, streams, wetlands or natural or man-made channels leading thereto.

F. Do not dispose of or bury trees, brush, debris, paints, chemicals, asphalt products, concrete curing compounds, fuels, lubricants, insecticides, wash water from concrete trucks or hydroseeders, or any other pollutant on site or within any streams, wetlands, surface waters or natural or man-made channels leading thereto, or unspecified locations.

G. No disturbance or alteration of any kind allowed beyond the specified limit of work.

H. Prevent any operation of equipment outside the locus property or designated limit of work.

I. Take preventative measures to ensure that sediments generated by site work do not wash into catch basins and other components of the stormwater and drainage system.

PART 4 – STABILIZATION TECHNIQUES

A. Protecting and Minimizing Exposed Areas

Steps shall be taken to minimize area of bare earth exposure by preserving existing vegetation and providing soil stabilization. Equipment and trucks shall be routed only over the proposed work areas and workers shall minimize foot traffic in vegetated areas adjacent to the work area as much as possible. During site work, utilization of stabilization techniques are necessary for controlling erosion on exposed areas, including grading, seeding and otherwise stabilizing the areas.

B. Sediment And Erosion Control

Prior to any construction occurring proper erosion and siltation barriers and/or limit of work silt sock or construction fencing barriers will be installed so that throughout and until completion of construction, adjacent areas will be afforded maximum protection. Temporary stockpiles of soil shall be surrounded with an erosion control barrier to prevent sediments from exiting the subject property. All erosion control barriers are to be maintained and periodically inspected until areas of bare soil (if any) are stabilized to ensure that they are in functioning condition. Mirafi (or equivalent fabric) fencing and hay bales shall be

installed along the limit of work as shown on the above-mentioned plan. Any accumulations of sediments present along erosion control barriers shall be removed as soon as possible after deposition in order to ensure the effectiveness of all sedimentation controls.

C. Vegetational Covers

1. Temporary Vegetational Cover

Any area proposed for removal of vegetation where soil will be exposed for more than 10 days shall be mulched or otherwise treated to prevent erosion. On sediment-producing areas in the buffer zone, where the period of exposure will be more than 30 days, the following procedures should be followed for a cover of annual rye. When bare soils are not completely graded and vegetated by September 30 of any year, winter rye shall be planted as specified in table and mulched with three (3) inches of hay or straw.

a. Install needed surface water control measures.

b. Perform all cultural operations at right angles to the slope.

c. Establish grass or other ground cover species as recommended in the attached excerpt (pgs 144 - 146) from Massachusetts Erosion and Sedimentation Guidelines for Urban and Suburban Areas, 2003.

2. Permanent Vegetational Cover

To reduce damages from the potential incidence of sedimentation and runoff to other properties, and to avoid erosion on the site itself, a permanent type cover shall be established in disturbed areas located adjacent to resource areas immediately upon completion of grading. Seeding herbaceous cover is usually the most economical and practical way to stabilize any large area. For this site, all disturbed areas where lawns are desired will be seeded in Fall during the period of August 1 to October 1; or in spring by May 15 with a commercial lawn mixture utilizing standard landscape methods and as recommended by the seed manufacturer. Grass sod or landscape plantings may be used instead of seed, if preferred. Where moderate to steep slopes have been loamed and seeded, multiple lines of erosion control fencing or biodegradable erosion control mats shall be installed from top to bottom of slope to stabilize soil and seed layers.

In upland/ buffer zone areas, outside of lawn locations, where an erosion control - wildlife seed mixture is desired, prepare soil and use one of grass seed mixes #1 through #6 as recommended in the attached excerpts (pgs 136-137) from Massachusetts Erosion and Sedimentation Guidelines for Urban and Suburban Areas 2003, to establish a stable, permanent cover.

REFERENCES

Department of Environmental Protection, Bureau of Resource Protection and U.S. Environmental Protection Agency, Massachusetts Erosion and Sedimentation Guidelines for Urban and Suburban Areas: A Guide for Planners, Designers and Municipal Officials. Massachusetts Executive Office of Environmental Affairs, Boston, Massachusetts, Reprint: May 2003.

Use low-maintenance native species wherever possible.

Planting should be timed to minimize the need for irrigation.

Sheet erosion, caused by the impact of rain on bare soil, is the source of most fine particles in sediment. To reduce this sediment load in runoff, the soil surface itself should be protected. The most efficient and economical means of controlling sheet and rill erosion is to establish vegetative cover. Annual plants which sprout rapidly and survive for only one growing season are suitable for establishing temporary vegetative cover. Temporary seeding is effective when combined with construction phasing so bare areas of the site are minimized at all times.

Temporary seeding may prevent costly maintenance operations on other erosion control systems. For example, sediment basin clean-outs will be reduced if the drainage area of the basin is seeded where grading and construction are not taking place. Perimeter dikes will be more effective if not choked with sediment.

Proper seedbed preparation and the use of quality seed are important in this practice just as in permanent seeding. Failure to carefully follow sound agronomic recommendations will often result in an inadequate stand of vegetation that provides little or no erosion control.

Soil that has been compacted by heavy traffic or machinery may need to be loosened. Successful growth usually requires that the soil be tilled before the seed is applied. Topsoiling is not necessary for temporary seeding; however, it may improve the chances of establishing temporary vegetation in an area.

Planting Procedures

Time of Planting

Planting should preferably be done between April 1 and June 30, and September 1 through September 30. If planting is done in the months of July and August, irrigation may be required. If planting is done between October 1 and March 31, mulching should be applied immediately after planting. If seeding is done during the summer months, irrigation of some sort will probably be necessary.

Site Preparation

Before seeding, install needed surface runoff control measures such as gradient terraces, interceptor dike/swales, level spreaders, and sediment basins.

Seedbed Preparation

The seedbed should be firm with a fairly fine surface.

Perform all cultural operations across or at right angles to the slope. See **Topsoiling** and **Surface Roughening** for more information on seedbed preparation. A minimum of 2 to 4 inches of tilled topsoil is required.

Annual ryegrass used for temporary seeding
Ryegrass reseeds itself and makes it difficult to establish a good cover of permanent vegetation.
Seed not broadcast evenly or rate too low
Results in patchy growth and erosion.

Maintenance

Inspect within 6 weeks of planting to see if stands are adequate. Check for damage after heavy rains. Stands should be uniform and dense. Fertilize, reseed, and mulch damaged and sparse areas immediately. Tack or tie down mulch as necessary.

Seeds should be supplied with adequate moisture. Furnish water as needed, especially in abnormally hot or dry weather or on adverse sites. Water application rates should be controlled to prevent runoff.

References

Massachusetts Department of Environmental Protection, Office of Watershed Management, Nonpoint Source Program, Massachusetts ***Nonpoint Source Management Manual***, Boston, Massachusetts, June, 1993.

North Carolina Department of Environment, Health, and Natural Resources, ***Erosion and Sediment Control Field Manual***, Raleigh, NC, February 1991.

U.S. Environmental Protection Agency, ***Storm Water Management For Construction Activities***, EPA-832-R- 92-005, Washington, DC, September, 1992.

Washington State Department of Ecology, ***Stormwater Management Manual for the Puget Sound Basin***, Olympia, WA, February, 1992.

Silt Curtain

A temporary sediment barrier installed parallel to the bank of a stream or lake. Used to contain the sediment produced by construction operations on the bank of a stream or lake and allow for its removal.

Where Practice Applies

The silt curtain is used along the banks of streams or lakes where sediment could pollute or degrade the stream or lake.

Seeding Dates

Seeding operations should be performed as an early spring seeding (April 1-May 15) with the use of cold treated seed. A late fall early winter dormant seeding (November 1 - December 15) can also be made, however the seeding rate will need to be increased by 50%.

Seeding Methods

Seeding should be performed by one of the following methods:

- Drill seedings (de-awned or de-bearded seed should be used unless the drill is equipped with special features to accept awned seed).
- Broadcast seeding with subsequent rolling, cultipacking or tracking the seeding with small track construction equipment. Tracking should be oriented up and down the slope.
- Hydroseeding with subsequent tracking. If wood fiber mulch is used, it should be applied as a separate operation after seeding and tracking to assure good seed to soil contact.

Mulch

Mulch the seedings with straw applied at the rate of ½ tons per acre. Anchor the mulch with erosion control netting or fabric on sloping areas.

Seed Mixtures for Permanent Cover

Recommended mixtures for permanent seeding are provided on the following pages. Select plant species which are suited to the site conditions and planned use. Soil moisture conditions, often the major limiting site factor, are usually classified as follows:

Dry - Sands and gravels to sandy loams. No effective moisture supply from seepage or a high water table.

Moist - Well drained to moderately well drained sandy loams, loams, and finer; or coarser textured material with moderate influence on root zone from seepage or a high water table.

Wet - All textures with a water table at or very near the soil surface, or with enduring seepage.

When other factors strongly influence site conditions, the plants selected must also be tolerant of these conditions.

