

# Notice of Intent

*Filed Under M.G.L. Chapter 131, Section 40*

Massport Marine Terminal

Infrastructure Project

Boston, Massachusetts

Applicant:

Massachusetts Port Authority

One Harborside Drive

East Boston, MA 02128

May 22, 2019

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# Section 1 – Notice of Intent Forms

- Massachusetts Department of Environmental Protection WPA Form 3: Notice of Intent
- Notice of Intent Wetland Fee Transmittal Form
- Filing Fee Worksheet
- Stormwater Checklist

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 #:
eDEP Transaction #:1084384
City/Town:BOSTON

A.General Information

1. Project Location:

a. Street Address MASSPORT MARINE TERMINAL, FID KENNEDY
b. City/Town BOSTON c. Zip Code
d. Latitude 42.34648N e. Longitude 71.02646W
f. Map/Plat # NA g.Parcel/Lot # 0602674205

2. Applicant:

Individual Organization

a. First Name JAMES b.Last Name STOLECKI
c. Organization MASSACHUSETTS PORT AUTHORITY
d. Mailing Address ONE HARBORSIDE DRIVE
e. City/Town EAST BOSTON f. State MA g. Zip Code 02128
h. Phone Number 617-568-3552 i. Fax j. Email jstolecki@massport.com

3.Property Owner:

more than one owner

a. First Name JAMES b. Last Name STOLECKI
c. Organization MASSACHUSETTS PORT AUTHORITY
d. Mailing Address ONE HARBORSIDE DRIVE
e. City/Town EAST BOSTON f.State MA g. Zip Code 02128
h. Phone Number 617-568-3552 i. Fax j.Email jstolecki@massport.com

4.Representative:

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

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

a.Total Fee Paid 2,000.00 b.State Fee Paid 987.50 c.City/Town Fee Paid 1,012.50

6.General Project Description:

ROADWAY CONSTRUCTION AND UTILITY INSTALLATION TO SERVICE PARCELS WITHIN THE MASSPORT MARINE TERMINAL.

7a.Project Type:

- 1. Single Family Home 2. Residential Subdivision
3. Limited Project Driveway Crossing 4. Commercial/Industrial
5. Dock/Pier 6. Utilities
7. Coastal Engineering Structure 8. Agriculture (eg., cranberries, forestry)
9. Transportation 10. Other

7b.Is any portion of the proposed activity eligible to be treated as a limited project subject to 310 CMR 10.24 (coastal) or 310

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CMR 10.53 (inland)?

1.  Yes  No If yes, describe which limited project applies to this project:  
 2. Limited Project

8. Property recorded at the Registry of Deeds for:

<b>a.County:</b>	<b>b.Certificate:</b>	<b>c.Book:</b>	<b>d.Page:</b>
SUFFOLK		24850	346

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

1. Buffer Zone & Resource Area Impacts (temporary & permanent):

This is a Buffer Zone only project - 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)

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
---------------	-----------------------------	-------------------------------

a. <input type="checkbox"/> Bank	1. linear feet	2. linear feet
----------------------------------	----------------	----------------

b. <input type="checkbox"/> Bordering Vegetated Wetland	1. square feet	2. square feet
---	----------------	----------------

c. <input type="checkbox"/> Land under Waterbodies and Waterways	1. Square feet	2. square feet
--	----------------	----------------

	3. cubic yards dredged	
--	------------------------	--

d. <input type="checkbox"/> Bordering Land Subject to Flooding	1. square feet	2. square feet
--	----------------	----------------

	3. cubic feet of flood storage lost	4. cubic feet replaced
--	-------------------------------------	------------------------

e. <input type="checkbox"/> Isolated Land Subject to Flooding	1. square feet	
---	----------------	--

	2. cubic feet of flood storage lost	3. cubic feet replaced
--	-------------------------------------	------------------------

f. <input type="checkbox"/> Riverfront Area	1. Name of Waterway (if any)	
---	------------------------------	--

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. |
|----------------------|-------------------------------|--|

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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)

Resource Area Size of Proposed Alteration Proposed Replacement (if any)

a. <input checked="" type="checkbox"/> Designated Port Areas	Indicate size under	Land under the ocean below,
b. <input type="checkbox"/> Land Under the Ocean	1. square feet	
	2. cubic yards dredged	
c. <input type="checkbox"/> Barrier Beaches	Indicate size under Coastal Beaches and/or Coastal Dunes, below	
d. <input type="checkbox"/> Coastal Beaches	1. square feet	2. cubic yards beach nourishment
e. <input type="checkbox"/> Coastal Dunes	1. square feet	2. cubic yards dune nourishment
f. <input checked="" type="checkbox"/> Coastal Banks	880	
	1. linear feet	
g. <input type="checkbox"/> Rocky Intertidal Shores	1. square feet	
h. <input type="checkbox"/> Salt Marshes	1. square feet	2. sq ft restoration, rehab, crea.
i. <input type="checkbox"/> Land Under Salt Ponds	1. square feet	
	2. cubic yards dredged	
j. <input type="checkbox"/> Land Containing Shellfish	1. square feet	
k. <input type="checkbox"/> Fish Runs	Indicate size under Coastal Banks, Inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above	
	1. cubic yards dredged	
l. <input checked="" type="checkbox"/> Land Subject to Coastal Storm Flowage	118421	
	1. square feet	

4.Restoration/Enhancement

Restoration/Replacement

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 entered the additional amount here.

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

5.Projects Involves Stream Crossings

Project Involves Streams Crossings



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

a. number of new stream crossings

b. number of replacement stream crossings

**C. Other Applicable Standards and Requirements**

**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 of Endangered Species program (NHESP)?

a.  Yes  No

If yes, include proof of mailing or hand delivery of NOI to:  
Natural Heritage and Endangered Species  
Program  
Division of Fisheries and Wildlife  
1 Rabbit Hill Road  
Westborough, MA 01581

b. Date of map:2017

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

c. Submit Supplemental Information for Endangered Species Review \* (Check boxes as they apply)

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

3.  Project plans for entire project site, including wetland resource areas and areas outside of wetland 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

c.  MESA filing fee (fee information available at: <http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/regulatory-review/mass-endangered-species-act-mesa/mesa-fee-schedule.html>)

Make check payable to "Natural Heritage & Endangered Species Fund" 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

d. 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/eea/agencies/dfg/dfw/laws-regulations/cmr/321-cmr-1000-massachusetts-endangered-species-act.html#10.14>; 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 Number

b. Date submitted to NHESP

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Provided by MassDEP:  
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3.  Separate MESA review completed.

Include copy of NHESP "no Take" determination or valid Conservation & Management Permit with approved plan.

\* Some projects **not** in Estimated Habitat may be located in Priority Habitat, and require NHESP review...

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

a.  Not applicable - project is in inland resource area only

b.  Yes  No

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

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

North Shore - Hull to New Hampshire:

Division of Marine Fisheries -  
Southeast Marine Fisheries Station  
Attn: Environmental Reviewer  
836 S. Rodney French Blvd  
New Bedford, MA 02744

Division of Marine Fisheries -  
North Shore Office  
Attn: Environmental Reviewer  
30 Emerson Avenue  
Gloucester, MA 01930

If yes, it 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.

3. 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 DEP Website for ACEC locations). **Note:** electronic filers click on Website.

b. ACEC Name

4. 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

5. 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

6. 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, Explain why the project is exempt:

1.  Single Family Home

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Provided by MassDEP:  
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City/Town:BOSTON

**E. Fees**

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

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

_____	_____
2. Municipal Check Number <u>0000189846</u>	3. Check date <u>5/3/2019</u>
_____	_____
4. State Check Number <u>MASSPORT</u>	5. Check date
_____	_____
6. Payer name on check: First Name	7. Payer 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.

James Stolecki	<u>James Stolecki</u>	5/21/2019
1. Signature of Applicant	_____	2. Date
Massachusetts Port Authority	_____	5/21/2019
3. Signature of Property Owner(if different)	_____	4. Date
_____	_____	_____
5. Signature of Representative (if any)	_____	6. Date

**For Conservation Commission:**

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

**For MassDEP:**

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

**Other:**

If the applicant has checked the "yes" box in Section C, Items 1-3, above, refer to that section and the Instructions for additional submittal requirements.

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

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Bureau of Resource Protection - Wetlands

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Provided by MassDEP:  
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City/Town:BOSTON

- 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**

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 by regular mail delivery.

- 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.
- 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.

**a. Plan Title:**                      **b. Plan Prepared By:**      **c. Plan Signed/Stamped By:**      **c. Revised Final Date:**      **e. Scale:**

MASSPORT MARINE  
TERMINAL  
INFRASTRUCTURE  
PROJECT DRAWINGS  
C-100, C-101, C-102,  
C-301, C-302, C-501,  
C-502

HDR ENGINEERING,  
INC.

05/2019

- 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.

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

Provided by MassDEP:  
 MassDEP File #:  
 eDEP Transaction #:1084384  
 City/Town: BOSTON

**A. Applicant Information**

1. Applicant:

a. First Name	JAMES	b. Last Name	STOLECKI		
c. Organization	MASSACHUSETTS PORT AUTHORITY				
d. Mailing Address	ONE HARBORSIDE DRIVE				
e. City/Town	EAST BOSTON	f. State	MA	g. Zip Code	02128
h. Phone Number	6175683552	i. Fax		j. Email	jstolecki@massport.com

2. Property Owner: (if different)

a. First Name	JAMES	b. Last Name	STOLECKI		
c. Organization	MASSACHUSETTS PORT AUTHORITY				
d. Mailing Address	ONE HARBORSIDE DRIVE				
e. City/Town	EAST BOSTON	f. State	MA	g. Zip Code	02128
h. Phone Number	6175683552	i. Fax		j. Email	jstolecki@massport.com

3. Project Location:

a. Street Address	MASSPORT MARINE TERMINAL, FID KENNEDY	b. City/Town	BOSTON
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Are you exempted from Fee?  (YOU HAVE SELECTED 'NO')

**Note:** Fee will be exempted if you are one of the following:

- City/Town/County/District
- Municipal Housing Authority
- Indian Tribe Housing Authority
- MBTA

State agencies are only exempt if the fee is less than \$100

**B. Fees**

Activity Type	Activity Number	Activity Fee	RF Multiplier	Sub Total
A.) WORK ON DOCKS, PIERS, REVETMENTS, DIKES, ETC. (COASTAL OR INLAND).	500	4.00		2000.00

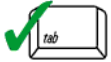
City/Town share of filing fee	\$1,012.50	State share of filing fee	\$987.50	Total Project Fee	\$2,000.00
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# Checklist for Stormwater Report

## A. Introduction

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



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

The Stormwater Report must include:

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

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

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

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

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

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



# 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.

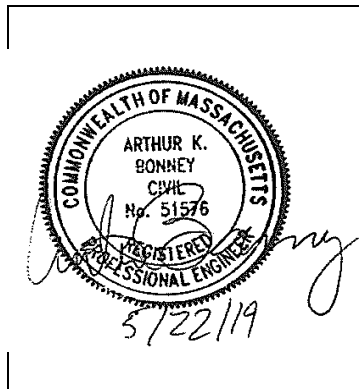
*Note:* Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that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



May 22, 2019

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

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## 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

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## 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<sup>1</sup>
- 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.

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



# Checklist for Stormwater Report

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## 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

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## 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

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## Checklist (continued)

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

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

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

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

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

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## Checklist (continued)

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

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

### Standard 9: Operation and Maintenance Plan

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

### Standard 10: Prohibition of Illicit Discharges

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

## Section 2 – Notice of Intent Narrative

- Introduction & Background
- Site Description
- Work Description
- Mitigation Measures
- Regulatory Compliance
- Summary

## Introduction and Background

The Massachusetts Port Authority (Massport, MPA), is proposing construction of the Massport Maritime Terminal Infrastructure project (the Project) located on Fid Kennedy Avenue in South Boston, as shown on the attached Location Plan. The Project is being implemented to provide access to, and facilitate development of, individual parcels within the Massport Marine Terminal (MMT) as shown on Drawing No. C-100. The overall MMT site comprises 6.25 acres. Currently, Parcel 6A is under construction (MA DEP File No. 006-1595 and will be occupied by Boston Sword and Tuna. Development of the remaining parcels will follow Massport's solicitation of proposals from developers, which will enter into lease agreements with Massport.

The Project includes construction of approximately 2,100 linear feet (LF) of roadway and overlay of pavement on 1,400 LF of existing roadway. The roadway width is typically 30 feet and is 36 feet for Shellfish Way. Proposed infrastructure construction includes a stormwater drainage system, a sanitary sewer line and telecommunication lines that will provide service to future parcel developments.

This Notice of Intent is filed only for the work associated with the proposed Massport Marine Terminal Infrastructure Project. The development of individual parcels within the MMT will be subject to filing requirements under the Wetlands Protection Act.

The proposed work will occur within jurisdictional resource areas and/or their buffer zones protected under the *Massachusetts Wetlands Protection Act* (MGL c. 131, Sec. 40' the *Act*) and its implementing *Regulations* (310 CMR 10.00, et seq.; the *Regulations*) The work involves both temporary and permanent disturbances to these protected areas.

The following narrative provides a description of the site, associated resource areas, proposed activities and mitigation measures. Specific Project details are provided on the accompanying *Notice of Intent Site Plan* prepared by HDR, Inc., dated May 2019.

## Site Description

The Project Site, which includes the proposed roadway construction and utility installation, includes approximately 6.4 acres of the overall 29.5-acre MMT area. The MMT contains Parcels 4, 5A, 5B, 6A, 6B, and 6C. These parcels will be developed in the future. Parcel 6A is currently under construction. The MMT roadway network will serve to provide the developments access to FID Kennedy Avenue. The site is bounded to the north by Shoreline Road, to the south by Fid Kennedy Avenue, to the west by Shellfish Way (both the existing and proposed portions of the roadway to be constructed), and to the east by Swordfish Way, a proposed road to be constructed. An USGS Locus Map of the Project Site is presented as [Appendix A, Figure 1. USGS Locus Map.](#)

The site was originally tidal flats which were filled in four phases between 1910 and the 1980s. During construction of the Central Artery/ Third Harbor Tunnel (CA/T) project, much of the MMT

site was used as a soil stockpiling and staging area.

The MMT property is owned by the City of Boston and Massport has a long-term lease extending until February 20, 2070. Massport's development objectives include seafood and non-seafood maritime industrial, and other complementary uses that provide programmatic enhancement to the seafood cluster.

The MMT site is fairly level with a highpoint dividing surface drainage between FID Kennedy Avenue to the southwest and Boston Harbor to the north, as a ridge running east-west across the property. This ridge extends above the Land Subject to Coastal Storm Flowage. The site is mostly covered in bituminous pavement and reclaimed asphalt product.

### *Existing Stormwater Conditions*

The drainage patterns for the site generally flow north to south towards FID Kennedy Avenue with a portion of flow heading to the west towards Seafood Way. The project site includes the following existing stormwater conditions:

#### Boston Harbor Outfall F-1 – 42-inch Storm Sewer

Recent work on Parcel 5 included installation of a new permitted 42-inch trunk drain line along Codfish Way connecting to a stormwater Water Quality Structure (WQS) and then to a new 42-inch outfall, F-1. The outfall and WQS are located at the north terminus of Codfish Way. A single catch basin near the center of Codfish Way, between FID Kennedy Avenue and Shoreline Road, collects stormwater flow and conveys it north to the WQS for treatment before discharge to the Boston Harbor through outfall F-1.

#### FID Kennedy Avenue – 48-inch Storm Sewer

A majority of the stormwater runoff generated from the site flows north to south and enters into an existing City-owned existing 48-inch storm sewer under FID Kennedy Avenue. The storm sewer ultimately discharges to Boston Harbor.

#### Seafood Way – 12-inch Storm Sewer

A portion of the flow from the northwest area of the site travels to the west offsite and is captured by a separate 12-inch storm sewer system. The system conveys flow north to an existing offsite catch basin and then flow is conveyed north.

### *Jurisdictional Resource Areas*

The Project site includes the following jurisdictional resource areas and buffer zone:



Land Subject to Coastal Storm Flowage

Land Subject to Coastal Storm Flowage, being land subject to any 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 extent of the resource area was determined through information provided by the National Flood Insurance Program (NFIP) Flood Insurance Rate Map (FIRM), Map 25025C0082J (see Figure 2 - FIRM), revised through March 16, 2016. The extent of the resource area is North American Vertical Datum of 1988 (NAVD88) elevation 10.0 (Boston Sewer Base elevation 16.46). The majority of the site is located within the LSCSF resource area.

Coastal Bank

Coastal Banks, being the seaward face or side of any elevated landform or side of any elevated landform, other than a coastal dune, which lies at the landward edge of a coastal beach, land subject to tidal action, or other wetland. The extent of the coastal bank for the Project was identified as the break in slope above the seaward rip-rap slope along Shoreline Road (El. 16± BCB).

The site photograph below shows the coastal bank at the Project site including the newly installed 42-inch diameter drainage pipe and headwall at Codfish Way (formerly known as Tide Street), installed as part of the previously permitted project on Parcel 5 of the MMT:



### Natural Heritage and Endangered Species Program

The site does not contain any Priority or Estimated Habitat Areas, nor does it contain any Certified or Potential Vernal Pools as depicted on Figure 3 – NHESP Map.

### Buffer Zones

A 100-foot buffer to the coastal bank is depicted on the accompanying plan set for assistance in identifying the area regulated by 310 CMR 10.30(4).

## Work Description

The Project consists of the improvements to the existing MMT site including construction of access roadways and infrastructure to service future development of the MMT. Specific improvements proposed under this Notice of Intent include the following:

1. Construction of site access roadways, involving excavation, backfill of ordinary borrow, gravel borrow, dense graded crushed stone, and full depth hot mix asphalt. HMA berms will be installed along the length of the roadway. The specific roadways are the following:
  - a. Swordfish Way, approximately 750-lf of 30-foot wide roadway along the easterly extent of the Project from the existing Fid Kennedy Avenue to the proposed Shoreline Road, identified above.
  - b. Shoreline Road, approximately 900 linear feet (lf) of 30-foot wide roadway along the northerly extent of the Project from the previously approved and constructed Shellfish Way (formerly Tide Street Extension) to the west to the proposed Swordfish Way to the east; and
  - c. Shellfish Way, approximately 450-lf of 36-foot wide roadway along the westerly extent of the Project from the existing Fid Kennedy Avenue to the existing Shellfish Way (formerly Tide Street Extension).
2. Rehabilitation of existing site access roadways, specifically:
  - a. Shellfish Way, involving pavement reclamation of approximately 450-lf of 36-foot wide roadway along the westerly extent of the Project from the terminus of the proposed Shellfish Way construction to the south, identified above, to the proposed Shoreline Road to the north. Work will consist of pavement removal and replacement with hot mix asphalt. The existing Shellfish Way will be widened from 30' to 36'.
  - b. Codfish Way, pavement overlay of approximately 950-lf of 30-foot wide roadway along the middle of the Project from the existing Fid Kennedy Avenue to the south to the proposed Shoreline Road to the north. Work will consist of applying a tack coat to the existing pavement surface and then applying a 1.5" thick overlay of hot mix asphalt.
3. Construction of cement concrete sidewalk and pedestrian access ramps
  - a. Construction of various cement concrete pedestrian access ramps and sidewalk at the following intersections:
    - i. Fid Kennedy Avenue and Shellfish Way
    - ii. Fid Kennedy Avenue and Codfish Way
    - iii. Fid Kennedy Avenue and Swordfish Way

4. Construction of HMA berms along the roadways and granite curb at intersections with FID Kennedy Way.
5. Construction of site utilities including:
  - a. Various catch basins, drain manholes, and swirl particle separators located in the proposed roadways of Swordfish Way, Codfish Way, Shellfish Way and Shoreline Road;
6. Sanitary sewer gravity main from the Right-Of-Way Line at Parcel 6 parallel to FID Kennedy Avenue and within the proposed 20' Sewer Reservation to Seafood Way, approximately 760± feet of sanitary sewer gravity main;

These proposed activities are further detailed on the attached drawings. Prior to construction and coincident with mobilization, erosion and sedimentation controls will be installed to protect jurisdictional areas and to demarcate the limit of work. Upon installation of erosion controls and inspection, a pre-construction conference with project stakeholders will be held to further discuss project timing and reporting. Continued monitoring and repair of erosion and sedimentation controls will continue for the project duration.

The construction of utilities will occur coincident with roadway construction. Restoration of areas of temporary disturbance will occur after construction is complete and will include the stabilization and repair of temporary disturbances to original conditions. Lastly, erosion controls will be removed from the site.

### Work in Resource Areas

As previously noted, the Project will involve both temporary and permanent disturbance to jurisdictional resource areas including Land Subject to Coastal Storm Flowage and Coastal Bank as follows:

#### Land Subject to Coastal Storm Flowage (310 CMR 10.04)

Approximately 118,412 sf of Land Subject to Coastal Storm Flowage will be altered as a result of Project construction. Permanent disturbance to this resource area will result from the shaping and grading of the roadways, construction, and utility installation. The entirety of this resource area has previously been disturbed as the site consists of historic fill areas and impervious surfaces. There are no performance standards for work in this resource area.

#### Coastal Bank (310 CMR 10.30)

A conservatively estimated 880-lf of coastal bank will be permanently altered due to the installation of the improved riprap revetment side slope protection. The improved riprap revetment will consist of stone placed on a crushed stone layer and separated with a geotextile. The geotextile will separate the subgrade fine particles from migrating into the crushed stone to maintain the integrity of the revetment base. This revetment will be constructed at a higher elevation than the existing revetment to increase resiliency of the MMT to sea level rise and increased ocean wave energy.

### Mitigation Measures

Construction activities, including excavation for full depth roadway construction and utility installation, including drainage and sanitary sewer, will create erodible surfaces and shall be limited to those areas necessary to safely operate equipment and conduct the proposed work..

### *Erosion and Sedimentation Controls*

An erosion and sedimentation control program will be implemented to protect resource areas from sedimentation due to the proposed construction activities. Work and stockpile areas are to be protected by an erosion control barrier prior to construction and erosion controls shall remain in place until all disturbed areas are stabilized. Erosion and sedimentation controls proposed are indicated on the accompanying *Erosion Control Plan*. Erosion and sedimentation controls proposed for the Project include the following:

#### *Structural Practices*

Structural erosion and sedimentation controls on the site include barriers, catch basin inlet protection, and stabilized construction entrances.

#### *Erosion Control Barriers*

Prior to any construction activities on the site, a barrier of compost filter tubes will be installed in accordance with the accompanying plans. As construction progresses, additional rows of compost filter tube will be installed around the base of stockpiles and other erosion prone areas. Compost filter tubes can be supplemented with hay bales and silt fence.

Compost filter tubes hay bales and silt fence installation should be inspected weekly, at a minimum, during construction activities and after significant rainfall events. If sediment has accumulated to a depth impairing the proper function of the erosion control barrier, it will be removed and reused on-site or disposed of at a suitable offsite location. Any damaged section of erosion controls presented in this section shall be repaired or replaced immediately upon discovery.

#### *Catch Basin Inlet Protection*

All existing and proposed catch basins on-site and adjacent to the Project, at those locations specified on the accompanying plan(s), shall be fitted with Siltsack®, or equivalent, catch basin filters. Catch basin filters should be inspected weekly, at a minimum, during construction activities and after significant rainfall events. If sediment has accumulated to a depth impairing the proper function of the filter, the sediment will be removed and reused on-site or disposed of at a suitable offsite location. Any damaged catch basin filters shall be repaired or replaced immediately upon discovery.

#### *Stabilized Construction Entrance*

A stabilized construction entrance shall be installed proximate the intersection of Fid Kennedy Ave and the proposed Swordfish Way and proximate the intersection of Fid Kennedy Ave and the proposed Shellfish Way. The construction entrances shall consist of 1-½-inch crushed stone placed 12-inches deep. The construction entrances should be a minimum of 25-feet in width and 50-feet in length. The entrances should be maintained in a condition that will prevent tracking or flowing of sediment onto public rights-of-way.

This may require the periodic topdressing with additional stone. The entrances should be inspected weekly and after significant rainfall events. Any mud or sediment tracked onto adjacent roadways should be removed immediately.

### *Non-structural Practices*

Non-structural best management practices to be used during construction include pavement sweeping, dust control, temporary stabilization and temporary seeding. These practices should be applied as applicable during construction activities.

#### Pavement Sweeping

Adjacent roadways shall be swept as necessary during construction activities. Sweeping may be done by hand or mechanically.

#### Dust Control

Dust control shall be provided by soil wetting only, the use of calcium chloride or other chemical means of dust prevention shall not be used on the Project. When necessary, exposed surfaces should be wetted to prevent wind-borne transport of sediment (dust). Water should be applied in a volume equivalent to ½-inch over the exposed areas. The water should be applied in a manner that minimizes erosion, such as a mechanical sprayer mounted to a water truck.

### *Stormwater Controls*

Stormwater controls for the Project have been proposed in accordance with the requirements of the Massachusetts Department of Environmental Protection's (MassDEP's) Stormwater Management Standards.

## Regulatory Compliance

The Regulations under the Act identify several Performance Standards for proposed work activities within jurisdictional resource areas and buffer zones.

### *Land Subject to Coastal Storm Flowage*

Land Subject to Coastal Storm Flowage (310 CMR 10.04) means *land subject to any 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 extent of Zone AE is identified on FIRM Map No. 25025C0082J, effective March 16, 2016 and No. 25025C0081J, effective March 16, 2016 as elevation 10.0 (NAVD88) which equates to elevation 16.46 on the Boston City Base datum. MassDEP has not established a Performance Standard for this resource area.

The Proponent is proposing to construct the new roadways with a crest elevation above the flood elevation and intends to construct the new roadways to form a physical barrier at or above this grade to provide resiliency during coastal storm events and mitigate the effects of sea level rise.

Shoreline Road's east-west alignment will be raised above existing grade to provide resiliency Shoreline Road is proposed to be raised above existing grade and higher than the 16.46 elevation.

Shoreline Road – Elevation 17.03 at approximately Station 406 increasing to elevation 19.07 at approximately Station 408+20 and then decreasing to elevation 16.90 at the low point at approximately station 412+10.

The Proponent is proposing to construct the new north-south roadways with a raised crest elevation above the 16.46 elevation. The following roadway finished grade centerline elevations are presented:

Swordfish Way – Elevation 18.55 at approximately Station 504+50

Shellfish Way – Elevation 18.09 at approximately Station 201+25

### Coastal Bank

In 310 CMR 10.30, "Coastal Banks" are noted for their importance in the prevention of storm damage prevention and flood control. Coastal banks that supply sediment to coastal beaches, coastal dunes and barrier beaches are per se significant to storm damage prevention and flood control, but also noted in 10.30 are Coastal banks that, because of their height, provide a buffer to upland areas from storm waters are significant to storm damage prevention and flood control. At the Project location, there are no banks comprised of sediments, only reinforced revetment materials serving as protective vertical buffer and wall against wave action.

