

Massachusetts Port Authority
One Harborside Drive, Suite 200S
East Boston, MA 02128-2909

Telephone: 617-568-5000 www.massport.com

March 22, 2022

Nicholas Moreno Executive Director, Boston Conservation Commission 1 City Hall Square, Room 709 Boston, MA 02201

Re: Notice of Intent – Piers Park II Project

Dear Mr. Moreno:

The Massachusetts Port Authority (Massport) respectfully submits the enclosed Notice of Intent (NOI) for the Piers Park II Project (Project), which would construct a new, public recreational park on Boston Harbor in East Boston.

This NOI is being filed pursuant to the Massachusetts Wetlands Protection Act (WPA). The Project site is located on Land Subject to Coastal Storm Flowage and within the mapped Federal Emergency Management Agency 100-year floodplain. The Project has been designed to comply with the WPA for the proposed work in regulated resource areas.

Please find enclosed the NOI Form and supporting documentation for your review. We respectfully request that the Commission place this matter on the next available meeting agenda. Please don't hesitate to contact me at (617) 568-3546 or via email at <a href="mailto:bwashburn@massport.com">bwashburn@massport.com</a> if there are any aspects of the project you would like to discuss.

Sincerely,

**Massachusetts Port Authority** 

75MM

Brad Washburn, Manager

**Environmental Planning and Permitting** 

Cc: Kathleen Ledoux/Massport
Anthony Guerriero/Massport



#### PIERS PARK II PROJECT

### 95 Marginal Road Boston, MA

#### **NOTICE OF INTENT**

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#### **Table of Contents**

#### **Notice of Intent Forms**

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

#### **Notice of Intent Figures**

Figure 1 – USGS Locus Map

Figure 2 – Tax Parcel Map

Figure 3 – Regulated Resources Map

Attachment A - NOI Narrative

Attachment B - Project Plans

Attachment C – Stormwater Report

Attachment D - Abutter Notification



#### **NOI FORMS**

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### WPA Form 3 - Notice of Intent

A. General Information

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

i. Fax Number

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

ĺ	Provided by MassDEP:			
	ManaDED Eila Niverban			
	MassDEP File Number			
	Document Transaction Number			
	B 1			
	Boston			

g. Zip Code

\$567.5

c. City/Town Fee Paid

City/Town

#### Important:

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





Note: Before completing this form consult your local Conservation Commission regarding any municipal bylaw or ordinance.

95 Marginal Street	Boston	02128
a. Street Address	b. City/Town	c. Zip Code
Latituda and Langituda.	42.36565	-71.03829
Latitude and Longitude:	d. Latitude	e. Longitude
0104446000		
f. Assessors Map/Plat Number	g. Parcel /Lot Numl	ber
2. Applicant:		
Brad	Washburn	
a. First Name	b. Last Name	
Massachusetts Port Authority		
c. Organization		
One Harborside Drive, 209SE		
d. Street Address		
Boston	MA	02128
e. City/Town	f. State	g. Zip Code
(617) 568-3546	bwashburn@massp	port.com
h. Phone Number i. Fax Number j. Email Address		

4 Representative (if any):

a. First Name

c. Organization

d. Street Address

h. Phone Number

e. City/Town

Representative (if any):				
Eileen	Piskura			
a. First Name	b. Last Name			
Kleinfelder				
c. Company				
4 Technology Drive				
d. Street Address	d. Street Address			
Westborough MA 01581				
e. City/Town	f. State	g. Zip Code		
(508) 287-3541	episkura@kleinfelder.com			
h. Phone Number i. Fax Number	j. Email address			

\$592.50

b. State Fee Paid

f. State

j. Email address

b. Last Name

wpaform3.doc • rev. 6/18/2020

\$1,160

a. Total Fee Paid



# 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

Prov	rided by MassDEP:
	MassDEP File Number
	Document Transaction Number
	Boston
	City/Town

Α.	A. General Information (continued)			
6.	General Project Description:  The Piers Park II Project includes construction of a new, public recreational park on a vacant area in Boston Harbor. The Project would construct a 1,600 SF sailing center building, 900 SF open-air pavilion, landscaping improvements, pedestrian facilities, and surface parking spaces to support this use (see attached narrative for detailed project description)			
7a.	a. Project Type Checklist: (Limited Project Types see Se	ction A. 7b.)		
	1. Single Family Home 2.	Residential Subdivision		
	3. Commercial/Industrial 4.	☐ Dock/Pier		
	5. Utilities 6.	☐ Coastal engineering Structure		
	7. Agriculture (e.g., cranberries, forestry) 8.	☐ Transportation		
	9. 🛛 Other			
7b.				
	2. Limited Project Type			
If the proposed activity is eligible to be treated as an Ecological Restoration Limited Project CMR10.24(8), 310 CMR 10.53(4)), complete and attach Appendix A: Ecological Restorate Project Checklist and Signed Certification.				
8.	Property recorded at the Registry of Deeds for:			
	29584 21			
		Page Number		
В.	. Buffer Zone & Resource Area Impact	s (temporary & permanent)		
1. 2.	<ul> <li>Buffer Zone Only – Check if the project is located only in the Buffer Zone of a Bordering Vegetated Wetland, Inland Bank, or Coastal Resource Area.</li> <li>Inland Resource Areas (see 310 CMR 10.54-10.58; if not applicable, go to Section B.3, Coastal Resource Areas).</li> </ul>			
	Check all that apply below. Attach narrative and any su project will meet all performance standards for each of			

standards requiring consideration of alternative project design or location.



For all projects affecting other Resource Areas, please attach a narrative explaining how the resource area was delineated.

# **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

rovided by MassDEP:			
	MassDEP File Number		
	Document Transaction Number		
	Boston		
	City/Town		

#### B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)

Resour	ce Area	Size of Proposed Alteration	Proposed Replacement (if any)		
a. 🗌	Bank	1. linear feet	2. linear feet		
b	Bordering Vegetated Wetland	1. square feet	2. square feet		
c. 🗌	Land Under Waterbodies and	1. square feet	2. square feet		
	Waterways	3. cubic yards dredged			
Resour	ce Area	Size of Proposed Alteration	Proposed Replacement (if any)		
d. 🗌	Bordering Land Subject to Flooding	1. square feet	2. square feet		
	oubject to 1 loculing	3. cubic feet of flood storage lost	4. cubic feet replaced		
е. 🗌	Isolated Land		4. Cubic feet feplaced		
	Subject to Flooding	1. square feet			
		2. cubic feet of flood storage lost	3. cubic feet replaced		
f	Riverfront Area	1. Name of Waterway (if available) - spec	cify coastal or inland		
2. Width of Riverfront Area (check one):					
	☐ 25 ft Designated Densely Developed Areas only				
	☐ 100 ft New agricult	ural projects only			
	200 ft All other proj	ects			
3. Total area of Riverfront Area on the site of the proposed project: square feet					
4. Proposed alteration of the Riverfront Area:					
a. t	total square feet	b. square feet within 100 ft.	c. square feet between 100 ft. and 200 ft.		
5.	Has an alternatives analysi	s been done and is it attached to th	is NOI? Yes No		
6. '	Was the lot where the activ	ity is proposed created prior to Aug	ust 1, 1996? ☐ Yes ☐ No		
		040 OMP 40 05 40 05)			

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

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



## WPA Form 3 – Notice of Intent

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

rovided by MassDEP:			
	MassDEP File Number		
	Document Transaction Number		
	Boston		
	City/Town		

#### B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)

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

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

4.

5.

Resource Area		Size of Proposed Alteration	Proposed Replacement (if any)	
а. 🗌	Designated Port Areas	Indicate size under Land Under the Ocean, below		
b. 🗌	Land Under the Ocean	1. square feet		
		2. cubic yards dredged	_	
c. 🗌	Barrier Beach	Indicate size under Coastal E	Beaches and/or Coastal Dunes below	
d. 🗌	Coastal Beaches	1. square feet	2. cubic yards beach nourishment	
e. 🗌	Coastal Dunes	1. square feet	2. cubic yards dune nourishment	
		Size of Proposed Alteration	Proposed Replacement (if any)	
f. 🛛	Coastal Banks	630 1. linear feet		
g. 📙	Rocky Intertidal Shores	1. square feet		
h. 🗌	Salt Marshes	1. square feet	2. sq ft restoration, rehab., creation	
i. 🗌	Land Under Salt Ponds	1. square feet		
		2. cubic yards dredged		
j. 🗌	Land Containing Shellfish	1. square feet	_	
k. 🗌	Fish Runs		Banks, inland Bank, Land Under the Inder Waterbodies and Waterways,	
I. 🔀	Land Subject to Coastal Storm Flowage	1. cubic yards dredged 173,900 1. square feet		
Restoration/Enhancement If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.2.b or B.3.h above, please enter the additional amount here.				
a. squar	a. square feet of BVW		of Salt Marsh	
☐ Pr	oject Involves Stream Cros	ssings		
a. number of new stream crossings		b. number of r	replacement stream crossings	



# WPA Form 3 – Notice of Intent

Prov	ided by MassDEP:
	MassDEP File Number
	Document Transaction Number
	Boston
	City/Town

١/،	Massachusetts Wetlands Protection Act M.G.L. c. 131, §40				
IVIC	assacriusetts Wetlands Protection Activi.G.	Boston City/Town			
$\overline{}$	Other Applicable Standards and F	Poquiromonte	City/Town		
Ů.	. Other Applicable Standards and r	\equilents			
	This is a proposal for an Ecological Restoration complete Appendix A: Ecological Restoration (310 CMR 10.11).				
Sti	reamlined Massachusetts Endangered Spec	ies Act/Wetlands P	rotection Act Review		
<b>.</b>	oanimioa massasiiassiis Enaangsisa Spes				
1.	Is any portion of the proposed project located in Esthe most recent Estimated Habitat Map of State-Li Natural Heritage and Endangered Species Program Massachusetts Natural Heritage Atlas or go to <a href="http://maps.massgis.state.ma.us/PRI">http://maps.massgis.state.ma.us/PRI</a> EST HAB/v	sted Rare Wetland Wild m (NHESP)? To view h	dlife published by the		
	a. Yes No If yes, include proof of n	nailing or hand delive	ry of NOI to:		
			gram		
	If yes, the project is also subject to Massachusetts CMR 10.18). To qualify for a streamlined, 30-day, complete Section C.1.c, and include requested macomplete Section C.2.f, if applicable. If MESA supply completing Section 1 of this form, the NHESP was up to 90 days to review (unless noted exceptions in	MESA/Wetlands Protect aterials with this Notice colemental information is will require a separate M	ction Act review, please of Intent (NOI); <i>OR</i> is not included with the NOI, MESA filing which may take		
	c. Submit Supplemental Information for Endangere	ed Species Review*			
	1. Percentage/acreage of property to be a	altered:			
	(a) within wetland Resource Area	percentage/acreage			
	(b) outside Resource Area	percentage/acreage			
	2. Assessor's Map or right-of-way plan of	fsite			
2.	☐ Project plans for entire project site, including wetlands jurisdiction, showing existing and propos tree/vegetation clearing line, and clearly demarcate	ed conditions, existing			
	(a) Project description (including descripti buffer zone)	on of impacts outside o	of wetland resource area &		
	(b) Photographs representative of the site	•			

wpaform3.doc • rev. 6/18/2020 Page 5 of 9

<sup>\*</sup> Some projects not in Estimated Habitat may be located in Priority Habitat, and require NHESP review (see https://www.mass.gov/maendangered-species-act-mesa-regulatory-review).

Priority Habitat includes habitat for state-listed plants and strictly upland species not protected by the Wetlands Protection Act.

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



# WPA Form 3 – Notice of Intent

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

rovided by MassDEP:			
	MassDEP File Number		
_			
	Document Transaction Number		
E	Boston		
(	City/Town		

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

	Make	<u>a-project-review</u> ).	ele at <a href="https://www.mass.gov/how-to/how-to-file-for-seachusetts">https://www.mass.gov/how-to/how-to-file-for-seachusetts</a> - NHESP" and <i>mail to NHESP</i> at		
	Projects altering 10 or more acres of land, also submit:				
	(d)	Vegetation cover type map of site			
	(e)	Project plans showing Priority & Estima	ted Habitat boundaries		
	(f) OF	R Check One of the Following			
Project is exempt from MESA review.  Attach applicant letter indicating which MESA exemption applies. (See 321 Chttps://www.mass.gov/service-details/exemptions-from-review-for-projectsaction priority-habitat; the NOI must still be sent to NHESP if the project is within established the pursuant to 310 CMR 10.37 and 10.59.)					
	2. 🗌	Separate MESA review ongoing.	a. NHESP Tracking # b. Date submitted to NHESP		
	3. 🗌	Separate MESA review completed. Include copy of NHESP "no Take" dete Permit with approved plan.	rmination or valid Conservation & Management		
3.	For coasta line or in a		osed project located below the mean high water		
	a. Not a	applicable – project is in inland resource	area only b. 🗌 Yes 🔀 No		
	If yes, inclu	ude proof of mailing, hand delivery, or ele	ctronic delivery of NOI to either:		
South Shore - Cohasset to Rhode Island border, and North Shore - Hull to New Hampshire bothe Cape & Islands:			North Shore - Hull to New Hampshire border:		
Division of Marine Fisheries - Southeast Marine Fisheries Station Attn: Environmental Reviewer 836 South Rodney French Blvd. New Bedford, MA 02744 Email: dmf.envreview-south@mass.gov		Marine Fisheries Station nmental Reviewer Rodney French Blvd. d, MA 02744	Division of Marine Fisheries - North Shore Office Attn: Environmental Reviewer 30 Emerson Avenue Gloucester, MA 01930 Email: dmf.envreview-north@mass.gov		
	Also if yes, the project may require a Chapter 91 license. For coastal towns in the Northeast Region please contact MassDEP's Boston Office. For coastal towns in the Southeast Region, please con MassDEP's Southeast Regional Office.				
	c. Is	this an aquaculture project?	d. ☐ Yes ⊠ No		
	If yes, inclu	ude a copy of the Division of Marine Fishe	eries Certification Letter (M.G.L. c. 130, § 57).		

wpaform3.doc • rev. 6/18/2020 Page 6 of 9



#### **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

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

	4.	Is any portion of the proposed project within an Area of Critical Environmental Concern (ACEC)?
Online Users: Include your document		a. $\square$ Yes $\boxtimes$ No If yes, provide name of ACEC (see instructions to WPA Form 3 or MassDEP Website for ACEC locations). <b>Note:</b> electronic filers click on Website.
transaction		b. ACEC
number (provided on your receipt page) with all	5.	Is any portion of the proposed project within an area designated as an Outstanding Resource Water (ORW) as designated in the Massachusetts Surface Water Quality Standards, 314 CMR 4.00?
supplementary		a. 🗌 Yes 🔀 No
information you submit to the Department.	6.	Is any portion of the site subject to a Wetlands Restriction Order under the Inland Wetlands Restriction Act (M.G.L. c. 131, § 40A) or the Coastal Wetlands Restriction Act (M.G.L. c. 130, § 105)?
		a. 🗌 Yes 🗵 No
	7.	Is this project subject to provisions of the MassDEP Stormwater Management Standards?
		<ul> <li>a. </li> <li>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:</li> <li>1. </li> <li>Applying for Low Impact Development (LID) site design credits (as described in Stormwater Management Handbook Vol. 2, Chapter 3)</li> </ul>
		2. A portion of the site constitutes redevelopment
		3. Proprietary BMPs are included in the Stormwater Management System.
		b. No. Check why the project is exempt:
		1. Single-family house
		2. Emergency road repair
		3. Small Residential Subdivision (less than or equal to 4 single-family houses or less than or equal to 4 units in multi-family housing project) with no discharge to Critical Areas.
	D.	Additional Information
		This is a proposal for an Ecological Restoration Limited Project. Skip Section D and complete Appendix A: Ecological Restoration Notice of Intent – Minimum Required Documents (310 CMR 10.12).
		Applicants must include the following with this Notice of Intent (NOI). See instructions for details.
		<b>Online Users:</b> Attach the document transaction number (provided on your receipt page) for any of the following information you submit to the Department.
		1. Subscription 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.)

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.

2.



# WPA Form 3 – Notice of Intent

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

Prov	ided by MassDEP:
	MassDEP File Number
	Document Transaction Number
	Boston
	City/Town

D. Ac	dditional	Information	(cont'd)
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3.		ource area boundary delineations (MassDEP BVW cability, Order of Resource Area Delineation, etc.), odology.	
4. 🛛	List the titles and dates for all plans and ot	her materials submitted with this NOI.	
Pie	ers Park II		
a. I	Plan Title		
Kle	einfelder	Andre Martecchini, P.E.	
b. F	Prepared By	c. Signed and Stamped by	
Ma	arch 18, 2022	1"=20'	
	Final Revision Date	e. Scale	
f. A	dditional Plan or Document Title	g. Date	
5. 🗌	If there is more than one property owner, plisted on this form.	lease attach a list of these property owners not	
6.	Attach proof of mailing for Natural Heritage	and Endangered Species Program, if needed.	
7.	Attach proof of mailing for Massachusetts Division of Marine Fisheries, if needed.		
8. 🛛	Attach NOI Wetland Fee Transmittal Form		
9. 🛛	Attach Stormwater Report, if needed.		

### E. Fees

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

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

11786	March 1, 2022
2. Municipal Check Number	3. Check date
11787	March 1, 2022
4. State Check Number	5. Check date
Kleinfelder Office Checking	
6. Payor name on check: First Name	7. Payor name on check: Last Name



### WPA Form 3 - Notice of Intent

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

#### 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.

TEMPL	March 21, 2022
1. Signature of Applicant	2. Date
3. Signature of Property Owner (if different) Eilu Pisku	4. Date
	March 21, 2022
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 any part of Section C, Item 3, above, refer to that section and the Instructions for additional submittal requirements.

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



#### Massachusetts Department of Environmental Protection

Bureau of Resource Protection - Wetlands

A. Applicant Information

#### **NOI Wetland Fee Transmittal Form**

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

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





• •			
<ol> <li>Location of Projet</li> </ol>	ect:		
95 Marginal Stre	eet	Boston	
a. Street Address		b. City/Town	
11787		\$567.50	
c. Check number		d. Fee amount	
2. Applicant Mailin	g Address:		
Brad		Washburn	
a. First Name		b. Last Name	
Massachusetts I	Port Authority		
<ul><li>c. Organization</li></ul>			
One Harborside	Drive, 209SE		
d. Mailing Address			
Boston		MA	02128
e. City/Town		f. State	g. Zip Code
(617) 568-3546		bwashburn@massport.cor	m
h. Phone Number	i. Fax Number	j. Email Address	
3. Property Owner	(if different):		
a. First Name		b. Last Name	
c. Organization			
d. Mailing Address			
e. City/Town		f. State	g. Zip Code
h. Phone Number	i. Fax Number	j. Email Address	

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

#### B. Fees

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

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

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

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

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

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

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



#### **Massachusetts Department of Environmental Protection**

Bureau of Resource Protection - Wetlands

#### **NOI Wetland Fee Transmittal Form**

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

B. Fees (continued)				
Step 1/Type of Activity	Step 2/Number of Activities	Step 3/Individual Activity Fee	Step 4/Subtotal Activity Fee \$110	
1b - site work without a house	1	\$110		
3b - each building	1	\$1,050	\$1,050	
-				
	Step 5/T	otal Project Fee:	\$1,160	
	Step 6			
	Total Project Fee: State share of filing Fee:		\$1,160 a. Total Fee from Step 5	
			\$567.5 b. 1/2 Total Fee <b>less</b> \$12.50	
	e of filling Fee:	\$592.5 c. 1/2 Total Fee <b>plus</b> \$12.50		

### C. Submittal Requirements

a.) Complete pages 1 and 2 and send with a check or money order for the state share of the fee, payable to the Commonwealth of Massachusetts.

Department of Environmental Protection Box 4062 Boston, MA 02211

b.) **To the Conservation Commission:** Send the Notice of Intent or Abbreviated Notice of Intent; a **copy** of this form; and the city/town fee payment.

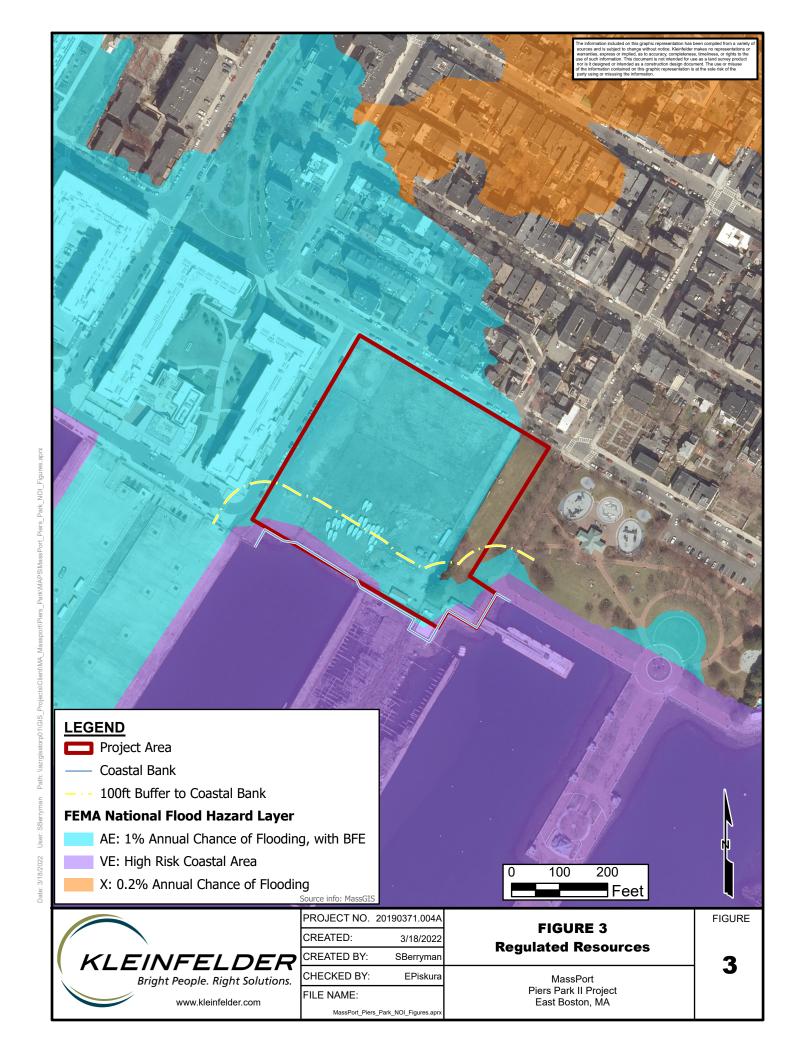
**To MassDEP Regional Office** (see Instructions): Send a copy of the Notice of Intent or Abbreviated Notice of Intent; a **copy** of this form; and a **copy** of the state fee payment. (E-filers of Notices of Intent may submit these electronically.)



#### **NOI FIGURES**

\_\_\_\_\_







# ATTACHMENT A Project Narrative

\_\_\_\_\_



### **Attachment A – Notice of Intent Narrative**

This Notice of Intent (NOI) is filed pursuant to the Massachusetts Wetlands Protection Act (WPA) (MGL Chapter 131, Section 40) and its implementing regulations (310 CMR 10.00). This narrative presents an introduction to the Piers Park II Project (Project), proposed by the Massachusetts Port Authority (Massport) in East Boston, MA. This narrative includes a discussion of regulated resource areas associated with the Project, a description of proposed work and proposed construction mitigation measures, and a discussion of how the Project meets the performance standards of the WPA regulations. Refer to the accompanying Project plans, included as Attachment B, for a plan layout and details of the Project components. In addition, Figures 1 through 3 present the Project Area and associated regulated resource mapping.

#### **Introduction and Site Description**

The Project is designed as a 4.7-acre public park that will serve as both active and passive open space and is a complementary extension of Massport's existing Piers Park I, which is located immediately adjacent to the Project. Massport proposes the Project after extensive community collaboration produced the design, emphasizing a joint goal of climate resiliency for East Boston and the Project's coastal neighbors. The Project includes construction and installation of a large central lawn area, playground equipment, exposed aggregate concrete and brick paved walkways, site furniture, antique lights, and plantings. A 43-car parking lot will be built along Marginal Street, and the sidewalk between the parking lot and the park will be reconstructed. The Harborwalk, a waterfront promenade with benches, trash receptacles, and lighting along Piers Park I will be extended along Piers Park II, positioned approximately 20 feet north of the existing seawall. The Harborwalk extension associated with the Project will afford visitors extended views of Boston Harbor and the downtown Boston skyline.

The Project includes one building: a 1,600 SF Sailing Center, which will accommodate administrative offices, utility spaces, and bathrooms for the established non-profit Piers Park sailing instruction program. There will also be a 900 SF open-air pavilion functioning as an outdoor assembly area for the sailing program. In addition to the Sailing Center, the park includes a multi-generational exercise and game play area; a children's playground and water play area; a one-acre central lawn area for informal play and events, and picnic groves.

The Project is located within land subject to the jurisdiction of the WPA, specifically Coastal Bank, a 100-foot Buffer for Coastal Bank, and Land Subject to Coastal Storm Flowage (LSCSF), which includes Federal Emergency Management Agency (FEMA)-delineated 100-year flood Zones AE and VE. The Project site is composed entirely of previously developed land that was historically used as part of shipping and warehouse operations. An important design feature of the Project is Massport's proposal to provide flood protection and resiliency to both the Project area and adjacent East Boston by elevating the ground surface in the Project area to form a physical barrier against anticipated coastal storm-flow flood waters. Massport's design is consistent with the City's district level flood protection initiatives to protect against potential flooding along Piers Park Lane.

The Project site is located on a parcel shared with Piers Park I. It is relatively flat with some paved and gravel portions and the remaining area of the site covered by sparse vegetation. Primary access points are from Marginal Street and Piers Park Lane. The proposed Project is approximately 205,000 square feet (4.7 acres) in area and abuts Marginal Street to the north, Piers Park Lane to the West and Piers Park I to the east. The southern edge of the park is an existing stone masonry gravity seawall with a concrete cap.



#### **Regulated Resource Areas**

The Project area is located within the following regulated resource areas protected under the WPA: Coastal Bank, 100-foot buffer to Coastal Bank, and Land Subject to Coastal Storm Flowage (LSCSF). Coastal Bank is defined in 310 CMR 10.30 as "the seaward face 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." Massport understands that, in this instance, the Massachusetts Department of Environmental Protection (MADEP) and Coastal Zone Management (CZM) also consider the land immediately adjacent to a coastal engineered structure a Coastal Bank resource. Massport has identified a linear extent of 630 feet of Coastal Bank, extending along the entire length of the existing seawall within the Project Area. Approximately 1.4 acres of the project site fall within the 100-foot buffer of the mapped Coastal Bank.

LSCSF is defined in 310 CMR 10.04 as "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." According to the most recent FEMA Flood Insurance Rate Map Number 25025C0081J dated March 16, 2016, for Suffolk County, Massachusetts, the Project area is within Flood Hazard Zone AE, subject to a 1% annual chance of flooding, with a Base Flood Elevation of 11 ft and 12 ft NAVD88 (17.46 ft and 18.46 ft BCB). The seawall and area immediately landward are located in a velocity zone VE with a Base Flood Elevation of 13 ft NAVD88 (19.46 ft. BCB). The majority of the 4.7-acre park, approximately 173,900 SF, is located within LSCSF. See Figure 3 for an illustration of the flood zones mapped by FEMA.

According to the most recently available data provided by the Massachusetts Natural Heritage and Endangered Species Program (NHESP), no Priority Habitats for Rare Species or Estimated Habitats for Rare Wildlife have been mapped within the Project area. No certified or potential vernal pools have been mapped in the Project area. The Project area is not located within or near an Area of Critical Environmental Concern (ACEC). According to MADEP, the Project area is not located within an Outstanding Resource Water area and is not designated as a Wellhead Protection Area.

#### **Proposed Activities**

The Project will be a seamless extension of Piers Park I, which was constructed by Massport approximately 23 years ago. The goal of the Project is to expand recreational opportunities in East Boston and expand recreational use of the harbor by the community. The Project is located on a lot historically developed for shipping and warehouse activities and separated from Boston Harbor by an existing seawall (Coastal Bank), which will be cosmetically improved (i.e., power-washed, and cleared of ageing fencing) but remain structurally unaltered. The proposed Project includes the following elements:

- 1. A new permanent 1,600 SF building and 900 SF pavilion, which will replace the existing trailer and tent operated by the non-profit Piers Park Sailing Center;
- 2. A water play area and children's play area;
- 3. A multi-generational activity use area, including exercise stations;
- 4. A one-acre multi-use grass playing field;
- 5. Park paths and green space, including planted trees and landscaping;
- 6. Picnic areas;
- 7. A 43-space parking lot for vehicles; and
- 8. Emergency and construction vehicle access to adjacent Park area.

Note that plans are in the concept planning phase for reconstruction of the adjacent Pier 3, directly to the south of Piers Park II. The future Piers Park III will involve reconstructing Pier 3 for public recreational use. The intent is for Piers Park III to complement Piers Park I and II, but Piers Park III is a distinct project from Piers Park II and will be advanced independently. The proposed Project addressed in this application is



not dependent on a future Piers Park III. Piers Park III is planned to be developed by the Trustees of the Reservation with their own timeline and permitting approvals.

At the completion of Piers Park II construction, Massport will install temporary asphalt pavement in the Harborwalk area and in the lower lawn portions of the park to provide temporary construction access for the Piers Park III construction as well as emergency vehicle access into Piers Park II. The stormwater design for the Project accounts for this temporary impervious surface. These areas will be converted to exposed aggregate concrete pavement (Harborwalk, including emergency vehicle access), and landscaped lawn (lower park lawn area), upon completion of the construction of Piers Park III.

#### Construction

Attachment B provides construction phasing drawings depicting how construction will be conducted. Construction of the proposed Piers Park II includes the following elements:

**Site Preparation**: The site requires clearing and grubbing to remove existing weedy grasses and brush. Existing concrete and bituminous pavements will be removed and transported off-site to an appropriate disposal location. Other existing site features such as fencing, old railroad tracks, manholes, pipes, valves, utility poles and electrical lines will either be removed and disposed of off-site or abandoned in place.

Site Development: The site is being graded to a minimum highpoint of El. 14.0 ft. NAVD88 (El. 20.46 BCB) to prevent flooding of Marginal Street and surrounding areas of East Boston. El. 14.0 ft. NAVD88 (El. 20.46 BCB) was chosen as the Design Flood Elevation because it matches the approximate maximum elevation of Piers Park I to the east. Prior to development of Piers Park I, that part of the parcel was included in the FEMA Flood Zone AE. Massport performed grading similar to that proposed for the Project at Piers Park I and subsequently requested and received a Letter of Map Amendment (LOMA) from FEMA removing that area from Flood Zone AE. Massport expects to receive a LOMA for Piers Park II based on a proposed elevation of 14.0 ft. NAVD88 (El. 20.46 BCB). If Piers Park II were designed to a higher flood elevation, water would flood over the lower Piers Park I site onto Marginal Street. Grading to proposed elevation 14.0 ft. NAVD88 (El. 20.46 BCB) will require approximately 18,500 cubic yards of clean fill material placed on the site. Subsurface infrastructure includes stormwater drainage, water service from Piers Park Lane, sanitary sewer service from Marginal Street, telephone service from Marginal Street and electric service from Marginal Street.

Sailing Center Building / Climate Resiliency: A new 1,600 SF building will be constructed and function as the administrative headquarters of the non-profit Piers Park Sailing Center. Activities proposed for the building include administrative offices, utility space, and bathroom facilities for staff of the Sailing Center and well as the general public. The first floor of the building will be at elevation 14.0 ft. NAVD88 (El. 20.46 BCB), the same grade as the park, with no below grade levels. The building perimeter includes a 3 ft. high continuous concrete wall, which is only interrupted by six door openings. Specific site and building elevations are provided in Table 1 below. Though the proposed building elevation is 14.0 ft. NAVD88 (El. 20.46 BCB), deployable flood barriers will be installed at each of the six building entrances thereby raising the flood protection of the building through dry floodproofing to elevation 17.0 ft. NAVD88 (El. 23.46 BCB). As designed, the building meets Massachusetts Building Code (9th Edition) and energy code standards, as well as conforms to Massport's "Floodproofing Design Guide" for new structures. Once temporary flood barriers are deployed in advance of a major storm, there will be no occupants in the building. Table 1 (below) describes how the proposed building design incorporates climate resilience standards. Note that, while the building's proposed elevation is 14.0 ft. NAVD88 (El. 20.46 BCB), dry floodproofing increases the building's flood protection up to elevation 17.0 ft. NAVD88 (El. 23.46 BCB), exceeding the recommended Design Flood Elevation of 21 ft. BCB.



**Table 1. Climate Resiliency Information** 

Site and Building Design Conditions (Feet BCB)

Existing Site Elevation – Low:	14.42 Ft BCB	Existing Site Elevation – High:	20.46 Ft BCB
Proposed Site Elevation – Low:	14.42 Ft BCB	Proposed Site Elevation – High:	24.19 Ft BCB
Proposed First Floor Elevation:	20.46 Ft BCB	Below grade levels:	0 Stories

#### Sea Level Rise and Storms

Sea Level Rise - Base Flood Elevation <sup>1</sup> :	20 Ft BCB		
Sea Level Rise - Design Flood Elevation <sup>2</sup> :	21 Ft BCB	First Floor Elevation:	20.46 Ft BCB
Site Elevations at Building:	20.46 Ft BCB	Accessible Route Elevation:	20.46 Ft BCB

<sup>&</sup>lt;sup>1</sup>Identified using the online BPDA SLR-FHA Mapping Tool

**Stormwater Management:** Project design incorporated stormwater management consistent with Massachusetts standards. A large portion of the site will be landscaped with native grasses, trees, and shrubs, which will improve stormwater retention and groundwater recharge on the site over the existing conditions. Pavements throughout Piers Park II will be exposed aggregate concrete or brick, except at the parking lot, which will be asphalt pavement. The stormwater management system has been designed to accommodate the 25-year storm, with an approximate volume of 280 cubic feet of stormwater infiltrated via infiltration structures. A site stormwater drainage system has been designed with two connections to the existing Boston Water and Sewer Commission (BWSC) drainage system:

- Water from the parking lot and a portion of the site grading down towards Marginal Street is captured in deep sump catch basins, passes through a water quality structure and then connects to an existing storm drain pipe in Marginal Street.
- Water from the portion of the site grading down towards the harbor is captured in deep sump catch basins, passes through a water quality structure and then connects to an existing storm drain in Piers Park Lane. This drain eventually discharges into Boston Harbor through an existing tide gate outfall. Infiltration is being provided in nine (9) dry wells adjacent to deep sump catch basins.

Three (3) check valves will be installed in the drain pipes to prevent flood water from entering the drainage system and backflowing to Marginal Street under the raised grade of the park. Two of the check valves will be installed in existing storm drain lines in Piers Park Lane and one will be installed in one of the new drain lines in the park. The proposed check valves are rubber in-line "duck-bill" type valves that permit water to flow in one direction only.

<sup>&</sup>lt;sup>2</sup>Identified by adding 12" to Sea Level Rise – Base Flood Elevation, per Boston Planning & Development Agency Guidance



For a detailed discussion of stormwater management see the Stormwater Management Report in Attachment C.

The existing seawall along the south edge of the park will remain intact. Existing steel wide-flange guard rail posts and chain link fencing, mounted on or adjacent to the seawall's concrete cap, will be removed and minor concrete repairs will be performed on the concrete cap. The concrete cap will also be pressure washed to remove some of the rust staining. The Harborwalk pavement will be set back a minimum of 20 ft. from the edge of the seawall. This is to prevent truck live loading directly behind the seawall. Stone rip rap will be placed in the area between the seawall and Harborwalk. No work is anticipated in the waters of Boston Harbor.

**Landscaping**: A detailed planting plan has been included in Attachment B of this submission and includes species and quantities of plantings. Overall, the plan focuses on utilizing native species and calls for thousands of trees, shrubs, perennials, and grasses including approximately 80 trees, 650 shrubs, and 2,600 perennials and grasses. The proposed plantings will be distributed throughout the Project site and incorporated into the various landscape designs.

**Winter Construction Snow Management:** The Contractor will include a plan for managing snow during construction in the Stormwater Pollution Prevention Plan they submit with the required National Pollutant Discharge Elimination System Construction Permit. Snow will not be permitted to be dumped into Boston Harbor during construction or operation of the Project.

#### Equipment

Anticipated equipment to be utilized in the construction of this project include: bulldozers, utility trucks, compactors, lulls, and excavators and backhoes with hoe-ram attachments. Crews will require work trucks.

#### Access and Staging

Site access will primarily be from an existing driveway on Marginal Street as well as a new curb cut at the southwest corner of the site from Piers Park Lane. The new Harborwalk section from Piers Park Lane connecting to the existing Harborwalk in Piers Park I is 20 ft. wide to accommodate fire truck access to the Sailing Center building.

The Harborwalk along the south side of the park will be temporarily constructed as an asphalt pavement so that it can serve as a temporary construction access to the future Piers Park III project. At the conclusion of Piers Park III construction, the temporary asphalt pavement will be replaced with the permanent exposed aggregate pavement to match the other pavements in Piers Park II.

#### Schedule

Massport anticipates the following schedule for this project:

• Completion of Bid Documents: May, 2022

Bidding and Award:
 May – July, 2022

• Contractor Notice-to-Proceed: July, 2022

Substantial Completion: September, 2023
 Final Completion: December, 2023

#### Work in Regulated Resources

The majority of the Project site is within 100-foot Buffer to Coastal Bank and LSCSF, and proposed activities are within these regulated resource areas. Despite the extent of Project work within LSCSF, construction



and operation of the Project will not result in any horizontal increase of the extent of LSCSF. Construction and operation of the Project within the area 100-feet landward of the delineated Coastal Bank will have no negative impacts on the function of the Bank. Work proposed at the Coastal Bank will be limited to the top and landward side of the existing seawall and will have no negative impacts on its ability to function as a vertical buffer/coastal bank.

#### **Regulatory Compliance**

As demonstrated below, the Project fully complies with and exceeds recommendations contained in the WPA and CZM guidance *Applying the Massachusetts Coastal Wetlands Regulations* for work in Coastal Bank, 100-Foot Buffer to Coastal Bank, and Land Subject to Coastal Storm Flowage.

#### Coastal Bank and 100-Foot Buffer to Coastal Bank

Construction and operation of the Project will not impact the function of the Coastal Bank. 310 CMR 10.30 states that "any project on a coastal bank or within 100 feet landward of the top of a coastal bank, other than a structure permitted by 310 CMR 10.30(3), shall not have an adverse effect due to wave action on the movement of sediment from the coastal bank to coastal beaches or land subject to tidal action" and "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".

The existing seawall will remain intact and continue to function as a buffer with minor improvements to the landward side of the seawall. Improvements to the seawall will be limited primarily to public safety measures on the top and landward side of the structure. This includes removal of existing unused steel wide-flange guard rail posts and chain link fencing, mounted on or adjacent to the seawall's concrete cap, and minor concrete repairs to the concrete cap. The concrete cap will also be pressure washed with water to remove some of the rust staining. On the landward side of the seawall, riprap surface treatment will be installed for a distance of approximately 20 ft. between the top of the existing seawall and the edge of the proposed Harborwalk. New safety railing will be mounted at the intersection of the riprap treatment and Harborwalk. The project will be consistent with performance metrics under the WPA for coastal bank resources, as there will be no reduction of the bank's ability to resist wind and rain erosion, no reduction in stability, and no increase in the danger to structures at the top of the bank reducing its value as a buffer. The Project would increase flood protection of the area as a result of raising the grade above FEMA hazard zones, providing not only flood control but also protection from significant storm damage.

Within the 100-foot Buffer to Coastal Bank, Massport proposes to construct the 1,600 SF sailing center, 900 SF pavilion, Harborwalk, and landscaping improvements. Construction and operation of these facilities will have no adverse effect on the stability of the Coastal Bank, no adverse effect on any priority or estimated habitat of rare vertebrate or invertebrate species and will have no adverse effect on the movement of sediment from the bank or land subject to tidal action. Conditions of the 100-foot Buffer to Coastal Bank



will be improved by stormwater management at the site as well as landscaping providing native vegetation and slowing floodwaters by frictional resistance and reducing flood water energy and destruction potential.

#### Land Subject to Coastal Storm Flowage

While there are no performance standards stated in the WPA for LSCSF, it can:

- Slow down flood waters and allow them to flow across a natural landform surface, providing frictional resistance and reducing their energy and destruction potential
- Allow flood waters to spread over a wide area without obstructions
- Allow flood waters to be detained, absorbed into the ground, or evaporated into the atmosphere
- Protect the land from storm erosion by providing a substrate for vegetation that helps to stabilize sediments and slow down flood waters.

310 CMR 10.21 also states that "310 CMR 10.21 through 10.37 are intended to ensure that development along the coastline is located, designed, built and maintained in a manner that protects the public interests in the coastal resources listed in M.G.L. c. 131, 40. The proponent of the work must submit sufficient information to enable the issuing authority to determine whether the proposed work will comply with 310 CMR 10.21 through 10.37."

Impacts to LCSF include construction and installation of park facilities, landscaping, a 1,600 SF Sailing Center and 900 SF pavilion, a 43-car parking lot, Harborwalk, multi-generational exercise and game play area; a children's playground and water play area; a one-acre central lawn area for informal play and events, and picnic groves. Proposed landscaping will introduce a permeable surface within the Project site, which will provide more protection against flooding than the existing compacted fill and pavement currently provide.

As part of the Project design, approximately 18,500 cubic yards of clean fill will be brought to the site and used to increase the elevation of the park from approximately 11 ft and 12 ft NAVD88 (17.46 ft and 18.46 ft BCB) to 14.0 ft. NAVD88 (El. 20.46 BCB), providing a physical barrier to flooding from coastal storms. Construction and operation of the Project will decrease the horizontal extent of the 100-year floodplain, protecting the neighborhood north of the park from flooding and providing resiliency for future climate change and sea level rise conditions. Stormwater design, as well as landscaping focused on providing native vegetation, will slow down flood waters and allow them to flow across a natural sloped landform surface, which will in turn allow the waters to be absorbed into the ground. This plan is consistent with the City's district level flood protection initiatives to protect against potential flooding along Piers Park Lane and impacts to coastal neighbors.

#### **Abutters**

In compliance with WPA Section 10.05(4), which states that "An applicant is required to provide notification to an Abutter whose Lot is separated from the Project Locus by a public or private street or body of water only if the Abutter's Lot is within 100 feet from the property line of the Project Locus.", Massport will notice all neighboring parcels within 100-ft of the Project site parcel.

#### Stormwater Management

Runoff generated from construction and operation of the Project will be collected and managed in accordance with the DEP Stormwater policies in significant improvement to existing conditions. Presently there is no drainage system on the Project site and a significant volume of water flows untreated directly into Boston Harbor. The proposed Project will improve existing conditions within the Project area by constructing a stormwater management system that includes measures to provide groundwater recharge,



attenuate peak flows and provide water quality treatment. Additional details on the stormwater implications of the Piers Park II are included in the accompanying Stormwater Management Report (Attachment C).

Compliance with the 10 stormwater management standards cited in Section 310 CMR 10.05(6)(k) of the WPA is evaluated in the attached Stormwater Management Report.

#### **Mitigation**

The Project has been designed to prevent short- and long-term impacts to regulated resources as well as to increase the resiliency of the Project area to flooding by coastal storms. Existing conditions in this part of East Boston are such that the Project site, as well as adjacent Marginal Street and neighborhoods, flood during large storm events. By raising the surface of the site above base flood elevation, the Project would reduce the horizontal extent of the FEMA Zone AE. Piers Park Lane, the public street west of the Project site, has a high point elevation of approximately 12.0 ft. NAVD88 (El. 18.46 BCB), providing some protection against flood waters. Massport is consistent with the City's district level flood protection initiatives to protect against potential flooding along Piers Park Lane and impacts to coastal neighbors.

An erosion and sediment control program will be implemented to minimize temporary impacts to resource areas during the construction phase of the Project. The program incorporates Best Management Practices (BMPs) specified in guidelines developed by the DEP and the U.S. Environmental Protection Agency (EPA).

Proper implementation of the erosion and sedimentation control program will:

- Minimize exposed soil areas through sequencing and temporary stabilization;
- Place structures in advance of construction to manage stormwater runoff and erosion; and
- Establish permanent vegetative cover or alternative forms of stabilization (loose straw or wattles) as soon as practicable.