Permanent Seeding Mixtures

Mix	Site	Seed Mixture	Seed, Pounds per: Acre	1,000 sf	Remarks
1	Dry	Little Bluestem or Broomsedge	10	0.25	* Use Warm Season planting procedure. * Roadsides
		Tumble Lovegrass*	1	0.10	* Sand and Gravel Stabilization
		Switchgrass	10	0.25	* Clover requires inoculation with nitrogen-fixing bacteria
		Bush Clover*	2	0.10	
		Red Top	1	0.10	* Rates for this mix are for PLS.
2	Dry	Deertongue	15	0.35	* Use Warm Season planting procedures.
		Broomsedge	10	0.25	* Acid sites/Mine spoil
		Bush Clover*	2	0.10	* Clover requires inoculation with nitrogen-fixing bacteria.
		Red Top	1	0.10	*Rates for this mix are for PLS.
3	Dry	Big Bluestem	10	0.25	* Use Warm Season planting procedures.
		Indian Grass	10	0.25	* Eastern Prairie appearance
		Switchgrass	10	0.25	* Sand and Gravel pits.
		Little Bluestem	10	0.25	* Golf Course Wild Areas
		Red Top or	1	0.10	* Sanitary Landfill Cover seeding
		Perennial Ryegrass	10	0.25	* Wildlife Areas *OK to substitute Poverty Dropseed in place of Red Top/Ryegrass. *Rates for this mix are for PLS.
4	Dry	Flat Pea	25	0.60	* Use Cool Season planting procedures
		Red Top or	2	0.10	* Utility Rights-of-Ways (tends to suppress
		Perennial Ryegrass	15	0.35	woody growth)
5	Dry	Little Bluestem	5	0.10	* Use Warm Season planting procedures.
		Switchgrass	10	0.25	* Coastal sites
		Beach Pea*	20	0.45	* Rates for Bluestein and Switchgrass are for
		Perennial Ryegrass	10	0.25	PLS.
6	Dry - Moist	Red Fescue	10	0.25	* Use Cool Season planting procedure.
		Canada Bluegrass	10	0.25	* Provides quick cover but is non-aggressive;
		Perennial Ryegrass	10	0.25	will tend to allow indigenous plant colonization.
		Red Top	1	0.10	* General erosion control on variety of sites, including forest roads, skid trails and landings.
7	Moist-Wet	Switchgrass	10	0.25	* Use Warm Season planting procedure.
		Virginia Wild Rye	5	0.10	* Coastal plain/flood plain
		Big Bluestem	15	0.35	* Rates for Bluestem and Switchgrass are for
		Red Top	1	0.10	PLS.

INSPECTION SCHEDULE and EVALUATION CHECKLIST

To be completed weekly and within 24-hours of significant rainfall events (greater than 1/4-inches in a 24-hour period).

Inspector's Name: _____ Date: _____

Qualifications: _____

_____

Days since last rainfall: _____ days Amount of last rainfall: _____inches

Stabilization Measures

Sub-Catchment	Date of Last Disturbance	Date of Next Disturbance	Stabilized (Yes or No)	Stabilized With:	Condition

Stabilization required: _____

_____

_____

_____

_____

_____

_____

To be performed by: _____ on or before: _____

SILTATION CONTROLS

Date of Inspection: _____

Silt Fence and Straw Bales or Silt Sock/ Wattle:

To Study Area:	Has sediment reached 1/3 height of silt fence? (Yes or No)	Depth of Silt (inches)	Is fence secure? (Yes or No)	Is there evidence of bypass or overtopping? (Yes or No)	Describe location of Problem(s), if any.

Maintenance required for silt fence and hay bales: _____

_____

_____

To be performed by: _____ on or before: _____

Other Best Management Practices:

BMP	In use? (Yes or No)	Maintenance Required? (Yes or No)	Describe location of Problem(s), if any.
Sweeping of Adjacent Roads			
Catch Basin Inlet Protection			
Sub-surface Infiltration			

Maintenance required: _____

_____

_____

Project File: BOS-0102

OPERATION AND MAINTENANCE PLAN
AND LONG-TERM POLLUTION PREVENTION PLAN
#33 LEYDEN STREET
BOSTON, MASSACHUSETTS

Date: June 27, 2019

Hayes Engineering, Inc.

Hayes Engineering, Inc.
603 Salem Street
Wakefield, MA 01880
Tel: (781) 246-2800
Fax :(781) 246-7596

OPERATION AND MAINTENANCE PLAN
#33 LEYDEN STREET
BOSTON, MASSACHUSETTS

June 27, 2019

GENERAL

The management plan incorporates a combination of three or more of the following chain of structural Best Management Practices to improve the water quality of the stormwater runoff from the proposed project.

1. Catch Basin
2. Stormceptor® STC 450i
3. StormTech® SC-160 LP
4. Parking Lot Sweeping
5. Nyoplast Roof Drain

These stormwater management facilities have unique characteristics, uses, planning considerations and maintenance requirements. The maintenance requirements, as suggested by the DEP in "Volume 2 Chapter 2: Structural BMP Specifications for the Massachusetts Stormwater Handbook", and the suggested schedules, are summarized in the following sections. It is suggested that the following guidelines be adhered to for a one-year cycle following completion of the project, then adjusted, as necessary, based on the results of the required inspections, unless otherwise stated.

Catch Basin

- Catch Basins should be inspected and cleaned a minimum of four (4) times per year and at the end of foliage and snow removal seasons for the first two years of operation. If the results of these cleanings reveal that less frequent cleaning is needed then the frequency may be adjusted but catch basins will be inspected and cleaned at least once annually.

- Sediment must be removed 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.

- All sediments and hydrocarbons should be properly handled and disposed, in accordance with local, state and federal guidelines and regulations.

Stormceptor® STC 450i Water Quality Chamber

Regulating the sediment and petroleum product input to the proposed subsurface chamber water quality system is the priority maintenance activity. Sediments and any oil spillage should be trapped and removed before they reach the chambers.

- Stormceptor chamber maintenance shall be performed on a regular basis as recommended by the manufacturer (described in the attached excerpt from the Stormceptor Maintenance Brochure obtained from the Stormceptor website (www.stormceptor.com) and as summarized herein.

- Sediment removal is recommended annually, but is likely to vary widely based on site conditions and loadings. Typical maintenance cleaning can be done with a vacuum truck. Inspection for each of the Stormceptor units will include a quantification of the sediment load and oil and grease volumes. This is easily made from the surface with a tube dipstick with ball valve inserted through the cleanout pipe or other access port. Depths of sediment indicating maintenance are presented in the following table for the various models. Inspection of the internal structure should be part of the routine inspection plan. The units are designed to accept 15% of their capacity in solids annually based on maximum drainage area loading. Removal of sediment, oils and grease from the system will depend on rates of accumulation. All sediment and oil waste materials shall be disposed of in accordance with all Federal, State and Local regulations.

StormTech® SC-160 LP Subsurface Stomwater Chambers

Recharger units are prone to failure due to clogging. Adherence to this aggressive maintenance plan and schedule preserves effectiveness of the system. Refer to the specifications outlined in the attached document titled "Isolator™ Row O & M Manual" (obtained from manufacturer's website at http://www.stormtech.com) and those provided below for system maintenance.

- The StormTech chambers will be inspected after every major storm for the first few months after construction and at least every 6 months for the first year of operation to ensure that proper function has been achieved. Water levels in the units should be recorded over several days to check drainage. Thereafter, the units will be inspected every other year (inspection frequency to be adjusted based upon rate of observed sediment accumulation).

- The Isolator row shall be cleaned with a "JetVac" or similar system using high pressure water nozzle and vacuum contained on a truck as specified in the manufacturer's O & M manual when the average depth of sediment in the chambers is more than 3 inches.

- Any required sediment cleaning or other action will be documented in a maintenance log kept by the property owner.

- Ponded water inside the units (as visible from the inspection ports) after 24 hours or several days most likely indicates the bottoms of the units are clogged.

In addition, Hayes Engineering, Inc. recommends the following to ensure that the chambers function well into the future.

- The Contractor shall verify that the required crushed stone and geotechnical fabric materials are clean and free of sediments and petroleum residue prior to, during and after the chamber system installation.

- Inspections of the chamber system shall be made by a registered professional engineer after every major storm for the first few months after construction to verify that proper function has been achieved. During these initial inspections, water levels in the chambers should be measured and recorded in a permanent log over several days to check the drainage duration and verify that sediments are not accumulating. If ponded water is present after 24 hours or an accumulation of sediment or debris is noted within the chambers, the Homeowners Association (or designated property manager) and engineer shall determine the cause for this condition and devise an action plan to improve system functionality. Any required maintenance or major repair will be documented in the permanent log book and be completed within seven business days, with a report of such to the Towns Engineer.

- Once the chamber system has been verified to perform as designed, interior chamber conditions shall be inspected at least annually. Post construction inspections (to be conducted through inspection ports) shall consist of documenting interior chamber and bed conditions, measured water depth, and presence of sediment. If inspection indicates that the system is clogged (ponding water present after 24 hours or sediment accumulations present), replacement or major repair actions may be required as determined by a professional engineer. In this case, the Homeowners Association (or designated property manager) and engineer shall determine the cause for this condition and devise an action plan. Any required maintenance or major repair will be documented in the permanent log book and be completed within seven business days, with a report of such to the Town Engineer.

- The inspection and maintenance responsibility for the subsurface system shall belong to the Homeowners Association (or otherwise designated property manager/ owner entity).

Nyoplast® Roof Drains

Nyoplast® drain basins are prone to failure due to grate clogging and sedimentation. Adherence to this maintenance plan and schedule preserves effectiveness of the system. Refer to the manufacturer specifications outlined in the attached document titled "Nyoplast Drain Basin Maintenance Considerations" (attached hereon and obtained from manufacturer's website at https://www.nyloplast-us.com/resources) for the recommended system inspection and maintenance schedule as summarized below. Inspections and maintenance actions conducted relative to the above described stormwater management devices shall be recorded in a permanent log.

- Visually inspect basin every two months or after two storm events during the first year after installation and conduct debris and sedimentation maintenance activities as necessary. After the first year, conduct yearly inspections and adjust inspection and maintenance schedule frequency dependent upon observed frequency of debris and sediment accumulation

- Inspections shall consist of identifying and presence of debris or obstructions on top of - and within the basin grate as well as the presence and amount of sediment and debris within the basin interior components (sump and pipes).
- Maintenance shall consist of removing debris and any sediments accumulations from the grate structure and depositing in a suitable container for disposal off-site. If significant accumulations of sediment, debris, or pipe obstructions are present within the basin, the basin interior components shall be cleaned using a vacuum truck.

Parking Lot Sweeping

In order to minimize the sediment load to the catch basin and those BMPs downstream it is planned to sweep the pavement areas and as conditions require. Based upon actual experience and documentation a revised schedule may be submitted but all pavement areas will be swept at least once annually. During construction the developer and property owner will be required to sweep Boardman Street at the lot entrance as needed to collect any off-site soil tracking by trucks and other vehicles. This will be done as needed with a hand held or mechanical sweeper.