Per 310 CMR 10.30, when a proposed project involves dredging, removing, filling, or altering a coastal bank, the issuing authority shall presume that the area is significant to storm damage prevention and flood control. This presumption may be overcome only upon a clear showing that a coastal bank does not play a role in storm damage prevention or flood control, and if the issuing authority makes a written determination to that effect. *The function and importance of the Coastal Bank at this site is acknowledged by the applicant and as such, the presumption of the Coastal Bank's significance in storm damage prevention or flood control because of its vertical buffer is not overcome at this site.*

As a Coastal Bank determined to be significant to storm damage prevention or flood control because it is a vertical buffer to storm waters, 310CMR 10.30 (6) through (8) apply.

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

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

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

As proposed, the project will permanently alter approximately 880 lf of Coastal Bank through reinforcement and reconstruction using additional riprap revetment slope protection. The proposed work is consistent with the performance standards 310 CMR 10.30 (6) through (8), by:

- *Not adversely affecting the stability of the Coastal Bank. The project includes engineered revetment treatments to expand and improve the overall bank and site stability.*
- *The proposed work includes “revetment” coastal engineering structures, which are permitted due to the existing Coastal Bank not being comprised of sediment source supplying coastal beaches, coastal dunes and barrier beaches. Furthermore, the existing site conditions include revetment reinforced Coastal Bank.*
- *The Project Site is not habitat of rare vertebrate or invertebrate species.*

#### Natural Heritage and Endangered Species Program

- *310 CMR 10.25(7) Notwithstanding the provisions of 310 CMR 10.25(3) through (6), no project which will have any adverse effects on specified habitat sites of rare vertebrate or invertebrate species, as identified under the procedures established under 310 CMR 10.37.*

The Project does not lie within estimated or priority habitat areas of State-listed Rare Wetlands Wildlife published by the Natural Heritage and Endangered Species Program (NHESP). Please refer to Appendix A, Figure 3 for NHESP mapping.

#### Designated Port Areas

- *310 CMR 10.26(4) Projects shall be designed and constructed using best practical measures, so as to minimize, adverse effects on storm damage prevention or flood control caused by changes in such land's ability to provide support for adjacent coastal banks or adjacent coastal engineering structures.*

Potential disturbances to land under the ocean within designated port areas are not anticipated and will not have adverse effects on storm damage prevention or flood control.

#### Work in Buffer Zone(s)

Work within the area 100-feet landward from the top of coastal bank and compliance with applicable performance standards is described above.



## Section 3 – Stormwater Management

- Compliance with Massachusetts Stormwater Standards
  - Standard 1: No New Untreated Discharges
  - Standard 2: Peak Rate Attenuation
  - Standard 3: Recharge
  - Standard 4: Water Quality
  - Standard 5: LUHPPLs
  - Standard 6: Critical Areas
  - Standard 7: Redevelopment Projects
  - Standard 8: Construction Period Pollution Plan
  - Standard 9: Operation and Maintenance Plan
  - Standard 10: Prohibition of Illicit Discharges

## ***Compliance with Stormwater Standards***

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The proposed development has been designed in compliance with the Stormwater Management Regulations (310 CMR 10.00). The Stormwater Management Regulations includes ten standards for stormwater management compliance. The following is a description of how the proposed redevelopment project will comply with each standard.

### **Standard #1**

**No new stormwater conveyances may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.**

The Project, as proposed, will not create new untreated discharges of stormwater runoff. The Project site qualifies as a redevelopment site, as it is entirely covered with bituminous concrete paving or packed reclaimed asphalt product (RAP) and is entirely impervious. Runoff from the proposed Project site roadways will be managed as follows for the drainage areas

**North** – Design Point 1L – 42-inch Outfall F-1, Shoreline Road

Runoff is treated through the use of deep sump catch basins, and then proprietary swirl particle separators. Runoff in excess of the first one inch will bypass the system and discharge to the Boston Harbor through the existing 42-inch outfall.

**South** – Design Point 6P – 48-inch Storm Sewer, FID Kennedy Avenue

Runoff is treated through the use of deep sump catch basins. The flow is then discharged to the FID Kennedy Avenue 48-inch storm sewer.

**West** – Design Point 7P – 12-inch Storm Sewer, Seafood Way

A portion of the runoff is treated through the use of deep sump catch basins. The flow is then discharged to an existing 12-inch storm sewer located near Seafood Way. The remaining runoff from the roadway flows to the west as sheet flow and enters the existing stormwater system with no prior treatment.

### **Standard #2**

**Stormwater management systems must be designed so that the post-development peak discharge rates do not exceed pre-development peak discharge rates.**

The Project, as proposed, is located within land subject to coastal storm flowage. A waiver to standard 2 is requested in accordance with the MassDEP Stormwater Management Policy. As designed, there will be no net increase or decrease in stormwater runoff. No infiltration is proposed for this redevelopment project due to the limited corridor width constraints and existing subsurface utilities.

## STORMWATER RUNOFF CALCULATIONS

A HydroCAD model was prepared to analyze the peak rate of flow that would occur at design points throughout the MMT site. The results are shown below in Table 1. The pre-development flow travels overland and heads south to the FID Kennedy drainage system.

Table 1 – Peak Flow and Volume Comparison

Return Period (years)	PRE-DEVELOPMENT		POST-DEVELOPMENT		DELTA	
	Peak Flow (cfs)	Volume (ac-ft)	Peak Flow (cfs)	Volume (cf)	Peak Flow (cfs)	Volume (cf)
<b>Design Point 1L – 42-inch Outfall F-1, Shoreline Road</b>						
2 Year	0	0	4.15	13,895	4.15	13,895
10 Year	0	0	6.01	20,433	6.01	20,433
25 Year	0	0	7.20	24,641	7.20	24,641
<b>Design Point 6P – 48-inch Storm Sewer , FID Kennedy Avenue</b>						
2 Year	7.23	24,200	3.97	13,282	-3.26	-10,918
10 Year	10.46	35,588	5.74	19,532	-4.72	-16,056
25 Year	12.53	42,916	6.88	23,554	-5.65	-19,362
<b>Design Point 7P – 12-inch Storm Sewer, Seafood Way</b>						
2 Year	4.34	14,528	3.45	11,552	-0.89	-2,976
10 Year	6.28	21,365	4.99	16,987	-1.29	-4,378
25 Year	7.53	25,764	5.98	20,485	-1.55	-5,279
<b>Total For All Design Points (1L, 6P, 7P)</b>						
2 Year	11.57	38,728	11.57	38,729	0	1
10 Year	16.74	56,953	16.74	56,952	0	-1
25 Year	20.06	68,680	20.06	68,680	0	0

### Standard #3

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

The Natural Resource Conservation Service (NRCS) classifies the soils at the Project site as “Map Unit Symbol 603: Urban land, wet substratum, 0 to 3 percent slopes,” typical of urban fill materials and best represented by Hydrologic Soil Group D. Projects sites comprised of “D” soils are required to infiltrate the required recharge volume to the maximum extent practicable.

As designed, there will be no net increase or decrease in stormwater runoff. No infiltration is proposed for this redevelopment project due to the limited corridor width constraints and existing subsurface. The purpose of the roadways are to provide site access to future development and utility corridor to support that development. Massport will require that future development of the parcels consider the feasibility of infiltrating stormwater runoff. This phased approach will improve stormwater quality as each parcel is developed. The proposed roadway infrastructure project will not result in an increase of impervious area and because of that, the expected amount of stormwater infiltration within the project area under pre/post development conditions is comparable.

**Standard #4**

**For new development, stormwater management systems must be designed to remove 80% of the average annual load (post-development conditions) of Total Suspended Solids (TSS). It is presumed that this standard is met when:**

- a. Suitable nonstructural practices for source control and pollution prevention are implemented.**
- b. Stormwater management BMPs are sized to capture the prescribed runoff volume.**
- c. Stormwater management BMPs are maintained as designed.**

The proposed project is a redevelopment project as defined by the Stormwater Regulations, as such, compliance with Standard #4 is provided to the maximum extent practicable. Due to the existing site constraints of this narrow and linear project, large area BMPs cannot be sited within the project limits. Stormwater is treated using the following practices based on drainage area and design point.

- a. North** – Design Point 1L – 42-inch Outfall F-1, Shoreline Road

Runoff is treated through the use of deep sump catch basins with TSS removal rates of 25%, and then proprietary swirl particle separators with a minimum TSS removal rate of 88.6%. Runoff in excess of the first one inch will bypass the system and discharge to the Boston Harbor through the existing 42-inch outfall.

- b. South** – Design Point 6P – 48-inch Storm Sewer, FID Kennedy Avenue

Runoff is treated through the use of deep sump catch basins with a TSS removal rate of 25%. The flow is then discharged to the FID Kennedy Avenue 48-inch storm sewer.

- c. West** – Design Point 7P – 12-inch Storm Sewer, Seafood Way

A portion of the runoff is treated through the use of deep sump catch basins with a TSS removal rate of 25%. The flow is then discharged to an existing 12-inch storm sewer

located near Seafood Way. The remaining runoff from the roadway flows to the west as sheet flow and enters the existing stormwater system with no prior treatment.

**Standard #5**

**Stormwater discharges from areas with higher potential pollutant loads require the use of specific stormwater management BMPs. The use of infiltration practices without pretreatment is prohibited.**

The proposed roadways are not considered to be Land Uses with Higher Potential Pollutant Loads (LUHPPLs). Future development of individual parcels shall evaluate this standard.

**Standard #6**

**Stormwater discharges to critical areas must utilize certain stormwater management BMPs approved for “critical areas”. Critical areas are Outstanding Resource Waters (ORWs), shellfish beds, swimming beaches, cold-water fisheries and recharge areas for public water supplies.**

The Project discharges to the Inner Boston Harbor, a Class SB water body. A water quality volume (WQV) equivalent to 1.0” over the impervious area was used for BMP sizing.

**Standard #7**

**Redevelopment of previously developed sites must meet the Stormwater Management Regulations to the maximum extent practicable. However, if it is not practicable to meet all the Standards, new stormwater management systems must be designed to improve existing conditions.**

The Project is subject to the Stormwater Management Standards only to the maximum extent practicable as a Redevelopment Project. The Project, as designed, does not increase impervious area on-site compared to the pre-development conditions, and it improves stormwater treatment over existing conditions.

**Standard #8**

**Erosion and sediment controls must be implemented to prevent impacts during construction or land disturbance activities.**

Downslope areas will be protected through the installation of compost filter tubes to be located along the perimeter and/or elsewhere as required to intercept sediment laden runoff. Silt Sacks will be utilized in all catch basin grates during construction and will be inspected periodically.

The Project is subject to a NPDES Construction General Permit. A Storm Water Pollution Prevention Plan (SWPPP) will be submitted by the Contractor prior to the commencement of construction activities.

**Standard #9**

**All stormwater management systems must have an operation and maintenance plan to ensure that systems function as designed.**

The project roadways and municipal drainage system shall be maintained by the Massachusetts Port Authority.

**Standard #10**

**All illicit discharges to the stormwater management system are prohibited.**

There are no known current illicit discharges of wastewater, stormwater contaminated with process wastes, raw materials, toxic pollutants, hazardous substances, oil or grease from the site. The discharge of any of these illicit materials is prohibited from the proposed stormwater management system.

***Summary and Conclusions***

---

The proposed roadway and infrastructure construction is considered a redevelopment project and complies with the standards established by the Stormwater Management Regulations to the maximum extent practicable. This MPA lead project proposes to capture and treat roadway runoff to the maximum extent practicable. The project will be capturing a portion of the flows entering the drainage system at FID Kennedy Avenue and transmitting them through a treatment train culminating with Water Quality Structures prior to discharge into Boston Harbor thereby increasing available capacity of the stormwater system on FID Kennedy Avenue. The separation will reduce the volume of untreated runoff entering the FID Kennedy stormwater system and eventually discharging to the Boston Harbor. The separated stormwater will discharge to the Harbor through the existing permitted drainage outfall F1 at the northern terminus of Codfish Way. The proposed roadway construction and infrastructure project will provide a balanced site with stormwater volumes and rates of flow equating in both the Pre and Post conditions. Water quality will ultimately be improved over the existing conditions.

## Appendix A: Figures

- Figure 1 – USGS Locus Map
- Figure 2 – FEMA Flood Insurance Rate Map
- Figure 3 – NHESP Map

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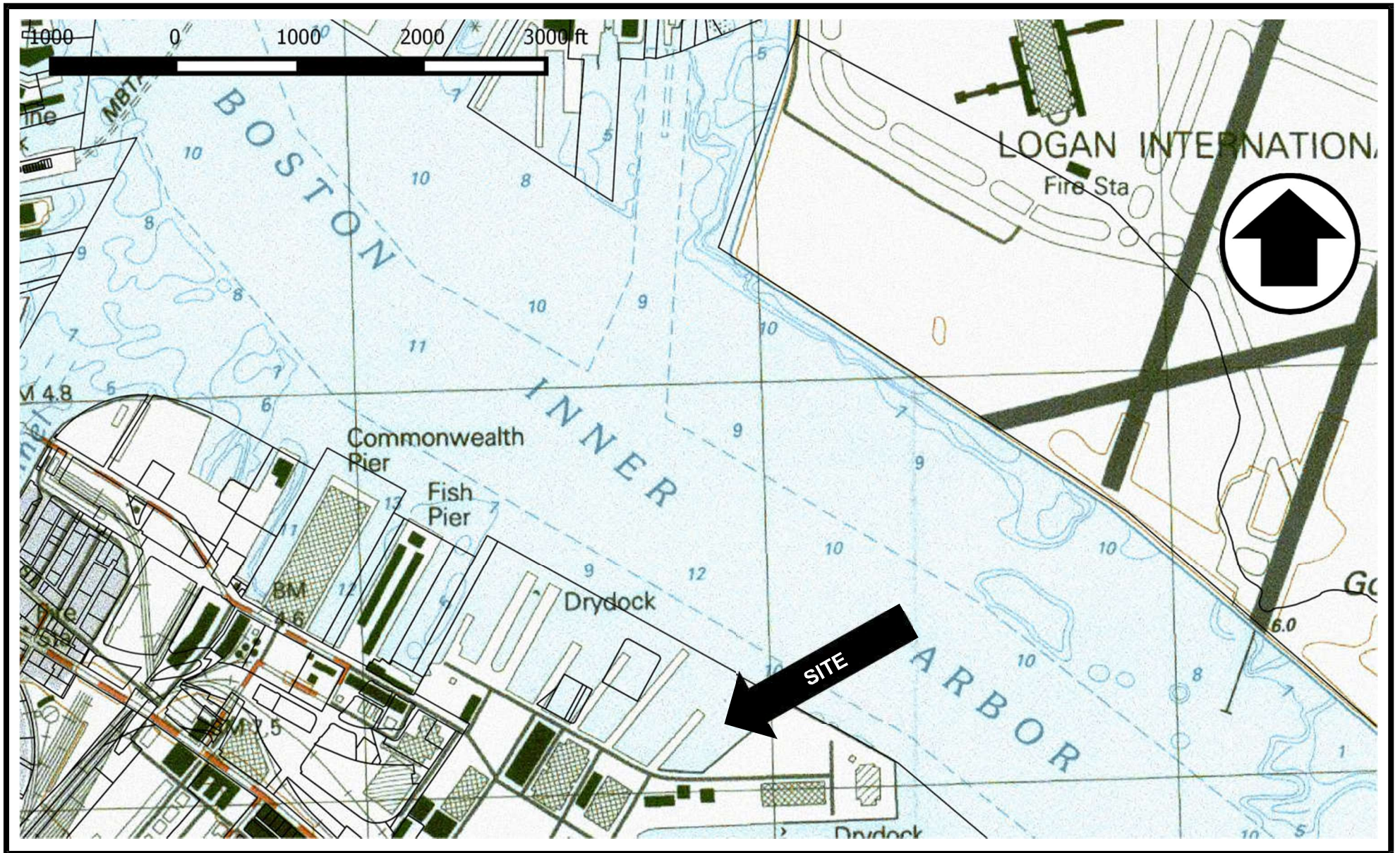


FIGURE 1 – USGS Locus Map

Scale: As Noted

Massachusetts Port Authority / MMT Infrastructure Project

May 21, 2019

# National Flood Hazard Layer FIRMette



42°21'4.73"N

71°27'48"W



## Legend

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

- |                                    |  |  |
|------------------------------------|--|--|
| <b>SPECIAL FLOOD HAZARD AREAS</b>  |  | Without Base Flood Elevation (BFE)<br><i>Zone A, V, A99</i>  |
|                                    |  | With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i>   |
|                                    |  | Regulatory Floodway  |
| <b>OTHER AREAS OF FLOOD HAZARD</b> |  | 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile <i>Zone X</i> |
|                                    |  | Future Conditions 1% Annual Chance Flood Hazard <i>Zone X</i>  |
|                                    |  | Area with Reduced Flood Risk due to Levee. See Notes. <i>Zone X</i>  |
|                                    |  | Area with Flood Risk due to Levee <i>Zone D</i>  |
| <b>OTHER AREAS</b>                 |  | Area of Minimal Flood Hazard <i>Zone X</i>   |
|                                    |  | Effective LOMRs  |
|                                    |  | Area of Undetermined Flood Hazard <i>Zone D</i>  |
| <b>GENERAL STRUCTURES</b>          |  | Channel, Culvert, or Storm Sewer   |
|                                    |  | Levee, Dike, or Floodwall  |
| <b>OTHER FEATURES</b>              |  | Cross Sections with 1% Annual Chance Water Surface Elevation   |
|                                    |  | Coastal Transect   |
|                                    |  | Base Flood Elevation Line (BFE)  |
|                                    |  | Limit of Study   |
|                                    |  | Jurisdiction Boundary  |
|                                    |  | Coastal Transect Baseline  |
|                                    |  | Profile Baseline   |
|                                    |  | Hydrographic Feature   |
| <b>MAP PANELS</b>                  |  | Digital Data Available   |
|                                    |  | No Digital Data Available  |
|                                    |  | Unmapped   |
|                                    |  | The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.                                     |



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

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/27/2019 at 12:41:38 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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

71°13'00.00"W

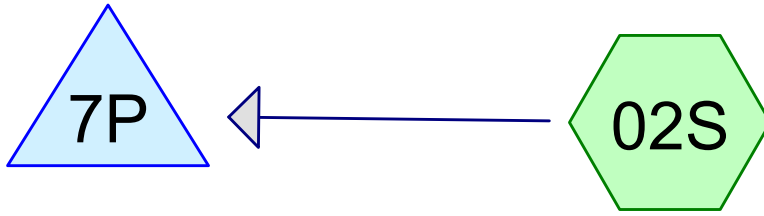


**FIGURE 3 – NHESP Habitat Map**

Massachusetts Port Authority / MMT Infrastructure Project

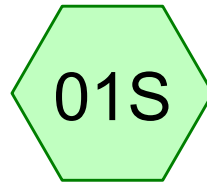
May 21, 2019

## Appendix B: Stormwater Calculations

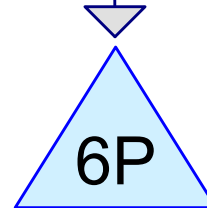


Existing Storm Outlet  
West

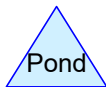
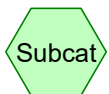
North West Area  
Draining West



North East Area and  
South Draining South



FID Kennedy West



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Page 2

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment01S: North East Area and** Runoff Area=97,861 sf 100.00% Impervious Runoff Depth=2.97"  
Tc=5.0 min CN=98 Runoff=7.23 cfs 24,200 cf

**Subcatchment02S: North West Area** Runoff Area=58,750 sf 100.00% Impervious Runoff Depth=2.97"  
Tc=5.0 min CN=98 Runoff=4.34 cfs 14,528 cf

**Pond 6P: FID Kennedy West** Inflow=7.23 cfs 24,200 cf  
Primary=7.23 cfs 24,200 cf

**Pond 7P: Existing Storm Outlet West** Inflow=4.34 cfs 14,528 cf  
Primary=4.34 cfs 14,528 cf

**Total Runoff Area = 156,611 sf Runoff Volume = 38,728 cf Average Runoff Depth = 2.97"**  
**0.00% Pervious = 0 sf 100.00% Impervious = 156,611 sf**

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**Summary for Subcatchment 01S: North East Area and South Draining South**

Runoff = 7.23 cfs @ 12.07 hrs, Volume= 24,200 cf, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
* 97,861	98	Area Draining South to FID Kennedy Avenue
97,861		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry, Direct</b>

**Summary for Subcatchment 02S: North West Area Draining West**

Runoff = 4.34 cfs @ 12.07 hrs, Volume= 14,528 cf, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
* 58,750	98	Area Draining West to Seafood Way
58,750		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry, Direct</b>

**Summary for Pond 6P: FID Kennedy West**

Inflow Area = 97,861 sf, 100.00% Impervious, Inflow Depth = 2.97" for 2-Year event  
 Inflow = 7.23 cfs @ 12.07 hrs, Volume= 24,200 cf  
 Primary = 7.23 cfs @ 12.07 hrs, Volume= 24,200 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

**Summary for Pond 7P: Existing Storm Outlet West**

Inflow Area = 58,750 sf, 100.00% Impervious, Inflow Depth = 2.97" for 2-Year event  
 Inflow = 4.34 cfs @ 12.07 hrs, Volume= 14,528 cf  
 Primary = 4.34 cfs @ 12.07 hrs, Volume= 14,528 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

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Type III 24-hr 10-Year Rainfall=4.60"

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Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment01S: North East Area and** Runoff Area=97,861 sf 100.00% Impervious Runoff Depth=4.36"  
Tc=5.0 min CN=98 Runoff=10.46 cfs 35,588 cf

**Subcatchment02S: North West Area** Runoff Area=58,750 sf 100.00% Impervious Runoff Depth=4.36"  
Tc=5.0 min CN=98 Runoff=6.28 cfs 21,365 cf

**Pond 6P: FID Kennedy West** Inflow=10.46 cfs 35,588 cf  
Primary=10.46 cfs 35,588 cf

**Pond 7P: Existing Storm Outlet West** Inflow=6.28 cfs 21,365 cf  
Primary=6.28 cfs 21,365 cf

**Total Runoff Area = 156,611 sf Runoff Volume = 56,952 cf Average Runoff Depth = 4.36"**  
**0.00% Pervious = 0 sf 100.00% Impervious = 156,611 sf**



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**Summary for Subcatchment 01S: North East Area and South Draining South**

Runoff = 10.46 cfs @ 12.07 hrs, Volume= 35,588 cf, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
* 97,861	98	Area Draining South to FID Kennedy Avenue
97,861		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry, Direct</b>

**Summary for Subcatchment 02S: North West Area Draining West**

Runoff = 6.28 cfs @ 12.07 hrs, Volume= 21,365 cf, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
* 58,750	98	Area Draining West to Seafood Way
58,750		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry, Direct</b>

**Summary for Pond 6P: FID Kennedy West**

Inflow Area = 97,861 sf, 100.00% Impervious, Inflow Depth = 4.36" for 10-Year event  
 Inflow = 10.46 cfs @ 12.07 hrs, Volume= 35,588 cf  
 Primary = 10.46 cfs @ 12.07 hrs, Volume= 35,588 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

**Summary for Pond 7P: Existing Storm Outlet West**

Inflow Area = 58,750 sf, 100.00% Impervious, Inflow Depth = 4.36" for 10-Year event  
 Inflow = 6.28 cfs @ 12.07 hrs, Volume= 21,365 cf  
 Primary = 6.28 cfs @ 12.07 hrs, Volume= 21,365 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

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Type III 24-hr 25-Year Rainfall=5.50"

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Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment01S: North East Area and** Runoff Area=97,861 sf 100.00% Impervious Runoff Depth=5.26"  
Tc=5.0 min CN=98 Runoff=12.53 cfs 42,916 cf

**Subcatchment02S: North West Area** Runoff Area=58,750 sf 100.00% Impervious Runoff Depth=5.26"  
Tc=5.0 min CN=98 Runoff=7.53 cfs 25,764 cf

**Pond 6P: FID Kennedy West** Inflow=12.53 cfs 42,916 cf  
Primary=12.53 cfs 42,916 cf

**Pond 7P: Existing Storm Outlet West** Inflow=7.53 cfs 25,764 cf  
Primary=7.53 cfs 25,764 cf

**Total Runoff Area = 156,611 sf Runoff Volume = 68,680 cf Average Runoff Depth = 5.26"**  
**0.00% Pervious = 0 sf 100.00% Impervious = 156,611 sf**

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**Summary for Subcatchment 01S: North East Area and South Draining South**

Runoff = 12.53 cfs @ 12.07 hrs, Volume= 42,916 cf, Depth= 5.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-Year Rainfall=5.50"

Area (sf)	CN	Description
* 97,861	98	Area Draining South to FID Kennedy Avenue
97,861		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry, Direct</b>

**Summary for Subcatchment 02S: North West Area Draining West**

Runoff = 7.53 cfs @ 12.07 hrs, Volume= 25,764 cf, Depth= 5.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-Year Rainfall=5.50"

Area (sf)	CN	Description
* 58,750	98	Area Draining West to Seafood Way
58,750		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry, Direct</b>