#### Construction Best Management Practices

Construction best management practices to be implemented include temporary stabilization, erosion and sedimentation controls, catch basin protection, and dewatering filters. These practices will be initiated as soon as practicable in appropriate places within the Project Area.

#### **Temporary Stabilization**

Any areas of exposed soil or stockpiles that will remain inactive for more than 14 days will be surrounded by erosion control devices and covered with polyurethane sheeting.

#### **Erosion Control Barriers**

Prior to any ground disturbance, an approved erosion control barrier, specifically plastic-free and weed-free straw wattles, will be installed at the down gradient limit of work. As construction progresses, additional barriers will be installed around the base of stockpiles and other erosion prone areas. The barriers will be entrenched into the substrate to prevent underflow. If sediment has accumulated to a depth which impairs proper functioning of the barrier, it will be removed by hand or by machinery operating upslope of the barriers. This material will be either reused in the Project Area or disposed of at a suitable offsite location. Any damaged sections of the barrier will be repaired or replaced immediately upon discovery.

#### **Catch Basin Inlet Protection**

The inlets of existing and proposed catch basins will be protected from sediment inflow during the work period by surrounding them with a barrier of staked straw bales or by installing straw wattles. If straw bales are used, a layer of non-woven filter fabric shall be placed beneath the grate of each basin. If sediment has



collected behind the barrier or in the straw wattle to a point where it impairs proper functioning, it will be removed and will be either reused onsite or disposed of at a suitable offsite location.

#### **Dewatering Filters**

If necessary, sediment laden water that collects in trenches or excavated areas will be pumped into straw bale basins or filter bags. The basins will consist of a ring of staked straw bales overlain by non-woven geotextile filter fabric and crushed stone. Discharge water will be pumped into the basin and allowed to drain through the fabric onto relatively flat stabilized surfaces. Dewatering filter bags may be used in place of straw bale basins. The bags will be placed on relatively flat terrain, free of brush and stumps, to avoid ruptures and punctures. A maximum of one six-inch discharge hose will be allowed per filter bag. To help prevent punctures, geotextile fabric will be placed beneath the filter bag when used in wooded locations. Unattended filter bags will be encircled with a straw bale and silt fence barrier.

#### **Summary**

The Applicant respectfully requests that the Boston Conservation Commission find these measures adequately protective of the interests identified in the WPA and issue an Order of Conditions approving the work described in this NOI and shown on the accompanying plans.



# ATTACHMENT B Project Plans

\_\_\_\_\_\_



### ATTACHMENT C Stormwater Report



# ATTACHMENT D Abutter Notification





# NOTIFICATION TO ABUTTERS BOSTON CONSERVATION COMMISSION

In accordance with the Massachusetts Wetlands Protection Act, Massachusetts General Laws Chapter 131, Section 40, you are hereby notified as an abutter to a project filed with the Boston Conservation Commission. A. \_\_\_\_\_ has filed a Notice of Intent with the Boston Conservation Commission seeking permission to alter an Area Subject to Protection under the Wetlands Protection Act (General Laws Chapter 131, section 40) B. The address of the lot where the activity is proposed is \_\_\_\_\_\_. C. The project involves \_\_\_\_\_\_. D. Copies of the Notice of Intent may be obtained by contacting the Boston Conservation Commission at CC@boston.gov. E. Copies of the Notice of Intent may be obtained from \_\_\_\_\_ by contacting them at \_\_\_\_\_\_, \_\_\_\_, between the hours of \_\_\_\_\_, \_\_\_\_, \_\_\_\_. F. In accordance with the Chapter 20 of the Acts of 2021, the public hearing will take place virtually at https://zoom.us/j/6864582044. If you are unable to access the internet, you can call 1-929-205-6099, enter Meeting ID 686 458 2044 # and use # as your participant ID. G. Information regarding the date and time of the public hearing may be obtained from the **Boston** Conservation Commission by emailing CC@boston.gov or calling (617) 635-3850 between the hours of 9 AM to 5 PM, Monday through Friday. NOTE: Notice of the public hearing, including its date, time, and place, will be published at least five (5) days in advance in the Boston Herald. NOTE: Notice of the public hearing, including its date, time, and place, will be posted on www.boston.gov/public-notices and in Boston City Hall not less than forty-eight (48) hours in advance. If you would like to provide comments, you may attend the public hearing or send written comments to CC@boston.gov or Boston City Hall, Environment Department, Room 709, 1 City Hall Square, Boston, MA 02201 NOTE: If you would like to provide comments, you may attend the public hearing or send written comments to CC@boston.gov or Boston City Hall, Environment Department, Room 709, 1 City Hall Square, Boston, MA 02201 NOTE: You also may contact the Boston Conservation Commission or the Department of Environmental Protection Northeast Regional Office for more information about this application or the Wetlands Protection Act. To contact DEP, call: the Northeast Region: (978) 694-3200. NOTE: If you plan to attend the public hearing and are in need of interpretation, please notify staff at CC@boston.gov by 12 PM the day before the hearing.





#### NOTIFICACIÓN PARA PROPIETARIOS Y/O VECINOS COLINDANTES COMISIÓN DE CONSERVACIÓN DE BOSTON

De conformidad con la Ley de protección de los humedales de Massachusetts, el Capítulo 131, Sección 40 de las Leyes Generales de Massachusetts, por la presente queda usted notificado como propietario o vecino colindante de un proyecto presentado ante la Comisión de Conservación de Boston.

A. Massachusetts Port Authority ha presentado una solicitud a la Comisión de Conservación de Boston pidiendo permiso para modificar una zona sujeta a protección en virtud de la Ley de protección de los humedales (Leyes generales, capítulo 131, sección 40)

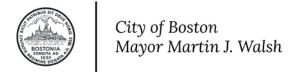
- B. La dirección del lote donde se propone la actividad es <sup>95</sup> Marginal Street.
- C. El proyecto consiste en construction of Piers Park II, a new public recreational park
- D. Se pueden obtener copias del Aviso de Intención comunicándose con la Comisión de Conservación de Boston en <u>CC@boston.gov</u>.
- E. Las copias de la notificación de intención pueden obtenerse en <sub>Eileen Piskura</sub>, Kleinfelder 508-270-6506 entre las Monday-Friday 8am to 4pm.
- F. De acuerdo con el Decreto Ejecutivo de le Mancomunidad de Massachusetts que suspende ciertas disposiciones de la Ley de reuniones abiertas, la audiencia pública se llevará a cabo virtualmente en <a href="https://zoom.us/j/6864582044">https://zoom.us/j/6864582044</a>. Si no puede acceder a Internet, puede llamar al 1-929-205-6099, ingresar ID de reunión 686 458 2044 # y usar # como su ID de participante.
- G. La información relativa a la fecha y hora de la audiencia pública puede solicitarse a la **Comisión** de Conservación de Boston por correo electrónico a <u>CC@boston.gov</u> o llamando al (617) 635-4416 entre las 9 AM y las 5 PM, de lunes a viernes.

NOTA: La notificación de la audiencia pública, incluida su fecha, hora y lugar, se publicará en el **Boston Herald** con al menos cinco (5) días de antelación.

NOTA: La notificación de la audiencia pública, incluida su fecha, hora y lugar, se publicará en <a href="https://www.boston.gov/public-notices">www.boston.gov/public-notices</a> y en el Ayuntamiento de Boston con no menos de cuarenta y ocho (48) horas de antelación. Si desea formular comentarios, puede asistir a la audiencia pública o enviarlos por escrito a <a href="https://cceapston.gov">CC@boston.gov</a> o al Ayuntamiento de Boston, Departamento de Medio Ambiente, Sala 709, 1 City Hall Square, Boston, MA 02201.

NOTA: También puede comunicarse con la Comisión de Conservación de Boston o con la Oficina Regional del Noreste del Departamento de Protección Ambiental para obtener más información sobre esta solicitud o la Ley de Protección de Humedales. Para comunicarse con el DEP, llame a la Región Noreste: (978) 694-3200.





NOTA: si tiene previsto asistir a la audiencia pública y necesita servicios de interpretación, sírvase informar al personal en <a href="CC@boston.gov">CC@boston.gov</a> antes de las 12 PM del día anterior a la audiencia.



#### **BABEL NOTICE**

#### English:

**IMPORTANT!** This document or application contains **important information** about your rights, responsibilities and/or benefits. It is crucial that you understand the information in this document and/or application, and we will provide the information in your preferred language at no cost to you. If you need them, please contact us at <a href="mailto:cc@boston.gov">cc@boston.gov</a> or 617-635-3850.

Spanish:

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FULL_ADDRESS	CITY	ZIPCODE OWNER	ADDRESSEE	MAIL_ADDRESS	MAIL_CS	STATE	ZIPCODE
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		MARGARET FARMER	JPNA	241 WEBSTER STREET	EAST BOSTON	MA	2128
		MARSHALL GREENLAND	BOSTON HARBOR SHIPYARD	256 MARGINAL STREET	EAST BOSTON	MA	2128
		ANTHONY GUERRIERO	MASSPORT	ONE HARBORSIDE DRIVE	EAST BOSTON	MA	2128
		KATHLEEN LEDOUX	MASSPORT	ONE HARBORSIDE DRIVE	EAST BOSTON	MA	2128
		REPRESENTATIVE ADRIAN MADARO	ATTN: GLORIBEL RIVAS	24 BEACON STREET, RM 134	BOSTON	MA	2133
		SENATOR LYDIA EDWARDS		24 BEACON STREET, RM 520	BOSTON	MA	2133
		LINA TRAMELLI	NEIGHBORHOOD SERVICES	1 CITY HALL SQUARE	BOSTON	MA	2201
		ALEX DEFRONZO	PIERS PARK SAILING CENTER	95 MARGINAL STREET	EAST BOSTON	MA	2128



#### **Massachusetts Department of Environmental Protection**

Bureau of Resource Protection - Wetlands Program

## **Checklist for Stormwater Report**

#### A. Introduction

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





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

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals. 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>&</sup>lt;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>&</sup>lt;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.



#### **Massachusetts Department of Environmental Protection**

Bureau of Resource Protection - Wetlands Program

## **Checklist for Stormwater Report**

#### B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

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

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

### **Registered Professional Engineer's Certification**

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature



#### Checklist

<b>Project Type:</b> Is the application for new development, redevelopment, or a mix of new and redevelopment?				
New development				
Redevelopment				
☐ Mix of New Development and Redevelopment				



## **Checklist for Stormwater Report**

### Checklist (continued)

env	rironmentally sensitive design and LID Techniques were considered during the planning and design of 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):
Sta	ndard 1: No New Untreated Discharges
X	No new untreated discharges
	Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
	$Supporting\ calculations\ specified\ in\ Volume\ 3\ of\ the\ Massachusetts\ Stormwater\ Handbook\ included.$



## **Checklist for Stormwater Report**

Checklist (continued)

Sta	dard 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.			
Sta	dard 3: Recharge			
	Soil Analysis provided.			
X	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.			
	Runoff from all impervious areas at the site discharging to the infiltration BMP.			
	Runoff from all impervious areas at the site is <i>not</i> 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.			
X	Recharge BMPs have been sized to infiltrate the Required Recharge Volume.			
	Recharge BMPs have been sized to infiltrate the Required Recharge Volume <i>only</i> 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.			
X	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.			

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



## **Checklist for Stormwater Report**

Cł	necklist (continued)
Sta	ndard 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.
Sta	ndard 4: Water Quality
The	E 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.
П	The Required Water Quality Volume is reduced through use of the LID site Design Credits.

X 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**

Cł	necklist (continued)
Sta	ndard 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.
Sta	ndard 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 <i>prior</i> to the discharge of stormwater to the post-construction stormwater BMPs.
	The NPDES Multi-Sector General Permit does <i>not</i> 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 <i>not</i> 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.
Sta	ndard 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.
X	Critical areas and BMPs are identified in the Stormwater Report.



#### **Massachusetts Department of Environmental Protection**

Bureau of Resource Protection - Wetlands Program

## **Checklist for Stormwater Report**

#### Checklist (continued)

ndard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum ent practicable  The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:
☐ Limited Project
<ul> <li>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.</li> <li>Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area</li> <li>Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff</li> </ul>
☐ 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.



#### **Massachusetts Department of Environmental Protection**

Bureau of Resource Protection - Wetlands Program

## **Checklist for Stormwater Report**

Checklist (continued) Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued) The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has not been included in the Stormwater Report but will be submitted **before** land disturbance begins. ☐ The project is **not** covered by a NPDES Construction General Permit. The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report. The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins. Standard 9: Operation and Maintenance Plan The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information: Name of the stormwater management system owners; Party responsible for operation and maintenance; |X| 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.



### **PIERS PARK II**

95 Marginal Street East Boston, 02128

### STORMWATER MANAGEMENT REPORT

March 17, 2022

Prepared for:

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

Prepared by:

Kleinfelder Northeast, Inc. One Beacon Street, Suite 8100 Boston, MA 02108



#### **Table of Contents**

- 1. Introduction and Project Overview
- 2. Stormwater Standards

Standard #1: No New Untreated Discharges

Standard #2: Post-development Peak Discharge Rates

Standard #3: Recharge to Groundwater

Standard #4: Water Quality

Standard #5: Higher Potential Pollutant Loads

Standard #6: Protection of Critical Areas

Standard #7: Redevelopment Projects

Standard #8: Erosion & Sedimentation Control Plan

Standard #9: Operation & Maintenance Plan

Standard #10: Illicit Discharges

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#### Figures.

Figure 1. General Site Layout – Full Build Out

Figure 2. Aerial View of Existing Site

Figure 3. Temporary Asphalt and Crushed Stone Pavements During Pier Park III

Construction

Figure 4. FEMA Flood Hazard Data

Figure 5. Infiltration Rate Table

Figure 6. Recharge Volume Calculation

Figure 7. Recharge Volume Infiltration Time Calculation

Appendix A – Pre-Construction Conditions

Appendix B – Post-Construction Conditions

Appendix C – Operations and Maintenance Plan

Appendix D – Long-Term Pollution Prevention Plan

Appendix E – Erosion Control and Sedimentation Plans



#### 1. Introduction and Project Overview

The proposed Piers Park II Project will be a universally accessible public park on the East Boston waterfront. The proposed Project is approximately 205,000 square feet (4.7 acres) in area and abuts Marginal Street to the north, Piers Park Lane to the West and Piers Park I to the east. The southern edge of the park is an existing seawall (see Figure 1). The official address for Piers Park II is 95 Marginal Street East Boston, MA 02128, which is the address used for this Stormwater Management Report.

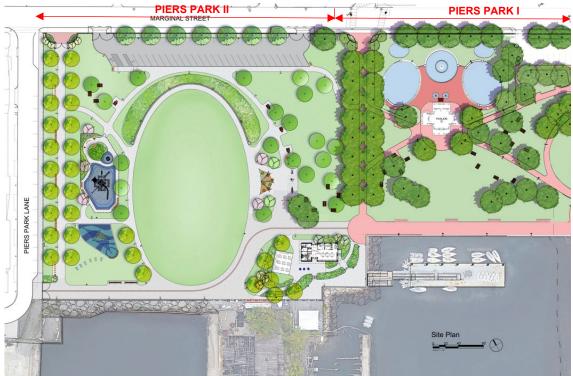


Figure 1 - General Site Layout - Full Build-Out

The park will serve both active and passive forms of open space recreation and is a complementary extension of the existing Piers Park I, constructed in the late 1990s, which is located immediately adjacent to the Project. The Project includes construction of a large 45,897 sf central lawn area for multi-purpose activities, a multi-generational exercise and game play area, a children's playground and water-play area, exposed aggregate concrete and brick paved walkways, picnic groves, site furniture, LED lighting, and landscape plantings. A 43-car parking lot will be built along Marginal Street, and the sidewalk between the parking lot and the park will be reconstructed. The Piers Park I Harborwalk, an important waterfront promenade with benches and lighting, will be extended along the south edge of Piers Park II. The Harborwalk affords beautiful views of Boston Harbor and the downtown Boston skyline, especially at sunset.

The Project includes one building: a 1,600 SF, single story Sailing Center, which will accommodate administrative offices, utility spaces, and bathrooms for the non-profit Piers Park Sailing Center program. There will also be a 900 SF open-air pavilion functioning as an outdoor assembly space for the sailing program. The floor of the Sailing Center building will be at elevation 14.0 NAVD88 (20.46 BCB). It will have further flood protection to elevation 17.0 NAVD88 (23.46 BCB) with deployment of stop log flood barriers at the entrance doors. The 17.0 NAVD88 (23.46 BCB) Design Flood Elevation for the building complies with Massport's *Floodproofing Design Guide* for new structures.

The Project is located entirely within land subject to the jurisdiction of the Wetlands Protection Act (WPA).



specifically Land Subject to Coastal Storm Flowage (LSCSF), which includes Federal Emergency Management Agency (FEMA)-delineated 100-year flood Zones AE and VE. The property, which is currently a vacant lot, was historically developed as waterfront facilities for maritime shipping. The LSCSF continues north and west beyond the Project boundary and into the adjacent Marginal Street and Piers Park Lane public roadways. The land will be graded to form a physical barrier against future coastal storm-flow flood waters up to a Design Flood Elevation of 14.0 NAVD88 (20.46 BCB). The DFE for park grading was selected as it is slightly higher than existing grades of Piers Park I. It was decided not to grade Piers Park II higher than Piers Park I because flood water will end up travelling through the lowest elevations, and having a higher elevation will not provide any additional flood protection to Marginal Street. This Project will be a critically important element in protecting East Boston from future flooding due to climate change.

The Project site, owned by the Massachusetts Port Authority, is located on a parcel of land shared with Piers Park I. The portion of the property to be developed into Piers Park II is relatively flat with some paved and gravel portions, with the remaining area of the site covered by weedy grasses (See Figure 2). A small portion of the site along the eastern edge consists of grass lawn that was previously constructed as part of the Piers Park I project. Primary access points for construction will be from Marginal Street and Piers Park Lane.



Figure 2 - Aerial View of Existing Site

The Project site does not contain any mapped priority habitats.



Note that plans are in the concept planning phase for reconstruction of the adjacent Pier 3, directly to the south of Piers Park II. The future Piers Park III will involve reconstructing Pier 3 for public recreational use. The intent is for Piers Park III to complement Piers Park I and II, but Piers Park III is a distinct project from Piers Park II and will be advanced independently. The proposed Project addressed in this application is not dependent on a future Piers Park III. Piers Park III is planned to be developed by the Trustees of the Reservation with their own timeline and permitting approvals.

At the completion of Piers Park II construction, Massport will install temporary asphalt or crushed stone pavement in the Harborwalk area and in the lower lawn portions of the park to provide temporary construction access and staging area for the Piers Park III construction as well as emergency vehicle access into Piers Park II (See Figure 3). The stormwater design for the Project accounts for this temporary impervious surface. These areas will be converted to exposed aggregate concrete pavement (Harborwalk) and landscaped lawn (lower park lawn area), upon completion of the construction of Piers Park III, as shown in Figure 1.

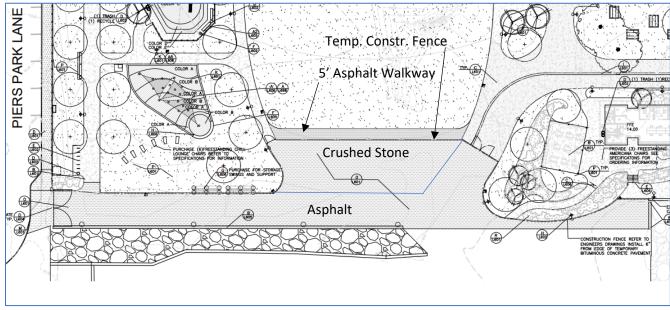


Figure 3 – Temporary Asphalt and Crushed Stone Pavements During Pier Park III Construction

This Stormwater Report addresses Project compliance with MA Stormwater Standards as appropriate.

#### 2. <u>Stormwater Standards</u>

This Section of the Stormwater Management Report (SMP) is organized to describe the Ten Massachusetts Stormwater Standards, which are listed below:

- Standard #1: No New Untreated Discharges
- Standard #2: Post-development Peak Discharge Rates
- Standard #3: Recharge to Groundwater
- Standard #4: Water Quality



- Standard #5: Higher Potential Pollutant Loads
- Standard #6: Protection of Critical Areas
- Standard #7: Redevelopment Projects
- Standard #8: Erosion and Sedimentation Control Plan
- Standard #9: Operation and Maintenance Plan
- Standard #10: Illicit Discharges

#### Standard 1: No New Untreated Discharges

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

The proposed project has been designed so that no new untreated discharges to wetlands or waters of the Commonwealth will be constructed. Stormwater from the site currently sheet flows either to Boston Harbor or to Marginal Street with no treatment. The project design has incorporated drainage systems with dry wells to promote subsurface on-site recharge and uses water quality structures to treat discharges prior to connecting to existing stormwater infrastructure.

No new stormwater discharges will be conveyed to Boston Harbor, therefore the project meets Standard 1.

#### Standard 2: Post-Development Peak Discharge Rates

Under Standard 2, "Stormwater management systems shall be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates. This Standard may be waived for discharges to land subject to coastal storm flowage as defined in 310 CMR 10.04"

Under 310 CMR 10.04, "Land Subject to Coastal Storm Flowage 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 Project is located almost entirely within Land Subject to Coastal Storm Flowage (LSCSF). Figure 4 shows the Federal Emergency Management Agency (FEMA)-delineated 100-year flood map for this area of East Boston, which shows that the entire property is within the delineated 100-year flood zone, for either Zones AE or VE.





Figure 4 - FEMA Flood Hazard Data

Since the project site is immediately adjacent to Boston Harbor and within the 100-year Flood Plain, we are requesting relief from this standard.

#### Standard 3: Recharge to Groundwater

Under Standard 3, "Loss of annual recharge to groundwater shall 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 predevelopment 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 stormwater system for the overall project collects water within the project area and directs it to two discharge points at existing BWSC storm drain lines in Piers Park Lane and Marginal Street. To provide for infiltration, nine (9) infiltrating drywells are being utilized adjacent to deep sump catch basins within the park area. The NRCS Soil Survey for the project area identified the soils as "udorthents" or urban fill materials, so to determine the Hydrologic Soil Group (HSG) for the project we relied on soil borings drilled at the project site. Based on a review of existing soil borings, the soil on site is classified as a Silt Loam which would put the project soils in Hydrologic Soil Group C. Infiltration calculations have been completed using the Silt Loam Rawls Rates provided in Volume 3 Chapter 1 of the Massachusetts Stormwater Handbook as shown below:



Table 2.3.3. 1982 Rawls Rates 18

Texture Class	NRCS Hydrologic Soil Group (HSG)	Infiltration Rate Inches/Hour
Sand	A	8.27
Loamy Sand	A	2.41
Sandy Loam	В	1.02
Loam	В	0.52
Silt Loam	C	0.27
Sandy Clay Loam	C	0.17
Clay Loam	D	0.09
Silty Clay Loam	D	0.06
Sandy Clay	D	0.05
Silty Clay	D	0.04
Clay	D	0.02

Figure 5. Infiltration Rate Table

The methodology described in the Massachusetts Stormwater Handbook was used to approximate the required Recharge Volume for the increased impervious area of the park and project site area, including the new Sailing Center. The minimum required Recharge Volume to infiltrate the additional impervious coverage of the Sailing Center and Park operating area is calculated to be 276 cubic feet as shown below in Figure 6. The actual Recharge Volume provided in the infiltration structures adjacent to the catch basins is approximately 280 cubic feet, therefore the Recharge Volume for Standard 3 is met.

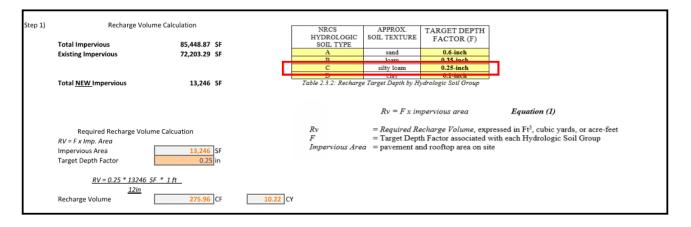


Figure 6. Recharge Volume Calculation

The methodology described in the Massachusetts Stormwater Handbook was used to approximate the infiltration time required for the Recharge Volume being provided for the increased impervious area of the park and project site area, including the new Sailing Center. The infiltration structures need to be sized appropriately to ensure that they will completely drain within 72 hours of the storm event. The Recharge Volume being provided is 280 CF, which is split between the nine (9) infiltration structures. The draw down time for each structure is calculated below in Figure 7. Infiltration structures are completely drained at 70.39 hrs, therefore Standard 3 is met.



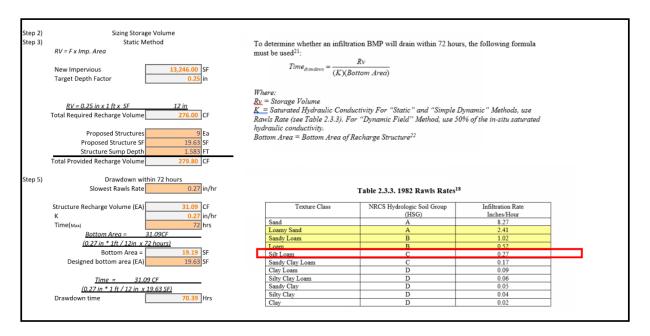


Figure 7. Recharge Volume Infiltration Time Calculation

#### Standard 4: Water Quality

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

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

The stormwater system for the overall project collects all water within the project area using deep-sump catch basins which initially directs flows to infiltration structures adjacent to the catch basins. Under larger storms, once the infiltration structure is at capacity, stormwater will be directed to a gravity network which culminates in a proprietary water quality structure, which removes Total Suspended Solids (TSS) to improve water quality, before discharging into the drainage system in the street. The basis of design for the water quality structure is a Stormceptor Type STC-900 for the discharge to Piers Park Lane and a STC-450i for the discharge from the parking lot to Marginal Street. Massport will own and maintain the water quality structures.

The stormwater management system is designed to remove 80% of the average annual post-construction load of Total Suspended Solids, through a combination of stormwater BMPs such as deep sump catch basins, infiltration basins, and proprietary water quality units (See Appendix B for the TSS Calculations), therefore, Standard 4: Water Quality is met.



#### Standard 5: Higher Potential Pollutant Loads

Under Standard 5, "For land uses with higher potential pollutant loads, source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum extent practicable."

The proposed use is a public park. The project does not include any of the following higher potential pollutant load sources:

- Auto fueling facilities (gas stations).
- Exterior fleet storage areas.
- Exterior vehicle service and equipment cleaning areas.
- Marinas and boat yards.
- · Parking lots with high intensity use.
- Confined disposal facilities and disposal sites.

The project is not considered a land use with higher potential pollutant loads and therefore this standard does not apply.

#### Standard 6: Protection of Critical Areas

Under Standard 6, "Stormwater discharges within the Zone II or Interim Wellhead Protection Area of a public water supply, and stormwater discharges near or to any other critical area, require the use of the specific source control and pollution prevention measures and the specific structural stormwater best management practices determined by the Department to be suitable for managing discharges to such areas, as provided in the Massachusetts Stormwater Handbook."

The project site is not in proximity to any Zone II or Wellhead Protection Areas of a public water supply.

The pre-treatment of the deep sump catch basins and proprietary water quality units are designed to provide containment of any accidental spill or other unexpected event, before the contaminants can infiltrate into the ground or ultimately discharge to Boston Harbor. Therefore, the Project meets Standard 6.

#### Standard 7: Redevelopment Projects

Standard 7 states, "A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural stormwater best management practice requirements of Standards 4, 5, and 6. Existing stormwater discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions."

Standard 7 is not applicable, as the project does not qualify as a redevelopment project because there is a net gain in impervious surface.



#### Standard 8: Erosion and Sediment Control Plan

Standard 8 states, "A plan to control construction-related impacts including erosion, sedimentation and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention plan) shall be developed and implemented."

The Contract Documents will require that the Contractor prepare and implement a Stormwater Pollution Plan (SWPPP) prior to starting construction.

#### Implementation of Erosion and Sedimentation Controls

As required under the US EPA Construction General Permit, the Contract drawings and specifications describe Erosion and Sediment Control requirements for the project. Prior to the start of any earthwork on the site, the sedimentation and erosion controls must be installed, inspected, and approved by Massport's on-site Resident Engineer.

#### Inspection and Maintenance of Stormwater Controls

Stormwater controls must be inspected and maintained in good operating condition until all disturbed soils are permanently stabilized. To ensure this, the Contractor is required to inspect erosion and sedimentation devices after each rain event to ensure that the devices are operating properly. The Contractor will be required to repair or replace barriers that decompose naturally due to weatherization over time to maintain the functionality of the system.

The following standard maintenance practices will apply to the erosion and sedimentation controls for the project:

- All erosion and sediment control measures will be properly maintained. If repairs or other maintenance is necessary, it will be initiated by the Contractor within 24 hours of report.
- Straw Waddles will be inspected for depth of sediment, tears, to verify if the rolls are intact and securely attached to the posts, and to verify that the posts are firmly in the ground.
- Built-up sediment will be removed from straw waddles when depth of sediment reaches one-half the height of the waddle and at the end of construction prior to removal.
- Erosion control measures will be maintained for disturbed areas of the site that have not been stabilized.
- Erosion control measures will be installed and maintained for the construction staging area, stockpiles, and material storage areas until those areas have been stabilized after construction.
- Temporary and permanent seeding and planting will be inspected for bare spots, washouts, and healthy growth.

If the inspections reveal the need for additional control devices to prevent erosion and sedimentation, the Contractor will be directed by Massport to promptly install additional protection devices as required. Control devices in need of repair will be repaired promptly after identification. A stockpile of 100 linear feet of straw waddles will be maintained on the site and under cover for emergency repairs and routine maintenance.

The Contractor will be responsible for preparing an inspection and maintenance report following each inspection and filing completed reports after maintenance action has taken place by the Contractor. The



Contractor's superintendent will be responsible for maintenance and repair activities and completing and signing the maintenance action portion of inspection and maintenance reports.

#### Standard 9: Operation and Maintenance Plan

Standard 9 states, "A long-term operation and maintenance plan shall be developed and implemented to ensure that stormwater management systems function as designed."

To ensure compliance with all applicable stormwater regulations, and as a measure of good housekeeping, Massport inspection and maintenance personnel shall maintain an operation and maintenance log for the last three years. The operation and maintenance log shall include inspections, repairs, replacements, and disposals (for disposals, the log shall indicate the type of material and the disposal location). A draft Operation and Maintenance Plan is included as Appendix C. A final plan will be submitted after approval by Massport.

#### Standard 10: Illicit Discharges

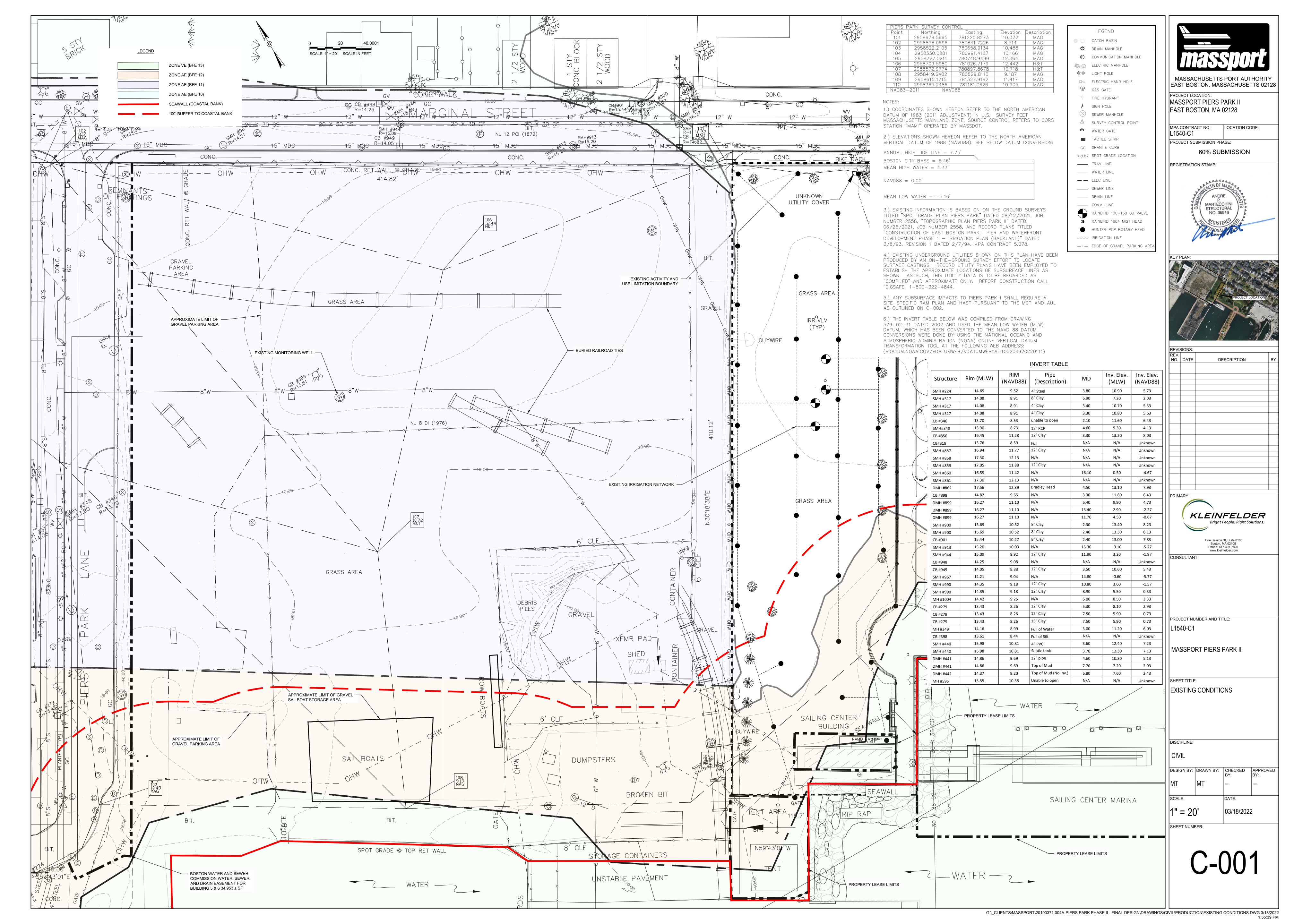
Standard 10 states, "All illicit discharges to the stormwater management system are prohibited."

To the best of our knowledge, there are no existing Illicit discharges to the stormwater management system located within the project area. In addition, the Long-Term Pollution Prevention Plan in Appendix D will be implemented in the Project area upon project completion.



### **APPENDIX A**

# **Pre-Construction Conditions**: Existing Conditions Plan

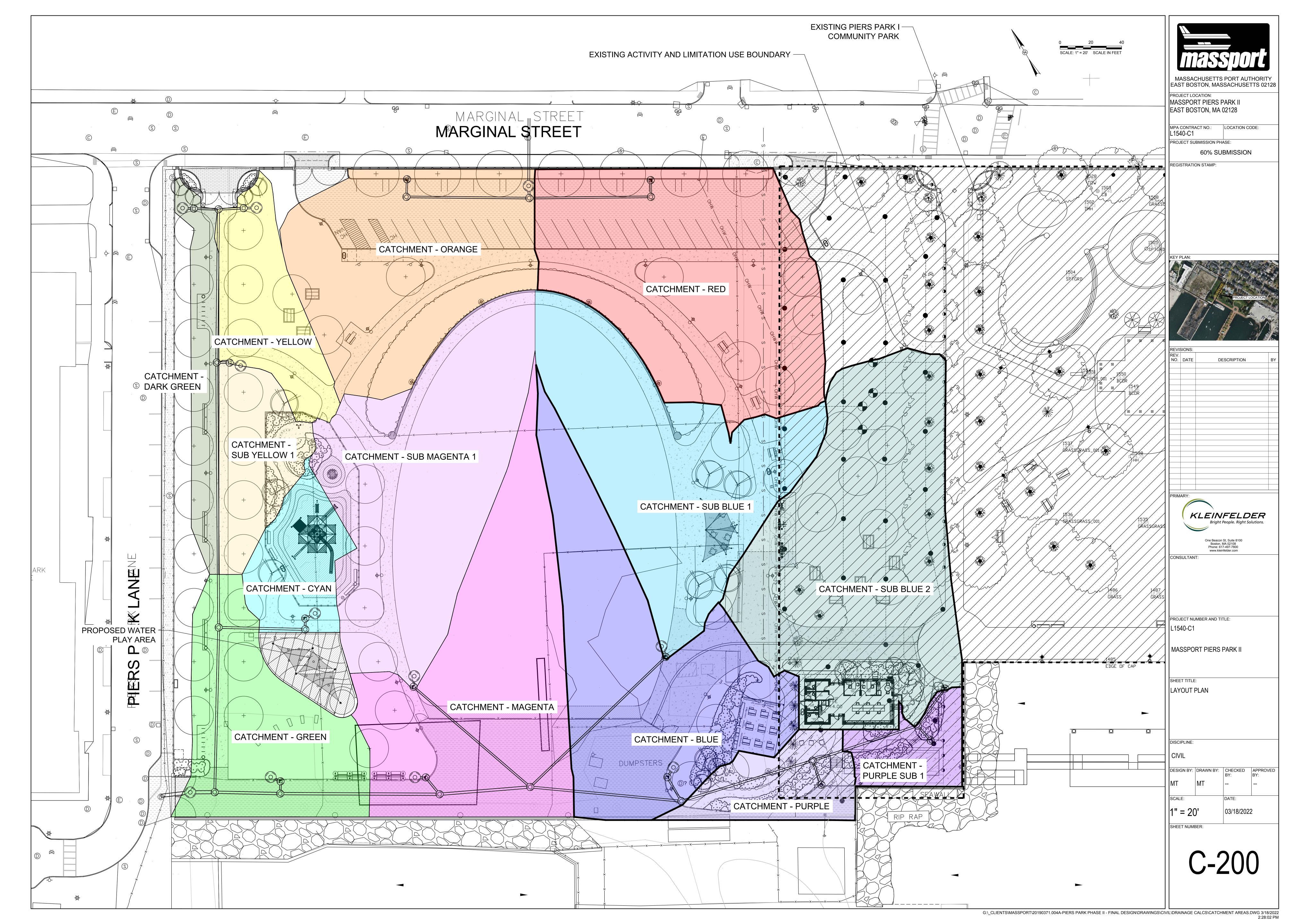


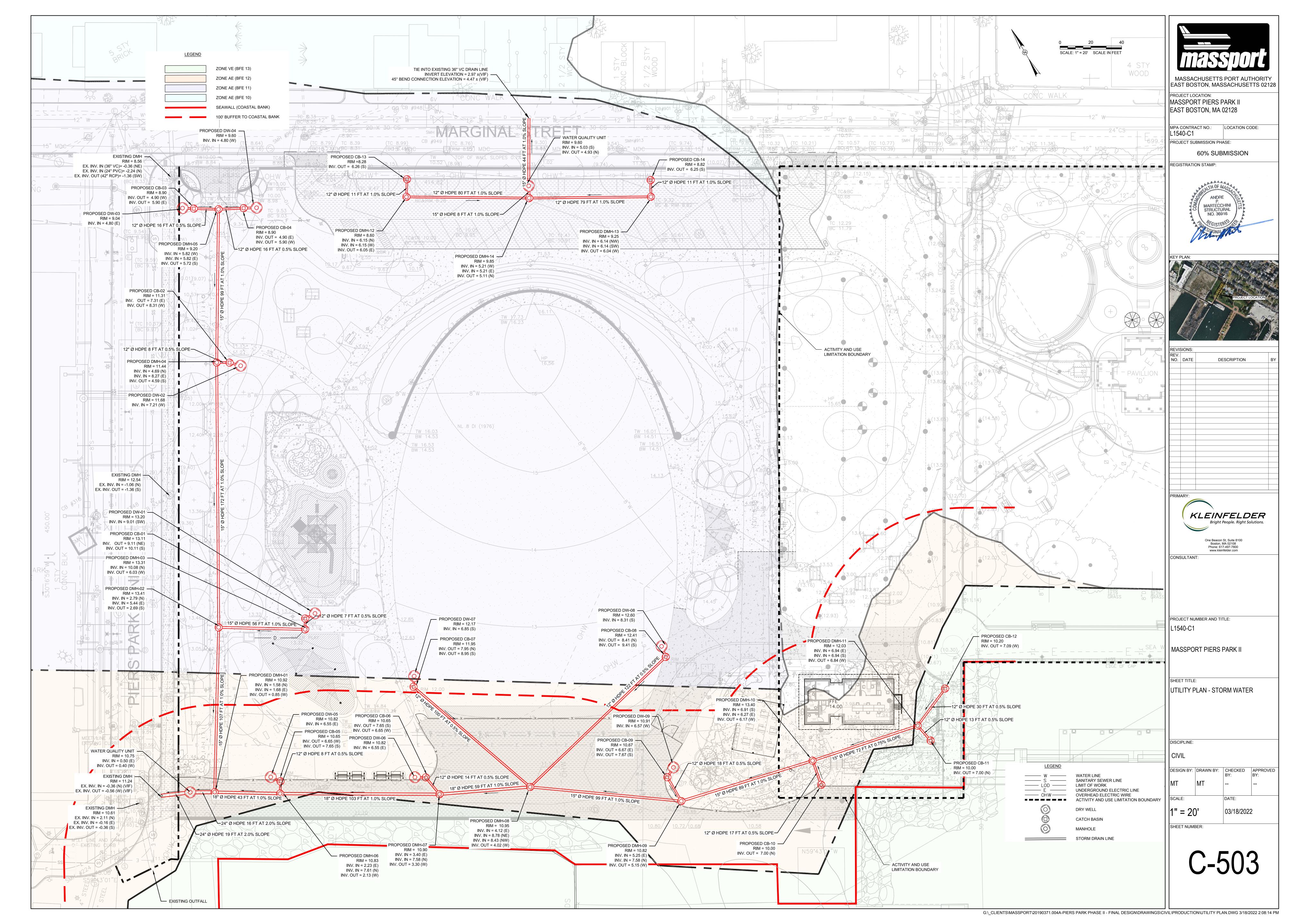


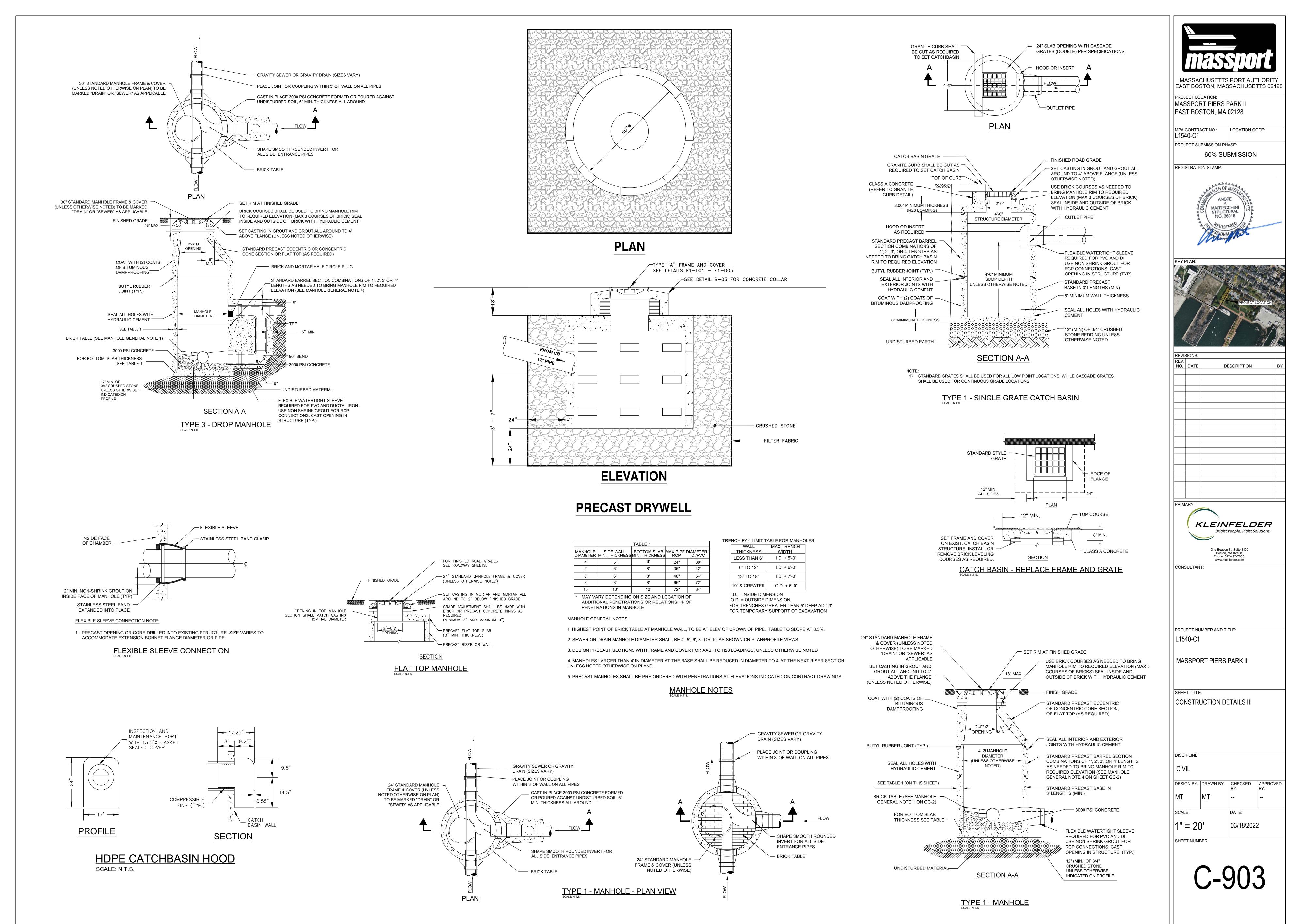
### **APPENDIX B**

### **Post-Construction Conditions:**

Catchment Area Plan, Storm Drainage Drawings, TSS Removal Calculation Sheet, HydroCAD© Modeling Output,







G:\\_CLIENTS\MASSPORT\20190371.004A-PIERS PARK PHASE II - FINAL DESIGN\DRAWINGS\CIVIL\PRODUCTION\CONSTRUCTION DETAILS.DWG 3/18/2022

Step 2) Step 3)	Sizing Storage Volume Static Method			
, in the second	$RV = F \times Imp. Area$			
	New Impervious	13,246.00	SF	
	Target Depth Factor	0.25	in	
		<u> </u>	•	
	$RV = 0.25 \text{ in } \times 1 \text{ ft } \times SF$	<u>12 in</u>	1	
	Total Required Recharge Volume	276.00	CF	
			l-	
	Proposed Structures		Ea	
	Proposed Structure SF		-	
	Structure Sump Depth			
	Total Provided Recharge Volume	279.80	CF	
Step 5)	Drawdown wii	thin 72 hours		
, and	Slowest Rawls Rate	0.27	in/hr	
			. '	
	Structure Recharge Volume (EA)	31.09	CF	
	K	0.27	in/hr	
	Time(Max)	72	hrs	
	Bottom Area =	31.09CF		
	(0.27 in * 1ft / 12in x	72 hours <u>)</u>	_	
Bottom Area =		19.19	SF	
	Designed bottom area (EA)	19.63	SF	
	<u>Time = 31.09 CF</u>			
	(0.27 in * 1 ft / 12 in x	<u>19.63 SF)</u>	,	
	Drawdown time	70.39	Hrs	

To determine whether an infiltration BMP will drain within 72 hours, the following formula must be used  $^{21}$ :

$$Time_{drawdown} = \frac{Rv}{(K)(Bottom\ Area)}$$

Where:

Rχ = Storage Volume

<u>K</u> = Saturated Hydraulic Conductivity For "Static" and "Simple Dynamic" Methods, use Rawls Rate (see Table 2.3.3). For "Dynamic Field" Method, use 50% of the in-situ saturated hydraulic conductivity.