Removal of Siltation Controls

All siltation controls and limit of work barriers, including silt socks and basin silt sacks, shall be removed with the approval of the Conservation Commission as soon as practical after paving, re-vegetation and total stabilization of the site. Unvegetated areas remaining in the area of the siltation controls shall be loamed and seeded with the appropriate groundcover to ensure re-vegetation as rapidly as possible after the removal of the siltation controls. In the case of all proposed stormwater management facilities, during construction of the proposed stormwater management system, the developer shall be the owner and party responsible for maintenance. Once development has been completed, the stormwater system maintenance responsibility will transfer to the Homeowners Association or other designated owner/manager as noted below.

Owner and Maintenance Responsibilities

Once the development is complete, the Homeowners Association or other designated owner entity will assume the responsibility of on-going maintenance, as well as the long-term pollution prevention plan, unless other legally-binding agreements are established with another entity.

O&M / LPPP
33 Leyden Street
Boston, MA
June 27, 2019

INSPECTION AND MAINTENANCE REPORT FORM
#33 LEYDEN STREET
BOSTON, MASSACHUSETTS

TO BE COMPLETED FOR REQUIRED INSPECTIONS AND MAINTENANCE
AT THE FREQUENCY SPECIFIED IN THE OPERATION AND MAINTENANCE PLAN

Inspector: _____ Date: _____

Inspector's Title: _____

Days Since Last Rainfall: _____ Amount of Last Rainfall: _____

	BMP	BMP Installed at Grade? (circle one)		BMP Maintenance Required or performed? (circle one)		Corrective Action Needed And Notes
1	Catch Basin inlets And gas traps	Yes	No	Yes	No	
2	Stormceptor® STC 450i	Yes	No	Yes	No	
3	StormTech® SC-160 LP - Subsurface Chambers	Yes	No	Yes	No	
4	Nyoplast Roof Runoff Drain Basin and Storage Structure	Yes	No	Yes	No	
5		Yes	No	Yes	No	
6		Yes	No	Yes	No	
7		Yes	No	Yes	No	

Additional Comments:
_____

LONG TERM POLLUTION PREVENTION PLAN
#33 LEYDEN STREET
BOSTON, MASSACHUSETTS

- Good housekeeping practices: Prevent or reduce pollutant runoff from the project development through the use of street sweeping, erosion control and catch basin cleaning. It should be noted that we are not seeking credit for TSS removal with street sweeping for this project.

- Provisions for storing materials and waste products inside or under cover: All materials stored on site should be stored in a neat and orderly fashion in their appropriate containers and, if possible, under a roof or other secure enclosure. Waste products should be placed in secure receptacles until they are emptied by a licensed solid waste management company in Massachusetts.

- Vehicle washing controls: The project is comprised of a multi-family residence building; therefore, the responsibility lies with the individual unit owners. The unit owners can prevent soap, scum and oily grit from entering the proposed stormwater system by using a professional car wash. On-site car washing shall be discouraged.

- Requirements for routine inspections and maintenance of stormwater BMPs: Follow the guidelines outlined in the project Operation & Maintenance Plan above.

- Spill prevention and response plans:

  Prevention: All materials stored on site should be stored in a neat and orderly fashion in their appropriate containers and, if possible, under a roof or other secure enclosure. Products should be kept in their original containers with the original manufacturer's label. Products should not be mixed with one another unless recommended by the manufacturer. If possible, all of the product should be used up before disposing of the container. The Manufacturer's recommendations for proper use and disposal should be followed.

  Response: Manufacturer's recommended methods for cleanup should be followed. Spills should be cleaned up immediately after discovery. The spill area shall be kept well ventilated and personnel shall wear appropriate protective clothing to prevent injury from contact with a hazardous substance. Spills of toxic or hazardous material shall be reported to the appropriate State and/or local authority in accordance with local and/or State regulations.

- Provisions for maintenance of lawns, gardens, and other landscaped areas: The project is comprised of a multi-family residence building, therefore, these activities should be left up to the Homeowners Association (or otherwise designated Property Manager/Owner Entity) to schedule and perform.

- Requirements for storage and use of fertilizers, herbicides, and pesticides (Should any questions arise about these materials the Order of Conditions for this project should be consulted if applicable):

Fertilizers: Fertilizers shall be applied in the minimum amounts recommended by the manufacturer. Once applied, fertilizers shall be worked into the soil to limit exposure to stormwater. Storage shall be stored under a roof or other secure enclosure. The contents of any partially used bags of fertilizers shall be transferred to a sealable plastic bag or bin to avoid spills.

Herbicides and Pesticides: Store herbicides and pesticides in original containers that are closed and labeled, in a secure area out of reach of children and pets. Avoid storing in damp areas where containers may become moist or rusty. Herbicides and Pesticides should not be stored near food. Follow the label instructions strictly about where and how much to apply. Do not put herbicides and pesticides in the trash or down the drain. Use rubber gloves when handling and use an appropriate cartridge mask if using products extensively.

- Pet waste management provisions: The project is comprised of a multi-family residence building; therefore, the responsibility lies with the individual unit owners who own pets to perform the clean up and disposal of their pet waste.

- Provisions for operation and management of septic systems: The project is comprised of single family house lots; therefore, the septic systems are privately owned and the responsibility for these activities lies with the individual homeowners to schedule and perform.

- Provisions for solid waste management: Waste products should be placed in secure receptacles until they are emptied by a licensed solid waste management company in Massachusetts.

- Snow disposal and plowing plans relative to Wetland Resource Areas: Snow disposal should be in accordance with the Bureau of Resource Protection Snow Disposal Guidelines, Guideline No. BRPG01-01 effective December 21, 2015.

- Winter Road Salt and/or Sand Use and Storage restrictions:

  Road Salt: Use and storage should be in accordance with the Bureau of Resource Protection Drinking Water Program Guidelines on Deicing Chemical (Road Salt) Storage, Guideline No. DWSG97-1 effective December 19, 1997.

  Sand: Whenever possible, use of environmentally friendly alternatives, i.e. calcium chloride and sand instead of salt for melting ice should be considered.

- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan: The responsibility lies with the Homeowners Association (or otherwise designated Proterty Manager /Owner entity.

Nyloplast® A DIVISION OF ADVANCED DRAINAGE SYSTEMS, INC.
Tomorrow's Drainage System Today

Nyloplast Drain Basin
Maintenance Considerations

Background:

The Nyloplast Drain Basin is an engineered PVC surface drainage structure. These drain basins are custom manufactured according to the plans/takeoff specified by the site engineer. Nyloplast Drain Basins have a quick production time, creates water tight connections, and provide simple and quick installations.

Installation shall be in accordance with Nyloplast installation procedures and those issued by local building/construction regulations. The required minimum sump located in the typical installation is for manufacturing purposes. Due to these manufacturing restrictions, the sump may collect sediment over time and the structure could require some maintenance.

Maintenance Recommendations

- Over the span of the first year of a new installation, visually inspect each basin every 2 months or after 2 storm events once the site has stabilized.
- Check for obstructions and debris at the openings of the grate and remove as needed.
- After cleaning the surface of the grate, remove the grate from the frame.
- Once the grate is removed from the frame, check for obstructions and debris inside the basin (including the sump and inlet and outlet pipes) and clean out as needed.
- A vacuum truck is best for the removal of debris when necessary. After the collection of the debris, it shall be disposed of according to the local environment requirements.
- After the maintenance or inspection of the structure completed, set the grate back in the frame so it sits flush and does not rock.
- Once the monitoring period is over, it is best to continually schedule maintenance based on the amount of debris or sediment that accumulates over time.

3130 Verona Avenue • Buford, Georgia 30518 • Tel: (770) 932-2443 • Fax: (770) 932-2490
www.nyloplast-us.com & www.ads-pipe.com

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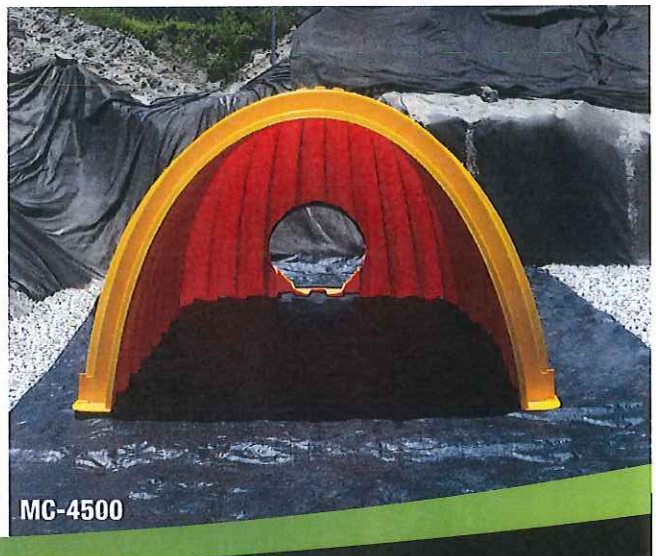
StormTech®
Detention • Retention • Water Quality
An ADS company

Isolator® Row O&M Manual


SC-740


MC-3500


MC-4500

THE MOST **ADVANCED** NAME IN WATER MANAGEMENT SOLUTIONS™

ADS®

THE ISOLATOR® ROW

INTRODUCTION

An important component of any Stormwater Pollution Prevention Plan is inspection and maintenance. The StormTech Isolator Row is a technique to inexpensively enhance Total Suspended Solids (TSS) removal and provide easy access for inspection and maintenance.

THE ISOLATOR ROW

The Isolator Row is a row of StormTech chambers, either SC-160LP, SC-310, SC-310-3, SC-740, DC-780, MC-3500 or MC-4500 models, that is surrounded with filter fabric and connected to a closely located manhole for easy access. The fabric-wrapped chambers provide for settling and filtration of sediment as storm water rises in the Isolator Row and ultimately passes through the filter fabric. The open bottom chambers and perforated sidewalls (SC-310, SC- 310-3 and SC-740 models) allow storm water to flow both vertically and horizontally out of the chambers. Sediments are captured in the Isolator Row protecting the storage areas of the adjacent stone and chambers from sediment accumulation.