**Summary for Pond 6P: FID Kennedy West**

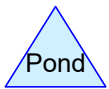
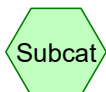
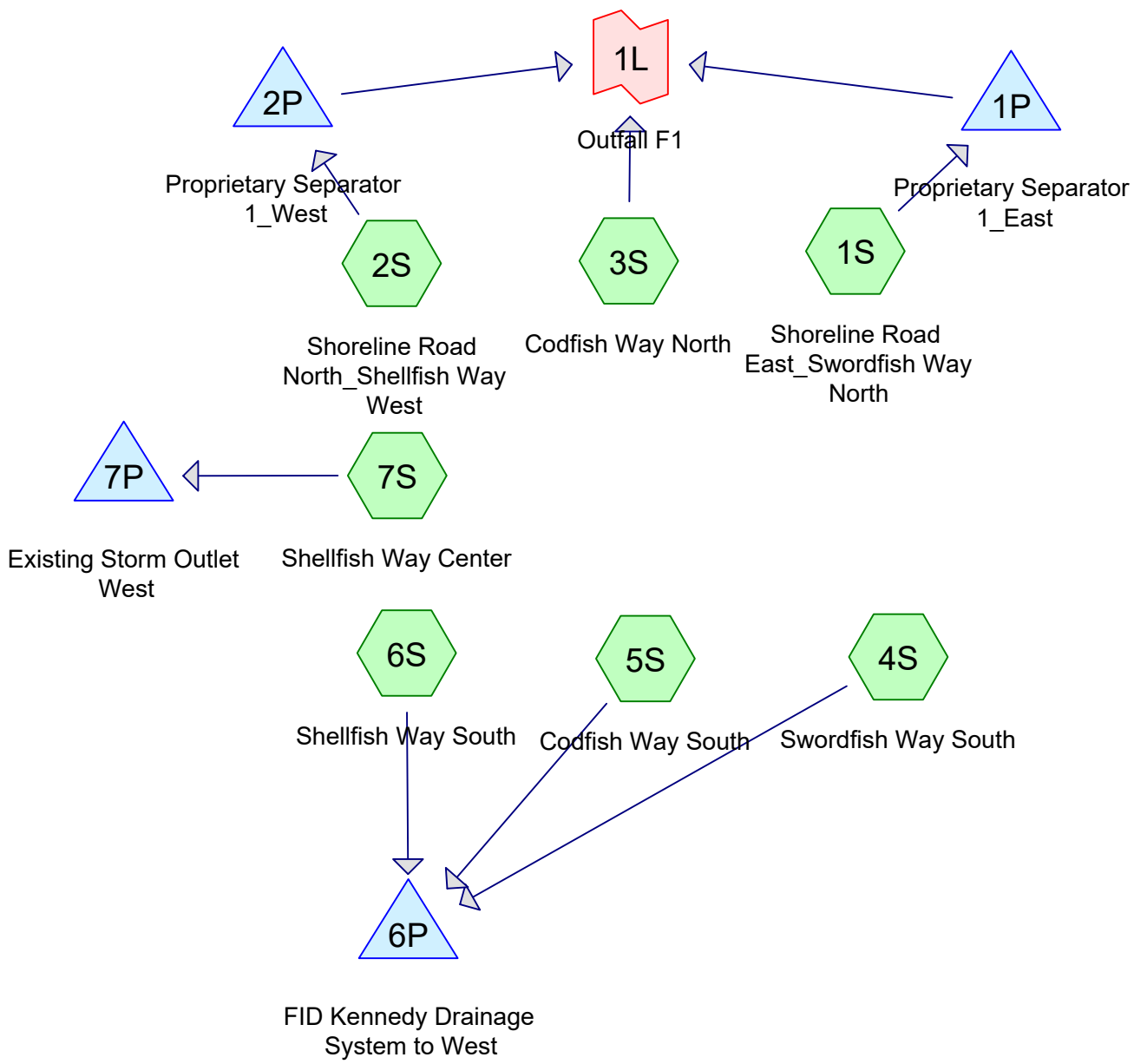
Inflow Area = 97,861 sf, 100.00% Impervious, Inflow Depth = 5.26" for 25-Year event  
 Inflow = 12.53 cfs @ 12.07 hrs, Volume= 42,916 cf  
 Primary = 12.53 cfs @ 12.07 hrs, Volume= 42,916 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

**Summary for Pond 7P: Existing Storm Outlet West**

Inflow Area = 58,750 sf, 100.00% Impervious, Inflow Depth = 5.26" for 25-Year event  
 Inflow = 7.53 cfs @ 12.07 hrs, Volume= 25,764 cf  
 Primary = 7.53 cfs @ 12.07 hrs, Volume= 25,764 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs



**Routing Diagram for MMT\_POST**  
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MMT Infrastructure Improvements Project M664

*Type III 24-hr 2-Year Rainfall=3.20"*

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Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

<b>Subcatchment1S: Shoreline Road</b>	Runoff Area=23,250 sf 100.00% Impervious Runoff Depth=2.97" Tc=5.0 min CN=98 Runoff=1.7 cfs 0.132 af
<b>Subcatchment2S: Shoreline Road</b>	Runoff Area=12,037 sf 100.00% Impervious Runoff Depth=2.97" Tc=5.0 min CN=98 Runoff=0.9 cfs 0.068 af
<b>Subcatchment3S: Codfish Way North</b>	Runoff Area=20,901 sf 100.00% Impervious Runoff Depth=2.97" Tc=5.0 min CN=98 Runoff=1.5 cfs 0.119 af
<b>Subcatchment4S: Swordfish Way South</b>	Runoff Area=27,667 sf 100.00% Impervious Runoff Depth=2.97" Tc=5.0 min CN=98 Runoff=2.0 cfs 0.157 af
<b>Subcatchment5S: Codfish Way South</b>	Runoff Area=16,575 sf 100.00% Impervious Runoff Depth=2.97" Tc=5.0 min CN=98 Runoff=1.2 cfs 0.094 af
<b>Subcatchment6S: Shellfish Way South</b>	Runoff Area=9,468 sf 100.00% Impervious Runoff Depth=2.97" Tc=5.0 min CN=98 Runoff=0.7 cfs 0.054 af
<b>Subcatchment7S: Shellfish Way Center</b>	Runoff Area=46,713 sf 100.00% Impervious Runoff Depth=2.97" Tc=5.0 min CN=98 Runoff=3.5 cfs 0.265 af
<b>Pond 1P: Proprietary Separator 1_East</b>	Inflow=1.7 cfs 0.132 af Primary=1.7 cfs 0.132 af
<b>Pond 2P: Proprietary Separator 1_West</b>	Inflow=0.9 cfs 0.068 af Primary=0.9 cfs 0.068 af
<b>Pond 6P: FID Kennedy Drainage System to West</b>	Inflow=4.0 cfs 0.305 af Primary=4.0 cfs 0.305 af
<b>Pond 7P: Existing Storm Outlet West</b>	Inflow=3.5 cfs 0.265 af Primary=3.5 cfs 0.265 af
<b>Link 1L: Outfall F1</b>	Inflow=4.2 cfs 0.319 af Primary=4.2 cfs 0.319 af

**Total Runoff Area = 3.60 ac Runoff Volume = 0.889 af Average Runoff Depth = 2.97"**  
**0.00% Pervious = 0.00 ac 100.00% Impervious = 3.60 ac**

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**Summary for Subcatchment 1S: Shoreline Road East\_Swordfish Way North**

Runoff = 1.7 cfs @ 12.07 hrs, Volume= 0.132 af, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-Year Rainfall=3.20"

	Area (sf)	CN	Description
*	4,899	98	Shoreline Road DA 02
*	6,542	98	Shoreline Road DA 03
*	5,370	98	Swordfish Way DA 04
*	6,439	98	Swordfish Way DA 05
	23,250	98	Weighted Average
	23,250		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry,</b>

**Summary for Subcatchment 2S: Shoreline Road North\_Shellfish Way West**

Runoff = 0.9 cfs @ 12.07 hrs, Volume= 0.068 af, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-Year Rainfall=3.20"

	Area (sf)	CN	Description
*	5,641	98	Shoreline Road DA 07
*	6,396	98	Shoreline Road DA 06
	12,037	98	Weighted Average
	12,037		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry,</b>

**Summary for Subcatchment 3S: Codfish Way North**

Runoff = 1.5 cfs @ 12.07 hrs, Volume= 0.119 af, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-Year Rainfall=3.20"

	Area (sf)	CN	Description
*	4,636	98	Codfish Way DA 01
*	16,265	98	Codfish Way DA 13
	20,901	98	Weighted Average
	20,901		100.00% Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry,</b>

**Summary for Subcatchment 4S: Swordfish Way South**

Runoff = 2.0 cfs @ 12.07 hrs, Volume= 0.157 af, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
* 14,823	98	Swordfish Way South DA 11
* 12,844	98	Swordfish Way South DA 12
27,667	98	Weighted Average
27,667		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry,</b>

**Summary for Subcatchment 5S: Codfish Way South**

Runoff = 1.2 cfs @ 12.07 hrs, Volume= 0.094 af, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
* 16,575	98	Codfish Way South DA 14
16,575		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry,</b>

**Summary for Subcatchment 6S: Shellfish Way South**

Runoff = 0.7 cfs @ 12.07 hrs, Volume= 0.054 af, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
* 9,468	98	Shellfish Way at FID Kennedy South DA 10
9,468		100.00% Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry, Direct</b>

**Summary for Subcatchment 7S: Shellfish Way Center**

Runoff = 3.5 cfs @ 12.07 hrs, Volume= 0.265 af, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-Year Rainfall=3.20"

Area (sf)	CN	Description
* 16,495	98	Shellfish Way South DA 09
* 12,601	98	Shellfish Way South DA 08
* 17,617	98	Shellfish Way South DA 08-1
46,713	98	Weighted Average
46,713		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry, Direct</b>

**Summary for Pond 1P: Proprietary Separator 1\_East**

Inflow Area = 0.53 ac, 100.00% Impervious, Inflow Depth = 2.97" for 2-Year event  
 Inflow = 1.7 cfs @ 12.07 hrs, Volume= 0.132 af  
 Primary = 1.7 cfs @ 12.07 hrs, Volume= 0.132 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

**Summary for Pond 2P: Proprietary Separator 1\_West**

Inflow Area = 0.28 ac, 100.00% Impervious, Inflow Depth = 2.97" for 2-Year event  
 Inflow = 0.9 cfs @ 12.07 hrs, Volume= 0.068 af  
 Primary = 0.9 cfs @ 12.07 hrs, Volume= 0.068 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

**Summary for Pond 6P: FID Kennedy Drainage System to West**

Inflow Area = 1.23 ac, 100.00% Impervious, Inflow Depth = 2.97" for 2-Year event  
 Inflow = 4.0 cfs @ 12.07 hrs, Volume= 0.305 af  
 Primary = 4.0 cfs @ 12.07 hrs, Volume= 0.305 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs



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**Summary for Pond 7P: Existing Storm Outlet West**

Inflow Area = 1.07 ac, 100.00% Impervious, Inflow Depth = 2.97" for 2-Year event  
Inflow = 3.5 cfs @ 12.07 hrs, Volume= 0.265 af  
Primary = 3.5 cfs @ 12.07 hrs, Volume= 0.265 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

**Summary for Link 1L: Outfall F1**

Inflow Area = 1.29 ac, 100.00% Impervious, Inflow Depth = 2.97" for 2-Year event  
Inflow = 4.2 cfs @ 12.07 hrs, Volume= 0.319 af  
Primary = 4.2 cfs @ 12.07 hrs, Volume= 0.319 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

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*Type III 24-hr 10-Year Rainfall=4.60"*

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Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

<b>Subcatchment1S: Shoreline Road</b>	Runoff Area=23,250 sf 100.00% Impervious Tc=5.0 min CN=98	Runoff Depth=4.36" Runoff=2.5 cfs 0.194 af
<b>Subcatchment2S: Shoreline Road</b>	Runoff Area=12,037 sf 100.00% Impervious Tc=5.0 min CN=98	Runoff Depth=4.36" Runoff=1.3 cfs 0.100 af
<b>Subcatchment3S: Codfish Way North</b>	Runoff Area=20,901 sf 100.00% Impervious Tc=5.0 min CN=98	Runoff Depth=4.36" Runoff=2.2 cfs 0.174 af
<b>Subcatchment4S: Swordfish Way South</b>	Runoff Area=27,667 sf 100.00% Impervious Tc=5.0 min CN=98	Runoff Depth=4.36" Runoff=3.0 cfs 0.231 af
<b>Subcatchment5S: Codfish Way South</b>	Runoff Area=16,575 sf 100.00% Impervious Tc=5.0 min CN=98	Runoff Depth=4.36" Runoff=1.8 cfs 0.138 af
<b>Subcatchment6S: Shellfish Way South</b>	Runoff Area=9,468 sf 100.00% Impervious Tc=5.0 min CN=98	Runoff Depth=4.36" Runoff=1.0 cfs 0.079 af
<b>Subcatchment7S: Shellfish Way Center</b>	Runoff Area=46,713 sf 100.00% Impervious Tc=5.0 min CN=98	Runoff Depth=4.36" Runoff=5.0 cfs 0.390 af
<b>Pond 1P: Proprietary Separator 1_East</b>		Inflow=2.5 cfs 0.194 af Primary=2.5 cfs 0.194 af
<b>Pond 2P: Proprietary Separator 1_West</b>		Inflow=1.3 cfs 0.100 af Primary=1.3 cfs 0.100 af
<b>Pond 6P: FID Kennedy Drainage System to West</b>		Inflow=5.7 cfs 0.448 af Primary=5.7 cfs 0.448 af
<b>Pond 7P: Existing Storm Outlet West</b>		Inflow=5.0 cfs 0.390 af Primary=5.0 cfs 0.390 af
<b>Link 1L: Outfall F1</b>		Inflow=6.0 cfs 0.469 af Primary=6.0 cfs 0.469 af

**Total Runoff Area = 3.60 ac    Runoff Volume = 1.307 af    Average Runoff Depth = 4.36"**  
**0.00% Pervious = 0.00 ac    100.00% Impervious = 3.60 ac**

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**Summary for Subcatchment 1S: Shoreline Road East\_Swordfish Way North**

Runoff = 2.5 cfs @ 12.07 hrs, Volume= 0.194 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
*	4,899	98	Shoreline Road DA 02
*	6,542	98	Shoreline Road DA 03
*	5,370	98	Swordfish Way DA 04
*	6,439	98	Swordfish Way DA 05
	23,250	98	Weighted Average
	23,250		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry,</b>

**Summary for Subcatchment 2S: Shoreline Road North\_Shellfish Way West**

Runoff = 1.3 cfs @ 12.07 hrs, Volume= 0.100 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
*	5,641	98	Shoreline Road DA 07
*	6,396	98	Shoreline Road DA 06
	12,037	98	Weighted Average
	12,037		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry,</b>

**Summary for Subcatchment 3S: Codfish Way North**

Runoff = 2.2 cfs @ 12.07 hrs, Volume= 0.174 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=4.60"

	Area (sf)	CN	Description
*	4,636	98	Codfish Way DA 01
*	16,265	98	Codfish Way DA 13
	20,901	98	Weighted Average
	20,901		100.00% Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry,</b>

**Summary for Subcatchment 4S: Swordfish Way South**

Runoff = 3.0 cfs @ 12.07 hrs, Volume= 0.231 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
* 14,823	98	Swordfish Way South DA 11
* 12,844	98	Swordfish Way South DA 12
27,667	98	Weighted Average
27,667		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry,</b>

**Summary for Subcatchment 5S: Codfish Way South**

Runoff = 1.8 cfs @ 12.07 hrs, Volume= 0.138 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
* 16,575	98	Codfish Way South DA 14
16,575		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry,</b>

**Summary for Subcatchment 6S: Shellfish Way South**

Runoff = 1.0 cfs @ 12.07 hrs, Volume= 0.079 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
* 9,468	98	Shellfish Way at FID Kennedy South DA 10
9,468		100.00% Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry, Direct</b>

**Summary for Subcatchment 7S: Shellfish Way Center**

Runoff = 5.0 cfs @ 12.07 hrs, Volume= 0.390 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=4.60"

Area (sf)	CN	Description
* 16,495	98	Shellfish Way South DA 09
* 12,601	98	Shellfish Way South DA 08
* 17,617	98	Shellfish Way South DA 08-1
46,713	98	Weighted Average
46,713		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry, Direct</b>

**Summary for Pond 1P: Proprietary Separator 1\_East**

Inflow Area = 0.53 ac, 100.00% Impervious, Inflow Depth = 4.36" for 10-Year event  
 Inflow = 2.5 cfs @ 12.07 hrs, Volume= 0.194 af  
 Primary = 2.5 cfs @ 12.07 hrs, Volume= 0.194 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

**Summary for Pond 2P: Proprietary Separator 1\_West**

Inflow Area = 0.28 ac, 100.00% Impervious, Inflow Depth = 4.36" for 10-Year event  
 Inflow = 1.3 cfs @ 12.07 hrs, Volume= 0.100 af  
 Primary = 1.3 cfs @ 12.07 hrs, Volume= 0.100 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

**Summary for Pond 6P: FID Kennedy Drainage System to West**

Inflow Area = 1.23 ac, 100.00% Impervious, Inflow Depth = 4.36" for 10-Year event  
 Inflow = 5.7 cfs @ 12.07 hrs, Volume= 0.448 af  
 Primary = 5.7 cfs @ 12.07 hrs, Volume= 0.448 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

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**Summary for Pond 7P: Existing Storm Outlet West**

Inflow Area = 1.07 ac, 100.00% Impervious, Inflow Depth = 4.36" for 10-Year event  
Inflow = 5.0 cfs @ 12.07 hrs, Volume= 0.390 af  
Primary = 5.0 cfs @ 12.07 hrs, Volume= 0.390 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

**Summary for Link 1L: Outfall F1**

Inflow Area = 1.29 ac, 100.00% Impervious, Inflow Depth = 4.36" for 10-Year event  
Inflow = 6.0 cfs @ 12.07 hrs, Volume= 0.469 af  
Primary = 6.0 cfs @ 12.07 hrs, Volume= 0.469 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

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*Type III 24-hr 25-Year Rainfall=5.50"*

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Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

<b>Subcatchment1S: Shoreline Road</b>	Runoff Area=23,250 sf 100.00% Impervious Runoff Depth=5.26" Tc=5.0 min CN=98 Runoff=3.0 cfs 0.234 af
<b>Subcatchment2S: Shoreline Road</b>	Runoff Area=12,037 sf 100.00% Impervious Runoff Depth=5.26" Tc=5.0 min CN=98 Runoff=1.5 cfs 0.121 af
<b>Subcatchment3S: Codfish Way North</b>	Runoff Area=20,901 sf 100.00% Impervious Runoff Depth=5.26" Tc=5.0 min CN=98 Runoff=2.7 cfs 0.210 af
<b>Subcatchment4S: Swordfish Way South</b>	Runoff Area=27,667 sf 100.00% Impervious Runoff Depth=5.26" Tc=5.0 min CN=98 Runoff=3.5 cfs 0.279 af
<b>Subcatchment5S: Codfish Way South</b>	Runoff Area=16,575 sf 100.00% Impervious Runoff Depth=5.26" Tc=5.0 min CN=98 Runoff=2.1 cfs 0.167 af
<b>Subcatchment6S: Shellfish Way South</b>	Runoff Area=9,468 sf 100.00% Impervious Runoff Depth=5.26" Tc=5.0 min CN=98 Runoff=1.2 cfs 0.095 af
<b>Subcatchment7S: Shellfish Way Center</b>	Runoff Area=46,713 sf 100.00% Impervious Runoff Depth=5.26" Tc=5.0 min CN=98 Runoff=6.0 cfs 0.470 af
<b>Pond 1P: Proprietary Separator 1_East</b>	Inflow=3.0 cfs 0.234 af Primary=3.0 cfs 0.234 af
<b>Pond 2P: Proprietary Separator 1_West</b>	Inflow=1.5 cfs 0.121 af Primary=1.5 cfs 0.121 af
<b>Pond 6P: FID Kennedy Drainage System to West</b>	Inflow=6.9 cfs 0.541 af Primary=6.9 cfs 0.541 af
<b>Pond 7P: Existing Storm Outlet West</b>	Inflow=6.0 cfs 0.470 af Primary=6.0 cfs 0.470 af
<b>Link 1L: Outfall F1</b>	Inflow=7.2 cfs 0.566 af Primary=7.2 cfs 0.566 af

**Total Runoff Area = 3.60 ac Runoff Volume = 1.577 af Average Runoff Depth = 5.26"**  
**0.00% Pervious = 0.00 ac 100.00% Impervious = 3.60 ac**

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**Summary for Subcatchment 1S: Shoreline Road East\_Swordfish Way North**

Runoff = 3.0 cfs @ 12.07 hrs, Volume= 0.234 af, Depth= 5.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-Year Rainfall=5.50"

	Area (sf)	CN	Description
*	4,899	98	Shoreline Road DA 02
*	6,542	98	Shoreline Road DA 03
*	5,370	98	Swordfish Way DA 04
*	6,439	98	Swordfish Way DA 05
	23,250	98	Weighted Average
	23,250		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry,</b>

**Summary for Subcatchment 2S: Shoreline Road North\_Shellfish Way West**

Runoff = 1.5 cfs @ 12.07 hrs, Volume= 0.121 af, Depth= 5.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-Year Rainfall=5.50"

	Area (sf)	CN	Description
*	5,641	98	Shoreline Road DA 07
*	6,396	98	Shoreline Road DA 06
	12,037	98	Weighted Average
	12,037		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry,</b>

**Summary for Subcatchment 3S: Codfish Way North**

Runoff = 2.7 cfs @ 12.07 hrs, Volume= 0.210 af, Depth= 5.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-Year Rainfall=5.50"

	Area (sf)	CN	Description
*	4,636	98	Codfish Way DA 01
*	16,265	98	Codfish Way DA 13
	20,901	98	Weighted Average
	20,901		100.00% Impervious Area



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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry,</b>

**Summary for Subcatchment 4S: Swordfish Way South**

Runoff = 3.5 cfs @ 12.07 hrs, Volume= 0.279 af, Depth= 5.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-Year Rainfall=5.50"

Area (sf)	CN	Description
* 14,823	98	Swordfish Way South DA 11
* 12,844	98	Swordfish Way South DA 12
27,667	98	Weighted Average
27,667		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry,</b>

**Summary for Subcatchment 5S: Codfish Way South**

Runoff = 2.1 cfs @ 12.07 hrs, Volume= 0.167 af, Depth= 5.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-Year Rainfall=5.50"

Area (sf)	CN	Description
* 16,575	98	Codfish Way South DA 14
16,575		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry,</b>

**Summary for Subcatchment 6S: Shellfish Way South**

Runoff = 1.2 cfs @ 12.07 hrs, Volume= 0.095 af, Depth= 5.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-Year Rainfall=5.50"

Area (sf)	CN	Description
* 9,468	98	Shellfish Way at FID Kennedy South DA 10
9,468		100.00% Impervious Area

**MMT\_POST**

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Page 15

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry, Direct</b>

**Summary for Subcatchment 7S: Shellfish Way Center**

Runoff = 6.0 cfs @ 12.07 hrs, Volume= 0.470 af, Depth= 5.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-Year Rainfall=5.50"

Area (sf)	CN	Description
* 16,495	98	Shellfish Way South DA 09
* 12,601	98	Shellfish Way South DA 08
* 17,617	98	Shellfish Way South DA 08-1
46,713	98	Weighted Average
46,713		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					<b>Direct Entry, Direct</b>

**Summary for Pond 1P: Proprietary Separator 1\_East**

Inflow Area = 0.53 ac, 100.00% Impervious, Inflow Depth = 5.26" for 25-Year event  
 Inflow = 3.0 cfs @ 12.07 hrs, Volume= 0.234 af  
 Primary = 3.0 cfs @ 12.07 hrs, Volume= 0.234 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

**Summary for Pond 2P: Proprietary Separator 1\_West**

Inflow Area = 0.28 ac, 100.00% Impervious, Inflow Depth = 5.26" for 25-Year event  
 Inflow = 1.5 cfs @ 12.07 hrs, Volume= 0.121 af  
 Primary = 1.5 cfs @ 12.07 hrs, Volume= 0.121 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

**Summary for Pond 6P: FID Kennedy Drainage System to West**

Inflow Area = 1.23 ac, 100.00% Impervious, Inflow Depth = 5.26" for 25-Year event  
 Inflow = 6.9 cfs @ 12.07 hrs, Volume= 0.541 af  
 Primary = 6.9 cfs @ 12.07 hrs, Volume= 0.541 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

**MMT\_POST**

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**Summary for Pond 7P: Existing Storm Outlet West**

Inflow Area = 1.07 ac, 100.00% Impervious, Inflow Depth = 5.26" for 25-Year event  
Inflow = 6.0 cfs @ 12.07 hrs, Volume= 0.470 af  
Primary = 6.0 cfs @ 12.07 hrs, Volume= 0.470 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

**Summary for Link 1L: Outfall F1**

Inflow Area = 1.29 ac, 100.00% Impervious, Inflow Depth = 5.26" for 25-Year event  
Inflow = 7.2 cfs @ 12.07 hrs, Volume= 0.566 af  
Primary = 7.2 cfs @ 12.07 hrs, Volume= 0.566 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

**CDS ESTIMATED NET ANNUAL SOLIDS LOAD REDUCTION  
BASED ON THE RATIONAL RAINFALL METHOD**

**MASSPORT MARINE TERMINAL  
BOSTON, MA, MA**

Area **0.28 ac**  
Weighted C **0.9**  
 $t_c$  **6 min**  
CDS Model **2015-4**

Unit Site Designation **WQS 1**  
Rainfall Station # **69**

CDS Treatment Capacity **1.4 cfs**

<u>Rainfall Intensity<sup>1</sup></u> (in/hr)	<u>Percent Rainfall Volume<sup>1</sup></u>	<u>Cumulative Rainfall Volume</u>	<u>Total Flowrate (cfs)</u>	<u>Treated Flowrate (cfs)</u>	<u>Incremental Removal (%)</u>
0.02	10.2%	10.2%	0.01	0.01	10.2
0.04	9.6%	19.8%	0.01	0.01	9.6
0.06	9.4%	29.3%	0.02	0.02	9.4
0.08	7.7%	37.0%	0.02	0.02	7.7
0.10	8.6%	45.6%	0.03	0.03	8.6
0.12	6.3%	51.9%	0.03	0.03	6.3
0.14	4.7%	56.5%	0.04	0.04	4.7
0.16	4.6%	61.2%	0.04	0.04	4.6
0.18	3.5%	64.7%	0.05	0.05	3.5
0.20	4.3%	69.1%	0.05	0.05	4.3
0.25	8.0%	77.1%	0.06	0.06	7.9
0.30	5.6%	82.7%	0.08	0.08	5.5
0.35	4.4%	87.0%	0.09	0.09	4.3
0.40	2.5%	89.5%	0.10	0.10	2.5
0.45	2.5%	92.1%	0.11	0.11	2.5
0.50	1.4%	93.5%	0.13	0.13	1.3
0.75	5.0%	98.5%	0.19	0.19	4.8
1.00	1.0%	99.5%	0.25	0.25	0.9
1.50	0.0%	99.5%	0.38	0.38	0.0
2.00	0.0%	99.5%	0.50	0.50	0.0
3.00	0.5%	100.0%	0.76	0.76	0.4
					99.2

Removal Efficiency Adjustment<sup>2</sup> = 6.5%

Predicted % Annual Rainfall Treated = 93.5%

**Predicted Net Annual Load Removal Efficiency = 92.7%**

1 - Based on 10 years of hourly precipitation data from NCDC Station 770, Boston WSFO AP, Suffolk County, MA

2 - Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.