Bottom Area = Bottom Area of Recharge Structure<sup>22</sup>

Table 2.3.3. 1982 Rawls Rates 18

Texture Class	NRCS Hydrologic Soil Group	Infiltration Rate	
	(HSG)	Inches/Hour	
Sand	A	8.27	
Loamy Sand	A	2.41	
Sandy Loam	В	1.02	
Loam	В	0.52	
Silt Loam	С	0.27	
Sandy Clay Loam	C	0.17	
Clay Loam	D	0.09	
Silty Clay Loam	D	0.06	
Sandy Clay	D	0.05	
Silty Clay	D	0.04	
Clay	D	0.02	

Step 1)	Recharge Volu	me Calculation
	Total Impervious	85,448.87 SF
	Existing Impervious	72,203.29 SF
	Total <u>NEW</u> Impervious	13,246 SF
	Required Recharge Volur	ne Calcuation

A sand 0.6-inch B loam 0.35-inch C silty loam 0.25-inch	H	NRCS YDROLOGIC SOIL TYPE	APPROX. SOIL TEXTURE	TARGET DEPTH FACTOR (F)
		A	sand	0.6-inch
C silty loam 0.25-inch		R	10am	0.35_inch
one men		С	silty loam	0.25-inch
D ciav 0.1-inch		D	ciav	0.1-inch

Table 2.3.2: Recharge Target Depth by Hydrologic Soil Group

Rv = F x impervious area

Equation (1)

Rv = Required Recharge Volume, expressed in Ft<sup>3</sup>, cubic yards, or acre-feet F = Target Depth Factor associated with each Hydrologic Soil Group

Impervious Area = pavement and rooftop area on site

RV = 0.25 \* 13246 SF \* 1 ft

<u>12in</u>

Recharge Volume

 $RV = F \times Imp. Area$ 

Target Depth Factor

Impervious Area

**275.96** CF

13,246 SF

0.25 in

10.22 CY

- 1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table
- 2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings
  - 3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row
- 4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row
  - 5. Total TSS Removal = Sum All Values in Column D

			ſ									
	Ш	Remaining	Load (C-D)	1.00 - 0.25 = 0.75	0.75 - 0.59 = 0.15				Separate Form Needs to be Completed for Each Outlet or BMP Train	<b>a</b>	n previous BMP (E)	
		Amount	Removed (B*C)	1.00 * 0.25 = 0.25	0.75 * 0.80 = 0.60				0.85		*Equals remaining load from previous BMP (E)	which enters the BMP
ane, East Boston, MA	O	Starting TSS	Load*	1.00	0.75				Total TSS Removal =			
Location: Piers Park Lane, East F	В	TSS Removal	Rate	25 %	% 08				Total T	Piers Park II	M.Tremblay	03/01/2022
Location:	⋖	7	BMP	Deep Sump Catch Basins	Stormceptor STC 900					Project:	Prepared By:	Date:
				ຸງອອເ		MeM W no	SST iteluc	Calo				
					120	<b>-</b>	<b>22T</b>					

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed 1. From MassDEP Stormwater Handbook Vol. 1

Mass. Dept. of Environmental Protection





#### **Detailed Stormceptor Sizing Report – Piers Park Lane**

Project Information & Location							
Project Name	Piers Park	Project Number	49420				
City	Boston	State/ Province	Massachusetts				
Country	United States of America	Date	2/22/2022				
Designer Information		EOR Information (optional)					
Name Matt Tremblay		Name					
Company	Kleinfelder	Company					
Phone # 508-270-6578		Phone #					
Email	mtremblay@kleinfelder.com	Email					

#### **Stormwater Treatment Recommendation**

The recommended Stormceptor Model(s) which achieve or exceed the user defined water quality objective for each site within the project are listed in the below Sizing Summary table.

Site Name	Piers Park Lane
Recommended Stormceptor Model	STC 900
Target TSS Removal (%)	80.0
TSS Removal (%) Provided	80
PSD	Fine Distribution
Rainfall Station	BOSTON WSFO AP

The recommended Stormceptor model achieves the water quality objectives based on the selected inputs, historical rainfall records and selected particle size distribution.

Stormceptor Sizi	ng Summary
Stormceptor Model	% TSS Removal Provided
STC 450i	72
STC 900	80
STC 1200	80
STC 1800	80
STC 2400	85
STC 3600	85
STC 4800	88
STC 6000	88
STC 7200	90
STC 11000	93
STC 13000	93
STC 16000	94

- 1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table
- 2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings
  - 3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row
- 4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row
  - 5. Total TSS Removal = Sum All Values in Column D

									<b>b</b> 6			
	Ш	Remaining	Load (C-D)	1.00 - 0.25 = 0.75	0.75 - 0.63 = 0.12				Separate Form Needs to be Completed for Each Outlet or BMP Train	n.	n previous BMP (E)	
	Q	Amount	Removed (B*C)	1.00 * 0.25 = 0.25	0.75 * 0.83 = 0.63				0.88		*Equals remaining load from previous BMP (E)	which enters the BMP
oston, MA	O	Starting TSS	Load*	1.00	0.75				Total TSS Removal =	•		
Location: Marginal Street, East Boston, MA	В	TSS Removal	Rate <sup>1</sup>	25 %	83 %				Total T	Piers Park II	M.Tremblay	03/01/2022
Location:	∢		BMP <sup>1</sup>	Deep Sump Catch Basins	Stormceptor STC 450i					Project:	Prepared By:	Date:
	TSS Removal Calculation Worksheet											

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed 1. From MassDEP Stormwater Handbook Vol. 1





#### **Detailed Stormceptor Sizing Report – Marginal Street**

Project Information & Location							
Project Name	Piers Park	Project Number	49420				
City	Boston	State/ Province	Massachusetts				
Country	United States of America	Date	2/22/2022				
Designer Information		EOR Information (optional)					
Name	Matt Tremblay	Name					
Company	Kleinfelder	Company					
Phone # 508-270-6578		Phone #					
Email mtremblay@kleinfelder.com		Email					

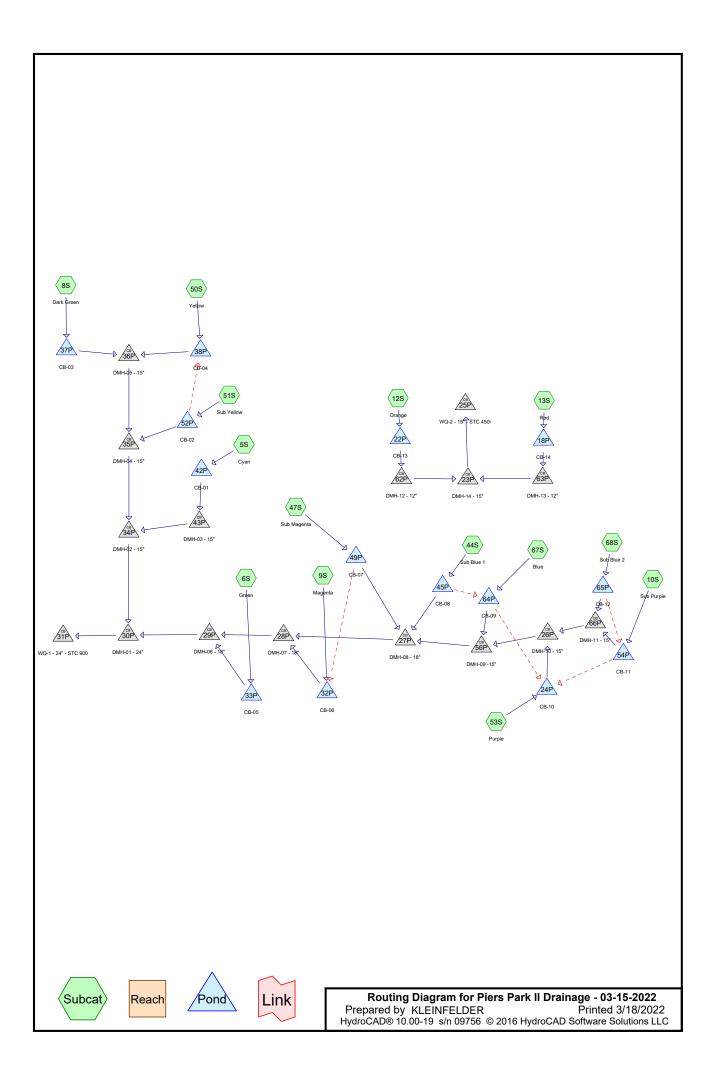
#### **Stormwater Treatment Recommendation**

The recommended Stormceptor Model(s) which achieve or exceed the user defined water quality objective for each site within the project are listed in the below Sizing Summary table.

Site Name	Marginal Street	
Recommended Stormceptor Model	STC 450i	
Target TSS Removal (%)	80.0	
TSS Removal (%) Provided	83	
PSD	Fine Distribution	
Rainfall Station	BOSTON WSFO AP	

The recommended Stormceptor model achieves the water quality objectives based on the selected inputs, historical rainfall records and selected particle size distribution.

Stormceptor Sizi	ng Summary
Stormceptor Model	% TSS Removal Provided
STC 450i	83
STC 900	89
STC 1200	89
STC 1800	89
STC 2400	92
STC 3600	92
STC 4800	94
STC 6000	94
STC 7200	95
STC 11000	97
STC 13000	97
STC 16000	98



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### Area Listing (all nodes)

Area	CN	Description
 (acres)		(subcatchment-numbers)
2.743	74	>75% Grass cover, Good, HSG C (5S, 6S, 8S, 9S, 10S, 12S, 13S, 44S, 47S, 50S, 51S, 53S, 67S, 68S)
1.649	98	Paved parking, HSG C (5S, 6S, 8S, 9S, 10S, 12S, 13S, 44S, 47S, 50S, 51S, 53S, 67S, 68S)
4.392	83	TOTAL AREA

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### Soil Listing (all nodes)

Area	Soil	Subcatchment
(acres)	Group	Numbers
0.000	HSG A	
0.000	HSG B	
4.392	HSG C	5S, 6S, 8S, 9S, 10S, 12S, 13S, 44S, 47S, 50S, 51S, 53S, 67S, 68S
0.000	HSG D	
0.000	Other	
4.392		TOTAL AREA

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### **Ground Covers (all nodes)**

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	2.743	0.000	0.000	2.743	>75% Grass cover, Good	5S, 6S, 8S, 9S, 10S, 12S, 13S, 44S, 47S, 50S, 51S, 53S, 67S,
0.000	0.000	1.649	0.000	0.000	1.649	Paved parking	68S 5S, 6S, 8S, 9S, 10S, 12S, 13S, 44S, 47S, 50S, 51S, 53S, 67S,
0.000	0.000	4.392	0.000	0.000	4.392	TOTAL AREA	

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### **Pipe Listing (all nodes)**

Line#	Node	In-Invert	Out-Invert	Length	Slope	n	Diam/Width	Height	Inside-Fill
	Number	(feet)	(feet)	(feet)	(ft/ft)		(inches)	(inches)	(inches)
1	18P	6.25	6.14	11.0	0.0100	0.010	12.0	0.0	0.0
2	22P	6.26	6.15	11.0	0.0100	0.010	12.0	0.0	0.0
3	23P	5.11	5.03	8.0	0.0100	0.010	15.0	0.0	0.0
4	24P	7.00	6.92	17.0	0.0047	0.010	12.0	0.0	0.0
5	25P	4.93	4.49	44.0	0.0100	0.013	15.0	0.0	0.0
6	26P	6.17	5.25	89.0	0.0103	0.010	15.0	0.0	0.0
7	27P	4.02	3.40	59.0	0.0105	0.010	18.0	0.0	0.0
8	28P	3.30	2.23	103.0	0.0104	0.010	18.0	0.0	0.0
9	29P	2.13	1.68	43.0	0.0105	0.010	18.0	0.0	0.0
10	30P	0.85	0.50	17.0	0.0206	0.010	24.0	0.0	0.0
11	31P	0.40	0.00	19.0	0.0211	0.010	24.0	0.0	0.0
12	32P	7.65	7.58	14.0	0.0050	0.010	12.0	0.0	0.0
13	33P	7.65	7.61	8.0	0.0050	0.010	12.0	0.0	0.0
14	34P	2.69	1.58	107.0	0.0104	0.010	15.0	0.0	0.0
15	35P	4.59	2.80	172.0	0.0104	0.010	15.0	0.0	0.0
16	36P	5.72	4.69	99.0	0.0104	0.010	15.0	0.0	0.0
17	37P	5.90	5.82	16.0	0.0050	0.010	12.0	0.0	0.0
18	38P	5.90	5.82	16.0	0.0050	0.010	12.0	0.0	0.0
19	42P	10.11	10.07	7.0	0.0057	0.010	12.0	0.0	0.0
20	43P	6.03	5.45	56.0	0.0104	0.010	15.0	0.0	0.0
21	45P	9.41	8.78	122.0	0.0052	0.013	12.0	0.0	0.0
22	49P	8.95	8.43	100.0	0.0052	0.010	12.0	0.0	0.0
23	52P	8.31	8.27	8.0	0.0050	0.010	12.0	0.0	0.0
24	54P	7.00	6.93	13.0	0.0054	0.010	12.0	0.0	0.0
25	56P	5.15	4.12	99.0	0.0104	0.010	15.0	0.0	0.0
26	62P	6.05	5.22	80.0	0.0104	0.010	12.0	0.0	0.0
27	63P	6.04	5.22	79.0	0.0104	0.010	12.0	0.0	0.0
28	64P	7.67	7.58	18.0	0.0050	0.010	12.0	0.0	0.0
29	65P	7.09	6.94	30.0	0.0050	0.010	12.0	0.0	0.0
30	66P	6.84	6.27	72.0	0.0079	0.010	15.0	0.0	0.0

### Piers Park II Drainage - 03-15-2022

Type III 24-hr 1-Year Rainfall=2.72"

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Time span=0.00-20.00 hrs, dt=0.01 hrs, 2001 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dvn-Stor-Ind method - Pond routing by Dvn-Stor-Ind method

Reach routing by Dyn-Stor-	Ind method - Pond routing by Dyn-Stor-Ind method
Subcatchment5S: Cyan	Runoff Area=5,019 sf 76.37% Impervious Runoff Depth>1.79" Flow Length=61' Tc=3.7 min CN=92 Runoff=0.27 cfs 0.017 af
Subcatchment6S: Green	Runoff Area=12,112 sf 41.50% Impervious Runoff Depth>1.19" Flow Length=103' Tc=7.7 min CN=84 Runoff=0.39 cfs 0.028 af
Subcatchment8S: Dark Green Flow Length=23	Runoff Area=4,351 sf 41.14% Impervious Runoff Depth>1.19" 3' Slope=0.0090 '/' Tc=4.1 min CN=84 Runoff=0.16 cfs 0.010 af
Subcatchment9S: Magenta	Runoff Area=20,952 sf 19.58% Impervious Runoff Depth>0.90" Flow Length=312' Tc=9.3 min CN=79 Runoff=0.48 cfs 0.036 af
Subcatchment10S: Sub Purple	Runoff Area=3,398 sf 78.31% Impervious Runoff Depth>1.88" Flow Length=68' Tc=1.7 min CN=93 Runoff=0.21 cfs 0.012 af
Subcatchment12S: Orange	Runoff Area=17,836 sf 53.13% Impervious Runoff Depth>1.40" Flow Length=155' Tc=5.3 min CN=87 Runoff=0.74 cfs 0.048 af
Subcatchment13S: Red	Runoff Area=23,439 sf 51.18% Impervious Runoff Depth>1.32" Flow Length=192' Tc=7.8 min CN=86 Runoff=0.84 cfs 0.059 af
Subcatchment44S: Sub Blue 1	Runoff Area=19,557 sf 30.13% Impervious Runoff Depth>1.01" Flow Length=180' Tc=7.9 min CN=81 Runoff=0.53 cfs 0.038 af
Subcatchment47S: Sub Magenta Flow Length=202	Runoff Area=21,212 sf 24.13% Impervious Runoff Depth>0.96" 2' Slope=0.0190 '/' Tc=8.3 min CN=80 Runoff=0.54 cfs 0.039 af
Subcatchment50S: Yellow	Runoff Area=6,792 sf 21.94% Impervious Runoff Depth>0.91" Flow Length=159' Tc=5.7 min CN=79 Runoff=0.18 cfs 0.012 af
Subcatchment51S: Sub Yellow	Runoff Area=5,713 sf 31.58% Impervious Runoff Depth>1.07" Flow Length=137' Tc=4.4 min CN=82 Runoff=0.19 cfs 0.012 af
Subcatchment53S: Purple	Runoff Area=4,915 sf 59.90% Impervious Runoff Depth>1.47" Flow Length=124' Tc=3.7 min CN=88 Runoff=0.23 cfs 0.014 af
Subcatchment67S: Blue	Runoff Area=20,096 sf 35.97% Impervious Runoff Depth>1.13" Flow Length=281' Tc=8.8 min CN=83 Runoff=0.60 cfs 0.043 af
Subcatchment68S: Sub Blue 2	Runoff Area=25,908 sf 32.70% Impervious Runoff Depth>1.07" Flow Length=214' Tc=8.8 min CN=82 Runoff=0.73 cfs 0.053 af
Pond 18P: CB-14 Primary=0.84 cfs	Peak Elev=6.74' Storage=90 cf Inflow=0.84 cfs 0.059 af 0.058 af Secondary=0.00 cfs 0.000 af Outflow=0.84 cfs 0.058 af
Pond 22P: CB-13 Primary=0.74 cfs	Peak Elev=6.72' Storage=85 cf Inflow=0.74 cfs 0.048 af 0.046 af Secondary=0.00 cfs 0.000 af Outflow=0.74 cfs 0.046 af

Pond 23P: DMH-14 - 15"

Peak Elev=5.78' Inflow=1.55 cfs 0.103 af 15.0" Round Culvert n=0.010 L=8.0' S=0.0100 '/' Outflow=1.55 cfs 0.103 af

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Pond 24P: CB-10 Peak Elev=7.26' Storage=26 cf Inflow=0.23 cfs 0.014 af

Primary=0.23 cfs 0.013 af Secondary=0.00 cfs 0.000 af Outflow=0.23 cfs 0.013 af

Pond 25P: WQ-2 - 15" - STC 450i Peak Elev=5.54' Inflow=1.55 cfs 0.103 af

15.0" Round Culvert n=0.013 L=44.0' S=0.0100 '/' Outflow=1.55 cfs 0.103 af

Pond 26P: DMH-10 - 15" Peak Elev=6.60' Inflow=1.01 cfs 0.078 af

15.0" Round Culvert n=0.010 L=89.0' S=0.0103 '/' Outflow=1.01 cfs 0.078 af

Pond 27P: DMH-08 - 18" Peak Elev=4.74' Inflow=2.65 cfs 0.194 af

18.0" Round Culvert n=0.010 L=59.0' S=0.0105 '/' Outflow=2.65 cfs 0.194 af

Pond 28P: DMH-07 - 18" Peak Elev=4.05' Inflow=3.12 cfs 0.229 af

18.0" Round Culvert n=0.010 L=103.0' S=0.0104 '/' Outflow=3.12 cfs 0.229 af

Pond 29P: DMH-06 - 18" Peak Elev=2.98' Inflow=3.51 cfs 0.255 af

18.0" Round Culvert n=0.010 L=43.0' S=0.0105 '/' Outflow=3.51 cfs 0.255 af

Pond 30P: DMH-01 - 24" Peak Elev=1.71' Inflow=4.19 cfs 0.300 af

24.0" Round Culvert n=0.010 L=17.0' S=0.0206 '/' Outflow=4.19 cfs 0.300 af

Pond 31P: WQ-1 - 24" - STC 900 Peak Elev=1.21' Inflow=4.19 cfs 0.300 af

24.0" Round Culvert n=0.010 L=19.0' S=0.0211 '/' Outflow=4.19 cfs 0.300 af

15.0" Round Culvert n=0.010 L=107.0' S=0.0104 '/' Outflow=0.78 cfs 0.044 af

Pond 32P: CB-06 Peak Elev=8.04' Storage=68 cf Inflow=0.48 cfs 0.036 af

Discarded=0.00 cfs 0.000 af Primary=0.48 cfs 0.035 af Secondary=0.00 cfs 0.000 af Outflow=0.48 cfs 0.035 af

Pond 33P: CB-05 Peak Elev=8.00' Storage=67 cf Inflow=0.39 cfs 0.028 af

Discarded=0.00 cfs 0.000 af Primary=0.39 cfs 0.026 af Secondary=0.00 cfs 0.000 af Outflow=0.39 cfs 0.026 af

Pond 34P: DMH-02 - 15" Peak Elev=3.06' Inflow=0.78 cfs 0.044 af

**Pond 35P: DMH-04 - 15"**Peak Elev=4.89' Inflow=0.52 cfs 0.029 af

15.0" Round Culvert n=0.010 L=172.0' S=0.0104 '/' Outflow=0.52 cfs 0.029 af

Pond 36P: DMH-05 - 15" Peak Elev=5.96' Inflow=0.33 cfs 0.019 af

15.0" Round Culvert n=0.010 L=99.0' S=0.0104 '/' Outflow=0.33 cfs 0.019 af

Pond 37P: CB-03 Peak Elev=6.11' Storage=64 cf Inflow=0.16 cfs 0.010 af

Discarded=0.00 cfs 0.000 af Primary=0.16 cfs 0.008 af Secondary=0.00 cfs 0.000 af Outflow=0.16 cfs 0.009 af

**Pond 38P: CB-04** Peak Elev=6.12' Storage=64 cf Inflow=0.18 cfs 0.012 af

Discarded=0.00 cfs 0.000 af Primary=0.18 cfs 0.010 af Secondary=0.00 cfs 0.000 af Outflow=0.18 cfs 0.010 af

Pond 42P: CB-01 Peak Elev=10.40' Storage=66 cf Inflow=0.27 cfs 0.017 af

Discarded=0.00 cfs 0.000 af Primary=0.27 cfs 0.016 af Secondary=0.00 cfs 0.000 af Outflow=0.27 cfs 0.016 af

Pond 43P: DMH-03 - 15" Peak Elev=6.25' Inflow=0.27 cfs 0.016 af

15.0" Round Culvert n=0.010 L=56.0' S=0.0104 '/' Outflow=0.27 cfs 0.016 af

Pond 45P: CB-08 Peak Elev=9.83' Storage=68 cf Inflow=0.53 cfs 0.038 af

Discarded=0.00 cfs 0.000 af Primary=0.53 cfs 0.036 af Secondary=0.00 cfs 0.000 af Outflow=0.53 cfs 0.037 af

Pond 49P: CB-07 Peak Elev=9.32' Storage=67 cf Inflow=0.54 cfs 0.039 af

Discarded=0.00 cfs 0.000 af Primary=0.54 cfs 0.037 af Secondary=0.00 cfs 0.000 af Outflow=0.54 cfs 0.037 af

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Type III 24-hr 1-Year Rainfall=2.72"

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Page 8

**Pond 52P: CB-02** Peak Elev=8.55' Storage=65 cf Inflow=0.19 cfs 0.012 af Discarded=0.00 cfs 0.000 af Primary=0.19 cfs 0.010 af Secondary=0.00 cfs 0.000 af Outflow=0.19 cfs 0.010 af

**Pond 54P: CB-11** Peak Elev=7.28' Storage=16 cf Inflow=0.21 cfs 0.012 af Primary=0.21 cfs 0.012 af Secondary=0.00 cfs 0.000 af Tertiary=0.00 cfs 0.000 af Outflow=0.21 cfs 0.012 af

**Pond 56P: DMH-09 -15"** Peak Elev=5.71' Inflow=1.59 cfs 0.121 af

15.0" Round Culvert n=0.010 L=99.0' S=0.0104 '/' Outflow=1.59 cfs 0.121 af

Pond 62P: DMH-12 - 12" Peak Elev=6.46' Inflow=0.74 cfs 0.046 af

12.0" Round Culvert n=0.010 L=80.0' S=0.0104 '/' Outflow=0.74 cfs 0.046 af

**Pond 63P: DMH-13 - 12"** Peak Elev=6.48' Inflow=0.84 cfs 0.058 af

12.0" Round Culvert n=0.010 L=79.0' S=0.0104 '/' Outflow=0.84 cfs 0.058 af

**Pond 64P: CB-09** Peak Elev=8.10' Storage=27 cf Inflow=0.60 cfs 0.043 af Discarded=0.00 cfs 0.000 af Primary=0.60 cfs 0.043 af Secondary=0.00 cfs 0.000 af Outflow=0.60 cfs 0.043 af

**Pond 65P: CB-12**Peak Elev=7.56' Storage=17 cf Inflow=0.73 cfs 0.053 af Primary=0.73 cfs 0.053 af Secondary=0.00 cfs 0.000 af Tertiary=0.00 cfs 0.000 af Outflow=0.73 cfs 0.053 af

Pond 66P: DMH-11 - 15" Peak Elev=7.25' Inflow=0.82 cfs 0.065 af 15.0" Round Culvert n=0.010 L=72.0' S=0.0079 '/' Outflow=0.82 cfs 0.065 af

Total Runoff Area = 4.392 ac Runoff Volume = 0.421 af Average Runoff Depth = 1.15" 62.45% Pervious = 2.743 ac 37.55% Impervious = 1.649 ac



## APPENDIX C

## Operations and Maintenance Plan



## **PIERS PARK II**

## **OPERATIONS AND MAINTENANCE PLAN**

**DRAFT** 



#### **Table of Contents**

#### 1 Operation and Maintenance

- 1.1 BMP Owner
- 1.2 Operations and Maintenance Responsibilities
- 1.3 Schedule for Inspection and Maintenance
- 1.4 Operation of Best Management Practices
- 1.5 Maintenance of Best Management Practices
- 1.6 Operations and Maintenance (O&M) Log Form

### 2 Long Term Pollution Prevention Plan

2.1 Housekeeping Operations



### **OPERATION AND MAINTENANCE PLAN**

This Operation and Maintenance Plan (O&M Plan) was prepared to ensure that all soil erosion and stormwater runoff control facilities and measures are maintained after construction. Regular inspections and maintenance are essential for long-term effectiveness of soil erosion and stormwater runoff control facilities and measures. If not properly maintained, these facilities and measures will not operate as designed and will not provide effective treatment of stormwater runoff. The following is an outline of these inspection and maintenance procedures.

#### 1.1 BEST MANAGEMENT PRACTICE (BMP) OWNER

 Massport will own and maintain all BMPs within the Project, including the inspection and maintenance of the two water quality structures. Should the title of land upon which they are located be transferred, the purchaser of the property, at that time, will assume all responsibilities set forth within this document.

#### 1.2 OPERATIONS AND MAINTENANCE RESPONSIBILITIES

- Massport will be responsible for the funding, operation, and maintenance of the BMP's.
- BMP's each have specific maintenance requirements to ensure long-term effectiveness. These
  stormwater management systems will be operated, inspected, and maintained on a regular
  basis by qualified Massport maintenance personnel with expertise in inspecting drainage
  system components. All stormwater BMPs will be kept in good working order at all times.
- The Contract Documents will require the Contractor to submit a detailed Manufacturer's recommended Operations and Maintenance Manual for each of the water quality structures based on the make and model of the actual as-built structures. The Contract Documents will also require that a representative of the manufacturer of the water quality structures will conduct field training for Massport maintenance staff on the proper operation and maintenance of the structures.

#### 1.3 SCHEDULE FOR INSPECTION AND MAINTENANCE

- As a minimum, Massport shall follow the general guidelines outlined herein for the BMP's provided on this site.
- An Operation and Maintenance log will be maintained by Massport. Logs will be maintained for the last three years, outlining inspections, repairs, replacement, and disposal for each Best Management Practice (BMP). In the case of disposal, the log shall indicate the type of material disposed and the disposal location.

#### 1.4 OPERATION OF BEST MANAGEMENT PRACTICES

- The Project stormwater drainage system is a relatively "hands-off" system that does not require "operating". Massport maintenance staff, will observe the functioning of the system, especially after major rainfalls.
- Massport maintenance staff will be responsible for conducting periodic inspections and maintenance of the two water quality structures in accordance with the manufacturer's recommended inspection and maintenance schedules included in the Operations and Maintenance Manual for each structure.



• In the event of a spill of any kind of hazardous materials in the park that could potentially enter the storm drainage system, Massport maintenance staff or the Massport Police, who are stationed 24 hours a day in the park, will immediately notify the City of Boston Fire Department and the Massport Fire Rescue of the situation.

#### 1.5 MAINTENANCE OF BEST MANAGEMENT PRACTICES

- The proposed drainage system will collect stormwater from the park area. This water is considered generally clean and limited maintenance should be associated with the proposed gravity system. Massport will perform biennial inspections of the manholes, catch basins and drywells to assess accumulation of debris and other materials that could limit the ability of the drainage system to conduct stormwater and drywells to infiltrate water as intended. If cleaning of manholes, catchbasins and drywells is required it shall be cleaned with a vacuum excavation truck to remove all debris that accumulates within the structures.
- All materials removed from the drainage system will be properly disposed of.

#### 1.6 OPERATIONS AND MAINTENANCE LOG

 Below is an Operations and Maintenance Log Form that Massport will use to record periodic operational observations and maintenance activities.



#### **OPERATIONS AND MAINTENANCE LOG FORM**

#### **Stormwater BMP Inspection and Maintenance Log**

Oto::::wate	Dop	ootion and maintonanoo Eo	9			
Facility Na	ame					
Address						
Begin Date	e			End Date		
Date	BMP ID#	BMP Description	Inspected by:	Cause for Inspection	Exceptions Noted	Comments and Actions Taken

**Instructions:** Record all inspections and maintenance for all treatment BMPs on this form. Use additional log sheets and/or attach extended comments or documentation as necessary. Submit a copy of the completed log with the annual independent inspectors' report to the municipality and start a new log at that time.

- BMP ID# Always use ID# from the Operation and Maintenance Manual.
- Inspected by Note all inspections and maintenance on this form, including the required independent annual inspection.
- Cause for inspection Note if the inspection is routine, pre-rainy-season, post-storm, annual, or in response to a noted problem or complaint.
- Exceptions noted Note any condition that requires correction or indicates a need for maintenance. ②②Comments and actions taken Describe any maintenance done and need for follow-up.



## APPENDIX D

Long-Term Pollution Prevention Plan



#### PIERS PARK II SAILING CENTER AND COMMUNITY PARK

#### DRAFT

#### LONG-TERM POLLUTION PREVENTION PLAN

#### 2.1 HOUSEKEEPING OPERATIONS

- 1. Good housekeeping and material management reduce the risk of spills or other accidental exposure of materials and substances to stormwater runoff.
  - a. All materials stored on-site must be stored in a neat, orderly manner in their appropriate containers. Storage of hazardous materials will not be permitted on site.
  - b. Products shall be kept in their original containers with the original manufacturer's label.
  - c. Substances should not be mixed with one another unless recommended by the manufacturer.
  - d. Whenever possible, products will be used up completely before disposing of container.
  - e. Original material labels and Safety Data Sheets (SDS) shall be kept by the Owner.
  - f. Fertilizers:
    - Once the grass is established during construction, use of fertilizers on site will be minimized, to the maximum extent feasible.

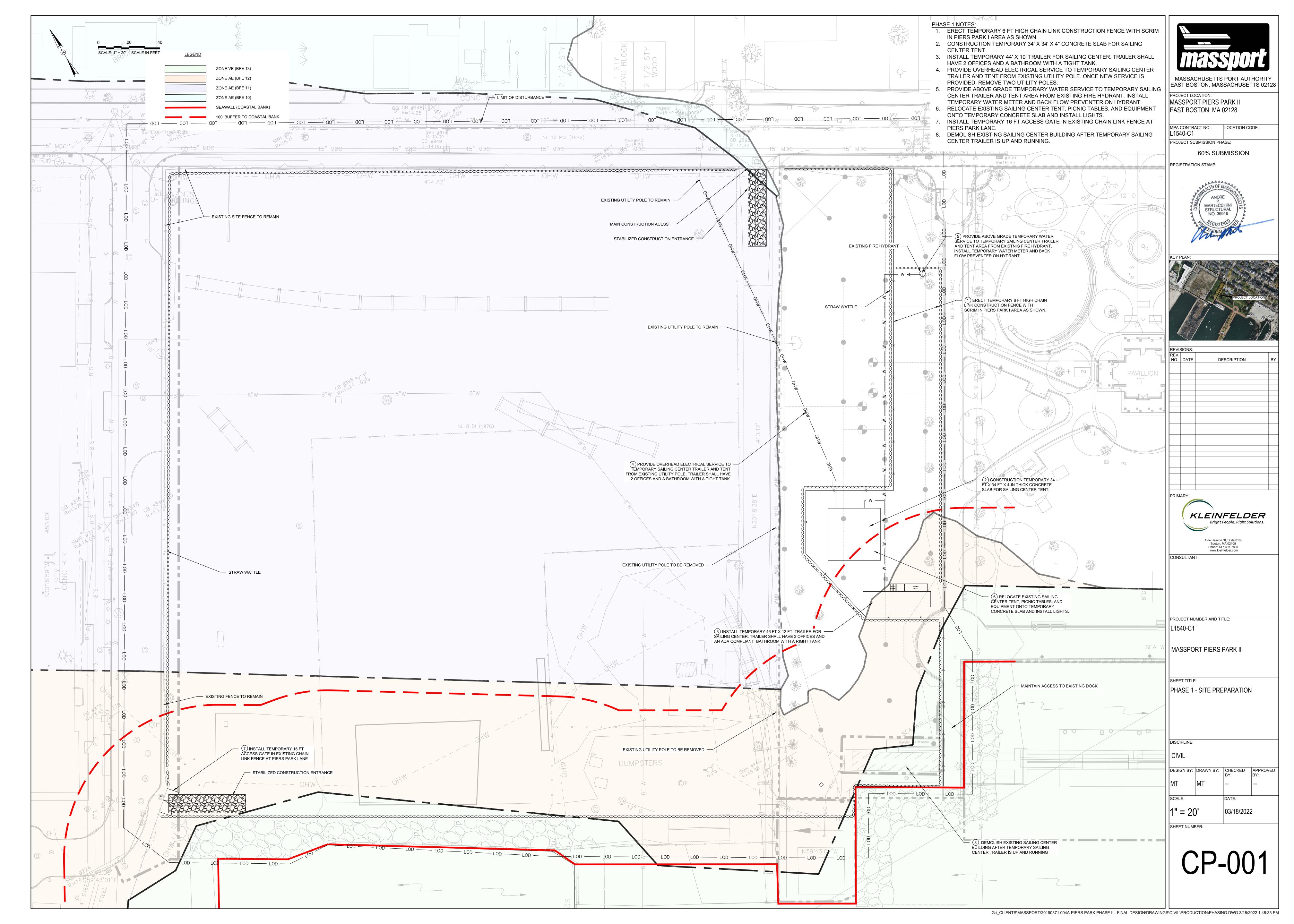
#### 2. Spill Control Practices:

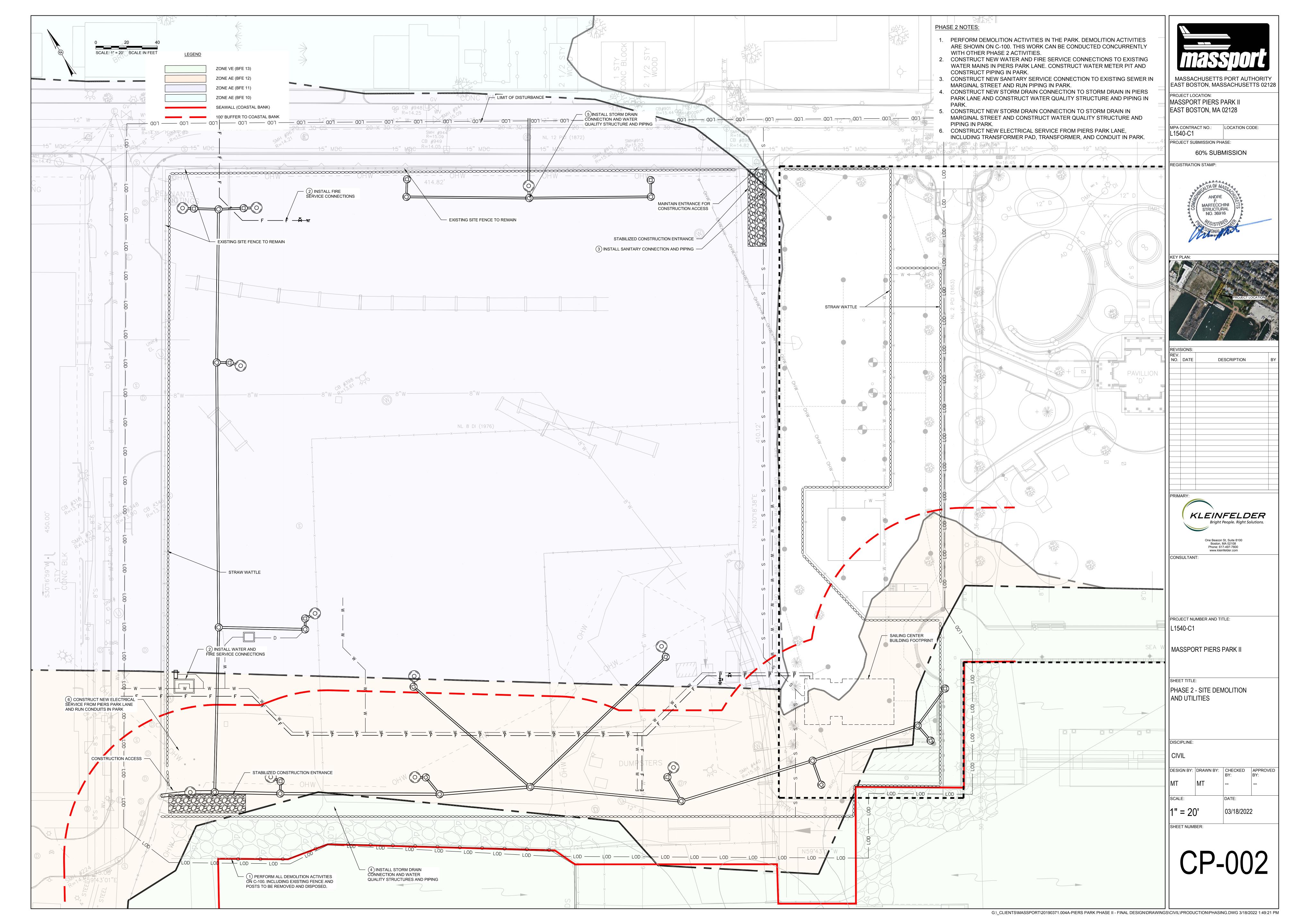
- a. Manufacturer's recommended methods shall be clearly posted for spill clean-up and Massport staff shall be made aware of the procedures and the locations of cleanup information and supplies.
- b. Material and equipment necessary for spill clean-up will be kept on-site in a designated material storage area. Equipment will include, but not be limited to, brooms, dust pans, mops, rags, gloves, goggles, absorbent materials, sand, sawdust and plastic and metal trash containers specifically kept and labeled for this purpose.
- c. All spills must be cleaned-up immediately after discovery.
- d. Spills of any toxic or hazardous material, that can potentially enter the storm drainage system, must be immediately reported by Massport maintenance staff or the Massport Police, who are stationed 24 hours a day in the park, to the City of Boston Fire Department and the Massport Fire Rescue.
- 3. No washing of vehicles will be permitted in the park area.
- 4. Massport will plow snow in park areas during winter months to allow the community year-round use of the park. Snow plowing operations will remove snow from park pathways and the parking lot to the immediately adjacent grass areas where snow melt will flow into the on-site drainage systems, including drainage basins.
- 5. During winter conditions sand use site-wide shall be applied to the minimum extent possible to maintain safe conditions.