Two different fabrics are used for the Isolator Row. A woven geotextile fabric is placed between the stone and the Isolator Row chambers. The tough geotextile provides a media for storm water filtration and provides a durable surface for maintenance operations. It is also designed to prevent scour of the underlying stone and remain intact during high pressure jetting. A non-woven fabric is placed over the chambers to provide a filter media for flows passing through the perforations in the sidewall of the chamber. The non-woven fabric is not required over the SC-160LP, DC-780, MC-3500 or MC-4500 models as these chambers do not have perforated side walls.

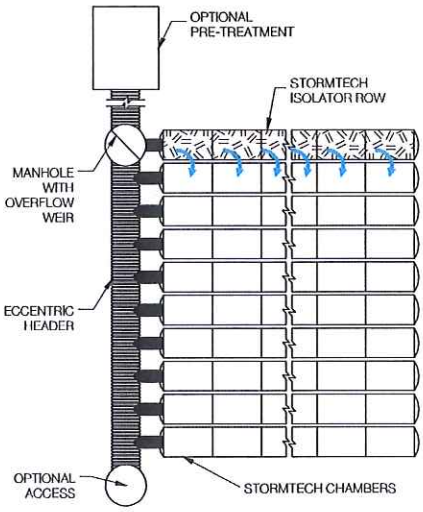
The Isolator Row is typically designed to capture the "first flush" and offers the versatility to be sized on a volume basis or flow rate basis. An upstream manhole not only provides access to the Isolator Row but typically includes a high flow weir such that storm water flowrates or volumes that exceed the capacity of the Isolator Row overtop the over flow weir and discharge through a manifold to the other chambers.

The Isolator Row may also be part of a treatment train. By treating storm water prior to entry into the chamber system, the service life can be extended and pollutants such as hydrocarbons can be captured. Pre-treatment best management practices can be as simple as deep sump catch basins, oil-water separators or can be innovative storm water treatment devices. The design of the treatment train and selection of pretreatment devices by the design engineer is often driven by regulatory requirements. Whether pretreatment is used or not, the Isolator Row is recommended by StormTech as an effective means to minimize maintenance requirements and maintenance costs.

Note: See the StormTech Design Manual for detailed information on designing inlets for a StormTech system, including the Isolator Row.

Looking down the Isolator Row from the manhole opening, woven geotextile is shown between the chamber and stone base.

StormTech Isolator Row with Overflow Spillway (not to scale)



ISOLATOR ROW INSPECTION/MAINTENANCE

INSPECTION

The frequency of inspection and maintenance varies by location. A routine inspection schedule needs to be established for each individual location based upon site specific variables. The type of land use (i.e. industrial, commercial, residential), anticipated pollutant load, percent imperviousness, climate, etc. all play a critical role in determining the actual frequency of inspection and maintenance practices.

At a minimum, StormTech recommends annual inspections. Initially, the Isolator Row should be inspected every 6 months for the first year of operation. For subsequent years, the inspection should be adjusted based upon previous observation of sediment deposition.

The Isolator Row incorporates a combination of standard manhole(s) and strategically located inspection ports (as needed). The inspection ports allow for easy access to the system from the surface, eliminating the need to perform a confined space entry for inspection purposes.

If upon visual inspection it is found that sediment has accumulated, a stadia rod should be inserted to determine the depth of sediment. When the average depth of sediment exceeds 3 inches throughout the length of the Isolator Row, clean-out should be performed.

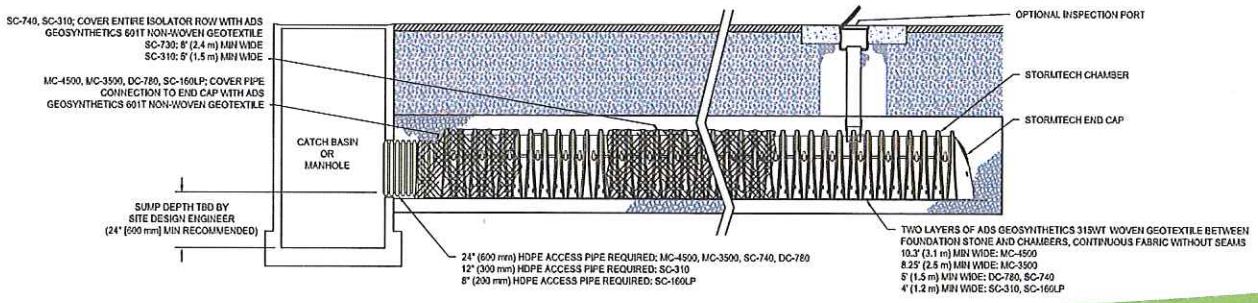
MAINTENANCE

The Isolator Row was designed to reduce the cost of periodic maintenance. By "isolating" sediments to just one row, costs are dramatically reduced by eliminating the need to clean out each row of the entire storage bed. If inspection indicates the potential need for maintenance, access is provided via a manhole(s) located on the end(s) of the row for cleanout. If entry into the manhole is required, please follow local and OSHA rules for a confined space entries.

Maintenance is accomplished with the JetVac process. The JetVac process utilizes a high pressure water nozzle to propel itself down the Isolator Row while scouring and suspending sediments. As the nozzle is retrieved, the captured pollutants are flushed back into the manhole for vacuuming. Most sewer and pipe maintenance companies have vacuum/JetVac combination vehicles. Selection of an appropriate JetVac nozzle will improve maintenance efficiency. Fixed nozzles designed for culverts or large diameter pipe cleaning are preferable. Rear facing jets with an effective spread of at least 45" are best. Most JetVac reels have 400 feet of hose allowing maintenance of an Isolator Row up to 50 chambers long. **The JetVac process shall only be performed on StormTech Isolator Rows that have AASHTO class 1 woven geotextile (as specified by StormTech) over their angular base stone.**

StormTech Isolator Row (not to scale)

Note: Non-woven fabric is only required over the inlet pipe connection into the end cap for SC-160LP, DC-780, MC-3500 and MC-4500 chamber models and is not required over the entire Isolator Row.



ISOLATOR ROW STEP BY STEP MAINTENANCE PROCEDURES

STEP 1

Inspect Isolator Row for sediment.

A) Inspection ports (if present)
   i. Remove lid from floor box frame
   ii. Remove cap from inspection riser
   iii. Using a flashlight and stadia rod,measure depth of sediment and record results on maintenance log.
   iv. If sediment is at or above 3 inch depth, proceed to Step 2. If not, proceed to Step 3.

B) All Isolator Rows
   i. Remove cover from manhole at upstream end of Isolator Row
   ii. Using a flashlight, inspect down Isolator Row through outlet pipe
      1. Mirrors on poles or cameras may be used to avoid a confined space entry
      2. Follow OSHA regulations for confined space entry if entering manhole
   iii. If sediment is at or above the lower row of sidewall holes (approximately 3 inches), proceed to Step 2. If not, proceed to Step 3.

STEP 2

Clean out Isolator Row using the JetVac process.

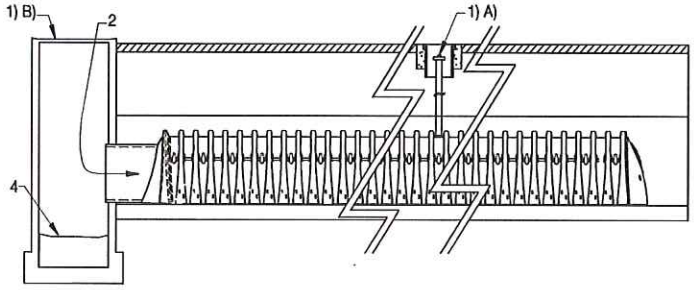
A) A fixed floor cleaning nozzle with rear facing nozzle spread of 45 inches or more is preferable
B) Apply multiple passes of JetVac until backflush water is clean
C) Vacuum manhole sump as required

STEP 3

Replace all caps, lids and covers, record observations and actions.

STEP 4

Inspect & clean catch basins and manholes upstream of the StormTech system.



SAMPLE MAINTENANCE LOG

Date	Stadia Rod Readings		Sediment Depth (1)–(2)	Observations/Actions	Inspector
	Fixed point to chamber bottom (1)	Fixed point to top of sediment (2)			
3/15/11	6.3 ft	none		New installation. Fixed point is CI frame at grade	DJM
9/24/11		6.2	0.1 ft	Some grit felt	SM
6/20/13		5.8	0.5 ft	Mucky feel, debris visible in manhole and in Isolator Row, maintenance due	NV
7/7/13	6.3 ft		0	System jetted and vacuumed	DJM