**CDS ESTIMATED NET ANNUAL SOLIDS LOAD REDUCTION  
BASED ON THE RATIONAL RAINFALL METHOD**

**MASSPORT MARINE TERMINAL  
BOSTON, MA, MA**

Area **1.01 ac**  
Weighted C **0.9**  
 $t_c$  **6 min**  
CDS Model **2015-4**

Unit Site Designation **WQS 2**  
Rainfall Station # **69**  
  
CDS Treatment Capacity **1.4 cfs**

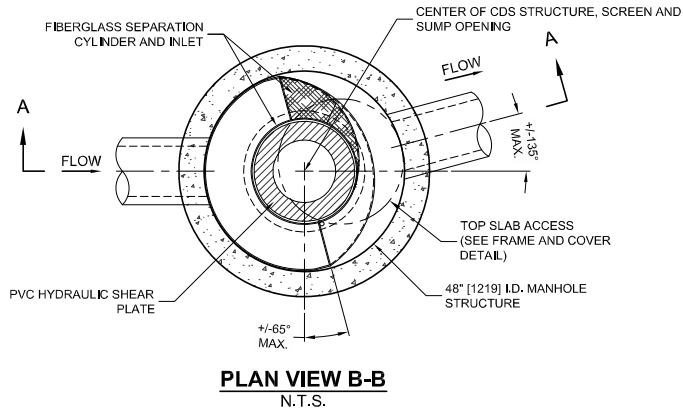
<u>Rainfall Intensity<sup>1</sup></u> (in/hr)	<u>Percent Rainfall Volume<sup>1</sup></u>	<u>Cumulative Rainfall Volume</u>	<u>Total Flowrate (cfs)</u>	<u>Treated Flowrate (cfs)</u>	<u>Incremental Removal (%)</u>
0.02	10.2%	10.2%	0.02	0.02	10.2
0.04	9.6%	19.8%	0.04	0.04	9.6
0.06	9.4%	29.3%	0.05	0.05	9.4
0.08	7.7%	37.0%	0.07	0.07	7.7
0.10	8.6%	45.6%	0.09	0.09	8.4
0.12	6.3%	51.9%	0.11	0.11	6.2
0.14	4.7%	56.5%	0.13	0.13	4.5
0.16	4.6%	61.2%	0.15	0.15	4.5
0.18	3.5%	64.7%	0.16	0.16	3.4
0.20	4.3%	69.1%	0.18	0.18	4.1
0.25	8.0%	77.1%	0.23	0.23	7.5
0.30	5.6%	82.7%	0.27	0.27	5.2
0.35	4.4%	87.0%	0.32	0.32	4.0
0.40	2.5%	89.5%	0.36	0.36	2.3
0.45	2.5%	92.1%	0.41	0.41	2.2
0.50	1.4%	93.5%	0.45	0.45	1.2
0.75	5.0%	98.5%	0.68	0.68	3.9
1.00	1.0%	99.5%	0.91	0.91	0.7
1.50	0.0%	99.5%	1.36	1.36	0.0
2.00	0.0%	99.5%	1.82	1.40	0.0
3.00	0.5%	100.0%	2.73	1.40	0.1
					95.0
					Removal Efficiency Adjustment <sup>2</sup> = 6.5%
					Predicted % Annual Rainfall Treated = 93.3%
					<b>Predicted Net Annual Load Removal Efficiency = 88.6%</b>

1 - Based on 10 years of hourly precipitation data from NCDC Station 770, Boston WSFO AP, Suffolk County, MA

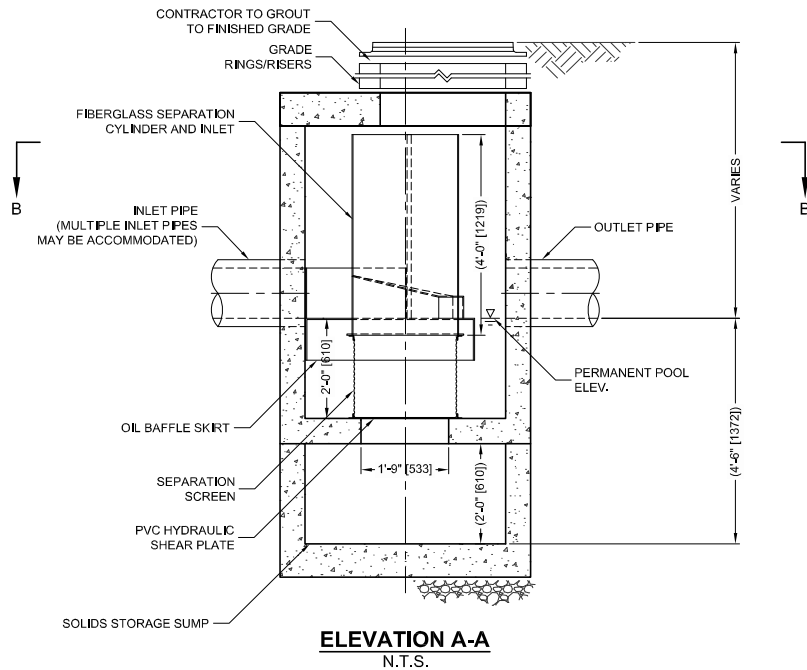
2 - Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.



C:\USERS\SCILACHTER\DESKTOP\CDS DETAILS 180 MIKRON SCREEN\GAD\CDS2015-4-C.DTL.DWG 5/19/2014 5:16 PM



**PLAN VIEW B-B**  
N.T.S.



**ELEVATION A-A**  
N.T.S.

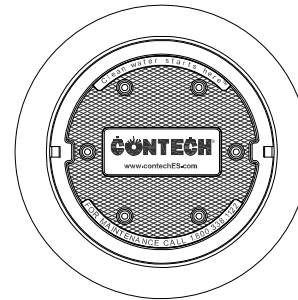


**CDS2015-4-C DESIGN NOTES**

THE STANDARD CDS2015-4-C CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW. SOME CONFIGURATIONS MAY BE COMBINED TO SUIT SITE REQUIREMENTS.

**CONFIGURATION DESCRIPTION**

- GRATED INLET ONLY (NO INLET PIPE)
- GRATED INLET WITH INLET PIPE OR PIPES
- CURB INLET ONLY (NO INLET PIPE)
- CURB INLET WITH INLET PIPE OR PIPES
- SEPARATE OIL BAFFLE (SINGLE INLET PIPE REQUIRED FOR THIS CONFIGURATION)
- SEDIMENT WEIR FOR NJDEP / NJCAT CONFORMING UNITS



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

**SITE SPECIFIC DATA REQUIREMENTS**

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

**GENERAL NOTES**

1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. [www.contechES.com](http://www.contechES.com)
4. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS20 AND CASTINGS SHALL MEET HS20 (AASHTO M 306) LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION.
6. PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.

**INSTALLATION NOTES**

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

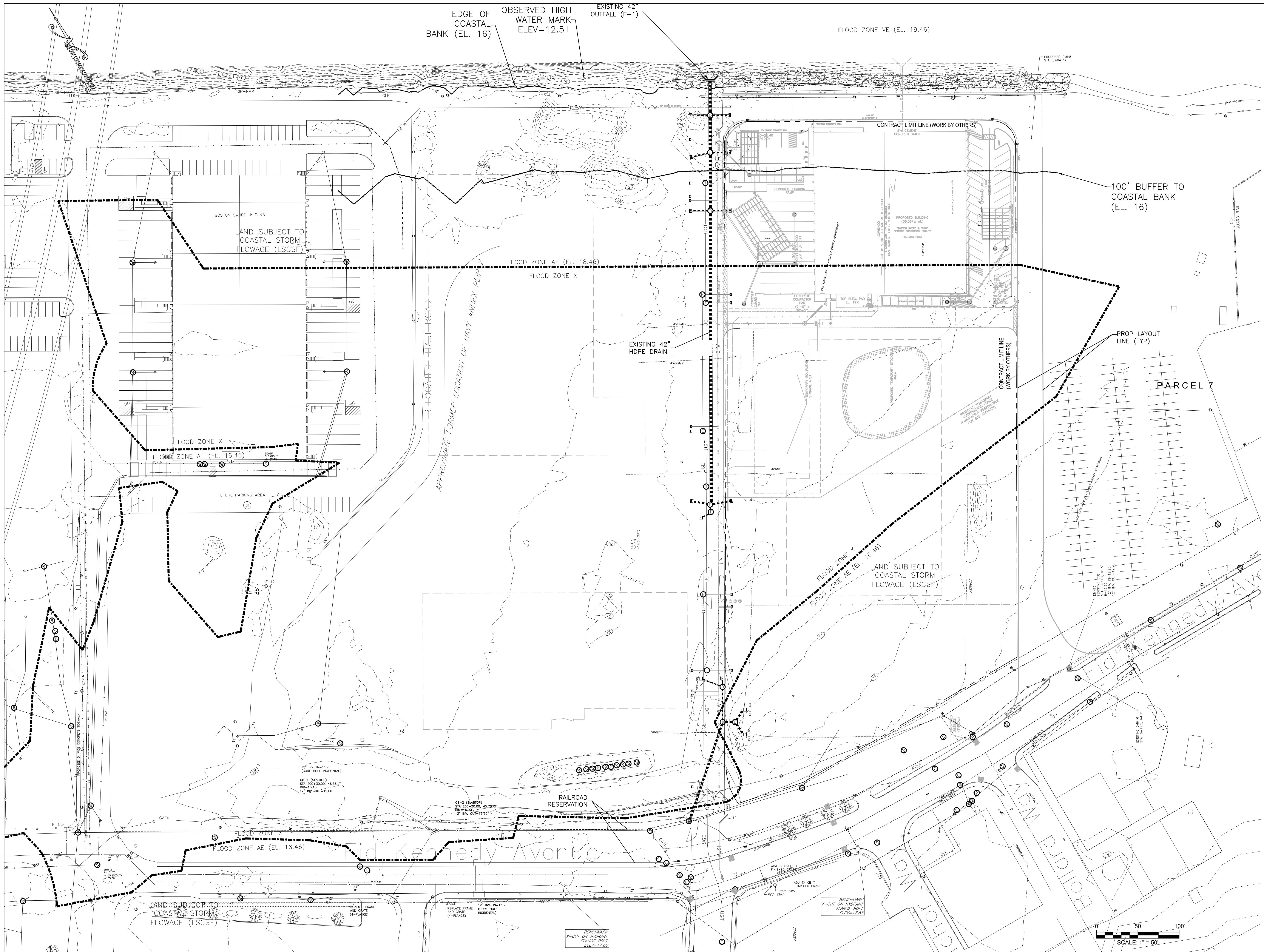


[www.contechES.com](http://www.contechES.com)  
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069  
800-338-1122 513-645-7000 513-645-7993 FAX

CDS2015-4-C  
INLINE CDS  
STANDARD DETAIL

## Appendix C: Project Plans

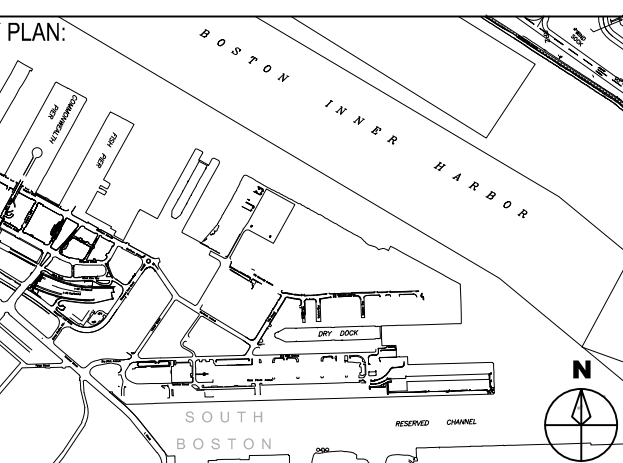
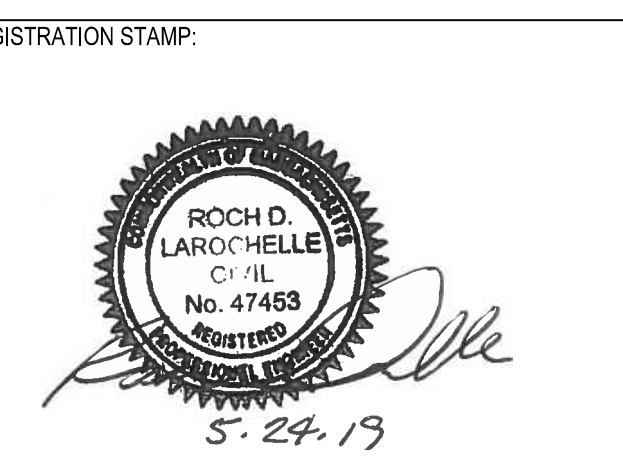




MASSACHUSETTS PORT AUTHORITY  
EAST BOSTON, MASSACHUSETTS 02128

PROJECT LOCATION:  
FID KENNEDY AVENUE  
BOSTON, MASSACHUSETTS

MPA CONTRACT NO.: M664  
LOCATION CODE: 4109  
PROJECT SUBMISSION PHASE:



REVISIONS:

REV NO.	DATE	DESCRIPTION	BY:

PRIMARY:  
**HDR**  
HDR ENGINEERING, INC.  
99 HIGH STREET, SUITE 2300  
BOSTON, MA 02110-2378  
(617) 357-7700 www.hdrinc.com

CONSULTANT:  
**MMT**  
MASSPORT MARINE TERMINAL  
INFRASTRUCTURE PROJECT

PROJECT NUMBER AND TITLE:  
**MMT**  
MASSPORT MARINE TERMINAL  
INFRASTRUCTURE PROJECT

SHEET TITLE:  
**EXISTING  
CONDITIONS PLAN**

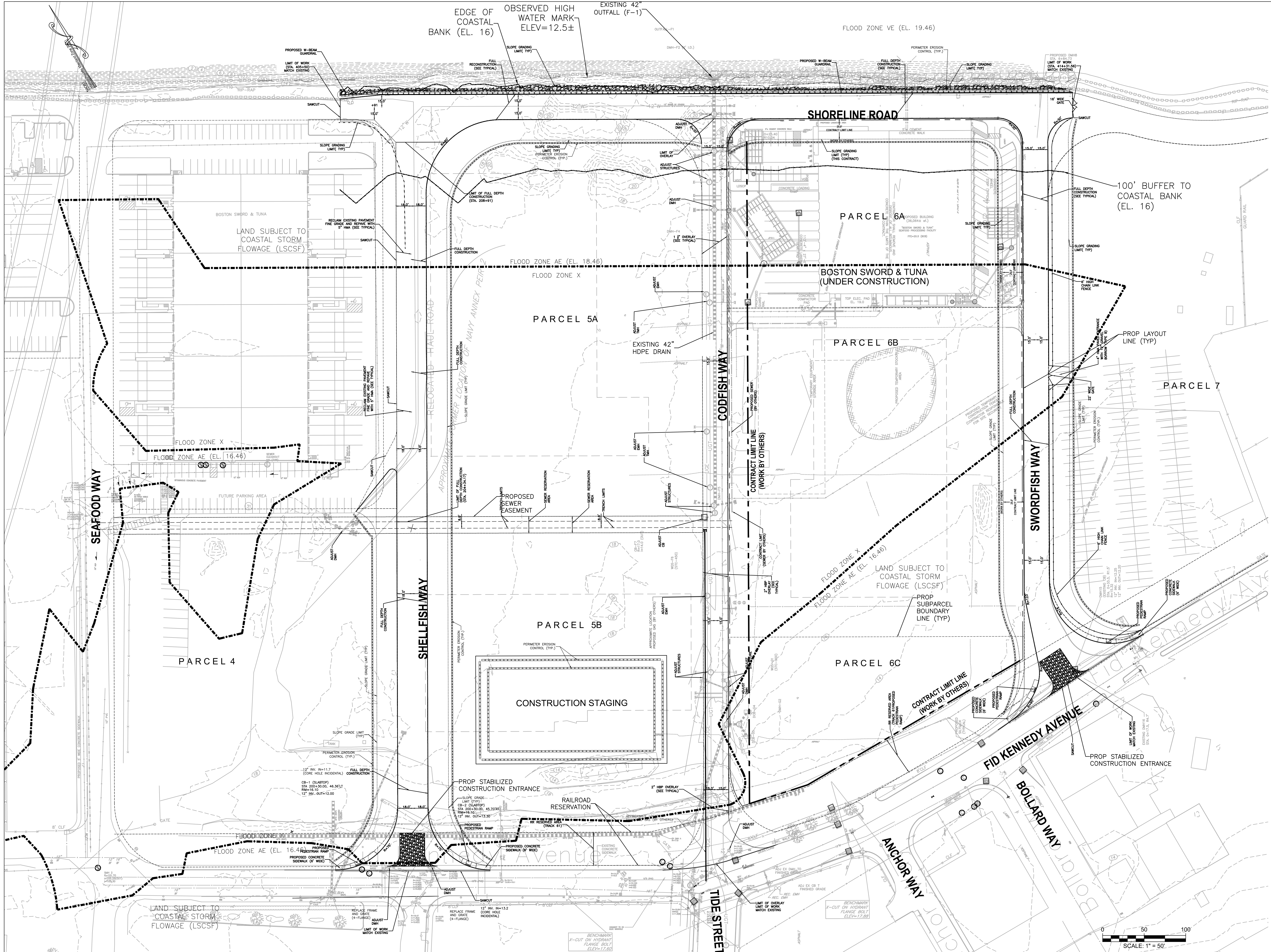
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CIVIL

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CHECKED BY: DES  
APPROVED BY: RDL

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DATE: 05/2019

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SHEET NO: 3 OF 15

**C-100**

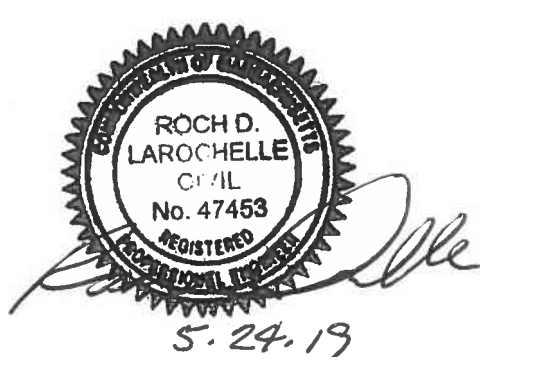


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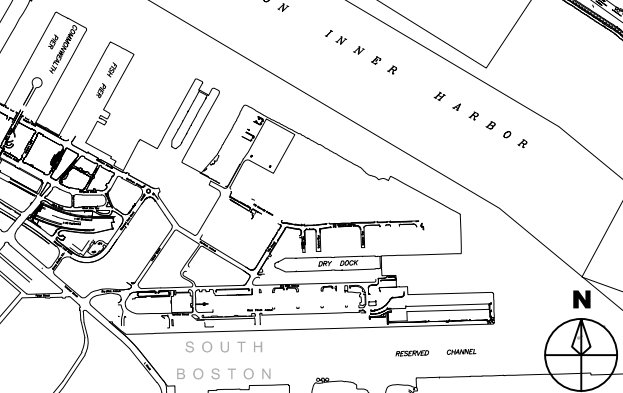
PROJECT LOCATION:  
FID KENNEDY AVENUE  
BOSTON, MASSACHUSETTS

MPA CONTRACT NO.: M664  
LOCATION CODE: 4109  
PROJECT SUBMISSION PHASE:

REGISTRATION STAMP:



KEY PLAN:



REVISIONS:

REV NO.	DATE	DESCRIPTION	BY:

PRIMARY:

**HDR**  
HDR ENGINEERING, INC.  
99 HIGH STREET, SUITE 2300  
BOSTON, MA 02110-2378  
(617) 357-7700 www.hdrinc.com

CONSULTANT:

PROJECT NUMBER AND TITLE:

**MMT**  
MASSPORT MARINE TERMINAL  
INFRASTRUCTURE PROJECT

SHEET TITLE:

EROSION CONTROL  
PLAN

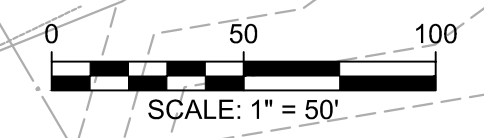
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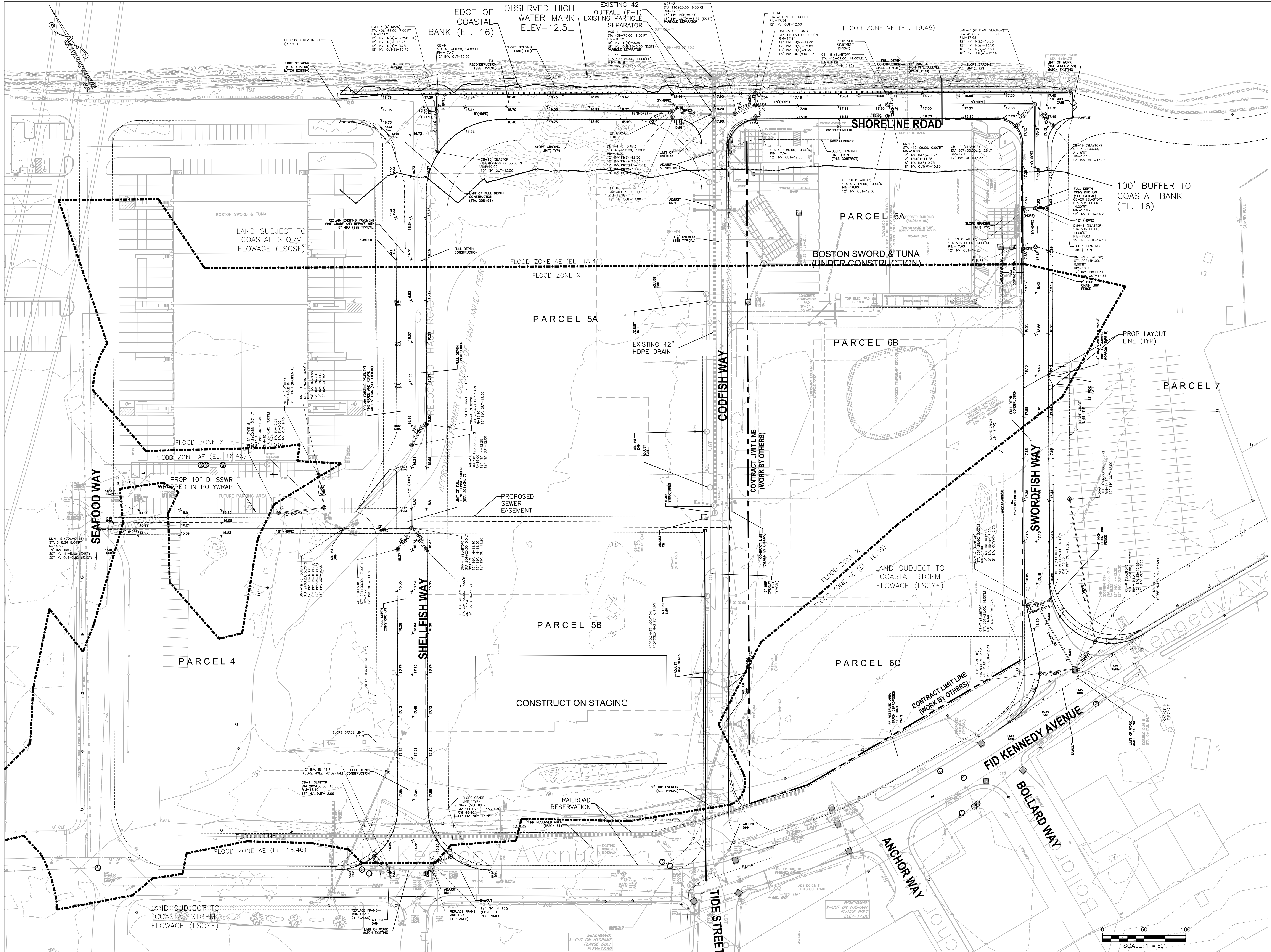
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**C-101**



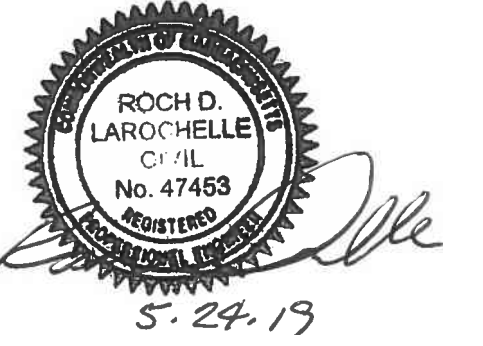


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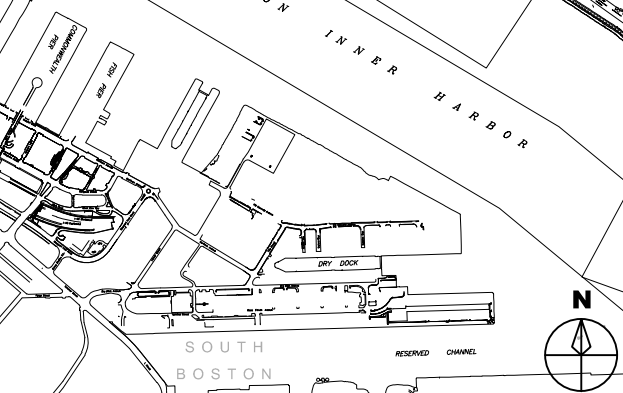
PROJECT LOCATION:  
FID KENNEDY AVENUE  
BOSTON, MASSACHUSETTS

MPA CONTRACT NO.: M664  
LOCATION CODE: 4109  
PROJECT SUBMISSION PHASE:

REGISTRATION STAMP:



KEY PLAN:



REVISIONS:

REV. NO.	DATE	DESCRIPTION	BY:

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(617) 357-7700 www.hdrinc.com

CONSULTANT:

PROJECT NUMBER AND TITLE:

**MMT**  
MASSPORT MARINE TERMINAL  
INFRASTRUCTURE PROJECT

SHEET TITLE:

GRADING &  
DRAINAGE PLAN

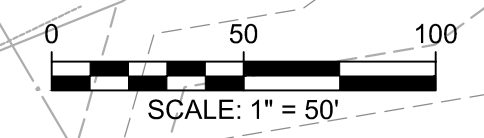
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DRAWN BY: CWA	CHECKED BY: DES	APPROVED BY: RDL
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**C-102**