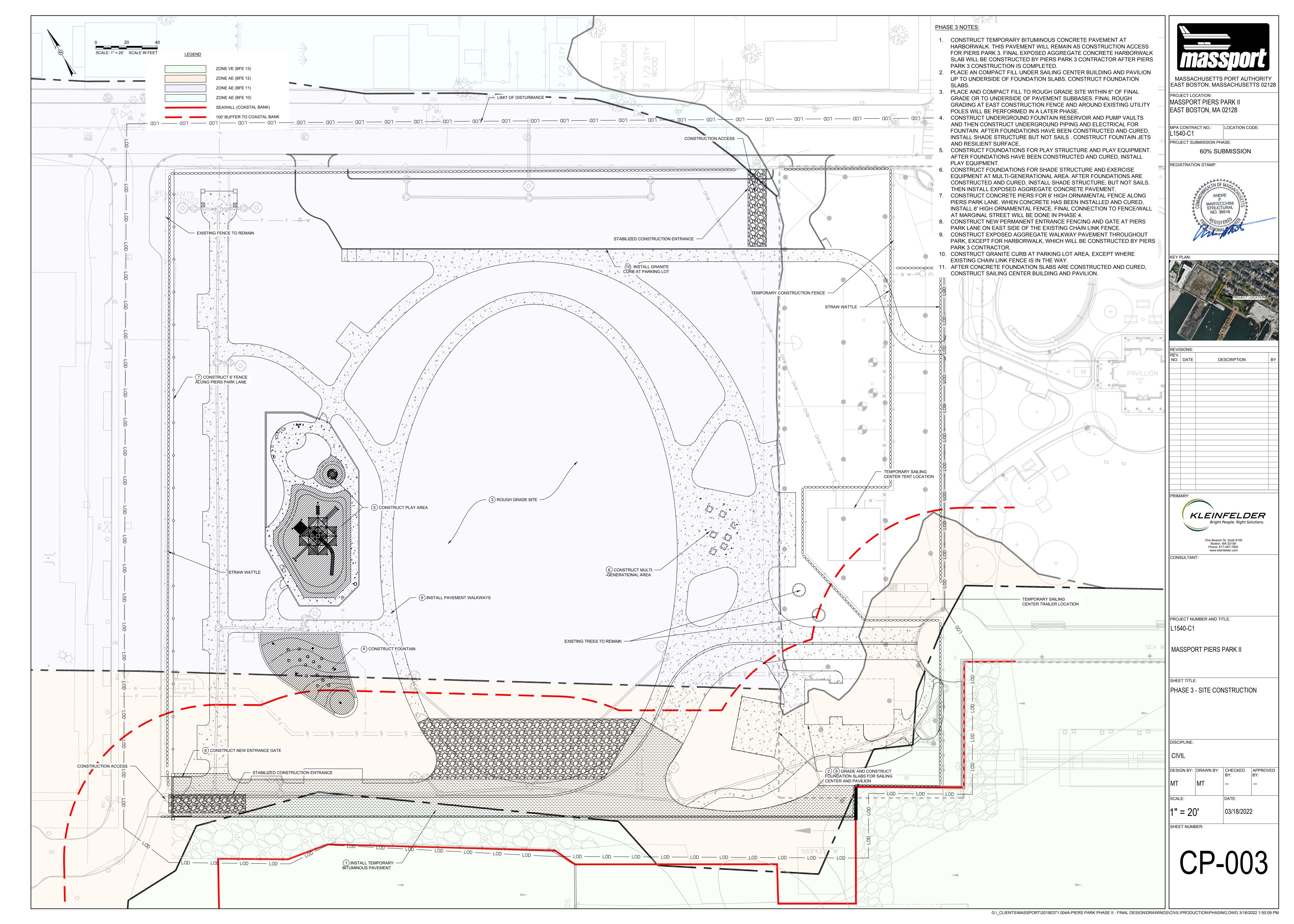


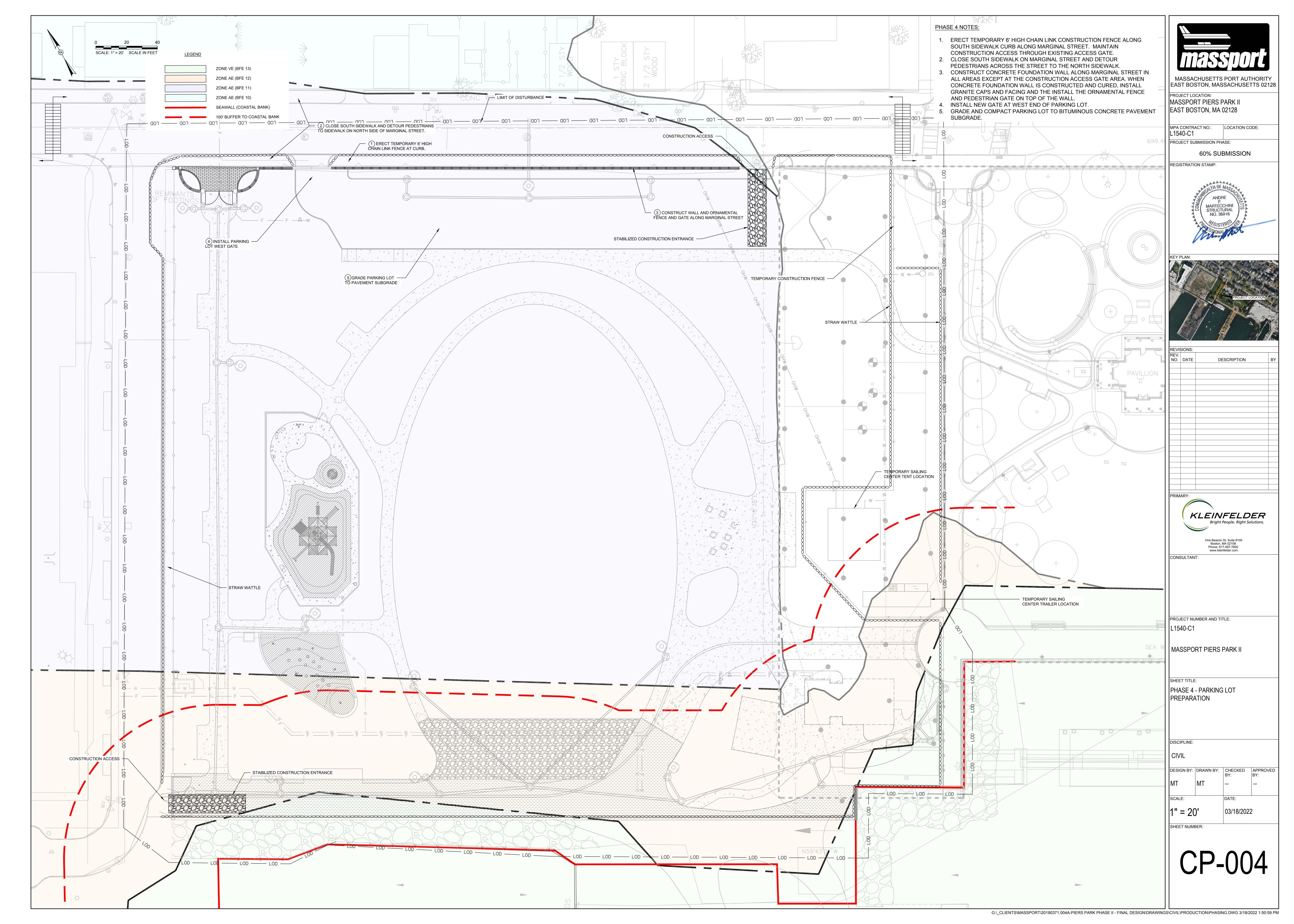
## **APPENDIX E**

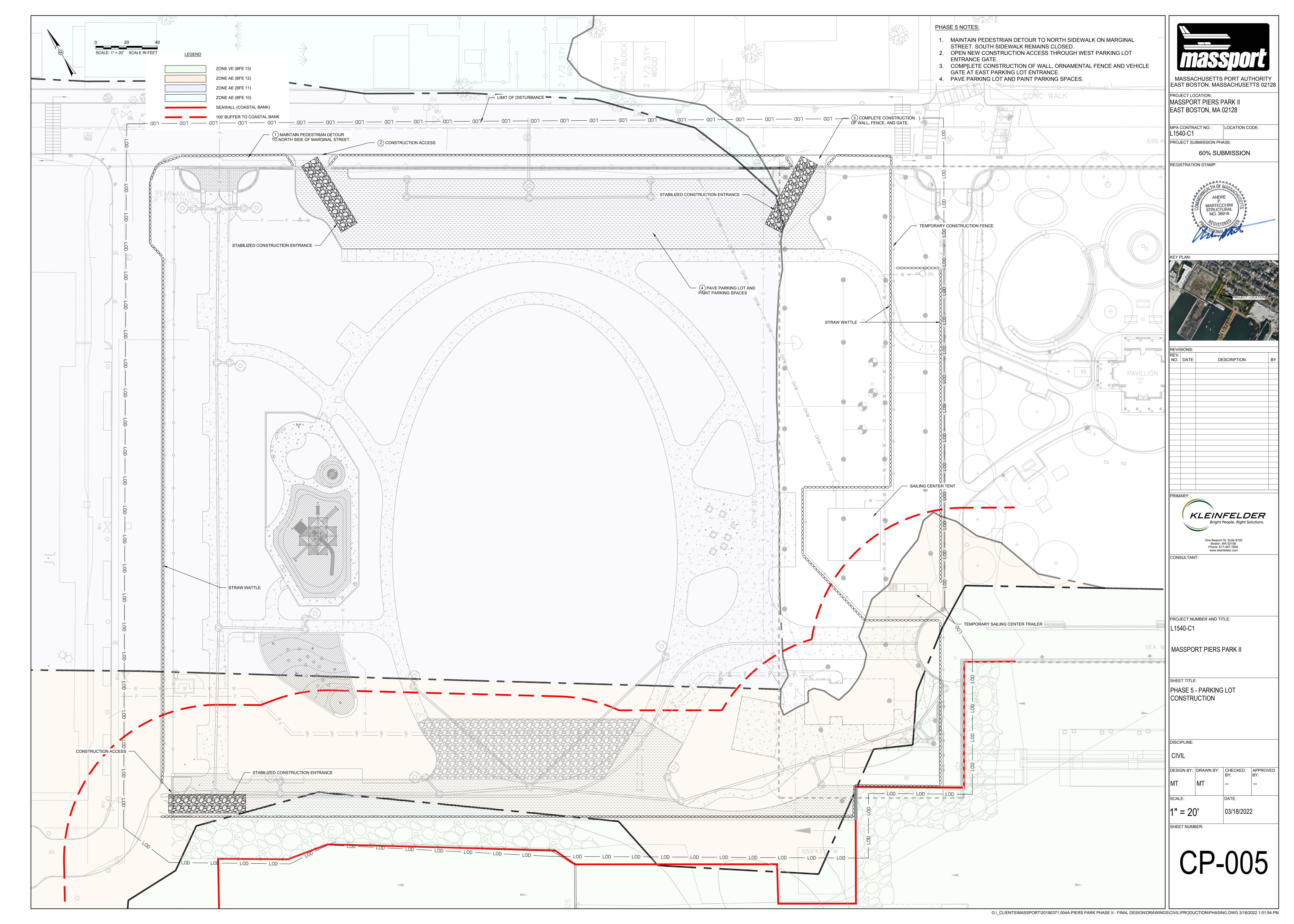
**Erosion Control and Sedimentation Plans** 