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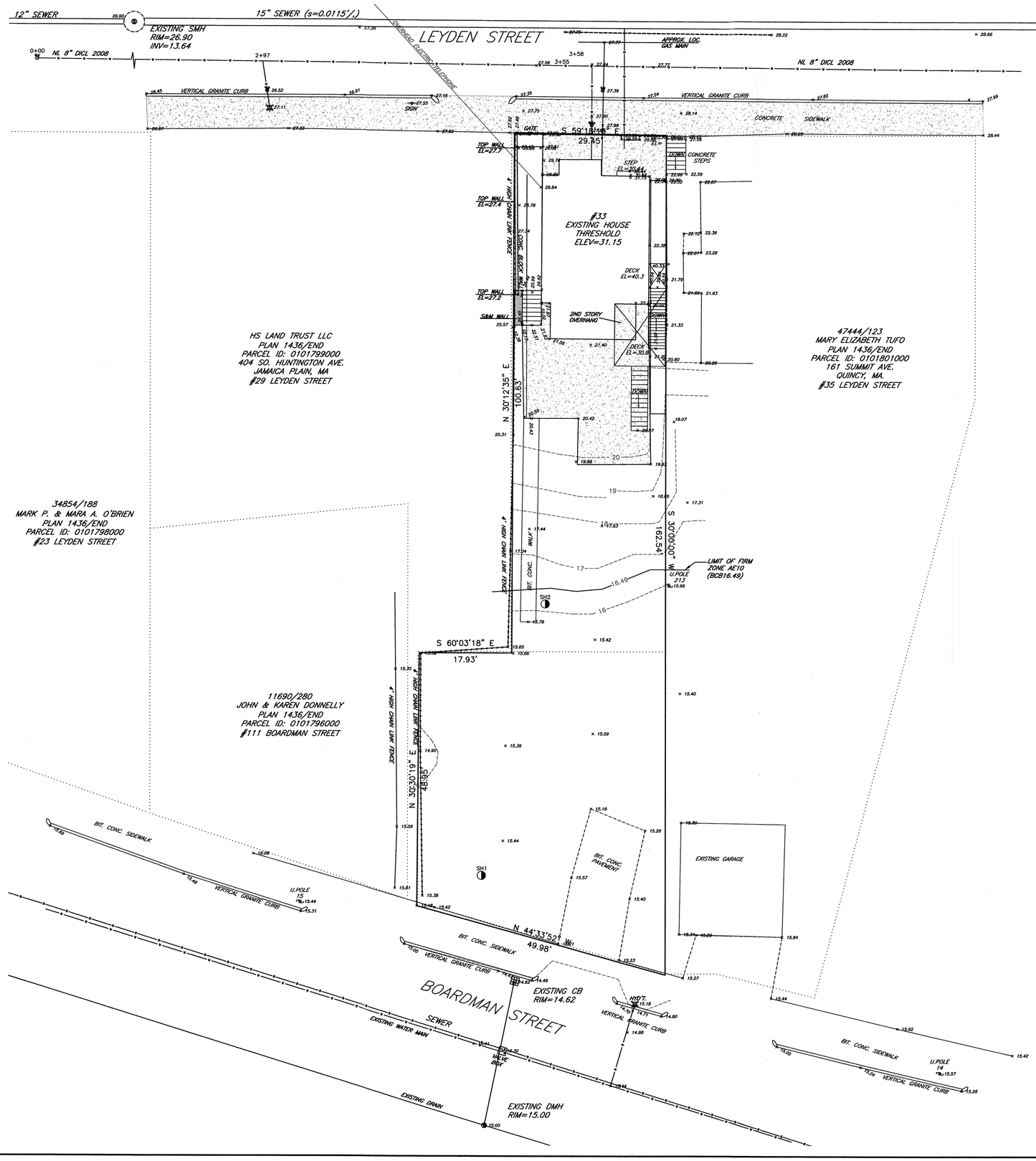
Advanced Drainage Systems, Inc.
4640 Trueman Blvd., Hilliard, OH 43026
1-800-821-6710 www.ads-pipe.com



PARCEL 0101800000 Reserved for BWSC Use Only:

LAND USE CODE = R3 "RESIDENTIAL 3-FAMILY"

LOCUS PROPERTY INFORMATION:

SUFFOLK REGISTRY OF DEEDS BOOK 56261 PAGE 166
BEING A PORTION OF LOT 6 ON PLAN BOOK 1436 PLAN END
CITY OF BOSTON PARCEL ID: 0101800000

ZONE: East Boston Neighborhood District 2F-4000

MINIMUM SETBACKS:
FRONT = 10 feet
SIDE = 7 feet
REAR = 40 feet
MIN. FRONTAGE = 40 feet
MIN. LOT AREA = 4,000 sf.

GENERAL NOTES:

1. PROPERTY LINE INFORMATION DEPICTED ON THIS PLAN IS APPROXIMATE ONLY. PROPERTY LINE REPRESENTS A COMPILATION OF THE LIMITS OF OCCUPATION OBSERVED IN THE FIELD ON SEPTEMBER 14, 2016 AND RECORD INFORMATION OBTAINED FROM THE SUFFOLK COUNTY REGISTRY OF DEEDS (SCRD).
2. TOPOGRAPHIC INFORMATION DEPICTED ON THIS PLAN IS THE RESULT OF AN ACTUAL FIELD SURVEY PERFORMED BY HAYES ENGINEERING, INC. ON SEPTEMBER 14, 2016.
3. DATUM IS CITY OF BOSTON SEWER BASE.
4. UNDERGROUND UTILITY INFORMATION DEPICTED ON THIS PLAN TAKEN FROM BOSTON WATER AND SEWER COMMISSION PLAN NUMBER B-184, SHEET 2, DATED AUGUST 1896.

CONTRACTORS UTILITY NOTES:

1. THE UNDERGROUND UTILITIES SHOWN HAVE BEEN COMPILED FROM FIELD SURVEY INFORMATION AND AVAILABLE EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. FURTHER, THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES AND DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION AVAILABLE.
2. THE CONTRACTOR(S) SHALL BE RESPONSIBLE FOR CHECKING AND VERIFYING THE LOCATIONS, SIZES, INVERTS AND ELEVATIONS OF ALL EXISTING UTILITIES SHOWN OR NOT SHOWN ON THESE PLANS AND SHALL NOTIFY THE ENGINEER IN WRITING OF ANY UTILITIES INTERFERING WITH THE PROPOSED DESIGN AND THE APPROPRIATE REMEDIAL ACTION PRIOR TO PROCEEDING WITH THE WORK.
3. THE CONTRACTOR(S) ARE RESPONSIBLE FOR CONTACTING DIG SAFE AT (800) 322-4844 PRIOR TO THE START OF ANY CONSTRUCTION.
4. THE CONTRACTOR(S) ARE RESPONSIBLE FOR OBTAINING THE FOLLOWING PERMITS, AS APPLICABLE:
   a. NPDES CONSTRUCTION GENERAL PERMIT
   b. STREET OPENING PERMIT(S)
   c. TRENCH PERMITS AS REQUIRED BY 520 CMR 14.00 and ASSOCIATED LOCAL PERMIT(S)
   d. ANY OTHER FEDERAL, LOCAL AND STATE PERMITS NOT PROVIDED TO THE CONTRACTOR PRIOR TO COMMENCEMENT OF WORK.

SHEET INDEX	
PLAN TITLE	SHEET DESIGNATION
Existing Conditions	C1
Grading and Drainage	C2
Utilities	C3
Details	C4

CITY OF BOSTON UTILITY COORDINATION SYSTEM (COBUCS) No. 1503672155600

Seal: COMMONWEALTH OF MASSACHUSETTS — PETER J. DOREN #33604 — PROFESSIONAL LAND SURVEYOR

Prepared For:

Owner / Applicant
OCEAN CITY DEVELOPMENT, LCC
BILL MANDELL
20 DEL CARMINE STREET
WAKEFIELD, MA 01880
781.486.3000

Prepared By:

Hayes Engineering, Inc.
603 Salem Street
Wakefield, MA 01880
Ph: 781.246.2800
Fax: 781.246.7596
www.hayeseng.com

Design By:	AMC
Drawn By:	AMC
Checked By:	PJO
Project File:	BOS-0102
Comp. No:	BOS69
☐	Issued For Permit
☒	Issued For Review
☐	Issued For Bid
☐	Issued For Construction
☒	Not For Construction

No.	Revision	Date
10		
9		
8		
7		
6	Conservation Comments	7/9/2019
5	ADA ACCESS. ROUTE	5/23/19
4	BWSC COMMENTS	2/27/2018
3	BWSC COMMENTS	01/08/2018
2	BWSC COMMENTS	10/19/2017
1		

Scale: 1"=10' (0' 5' 10' 20')

Date: May 9, 2017

Drawing Title:

SITE PLAN No. 17255
EXISTING CONDITIONS
33 LEYDEN STREET
BOSTON, MASSACHUSETTS

Drawing No.: C1

SHEET 1 OF 4

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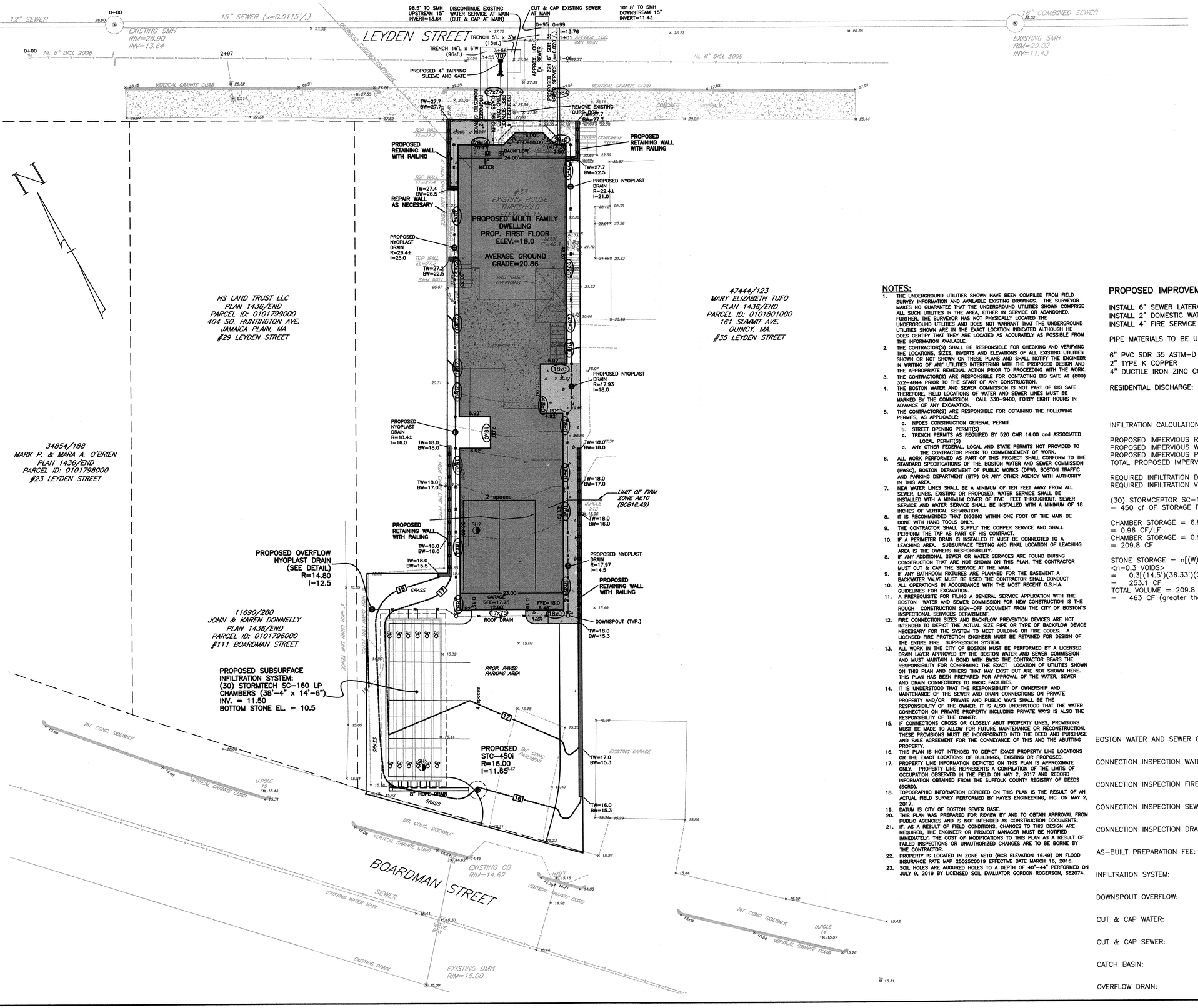