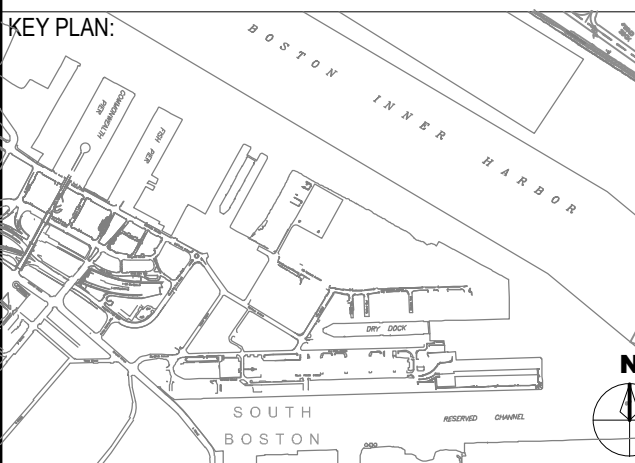
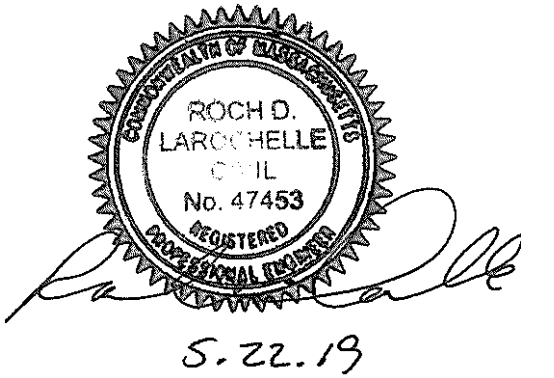


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PROJECT LOCATION:  
FID KENNEDY AVENUE  
BOSTON, MASSACHUSETTS

MPA CONTRACT NO.: M664  
LOCATION CODE: 4109  
PROJECT SUBMISSION PHASE:

REGISTRATION STAMP:



REV NO.	DATE	DESCRIPTION	BY

PRIMARY:  
**HDR**  
HDR ENGINEERING, INC.  
99 HIGH STREET, SUITE 2300  
BOSTON, MA 02110-2378  
(617) 357-7700 www.hdrinc.com

CONSULTANT:  
**MMT**  
MASSPORT MARINE TERMINAL  
INFRASTRUCTURE PROJECT

PROJECT NUMBER AND TITLE:  
**MMT**  
MASSPORT MARINE TERMINAL  
INFRASTRUCTURE PROJECT

SHEET TITLE:  
ROADWAY TYPICAL SECTIONS

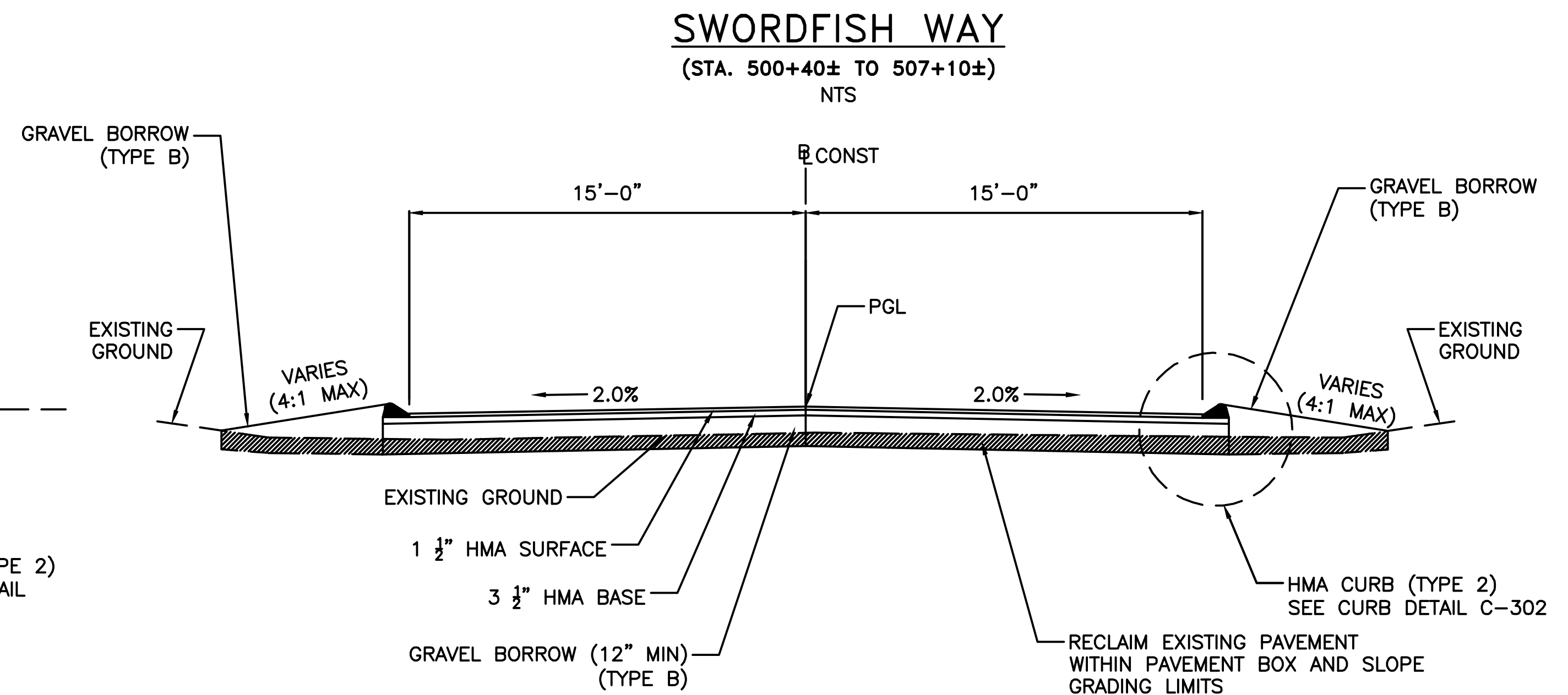
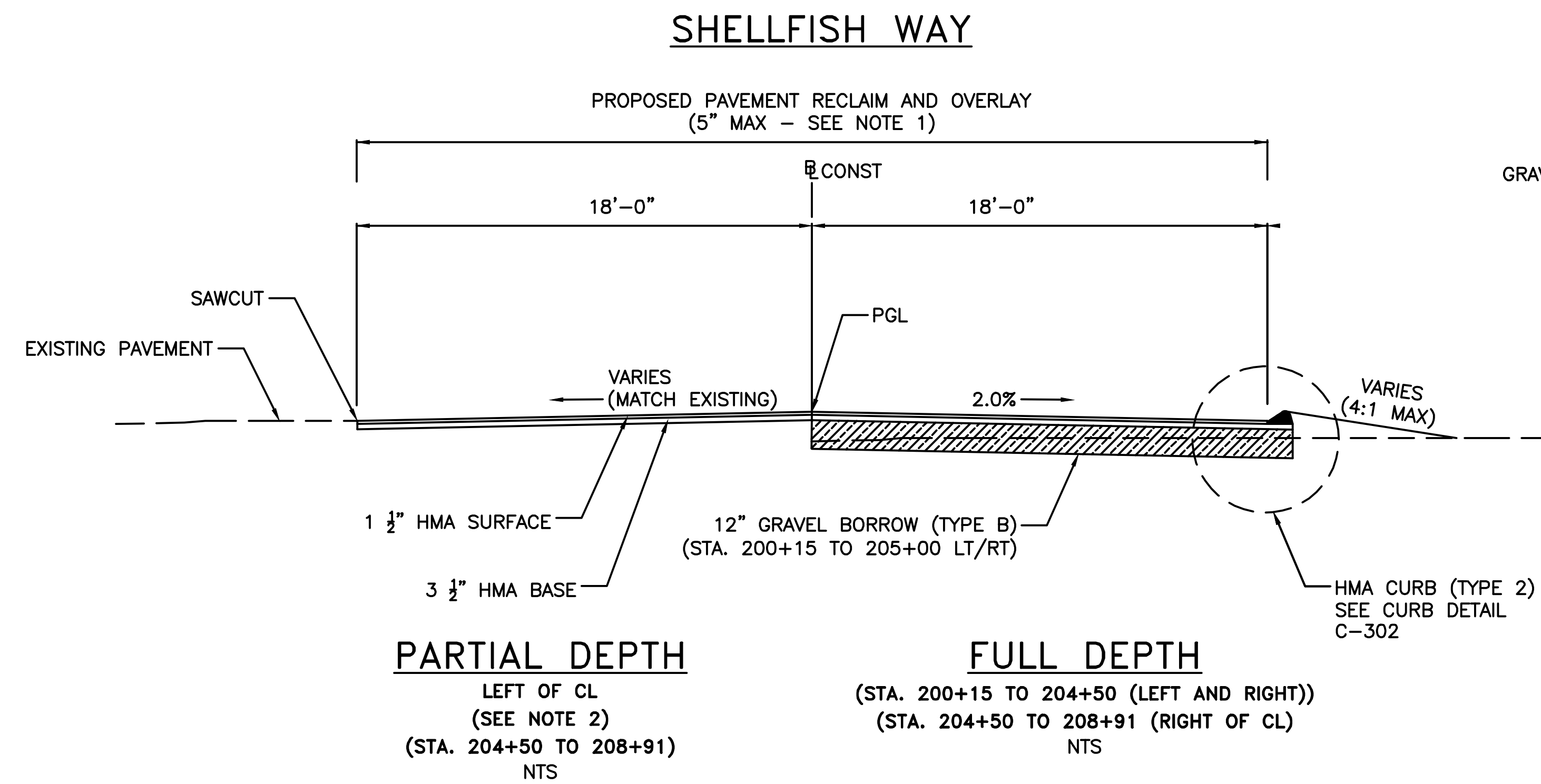
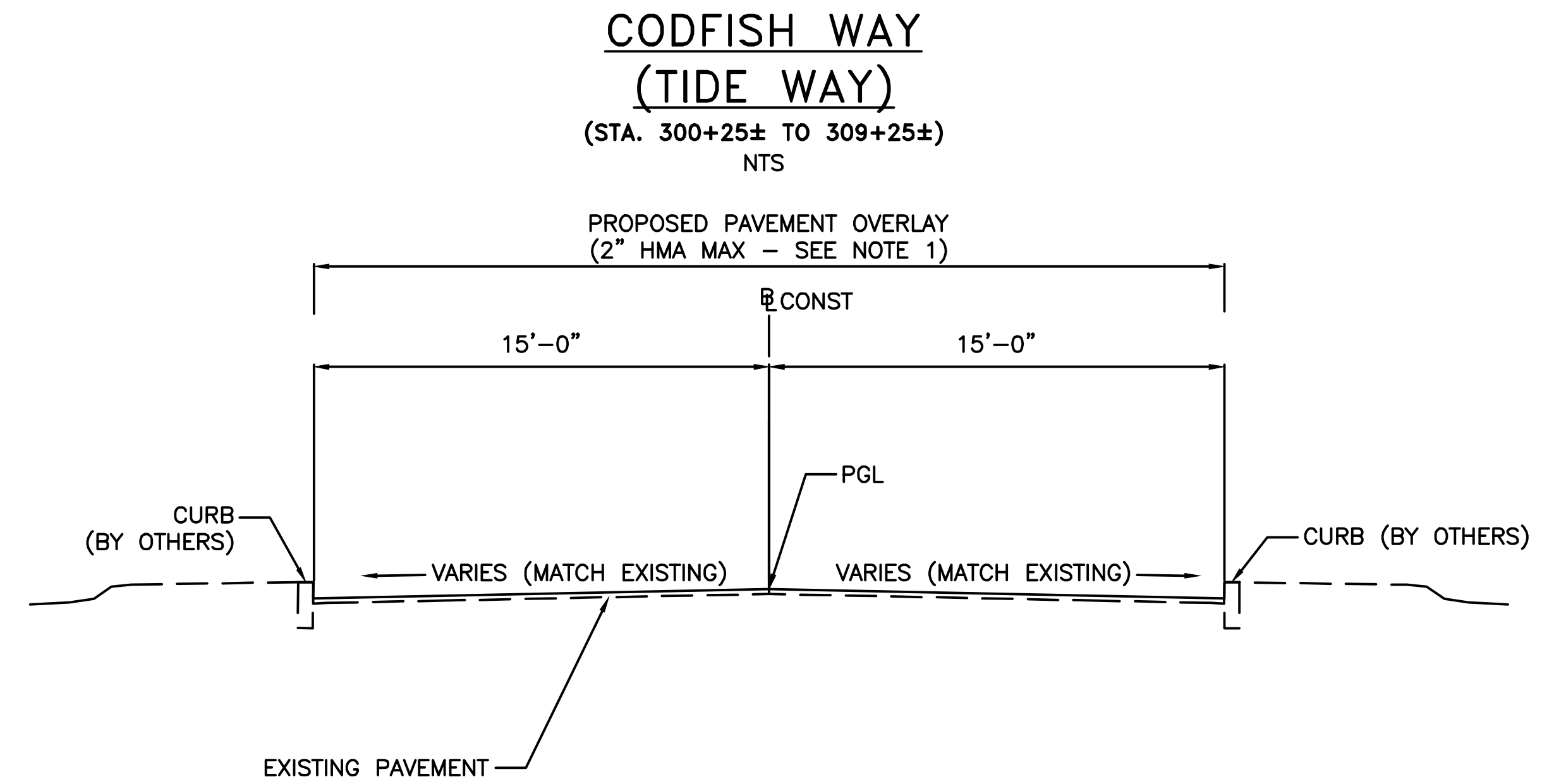
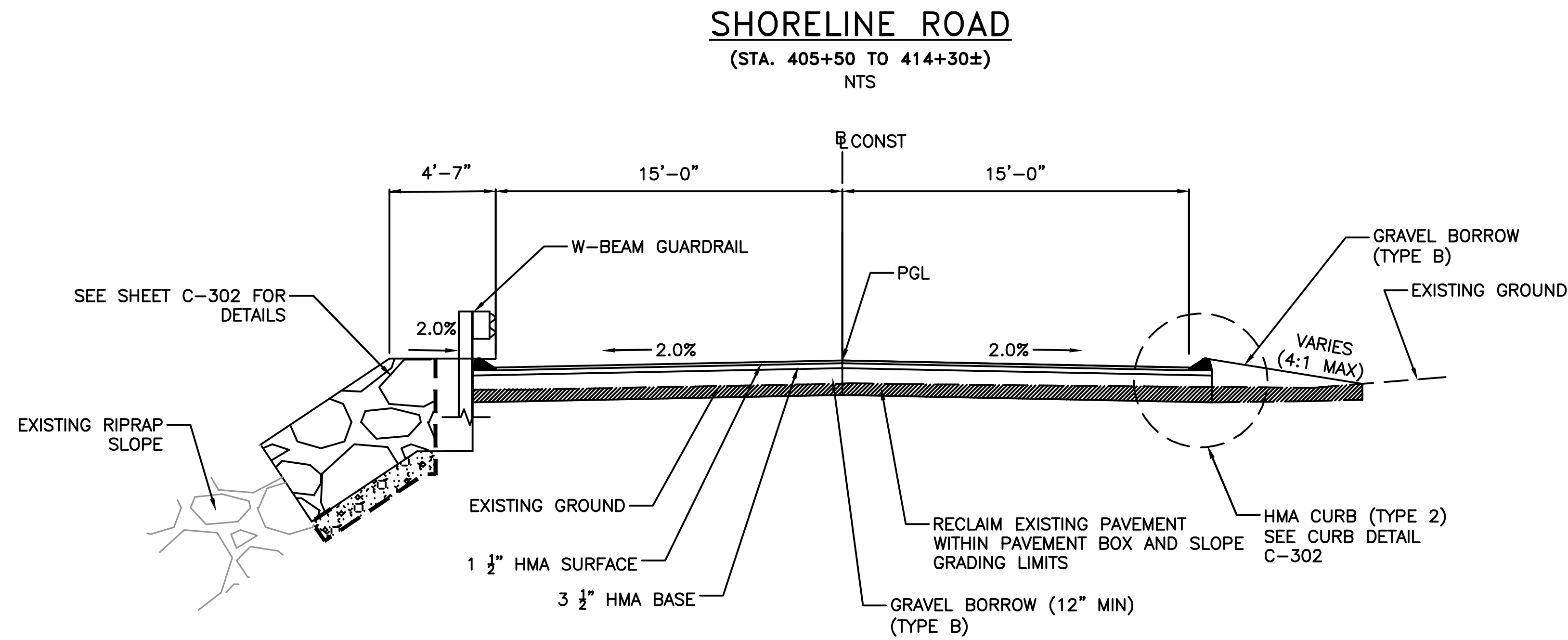
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CIVIL

DRAWN BY: CWA  
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APPROVED BY: RDL

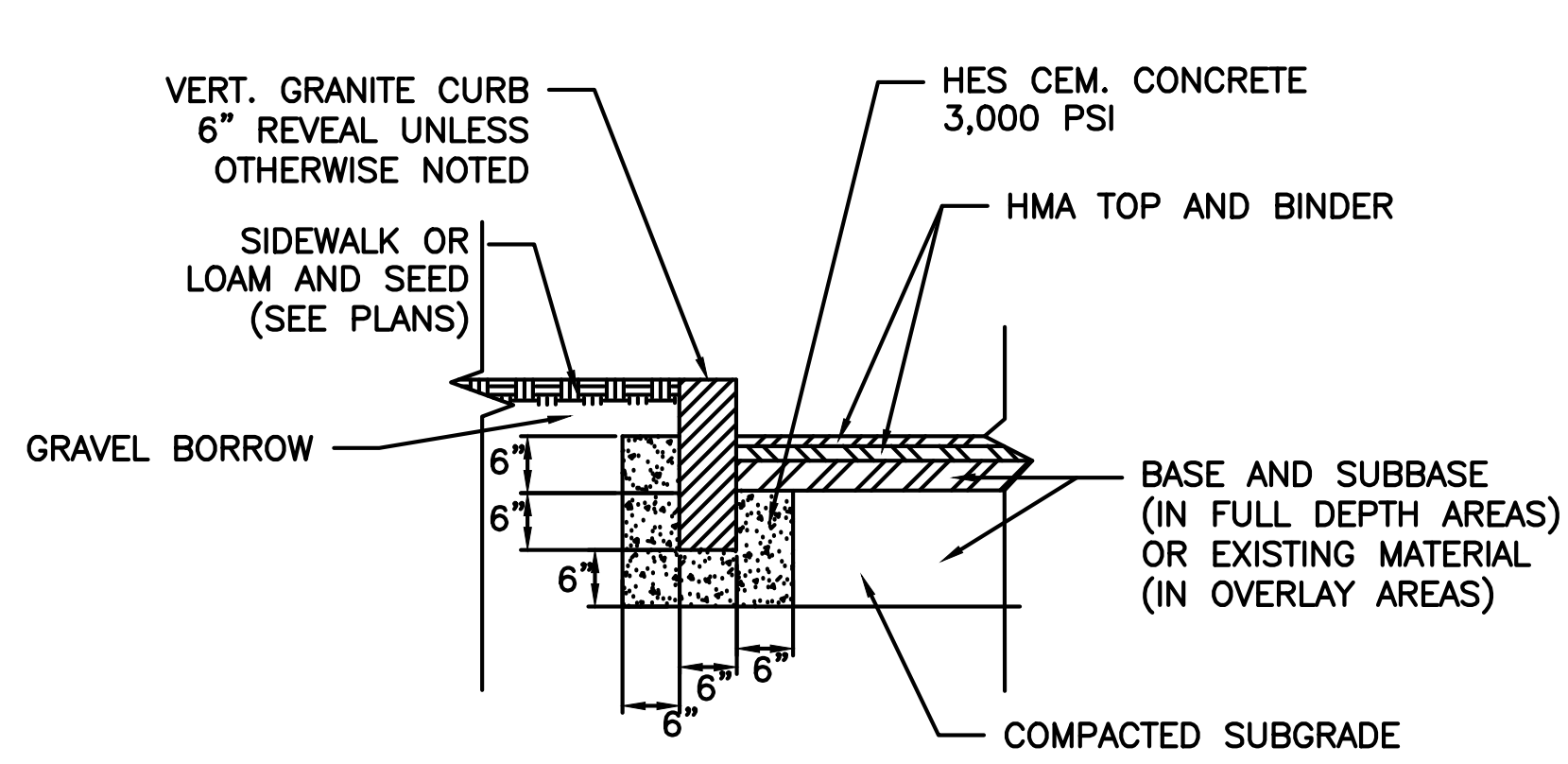
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# C-301

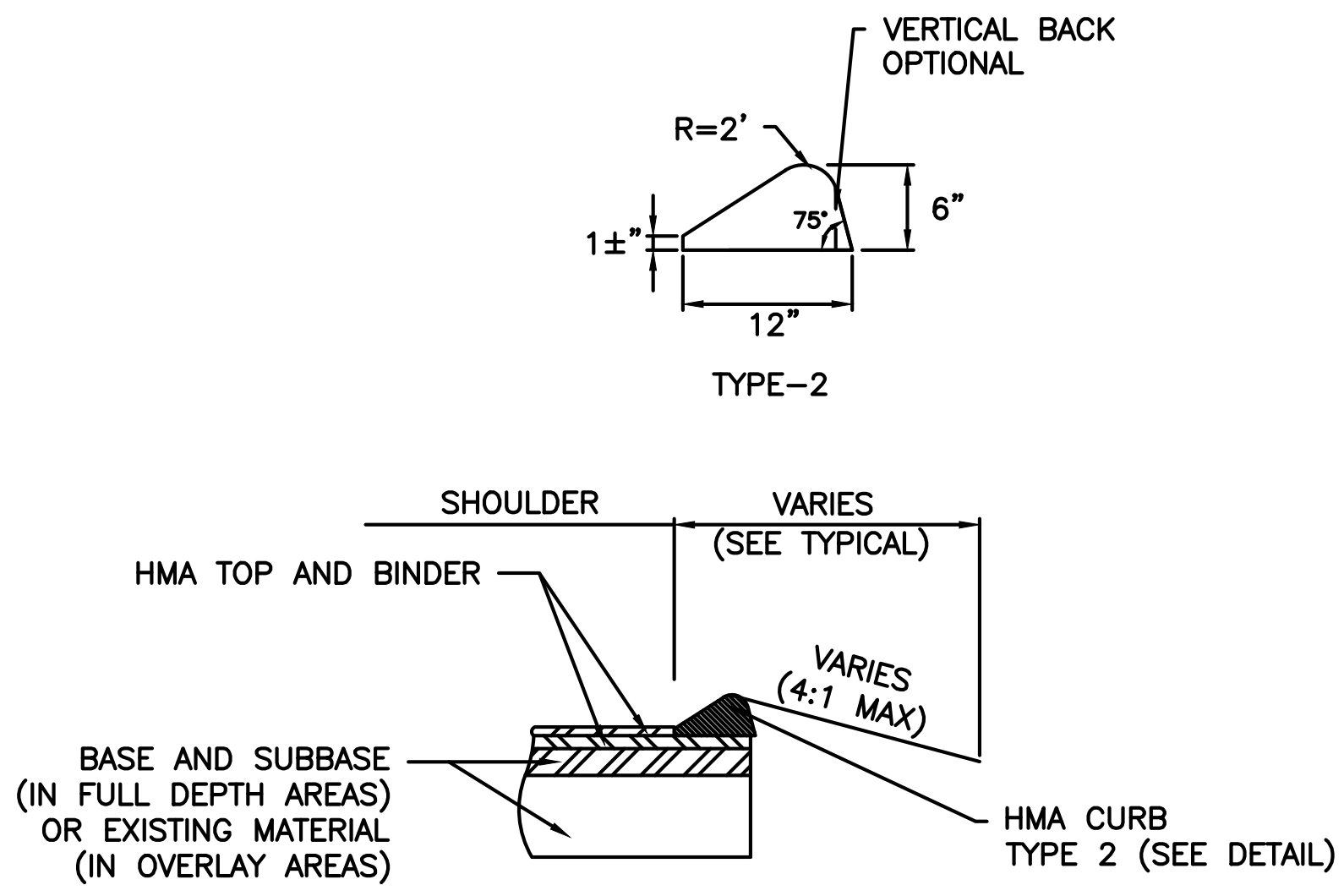


- NOTES:**
- TACK COAT TO BE APPLIED BETWEEN LAYERS AND UNDER INTERMEDIATE COURSE AT AN APPLICATION RATE OF 0.05-0.07 GALLONS PER SQUARE YARD.
  - REMOVE EXISTING PAVEMENT, FINE GRADE, AND REPLACE WITH 4" HMA (1 1/2" SURFACE, 3 1/2" BASE)