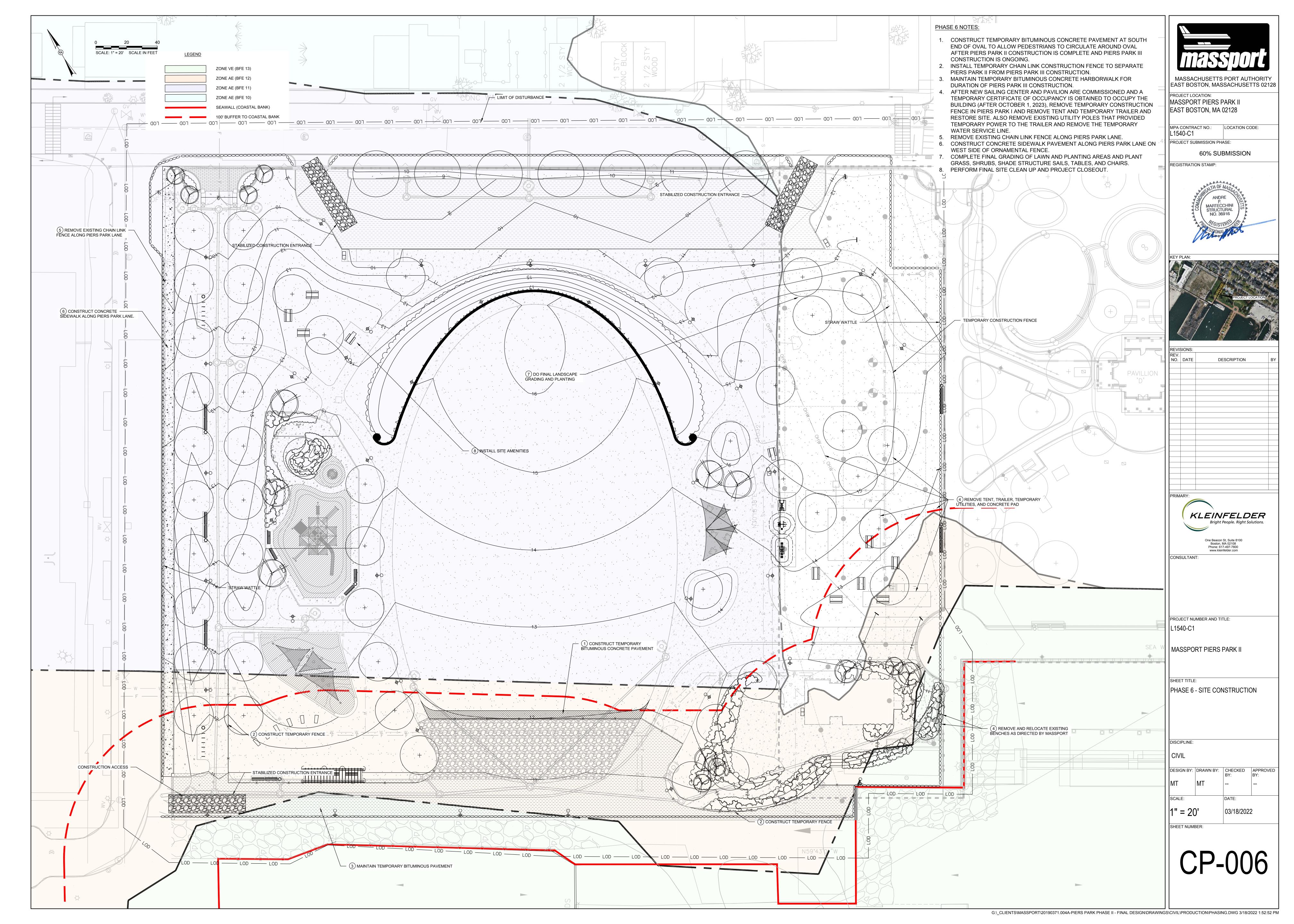


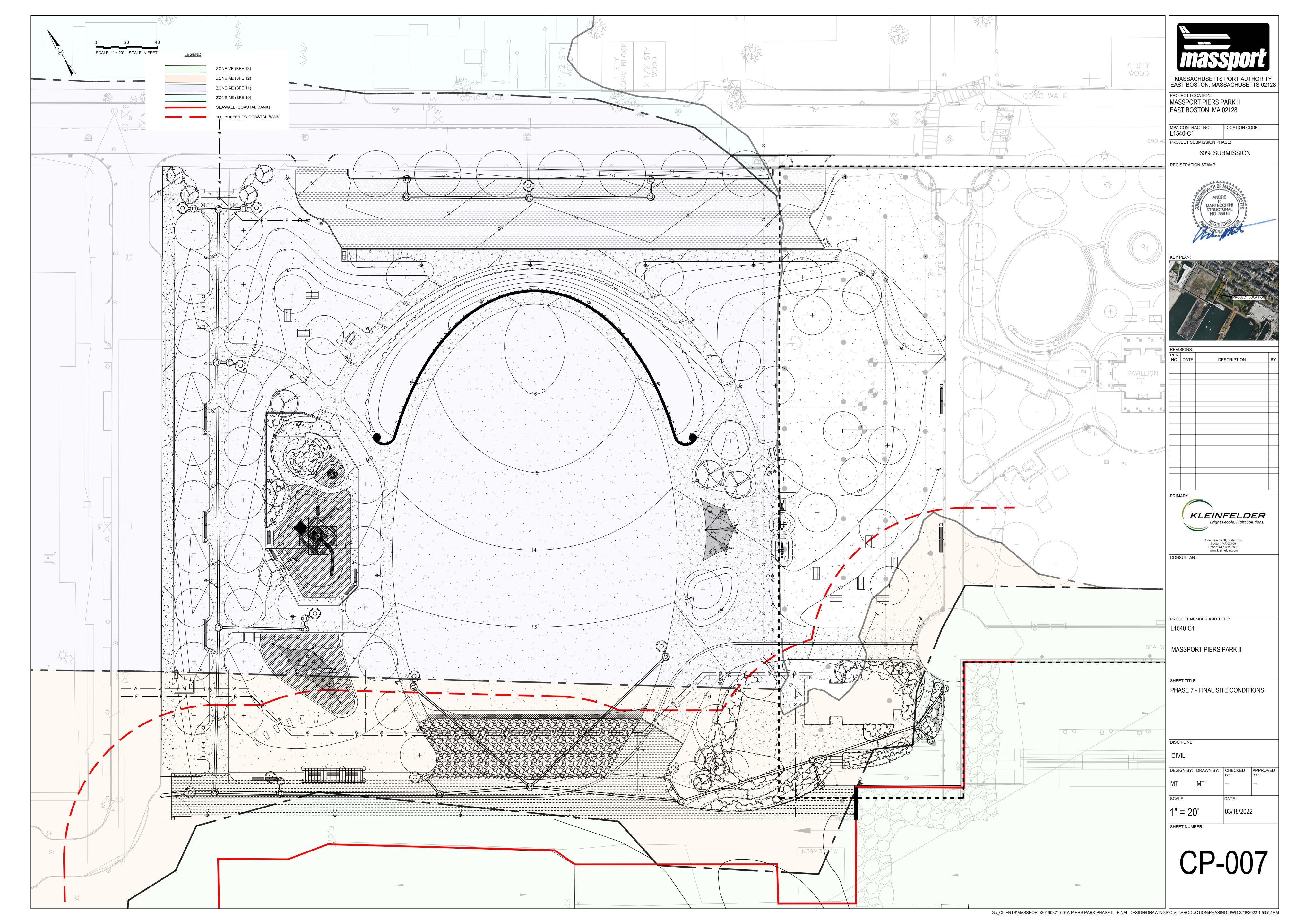


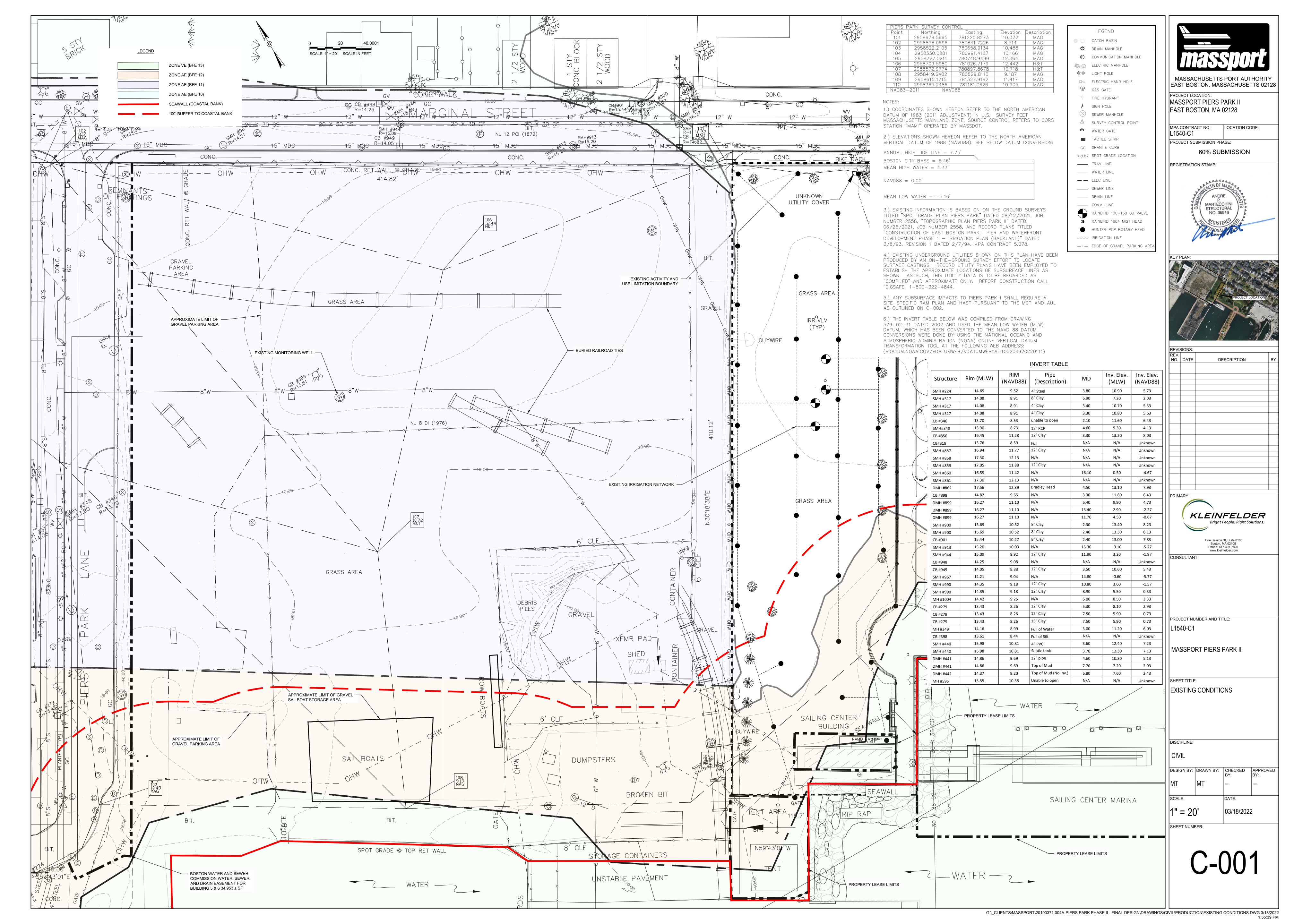


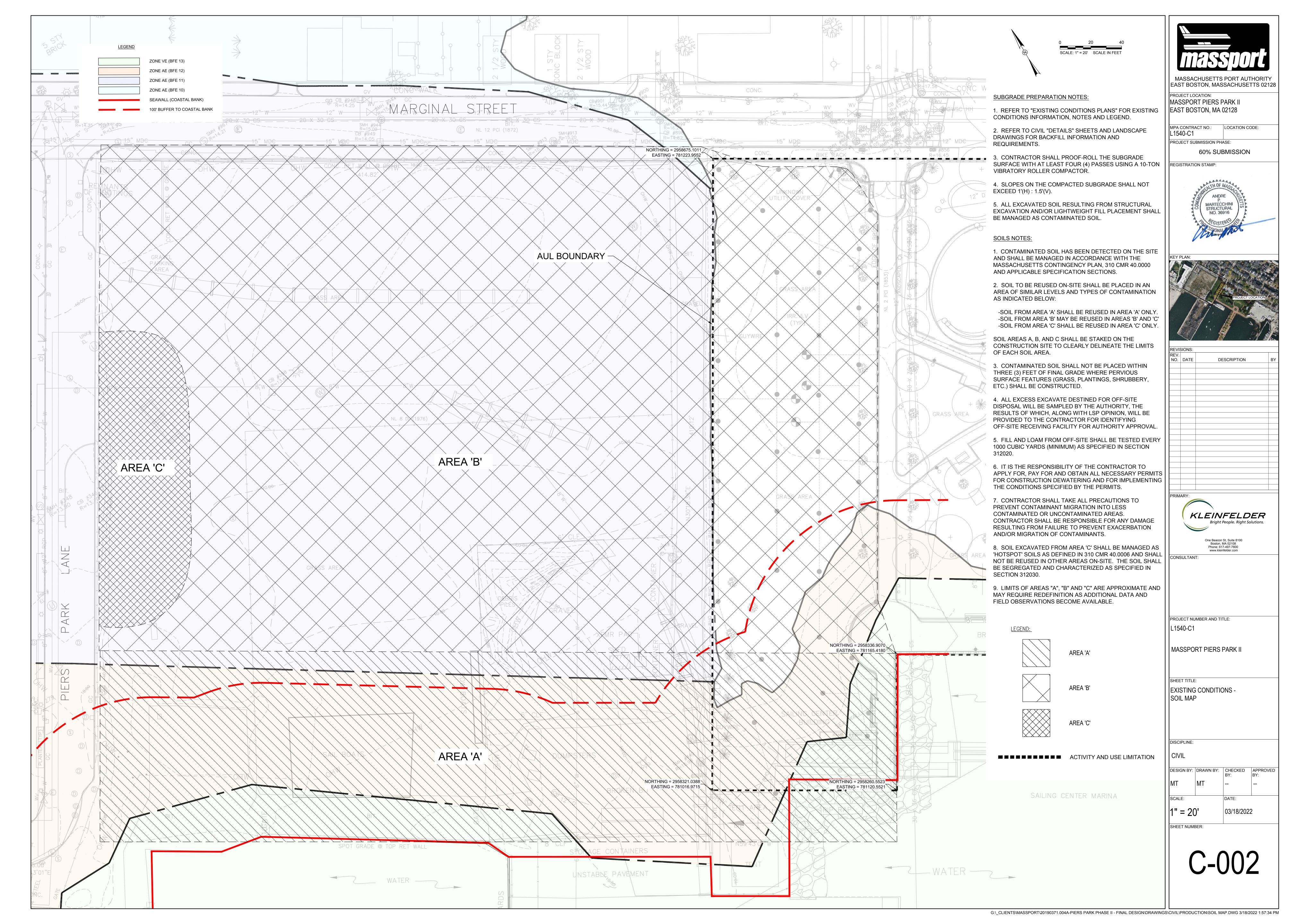


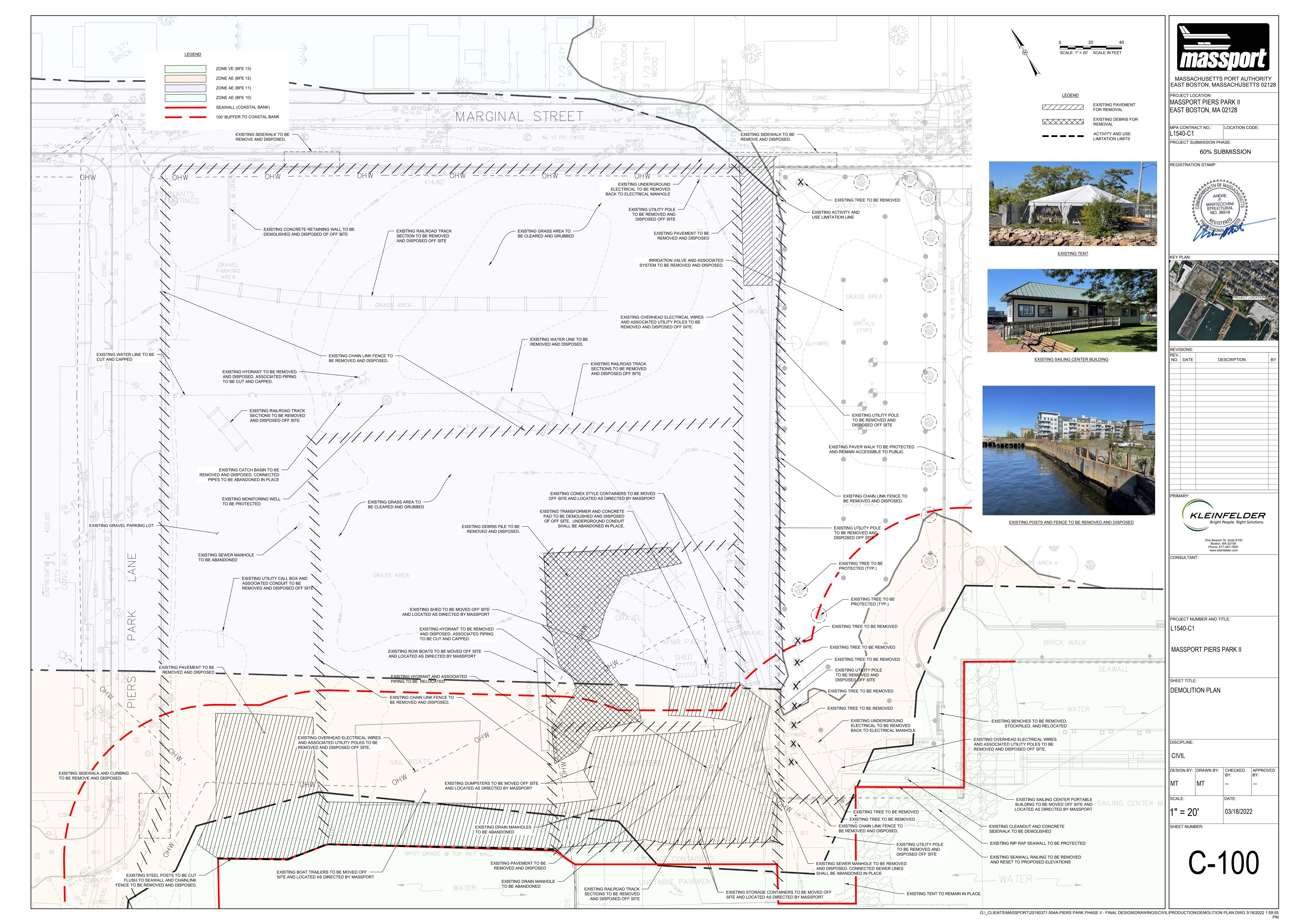


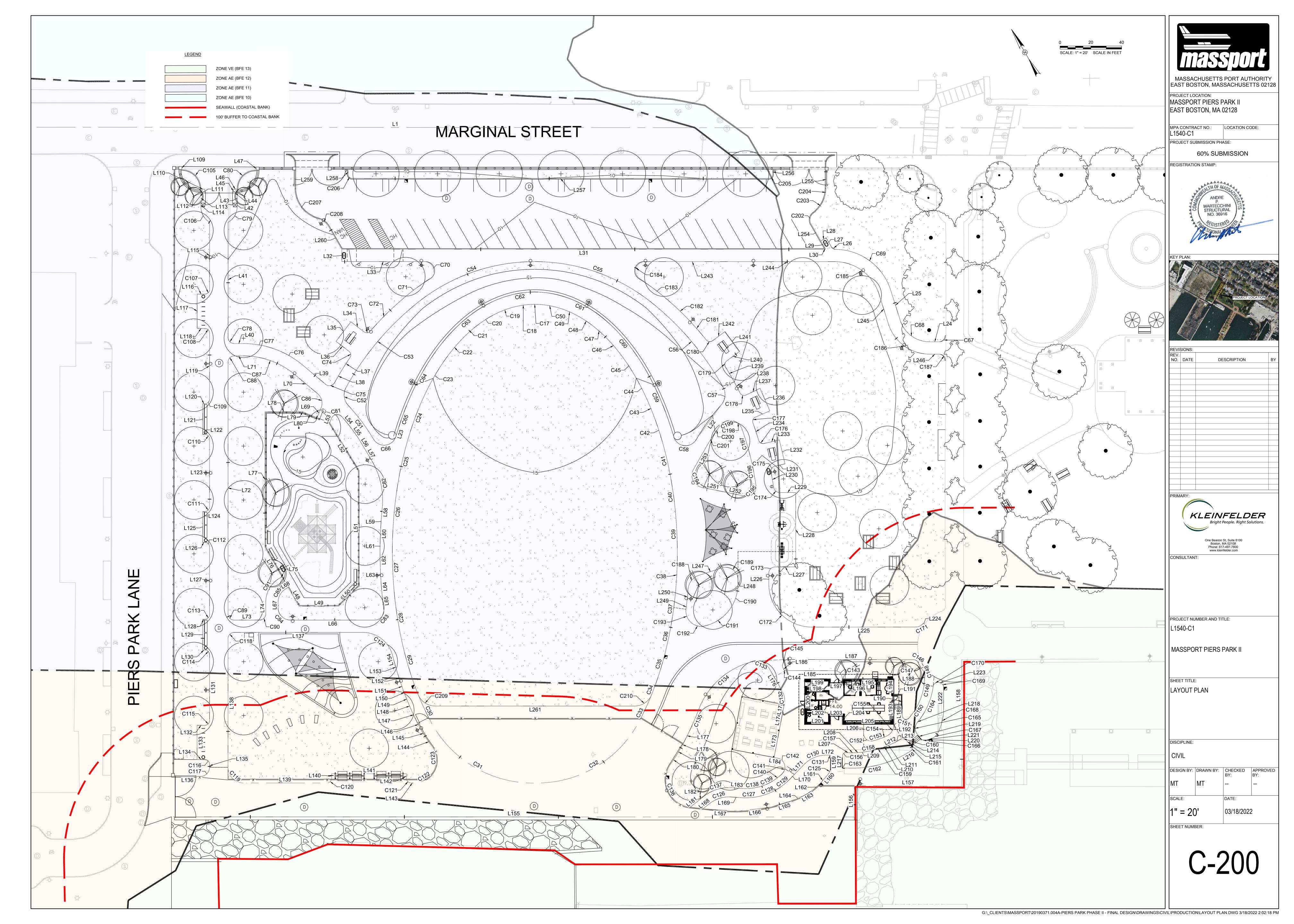












				_		
	G STARTING	RASS OVA	L CONSTRUCTION BA		A ENDING	ENDING
NUMBER	NORTHING	EASTING	CURVE DATA  R=47.92 Δ= 8°10'52"	LINE DATA	NORTHING	EASTING
C17	2958675.864	781044.380	L=6.84' T=3.43'		2958679.304	781038.472
C18	2958679.304	781038.472	R=51.79 Δ= 8°53'11" L=8.03' T=4.02'		2958682.356	781031.051
C19	2958682.356	781031.051	R=61.77 Δ=15°26'45" L=16.65' T=8.38'		2958685.220	781014.698
C20	2958685.220	781014.698	R=71.58' Δ=9°07'39" L=11.40' T=5.71'		2958684.758	781003.317
C21	2958684.758	781003.317	R=85.63 <sup>°</sup> Δ=9°02'04" L=13.50' T=6.77'		2958682.165	780990.080
C22	2958682.165	780990.080	R=109.10 <sup>°</sup> Δ=8°23'43" L=15.99' T=8.01'		2958676.831	780975.026
C23	2958676.831	780975.026	R=151.02 <sup>°</sup> Δ=10°55'39" L=28.80' T=14.44'		2958662.729	780949.963
C24	2958662.729	780949.963	R=201.19 <sup>°</sup> Δ=8°31'36" L=29.94' T=15.00'		2958643.860	780926.751
C25	2958643.860	780926.751	R=242.23 Δ=7°06'34" L=30.06' T=15.05'		2958621.934	780906.222
C26	2958621.934	780906.222	R=270.47 Δ=7°51'31" L=37.10' T=18.58'		2958591.829	780884.596
C27	2958591.829	780884.596	R=282.36 Δ=7°11'21" L=35.43' T=17.74'		2958560.622	780867.869
C28	2958560.622	780867.869	R=261.40 Δ=6°44'52" L=30.79' T=15.41'		2958531.936	780856.746
C29	2958531.936	780856.746	R=226.99 Δ=6°30'22" L=25.78' T=12.90'		2958507.004	780850.261
C30	2958507.004	780850.261	R=184.81 Δ= 9°33'44"		2958476.403	780846.701
C31	2958476.403	780846.701	L=30.84' T=15.46' $R=75.15' \Delta = 63^{\circ}04'56"$		2958408.412	780886.195
C32	2958408.412	780886.195	L=82.75' T=46.13' R=75.00' Δ=60°50'02"		2958408.635	780962.138
C32	2958408.635	780962.138	L=79.63' T=44.03' R=163.74' Δ=4°51'58"		2958408.835	780973.750
			L=13.91' T=6.96' R=200.12' Δ=5°31'25"			
C34	2958416.277	780973.750	L=19.29' T=9.65' R=219.41' Δ=4°18'12"		2958428.311	780988.820
C35	2958428.311	780988.820	L=16.48' T=8.24' $R=243.86' \Delta=4°53'41"$		2958439.640	781000.782
C36	2958439.640	781000.782	L=20.83' T=10.42' R=265.83' Δ=3°20'26"		2958455.118	781014.716
C37	2958455.118	781014.716	L=15.50' T=7.75' $R=280.52' \Delta=6^{\circ}01'23"$		2958467.336	781024.248
C38	2958467.336	781024.248	$L=29.49'$ $T=14.76'$ $R=286.63'$ $\Delta=4°43'21"$		2958491.987	781040.408
C39	2958491.987	781040.408	L=23.62' T=11.82'		2958512.881	781051.419
C40	2958512.881	781051.419	R=263.26' Δ=5°29'02" L=25.20' T=12.61'		2958536.127	781061.118
C41	2958536.127	781061.118	R=228.41 Δ=5°39'26" L=22.55' T=11.29'		2958557.651	781067.822
C42	2958557.651	781067.822	R=206.73 Δ= 5°00'15" L=18.06' T=9.03'		2958575.293	781071.643
C43	2958575.293	781071.643	R=182.68 Δ= 3°48'52" L=12.16' T=6.08'		2958587.334	781073.336
C44	2958587.334	781073.336	R=173.43 Δ= 5°28'51" L=16.59' T=8.30'		2958603.890	781074.300
C45	2958603.890	781074.300	R=139.72 Δ=7°00'50" L=17.10' T=8.56'		2958620.959	781073.377
C46	2958620.959	781073.377	R=107.57' Δ=8°27'37" L=15.88' T=7.96'		2958636.550	781070.415
C47	2958636.550	781070.415	R=89.18' Δ=6°56'20" L=10.80' T=5.41'		2958646.786	781066.990
C48						
	2958646.786	781066.990	R=75.47 <sup>°</sup> Δ=7°45'57" L=10.23' T=5.12'		2958655.984	781062.533
C49	2958646.786 2958655.984	781066.990 781062.533			2958655.984 2958667.642	
C49 C50			L=10.23' T=5.12' R=63.13 Δ=13°08'12"			781054.005
	2958655.984 2958667.642 LAND	781062.533 781054.005 DSCAPE AR	L=10.23' T=5.12'  R=63.13' $\Delta$ = 13°08'12"  L=14.48' T=7.27'  R=56.23' $\Delta$ = 12°55'39"	I BASELINE	2958667.642 2958675.864 DATA	781054.005 781044.380
	2958655.984 2958667.642	781062.533 781054.005	L=10.23' T=5.12'  R=63.13' $\Delta$ = 13°08'12" L=14.48' T=7.27'  R=56.23' $\Delta$ = 12°55'39" L=12.69' T=6.37'	I BASELINE LINE DATA	2958667.642 2958675.864	781054.005
C50	2958655.984 2958667.642 LAND	781062.533 781054.005 DSCAPE AR STARTING	L=10.23' T=5.12'  R=63.13' Δ=13°08'12" L=14.48' T=7.27'  R=56.23' Δ=12°55'39" L=12.69' T=6.37'  EA 4 CONSTRUCTION		2958667.642 2958675.864 DATA ENDING	781054.005 781044.380 ENDING EASTING
C50	2958655.984  2958667.642  LAND  STARTING NORTHING	781062.533 781054.005 OSCAPE AR STARTING EASTING	L=10.23' T=5.12'  R=63.13' $\Delta$ = 13°08'12" L=14.48' T=7.27'  R=56.23' $\Delta$ = 12°55'39" L=12.69' T=6.37'  EA 4 CONSTRUCTION  CURVE DATA  R=132.00' $\Delta$ = 11°56'31"		2958667.642 2958675.864  DATA  ENDING NORTHING	781054.005 781044.380 ENDING EASTING 780903.872
C50  NUMBER  C51	2958655.984  2958667.642  LAND  STARTING NORTHING  2958654.695	781062.533 781054.005  SCAPE AR  STARTING EASTING 780907.003	L=10.23' T=5.12'  R=63.13' $\Delta$ = 13°08'12" L=14.48' T=7.27'  R=56.23' $\Delta$ = 12°55'39" L=12.69' T=6.37'  EA 4 CONSTRUCTION  CURVE DATA  R=132.00' $\Delta$ = 11°56'31" L=27.51' T=13.81'  R=10.00' $\Delta$ = 71°40'07"		2958667.642 2958675.864  DATA  ENDING NORTHING 2958681.978	781054.005 781044.380 ENDING EASTING 780903.872 780908.507
C50  NUMBER  C51  C52	2958655.984  2958667.642  LAND  STARTING NORTHING  2958654.695  2958681.978	781062.533 781054.005 DSCAPE AR STARTING EASTING 780907.003 780903.872	L=10.23' T=5.12'  R=63.13' $\Delta$ = 13°08'12" L=14.48' T=7.27'  R=56.23' $\Delta$ = 12°55'39" L=12.69' T=6.37'  EA 4 CONSTRUCTION  CURVE DATA  R=132.00' $\Delta$ = 11°56'31" L=27.51' T=13.81'  R=10.00' $\Delta$ = 71°40'07" L=12.51' T=7.22'  R=185.00' $\Delta$ = 22°27'43"		2958667.642 2958675.864  DATA  ENDING NORTHING 2958681.978 2958692.731	781054.005 781044.380 ENDING EASTING 780903.872 780908.507 780976.386
C50  NUMBER  C51  C52  C53	2958655.984  2958667.642  LAND  STARTING NORTHING  2958654.695  2958681.978  2958692.731	781062.533 781054.005  OSCAPE AR STARTING EASTING 780907.003 780903.872 780908.507	L=10.23' T=5.12'  R=63.13' $\Delta$ = 13°08'12" L=14.48' T=7.27'  R=56.23' $\Delta$ = 12°55'39" L=12.69' T=6.37'  EA 4 CONSTRUCTION  CURVE DATA  R=132.00' $\Delta$ = 11°56'31" L=27.51' T=13.81'  R=10.00' $\Delta$ = 71°40'07" L=12.51' T=7.22'  R=185.00' $\Delta$ = 22°27'43" L=72.53' T=36.73'  R=122.32' $\Delta$ = 38°25'34"		2958667.642 2958675.864  DATA  ENDING NORTHING  2958681.978  2958692.731  2958716.926	781054.005 781044.380  ENDING EASTING 780903.872 780908.507 780976.386 781055.436
C50  NUMBER  C51  C52  C53  C54	2958655.984  2958667.642  LAND  STARTING NORTHING  2958654.695  2958681.978  2958692.731  2958716.926	781062.533 781054.005  PSCAPE AR STARTING EASTING 780907.003 780903.872 780908.507 780976.386	L=10.23' T=5.12'  R=63.13' $\Delta$ = 13°08'12" L=14.48' T=7.27'  R=56.23' $\Delta$ = 12°55'39" L=12.69' T=6.37'  EA 4 CONSTRUCTION  CURVE DATA  R=132.00' $\Delta$ = 11°56'31" L=27.51' T=13.81'  R=10.00' $\Delta$ = 71°40'07" L=12.51' T=7.22'  R=185.00' $\Delta$ = 22°27'43" L=72.53' T=36.73'  R=122.32' $\Delta$ = 38°25'34" L=82.04' T=42.63'  R=121.68' $\Delta$ = 38°38'11"		2958667.642 2958675.864  DATA  ENDING NORTHING 2958681.978 2958692.731 2958716.926 2958701.659	781054.005 781044.380  ENDING EASTING 780903.872 780908.507 780976.386 781055.436 781107.651
C50  NUMBER  C51  C52  C53  C54  C55	2958655.984  2958667.642  LAND  STARTING NORTHING  2958654.695  2958681.978  2958692.731  2958716.926  2958701.659	781062.533 781054.005  SCAPE AR STARTING EASTING 780907.003 780903.872 780908.507 780976.386 781055.436	$\begin{array}{cccccccccccccccccccccccccccccccccccc$		2958667.642 2958675.864  DATA  ENDING NORTHING 2958681.978 2958692.731 2958716.926 2958701.659 2958640.378	781054.005 781044.380  ENDING EASTING 780903.872 780908.507 780976.386 781055.436 781107.651 781120.024
C50  NUMBER  C51  C52  C53  C54  C55  C56	2958655.984  2958667.642  LAND  STARTING NORTHING  2958654.695  2958681.978  2958692.731  2958716.926  2958701.659  2958640.378	781062.533 781054.005 DSCAPE AR STARTING EASTING 780907.003 780903.872 780908.507 780976.386 781055.436 781107.651	L=10.23' T=5.12'  R=63.13' $\Delta$ = 13°08'12" L=14.48' T=7.27'  R=56.23' $\Delta$ = 12°55'39" L=12.69' T=6.37'  EA 4 CONSTRUCTION  CURVE DATA  R=132.00' $\Delta$ = 11°56'31" L=27.51' T=13.81'  R=10.00' $\Delta$ = 71°40'07" L=12.51' T=7.22'  R=185.00' $\Delta$ = 22°27'43" L=72.53' T=36.73'  R=122.32' $\Delta$ = 38°25'34" L=82.04' T=42.63'  R=121.68' $\Delta$ = 38°38'11" L=82.06' T=42.66'  R=185.00' $\Delta$ = 22°24'46" L=72.37' T=36.65'  R=10.00' $\Delta$ = 70°40'26"		2958667.642 2958675.864  DATA  ENDING NORTHING 2958681.978 2958692.731 2958716.926 2958701.659 2958640.378 2958569.544	781054.005 781044.380  ENDING EASTING 780903.872 780908.507 780976.386 781107.651 781120.024 781113.121
C50  NUMBER  C51  C52  C53  C54  C55  C56  C57	2958655.984  2958667.642  LAND  STARTING NORTHING  2958654.695  2958681.978  2958692.731  2958716.926  2958701.659  2958640.378  2958569.544	781062.533 781054.005  PSCAPE AR STARTING EASTING 780907.003 780903.872 780908.507 780976.386 781055.436 781107.651 781120.024	L=10.23' T=5.12'  R=63.13' $\Delta$ = 13°08'12" L=14.48' T=7.27'  R=56.23' $\Delta$ = 12°55'39" L=12.69' T=6.37'  EA 4 CONSTRUCTION  CURVE DATA  R=132.00' $\Delta$ = 11°56'31" L=27.51' T=13.81'  R=10.00' $\Delta$ = 71°40'07" L=12.51' T=7.22'  R=185.00' $\Delta$ = 22°27'43" L=72.53' T=36.73'  R=122.32' $\Delta$ = 38°25'34" L=82.04' T=42.63'  R=121.68' $\Delta$ = 38°38'11" L=82.06' T=42.66'  R=185.00' $\Delta$ = 22°24'46" L=72.37' T=36.65'  R=10.00' $\Delta$ = 70°40'26"	LINE DATA  S65°58'10"W	2958667.642 2958675.864  DATA  ENDING NORTHING 2958681.978 2958692.731 2958716.926 2958701.659 2958640.378 2958569.544 2958560.261	781054.005 781044.380  ENDING EASTING 780903.872 780908.507 780976.386 781055.436 781107.651 781120.024 781113.121 781087.907
C50  NUMBER  C51  C52  C53  C54  C55  C56  C57  L22	2958655.984  2958667.642  LAND  STARTING NORTHING  2958654.695  2958681.978  2958692.731  2958716.926  2958701.659  2958640.378  2958569.544  2958560.261	781062.533 781054.005  PSCAPE AR STARTING EASTING 780907.003 780908.507 780976.386 781055.436 781107.651 781120.024 781113.121	$\begin{array}{c} \text{L=}10.23'  \text{T=}5.12' \\ \text{R=}63.13'  \Delta = 13^{\circ}08'12'' \\ \text{L=}14.48'  \text{T=}7.27' \\ \text{R=}56.23'  \Delta = 12^{\circ}55'39'' \\ \text{L=}12.69'  \text{T=}6.37' \\ \\ \text{EA 4 CONSTRUCTION} \\ \\ \text{CURVE DATA} \\ \\ \text{R=}132.00'  \Delta = 11^{\circ}56'31'' \\ \text{L=}27.51'  \text{T=}13.81' \\ \\ \text{R=}10.00'  \Delta = 71^{\circ}40'07'' \\ \text{L=}12.51'  \text{T=}7.22' \\ \\ \text{R=}185.00'  \Delta = 22^{\circ}27'43'' \\ \text{L=}72.53'  \text{T=}36.73' \\ \\ \text{R=}122.32'  \Delta = 38^{\circ}25'34'' \\ \text{L=}82.04'  \text{T=}42.63' \\ \\ \text{R=}121.68'  \Delta = 38^{\circ}38'11'' \\ \text{L=}82.06'  \text{T=}42.66' \\ \\ \text{R=}185.00'  \Delta = 22^{\circ}24'46'' \\ \text{L=}72.37'  \text{T=}36.65' \\ \\ \text{R=}10.00'  \Delta = 70^{\circ}40'26'' \\ \text{L=}12.33'  \text{T=}7.09' \\ \\ \\ \text{R=}8.00'  \Delta = 133^{\circ}40'43'' \\ \text{L=}18.67'  \text{T=}18.70' \\ \\ \text{R=}189.48'  \Delta = 17^{\circ}06'25'' \\ \\ \end{array}$	LINE DATA  S65°58'10"W	2958667.642 2958675.864  DATA  ENDING NORTHING 2958681.978 2958692.731 2958716.926 2958701.659 2958640.378 2958569.544 2958560.261 2958549.019	781054.005 781044.380  ENDING EASTING 780903.872 780908.507 780976.386 781107.651 781120.024 781113.121 781087.907 781076.129
C50  NUMBER  C51  C52  C53  C54  C55  C56  C57  L22  C58	2958655.984  2958667.642  LAND  STARTING NORTHING  2958654.695  2958681.978  2958692.731  2958716.926  2958701.659  2958640.378  2958569.544  2958569.544  2958560.261  2958549.019	781062.533 781054.005  SCAPE AR STARTING EASTING 780907.003 780908.507 780976.386 781055.436 781107.651 781120.024 781113.121 781087.907	$\begin{array}{c} \text{L=}10.23'  \text{T=}5.12' \\ \text{R=}63.13'  \Delta = 13^{\circ}08'12'' \\ \text{L=}14.48'  \text{T=}7.27' \\ \text{R=}56.23'  \Delta = 12^{\circ}55'39'' \\ \text{L=}12.69'  \text{T=}6.37' \\ \\ \text{EA 4 CONSTRUCTION} \\ \\ \text{CURVE DATA} \\ \\ \text{R=}132.00'  \Delta = 11^{\circ}56'31'' \\ \text{L=}27.51'  \text{T=}13.81' \\ \\ \text{R=}10.00'  \Delta = 71^{\circ}40'07'' \\ \text{L=}12.51'  \text{T=}7.22' \\ \\ \text{R=}185.00'  \Delta = 22^{\circ}27'43'' \\ \text{L=}72.53'  \text{T=}36.73' \\ \\ \text{R=}122.32'  \Delta = 38^{\circ}25'34'' \\ \text{L=}82.04'  \text{T=}42.63' \\ \\ \text{R=}121.68'  \Delta = 38^{\circ}38'11'' \\ \text{L=}82.06'  \text{T=}42.66' \\ \\ \text{R=}185.00'  \Delta = 22^{\circ}24'46'' \\ \text{L=}72.37'  \text{T=}36.65' \\ \\ \text{R=}10.00'  \Delta = 70^{\circ}40'26'' \\ \text{L=}12.33'  \text{T=}7.09' \\ \\ \\ \text{R=}189.48'  \Delta = 17^{\circ}06'25'' \\ \text{L=}56.57'  \text{T=}28.50' \\ \\ \text{R=}121.27'  \Delta = 12^{\circ}33'57'' \\ \\ \end{array}$	LINE DATA  S65°58'10"W	2958667.642  2958675.864  DATA  ENDING NORTHING  2958681.978  2958692.731  2958716.926  2958701.659  2958640.378  2958569.544  2958569.544  2958560.261  2958557.832	781054.005 781044.380  ENDING EASTING 780903.872 780908.507 780976.386 781107.651 781120.024 781113.121 781087.907 781076.129 781082.041
C50  NUMBER  C51  C52  C53  C54  C55  C56  C57  L22  C58  C59	2958655.984  2958667.642  LAND  STARTING NORTHING  2958654.695  2958681.978  2958692.731  2958716.926  2958701.659  2958640.378  2958569.544  2958569.544  2958560.261  2958557.832	781062.533 781054.005  SCAPE AR STARTING EASTING 780907.003 780908.507 780976.386 781055.436 781107.651 781120.024 781113.121 781087.907 781076.129		LINE DATA  S65°58'10"W	2958667.642 2958675.864  DATA  ENDING NORTHING 2958681.978 2958692.731 2958716.926 2958701.659 2958640.378 2958569.544 2958569.544 2958560.261 2958557.832 2958613.885	781054.005 781044.380  ENDING EASTING 780903.872 780908.507 780976.386 781107.651 781120.024 781113.121 781087.907 781076.129 781082.041 781077.727
C50  NUMBER  C51  C52  C53  C54  C55  C56  C57  L22  C58  C59  C60	2958655.984  2958667.642  LAND  STARTING NORTHING  2958654.695  2958681.978  2958692.731  2958716.926  2958701.659  2958640.378  2958569.544  2958560.261  2958557.832  2958613.885	781062.533 781062.533 781054.005  SCAPE AR STARTING EASTING 780907.003 780908.507 780976.386 781055.436 781107.651 781120.024 781113.121 781087.907 781076.129 781082.041	L=10.23' T=5.12'  R=63.13' Δ=13°08'12" L=14.48' T=7.27'  R=56.23' Δ=12°55'39" L=12.69' T=6.37'  EA 4 CONSTRUCTION  CURVE DATA  R=132.00' Δ=11°56'31" L=27.51' T=13.81'  R=10.00' Δ=71°40'07" L=12.51' T=7.22'  R=185.00' Δ=22°27'43" L=72.53' T=36.73'  R=122.32' Δ=38°25'34" L=82.04' T=42.63'  R=121.68' Δ=38°38'11" L=82.06' T=42.66'  R=185.00' Δ=22°24'46" L=72.37' T=36.65'  R=10.00' Δ=70°40'26" L=12.33' T=7.09'  R=8.00' Δ=133°40'43" L=18.67' T=18.70'  R=189.48' Δ=17°06'25" L=12.33' T=7.09'  R=121.27' Δ=12°33'57" L=26.60' T=13.35'  R=74.46' Δ=38°19'32" L=49.81' T=25.87'  R=62.19' Δ=30°33'02"	LINE DATA  S65°58'10"W	2958667.642 2958675.864  DATA  ENDING NORTHING 2958681.978 2958692.731 2958716.926 2958701.659 2958640.378 2958569.544 2958569.544 2958569.544 2958569.361 2958549.019 2958557.832 2958613.885 2958640.074	781054.005 781044.380  ENDING EASTING 780903.872 780908.507 780976.386 781055.436 781107.651 781120.024 781113.121 781087.907 781076.129 781077.727 781050.986
C50  NUMBER  C51  C52  C53  C54  C55  C56  C57  L22  C58  C59  C60  C61  C62	2958655.984  2958667.642  LAND STARTING NORTHING 2958654.695  2958681.978  2958692.731  2958701.659  2958640.378  2958569.544  2958569.544  2958560.261  2958557.832  2958613.885  2958640.074  2958680.994	781062.533 781054.005  SCAPE AR STARTING EASTING 780907.003 780908.507 780976.386 781055.436 781107.651 781120.024 781113.121 781087.907 781076.129 781077.727 781050.986	L=10.23' T=5.12'  R=63.13' Δ=13°08'12" L=14.48' T=7.27'  R=56.23' Δ=12°55'39" L=12.69' T=6.37'  EA 4 CONSTRUCTION  CURVE DATA  R=132.00' Δ=11°56'31" L=27.51' T=13.81'  R=10.00' Δ=71°40'07" L=12.51' T=7.22'  R=185.00' Δ=22°27'43" L=72.53' T=36.73'  R=122.32' Δ=38°25'34" L=82.04' T=42.63'  R=121.68' Δ=38°38'11" L=82.06' T=42.66'  R=185.00' Δ=22°24'46" L=72.37' T=36.65'  R=10.00' Δ=70°40'26" L=12.33' T=7.09'  R=8.00' Δ=133°40'43" L=18.67' T=18.70'  R=189.48' Δ=17°06'25" L=56.57' T=28.50'  R=121.27' Δ=12°33'57" L=26.60' T=13.35'  R=74.46' Δ=38°19'32" L=49.81' T=25.87'  R=62.19' Δ=30°33'02" L=33.16' T=16.99'  R=94.99' Δ=29°08'05"	LINE DATA  S65°58'10"W	2958667.642  2958675.864  DATA  ENDING NORTHING  2958681.978  2958692.731  2958701.659  2958640.378  2958569.544  2958569.544  2958567.832  2958613.885  2958640.074  2958680.994  2958692.797	781054.005 781044.380  ENDING EASTING 780903.872 780908.507 780976.386 781055.436 781107.651 781120.024 781113.121 781087.907 781076.129 781077.727 781050.986 781020.415
C50  NUMBER  C51  C52  C53  C54  C55  C56  C57  L22  C58  C59  C60  C61  C62  C63	2958655.984  2958667.642  LAND STARTING NORTHING  2958654.695  2958681.978  2958692.731  2958701.659  2958640.378  2958569.544  2958569.544  2958569.544  2958569.797	781062.533 781054.005  SCAPE AR STARTING EASTING 780907.003 780908.507 780976.386 781055.436 781107.651 781120.024 781113.121 781087.907 781076.129 781076.129 781077.727 781050.986 781020.415	L=10.23' T=5.12'  R=63.13' Δ=13°08'12" L=14.48' T=7.27'  R=56.23' Δ=12°55'39" L=12.69' T=6.37'  EA 4 CONSTRUCTION  CURVE DATA  R=132.00' Δ=11°56'31" L=27.51' T=13.81'  R=10.00' Δ=71°40'07" L=12.51' T=7.22'  R=185.00' Δ=22°27'43" L=72.53' T=36.73'  R=122.32' Δ=38°25'34" L=82.04' T=42.63'  R=121.68' Δ=38°38'11" L=82.06' T=42.66'  R=185.00' Δ=22°24'46" L=72.37' T=36.65'  R=10.00' Δ=70°40'26" L=12.33' T=7.09'  R=8.00' Δ=133°40'43" L=18.67' T=18.70'  R=189.48' Δ=17°06'25" L=56.57' T=28.50'  R=121.27' Δ=12°33'57" L=26.60' T=13.35'  R=74.46' Δ=38°19'32" L=49.81' T=25.87'  R=62.19' Δ=30°33'02" L=33.16' T=16.99'  R=94.99' Δ=29°08'05" L=48.30' T=24.68'  R=164.34' Δ=15°31'06"	LINE DATA  S65°58'10"W	2958667.642 2958675.864  DATA  ENDING NORTHING 2958681.978 2958692.731 2958701.659 2958640.378 2958569.544 2958560.261 2958557.832 2958613.885 2958640.074 2958680.994 2958680.994	781054.005 781044.380  ENDING EASTING 780903.872 780908.507 780976.386 781055.436 781107.651 781120.024 781113.121 781087.907 781076.129 781077.727 781050.986 781020.415 780973.310
C50  NUMBER  C51  C52  C53  C54  C55  C56  C57  L22  C58  C59  C60  C61  C62  C63  C64	2958655.984  2958667.642  LAND STARTING NORTHING  2958654.695  2958681.978  2958692.731  2958701.659  2958640.378  2958569.544  2958569.544  2958569.544  2958560.261  2958557.832  2958613.885  2958640.074  2958680.994  2958680.994	781062.533 781054.005  SCAPE AR STARTING EASTING 780907.003 780903.872 780908.507 780976.386 781055.436 781107.651 781120.024 781113.121 781087.907 781076.129 781076.129 781077.727 781050.986 781020.415 780973.310	L=10.23' T=5.12'  R=63.13' Δ=13°08'12" L=14.48' T=7.27'  R=56.23' Δ=12°55'39" L=12.69' T=6.37'  EA 4 CONSTRUCTION  CURVE DATA  R=132.00' Δ=11°56'31" L=27.51' T=13.81'  R=10.00' Δ=71°40'07" L=12.51' T=7.22'  R=185.00' Δ=22°27'43" L=72.53' T=36.73'  R=122.32' Δ=38°25'34" L=82.04' T=42.63'  R=121.68' Δ=38°38'11" L=82.06' T=42.66'  R=185.00' Δ=22°24'46" L=72.37' T=36.65'  R=10.00' Δ=70°40'26" L=12.33' T=7.09'  R=189.48' Δ=17°06'25" L=12.33' T=7.09'  R=189.48' Δ=17°06'25" L=12.33' T=7.09'  R=189.48' Δ=18.70'  R=189.48' Δ=18.70'  R=189.48' Δ=18.70'  R=121.27' Δ=12°33'57" L=26.60' T=13.35'  R=74.46' Δ=38°19'32" L=49.81' T=25.87'  R=62.19' Δ=30°33'02" L=33.16' T=16.99'  R=94.99' Δ=29°08'05" L=48.30' T=24.68'  R=164.34' Δ=15°31'06" L=44.51' T=22.39'  R=213.95' Δ=3°58'01"	LINE DATA  S65°58'10"W	2958667.642 2958667.642  2958675.864  DATA  ENDING NORTHING 2958681.978 2958692.731 2958716.926 2958701.659 2958640.378 2958569.544 2958569.544 2958557.832 2958613.885 2958640.074 2958680.994 2958680.994 2958684.787 2958661.839	781054.005 781044.380  ENDING EASTING 780903.872 780908.507 780976.386 781107.651 781120.024 781113.121 781087.907 781076.129 781076.129 781077.727 781050.986 781020.415 780973.310 780935.331
C50  NUMBER  C51  C52  C53  C54  C55  C56  C57  L22  C58  C59  C60  C61  C62  C63  C64  C65	2958655.984  2958667.642  LAND STARTING NORTHING 2958654.695  2958681.978  2958692.731  2958716.926  2958701.659  2958640.378  2958569.544  2958560.261  295857.832  2958613.885  2958640.074  2958680.994  2958680.994  2958681.839	781062.533 781054.005  SCAPE AR STARTING EASTING 780907.003 780903.872 780908.507 780976.386 781107.651 781120.024 781113.121 781087.907 781076.129 781077.727 781050.986 781020.415 780973.310 780935.331	L=10.23' T=5.12'  R=63.13' Δ=13°08'12" L=14.48' T=7.27'  R=56.23' Δ=12°55'39" L=12.69' T=6.37'  EA 4 CONSTRUCTION  CURVE DATA  R=132.00' Δ=11°56'31" L=27.51' T=13.81'  R=10.00' Δ=71°40'07" L=12.51' T=7.22'  R=185.00' Δ=22°27'43" L=72.53' T=36.73'  R=122.32' Δ=38°25'34" L=82.04' T=42.63'  R=121.68' Δ=38°38'11" L=82.06' T=42.66'  R=185.00' Δ=22°24'46" L=72.37' T=36.65'  R=10.00' Δ=70°40'26" L=12.33' T=7.09'  R=189.48' Δ=17°06'25" L=12.33' T=7.09'  R=189.48' Δ=17°06'25" L=12.33' T=28.50'  R=121.27' Δ=12°33'57" L=26.60' T=13.35'  R=74.46' Δ=38°19'32" L=49.81' T=25.87'  R=62.19' Δ=30°33'02" L=33.16' T=16.99'  R=94.99' Δ=29°08'05" L=48.30' T=24.68'  R=164.34' Δ=15°31'06" L=44.51' T=22.39'	LINE DATA  S65°58'10"W	2958667.642  2958675.864  DATA  ENDING NORTHING  2958681.978  2958692.731  2958701.659  2958640.378  2958569.544  2958569.544  2958567.832  2958613.885  2958640.074  2958680.994  2958680.994  2958684.787  2958661.839  2958652.251	781054.005 781044.380  ENDING EASTING 780903.872 780908.507 780976.386 781107.651 781120.024 781113.121 781087.907 781076.129 781077.727 781050.986 781020.415 780973.310 780935.331 780924.043
C50  NUMBER  C51  C52  C53  C54  C55  C56  C57  L22  C58  C59  C60  C61  C62  C63  C64	2958655.984  2958667.642  LAND STARTING NORTHING  2958654.695  2958681.978  2958692.731  2958701.659  2958640.378  2958569.544  2958569.544  2958569.544  2958560.261  2958557.832  2958613.885  2958640.074  2958680.994  2958680.994	781062.533 781054.005  SCAPE AR STARTING EASTING 780907.003 780903.872 780908.507 780976.386 781055.436 781107.651 781120.024 781113.121 781087.907 781076.129 781076.129 781077.727 781050.986 781020.415 780973.310	L=10.23' T=5.12'  R=63.13' Δ=13°08'12" L=14.48' T=7.27'  R=56.23' Δ=12°55'39" L=12.69' T=6.37'  EA 4 CONSTRUCTION  CURVE DATA  R=132.00' Δ=11°56'31" L=27.51' T=13.81'  R=10.00' Δ=71°40'07" L=12.51' T=7.22'  R=185.00' Δ=22°27'43" L=72.53' T=36.73'  R=122.32' Δ=38°25'34" L=82.04' T=42.63'  R=121.68' Δ=38°38'11" L=82.06' T=42.66'  R=185.00' Δ=22°24'46" L=72.37' T=36.65'  R=10.00' Δ=70°40'26" L=12.33' T=7.09'  R=189.48' Δ=17°06'25" L=12.33' T=7.09'  R=189.48' Δ=17°06'25" L=12.33' T=7.09'  R=189.48' Δ=18.70'  R=189.48' Δ=18.70'  R=189.48' Δ=18.70'  R=121.27' Δ=12°33'57" L=26.60' T=13.35'  R=74.46' Δ=38°19'32" L=49.81' T=25.87'  R=62.19' Δ=30°33'02" L=33.16' T=16.99'  R=94.99' Δ=29°08'05" L=48.30' T=24.68'  R=164.34' Δ=15°31'06" L=44.51' T=22.39'  R=213.95' Δ=3°58'01"	LINE DATA  S65°58'10"W 27.61'	2958667.642 2958667.642  2958675.864  DATA  ENDING NORTHING 2958681.978 2958692.731 2958716.926 2958701.659 2958640.378 2958569.544 2958569.544 2958557.832 2958613.885 2958640.074 2958680.994 2958680.994 2958684.787 2958661.839	EASTING 780903.872 780908.507 780976.386 781055.436 781107.651 781120.024 781113.121 781087.907 781076.129 781077.727 781050.986 781020.415 780973.310

	EDO	GE OF PATI	H 1 CONSTRUCTION E	BASELINE DA	ATA	<u> </u>
NUMBER	STARTING NORTHING	STARTING EASTING	CURVE DATA	LINE DATA	ENDING NORTHING	ENDIN EASTIN
C67	2958525.675	781261.819	R=4.00 <sup>°</sup> Δ=89°57'05" L=6.28' T=4.00'		2958524.228	781256.3
L24	2958524.228	781256.353	L-0.20 1-4.00	N59°44'55"W	2958527.484	781250.7
			R=20.00 Δ=72°41'53"	6.46'		
C68	2958527.484	781250.770	L=25.38' T=14.72'	N12°39'21"E	2958549.193	781241.2
L25	2958549.193	781241.243		20.55'	2958569.246	781245.7
C69	2958569.246	781245.746	R=38.00 <sup>°</sup> Δ=71°46'28" L=47.60' T=27.49'		2958610.184	781228. <sup>-</sup>
L26	2958610.184	781228.173		N29°26'05"W 2.97'	2958612.772	781226.7
L27	2958612.772	781226.713		N0°14'56"E 6.93'	2958619.704	781226.7
L28	2958619.704	781226.743		N89°45'04"W 4.08'	2958619.721	781222.6
L29	2958619.721	781222.662		S0°14'56"W	2958614.155	781222.6
L30	2958614.155	781222.638		5.57' S30°18'08"W	2958613.603	781222.3
				0.64' N59°45'04"W		
L31	2958613.603	781222.316		313.71' S30°14'56"W	2958771.636	780951.3
L32	2958771.636	780951.320		8.00'	2958764.726	780947.2
L33	2958764.726	780947.290		S59°45'04"E 53.69'	2958737.680	780993.6
C70	2958737.680	780993.667	R=6.00 Δ=146°05'05" L=15.30' T=19.68'		2958726.510	780991.0
C71	2958726.510	780991.028	R=193.00 Δ=7°40'10" L=25.83' T=12.94'		2958723.139	780965.4
C72	2958723.139	780965.434	R=193.00 Δ=7°40'10" L=25.83' T=12.94'		2958716.384	780940.
C73	2958716.384	780940.519	R=3.00 <sup>°</sup> Δ=86°40'14"		2958718.080	780936.7
			L=4.54' T=2.83'	N22°20'06"W		
L34	2958718.080	780936.767		10.69' S67°39'54"W	2958727.968	780932.7
L35	2958727.968	780932.704		15.96'	2958721.901	780917.9
L36	2958721.901	780917.939		S22°20'06"E 10.63'	2958712.068	780921.9
C74	2958712.068	780921.979	R=3.00 <sup>°</sup> Δ=86°44'38" L=4.54' T=2.83'		2958708.222	780920.
L37	2958708.222	780920.500		S63°03'49"W 9.48'	2958703.929	780912.0
L38	2958703.929	780912.050		S60°22'23"W 9.48'	2958699.243	780903.8
C75	2958699.243	780903.811	R=4.00 <sup>°</sup> Δ= 99°37'58" L=6.96' T=4.74'		2958701.225	780898.0
L39	2958701.225	780898.029	2 5.55 7 1.77	N19°43'26"W 20.00'	2958720.054	780891.2
	2958720.054	780891.279	R=58.63 <sup>°</sup> Δ=20°07'18"	20.00	2958737.736	780880.9
			L=20.59' T=10.40'  R=60.00' Δ=19°39'20"			
C77	2958737.736	780880.938	L=20.58' T=10.39'	N59°47'34"W	2958750.911	780865.2
L40	2958750.911	780865.256		5.91'	2958753.887	780860. <sup>-</sup>
C78	2958753.887	780860.145	R=4.00° Δ=90°00'00" L=6.28' T=4.00'		2958759.357	780858.7
L41	2958759.357	780858.704		N30°14'56"E 74.78'	2958823.957	780896.3
C79	2958823.957	780896.376	R=11.26 Δ= 62°00'43" L=12.19' T=6.77'		2958829.644	780906.4
L42	2958829.644	780906.490		N30°15'58"E 2.50'	2958831.800	780907.7
L43	2958831.800	780907.748		N30°14'33"E 6.50'	2958837.413	780911.0
 L44	2958837.413	780911.021		N59°47'04"W	2958838.670	780908.8
L45	2958838.670	780908.861		2.50' N30°15'57"E	2958840.830	780910. <sup>-</sup>
				2.50' S59°47'04"E		
L46	2958840.830	780910.122	D 44.04' A 040001401	2.50'	2958839.573	780912.2
C80	2958839.573	780912.281	R=11.94 <sup>°</sup> Δ=94°09'12" L=19.61' T=12.83'		2958844.060	780929.
L47	2958844.060	780929.176		N30°12'26"E 2.00'	2958845.789	780930.
	LAND	SCAPE AR	EA 2 CONSTRUCTION	BASELINE	DATA	<b>.</b>
NUMBER	STARTING NORTHING	STARTING EASTING	CURVE DATA	LINE DATA	ENDING NORTHING	ENDIN EASTIN
L48	2958599.448	780810.656		S0°08'57"W 14.08'	2958585.373	780810.6
L49	2958585.373	780810.620		S59°45'58"E 25.70'	2958572.433	780832.8
L50	2958572.433	780832.822		N75°17'27"E 18.91'	2958577.235	780851. <sup>-</sup>
L51	2958577.235	780851.114		N30°12'26"E	2958641.838	780888.7
				74.75' N1°24'58"W		
L52	2958641.838	780888.725		36.50' N52°30'35"E	2958678.328	780887.8
L53	2958678.328	780887.823	D=4.04 <sup>2</sup> A 44=0:===	3.01'	2958680.162	780890.2
C81	2958680.162	780890.214	R=4.01 Δ= 115°47'35" L=8.11' T=6.40'		2958677.779	780896.5
L54	2958677.779	780896.584		S9°14'43"E 9.12'	2958668.775	780898.0
L55	2958668.775	780898.049		S5°01'46"E 9.12'	2958659.689	780898.8
L56	2958659.689	780898.849		S0°34'58"E 8.20'	2958651.493	780898.9
L57	2958651.493	780898.932		S0°34'58"E 8.20'	2958643.297	780899.0
C82	2958643.297	780899.016	R=50.02 <sup>°</sup> Δ=37°22'33"	J0	2958612.833	780889.0
L58	2958612.833	780889.054	L=32.63' T=16.92'	S35°28'26"W	2958609.553	780886.7
LUÖ				4.03' S34°14'58"W		
. –	2958609.553	780886.716		8.08'	2958602.873	780882.
L59			I	S32°37'42"W 8.10'	2958596.047	780877.7
L59 L60	2958602.873	780882.168				
	2958602.873 2958596.047	780882.168		S31°00'46"W 8.12'	2958589.091	780873.6
L60				S31°00'46"W	2958589.091 2958580.232	780873.6 780868.6

	STARTING NORTHING	STARTING EASTING	CURVE DATA	LINE DATA	ENDING NORTHING	ENDING EASTING
L64	2958573.040	780864.948		S25°45'23"W 8.07'	2958565.770	780861.441
L65	2958565.770	780861.441		S23°49'38"W 10.96'	2958555.748	780857.015
C83	2958555.748	780857.015	R=6.00 <sup>°</sup> Δ=94°19'21" L=9.88' T=6.47'		2958552.734	780848.748
L66	2958552.734	780848.748		N59°45'58"W 54.99'	2958580.421	780801.242
C84	2958580.421	780801.242	R=8.00 <sup>°</sup> Δ=89°55'05" L=12.55' T=7.99'		2958591.351	780798.353
L67	2958591.351	780798.353		N30°14'56"E 3.64'	2958594.494	780800.185
C85	2958594.494	780800.185	R=10.00 Δ=61°23'57" L=10.72' T=5.94'		2958599.452	780809.111
L68	2958599.452	780809.111		S89°44'50"E 1.54'	2958599.445	780810.656
	LAND	SCAPE AR	EA 3 CONSTRUCTION	I BASELINE	DATA	
NUMBER	STARTING NORTHING	STARTING EASTING	CURVE DATA	LINE DATA	ENDING NORTHING	ENDING EASTING
L69	2958685.242	780882.392		N52°23'59"E 6.48'	2958689.196	780887.526
C86	2958689.196	780887.526	R=8.00 <sup>°</sup> Δ=75°32'34" L=10.55' T=6.20'		2958698.520	780890.543
L70	2958698.520	780890.543		N19°50'56"W 19.92'	2958717.254	780883.781
C87	2958717.254	780883.781	R=52.00 Δ=39°18'40" L=35.68' T=18.57'		2958743.997	780861.231
L71	2958743.997	780861.231		N59°47'34"W 5.92'	2958746.976	780856.115
C88	2958746.976	780856.115	R=4.00 <sup>°</sup> Δ=90°02'36" L=6.29' T=4.00'		2958745.533	780850.643
L72	2958745.533	780850.643		S30°14'56"W 163.53'	2958604.271	780768.265
C89	2958604.271	780768.265	R=4.00° Δ=89°59'58" L=6.28' T=4.00'		2958598.801	780769.705
L73	2958598.801	780769.705		S59°45'58"E 16.50'	2958590.493	780783.961
C90	2958590.493	780783.961	R=4.00 <sup>°</sup> Δ= 89°59'59" L=6.28' T=4.00'		2958591.933	780789.431
L74	2958591.933	780789.431		N30°14'56"E 7.63'	2958598.524	780793.275
C91	2958598.524	780793.275	R=18.00 Δ=61°23'57" L=19.29' T=10.69'		2958607.449	780809.341
L75	2958607.449	780809.341		N89°57'55"E 1.35'	2958607.450	780810.689
L76	2958607.450	780810.689		N0°14'04"E 22.08'	2958629.534	780810.779
L77	2958629.534	780810.779		N30°14'56"E 88.03'	2958705.579	780855.126
L78	2958705.579	780855.126		S59°47'34"E 24.31'	2958693.350	780876.132
L79	2958693.350	780876.132		S48°38'30"E 0.19'	2958693.222	780876.277
L80	2958693.222	780876.277		S37°26'22"E 10.05'	2958685.240	780882.389
	ED(	GE OF PATI	H 2 CONSTRUCTION E	BASELINE D	ATA	
NUMBER	STARTING NORTHING	STARTING EASTING	CURVE DATA	LINE DATA	ENDING NORTHING	ENDING EASTING
L109	2958870.362	780888.724		S30°17'27"W		
	2330070.302	100000.124		2.00'	2958868.634	780887.715
C105	2958868.634	780887.715	R=12.50° Δ=90°16'06" L=19.70' T=12.56'		2958868.634 2958851.425	
C105 L110						780891.958
	2958868.634	780887.715		2.00' S59°43'03"E	2958851.425	780887.715 780891.958 780894.115 780892.856
L110	2958868.634 2958851.425	780887.715 780891.958		2.00' \$59°43'03"E 2.50' \$30°13'56"W	2958851.425 2958850.165	780891.958 780894.115 780892.856
L110 L111	2958868.634 2958851.425 2958850.165	780887.715 780891.958 780894.115		2.00' \$59°43'03"E 2.50' \$30°13'56"W 2.50' N59°43'03"W	2958851.425 2958850.165 2958848.004	780891.958 780894.115 780892.856 780890.698
L110 L111 L112	2958868.634 2958851.425 2958850.165 2958848.004	780887.715 780891.958 780894.115 780892.856		2.00'  \$59°43'03"E 2.50'  \$30°13'56"W 2.50'  N59°43'03"W 2.50'  \$30°15'20"W	2958851.425 2958850.165 2958848.004 2958849.264	780891.958 780894.115 780892.856 780890.698 780887.425
L110 L111 L112 L113	2958868.634 2958851.425 2958850.165 2958848.004 2958849.264	780887.715 780891.958 780894.115 780892.856 780890.698		2.00'  S59°43'03"E 2.50'  S30°13'56"W 2.50'  N59°43'03"W 2.50'  S30°15'20"W 6.50'  S30°13'55"W	2958851.425 2958850.165 2958848.004 2958849.264 2958843.652	780891.958 780894.115 780892.856 780890.698 780887.425 780886.168
L110 L111 L112 L113 L114	2958868.634 2958851.425 2958850.165 2958848.004 2958849.264 2958843.652	780887.715 780891.958 780894.115 780892.856 780890.698 780887.425	L=19.70' T=12.56'  R=11.67 Δ= 59°01'44"	2.00'  S59°43'03"E 2.50'  S30°13'56"W 2.50'  N59°43'03"W 2.50'  S30°15'20"W 6.50'  S30°13'55"W	2958851.425 2958850.165 2958848.004 2958849.264 2958843.652 2958841.495	780891.958 780894.115 780892.856 780890.698 780887.425 780886.168 780886.010
L110 L111 L112 L113 L114 C106	2958868.634 2958851.425 2958850.165 2958848.004 2958849.264 2958843.652 2958841.495	780887.715 780891.958 780894.115 780892.856 780890.698 780887.425 780886.168	L=19.70' T=12.56'  R=11.67 Δ= 59°01'44"	2.00'  S59°43'03"E 2.50'  S30°13'56"W 2.50'  N59°43'03"W 2.50'  S30°15'20"W 6.50'  S30°13'55"W 2.50'	2958851.425 2958850.165 2958848.004 2958849.264 2958843.652 2958841.495 2958830.002	780891.958 780894.115 780892.856 780890.698 780887.425 780886.168 780886.010
L110 L111 L112 L113 L114 C106 L115	2958868.634 2958851.425 2958850.165 2958848.004 2958849.264 2958843.652 2958841.495 2958830.002	780887.715 780891.958 780894.115 780892.856 780890.698 780887.425 780886.168 780886.010	L=19.70' T=12.56'  R=11.67' Δ=59°01'44" L=12.02' T=6.60'  R=3.00' Δ=90°00'00"	2.00'  S59°43'03"E 2.50'  S30°13'56"W 2.50'  N59°43'03"W 2.50'  S30°15'20"W 6.50'  S30°13'55"W 2.50'	2958851.425 2958850.165 2958848.004 2958849.264 2958843.652 2958841.495 2958830.002 2958792.298	780891.958 780894.115 780892.856 780890.698 780887.425 780886.168 780886.010 780864.023 780859.920
L110  L111  L112  L113  L114  C106  L115  C107	2958868.634 2958851.425 2958850.165 2958848.004 2958849.264 2958843.652 2958841.495 2958830.002 2958792.298	780887.715 780891.958 780894.115 780892.856 780890.698 780887.425 780886.168 780886.100 780864.023	L=19.70' T=12.56'  R=11.67' Δ=59°01'44" L=12.02' T=6.60'  R=3.00' Δ=90°00'00"	2.00'  S59°43'03"E 2.50'  S30°13'56"W 2.50'  N59°43'03"W 2.50'  S30°15'20"W 6.50'  S30°13'55"W 2.50'  S30°14'56"W 43.65'	2958851.425 2958850.165 2958848.004 2958849.264 2958843.652 2958841.495 2958830.002 2958792.298 2958791.218	780891.958 780894.115 780892.856 780890.698 780887.425 780886.168 780886.010 780864.023 780859.920 780855.528
L110 L111 L112 L113 L114 C106 L115 C107 L116	2958868.634 2958851.425 2958850.165 2958848.004 2958849.264 2958843.652 2958841.495 2958830.002 2958792.298 2958791.218	780887.715 780891.958 780894.115 780892.856 780890.698 780887.425 780886.168 780886.010 780864.023 780859.920	L=19.70' T=12.56'  R=11.67' Δ=59°01'44" L=12.02' T=6.60'  R=3.00' Δ=90°00'00"	2.00'  S59°43'03"E 2.50'  S30°13'56"W 2.50'  N59°43'03"W 6.50'  S30°15'20"W 6.50'  S30°13'55"W 2.50'  S30°14'56"W 43.65'  N59°46'03"W 5.08'  S30°14'56"W	2958851.425 2958850.165 2958848.004 2958849.264 2958843.652 2958841.495 2958830.002 2958792.298 2958791.218 2958793.778	780891.958 780894.115 780892.856 780890.698 780886.168 780886.010 780864.023 780855.528 780844.309
L110 L111 L112 L113 L114 C106 L115 C107 L116 L117	2958868.634 2958851.425 2958850.165 2958848.004 2958849.264 2958843.652 2958841.495 2958830.002 2958792.298 2958791.218 2958793.778	780887.715 780891.958 780894.115 780892.856 780890.698 780887.425 780886.168 780886.010 780864.023 780855.528	L=19.70' T=12.56'  R=11.67' Δ=59°01'44" L=12.02' T=6.60'  R=3.00' Δ=90°00'00"	2.00'  S59°43'03"E 2.50'  S30°13'56"W 2.50'  N59°43'03"W 6.50'  S30°13'55"W 2.50'  S30°13'55"W 2.50'  N59°46'03"W 5.08'  S30°14'56"W 22.27'  S59°45'04"E	2958851.425 2958850.165 2958848.004 2958849.264 2958843.652 2958841.495 2958830.002 2958792.298 2958791.218 2958793.778 2958774.539	780891.958 780894.115 780892.856 780890.698 780887.425 780886.168 780886.010 780864.023 780859.920 780855.528 780844.309 780848.700
L110 L111 L112 L113 L114 C106 L115 C107 L116 L117 L118	2958868.634 2958851.425 2958850.165 2958848.004 2958849.264 2958843.652 2958841.495 2958830.002 2958792.298 2958791.218 2958793.778 2958774.539	780887.715 780891.958 780894.115 780892.856 780890.698 780886.168 780886.168 780886.010 780864.023 780855.528 780844.309	$R=11.67^{'}$ $\Delta=59^{\circ}01'44"$ $L=12.02'$ $T=6.60'$ $\Delta=90^{\circ}00'00"$ $L=4.71'$ $T=3.00'$ $\Delta=82^{\circ}06'02"$	2.00'  S59°43'03"E 2.50'  S30°13'56"W 2.50'  N59°43'03"W 6.50'  S30°13'55"W 2.50'  S30°13'55"W 2.50'  N59°46'03"W 5.08'  S30°14'56"W 22.27'  S59°45'04"E	2958851.425 2958850.165 2958848.004 2958849.264 2958843.652 2958841.495 2958830.002 2958792.298 2958791.218 2958793.778 2958774.539 2958771.978	780891.958 780894.115 780892.856 780890.698 780887.425 780886.168 780886.010 780864.023 780859.920 780855.528 780844.309 780849.959
L110 L111 L112 L113 L114 C106 L115 C107 L116 L117 L118 C108	2958868.634 2958851.425 2958850.165 2958848.004 2958849.264 2958843.652 2958841.495 2958830.002 2958792.298 2958791.218 2958791.218 2958771.978	780887.715 780891.958 780894.115 780892.856 780890.698 780886.168 780886.100 780864.023 780855.528 780844.309 780848.700	$R=11.67^{'}$ $\Delta=59^{\circ}01'44"$ $L=12.02'$ $T=6.60'$ $\Delta=90^{\circ}00'00"$ $L=4.71'$ $T=3.00'$ $\Delta=82^{\circ}06'02"$	2.00'  S59°43'03"E 2.50'  S30°13'56"W 2.50'  N59°43'03"W 2.50'  S30°15'20"W 6.50'  S30°13'55"W 2.50'  S30°14'56"W 43.65'  N59°46'03"W 5.08'  S30°14'56"W 22.27'  S59°45'04"E 5.08'	2958851.425 2958850.165 2958848.004 2958849.264 2958843.652 2958841.495 2958890.002 2958792.298 2958791.218 2958793.778 2958774.539 2958771.978 2958768.182	780891.958 780894.115 780892.856 780890.698 780886.168 780886.010 780864.023 780859.920 780855.528 780844.309 780849.959 780828.188
L110 L111 L112 L113 L114 C106 L115 C107 L116 L117 L118 C108 L119	2958868.634 2958851.425 2958850.165 2958848.004 2958849.264 2958843.652 2958841.495 2958830.002 2958792.298 2958791.218 2958793.778 2958774.539 2958771.978 2958768.182	780887.715 780891.958 780894.115 780892.856 780892.856 780887.425 780886.168 780886.010 780864.023 780855.528 780844.309 780849.959	$R=11.67^{\circ}$ $\Delta=59^{\circ}01'44"$ $L=12.02'$ $T=6.60'$ $R=3.00^{\circ}$ $\Delta=90^{\circ}00'00"$ $L=4.71'$ $T=3.00'$ $R=3.00^{\circ}$ $\Delta=82^{\circ}06'02"$ $L=4.36'$ $T=2.65'$	2.00'  S59°43'03"E 2.50'  S30°13'56"W 2.50'  N59°43'03"W 2.50'  S30°15'20"W 6.50'  S30°13'55"W 2.50'  S30°14'56"W 43.65'  N59°46'03"W 5.08'  S30°14'56"W 22.27'  S59°45'04"E 5.08'	2958851.425 2958850.165 2958848.004 2958849.264 2958843.652 2958841.495 29588792.298 2958791.218 2958793.778 2958774.539 2958771.978 2958768.182 2958730.849	780891.958 780894.115 780892.856 780890.698 780886.168 780886.168 7808864.023 780855.528 780844.309 780848.700 780849.959 780828.188 780824.085
L110 L111 L112 L113 L114 C106 L115 C107 L116 L117 L118 C108 L119 C109	2958868.634 2958851.425 2958850.165 2958848.004 2958849.264 2958841.495 2958830.002 2958792.298 2958792.298 2958791.218 2958793.778 2958774.539 2958771.978 2958768.182 2958730.849	780887.715 780891.958 780894.115 780892.856 7808892.856 780887.425 780886.168 780886.010 780864.023 780859.920 780855.528 780844.309 780849.959 780828.188	$R=11.67^{\circ}$ $\Delta=59^{\circ}01'44"$ $L=12.02'$ $T=6.60'$ $R=3.00^{\circ}$ $\Delta=90^{\circ}00'00"$ $L=4.71'$ $T=3.00'$ $R=3.00^{\circ}$ $\Delta=82^{\circ}06'02"$ $L=4.36'$ $T=2.65'$	2.00'  S59°43'03"E 2.50'  S30°13'56"W 2.50'  S30°15'20"W 6.50'  S30°13'55"W 2.50'  S30°14'56"W 43.65'  N59°46'03"W 5.08'  S30°14'56"W 22.27'  S59°45'04"E 5.08'  S30°14'56"W 43.22'	2958851.425 2958850.165 2958848.004 2958849.264 2958843.652 2958841.495 29588792.298 2958791.218 2958793.778 2958774.539 2958771.978 2958768.182 2958730.849 2958729.769	780891.958 780894.115 780892.856 780890.698 780887.425 780886.168 780886.010 780864.023 780859.920 780855.528 780844.309 780849.959 780828.188 780824.085
L110 L111 L112 L113 L114 C106 L115 C107 L116 L117 L118 C108 L119 C109 L120	2958868.634 2958851.425 2958850.165 2958848.004 2958849.264 2958841.495 2958830.002 2958792.298 2958792.298 2958791.218 2958774.539 2958771.978 2958768.182 2958730.849 2958729.769	780887.715 780891.958 780894.115 780892.856 780890.698 780886.168 780886.100 780864.023 780855.528 780844.309 780848.700 780849.959 780828.188 780824.085	$R=11.67^{\circ}$ $\Delta=59^{\circ}01'44"$ $L=12.02'$ $T=6.60'$ $R=3.00^{\circ}$ $\Delta=90^{\circ}00'00"$ $L=4.71'$ $T=3.00'$ $R=3.00^{\circ}$ $\Delta=82^{\circ}06'02"$ $L=4.36'$ $T=2.65'$	2.00'  S59°43'03"E 2.50'  S30°13'56"W 2.50'  N59°43'03"W 6.50'  S30°13'55"W 2.50'  S30°13'55"W 2.50'  S30°14'56"W 43.65'  S30°14'56"W 22.27'  S59°45'04"E 5.08'  S30°14'56"W 43.22'  N59°45'04"W 1.50'  S30°14'56"W	2958851.425 2958850.165 2958848.004 2958849.264 2958843.652 2958841.495 29588792.298 2958791.218 2958791.218 2958774.539 2958771.978 2958771.978 2958768.182 2958730.849 2958730.525	780891.958 780894.115 780892.856 780892.856 780887.425 780886.168 780886.010 780864.023 780859.920 780855.528 780844.309 780849.959 780828.188 780822.790 780812.712
L110  L111  L112  L113  L114  C106  L115  C107  L116  L117  L118  C108  L119  C109  L120  L121	2958868.634 2958851.425 2958850.165 2958848.004 2958849.264 2958843.652 2958841.495 2958892.298 2958792.298 2958791.218 2958793.778 2958774.539 2958771.978 2958771.978 2958768.182 2958730.849 2958730.525	780887.715 780891.958 780894.115 780892.856 780890.698 780886.168 780886.100 780864.023 780855.528 780844.309 780844.309 780848.700 780849.959 780828.188 780822.790	$R=11.67^{\circ}$ $\Delta=59^{\circ}01'44"$ $L=12.02'$ $T=6.60'$ $R=3.00^{\circ}$ $\Delta=90^{\circ}00'00"$ $L=4.71'$ $T=3.00'$ $R=3.00^{\circ}$ $\Delta=82^{\circ}06'02"$ $L=4.36'$ $T=2.65'$	2.00'  S59°43'03"E 2.50'  S30°13'56"W 2.50'  N59°43'03"W 6.50'  S30°15'20"W 6.50'  S30°13'55"W 2.50'  S30°14'56"W 43.65'  N59°46'03"W 5.08'  S30°14'56"W 22.27'  S59°45'04"E 5.08'  N59°45'04"E 5.08'  N59°45'04"E 5.08'	2958851.425 2958850.165 2958848.004 2958849.264 2958843.652 2958841.495 29588792.298 2958791.218 2958793.778 2958774.539 2958774.539 2958774.539 29587769.298	780891.958 780894.115 780892.856 780890.698 780887.425 780886.168 780886.010 780864.023 780855.528 780844.309 780849.959 780828.188 780822.790 780812.712 780814.008
L110 L111 L112 L113 L114 C106 L115 C107 L116 L117 L118 C108 L119 C109 L120 L121 L122	2958868.634 2958851.425 2958850.165 2958848.004 2958849.264 2958843.652 2958841.495 2958830.002 2958792.298 2958791.218 2958791.218 2958771.978 2958774.539 2958771.978 29587730.849 2958730.849 2958730.525 2958713.244	780887.715 780891.958 780894.115 780892.856 7808892.856 780887.425 780886.168 780886.010 780864.023 780855.528 780844.309 780849.959 780828.188 780822.790 780812.712	$L=19.70'$ $T=12.56'$ $R=11.67'$ $\Delta=59^{\circ}01'44"$ $L=12.02'$ $T=6.60'$ $R=3.00'$ $\Delta=90^{\circ}00'00"$ $L=4.71'$ $T=3.00'$ $R=3.00'$ $\Delta=90^{\circ}00'00"$ $L=4.71'$ $T=3.00'$	2.00'  S59°43'03"E 2.50'  S30°13'56"W 2.50'  N59°43'03"W 6.50'  S30°15'20"W 6.50'  S30°13'55"W 2.50'  S30°14'56"W 43.65'  N59°46'03"W 5.08'  S30°14'56"W 22.27'  S59°45'04"E 5.08'  N59°45'04"E 5.08'  N59°45'04"E 5.08'	2958851.425 2958850.165 2958848.004 2958849.264 2958843.652 2958841.495 29588792.298 2958791.218 2958793.778 2958774.539 2958774.539 2958771.978 29587768.182 2958730.849 2958730.525 2958713.244 2958712.488	780891.958 780894.115 780892.856 780890.698 780887.425 780886.168 780886.100 780864.023 780855.528 780844.309 780848.700 780849.959 780822.790 780812.712 780814.008
L110  L111  L112  L113  L114  C106  L115  C107  L116  L117  L118  C108  L119  C109  L120  L121  L122  C110	2958868.634 2958851.425 2958850.165 2958848.004 2958849.264 2958843.652 2958841.495 2958830.002 2958792.298 2958791.218 2958793.778 2958774.539 2958774.539 2958774.539 2958774.539 2958774.539	780887.715 780891.958 780894.115 780892.856 7808892.856 780887.425 780886.168 780886.010 780859.920 780855.528 780844.309 780849.959 780822.790 780812.712 780814.008	$L=19.70'$ $T=12.56'$ $R=11.67'$ $\Delta=59^{\circ}01'44"$ $L=12.02'$ $T=6.60'$ $R=3.00'$ $\Delta=90^{\circ}00'00"$ $L=4.71'$ $T=3.00'$ $R=3.00'$ $\Delta=90^{\circ}00'00"$ $L=4.71'$ $T=3.00'$	2.00'  S59°43'03"E 2.50'  S30°13'56"W 2.50'  S30°15'20"W 6.50'  S30°13'55"W 2.50'  S30°14'56"W 43.65'  N59°46'03"W 5.08'  S30°14'56"W 22.27'  S59°45'04"E 5.08'  S30°14'56"W 43.22'  N59°45'04"W 1.50'  S30°14'56"W 20.00'  S59°45'04"E 1.50'	2958851.425 2958850.165 2958848.004 2958849.264 2958843.652 2958841.495 29588792.298 2958791.218 2958791.218 2958774.539 2958771.978 2958771.978 29587730.849 2958730.849 2958730.525 2958713.244 2958713.244	780891.958 780894.115 780892.856 780890.698 780887.425 780886.168 780886.010 780864.023 780855.528 780844.309 780849.959 780822.790 780812.712 780812.712 780815.088 780792.924
L110  L111  L112  L113  L114  C106  L115  C107  L116  L117  L118  C108  L119  C109  L120  L121  L122  C110  L123	2958868.634 2958851.425 2958850.165 2958848.004 2958849.264 2958843.652 2958841.495 2958830.002 2958792.298 2958792.298 2958793.778 2958774.539 2958774.539 2958774.539 2958774.539 2958774.539 2958774.539	780887.715 780891.958 780894.115 780892.856 7808892.856 780887.425 780886.168 780886.010 780864.023 780855.528 780844.309 780849.959 780822.790 780812.712 780814.008 780815.088	L=19.70' T=12.56'  R=11.67' Δ=59°01'44" L=12.02' T=6.60'  R=3.00' Δ=90°00'00" L=4.71' T=3.00'  R=3.00' Δ=90°00'00" L=4.71' T=3.00'  R=3.00' Δ=90°00'00" L=4.71' T=3.00'	2.00'  S59°43'03"E 2.50'  S30°13'56"W 2.50'  S30°15'20"W 6.50'  S30°13'55"W 2.50'  S30°14'56"W 43.65'  N59°46'03"W 5.08'  S30°14'56"W 22.27'  S59°45'04"E 5.08'  S30°14'56"W 43.22'  N59°45'04"W 1.50'  S30°14'56"W 20.00'  S59°45'04"E 1.50'	2958851.425 2958850.165 2958848.004 2958849.264 2958843.652 2958841.495 29588792.298 2958791.218 2958774.539 2958771.978 2958771.978 29587730.849 2958730.849 2958730.525 2958713.244 2958713.244 2958713.244	780891.958 780894.115 780892.856 780890.698 780887.425 780886.168 780886.010 780864.023 780859.920 780855.528 780844.309 780849.959 780822.790 780822.790 780812.712 780814.008 780792.924 780792.924 780792.924
L110  L111  L112  L113  L114  C106  L115  C107  L116  L117  L118  C108  L119  C109  L120  L121  L122  C110  L123  C111	2958868.634 2958851.425 2958850.165 2958848.004 2958849.264 2958843.652 2958841.495 2958830.002 2958792.298 2958792.298 2958791.218 2958771.978 2958771.978 29587730.849 2958730.849 2958730.525 2958713.244 2958713.244 2958713.244 2958708.385	780887.715 780891.958 780894.115 780892.856 7808892.856 780887.425 780886.168 780886.010 780864.023 780855.528 780844.309 780849.959 780849.959 780822.790 780812.712 780812.712 780815.088 780792.924	L=19.70' T=12.56'  R=11.67' Δ=59°01'44" L=12.02' T=6.60'  R=3.00' Δ=90°00'00" L=4.71' T=3.00'  R=3.00' Δ=90°00'00" L=4.71' T=3.00'  R=3.00' Δ=90°00'00" L=4.71' T=3.00'	2.00'  S59°43'03"E 2.50'  S30°13'56"W 2.50'  S30°15'20"W 6.50'  S30°13'55"W 2.50'  S30°13'55"W 2.50'  S30°14'56"W 43.65'  N59°46'03"W 5.08'  S30°14'56"W 22.27'  S59°45'04"E 5.08'  N59°45'04"E 1.50'  S30°14'56"W 43.22'  N59°45'04"E 1.50'  S30°14'56"W 43.22'	2958851.425 2958850.165 2958848.004 2958849.264 2958843.652 2958841.495 29588792.298 2958791.218 2958774.539 2958774.539 2958771.978 29587730.849 2958730.849 2958730.525 2958713.244 2958713.244 2958712.488 2958708.385 2958669.298	780891.958 780894.115 780892.856 780890.698 780886.168 780886.010 780864.023 780855.528 780844.309 780848.700 780849.959 780822.790 780812.712 780814.008 780815.088 780792.924 780787.525
L110  L111  L112  L113  L114  C106  L115  C107  L116  L117  L118  C108  L119  C109  L120  L121  L122  C110  L123  C111  L124	2958868.634 2958851.425 2958850.165 2958848.004 2958849.264 2958843.652 2958830.002 2958792.298 2958792.298 2958791.218 2958771.978 2958774.539 2958774.539 29587730.849 2958730.849 2958730.525 2958730.525 2958713.244 2958712.488 2958708.385 2958669.298	780887.715 780891.958 780894.115 780892.856 7808892.856 780887.425 780886.168 780886.010 780855.528 780844.309 780844.309 780849.959 780822.790 780822.790 780812.712 780812.712 780815.088 780792.924 780792.924 780788.821	L=19.70' T=12.56'  R=11.67' Δ=59°01'44" L=12.02' T=6.60'  R=3.00' Δ=90°00'00" L=4.71' T=3.00'  R=3.00' Δ=90°00'00" L=4.71' T=3.00'  R=3.00' Δ=90°00'00" L=4.71' T=3.00'	2.00'  S59°43'03"E 2.50'  S30°13'56"W 2.50'  S30°15'20"W 6.50'  S30°13'55"W 2.50'  S30°13'55"W 2.50'  S30°14'56"W 43.65'   N59°46'03"W 5.08'  S30°14'56"W 22.27'  S59°45'04"E 5.08'  N59°45'04"E 1.50'  S30°14'56"W 20.00'  S59°45'04"E 1.50'	2958851.425 2958850.165 2958848.004 2958849.264 2958843.652 2958841.495 29588792.298 2958791.218 2958791.218 2958774.539 2958774.539 2958771.978 29587730.849 2958730.849 2958730.525 2958730.525 2958730.525 2958713.244 2958713.244 2958713.244 2958713.244 295870.378	780891.958 780894.115 780892.856 780890.698 780886.168 780886.168 7808864.023 780855.528 780844.309 780849.959 780822.790 780822.790 780812.712 780814.008 780815.088 780792.924 780787.525 780777.450
L110  L111  L112  L113  L114  C106  L115  C107  L116  L117  L118  C108  L119  C109  L120  L121  L122  C110  L123  C111  L124  L125	2958868.634 2958851.425 2958850.165 2958848.004 2958849.264 2958843.652 2958841.495 2958830.002 2958792.298 2958791.218 2958774.539 2958774.539 2958774.539 2958774.539 2958774.539 2958774.539 2958774.539 2958774.539 2958774.539	780887.715 780891.958 780894.115 780892.856 7808892.856 780887.425 780886.168 780886.010 780859.920 780855.528 780844.309 780849.959 780822.790 780822.790 780812.712 780812.712 780815.088 780792.924 780783.821 780787.525	L=19.70' T=12.56'  R=11.67' Δ=59°01'44" L=12.02' T=6.60'  R=3.00' Δ=90°00'00" L=4.71' T=3.00'  R=3.00' Δ=90°00'00" L=4.71' T=3.00'  R=3.00' Δ=90°00'00" L=4.71' T=3.00'	2.00'  S59°43'03"E 2.50'  S30°13'56"W 2.50'  S30°15'20"W 6.50'  S30°13'55"W 2.50'  S30°13'55"W 2.50'  S30°14'56"W 43.65'   N59°46'03"W 5.08'  S30°14'56"W 22.27'  S59°45'04"E 5.08'  S30°14'56"W 43.22'  N59°45'04"W 1.50'  S30°14'56"W 20.00'  S59°45'04"E 1.50'  S30°14'56"W 20.00'  S59°45'04"E 1.50'	2958851.425 2958850.165 2958848.004 2958849.264 2958843.652 2958841.495 29588792.298 2958791.218 2958791.218 2958774.539 2958771.978 2958771.978 2958730.849 2958730.525 2958730.525 2958713.244 2958713.244 2958713.244 2958713.244 295870.378 2958669.298 2958670.054	780891.958 780894.115