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LAND USE CODE = R3 "RESIDENTIAL 3-FAMILY"

NOTES:

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2. THE CONTRACTOR(S) SHALL BE RESPONSIBLE FOR CHECKING AND VERIFYING THE LOCATIONS, SIZES, INVERTS AND ELEVATIONS OF ALL EXISTING UTILITIES SHOWN OR NOT SHOWN ON THESE PLANS AND SHALL NOTIFY THE ENGINEER IN WRITING OF ANY UTILITIES INTERFERRING WITH THE PROPOSED DESIGN AND THE APPROPRIATE REMEDIAL ACTION PRIOR TO PROCEEDING WITH THE WORK.
3. THE CONTRACTOR(S) ARE RESPONSIBLE FOR CONTACTING DIG SAFE AT (800) 322-4844 PRIOR TO THE START OF ANY CONSTRUCTION.
4. THE BOSTON WATER AND SEWER COMMISSION IS NOT PART OF DIG SAFE THEREFORE, FIELD LOCATIONS OF WATER AND SEWER LINES MUST BE MARKED BY THE COMMISSION, CALL 330-9400, FORTY EIGHT HOURS IN ADVANCE OF ANY EXCAVATION.
5. THE CONTRACTOR(S) ARE RESPONSIBLE FOR OBTAINING THE FOLLOWING PERMITS, AS APPLICABLE:
   a. NPDES CONSTRUCTION GENERAL PERMIT
   b. STREET OPENING PERMIT(S)
   c. TRENCH PERMITS AS REQUIRED BY 520 CMR 14.00 and ASSOCIATED LOCAL PERMIT(S)
   d. ANY OTHER FEDERAL, LOCAL AND STATE PERMITS NOT PROVIDED TO THE CONTRACTOR PRIOR TO COMMENCEMENT OF WORK.
6. ALL WORK PERFORMED AS PART OF THIS PROJECT SHALL CONFORM TO THE STANDARD SPECIFICATIONS OF THE BOSTON WATER AND SEWER COMMISSION (BWSC), BOSTON DEPARTMENT OF PUBLIC WORKS (DPW), BOSTON TRAFFIC AND PARKING DEPARTMENT (BTP) OR ANY OTHER AGENCY WITH AUTHORITY IN THIS AREA.
7. NEW WATER LINES SHALL BE A MINIMUM OF TEN FEET AWAY FROM ALL SEWER, LINES, EXISTING OR PROPOSED. WATER SERVICE SHALL BE INSTALLED WITH A MINIMUM COVER OF FIVE FEET THROUGHOUT. SEWER SERVICE AND WATER SERVICE SHALL BE INSTALLED WITH A MINIMUM OF 18 INCHES OF VERTICAL SEPARATION.
8. IT IS RECOMMENDED THAT DIGGING WITHIN ONE FOOT OF THE MAIN BE DONE WITH HAND TOOLS ONLY.
9. THE CONTRACTOR SHALL SUPPLY THE COPPER SERVICE AND SHALL PERFORM THE TAP AS PART OF HIS CONTRACT.
10. IF A PERIMETER DRAIN IS INSTALLED IT MUST BE CONNECTED TO A LEACHING AREA. SUBSURFACE TESTING AND FINAL LOCATION OF LEACHING AREA IS THE OWNERS RESPONSIBILITY.
8. IF ANY ADDITIONAL SEWER OR WATER SERVICES ARE FOUND DURING CONSTRUCTION THAT ARE NOT SHOWN ON THIS PLAN, THE CONTRACTOR MUST CUT & CAP THE SERVICE AT THE MAIN.
9. IF ANY BATHROOM FIXTURES ARE PLANNED FOR THE BASEMENT A BACKWATER VALVE MUST BE USED THE CONTRACTOR SHALL CONDUCT
10. ALL OPERATIONS IN ACCORDANCE WITH THE MOST RECENT O.S.H.A. GUIDELINES FOR EXCAVATION.
11. A PREREQUISITE FOR FILING A GENERAL SERVICE APPLICATION WITH THE BOSTON WATER AND SEWER COMMISSION FOR NEW CONSTRUCTION IS THE ROUGH CONSTRUCTION SIGN-OFF DOCUMENT FROM THE CITY OF BOSTON'S INSPECTIONAL SERVICES DEPARTMENT.
12. FIRE CONNECTION SIZES AND BACKFLOW PREVENTION DEVICES ARE NOT INTENDED TO DEPICT THE ACTUAL SIZE PIPE OR TYPE OF BACKFLOW DEVICE NECESSARY FOR THE SYSTEM TO MEET BUILDING OR FIRE CODES. A LICENSED FIRE PROTECTION ENGINEER MUST BE RETAINED FOR DESIGN OF THE ENTIRE FIRE SUPPRESSION SYSTEM.
13. ALL WORK IN THE CITY OF BOSTON MUST BE PERFORMED BY A LICENSED DRAIN LAYER APPROVED BY THE BOSTON WATER AND SEWER COMMISSION AND MUST MAINTAIN A BOND WITH BWSC THE CONTRACTOR BEARS THE RESPONSIBILITY FOR CONFIRMING THE EXACT LOCATION OF UTILITIES SHOWN ON THIS PLAN AND OTHERS THAT MAY EXIST BUT ARE NOT SHOWN HERE. THIS PLAN HAS BEEN PREPARED FOR APPROVAL OF THE WATER, SEWER AND DRAIN CONNECTIONS TO BWSC FACILITIES.
14. IT IS UNDERSTOOD THAT THE RESPONSIBILITY OF OWNERSHIP AND MAINTENANCE OF THE SEWER AND DRAIN CONNECTIONS ON PRIVATE PROPERTY AND/OR PRIVATE AND PUBLIC WAYS SHALL BE THE RESPONSIBILITY OF THE OWNER. IT IS ALSO UNDERSTOOD THAT THE WATER CONNECTION ON PRIVATE PROPERTY INCLUDING PRIVATE WAYS IS ALSO THE RESPONSIBILITY OF THE OWNER.
15. IF CONNECTIONS CROSS OR CLOSELY ABUT PROPERTY LINES, PROVISIONS MUST BE MADE TO ALLOW FOR FUTURE MAINTENANCE OR RECONSTRUCTION. THESE PROVISIONS MUST BE INCORPORATED INTO THE DEED AND PURCHASE AND SALE AGREEMENT FOR THE CONVEYANCE OF THIS AND THE ABUTTING PROPERTY.
16. THIS PLAN IS NOT INTENDED TO DEPICT EXACT PROPERTY LINE LOCATIONS OR THE EXACT LOCATIONS OF BUILDINGS, EXISTING OR PROPOSED.
17. PROPERTY LINE INFORMATION DEPICTED ON THIS PLAN IS APPROXIMATE ONLY. PROPERTY LINE REPRESENTS A COMPILATION OF THE LIMITS OF OCCUPATION OBSERVED IN THE FIELD ON MAY 2, 2017 AND RECORD INFORMATION OBTAINED FROM THE SUFFOLK COUNTY REGISTRY OF DEEDS (SCRD).
18. TOPOGRAPHIC INFORMATION DEPICTED ON THIS PLAN IS THE RESULT OF AN ACTUAL FIELD SURVEY PERFORMED BY HAYES ENGINEERING, INC. ON MAY 2, 2017.
19. DATUM IS CITY OF BOSTON SEWER BASE.
20. THIS PLAN WAS PREPARED FOR REVIEW BY AND TO OBTAIN APPROVAL FROM PUBLIC AGENCIES AND IS NOT INTENDED AS CONSTRUCTION DOCUMENTS.
21. IF, AS A RESULT OF FIELD CONDITIONS, CHANGES TO THIS DESIGN ARE REQUIRED, THE ENGINEER OR PROJECT MANAGER MUST BE NOTIFIED IMMEDIATELY. THE COST OF MODIFICATIONS TO THIS PLAN AS A RESULT OF FAILED INSPECTIONS OR UNAUTHORIZED CHANGES ARE TO BE BORNE BY THE CONTRACTOR.
22. PROPERTY IS LOCATED IN ZONE AE10 (BCB ELEVATION 16.49) ON FLOOD INSURANCE RATE MAP 25025C0019 EFFECTIVE DATE MARCH 16, 2016.
23. SOIL HOLES ARE AUGURED HOLES TO A DEPTH OF 40"-44" PERFORMED ON JULY 9, 2019 BY LICENSED SOIL EVALUATOR GORDON ROGERSON, SE2074.

PROPOSED IMPROVEMENTS TO THE PROPERTY:

INSTALL 6" SEWER LATERAL (26 LF.)
INSTALL 2" DOMESTIC WATER SERVICE (20 LF.)
INSTALL 4" FIRE SERVICE (20 LF.)