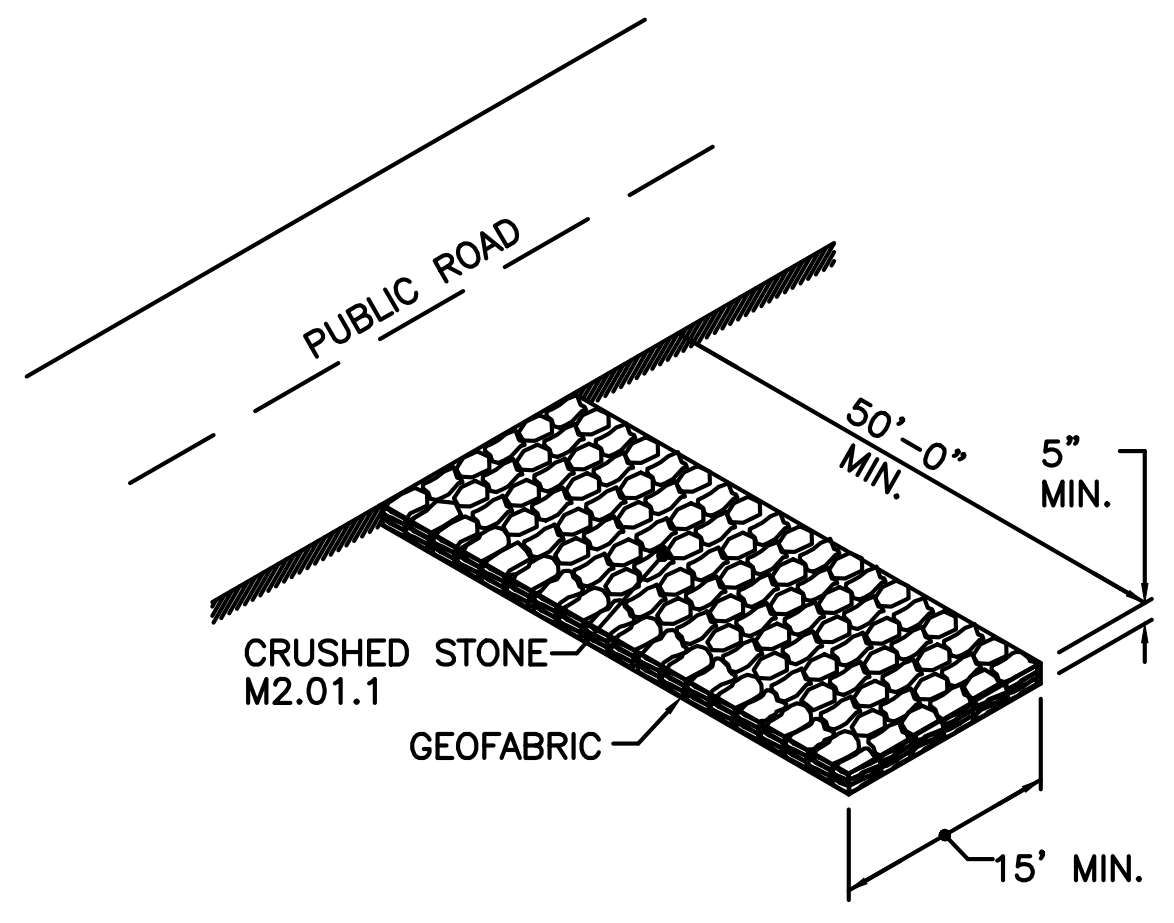


**PROPOSED VERTICAL CURB DETAIL**  
NTS

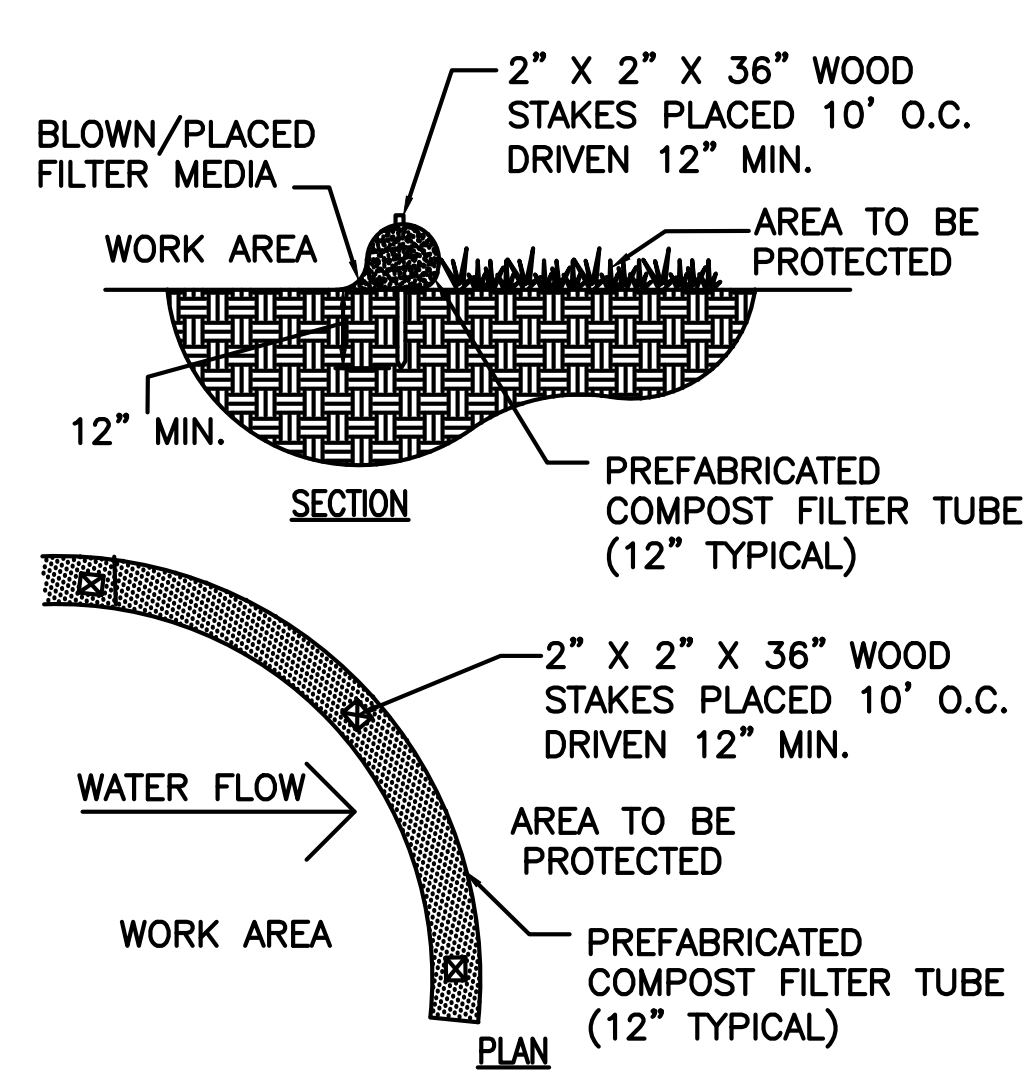
- NOTES:**
1. NEW CURBS SHALL BE SET TO PRODUCE A SMOOTH TRANSITION FROM EXISTING CURB TO PROPOSED CURB
  2. SEE CURBING PLANS FOR INSTALLATION LOCATIONS.



**HOT MIX ASPHALT CURB (TYPE-2)**  
NTS



**TEMPORARY CONSTRUCTION ACCESS ROAD**  
NOT TO SCALE



- NOTES:**
1. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.

**COMPOST FILTER TUBE**  
NOT TO SCALE

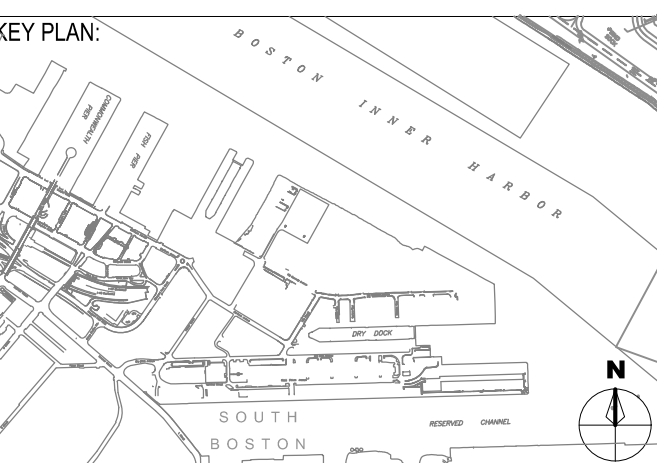
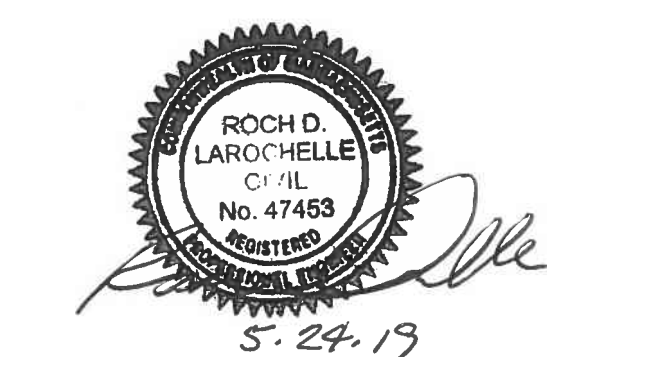


MASSACHUSETTS PORT AUTHORITY  
EAST BOSTON, MASSACHUSETTS 02128

PROJECT LOCATION:  
FID KENNEDY AVENUE  
BOSTON, MASSACHUSETTS

MPA CONTRACT NO.: M664  
LOCATION CODE: 4109  
PROJECT SUBMISSION PHASE:

REGISTRATION STAMP:



REVISIONS:

REV NO.	DATE	DESCRIPTION	BY

PRIMARY:  
**HDR**  
HDR ENGINEERING, INC.  
99 HIGH STREET, SUITE 2300  
BOSTON, MA 02110-2378  
(617) 357-7700 www.hdrinc.com

CONSULTANT:  
**MMT**  
MASSPORT MARINE TERMINAL  
INFRASTRUCTURE PROJECT

PROJECT NUMBER AND TITLE:  
**MMT**  
MASSPORT MARINE TERMINAL  
INFRASTRUCTURE PROJECT

SHEET TITLE:  
**CIVIL DETAILS**

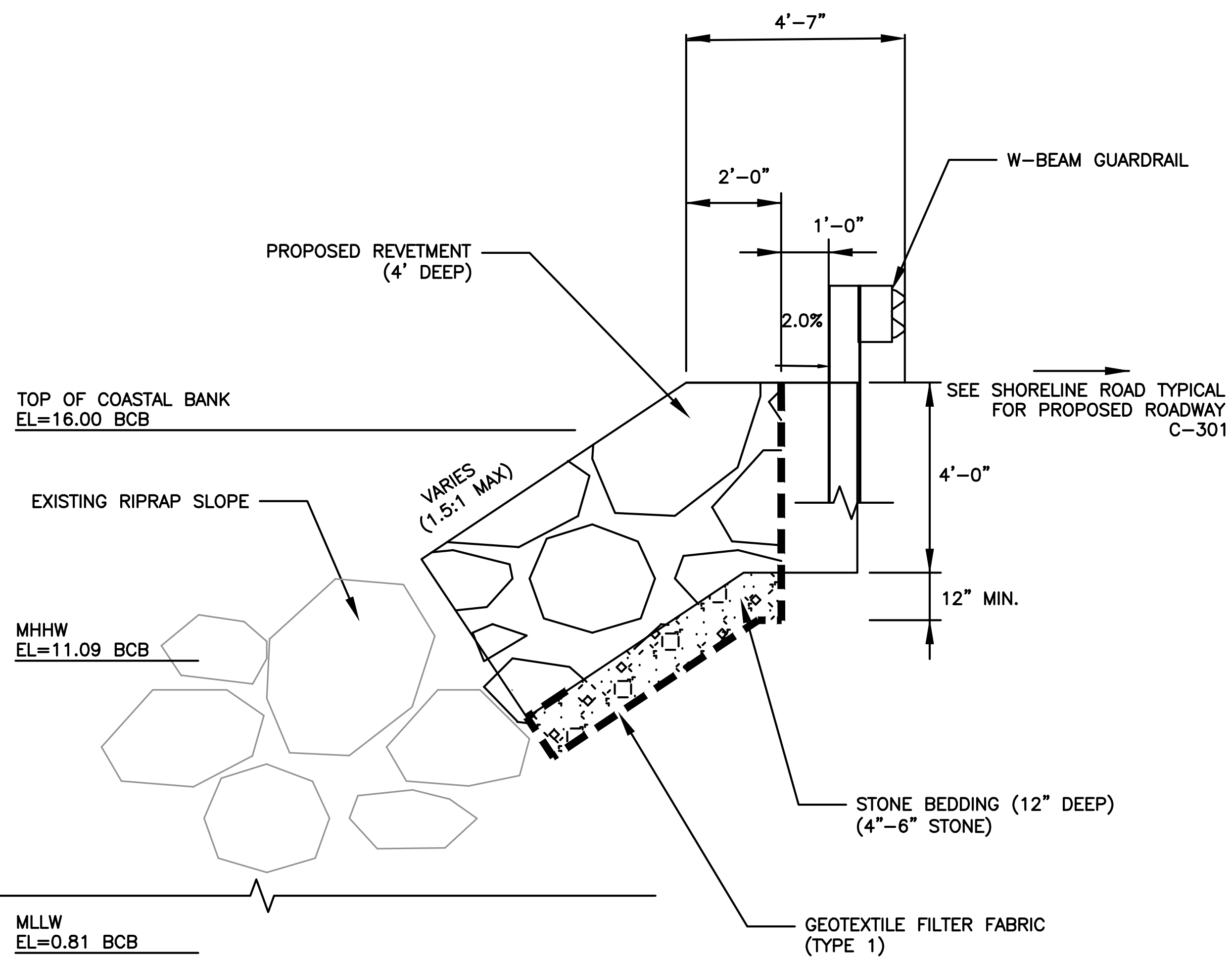
DISCIPLINE:  
**CIVIL**

DRAWN BY: CWA  
CHECKED BY: DES  
APPROVED BY: RDL

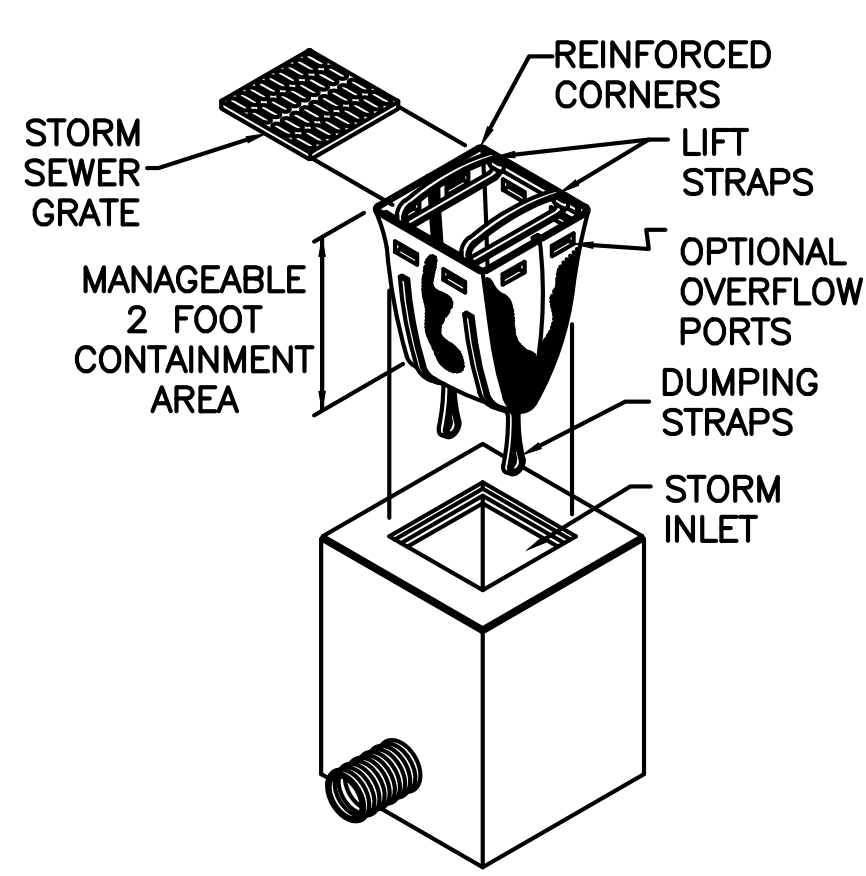
SCALE: N/A  
DATE: 05/2019

DRAWING NUMBER: SHEET NO. 7 OF 15

**C-302**



**REVETMENT DETAIL (4' DEEP)**  
NTS

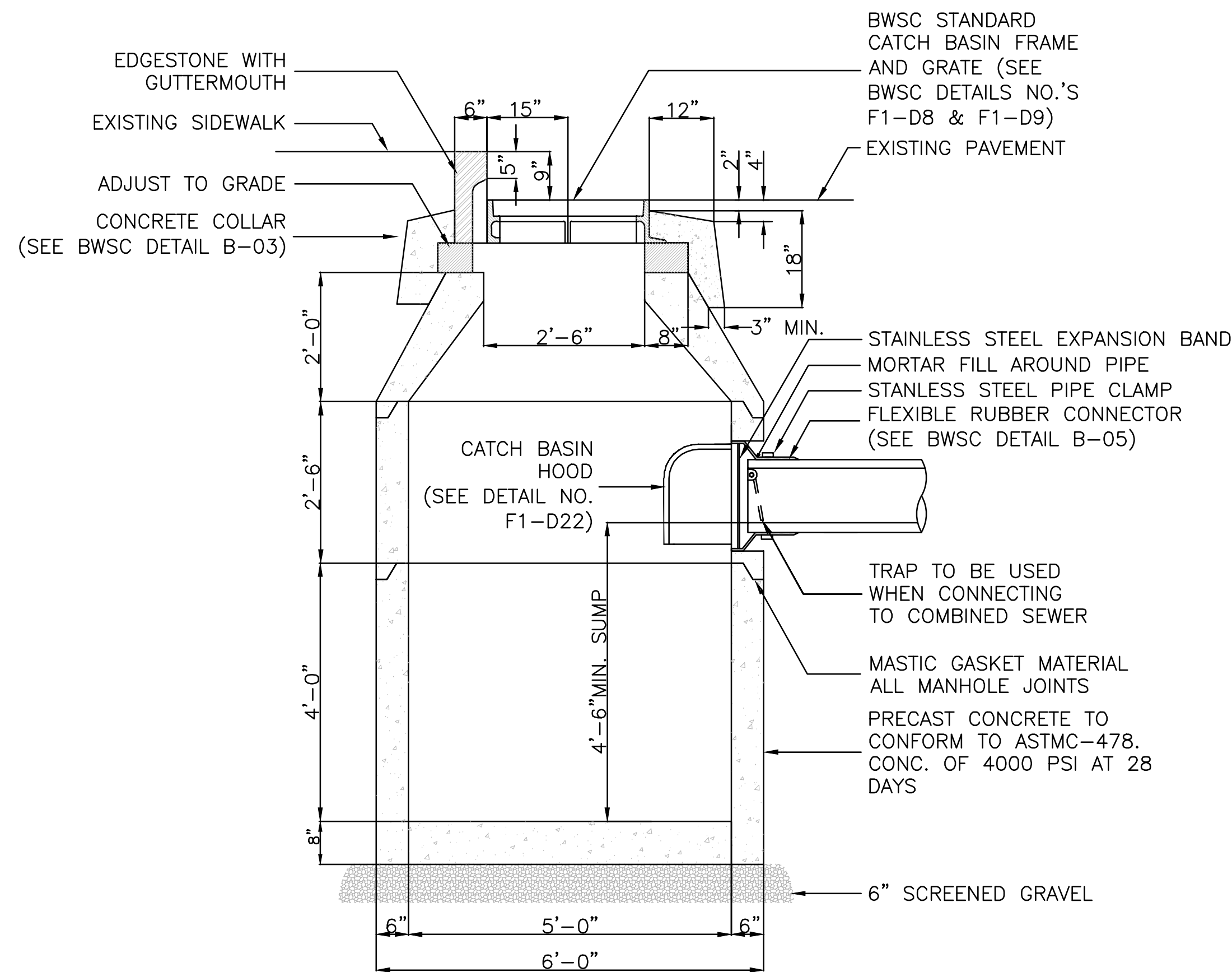


- NOTES:**
1. INSTALL SILTSACK IN ALL CATCH BASINS WHERE INDICATED ON THE PLAN BEFORE COMMENCING WORK OR IN PAVED AREAS AFTER BINDER COURSE IS PLACED AND HAY BALES HAVE BEEN REMOVED.
  2. GRATE TO BE PLACED OVER SILTSACK.
  3. SILTSACK SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS AND CLEANING OR REPLACEMENT SHALL BE PERFORMED PROMPTLY AS NEEDED. MAINTAIN UNTIL UPSTREAM AREAS HAVE BEEN PERMANENTLY STABILIZED.

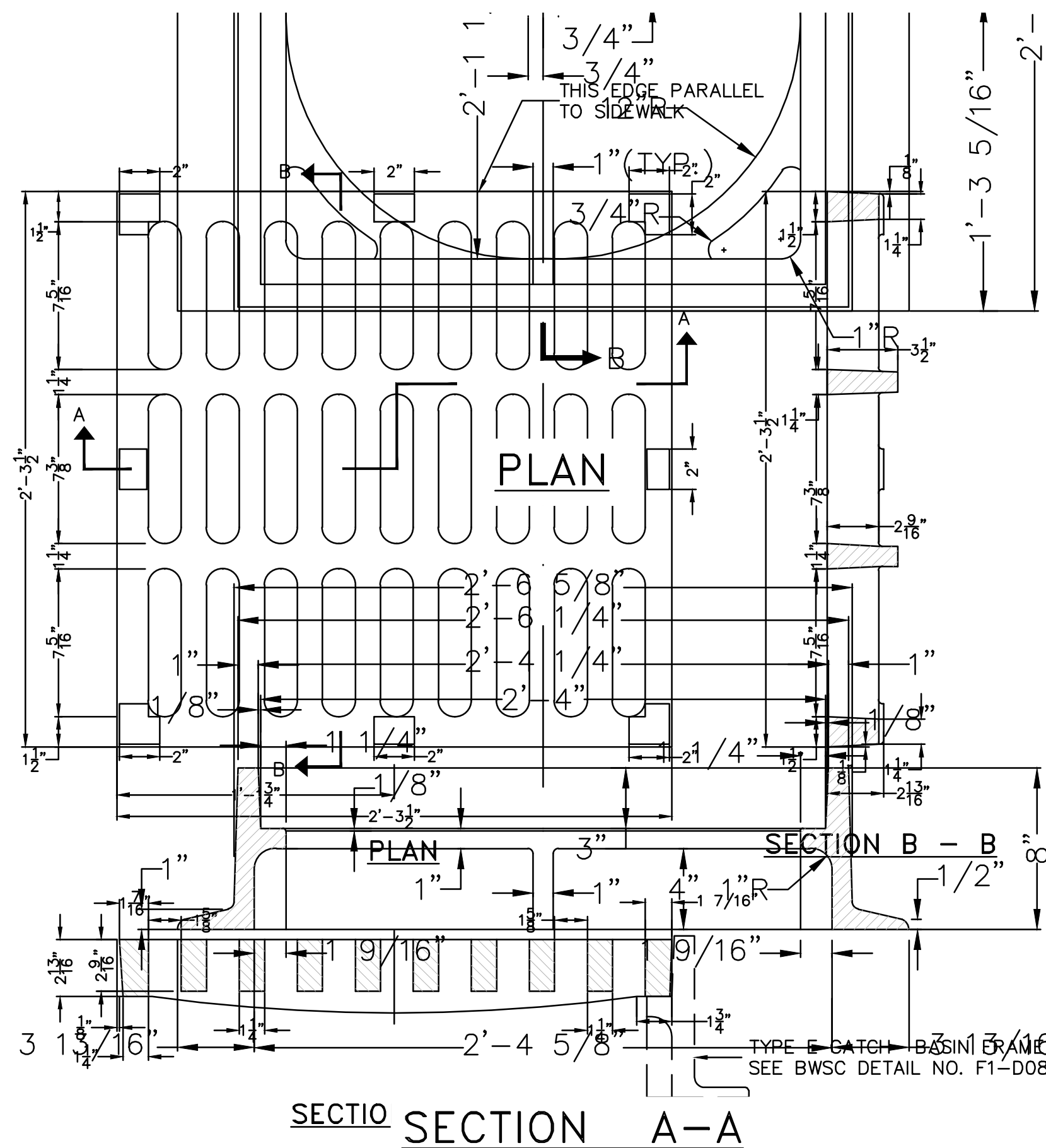
**SILTSACK**  
NOT TO SCALE

MECHANICAL PROPERTIES	TEST METHOD	UNITS	SACK SPECIFICATIONS	
			MARV RFDS-B	MARV HFDS-SO
GRAB TENSILE STRENGTH	ASTM D 4632	kN (LBS)	1.78 (400) x 1.40 (315)	1.62 (365) x 0.89 (200)
GRAB TENSILE ELONGATION	ASTM D 4632	%	15 x 15	24 x 10
PUNCTURE STRENGTH	ASTM D 4833	kN (LBS)	0.67 (150)	0.40 (90)
MULLEN BURST STRENGTH	ASTM D 3786	kPa (PSI)	5506 (800)	3097 (450)
TRAPEZOID TEAR STRENGTH	ASTM D 4533	kN (LBS)	0.67 (150) x 0.73 (165)	0.51 (115) x 0.33 (75)
UV RESISTANCE	ASTM D 4355	%	90	90
APPARENT OPENING SIZE	ASTM D 4751	Mm (US STD SIEVE)	0.425 (40)	0.425 (40)
FLOW RATE	ASTM D 4491	1/MIN/M <sup>2</sup> (GAL/MIN/FT <sup>2</sup> )	2852 (70)	5907 (145)
PERMITTIVITY	ASTM D 4491	SEC <sup>-1</sup>	0.90	2.1

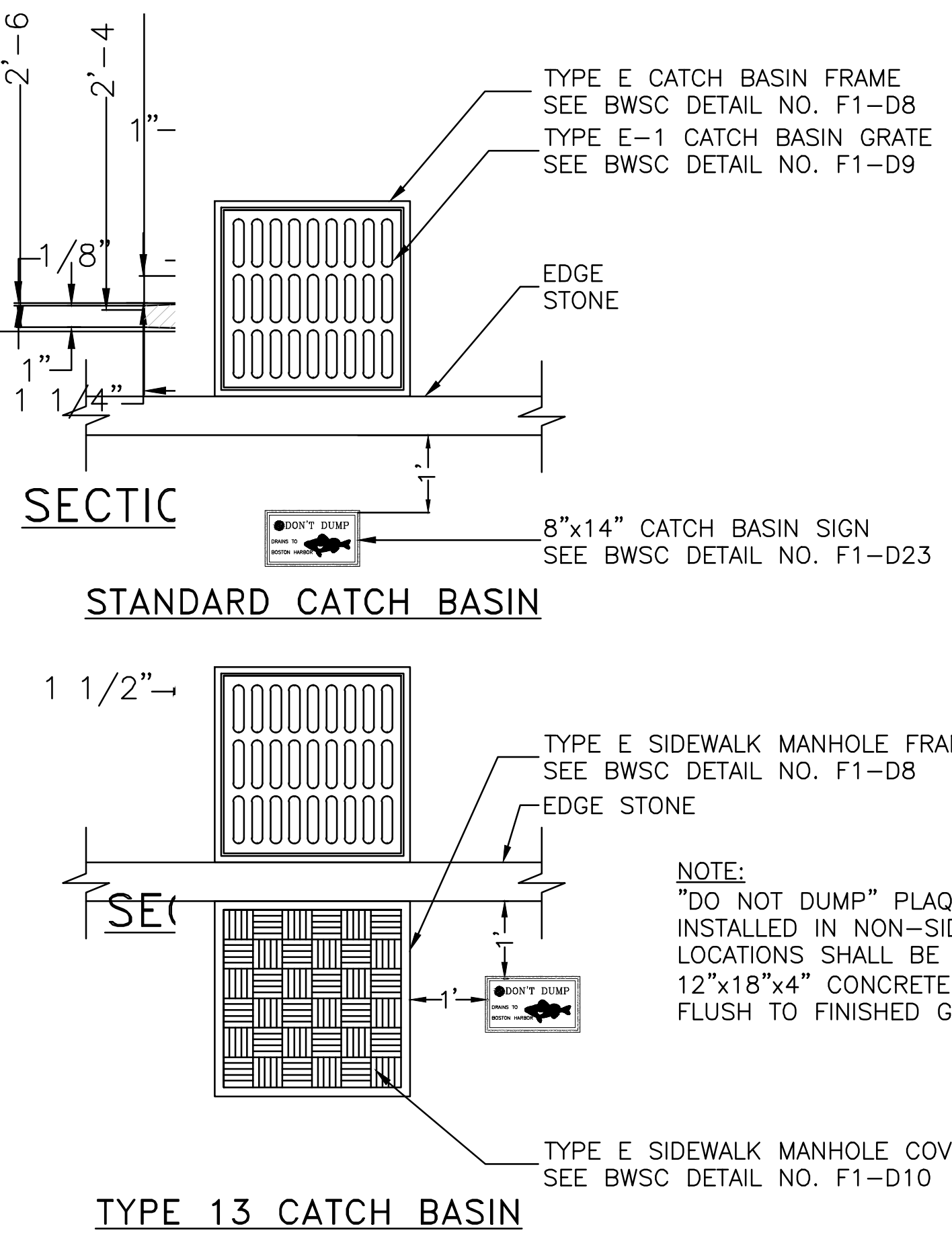
RFDS-B REGULAR FLOW SACK (BLACK)  
HFDS-SO HI-FLOW SACK (SAFETY ORANGE)  
NOTE: THE CURB SACK WILL BE MANUFACTURED FROM A WOVEN MONOFILAMENT FABRIC THAT MEETS OR EXCEEDS THE MANUFACTURER'S SPECIFICATIONS:  
\*NOTE: SACKS CAN BE ORDERED WITH OUR OPTIONAL OIL ABSORBENT PILLOWS