Note		ED	GE OF PAT	H 2 CONSTRUCTION E	BASELINE D	ATA	
	NUMBER			CURVE DATA	LINE DATA		ENDING EASTING
Column	L128	2958608.829	780753.558			2958609.579	780752.27
Color	L129	2958609.579	780752.272		S30°14'56"W	2958592.302	780742.19
	L130	2958592.302	780742.196		S59°45'04"E	2958591.552	780743.48
	C114	2958591 552	780743 483		1.49	2958587 449	780744 56
				L=4.71' T=3.00'	S30°14'56"W		
11		2958587.449		R-3 00'	42.86'		
	C115	2958550.422	780722.970		N.50° 40100 WA	2958549.342	780718.86
	L132	2958549.342	780718.868			2958551.901	780714.47
Color	L133	2958551.901	780714.476			2958532.663	780703.25
Color	L134	2958532.663	780703.256			2958530.102	780707.64
C11	C116	2958530.102	780707.648			2958525.999	780708.72
	L135	2958525.999	780708.728			2958524.271	780707.72
	C117	2958524.271	780707.720			2958522.108	780699.51
Number   STATTING	L136	2958522.108	780699.519	L-9.42 1-5.99		2958530.525	780685.05
Notification   STANTING				EFA 1 CONSTRUCTION			
No.	NUMBER	STARTING	STARTING			ENDING	ENDING
C118				33111231111			
Line				R=4.00' Δ=90°00'00"	83.45'		
C199					\$30°14/E6/04		780760.20
Life   2058014.309   780721.509	L138	2958590.449	780760.204	D 42.55		2958518.074	780717.99
C120	C119	2958518.074	780717.998			2958504.398	780721.59
Life   Description   Property	L139	2958504.398	780721.599			2958477.069	780768.46
Life   2688478   780774.046	C120	2958477.069	780768.464			2958478.168	780772.53
Life	L140	2958478.168	780772.535			2958480.760	780774.04
L142	L141	2958480.760	780774.046		S59°45'07"E	2958456.244	780816.08
C121   256843.062   780814.675   R=3.00   A=697-9938*   2968448.505   780816.065   R   15.00*   A=697-9938*   2968448.505   780816.065   R   15.00*   A=697-9938*   2968448.605   780818.605   780818.605   R   15.00*   A=697-9938*   2968448.605   78081	I 142	2958456 244	780816 087		S30°14'56"W	2958453 652	780814 57
Life   295840.5502   750814.075   L=4.71* T=3.00   S6074*827E   295840.805   760818.95				R=3.00° Δ=89°59'38"	3.00'		
C122   2958448.050   780616.956   R   15.00   Δ-80°55°14   2958449.272   780832.828   780632.8	C121	2958453.652	/80814.575		\$60°14'03"E	2958449.550	
C122	L143	2958449.550	780815.656			2958448.805	780816.95
Life	C122	2958448.805	780816.958	L=16.72' T=9.35'		2958449.272	780832.82
L144   295493.119   780639.366   6.48   2956470.147   780838.794   NOT4823TW   2956476.601   780838.703   NOT4823TW   2956476.601   780838.703   NOT4823TW   2956476.601   780838.703   NOT4823TW   2956476.601   780838.703   NOT4823TW   2956495.536   780839.030   NOT00027E   2956495.536   780849.560   780839.030   NOT00027E   2956495.541   780849.304   NOT00027E   2958495.914   780849.304   NOT00027E   2958495.914   780849.304   NOT00027E   2958495.914   780849.304   NOT00027E   2958500.267   780849.904   NOT00027E   2958500.265   780844.000   NOT00027E   2958500.265   780845.855   780845.855   NOT00027E   2958500.265   780845.855   NOT00027E   2958500.265   780845.855   7	C123	2958449.272	780832.820			2958463.719	780839.38
Life   2958476.801   780938.703	L144	2958463.719	780839.386			2958470.147	780838.79
Life	L145	2958470.147	780838.794			2958476.601	780838.70
L144   298480.589   780839.040   7.06   299489.593   780839.647   780840.300   7.06   2995489.593   780839.647   780840.300   780840.	L146	2958476.601	780838.703		_	2958483.538	780839.03
L148	L147	2958483.538	780839.030			2958490.569	780839.64
L149	L148	2958490.569	780839.647		N7°00'02"E	2958495.914	780840.30
L150 2958500.267 780840.940	L149	2958495.914	780840.304		N8°18'59"E	2958500.267	780840.94
L151 2958504.926 780841.723 N10*4533*E 2958508.565 780842.411 L152 2958508.565 780842.414 N12*13*15*E 2958516.888 780844.00 L153 2958515.888 780844.000 N14*06*50*E 7.60* 2958523.260 780845.854 L154 2958523.260 780845.854 N15*29*31*E 2958523.260 780845.854 C124 2958526.999 780846.880 R=20.00 A=76*03*35* 2958549.852 780837.75  HARBOR WALK EDGE CONSTRUCTION BASELINE DATA  NUMBER STARTING STARTING CURVE DATA LINE DATA ENDING RASTING 2958508.324 780671.195 442.10* 2958526.604 781053.101 N30*14*47*E 2958303.296 781063.417 S56*4500*E 2958267.627 781123.409 N30*12*58*E 2958267.627 781123.409 N30*12*58*E 2958338.810 781164.86  NUMBER NORTHING EASTING CURVE DATA LINE DATA ENDING RASTING NORTHING EASTING	I 150	2958500 267				2958504 926	
L152 2958508.565 780842.414 N12*13*15*E 2958515.888 780844.000 N14*06*50*E 2958523.260 780845.85  L153 2958515.888 780844.000 N14*06*50*E 2958523.260 780845.85  L154 2958523.260 780845.854 N15*29*51*E 2958523.260 780846.88  C124 2958526.959 780846.880 R 20.000 A=76*03*35* 2958549.852 780837.75  HARBOR WALK EDGE CONSTRUCTION BASELINE DATA  NUMBER STARTING PASSED PA							
L152 2958308.565 780842.414 7.49 2958318.886 780844.000 N14*06*50*E 2958523.260 780845.85  L153 2958515.888 780844.000 N14*06*50*E 2958523.260 780845.85  L154 2958523.260 780845.854 N15*29*51*E 2958523.260 780845.85  L154 2958526.959 780846.880 R-20.00* Δ=76*0335** 2958549.852 780837.75  HARBOR WALK EDGE CONSTRUCTION BASELINE DATA  NUMBER NORTHING EASTING CURVE DATA LINE DATA ENDING NORTHING EASTING 442.10** 2958265.004 781053.101  L155 2958508.324 780671.195 S59*4500*E 2958267.627 781123.400  L156 2958267.627 781123.409 N30*1258*E 2958267.627 781123.40  L157 2958303.296 781063.417 S59*15*8*E 2958267.627 781123.40  L158 2958267.627 781123.409 N30*1258*E 295838.810 781164.86  NUMBER STARTING CURVE DATA LINE DATA ENDING RASTING CURVE DATA LINE DATA  NUMBER STARTING STARTING CURVE DATA LINE DATA ENDING EASTING CURVE DATA LINE DATA  NUMBER NORTHING EASTING CURVE DATA LINE DATA ENDING EASTING CURVE DATA LINE DATA  L159 2958327.616 781059.482 S30*14*56*W 7.95* 2958320.753 781055.479  L160 2958318.120 781055.479 R-6.00* Δ=40*14*28*  2958318.120 781052.30  L161 2958317.221 781049.763 S70*293*W 2958315.520 781044.71  L162 2958315.520 781044.714 S79*07*15*W 2958314.250 781028.63  L164 2958314.369 781028.634 N82*2308*W 2958314.369 781028.63  L165 2958314.369 781028.634 N82*2308*W 2958314.369 781028.63  L166 2958314.369 781028.634 N82*2308*W 2958314.260 781028.63  L166 2958314.369 781028.634 N82*2308*W 2958314.369 781028.63  L166 2958314.368 781026.259 N77*23*18*W 2958314.488 781009.58  L166 2958314.488 781009.581 N56*4802*W 2958314.488 781009.58  L166 2958318.428 781009.581 N56*4802*W 2958314.400 780988.87  L168 2958318.428 781009.581 N56*4802*W 2958314.400 780988.87	L151	2958504.926	780841.723		3.70'	2958508.565	780842.41
L153	L152	2958508.565	780842.414		7.49'	2958515.888	780844.00
C124   2958526.969   780846.880   R = 20.00	L153	2958515.888	780844.000		7.60'	2958523.260	780845.85
HARBOR WALK EDGE CONSTRUCTION BASELINE DATA  NUMBER STARTING NORTHING EASTING LIST 2958285.604 T81053.101  L155 2958285.604 781053.101 S59*45'00"E 442.10* 2958285.604 781053.101  L156 2958285.604 781053.101 S59*45'00"E 42.10* 2958285.604 781053.101  L157 2958303.296 781063.417 S59*15'58"E 2958286'.627 781123.409 S59*15'58"E 2958286'.627 781123.409 S30*14'5"E 2958338.810 781164.86  LANDSCAPE AREA 5 CONSTRUCTION BASELINE DATA  NUMBER STARTING NORTHING EASTING CURVE DATA LINE DATA SINDING NORTHING EASTING PASELINE DATA  L159 2958327.616 781059.482 S30*14'56"W 7.95* 2958320.753 781055.479 R=6.00*	L154	2958523.260	780845.854			2958526.959	780846.88
NUMBER STARTING RASTING CURVE DATA LINE DATA NORTHING EASTING L156 2958508.324 780671.195 S59"45'00"E 442.10" 2958285.604 781053.101 S59"45'00"E 2048" 2958285.604 781053.101 S59"15'58"E 2048" 2958303.296 781063.417 S59"15'58"E 2958303.296 781063.417 S59"15'58"E 2958303.296 781123.409 S59"15'58"E 2958303.810 781164.86 EASTING RASTING RASTING CURVE DATA LINE DATA NORTHING EASTING EASTING CURVE DATA LINE DATA NORTHING EASTING EASTING CURVE DATA LINE DATA S18411.00 PARTING EASTING EASTING CURVE DATA S18411.00 PARTING EASTING EASTIN	C124	2958526.959	780846.880			2958549.852	780837.75
NUMBER NORTHING EASTING CURVE DATA LINE DATA NORTHING EASTING L155 2958508.324 780671.195 \$559*45'00"E 442.10" 2958285.604 781053.101 \$130*42.10" 2958303.296 781063.417 \$2958303.296 781063.417 \$2958303.296 781063.417 \$2958303.296 781063.417 \$2958303.296 781123.409 \$2958267.627 781123.409 \$2958267.627 781123.409 \$2958267.627 781123.409 \$295832.37" 2958338.810 781164.86		HARB	OR WALK E	EDGE CONSTRUCTION	N BASELINE	DATA	
L155 2958308.324 780671.195 442.10' 2958285.604 781053.101  L156 2958285.604 781053.101 N30°14'47"E 2058303.296 781063.41  L157 2958303.296 781063.417 S59°15'58"E 69.80' 2958267.627 781123.409  LANDSCAPE AREA 5 CONSTRUCTION BASELINE DATA  NUMBER STARTING NORTHING EASTING CURVE DATA LINE DATA NORTHING EASTING EASTING SA0°14'56"W 7.95' 2958320.753 781055.47  C125 2958320.753 781055.479 R=6.00' \( \text{D} = 40°14'28'' \) 2958318.120 781052.30  L160 2958318.120 781052.300 S70°29'23"W 2958317.221 781049.763  L161 2958317.221 781049.763 S71°29'13"W 2958317.221 781049.763  L162 2958315.520 781044.714 S79°07'15"W 2958314.250 781038.10  L163 2958314.250 781038.105 N89°17'00"W 2958314.260 781038.10  L164 2958314.369 781028.634 N82°23'08"W 2958314.686 781028.635  L165 2958314.369 781028.634 N82°23'08"W 2958318.428 781009.586  L166 2958318.428 781009.581 N66°55'59"W 2958339.665 780070.97  L168 2958326.818 780989.878 N81°38'54E 2958339.665 780070.97	NUMBER			CURVE DATA	LINE DATA		
L156	L155	2958508.324	780671.195			2958285.604	781053.10
L157 2958303.296 781063.417 S59°15′58″E 69.80′ 2958267.627 781123.40   L158 2958267.627 781123.409 N30°12′58″E 2958338.810 781164.86    LANDSCAPE AREA 5 CONSTRUCTION BASELINE DATA  NUMBER STARTING NORTHING EASTING CURVE DATA LINE DATA ENDING EASTING EASTING STARTING EASTING EASTING CURVE DATA LINE DATA S1055.47   C125 2958320.753 781055.479 R=6.00′ Δ=40°14′28″ 2958318.120 781052.30   L160 2958318.120 781052.300 S70°29′23″W 2958317.221 781049.76   L161 2958317.221 781049.763 S71°23′10″W 5.33′ 2958314.250 781044.71   L162 2958314.250 781038.105 N89°17′00″W 9.47′ 2958314.369 781028.63   L164 2958314.369 781028.634 N82°23′08″W 2958314.686 781026.25   L165 2958318.428 781009.581 N86°55′59″W 2958326.818 780989.87   L166 2958318.428 780989.878 N86°55′59″W 2958339.665 780970.97   L168 295834.686 780989.878 N86°55′59″W 2958339.665 780970.97   L168 295834.686 780989.878 N86°55′59″W 2958339.665 780970.97   L168 2958339.665 780970.974 N81°38′54″E 295834.442 780976.626   N81°38′54″E 295834.442 780976.626   N81°38′54″E 295834.442 780970.974 N81°38′54″E 295834.442 780976.626   N81°38′54″E 295834.442 780970.974 N81°38′54″E 295834.442 780976.626   N81°38′54″E 295834.442 780970.974 N81°38′54″E 295834.442 780976.626   N81°38′54″E 295834.442 780976.626   N81°38′54″E 295834.642 780970.974 N81°38′54″E 295834.642 780976.626   N81°38′54″E 295834.642 780970.974 N81°38′54″E 295834.6442 780976.626   N81°38′54″E 2958346   N81°38′54″E 295834	L156	2958285.604	781053.101		N30°14'47"E	2958303.296	781063.41
L158 2958267.627 781123.409 N30°12758°E 82.37' 2958338.810 781164.86  LANDSCAPE AREA 5 CONSTRUCTION BASELINE DATA  NUMBER STARTING NORTHING EASTING EASTING CURVE DATA LINE DATA ENDING EASTING EASTING EASTING STARTING EASTING EAST	L157	2958303.296	781063.417		S59°15'58"E	2958267.627	781123.40
LANDSCAPE AREA 5 CONSTRUCTION BASELINE DATA  NUMBER STARTING STARTING EASTING CURVE DATA LINE DATA STARTING EASTING E	L158	2958267 627	781123.409		N30°12'58"E	2958338.810	781164 86
NUMBER STARTING NORTHING EASTING CURVE DATA LINE DATA RORTHING EASTING EASTING STARTING NORTHING EASTING EASTING EASTING STARTING STARTING EASTING EASTING EASTING EASTING STARTING STARTING EASTING EASTING EASTING EASTING STARTING STARTING EASTING				EA 5 CONSTRUCTION			1.51.00
NORTHING   EASTING   S30°14'56"W   2958320.753   781055.47	NUMRER	STARTING	STARTING			ENDING	
L159         2958327.516         781059.482         7.95'         2958320.753         781059.472           C125         2958320.753         781055.479         R=6.00' Δ=40°14'28" L=4.21' T=2.20'         2958318.120         781052.30           L160         2958318.120         781052.300         \$70°29'23"W 2.69"         2958317.221         781049.76           L161         2958317.221         781049.763         \$71°23'10"W 5.33'         2958315.520         781044.71           L162         2958315.520         781044.714         \$79°07'15"W 6.73'         2958314.250         781038.10           L163         2958314.250         781038.105         \$89°17'00"W 9.47'         2958314.369         781028.63           L164         2958314.369         781028.634         \$82°23'08"W 2.40'         2958314.686         781026.25           L165         2958314.686         781026.259         \$877°21'18"W 17.09'         2958318.428         781009.58           L166         2958318.428         781009.581         \$86°55'59"W 2.42'         2958339.665         780970.97           L167         2958326.818         780989.878         \$88'4'02"W 2.86'         2958339.665         780970.97           L168         2958339.665         780970.974         \$88'4'02"W 2.86'         2958340.442				JOINT DAIL			
C125         2958320.753         781055.479         L=4.21'         T=2.20'         2958318.120         781052.300         570°29'23"W 2.69'         2958317.221         781049.76           L161         2958317.221         781049.763         S71°23'10"W 5.33'         2958315.520         781044.71           L162         2958315.520         781044.714         S79°07'15"W 6.73'         2958314.250         781038.10           L163         2958314.250         781038.105         N89°17'00"W 				R=6.00'			
L160       2958318.120       781052.300       2.69'       2958317.221       781049.763         L161       2958317.221       781049.763       \$71°23'10"W 5.33'       2958315.520       781044.714         L162       2958315.520       781044.714       \$79°07'15"W 6.73'       2958314.250       781038.10         L163       2958314.250       781038.105       \$89°17'00"W 9.47'       2958314.369       781028.63         L164       2958314.369       781028.634       \$82°23'08"W 2.40'       2958314.686       781026.25         L165       2958314.686       781026.259       \$877°21'18"W 17.09'       2958318.428       781009.58         L166       2958318.428       781009.581       \$86°55'59"W 21.42'       2958326.818       780989.87         L167       2958326.818       780989.878       \$85°48'02"W 22.86'       2958339.665       780970.97         L168       2958339.665       780970.974       \$881°38'54"E 2858340.442       780976.26	C125	2958320.753	781055.479		070000000	2958318.120	781052.30
L161       2958317.221       781049.763       5.33'       2958315.520       781044.71         L162       2958315.520       781044.714       \$79°07'15"W 6.73'       2958314.250       781038.10         L163       2958314.250       781038.105       \$89°17'00"W 9.47'       2958314.369       781028.63         L164       2958314.369       781028.634       \$82°23'08"W 2.40'       2958314.686       781026.25         L165       2958314.686       781026.259       \$877°21'18"W 17.09'       2958318.428       781009.58         L166       2958318.428       781009.581       \$86°55'59"W 21.42'       2958326.818       780989.87         L167       2958326.818       780989.878       \$85°48'02"W 22.86'       2958339.665       780970.97         L168       2958339.665       780970.974       \$881°38'54"E       2958340.442       780976.26	L160	2958318.120	781052.300		2.69'	2958317.221	781049.76
L162       2958315.520       781044.714       6.73'       2958314.250       781038.10         L163       2958314.250       781038.105       N89°17'00"W 9.47'       2958314.369       781028.63         L164       2958314.369       781028.634       N82°23'08"W 2.40'       2958314.686       781026.25         L165       2958314.686       781026.259       N77°21'18"W 17.09'       2958318.428       781009.58         L166       2958318.428       781009.581       N66°55'59"W 2958326.818       780989.87         L167       2958326.818       780989.878       N55°48'02"W 22.86'       2958339.665       780970.97         L168       2958339.665       780970.974       N81°38'54"E       2958340.442       780976.26	L161	2958317.221	781049.763			2958315.520	781044.71
L163       2958314.250       781038.105       9.47'       2958314.369       781028.63         L164       2958314.369       781028.634       82°23'08"W 2.40'       2958314.686       781026.25         L165       2958314.686       781026.259       877°21'18"W 17.09'       2958318.428       781009.58         L166       2958318.428       781009.581       866°55'59"W 21.42'       2958326.818       780989.87         L167       2958326.818       780989.878       875°48'02"W 22.86'       2958339.665       780970.97         L168       2958339.665       780970.974       881°38'54"E       2958340.442       780976.26	L162	2958315.520	781044.714			2958314.250	781038.10
L164       2958314.369       781028.634       N82°23'08"W 2.40"       2958314.686       781026.25         L165       2958314.686       781026.259       N77°21'18"W 17.09"       2958318.428       781009.58         L166       2958318.428       781009.581       N66°55'59"W 2958326.818       780989.87         L167       2958326.818       780989.878       N55°48'02"W 2958339.665       780970.97         L168       2958339.665       780970.974       N81°38'54"E 2958340.442       780976.26	L163	2958314.250	781038.105			2958314.369	781028.63
L165       2958314.686       781026.259       N77°21'18"W 17.09'       2958318.428       781009.58         L166       2958318.428       781009.581       N66°55'59"W 21.42'       2958326.818       780989.87         L167       2958326.818       780989.878       N55°48'02"W 22.86'       2958339.665       780970.97         L168       2958339.665       780970.974       N81°38'54"E       2958340.442       780976.26	L164	2958314.369	781028.634		N82°23'08"W	2958314.686	781026.25
L166 2958318.428 781009.581 N66°55'59"W 2958326.818 780989.87  L167 2958326.818 780989.878 N55°48'02"W 2958339.665 780970.97  L168 2958339.665 780970.974 N81°38'54"E 2958340.442 780976.26	L165	2958314.686	781026.259		N77°21'18"W	2958318.428	781009.58
L167 2958326.818 780989.878					N66°55'59"W		
1167   2958326.818   780989.878   22.86'   2958339.665   780970.97 1168   2958339.665   780970.974   N81°38'54"E   2958340.442   780976.26							
1 168   1 7958339 665   780970 977		2958326.818			22.86'	∠⊎58339.665	780970.97
	L168	2958339.665	780970.974			2958340.442	780976.26



MASSACHUSETTS PORT AUTHORITY EAST BOSTON, MASSACHUSETTS 02128

PROJECT LOCATION:
MASSPORT PIERS PARK II
EAST BOSTON, MA 02128

MPA CONTRACT NO.: LOCATION CODE: L1540-C1

PROJECT SUBMISSION PHASE:

60% SUBMISSION
REGISTRATION STAMP:





REVI	SIONS:	
REV. NO.	DATE	DESCRIPTION

PRIMARY:	
KL	<b>EINFELDER</b> Bright People. Right Solutions.
	One Beacon St, Suite 8100 Boston, MA 02108 Phone: 617-497-7800 www.kleinfelder.com

CONSULTANT:

L1540-C1

PROJECT NUMBER AND TITLE:

MASSPORT PIERS PARK II

SHEET TITLE:

LAYOUT POINT TABLES 1

DISCIPLINE:

CIV/II

DESIGN BY: DRAWN BY: CHECKED BY:

MT -- --

SCALE: DATE: 1" = 20' 03/18/2022

SHEET NUMBER:

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NII IN 45.77	LANE STARTING	SCAPE AR	EA 5 CONSTRUCTION		DATA ENDING	ENDING
NUMBER	NORTHING	EASTING	CURVE DATA  R=20.00 Δ= 42°54'49"	LINE DATA	NORTHING	EASTING
C126	2958340.442	780976.261	L=14.98' T=7.86'	0.550004005	2958337.124	780990.512
L169	2958337.124	780990.512		S55°26'16"E 6.41'	2958333.486	780995.792
C127	2958333.486	780995.792	R=40.00° Δ=15°02'18" L=10.50' T=5.28'		2958328.727	781005.116
C128	2958328.727	781005.116	R=40.00 <sup>°</sup> Δ=22°22'15" L=15.62' T=7.91'		2958326.476	781020.471
C129	2958326.476	781020.471	R=43.95 <sup>°</sup> Δ= 10°28'50" L=8.04' T=4.03'		2958327.641	781028.414
L170	2958327.641	781028.414		N74°08'58"E 7.02'	2958329.559	781035.168
L171	2958329.559	781035.168		N74°22'02"E 7.19'	2958331.496	781042.089
C130	2958331.496	781042.089	R=20.00 Δ=45°52'54" L=16.02' T=8.47'		2958329.512	781057.554
L172	2958329.512	781057.554	2 10.02 1 0.11	S59°45'04"E 1.95'	2958328.528	781059.242
C131	2958328.528	781059.242	R=0.67 <sup>°</sup> Δ=89°59'55"	1.90	2958327.616	781059.482
	LANE	SCAPE AR	L=1.05' T=0.67'  EA 6 CONSTRUCTION	BASELINE	 DATA	
NUMBER	STARTING	STARTING	CURVE DATA	LINE DATA	ENDING	ENDING
L173	NORTHING 2958345,219	781027.557	GORVE BATTA	N41°01'18"E	NORTHING 2958361.194	EASTING
				21.17' N41°01'18"E		781041.454
L174	2958361.194	781041.454		7.20' N41°01'18"E	2958366.628	781046.182
L175	2958366.628	781046.182	D 40.00° A 1100 W	7.20'	2958372.063	781050.910
C132	2958372.063	781050.910	R=12.00° Δ=41°01'08" L=8.59' T=4.49'		2958379.939	781053.857
L176	2958379.939	781053.857		N0°14'56"E 17.93'	2958397.866	781053.935
C133	2958397.866	781053.935	R=8.00 <sup>°</sup> Δ=71°47'22" L=10.02' T=5.79'		2958405.489	781048.468
C134	2958405.489	781048.468	R=50.00 <sup>°</sup> Δ=56°47'18" L=49.56' T=27.03'		2958397.285	781001.627
C135	2958397.285	781001.627	R=214.82 <sup>'</sup> Δ=4°09'09" L=15.57' T=7.79'		2958387.982	780989.147
L177	2958387.982	780989.147		S56°31'00"W 7.94'	2958383.602	780982.526
L178	2958383.602	780982.526		S58°30'26"W	2958381.086	780978.420
L179	2958381.086	780978.420		4.82' S61°02'13"W	2958378.154	780973.121
L180	2958378.154	780973.121		6.06' S64°16'49"W	2958375.526	780967.665
			R=18.00 Δ= 118°50'32"	6.06'		
C136	2958375.526	780967.665	L=37.34' T=30.46'	N81°38'54"E	2958344.730	780964.167
L181	2958344.730	780964.167		5.67'	2958345.554	780969.778
L182	2958345.554	780969.778		N81°38'54"E 5.67'	2958346.378	780975.390
C137	2958346.378	780975.390	R=26.00 Δ=42°54'49" L=19.47' T=10.22'		2958342.065	780993.916
L183	2958342.065	780993.916		S55°26'16"E 6.41'	2958338.428	780999.196
C138	2958338.428	780999.196	R=34.00 Δ=24°17'16" L=14.41' T=7.32'		2958332.972	781012.420
C139	2958332.972	781012.420	R=34.00 <sup>°</sup> Δ=10°46'02" L=6.39' T=3.20'		2958332.428	781018.777
C140	2958332.428	781018.777	R=34.00 Δ=13°31'14" L=8.02' T=4.03'		2958333.439	781026.717
C141	2958333.439	781026.717	R=6.00 <sup>°</sup> Δ=62°28'59" L=6.54' T=3.64'		2958337.859	781031.098
C142	2958337.859	781031.098	R=6.00° Δ=62°28'59" L=6.54' T=3.64'		2958343.787	781029.202
L184	2958343.787	781029.202	L-0.34 1-3.04	N48°58'42"W	2958345.219	781027.557
	LAND	    SCAPE AR	EA 7 CONSTRUCTION	2.18' BASELINE	<u> </u> DATA	
NUMBER	STARTING NORTHING	STARTING	CURVE DATA	LINE DATA	ENDING	ENDING
	re 1 HING -		1		NORTHING	EASTING
C143		781091.478	R=5.02 <sup>3</sup> Δ=93°22'48"		2958374 110	781089 83 <u>8</u>
C143	2958367.007	781091.478	R=5.02 <sup>°</sup> Δ=93°22'48" L=8.17' T=5.32'	N59°35'00"W	2958374.119	781089.838
L185	2958367.007 2958374.119	781091.478 781089.838	L=8.17' T=5.32'	N59°35'00"W 31.99'	2958390.315	781062.252
L185 C144	2958367.007 2958374.119 2958390.315	781091.478 781089.838 781062.252		31.99'	2958390.315 2958391.181	781062.252 781061.758
L185	2958367.007 2958374.119	781091.478 781089.838	L=8.17' T=5.32'  R=1.00' Δ=59°49'57" L=1.04' T=0.58'		2958390.315	781062.252
L185 C144	2958367.007 2958374.119 2958390.315	781091.478 781089.838 781062.252	L=8.17' T=5.32'  R=1.00' Δ=59°49'57"	31.99' N0°14'56"E 0.81'	2958390.315 2958391.181	781062.252 781061.758
L185 C144 L186	2958367.007 2958374.119 2958390.315 2958391.181	781091.478 781089.838 781062.252 781061.758	L=8.17' T=5.32' $R=1.00^{\circ}$ $\Delta=59^{\circ}49'57''$ $L=1.04'$ T=0.58' $R=4.00^{\circ}$ $\Delta=120^{\circ}00'02''$	31.99' N0°14'56"E	2958390.315 2958391.181 2958391.990	781062.252 781061.758 781061.762
L185 C144 L186 C145	2958367.007 2958374.119 2958390.315 2958391.181 2958391.990	781091.478 781089.838 781062.252 781061.758 781061.762	L=8.17' T=5.32' $R=1.00^{\circ}$ $\Delta=59^{\circ}49'57''$ $L=1.04'$ T=0.58' $R=4.00^{\circ}$ $\Delta=120^{\circ}00'02''$	31.99' N0°14'56"E 0.81' S59°39'23"E	2958390.315 2958391.181 2958391.990 2958395.428	781062.252 781061.758 781061.762 781067.777
L185 C144 L186 C145 L187	2958367.007 2958374.119 2958390.315 2958391.181 2958391.990 2958395.428	781091.478 781089.838 781062.252 781061.758 781061.762 781067.777	L=8.17' T=5.32' $R=1.00'  \Delta=59^{\circ}49'57"$ L=1.04' T=0.58' $R=4.00'  \Delta=120^{\circ}00'02"$ L=8.38' T=6.93' $R=3.00'  \Delta=65^{\circ}35'05"$	31.99' N0°14'56"E 0.81' S59°39'23"E	2958390.315 2958391.181 2958391.990 2958395.428 2958354.386	781062.252 781061.758 781061.762 781067.777 781137.890
L185 C144 L186 C145 L187 C146	2958367.007 2958374.119 2958390.315 2958391.181 2958391.990 2958395.428 2958354.386	781091.478 781089.838 781062.252 781061.758 781067.777 781137.890	L=8.17' T=5.32'  R=1.00' $\Delta$ = 59°49'57" L=1.04' T=0.58'  R=4.00' $\Delta$ = 120°00'02" L=8.38' T=6.93'  R=3.00' $\Delta$ = 65°35'05" L=3.43' T=1.93'  R=25.15' $\Delta$ = 15°48'46"	31.99' N0°14'56"E 0.81' S59°39'23"E	2958390.315 2958391.181 2958391.990 2958395.428 2958354.386 2958351.487	781062.252 781061.758 781061.762 781067.777 781137.890 781139.358
L185 C144 L186 C145 L187 C146 C147	2958367.007 2958374.119 2958390.315 2958391.181 2958391.990 2958395.428 2958354.386 2958351.487	781091.478 781089.838 781062.252 781061.758 781067.777 781137.890 781139.358	L=8.17' T=5.32'  R=1.00' $\Delta$ = 59°49'57" L=1.04' T=0.58'  R=4.00' $\Delta$ = 120°00'02" L=8.38' T=6.93'  R=3.00' $\Delta$ = 65°35'05" L=3.43' T=1.93'  R=25.15' $\Delta$ = 15°48'46" L=6.94' T=3.49'  R=3.00' $\Delta$ = 43°07'37"	31.99'  N0°14'56"E 0.81'  S59°39'23"E 81.24'  S33°14'30"W	2958390.315 2958391.181 2958391.990 2958395.428 2958354.386 2958351.487 2958344.573	781062.252 781061.758 781061.762 781067.777 781137.890 781139.358 781139.597
L185 C144 L186 C145 L187 C146 C147 C148	2958367.007 2958374.119 2958390.315 2958391.181 2958391.990 2958395.428 2958354.386 2958351.487 2958344.573	781091.478 781089.838 781062.252 781061.758 781061.762 781067.777 781137.890 781139.358 781139.597	L=8.17' T=5.32'  R=1.00' $\Delta$ = 59°49'57" L=1.04' T=0.58'  R=4.00' $\Delta$ = 120°00'02" L=8.38' T=6.93'  R=3.00' $\Delta$ = 65°35'05" L=3.43' T=1.93'  R=25.15' $\Delta$ = 15°48'46" L=6.94' T=3.49'  R=3.00' $\Delta$ = 43°07'37" L=2.26' T=1.19'	31.99'  N0°14'56"E 0.81'  S59°39'23"E 81.24'	2958390.315 2958391.181 2958391.990 2958395.428 2958354.386 2958351.487 2958344.573 2958342.413	781062.252 781061.758 781061.762 781067.777 781137.890 781139.358 781139.597 781139.150
L185 C144 L186 C145 L187 C146 C147 C148 L188	2958367.007 2958374.119 2958390.315 2958391.181 2958391.990 2958395.428 2958354.386 2958354.386 2958354.387 2958344.573	781091.478 781089.838 781062.252 781061.758 781061.762 781067.777 781137.890 781139.358 781139.597 781139.150	L=8.17' T=5.32'  R=1.00' $\Delta$ = 59°49'57" L=1.04' T=0.58'  R=4.00' $\Delta$ = 120°00'02" L=8.38' T=6.93'  R=3.00' $\Delta$ = 65°35'05" L=3.43' T=1.93'  R=25.15' $\Delta$ = 15°48'46" L=6.94' T=3.49'  R=3.00' $\Delta$ = 43°07'37" L=2.26' T=1.19'  R=40.00' $\Delta$ = 17°47'26" L=12.42' T=6.26'  R=41.85' $\Delta$ = 19°58'51"	31.99'  N0°14'56"E 0.81'  S59°39'23"E 81.24'  S33°14'30"W	2958390.315 2958391.181 2958391.990 2958395.428 2958354.386 2958351.487 2958344.573 2958342.413 2958339.421	781062.252 781061.758 781061.762 781067.777 781137.890 781139.358 781139.597 781139.150 781137.189
L185 C144 L186 C145 L187 C146 C147 C148 L188 C149 C150	2958367.007 2958374.119 2958390.315 2958391.181 2958391.990 2958395.428 2958354.386 2958351.487 2958344.573 2958342.413 2958339.421 2958330.248	781091.478 781089.838 781062.252 781061.758 781067.777 781137.890 781139.358 781139.597 781139.150 781137.189 781128.890	L=8.17' T=5.32'  R=1.00' $\Delta$ = 59°49'57" L=1.04' T=0.58'  R=4.00' $\Delta$ = 120°00'02" L=8.38' T=6.93'  R=3.00' $\Delta$ = 65°35'05" L=3.43' T=1.93'  R=25.15' $\Delta$ = 15°48'46" L=6.94' T=3.49'  R=3.00' $\Delta$ = 43°07'37" L=2.26' T=1.19'	31.99'  N0°14'56"E 0.81'  S59°39'23"E 81.24'  S33°14'30"W	2958390.315 2958391.181 2958391.990 2958395.428 2958354.386 2958351.487 2958344.573 2958342.413 2958339.421 2958330.248 2958323.264	781062.252 781061.758 781061.762 781067.777 781137.890 781139.358 781139.150 781137.189 781128.890 781116.159
L185 C144 L186 C145 L187 C146 C147 C148 L188 C149 C150 C151	2958367.007 2958374.119 2958390.315 2958391.181 2958391.990 2958395.428 2958354.386 2958354.386 2958354.487 2958344.573 2958342.413 2958339.421 2958330.248 29583323.264	781091.478 781089.838 781062.252 781061.758 781061.762 781067.777 781137.890 781139.358 781139.150 781137.189 781128.890 781116.159	L=8.17' T=5.32'  R=1.00' $\Delta$ = 59°49'57" L=1.04' T=0.58'  R=4.00' $\Delta$ = 120°00'02" L=8.38' T=6.93'  R=3.00' $\Delta$ = 65°35'05" L=3.43' T=1.93'  R=25.15' $\Delta$ = 15°48'46" L=6.94' T=3.49'  R=3.00' $\Delta$ = 43°07'37" L=2.26' T=1.19'  R=40.00' $\Delta$ = 17°47'26" L=12.42' T=6.26'  R=41.85' $\Delta$ = 19°58'51" L=14.59' T=7.37'	31.99'  N0°14'56"E 0.81'  S59°39'23"E 81.24'  \$33°14'30"W 3.58'	2958390.315 2958391.181 2958391.990 2958395.428 2958354.386 2958351.487 2958344.573 2958342.413 2958339.421 2958330.248 2958323.264 2958326.855	781062.252 781061.758 781061.762 781067.777 781137.890 781139.358 781139.150 781137.189 781128.890 781116.159 781113.096
L185 C144 L186 C145 L187 C146 C147 C148 L188 C149 C150	2958367.007 2958374.119 2958390.315 2958391.181 2958391.990 2958395.428 2958354.386 2958351.487 2958344.573 2958342.413 2958339.421 2958330.248	781091.478 781089.838 781062.252 781061.758 781067.777 781137.890 781139.358 781139.597 781139.150 781137.189 781128.890	L=8.17' T=5.32'  R=1.00' $\Delta$ = 59°49'57" L=1.04' T=0.58'  R=4.00' $\Delta$ = 120°00'02" L=8.38' T=6.93'  R=3.00' $\Delta$ = 65°35'05" L=3.43' T=1.93'  R=25.15' $\Delta$ = 15°48'46" L=6.94' T=3.49'  R=3.00' $\Delta$ = 43°07'37" L=2.26' T=1.19'  R=40.00' $\Delta$ = 17°47'26" L=12.42' T=6.26'  R=41.85' $\Delta$ = 19°58'51" L=14.59' T=7.37'  R=2.50' $\Delta$ = 141°25'27"	31.99'  N0°14'56"E 0.81'  S59°39'23"E 81.24'  \$33°14'30"W 3.58'  N30°14'56"E 4.25'	2958390.315 2958391.181 2958391.990 2958395.428 2958354.386 2958351.487 2958344.573 2958342.413 2958339.421 2958330.248 2958323.264	781062.252 781061.758 781061.762 781067.777 781137.890 781139.358 781139.150 781137.189 781128.890 781116.159
L185 C144 L186 C145 L187 C146 C147 C148 L188 C149 C150 C151	2958367.007 2958374.119 2958390.315 2958391.181 2958391.990 2958395.428 2958354.386 2958354.386 2958354.487 2958344.573 2958342.413 2958339.421 2958330.248 29583323.264	781091.478 781089.838 781062.252 781061.758 781061.762 781067.777 781137.890 781139.358 781139.150 781137.189 781128.890 781116.159	L=8.17' T=5.32'  R=1.00' $\Delta$ = 59°49'57" L=1.04' T=0.58'  R=4.00' $\Delta$ = 120°00'02" L=8.38' T=6.93'  R=3.00' $\Delta$ = 65°35'05" L=3.43' T=1.93'  R=25.15' $\Delta$ = 15°48'46" L=6.94' T=3.49'  R=3.00' $\Delta$ = 43°07'37" L=2.26' T=1.19'  R=40.00' $\Delta$ = 17°47'26" L=12.42' T=6.26'  R=41.85' $\Delta$ = 19°58'51" L=14.59' T=7.37'  R=2.50' $\Delta$ = 141°25'27"	31.99'  N0°14'56"E 0.81'  S59°39'23"E 81.24'  \$33°14'30"W 3.58'	2958390.315 2958391.181 2958391.990 2958395.428 2958354.386 2958351.487 2958344.573 2958342.413 2958339.421 2958330.248 2958323.264 2958326.855	781062.252 781061.758 781061.762 781067.777 781137.890 781139.358 781139.150 781137.189 781128.890 781116.159 781113.096