PIPE MATERIALS TO BE USED:

6" PVC SDR 35 ASTM-D 3034
2" TYPE K COPPER
4" DUCTILE IRON ZINC COATED CLASS 56 CLDI

RESIDENTIAL DISCHARGE: 3 BR/UNIT x 3 UNITS
= 9 BEDROOMS
9 BR x 110 GPD/BR
990 GPD

INFILTRATION CALCULATIONS:

PROPOSED IMPERVIOUS ROOF AREA: 2344 sf.
PROPOSED IMPERVIOUS WALK AREA: 876 sf.
PROPOSED IMPERVIOUS PARKING AREA: 1550 sf.
TOTAL PROPOSED IMPERVIOUS AREA: 4770 sf.

REQUIRED INFILTRATION DEPTH: 1.0"
REQUIRED INFILTRATION VOLUME: 4770 sf. X 1.0" = 398 cf.

(30) STORMCEPTOR SC-160LP CHAMBERS AT 15.0cf PER CHAMBER
= 450 cf OF STORAGE PROVIDED

CHAMBER STORAGE = 6.85 CF/CHAMBER / (85.4"/12")
= 0.96 CF/LF
CHAMBER STORAGE = 0.96 CF/LF * 36.33 LF * 6 CHAMBERS
= 209.8 CF

STONE STORAGE = n[(W)(L)(H) – (TOTAL CHAMBER VOLUME)]
<n=0.3 VOIDS>
= 0.3[(14.5')(36.33')(2.0') – 209.8 CF]
= 253.1 CF
TOTAL VOLUME = 209.8 CF (CHAMBERS) + 253.1 CF (STONE VOIDS)
= 463 CF (greater than 398 CF required)

BOSTON WATER AND SEWER COMMISSION INSPECTIONS:

CONNECTION INSPECTION WATER: _____ NAME _____ DATE
CONNECTION INSPECTION FIRE: _____ NAME _____ DATE
CONNECTION INSPECTION SEWER: _____ NAME _____ DATE
CONNECTION INSPECTION DRAIN: _____ NAME _____ DATE
AS-BUILT PREPARATION FEE: _____ NAME _____ DATE
INFILTRATION SYSTEM: _____ NAME _____ DATE
DOWNSPOUT OVERFLOW: _____ NAME _____ DATE
CUT & CAP WATER: _____ NAME _____ DATE
CUT & CAP SEWER: _____ NAME _____ DATE
CATCH BASIN: _____ NAME _____ DATE
OVERFLOW DRAIN: _____ NAME _____ DATE

Prepared For:

Owner / Applicant
OCEAN CITY DEVELOPMENT, LCC
BILL MANDELL
20 DEL CARMINE STREET
WAKEFIELD, MA 01880
781.486.3000

Prepared By:

Hayes Engineering, Inc.
603 Salem Street
Wakefield, MA 01880
Ph: 781.246.2800
Fax: 781.246.7596
www.hayeseng.com

Design By: AMC
Drawn By: AMC
Checked By: PJO
Project File: BOS-0102
Comp. No: BOS69
☐ Issued For Permit
☒ Issued For Review
☐ Issued For Bid
☐ Issued For Construction
☒ Not For Construction

No.	Revision	Date
10		
9		
8		
7		
6	Conservation Comments	7/9/2019
5	ADA ACCESS ROUTE	5/23/19
4	BWSC COMMENTS	2/27/2018
3	BWSC COMMENTS	01/08/2018
2	BWSC COMMENTS	10/19/2017
1		

Scale: 1"=10'
0' 5' 10' 20'

Date: May 9, 2017

Drawing Title:

SITE PLAN No. 17255
GRADING & DRAINAGE
33 LEYDEN STREET
BOSTON, MASSACHUSETTS

7/10/19

Seal:

COMMONWEALTH OF MASSACHUSETTS
PETER J. OOREN
CIVIL
No. 27145
REGISTERED
PROFESSIONAL ENGINEER

Drawing No.:

C2

SHEET 2 OF 4

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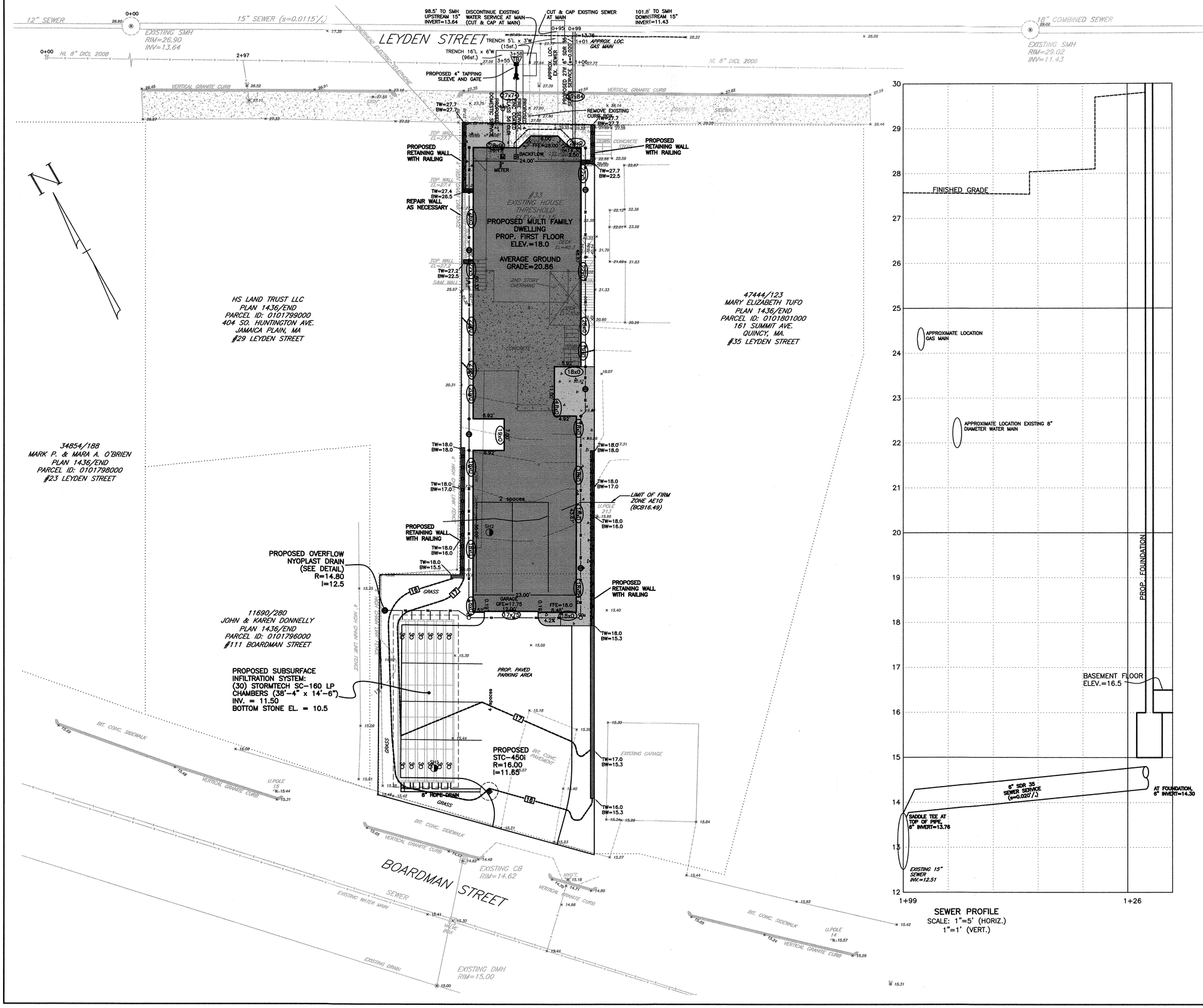
LAND USE CODE = R3 "RESIDENTIAL 3-FAMILY"



SEWER PROFILE
SCALE: 1"=5' (HORIZ.)
1"=1' (VERT.)

Prepared For:

Owner / Applicant
OCEAN CITY DEVELOPMENT, LCC
BILL MANDELL
20 DEL CARMINE STREET
WAKEFIELD, MA 01880
781.486.3000

Prepared By:

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1		

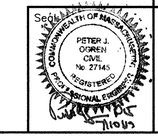
Scale: 1"=10'

Date: May 9, 2017

Drawing Title:

SITE PLAN No. 17255
UTILITIES
33 LEYDEN STREET
BOSTON, MASSACHUSETTS

Seal:



Drawing No.:

C3

SHEET 3 OF 4

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TABLE II - "a" DIMENSION - FEET		
PIPE DIAMETER - INCHES	90° FITTING	OTHERS
6, 8, 10 & 12	1 - 6	1 - 0
16 & 20	2 - 0	1 - 6
24" - 30"	3 - 0	2 - 0

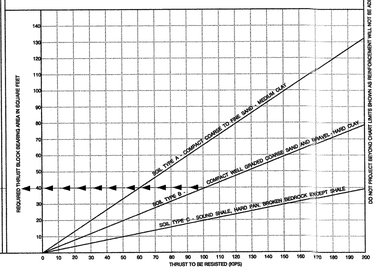
TABLE I - THRUST - KIPS (WATER PRESSURE = 200 P.S.I.)										
PIPE DIAMETER INCHES	6	8	10	12	16	20	24	30	36	42
DEAD ENDS AND TEES	5.6	10	15.8	22.6	40.2	62.8	90.4	141.0	203.0	277.0
ANGLE FITTINGS 90°	7.9	14.2	22.4	32.0	56.8	88.8	127.7	199.0	286.5	390.0
ANGLE FITTINGS 67 1/2°	-	11.1	17.6	25.1	44.7	70.0	100.2	157.0	226.0	309.0
ANGLE FITTINGS 45 1/4°	-	-	14.9	21.2	37.9	59.2	85.1	133.0	192.0	261.0
ANGLE FITTINGS 40°	-	-	-	17.3	30.8	48.1	69.0	108.0	156.0	212.0
ANGLE FITTINGS 33 3/4°	-	-	-	13.1	23.3	36.5	52.5	82.0	118.0	161.0
ANGLE FITTINGS 22 1/2°	-	-	-	8.8	15.7	24.5	35.2	55.0	79.5	108.0