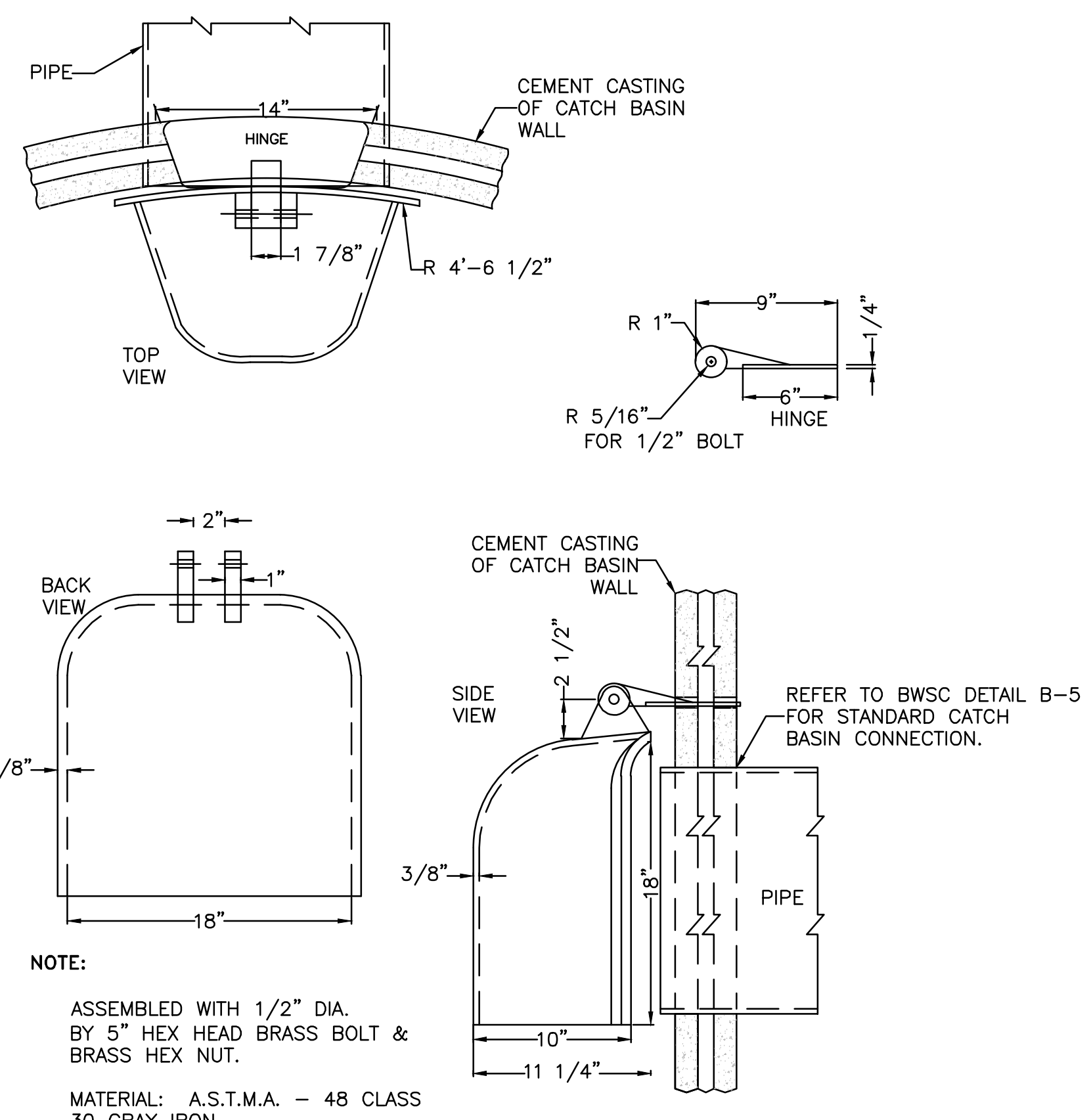
**STANDARD CATCH BASIN NO.5**  
(BWSC B-1b)  
NO SCALE



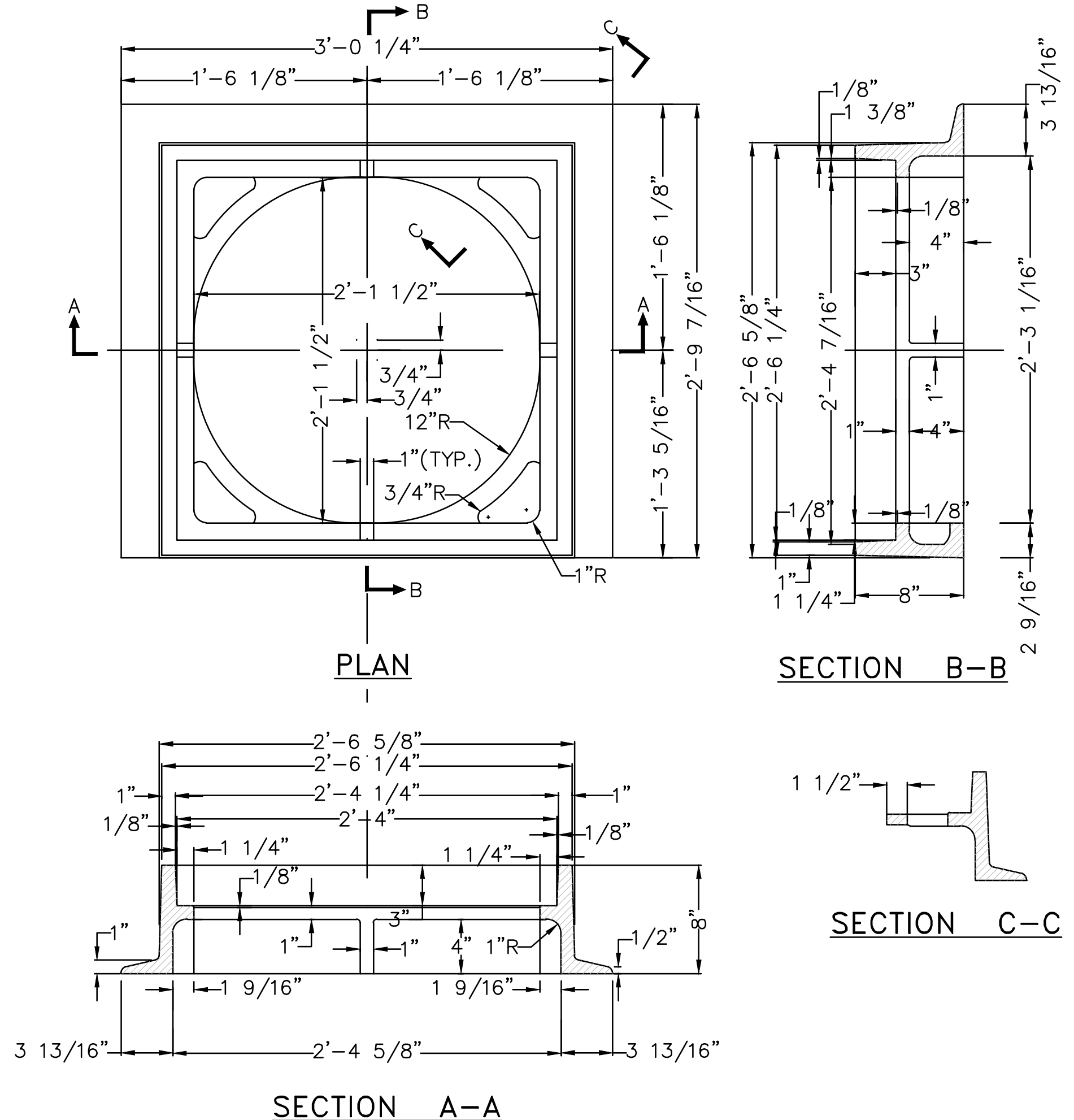
**TYPE E-1 CATCH BASIN GRATE NO. 99970000**  
(BWSC F1-D09)  
NO SCALE



**CATCH BASIN SIGN INSTALLATION**  
(BWSC B-01f)  
NO SCALE



**CATCH BASIN HOOD**  
(BWSC F1-D22e)  
NO SCALE



**TYPE E CATCH BASIN FRAME**  
(BWSC F1-D08)  
NO SCALE

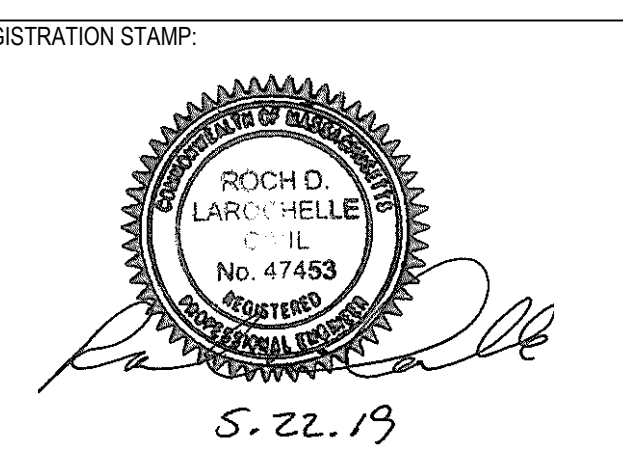
**NOTES:**  
1. STANDARD STRUCTURE AND GRATE DETAILS REFER TO BOSTON WATER AND SEWER COMMISSION STANDARDS.



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SHEET TITLE:  
**DRAINAGE DETAILS**

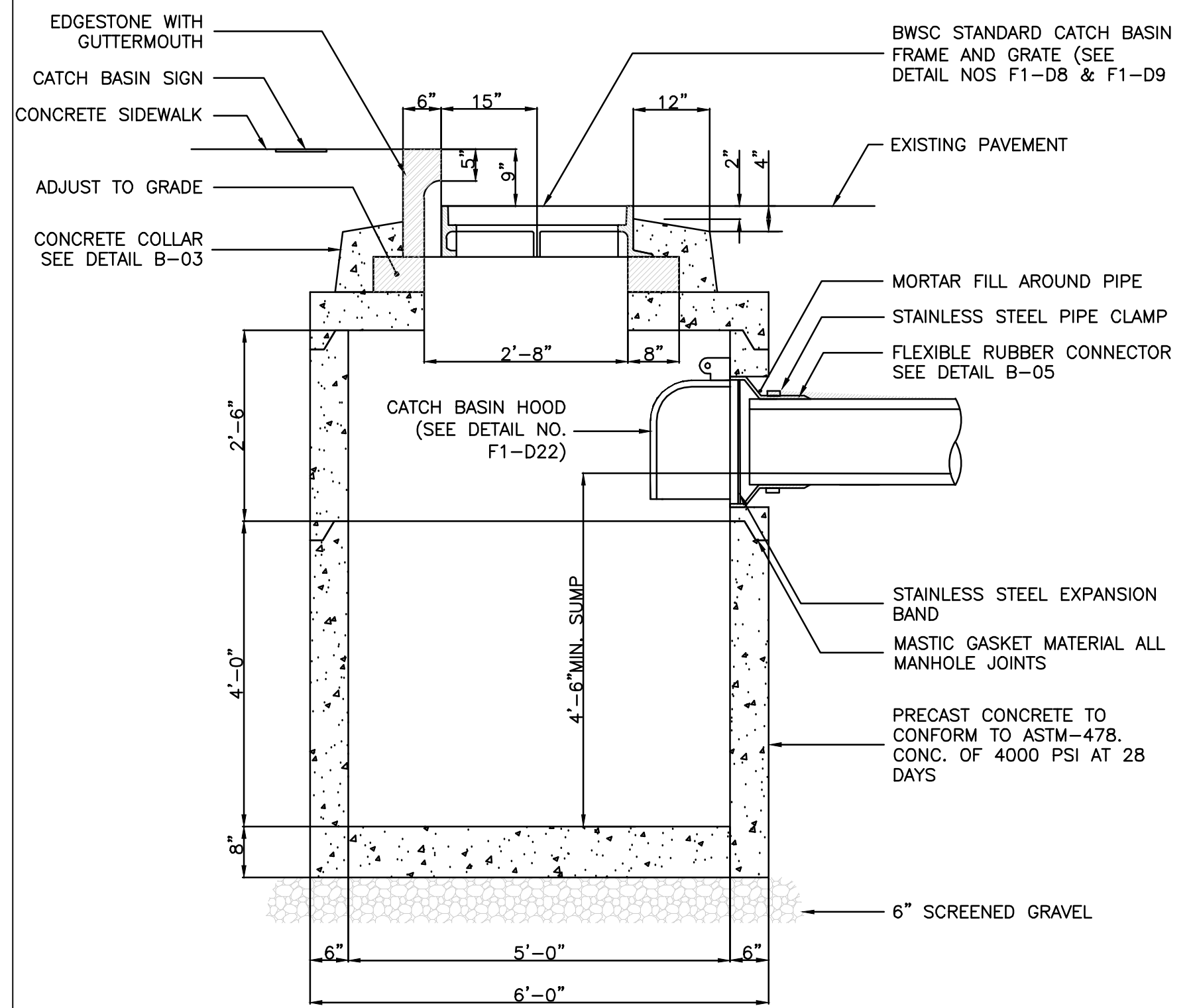
DISCIPLINE:  
**CIVIL**

DRAWN BY: CWA  
CHECKED BY: DES  
APPROVED BY: RDL

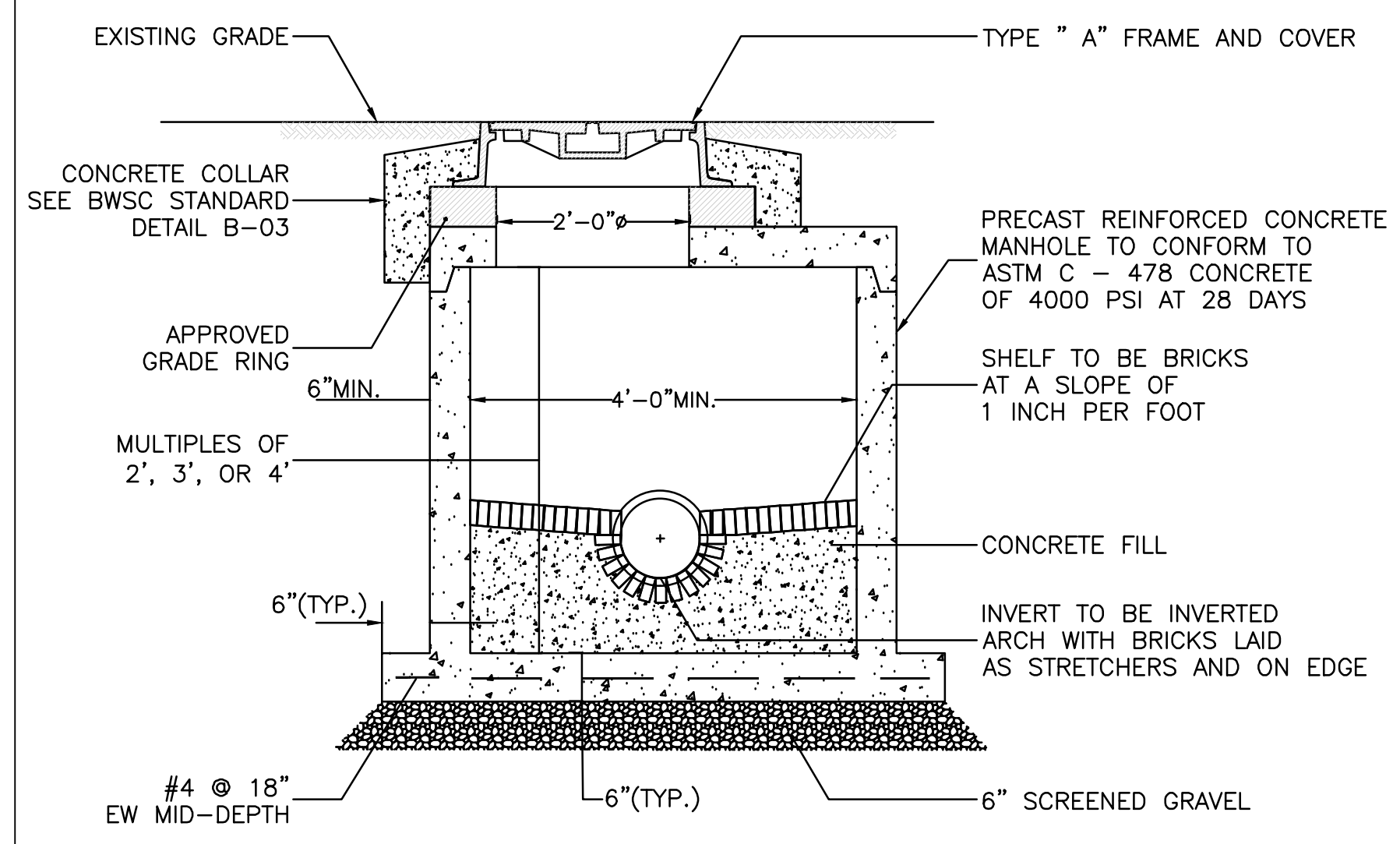
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DATE: 05/2019

DRAWING NUMBER: SHEET NO. 9 OF 15

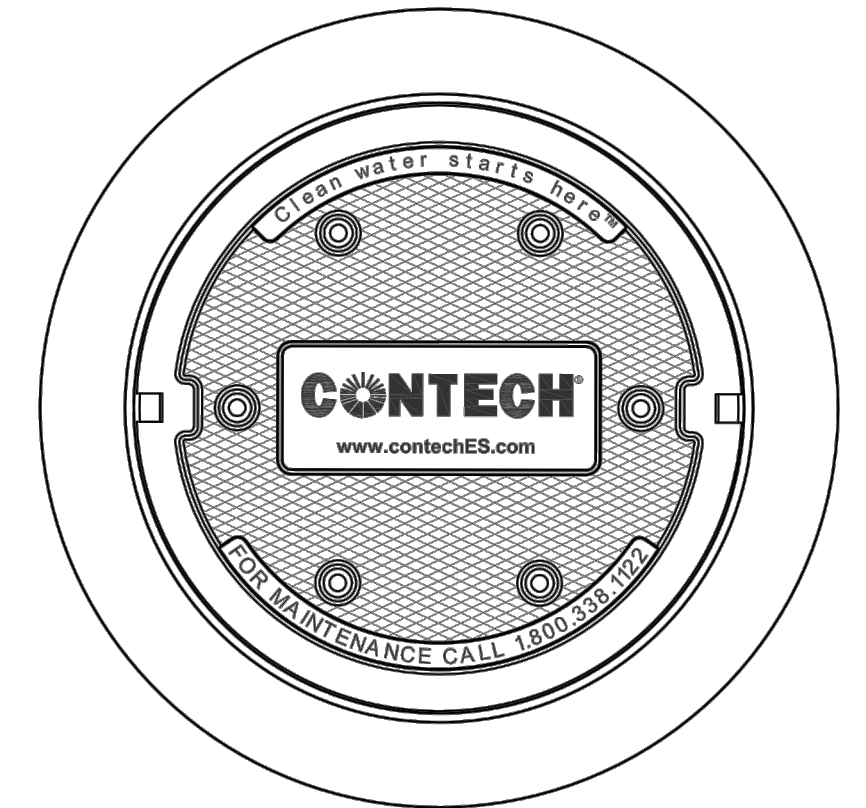
**C-501**



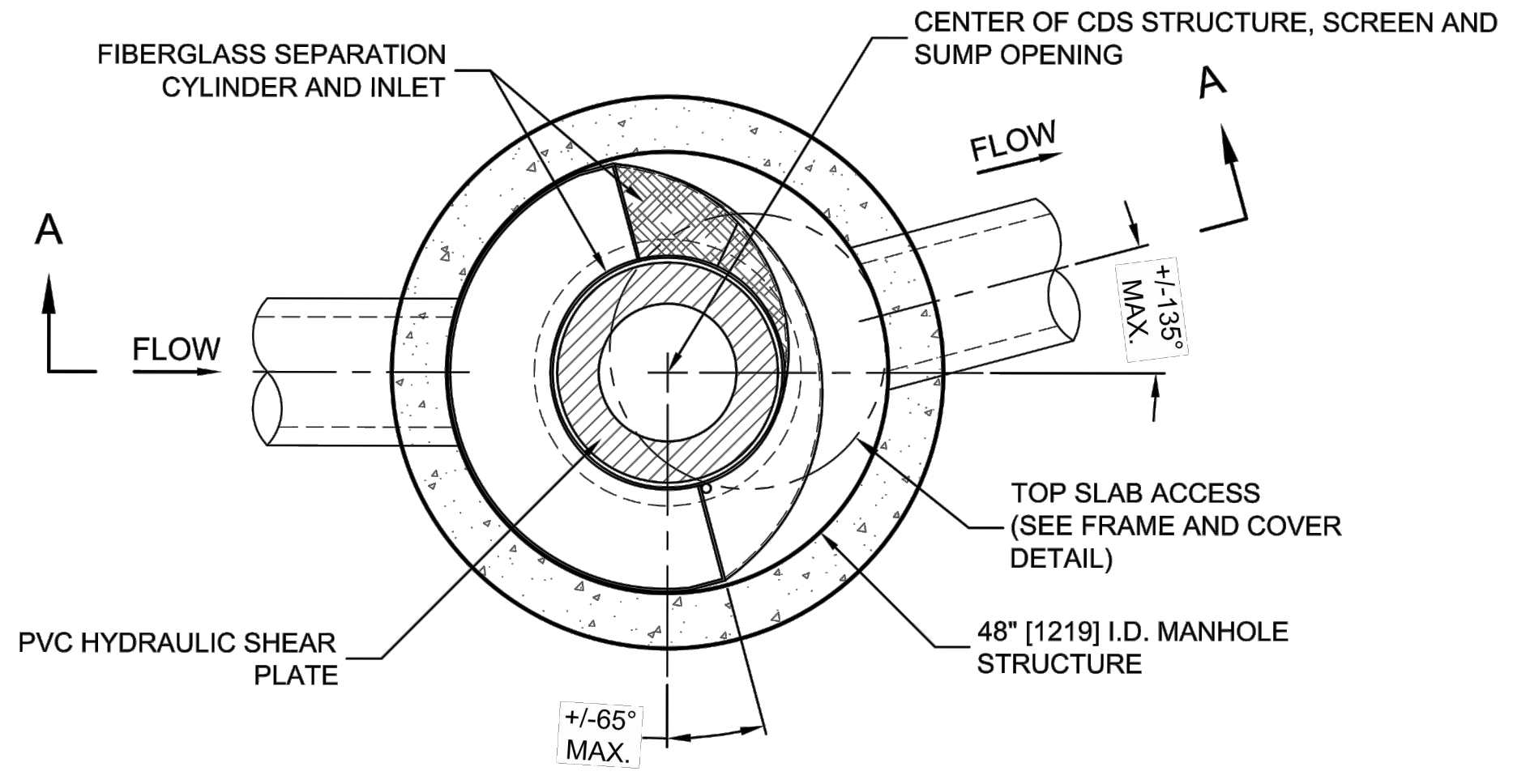
**SHALLOW CATCH BASIN (SLABTOP)**  
(BWSC B-1d)  
NO SCALE



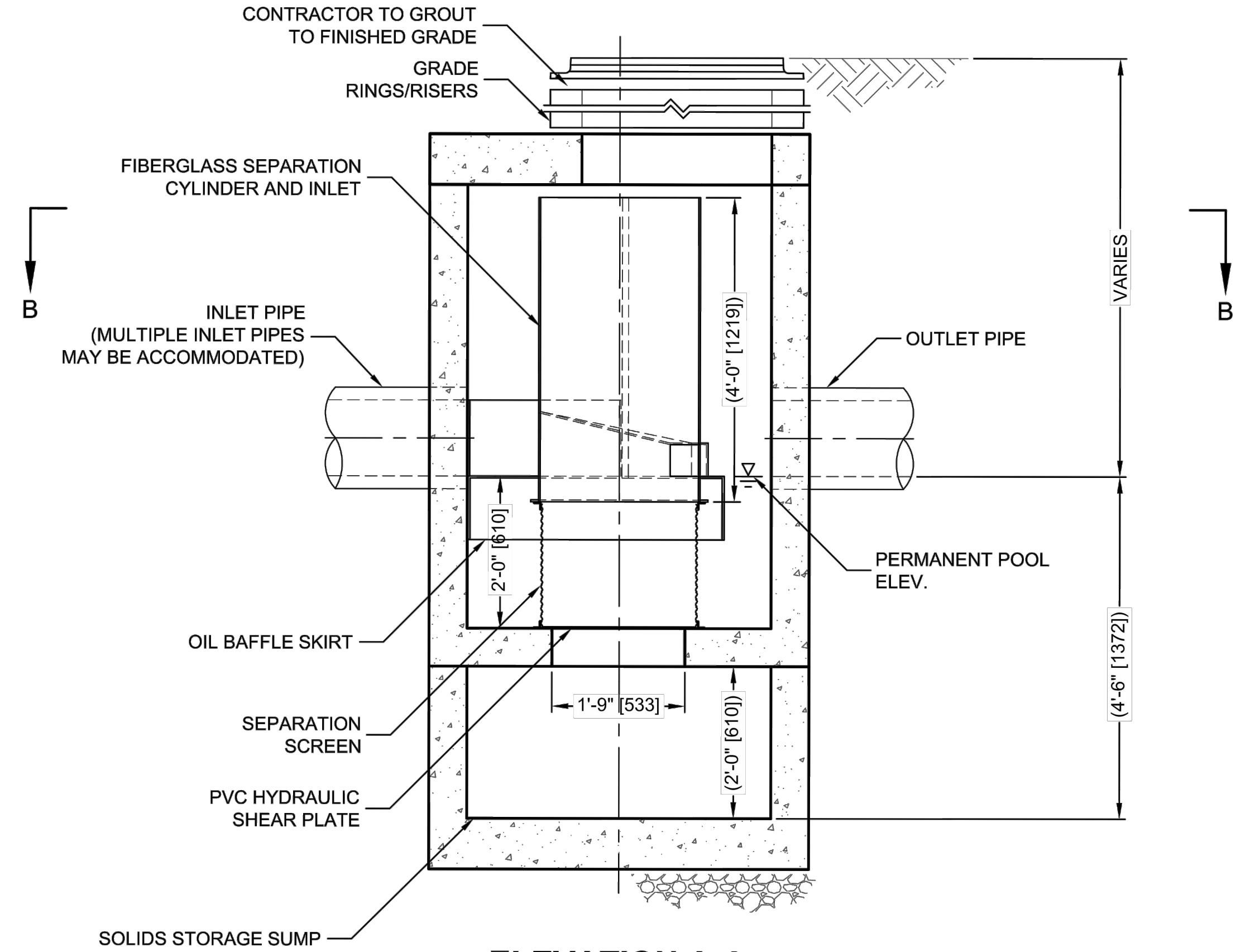
**SHALLOW MANHOLE (SLABTOP)**  
(BWSC B-06)  
NO SCALE



**FRAME AND COVER**  
(DIAMETER VARIES)



**PLAN VIEW B-B**  
N.T.S.



**ELEVATION A-A**  
N.T.S.

**STORMWATER TREATMENT CHAMBER**  
(CONTECH CDS OR APPROVED EQUAL)  
NO SCALE

**SITE SPECIFIC DATA REQUIREMENTS**

STRUCTURE ID	WQS-1		WQS-2			
WATER QUALITY FLOW RATE (CFS OR L/s)	0.34		1.22			
PEAK FLOW RATE (CFS OR L/s)	1.68 CFS		6.41 CFS			
RETURN PERIOD OF PEAK FLOW (YRS)	10		10			
SCREEN APERTURE (2400 OR 4700)	-		-			
CDS	2015-4		2015-4			
INSIDE DIAMETER (OUTSIDE DIAMETER)	4' (5.2')		4' (5.2')			
PIPE DATA:	I.E.	MATERIAL	DIAMETER	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	9.25	HDPE	12"	9.00	HDPE	18"
INLET PIPE 2	-	-	-	-	-	-
OUTLET PIPE	9.00	(EXISTING)	18"	8.75	(EXISTING)	18"
RIM ELEVATION	18.12		17.83			
ANTI-FLOTATION BALLAST	WIDTH	HEIGHT	WIDTH	HEIGHT		
	-	-	-	-		

**GENERAL NOTES:**

- CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
- STRUCTURE SHALL MEET AASHTO HS20 AND CASTINGS SHALL MEET HS20 (AASHTO M 306) LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION.
- PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER, REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.