	SAI	LING CENT	ER CONSTRUCTION I	BASELINE D	ATA	
NUMBER	STARTING NORTHING	STARTING EASTING	CURVE DATA	LINE DATA	ENDING NORTHING	ENDING EASTIN
L192	2958324.571	781105.397		S59°45'04"E 0.16'	2958324.490	781105.5
L193	2958324.490	781105.537		N30°14'56"E 19.62'	2958341.443	781115.4
 L194	2958341.443	781115.423		N30°14'56"E 10.02'	2958350.099	781120.4
 L195	2958350.099	781120.471		N59°45'04"W	2958367.007	781091.4
 L196	2958367.007	781091.478		33.56' S30°14'56"W	2958364.882	781090.2
L197	2958364.882	781090.239		2.46' N59°45'04"W	2958368.749	781083.6
L198	2958368.749	781083.608		7.68' N29°45'49"E	2958370.885	781084.8
L199	2958370.885	781084.829		2.46' N59°45'04"W	2958379.349	781070.3
L200	2958379.349	781070.314		16.80' S30°14'56"W	2958353.739	781055.3
L201	2958353.739	781055.380		29.65' S59°45'04"E	2958345.301	781069.8
L201	2958345.301	781053.380		16.75' N30°14'56"E	2958349.908	781009.6
				5.33' S59°45'04"E		
L203	2958349.908	781072.535		7.75' S30°14'56"W	2958346.003	781079.2
L204	2958346.003	781079.230		5.33' S59°45'04"E	2958341.397	781076.5
L205	2958341.397	781076.544		33.40'	2958324.571	781105.3
NUMBER	STARTING	STARTING	EA 9 CONSTRUCTION  CURVE DATA	LINE DATA	ENDING	ENDING
	NORTHING	EASTING	R=2.00° Δ=93°41'24"	LINE DATA	NORTHING	EASTIN
C156	2958323.839	781066.540	L=3.27' T=2.13'	S57°20'37"E	2958324.491	781069.3
L207	2958324.491	781069.384	R=61.00° Δ=2°52'03"	2.73'	2958323.018	781071.6
C157	2958323.018	781071.683	L=3.05' T=1.53'	S63°17'00"E	2958321.494	781074.3
L208	2958321.494	781074.329		3.81' S65°57'42"E	2958319.781	781077.7
L209	2958319.781	781077.732	R=62.04 <sup>°</sup> Δ=6°23'33"	1.99'	2958318.969	781079.5
C158	2958318.969	781079.552	L=6.92' T=3.46'  R=61.00' Δ=5°03'55"		2958316.627	781086.0
C159	2958316.627	781086.062	L=5.39' T=2.70'	S80°05'54"E	2958315.321	781091.2
L210	2958315.321	781091.293		3.38' S82°41'58"E	2958314.740	781094.6
L211	2958314.740	781094.619		2.16' S84°47'27"E	2958314.465	781096.7
L212	2958314.465	781096.763		2.29'	2958314.257	781099.0
L213	2958314.257	781099.045	D 000' A 04040H0U	S88°20'59"E 5.29'	2958314.105	781104.3
C160	2958314.105	781104.328	R=3.00° Δ=81°43'19" L=4.28' T=2.60'	0000014005	2958311.581	781107.3
L214	2958311.581	781107.334		S9°06'40"E 2.59'	2958309.025	781107.7
L215	2958309.025	781107.743		S9°06'40"E 2.59'	2958306.470	781108.1
C161	2958306.470	781108.153	R=2.00° Δ=96°50'17" L=3.38' T=2.25'		2958304.155	781106.2
L216	2958304.155	781106.258		N89°57'39"W 5.73'	2958304.159	781100.5
C162	2958304.159	781100.528	R=71.00° Δ= 32°24'58" L=40.17' T=20.64'		2958316.774	781062.9
C163	2958316.774	781062.953	R=0.50° Δ=85°34'28" L=0.75' T=0.46'		2958317.438	781062.8
L217	2958317.438	781062.807		N30°14'56"E 7.41'	2958323.839	781066.5
	LAND	SCAPE ARE	EA 10 CONSTRUCTION	N BASELINE	DATA	
NUMBER	STARTING NORTHING	STARTING EASTING	CURVE DATA	LINE DATA	ENDING NORTHING	ENDING EASTIN
C164	2958333.114	781140.050	R=46.00° Δ=30°57'36" L=24.86' T=12.74'		2958318.454	781120.3
L218	2958318.454	781120.352		S68°49'25"W 1.22'	2958318.012	781119.2
C165	2958318.012	781119.211	R=5.98 <sup>°</sup> Δ=78°11'59" L=8.17' T=4.86'		2958311.467	781115.4
L219	2958311.467	781115.454		S9°06'40"E 3.74'	2958307.779	781116.0
C166	2958307.779	781116.046	R=3.00 <sup>°</sup> Δ=65°26'46" L=3.43' T=1.93'		2958305.362	781118.2
L220	2958305.362	781118.209		S74°33'26"E 1.52'	2958304.957	781119.6
L221	2958304.957	781119.674		S74°33'26"E 1.52'	2958304.553	781121.1
C167	2958304.553	781121.138	R=8.01 <sup>°</sup> Δ= 50°23'23" L=7.04' T=3.77'		2958305.709	781127.8
C168	2958305.709	781127.856	R=35.00° Δ=25°46'24" L=15.74' T=8.01'		2958317.101	781138.5
L222	2958317.101	781138.530		N30°14'56"E 13.91'	2958329.121	781145.5
C169	2958329.121	781145.540	R=3.00 <sup>°</sup> Δ=70°41'21" L=3.70' T=2.13'		2958332.578	781145.2
	2958332.578	781145.232	22	N39°35'40"W	2958333.150	781144.7
L223	2000002.070	701110.202		0.74'		

	EDO	GE OF PATI	H 3 CONSTRUCTION E	BASELINE DA	ATA	
NUMBER	STARTING NORTHING	STARTING EASTING	CURVE DATA	LINE DATA	ENDING NORTHING	ENDING EASTING
L224	2958370.884	781155.472		N23°48'39"W 1.00'	2958371.799	781155.06
C171	2958371.799	781155.068	R=6.00 <sup>°</sup> Δ=54°07'08" L=5.67' T=3.06'		2958372.098	781149.61
L225	2958372.098	781149.617		N59°47'34"W 67.33'	2958405.976	781091.42
C172	2958405.976	781091.426	R=28.00° Δ=88°09'20" L=43.08' T=27.11'		2958443.476	781080.87
L226	2958443.476	781080.875		N30°06'10"E 7.97'	2958450.367	781084.87
C173	2958450.367	781084.870	R=4.00° Δ=90°00'06" L=6.28' T=4.00'		2958451.811	781090.33
L227	2958451.811	781090.339		S59°47'34"E 13.50'	2958445.019	781102.00
L228	2958445.019	781102.006		N30°12'26"E 48.28'	2958486.742	781126.29
L229	2958486.742	781126.296		N59°47'34"W 10.31'	2958491.931	781117.38
C174	2958491.931	781117.384	R=4.00 <sup>°</sup> Δ=80°14'21" L=5.60' T=3.37'		2958496.785	781115.64
L230	2958496.785	781115.648		N20°26'45"E 10.43'	2958506.554	781119.29
C175	2958506.554	781119.290	R=3.00 <sup>°</sup> Δ=86°57'15" L=4.55' T=2.84'		2958508.395	781122.98
L231	2958508.395	781122.985		S73°08'38"E 7.02'	2958506.360	781129.70
L232	2958506.360	781129.701		N16°51'22"E 16.00'	2958521.673	781134.34
L233	2958521.673	781134.340		N73°13'27"W 10.10'	2958524.589	781124.66
C176	2958524.589	781124.665	R=3.00° Δ=86°52'48" L=4.55' T=2.84'		2958528.170	781122.61
L234	2958528.170	781122.616		N11°55'43"E 11.74'	2958539.660	781125.04
C177	2958539.660	781125.043	R=3.00 <sup>°</sup> Δ=89°17'07" L=4.67' T=2.96'		2958542.251	781128.36
L235	2958542.251	781128.369		S83°16'40"E 10.22'	2958541.055	781138.51
L236	2958541.055	781138.515		N6°43'20"E 15.96'	2958556.907	781140.38
L237	2958556.907	781140.383		N85°18'52"W 10.02'	2958557.725	781130.39
C178	2958557.725	781130.394	R=3.00 <sup>°</sup> Δ=89°07'25" L=4.67' T=2.95'		2958560.915	781127.64
L238	2958560.915	781127.645		N2°23'05"E 9.59'	2958570.497	781128.04
L239	2958570.497	781128.044		N0°27'46"W 9.59'	2958580.088	781127.96
C179	2958580.088	781127.967	R=3.00 <sup>°</sup> Δ= 85°43'26" L=4.49' T=2.78'		2958583.169	781130.64
L240	2958583.169	781130.643		N83°50'17"E 10.18'	2958584.262	781140.76
L241	2958584.262	781140.768		N6°09'43"W 16.00'	2958600.170	781139.05
L242	2958600.170	781139.050		S83°45'28"W 9.77'	2958599.107	781129.33
C180	2958599.107	781129.336	R=3.00 <sup>°</sup> Δ= 87°55'27" L=4.60' T=2.89'	0.77	2958601.655	781126.04
C181	2958601.655	781126.041	R=189.80° Δ=5°50'37" L=19.36' T=9.69'		2958620.636	781122.27
C182	2958620.636	781122.277	R=183.16 <sup>°</sup> Δ=3°40'08" L=11.73' T=5.87'		2958631.921	781119.09
C183	2958631.921	781119.091	R=193.00° Δ=8°17'18" L=27.92' T=13.98'		2958657.841	781108.78
C184	2958657.841	781108.781	R=6.00° Δ=146°05'03" L=15.30' T=19.68'		2958665.639	781117.20
L243	2958665.639	781117.204	2 10.00 1 10.00	S59°45'04"E 61.69'	2958634.563	781170.49
L244	2958634.563	781170.493		S59°45'04"E 61.69'	2958603.487	781223.78
C185	2958603.487	781223.782	R=30.00 Δ=72°24'26" L=37.91' T=21.96'	01.00	2958570.998	781237.94
L245	2958570.998	781237.940	L-01.31 1-21.30	S12°39'21"W 20.55'	2958550.946	781233.43
C186	2958550.946	781233.437	R=28.00 Δ=72°41'53"	20.00	2958520.553	781246.77
L246	2958520.553	781246.775	L=35.53' T=20.60'	S59°44'52"E	2958517.317	781252.32
	I	İ	İ	6.42'		1

		LANDS	SCAPE ISLA	AND 2 CONSTRUCTIO	N BASELINE	DATA	
NG ING	NUMBER	STARTING NORTHING	STARTING EASTING	CURVE DATA	LINE DATA	ENDING NORTHING	ENDING EASTING
5.068	C194	2958533.273	781076.654	R=8.04 <sup>°</sup> Δ=103°09'08" L=14.47' T=10.13'		2958520.813	781074.844
0.617	L251	2958520.813	781074.844		S48°18'17"E 14.98'	2958510.849	781086.029
.426	L252	2958510.849	781086.029		S48°18'17"E 14.98'	2958500.885	781097.214
0.875	C195	2958500.885	781097.214	R=6.06 Δ=101°59'04" L=10.78' T=7.48'	14.90	2958503.548	781106.241
.870	C196	2958503.548	781106.241	R=185.00° Δ=5°56'23"		2958521.638	781112.585
0.339	C197	2958521.638	781112.585	L=19.18' T=9.60' R=185.00' Δ=5°56'23"		2958540.288	781117.023
2.006	C198	2958540.288	781117.023	L=19.18' T=9.60' R=8.00' Δ=61°34'20"		2958547.965	781114.172
5.296	C199	2958547.965	781114.172	L=8.60' T=4.77' $R=8.00' \Delta=61^{\circ}34'20''$		2958549.113	781106.064
.384	C200	2958549.113	781106.064	L=8.60' T=4.77' $R=124.00^{\circ} \Delta=3^{\circ}39'09"$		2958545.828	781098.875
				L=7.90' T=3.95' $R=129.08^{\circ} \Delta=3^{\circ}03'51"$			
.648	C201	2958545.828	781098.875	L=6.90' T=3.45'	S59°58'00"W	2958542.594	781092.777
.290	L253	2958542.594		AND CONCEDUCTION	18.62'	2958533.273	781076.654
.985	NUMBER	STARTING	STARTING	AND CONSTRUCTION  CURVE DATA	LINE DATA	ENDING	ENDING
0.701		NORTHING	EASTING	R=10.00° Δ=67°44'02"	LINE DATA	NORTHING	EASTING
.340	C188	2958467.923	781034.525	L=11.82' T=6.71'	S77°36'29"E	2958472.003	781044.897
.665	L247	2958472.003	781044.897	R=8.00° Δ=107°48'52"	15.74'	2958468.626	781060.269
2.616	C189	2958468.626	781060.269	L=15.05' T=10.97'	S30°12'26"W	2958456.787	781065.465
5.043	L248	2958456.787	781065.465	R=28.00 Δ= 38°18'57"	2.85'	2958454.325	781064.032
3.369	C190	2958454.325	781064.032	L=18.72' T=9.73'		2958442.356	781050.085
.515	C191	2958442.356	781050.085	R=28.00 Δ= 38°18'57" L=18.72' T=9.73'		2958441.613	781031.723
.383	C192	2958441.613	781031.723	R=10.00 Δ=55°33'33" L=9.70' T=5.27'		2958448.160	781025.088
.394	C193	2958448.160	781025.088	R=10.00° Δ=55°33'33" L=9.70' T=5.27'		2958457.335	781026.735
7.645	L249	2958457.335	781026.735		N37°18'39"E 2.58'	2958459.385	781028.297
3.044	L250	2958459.385	781028.297		N36°06'27"E 10.57'	2958467.923	781034.525
7.967			T	DGE CONSTRUCTION	BASELINE		
0.643	NUMBER	STARTING NORTHING	STARTING EASTING	CURVE DATA	LINE DATA	ENDING NORTHING	ENDING EASTING
.768	L254	2958619.721	781222.662		N0°14'56"E 12.60'	2958632.319	781222.717
.050	C202	2958632.319	781222.717	R=5.50° Δ=81°36'49" L=7.83' T=4.75'		2958637.740	781227.439
.336	C203	2958637.740	781227.439	R=20.51 Δ=38°13'51" L=13.69' T=7.11'		2958643.516	781239.569
5.041	C204	2958643.516	781239.569	R=20.80 <sup>°</sup> Δ=13°48'25" L=5.01' T=2.52'		2958647.431	781242.679
2.277	L255	2958647.431	781242.679		N30°18'08"E 11.85'	2958657.661	781248.658
0.091				OGE 2 CONSTRUCTION	N BASELINE		
3.781	NUMBER	STARTING NORTHING	STARTING EASTING	CURVE DATA	LINE DATA	ENDING NORTHING	ENDING EASTING
7.204	L256	2958675.654	781219.134		S30°14'56"W 3.50'	2958672.631	781217.371
.493	C205	2958672.631	781217.371	R=2.50 <sup>°</sup> Δ=89°59'57" L=3.93' T=2.50'		2958671.731	781213.952
	L257	2958671.731	781213.952		N59°45'04"W 270.55'	2958808.024	780980.237
5.782	C206	2958808.024	780980.237	R=2.50 <sup>°</sup> Δ=90°00'00" L=3.93' T=2.50'		2958811.443	780979.336
7.940	L258	2958811.443	780979.336		N30°14'56"E 3.50'	2958814.466	780981.099
5.437		PARK	ING LOT ED	DGE 3 CONSTRUCTION	N BASELINE	DATA	
5.775	NUMBER	STARTING NORTHING	STARTING EASTING	CURVE DATA	LINE DATA	ENDING NORTHING	ENDING EASTING
2.323	L259	2958831.374	780950.961		S30°14'56"W 11.78'	2958821.194	780945.024
3.693	C207	2958821.194	780945.024	R=20.50° Δ=74°42'28" L=26.73' T=15.65'		2958796.509	780948.101
	C208	2958796.509	780948.101	R=11.50 Δ=44°42'27" L=8.97' T=4.73'		2958788.404	780951.393
	L260	2958788.404	780951.393		S0°14'56"W 16.77'	2958771.636	780951.320
		ALI	GNMENT - (	L (24) CONSTRUCTION I		ATA	I
	NUMBER	STARTING NORTHING	STARTING EASTING	CURVE DATA	LINE DATA	ENDING NORTHING	ENDING EASTING
	C210	2958419.882	780978.587	R=12.00 <sup>°</sup> Δ=62°25'03" L=13.07' T=7.27'		2958419.664	780966.153
	L261	2958419.664	780966.153		N59°45'04"W	2958484.860	780854.356
	1			· ·	170 //7		I
	C209	2958484.860	780854.356	R=12.00° Δ=66°08'52" L=13.85' T=7.81'	129.42'	2958496.559	780848.467



PROJECT LOCATION:
MASSPORT PIERS PARK II

MPA CONTRACT NO.: LOCATION CODE: L1540-C1

EAST BOSTON, MA 02128

PROJECT SUBMISSION PHASE:

60% SUBMISSION

REGISTRATION STAMP:





REVI	SIONS:	
REV. NO.	DATE	DESCRIPTION



CONSULTANT:

PROJECT NUMBER AND TITLE:

MASSPORT PIERS PARK II

SHEET TITLE:

L1540-C1

LAYOUT POINT TABLES 2

DISCIPLINE:

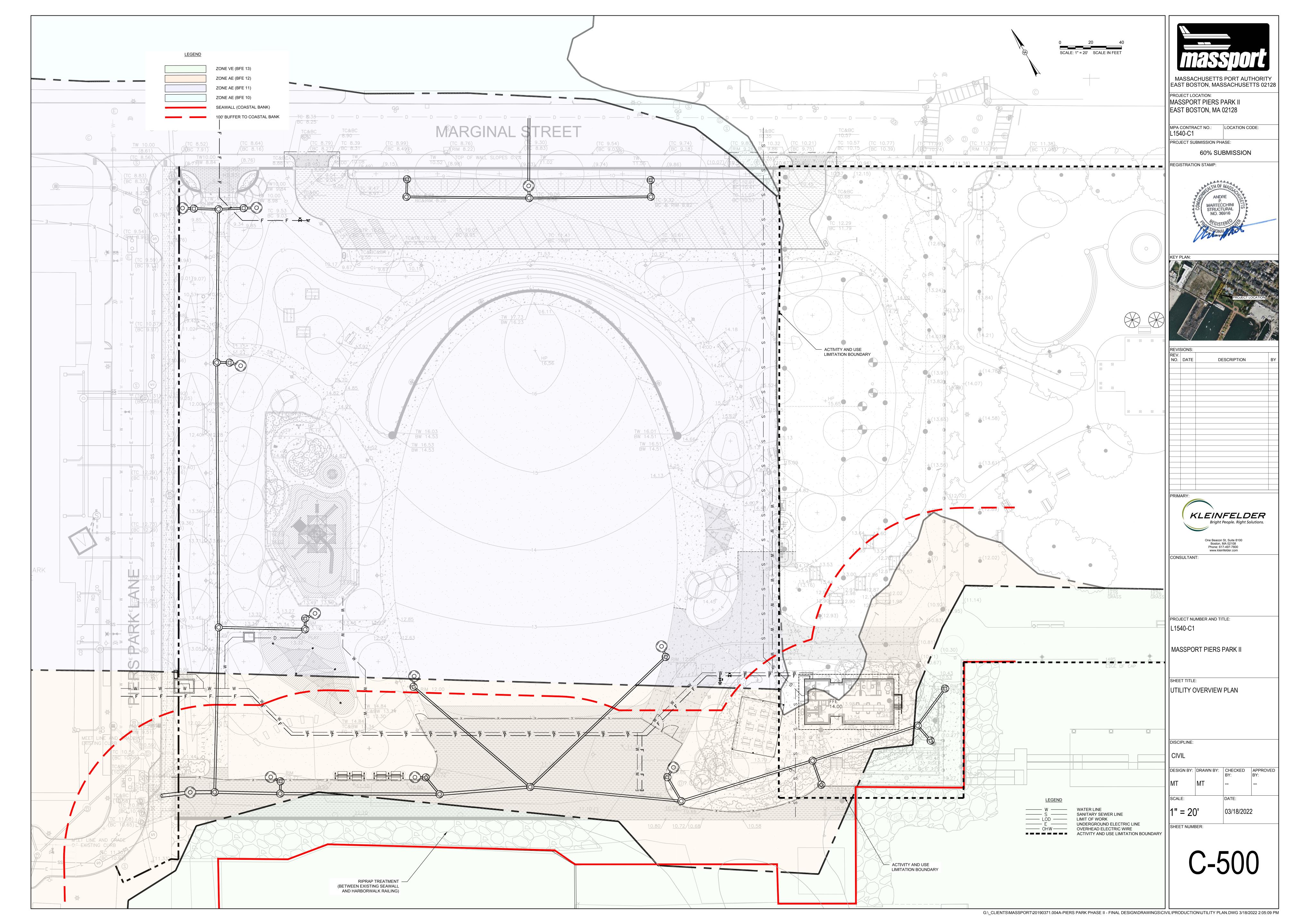
DESIGN BY: DRAWN BY: CHECKED APPROVED BY:

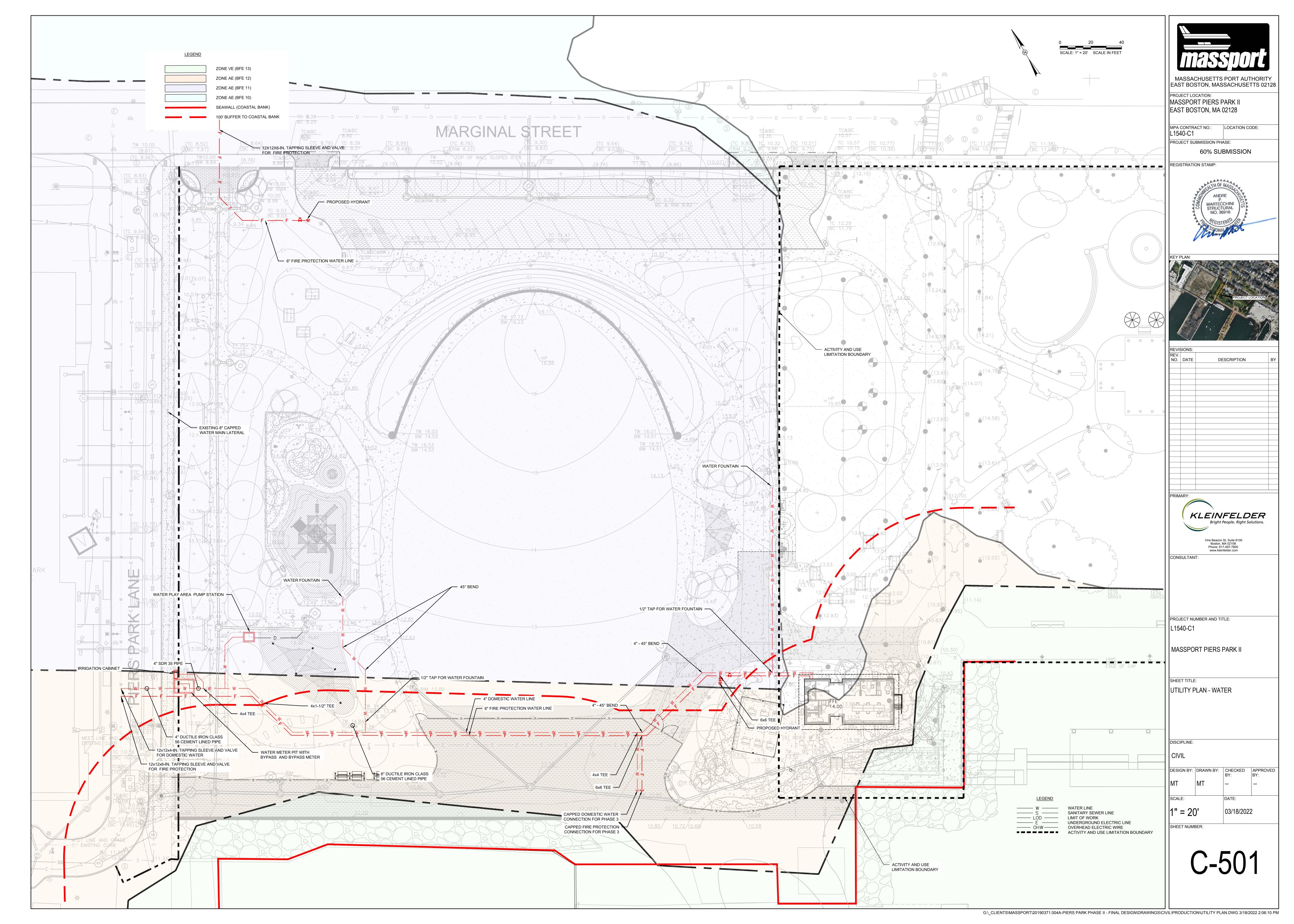
SCALE: DATE:

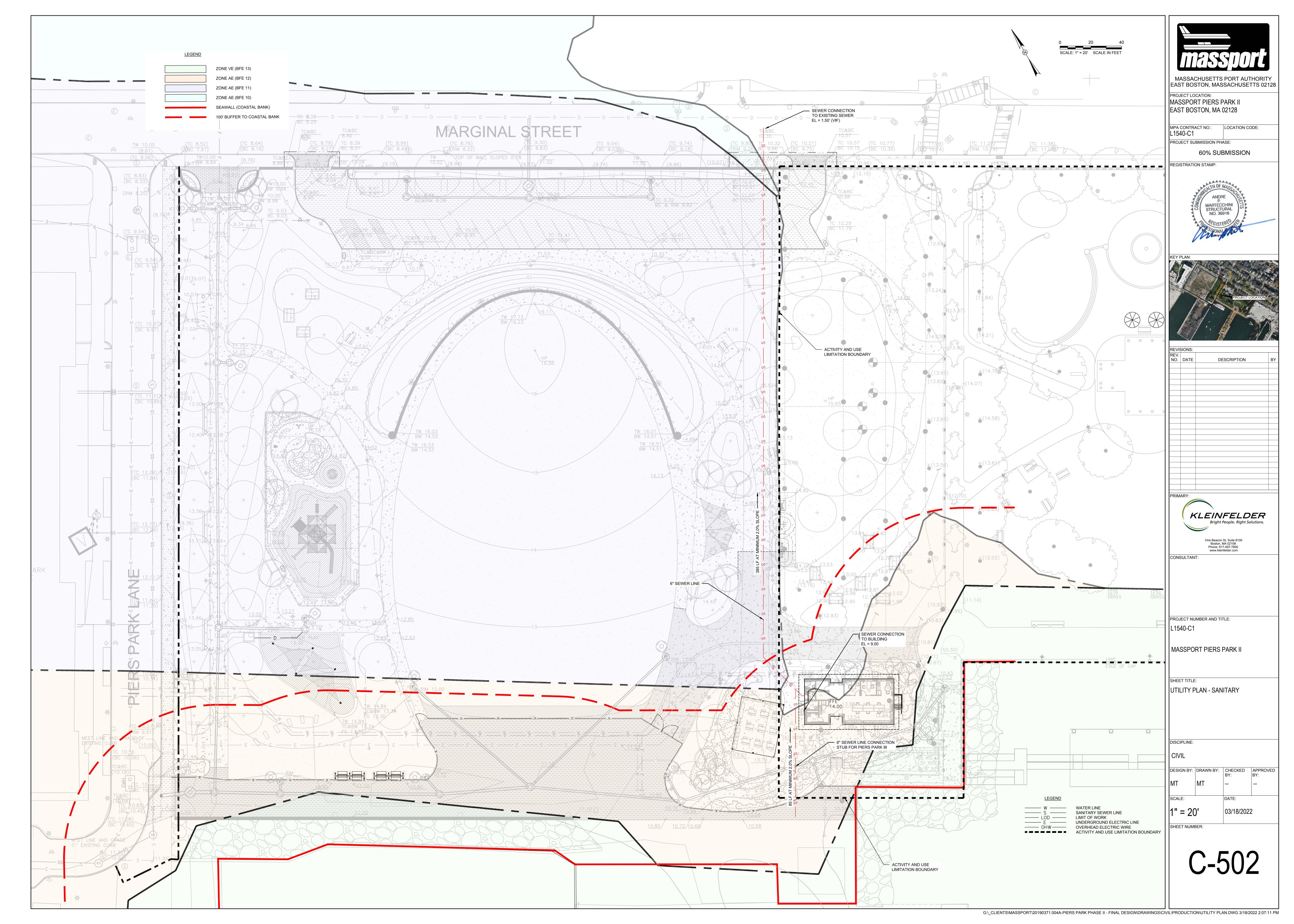
1" = 20' 03/18/2022

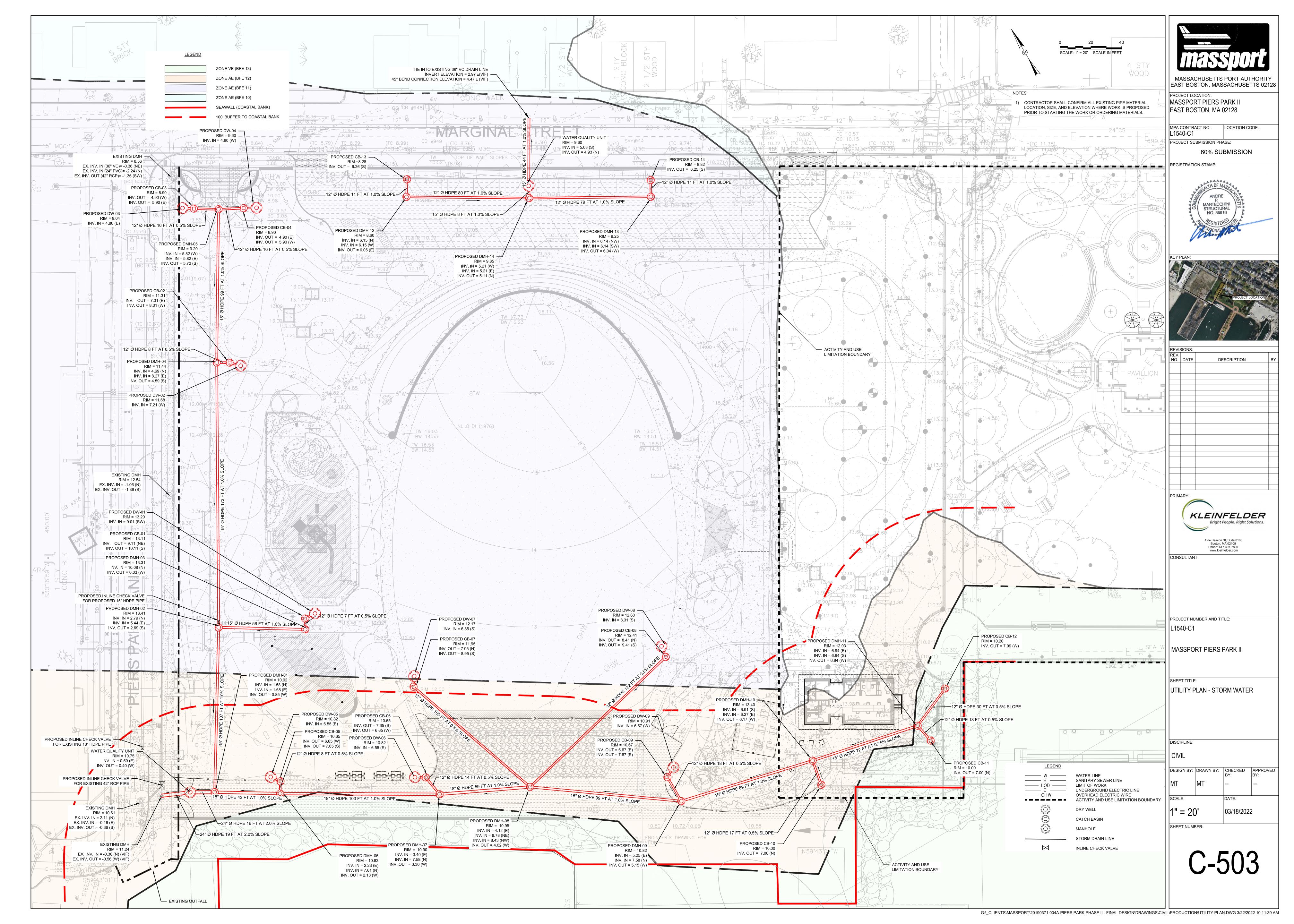
SHEET NUMBER:

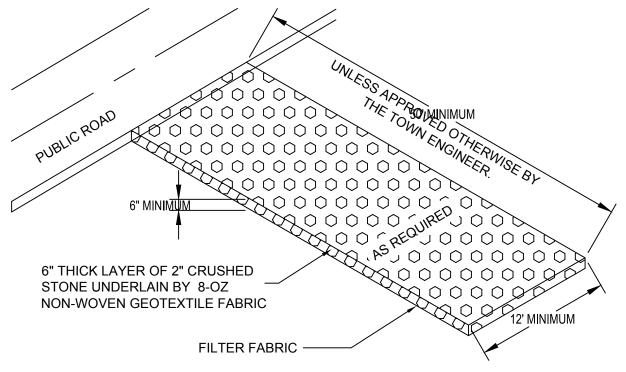
C-202









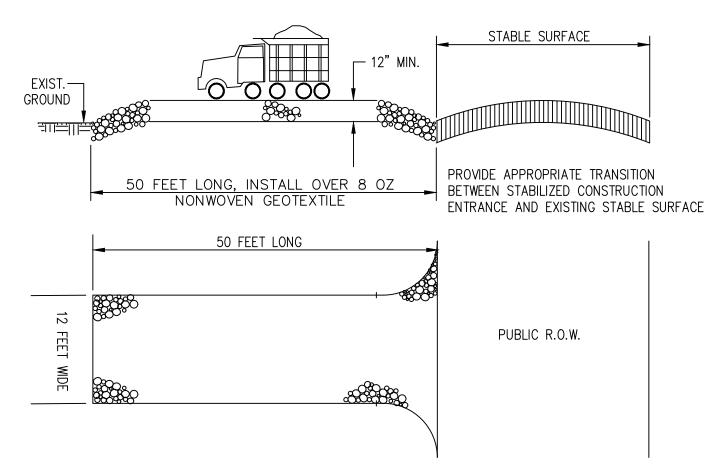


## NOTES:

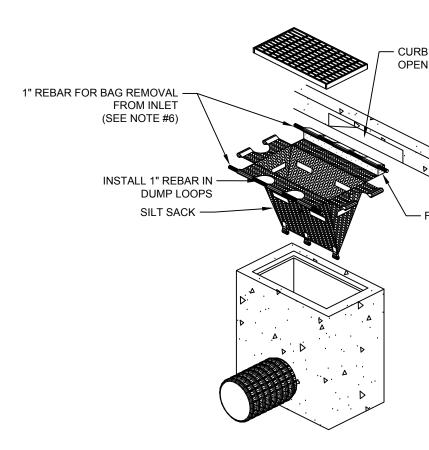
1. NON-WOVEN GEOTEXTILE FABRIC SHALL BE PLACED OVER THE ENTIRE AREA OF THE CONSTRUCTION ENTRANCE PRIOR TO PLACING STONE.

2. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING SEDIMENT ONTO PUBLIC RIGHT-OF WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, WASHED, OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED PROMPTLY.