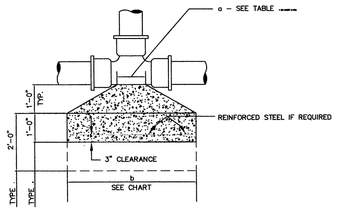
DESIGN THRUST BLOCKS OR OTHER SUITABLE ANCHORAGE TO SUIT ACTUAL CONDITIONS

REINFORCING STEEL EACH WAY				THRUST BLOCK DIMENSIONS	
				b = WIDTH	d = DEPTH
TYPE I THRUST BLOCK		TYPE II THRUST BLOCK			
SOIL TYPE		SOIL TYPE			
A	B	C	A	B	C
#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	18'-0	8'-0
#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	16'-0	8'-0
#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	14'-0	8'-0
#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	12'-0	8'-0
#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	10'-0	8'-0
#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	8'-0	8'-0
#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	7'-0	7'-0
#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	6'-0	6'-0
#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	5'-0	5'-0
#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	4'-0	4'-0
#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	3'-0	3'-0
#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	2'-0	2'-0

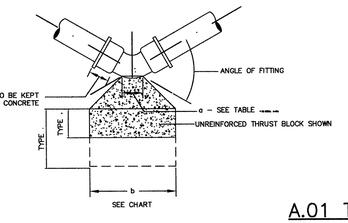
SPECIAL DESIGN REQUIRED — DO NOT USE — NO REINFORCEMENT REQUIRED

CHART
FOR DETERMINING
REQUIRED CONCRETE THRUST BLOCK DIMENSIONS AND REINFORCING

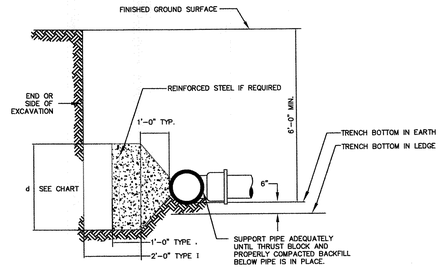




PLAN - TEE



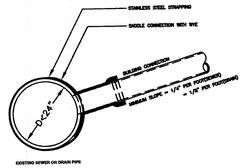
PLAN - BEND



TYPICAL SECTION
(FOR TEES, BENDS & DEAD ENDS)

A.01 TYPICAL THRUST BLOCK

NOT TO SCALE



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 FITTED ARE NOT ALLOWED.

B.12 SEWER CONNECTION DETAIL

NOT TO SCALE

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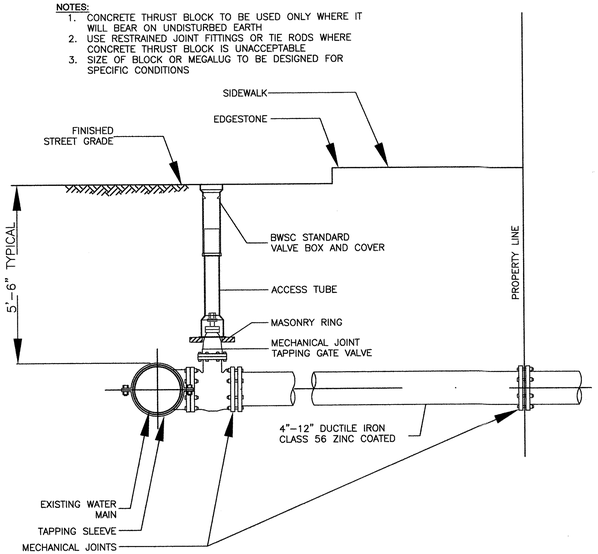
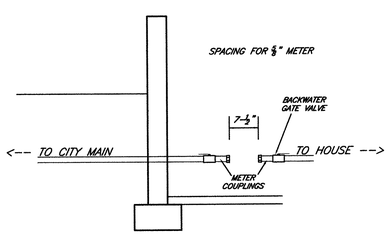
LAND USE CODE = R3 "RESIDENTIAL 3-FAMILY"

NOTES:
1. CONCRETE THRUST BLOCK TO BE USED ONLY WHERE IT WILL BEAR ON UNDISTURBED EARTH
2. USE RESTRAINED JOINT FITTINGS OR TIE RODS WHERE CONCRETE THRUST BLOCK IS UNACCEPTABLE
3. SIZE OF BLOCK OR MEGALUG TO BE DESIGNED FOR SPECIFIC CONDITIONS



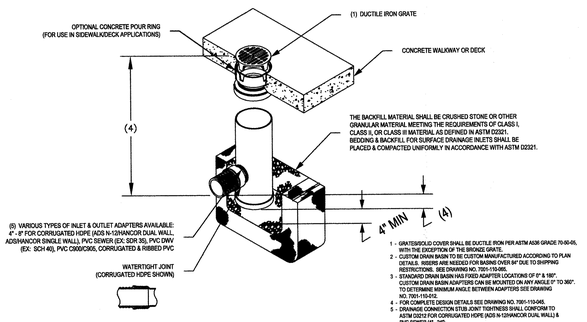
A.09 TAPPING SLEEVE AND VALVE

NOT TO SCALE



A.02 METER SPACING DETAIL

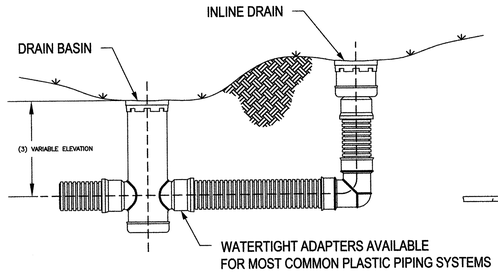
NOT TO SCALE



1 - GRATES/SOLID COVER SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-00-05, WITH THE EXCEPTION OF THE BRONZE GRATE.
2 - CUSTOM DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001-110-005.
3 - STANDARD DRAIN BASIN HAS FIXED ADAPTER LOCATIONS OF 0° & 180°. CUSTOM DRAIN BASIN ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-010.
4 - FOR COMPLETE DESIGN DETAILS SEE DRAWING NO. 7001-110-040.
5 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL) & PVC SEWER (4"-24").

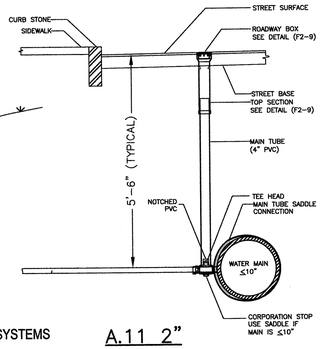
NYLOPLAST 8" DRAIN BASIN DETAIL

NOT TO SCALE



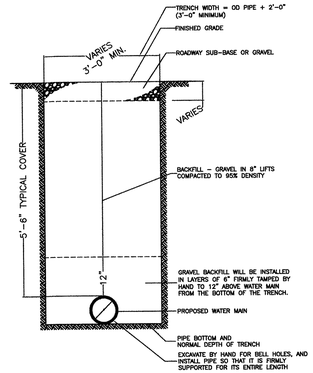
TYPICAL INSTALLATIONS

TYPICAL INSTALLATION OF NYLOPLAST DRAIN BASIN AND INLINE DRAIN



A.11 2" SERVICE CONNECTION

NOT TO SCALE

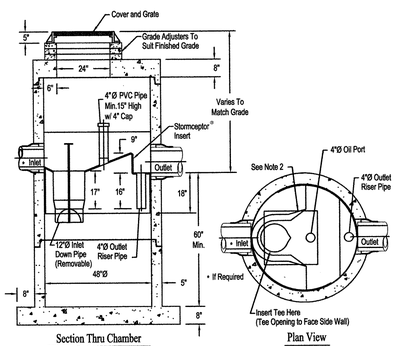


A.05 WATER TRENCH DETAIL

NOT TO SCALE

Rinker MATERIALS — Concrete Pipe Division

STC 450i Precast Concrete Stormceptor
(450 U.S. Gallon Capacity)



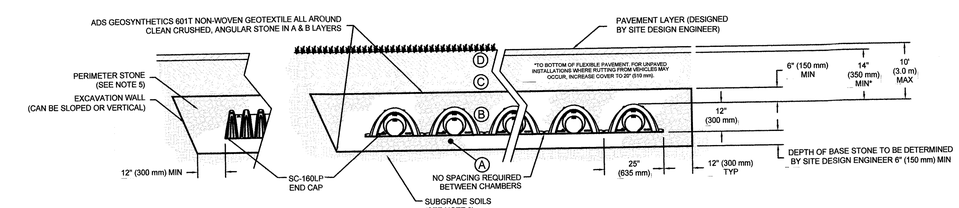
Notes:
1. The Use Of Flexible Connection is Recommended at The Inlet and Outlet Where Applicable.
2. The Cover Should be Positioned Over The Inlet Drop Pipe and The Oil Port.
3. The Stormceptor System is protected by one or more of the following U.S. Patents: #4985148, #5498331, #5725760, #5753115, #5849181, #6068765, #6371690.
4. Contact a Concrete Pipe Division representative for further details not listed on this drawing.

Rinker 027

ACCEPTABLE FILL MATERIALS: STORMTECH SC-160LP CHAMBER SYSTEMS

	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE (9" LAYER) TO 14" (355 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

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



NOTES:

1. SC-160LP CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.

STORMTECH SC-160LP DETAIL

NOT TO SCALE

Prepared For:

Owner / Applicant
OCEAN CITY DEVELOPMENT, LCC
BILL MANDELL
20 DEL CARMINE STREET
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8		
9		
10		

Scale: 1"=10' (0', 5', 10', 20')

Date: May 9, 2017

Drawing Title:

SITE PLAN No. 17255
DETAILS
33 LEYDEN STREET
BOSTON, MASSACHUSETTS

Seal:

Drawing No.:

C4

SHEET 4 OF 4

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