**INSTALLATION NOTES:**

- CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE (LIFTING CLUTCHES PROVIDED)
- CONTRACTOR TO ADD JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS, AND ASSEMBLE STRUCTURE.
- CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES, MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
- CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

**NOTES:**

- STANDARD STRUCTURE AND GRATE DETAILS REFER TO BOSTON WATER AND SEWER COMMISSION STANDARDS.



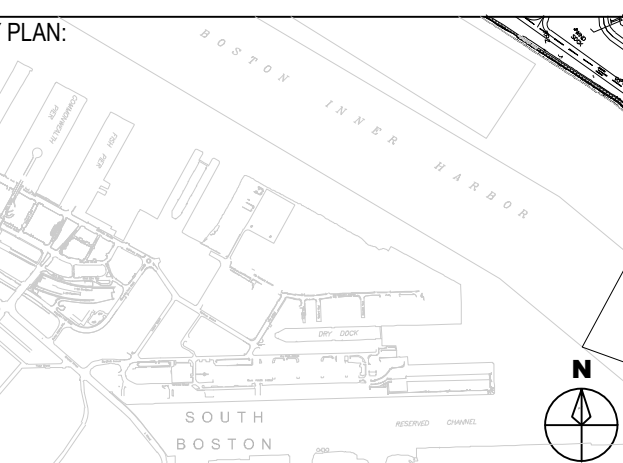
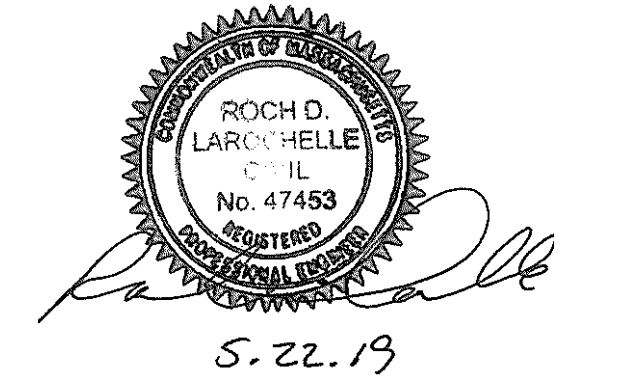
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**DRAINAGE DETAILS**

DISCIPLINE:  
CIVIL

DRAWN BY: CWA  
CHECKED BY: DES  
APPROVED BY: RDL

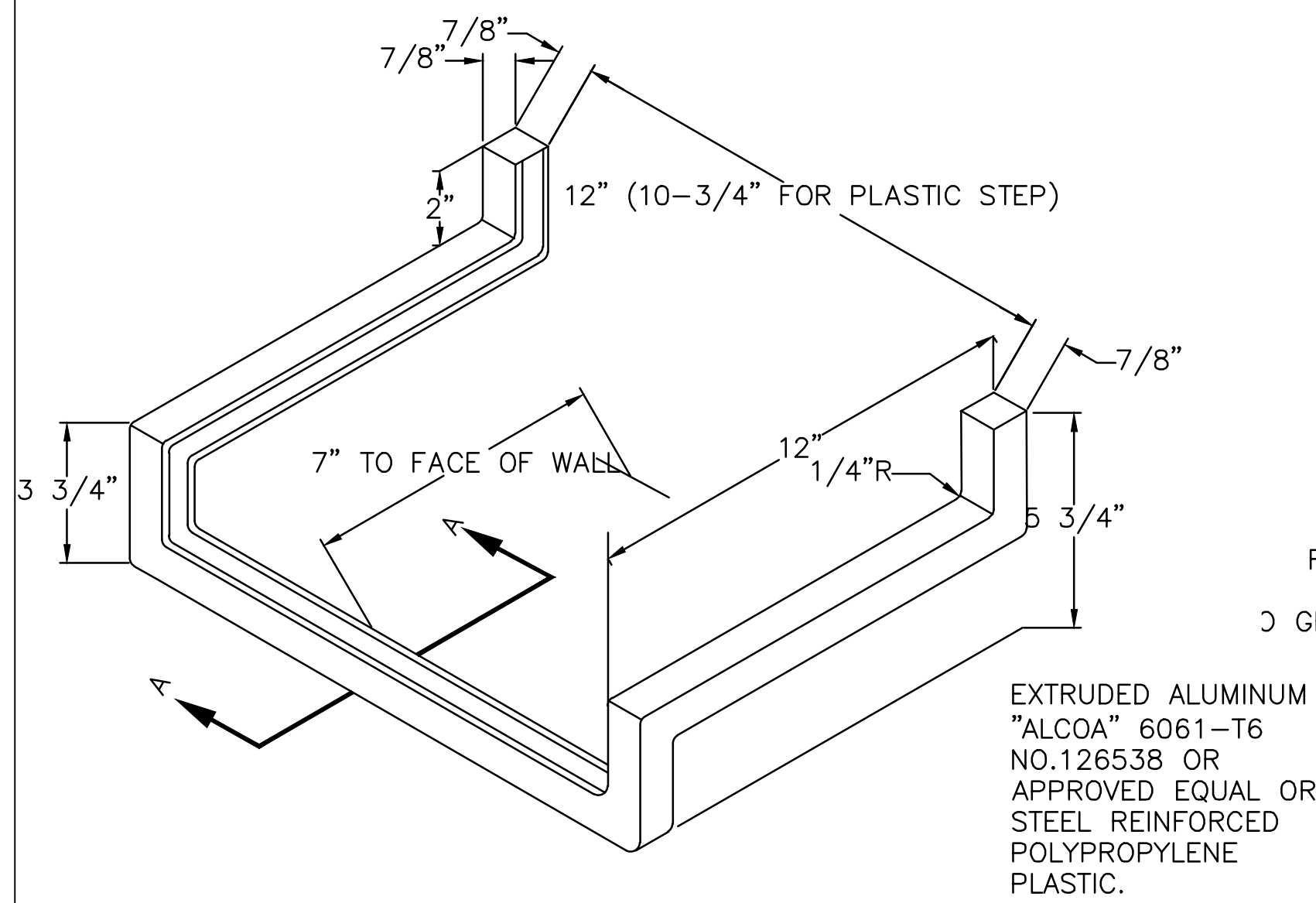
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DATE: 05/2019

DRAWING NUMBER: SHEET NO. 10 OF 15

**C-502**

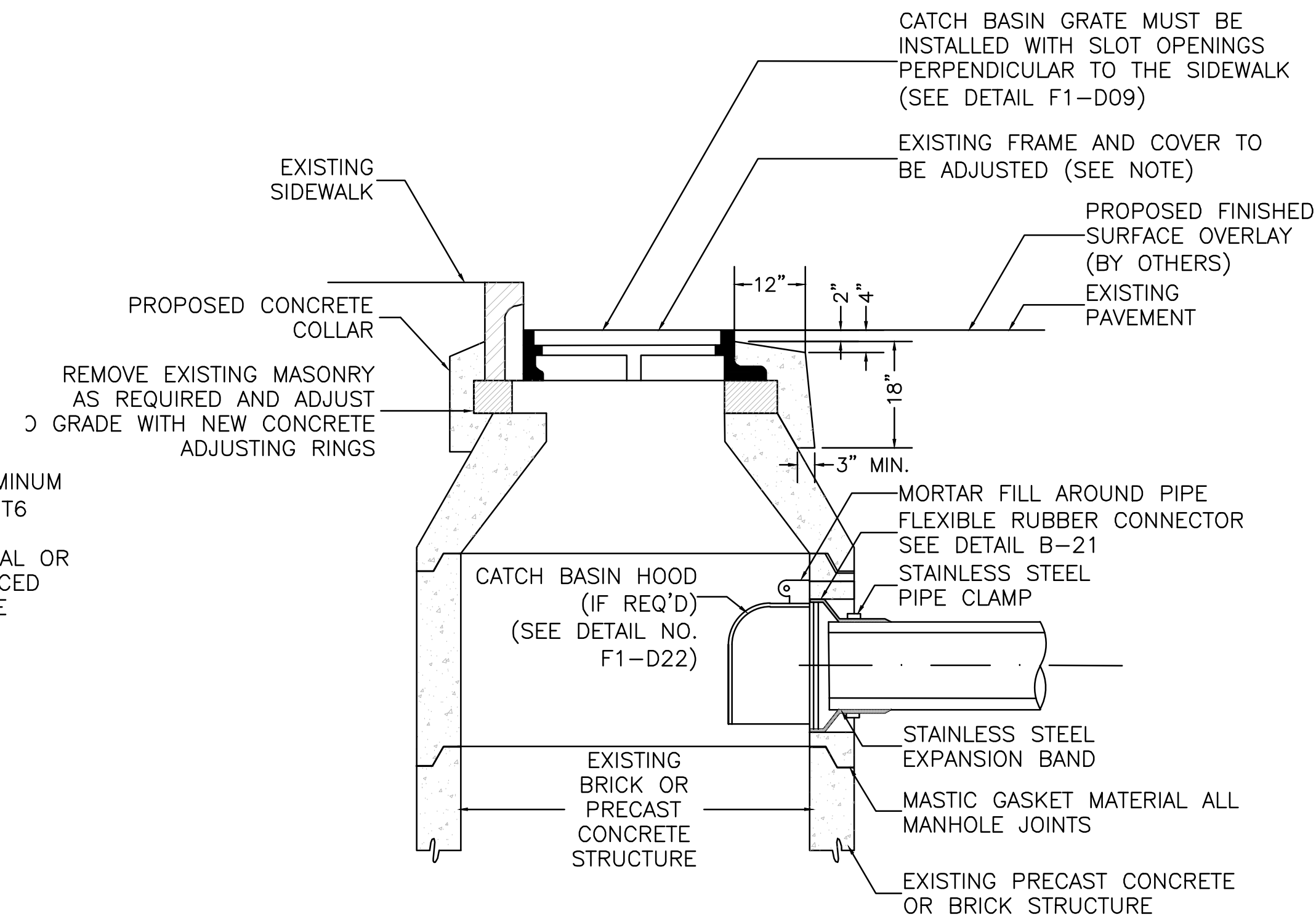




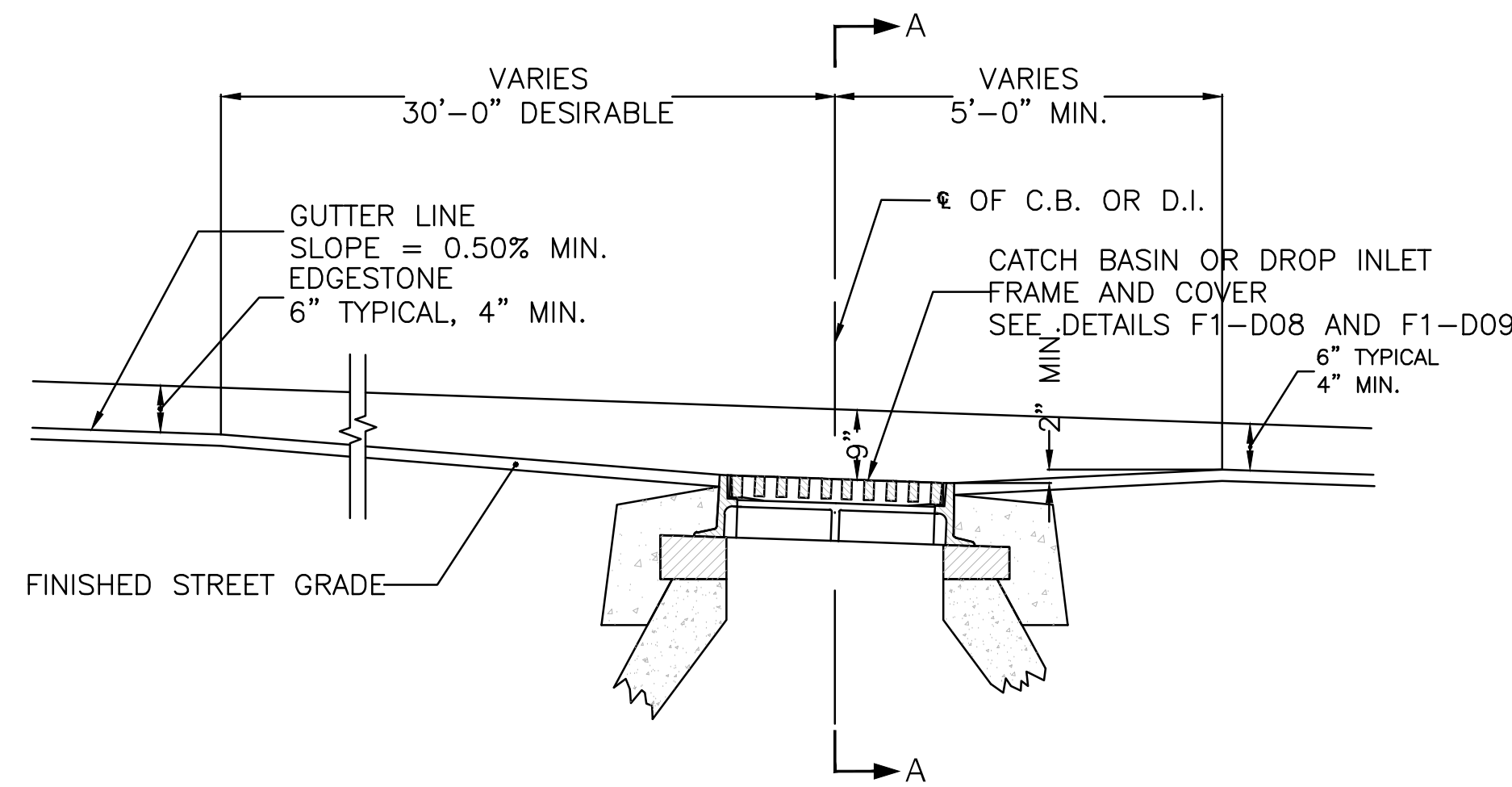


**NOTE:**  
PORTION EMBEDDED IN CONCRETE COATED WITH HEAVY-BODIED BITUMINOUS MATERIAL AS SPECIFIED OR APPROVED.

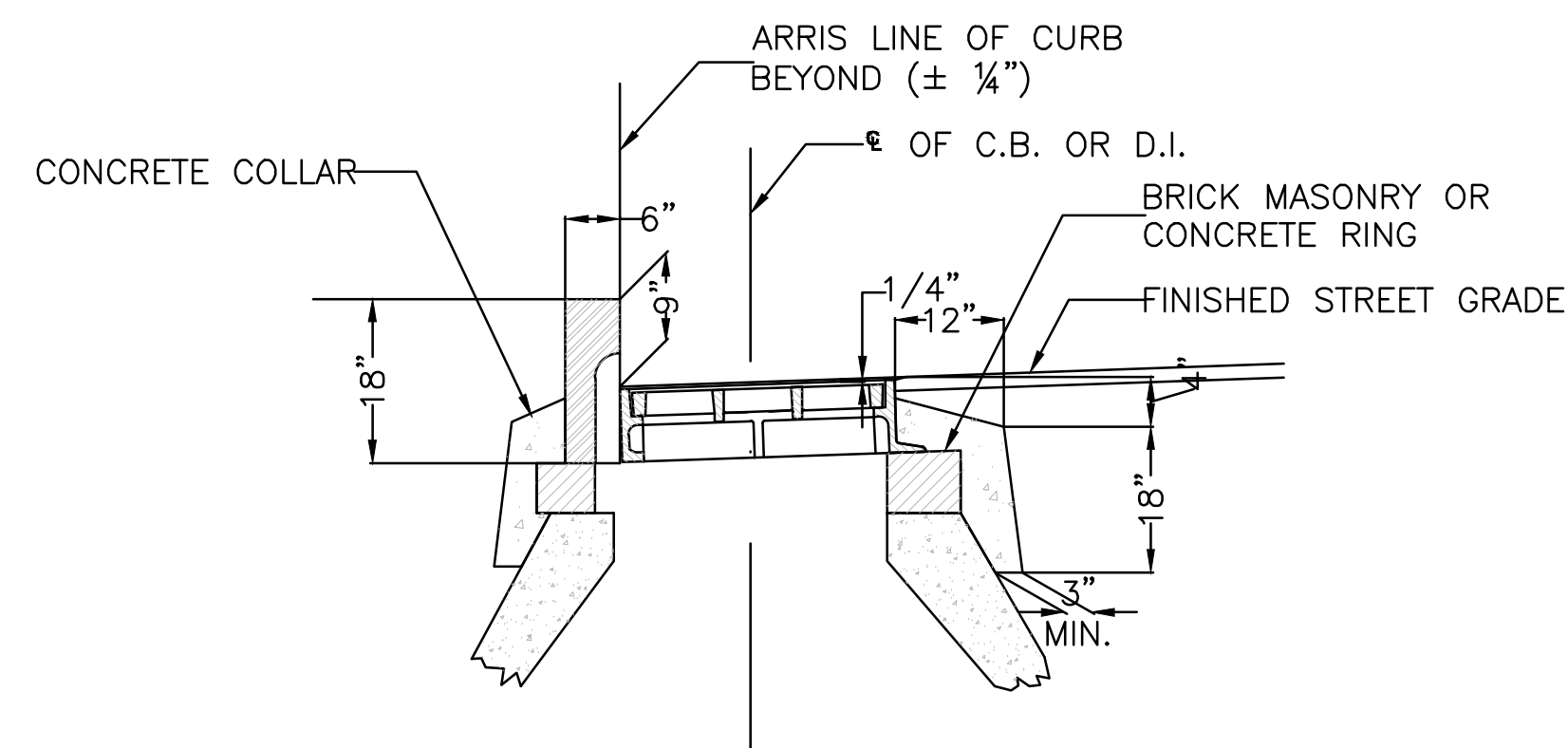
**SECTION A-A**  
**ALUMINUM MANHOLE STEP**  
(BWSC B-02f)  
NO SCALE



**CATCH BASIN ADJUSTMENT TO GRADE**  
(BWSC B-01a)  
NO SCALE

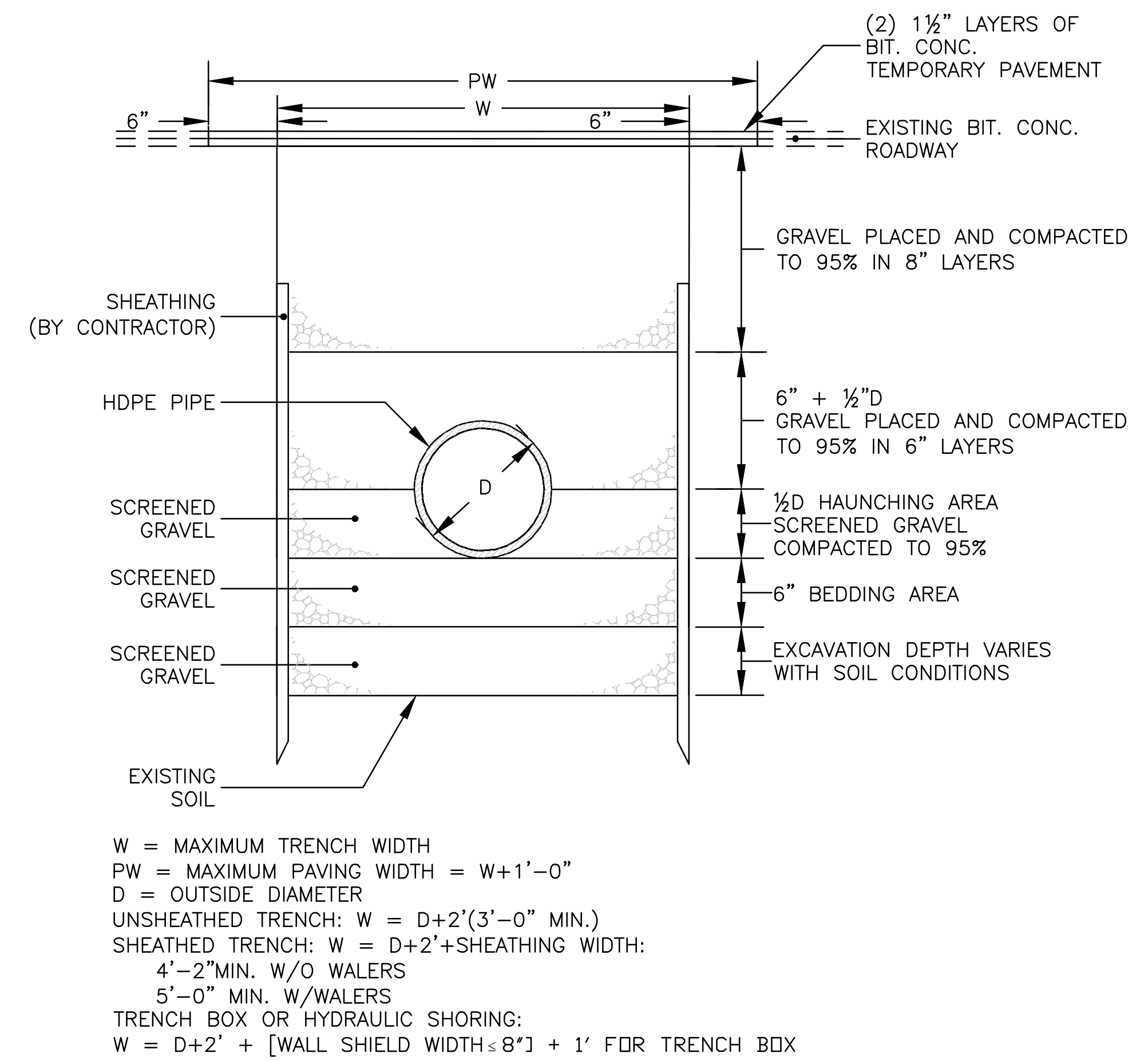


**PROFILE ALONG GUTTER LINE**



**SECTION A-A**

**TOLERANCES FOR SETTING CATCH BASIN AND CURB INLET FRAME**  
(BWSC B-01h)  
NO SCALE



**TRENCH DETAIL FOR RCP OR DICL PIPE**  
(BWSC B-8)  
NO SCALE

**NOTES:**

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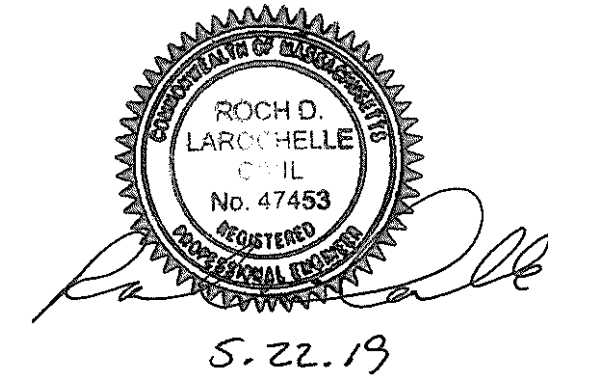


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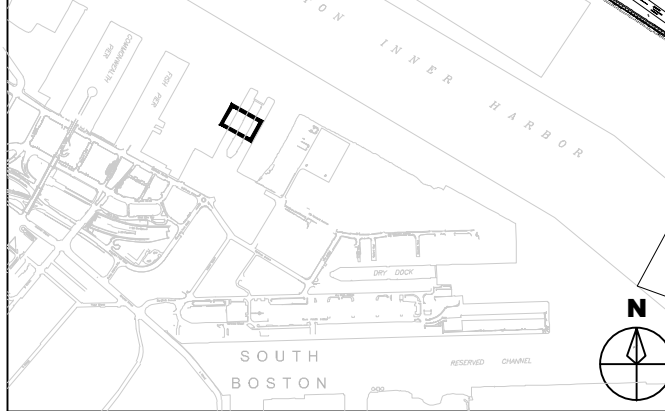
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KEY PLAN:



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**CIVIL**

DRAWN BY: **CWA** CHECKED BY: **DES** APPROVED BY: **RDL**

SCALE: **N/A** DATE: **05/2019**

DRAWING NUMBER: SHEET NO: 12 OF 15

**C-504**