## CONSTRUCTION ENTRANCE/WASH PAD SCALE: NTS

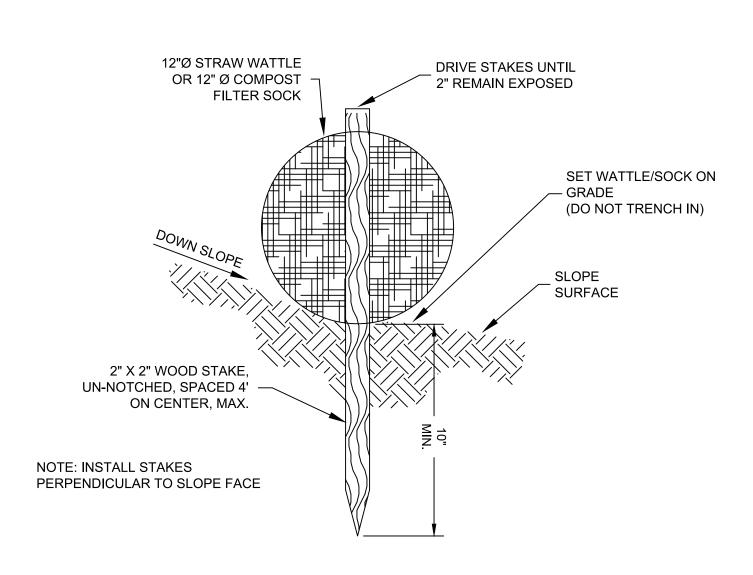


STABILIZED CONSTRUCTION ENTRANCE DETAIL

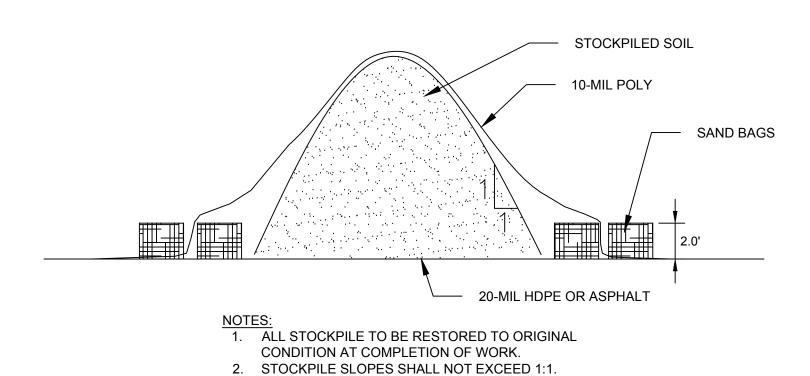


## NOTES FOR EROSION CONTROL:

- SEDIMENT AS NECESSARY TO MAINTAIN LEVEL BELOW OVERFLOW HOLES IN
- AUTHORITY. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING SEDIMENTATION
- OF THE PROJECT. 4. CONTRACTOR SHALL REMOVE AND
- 5. CONTRACTOR SHALL REMOVE SILT
- 6. 1" REBAR FOR BAG REMOVAL SHALL BE REMOVED DURING WINTER MONTHS AT LOCATIONS WHERE PLOW ACTIVITY IS.

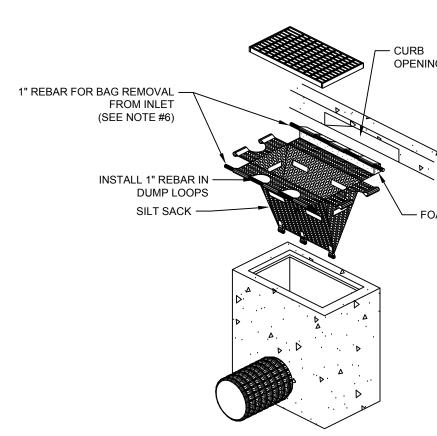


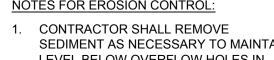
STRAW WATTLE DETAIL
SCALE: NTS



# STOCKPILE DETAIL SCALE: NTS

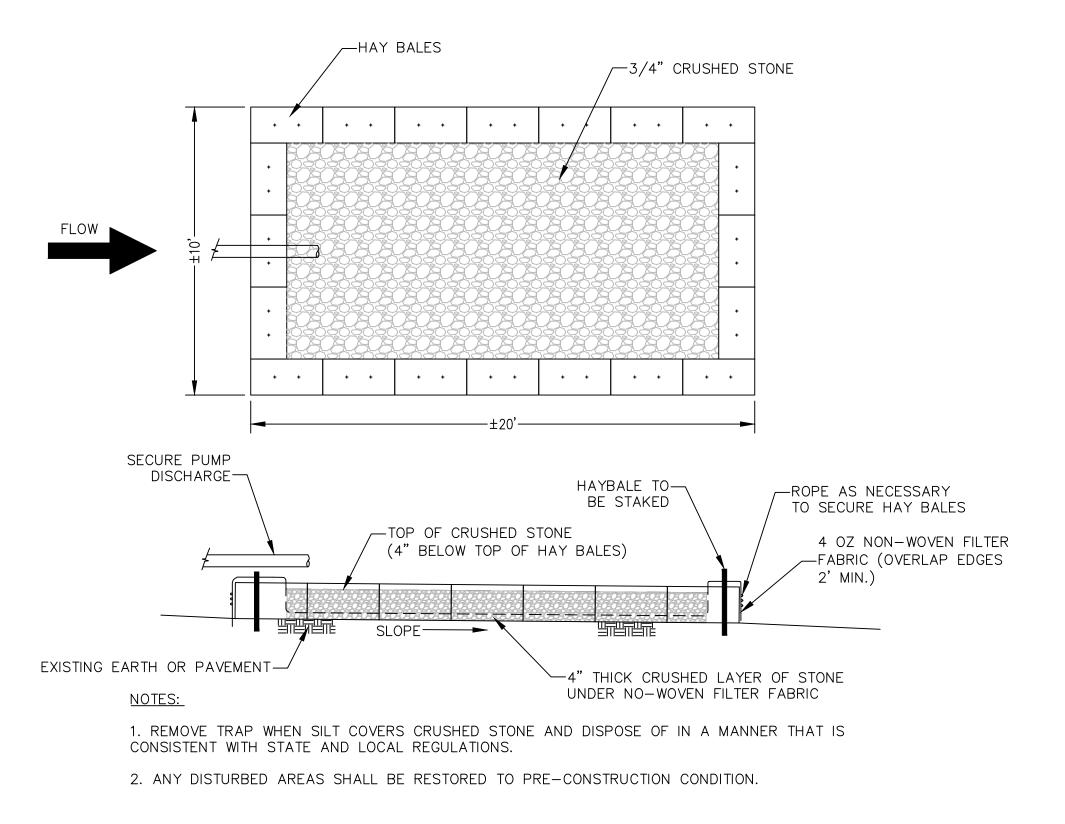
3. SAND BAGS SHALL BE AT LEAST 75 LBS PER BAG.



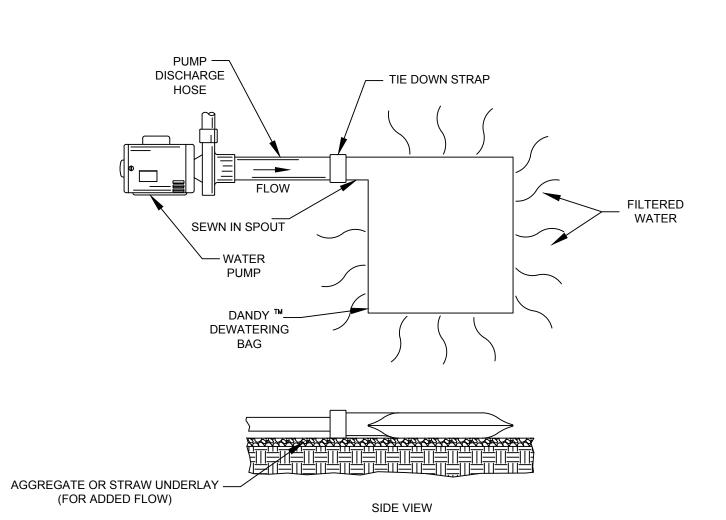


- SILT SACK. 2. SILT SACK SHALL BE USED ON ALL CATCH BASINS WITHIN CONSTRUCTION ZONE OR AS DIRECTED BY THE
- BARRIERS THROUGHOUT THE DURATION
- LEGALLY DISPOSE OF SEDIMENT AS REQUIRED.
- SACKS AND LEGALLY DISPOSE OF THEM OFF-SITE, UPON COMPLETION OF THE PROJECT AND AS REQUIRED.
- BARS SHALL BE REINSTALLED AFTER SNOW SEASON IS COMPLETE.

SILT SACK DETAIL



## TEMPORARY SEDIMENT TRAP NOT TO SCALE



Mechanical Properties	Test Method	Units	MARV
Grab Tensile Strength	ASTM D 4632	kN (lbs)	0.9 (205) x 0.9 (205)
Grab Tensile Elongation	ASTM D 4632	%	50 x 50
Puncture Strength	ASTM D 4833	kN (lbs)	0.58 (130)
Mullen Burst Strength	ASTM D 3786	kPa (psi)	2618 (380)
Trapezoid Tear Strength	ASTM D 4533	kN (lbs)	0.36 (80) X 0.36 (80)
UV Resistance	ASTM D 4355	%	70
Apparent Opening Size	ASTM D 4751	Mm (US Std Sieve)	0.180 (80)
Flow Rate	ASTM D 4491	1/min/m (gal/min/ft ) <sup>2</sup>	3866 (95)
Permittivity	ASTM D 4491	Sec <sup>-1</sup>	12

DEWATERING SILT BAG DETAIL SCALE: NTS



PROJECT LOCATION: MASSPORT PIERS PARK II

EAST BOSTON, MA 02128

MPA CONTRACT NO.: LOCATION CODE: L1540-C1 PROJECT SUBMISSION PHASE:

60% SUBMISSION





REVISIONS:

REV. NO.	DATE	DESCRIPTION	В
110.	DATE	BEGORII TIGIY	

One Beacon St, Suite 8100 Boston, MA 02108 Phone: 617-497-7800 www.kleinfelder.com CONSULTANT

KLEINFELDER

Bright People. Right Solutions.

PROJECT NUMBER AND TITLE:

MASSPORT PIERS PARK II

SHEET TITLE:

L1540-C1

EROSION CONTROL DETAILS

DISCIPLINE:

CIVIL

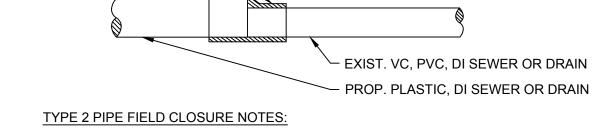
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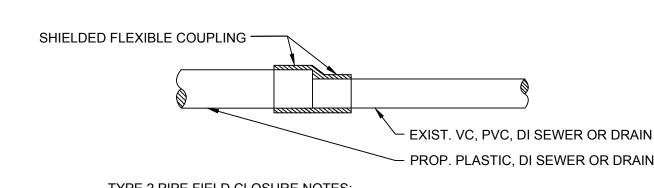
03/18/2022

SHEET NUMBER:

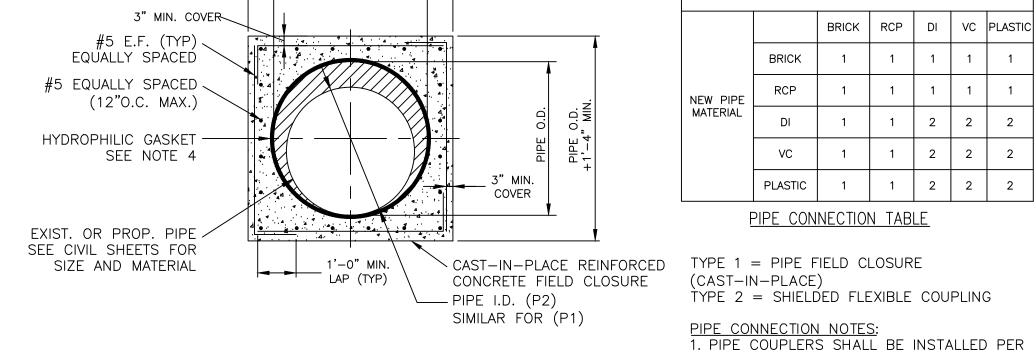


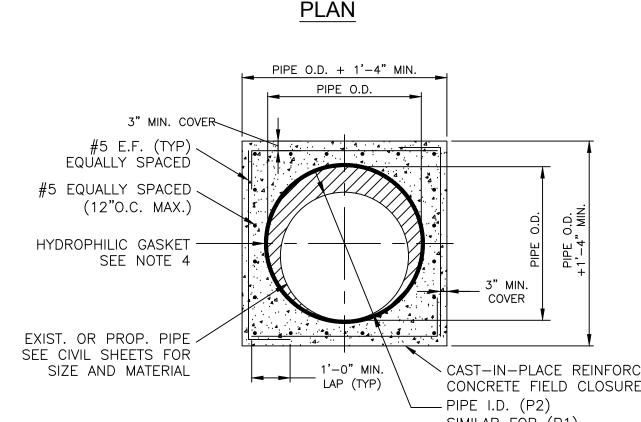
1. FOR ALL GRAVITY MAINS AND LATERAL PIPES (SEWERS OR DRAINS). SEE SPECIFICATIONS FOR MATERIALS AND REQUIREMENTS.





# PIPE FIELD CLOSURE TYPE-1





SANITARY SEWER OR

STORM DRAIN

6" (MIN) SEPARATION -

WATER LINE

4 4 4

4 4 4 4 4 4 4

12" MIN. TYP. ALL

— 6" (MIN)

AROUND

SEPARATION

"L" (SEE NOTE 1)

6" (TYP)

1'−0" MIN. — | **→** 

3" MIN. ————

VARIES, DEPENDENT -

8" MIN.

UPON LARGE PIPE (P1)

EXIST. OR PROP. PIPE/ SEE UTILITY SHEETS FOR

SIZE AND MATERIAL

– 12" (MIN) CONCRETE

ENCASEMENT TYP.

ALL AROUND

SANITARY

STORM DRAIN

**CONCRETE ENCASEMENT DETAIL** 

1'-0" MIN.

\_\_#5 EQUALLY

SPACED (12"O.C. MAX.)

(TYP) SEE NOTE 4

EXIST. OR PROP. PIPE

SIZE AND MATERIAL

\_ 8" MIN. BEYOND

LARGE PIPE (P1)

SEE UTILITY SHEETS FOR

CAST-IN-PLACE REINFORCED

CONCRETE FIELD CLOSURE

SEWER OR <del>▼ </del>

WATER LINE

44 4 44

PLAN

10' MIN. (TYP)

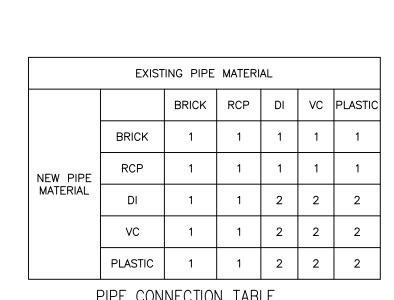
CONCRETE ENCASEMENT NOTE:

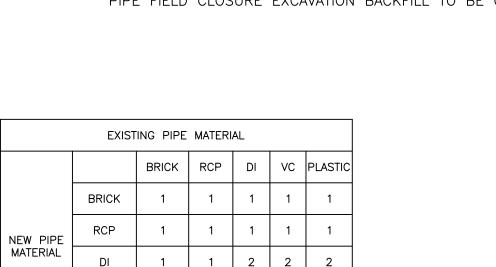
1. CONCRETE SHALL HAVE A MINIMUM 3,000 PSI STRENGTH

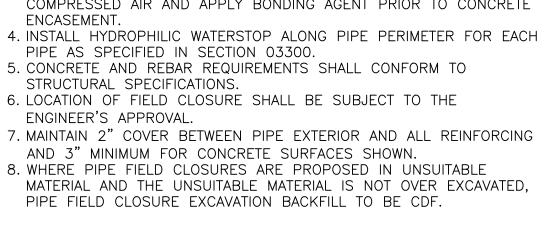
AS INDICATED IN SPECIFICATION SECTION 03300.

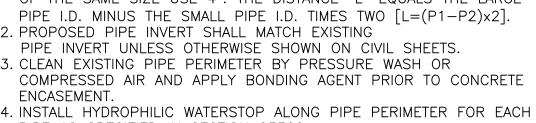
EXISTING PIPE MATERIAL									
NEW PIPE MATERIAL		BRICK	RCP	DI	VC	PLASTIC			
	BRICK	1	1	1	1	1			
	RCP	1	1	1	1	1			
	DI	1	1	2	2	2			
	VC	1	1	2	2	2			
	PLASTIC	1	1	2	2	2			

THE TABLE ABOVE UNLESS OTHERWISE NOTED.









1. SPACING BETWEEN PIPES (L) DEPENDS ON PIPE SIZES, FOR PIPES OF THE SAME SIZE USE 4". THE DISTANCE "L" EQUALS THE LARGE 2. PROPOSED PIPE INVERT SHALL MATCH EXISTING 3. CLEAN EXISTING PIPE PERIMETER BY PRESSURE WASH OR

TYPE 1 PIPE FIELD CLOSURE NOTES:

HYDROPHILIC WATERSTOP ALL AROUND

- 12" (MIN) CONCRETE ENCASEMENT

CONCRETE ENCASEMENT FOR SEWER MAIN CROSSINGS

12" MIN.

<u>PLAN</u>

TOP COURSE

5.25" MIN.—►

<u>SECTION</u>

GATE BOX SETTING

VALVE BOX COVER MARKED "WATER"

SURFACE RESTORATION PER

DRAWINGS AND SPECIFICATIONS

ADJUSTABLE SLIDING CURB BOX

FLAT STONE OR CONCRETE BLOCK

1. ANY WATER MAIN TO BE ENCASED IN CONCRETE FOR STRUCTURAL PURPOSES

TYPICAL WATER SERVICE CONNECTION
SCALE: N.T.S.

SHALL BE ENCASED WITHIN FLOWABLE FILL WITH 0% ASH CONTENT.

1" COPPER UNLESS OTHERWISE REQUIRED

CAP AT PROPERTY LINE OR CONNECT TO

EXISTING WATER SERVICE LINE

GATE BOX COVER WITH "WATER"

CAST ON THE TOP

TACK COAT WHEN —

HMA IS USED

5'-0" MIN.

─ WATER MAIN

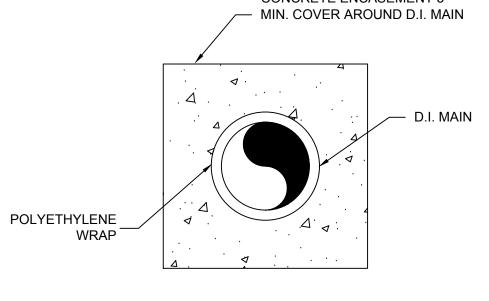
NOTES:

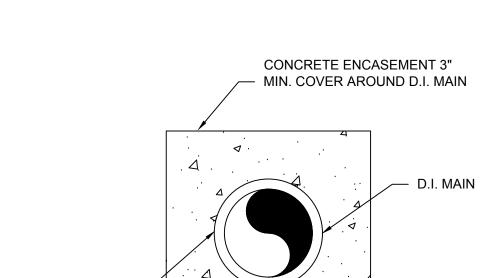
CLASS A CONCRETE OR (2)

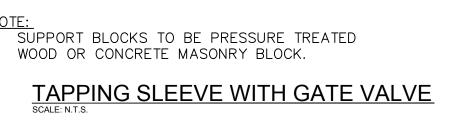
LIFTS OF BINDER COURSE

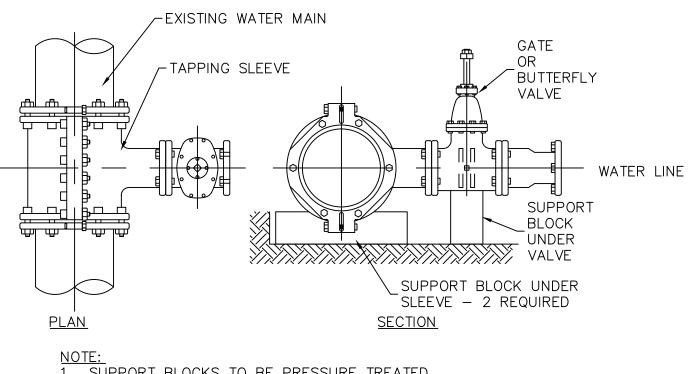
FINISHED GRADE -

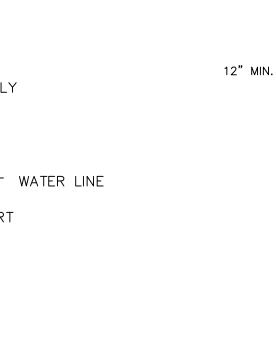
CORPORATION STOP-



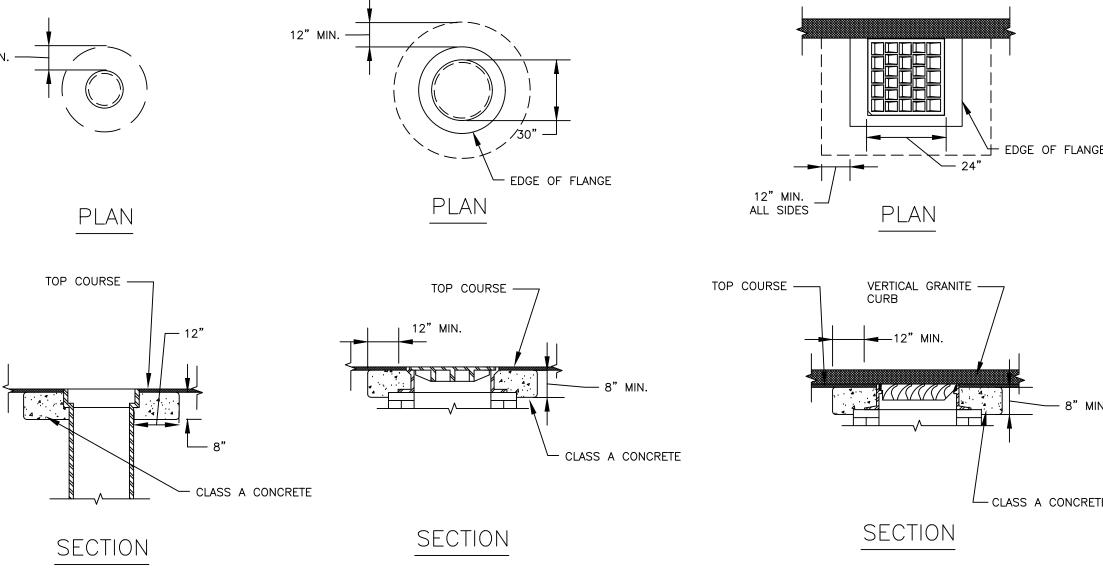








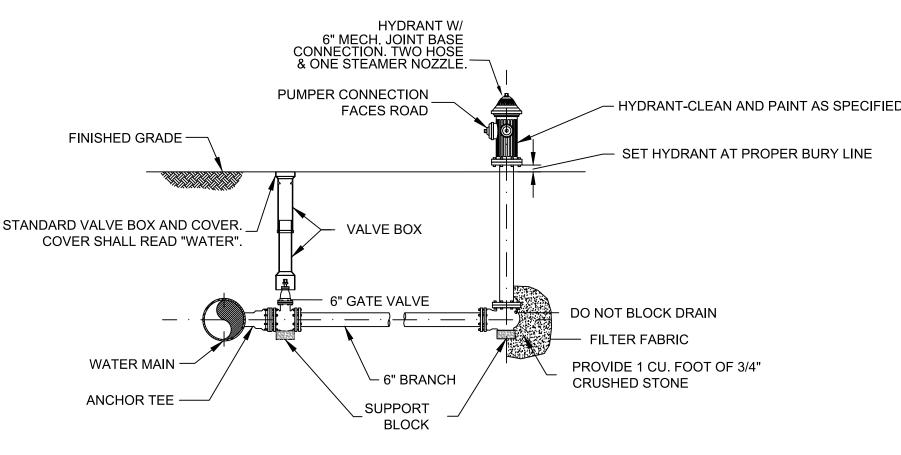
GATE BOXES

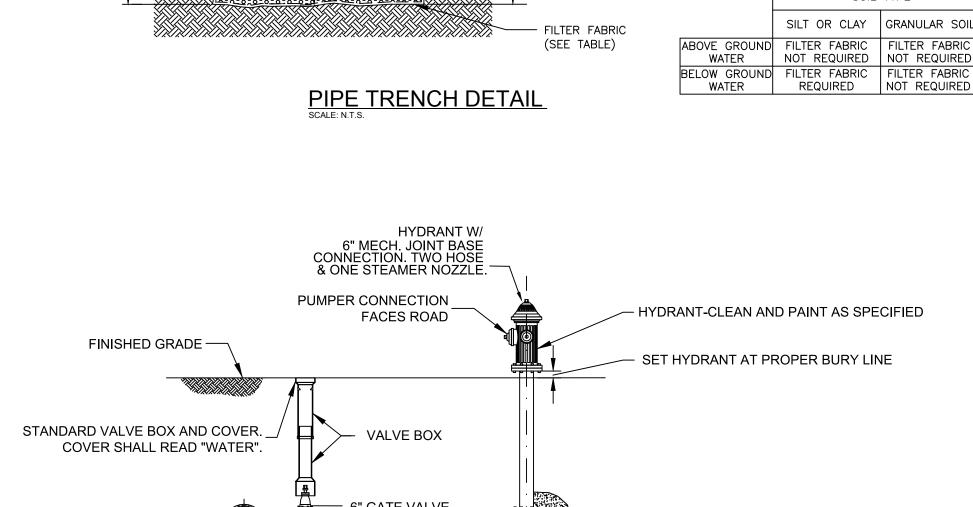


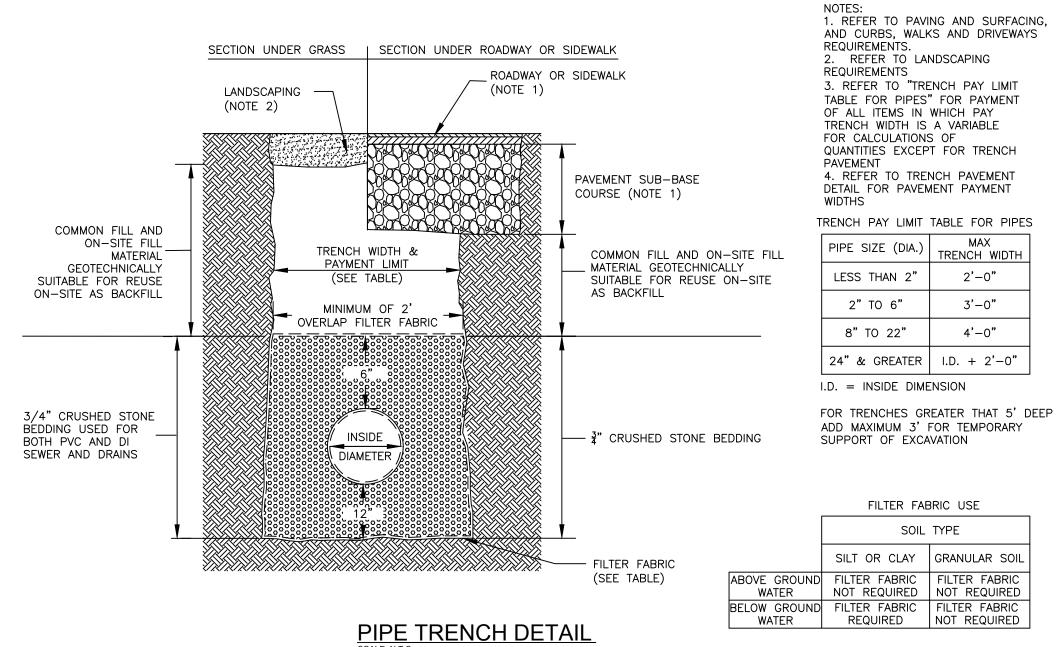
## STANDARDS PER SPECIFICATION. FIRE HYDRANT DETAIL

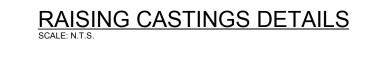
- 4. PROVIDE JOINT RESTRAINT AND THRUST BLOCK PER CITY WATER DEPARTMENT
- ALL VALVES OPEN RIGHT.

- 2. SUPPORT BLOCKS TO BE PRESSURE TREATED WOOD OR CONCRETE MASONRY BLOCK.
- 1. PROVIDE HYDRANT AND VALVE JOINTS WITH APPROVED MECHANICAL JOINTS.

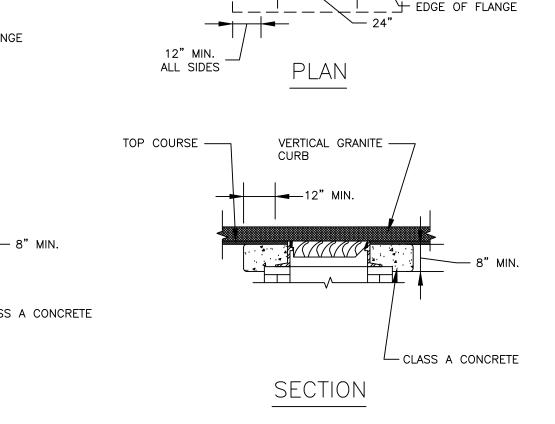








MANHOLES



CATCH BASINS

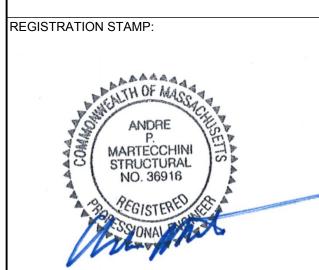
L1540-C1 PROJECT SUBMISSION PHASE 60% SUBMISSION REGISTRATION STAMP: MARTECCHIN

PROJECT LOCATION:

MPA CONTRACT NO.:

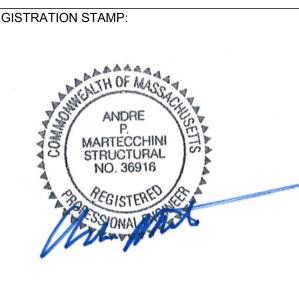
MASSPORT PIERS PARK II

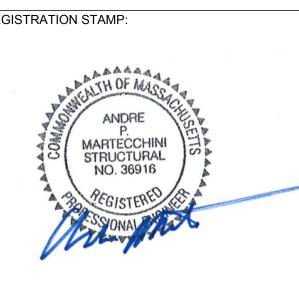
EAST BOSTON, MA 02128









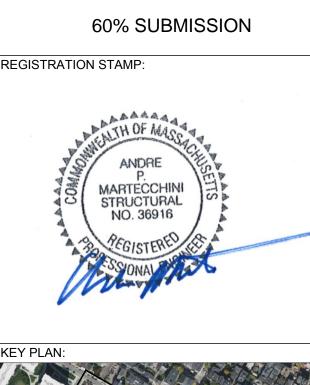


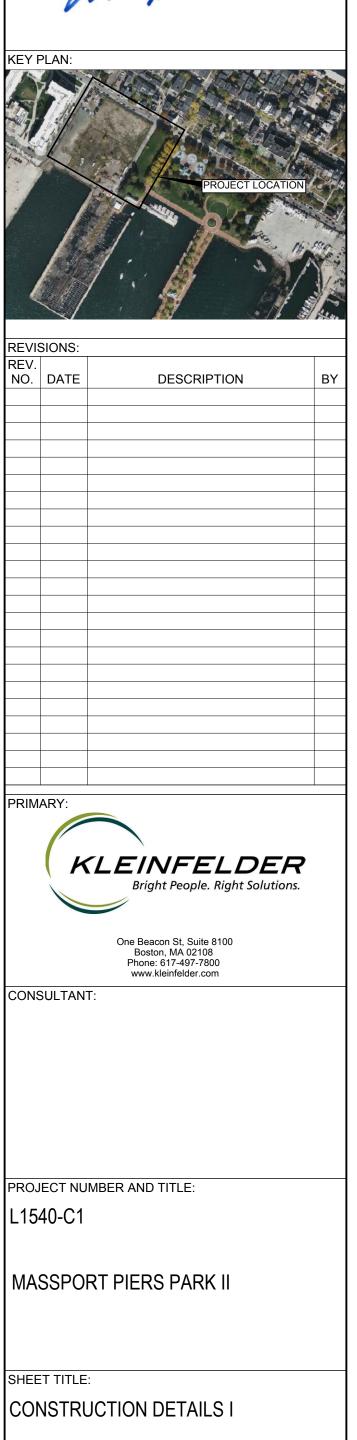


MASSACHUSETTS PORT AUTHORITY EAST BOSTON, MASSACHUSETTS 02128



LOCATION CODE:





G:\\_CLIENTS\MASSPORT\20190371.004A-PIERS PARK PHASE II - FINAL DESIGN\DRAWINGS\CIVIL\PRODUCTION\CONSTRUCTION DETAILS.DWG 3/22/2022 10:30:37 AM

DESIGN BY: DRAWN BY: CHECKED APPROVED

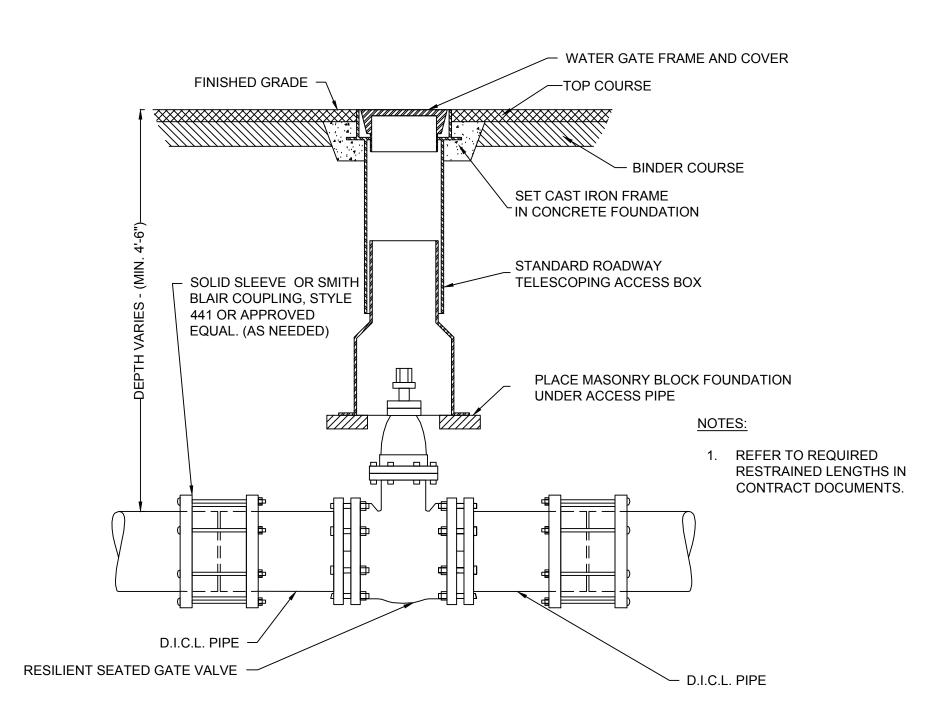
03/18/2022

DISCIPLINE:

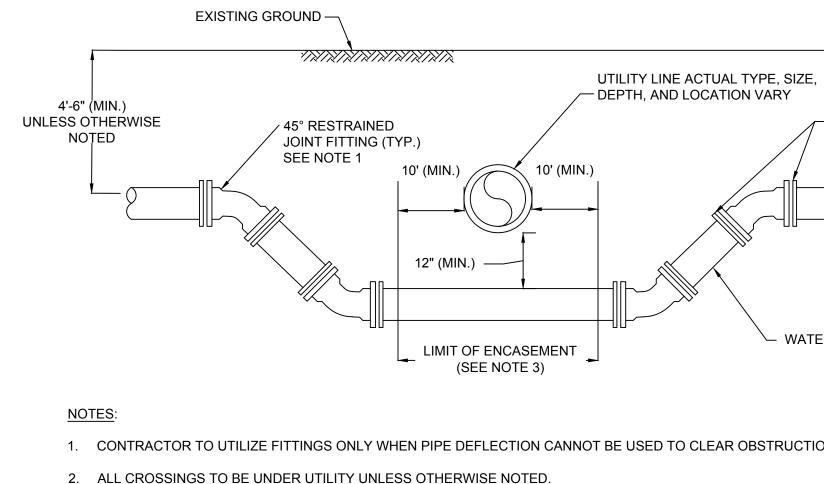
CIVIL

SCALE:

SHEET NUMBER:



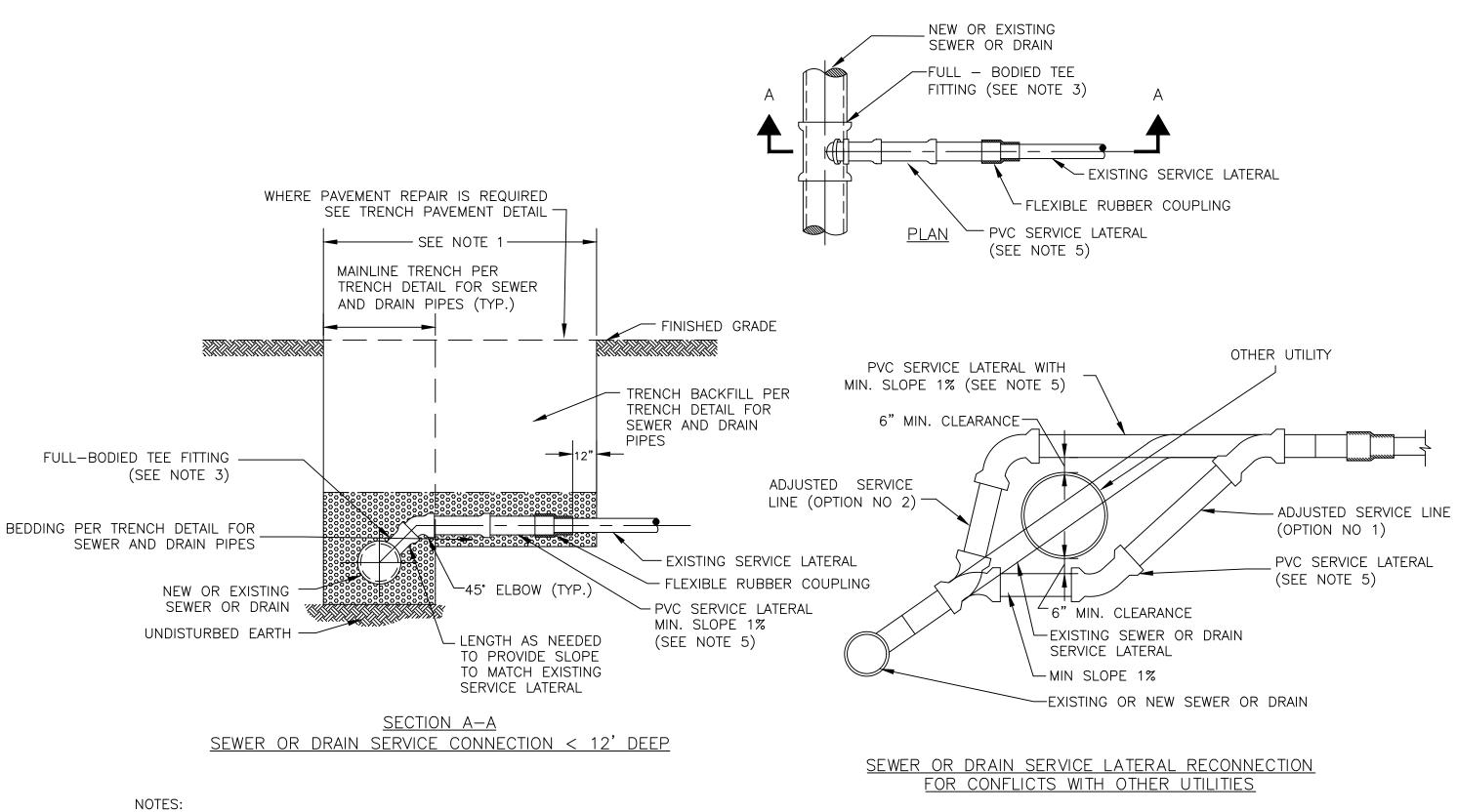
TYPICAL VALVE



- 1. CONTRACTOR TO UTILIZE FITTINGS ONLY WHEN PIPE DEFLECTION CANNOT BE USED TO CLEAR OBSTRUCTION.
- 2. ALL CROSSINGS TO BE UNDER UTILITY UNLESS OTHERWISE NOTED.
- 3. FOR WATER MAIN CROSSING UNDER SEWER MAINS REFER TO SEWER CROSSING AT WATER MAIN DETAIL.

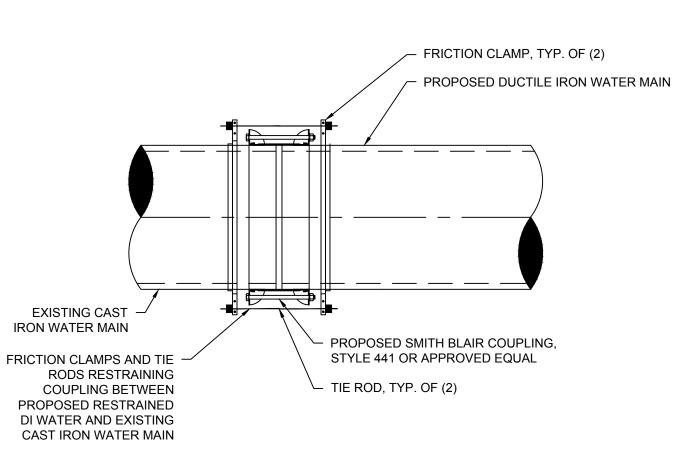
4. INSULATE ALL SMALL DIAMETER WATER MAIN HAVING LESS THAN 4'-0" COVER AND ALL LARGE DIAMETER WATER MAIN (16" OR 20") HAVING LESS THAN 3'-6" COVER.

## WATER MAIN UTILITY CROSSING



- 1. REPLACE EXISTING SERVICE LATERAL TO EXTENT REQUIRED. 2. EXCAVATE AND REMOVE EXISTING LATERAL AS REQUIRED TO ALLOW RECONSTRUCTION.
- 3. FOR SEWER AND DRAIN SERVICE CONNECTIONS TO MAINLINE 18" IN DIAMETER OR GREATER AN INSERTA TEE OR EQUAL MAY BE USED. 4. FOR SERVICE CONNECTIONS > 12' DEEP FROM INVERT OF MAINLINE PIPE TO FINISHED GRADE, SEE CHIMNEY DETAIL.
- 5. SEWER AND DRAIN LATERALS SHALL BE SIZED TO FIT ANTICIPATED FLOWS BUT SHALL NOT BE LESS THAN 6" FOR SEWER SERVICES AND 8" FOR DRAIN SERVICES

# SEWER OR DRAIN SERVICE CONNECTION



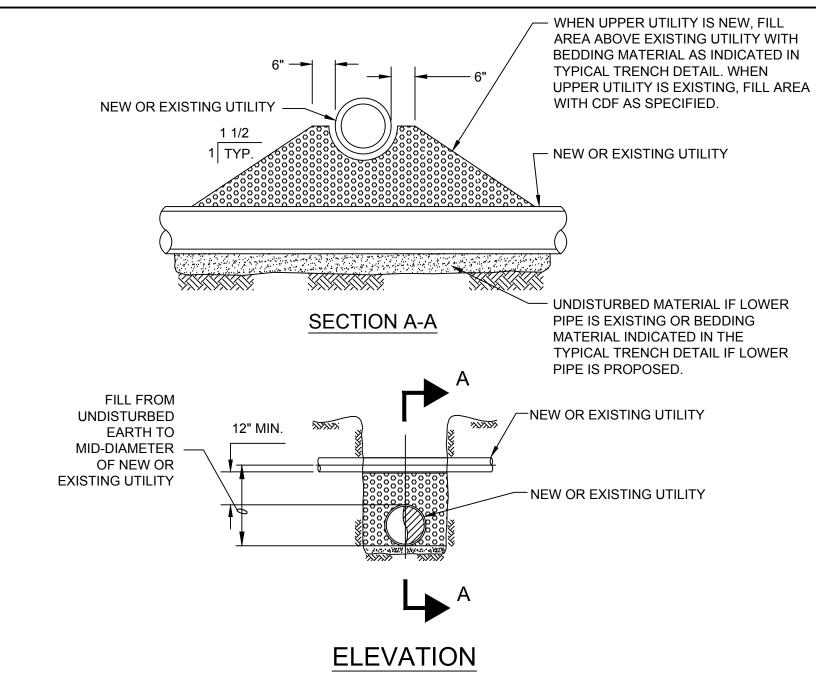
INSTALL MEG-A-LUG

- WATER MAIN (SIZE VARIES)

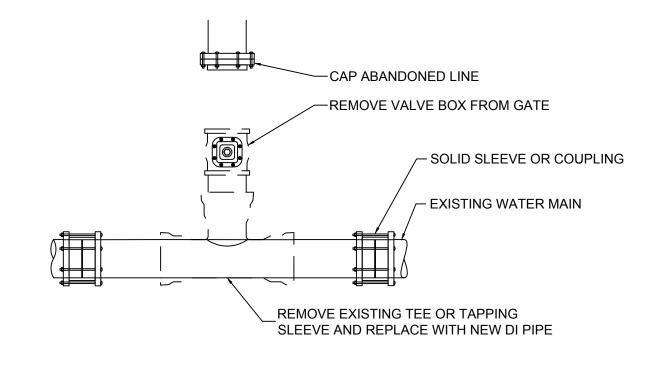
RETAINER GLANDS (TYP.)

1. EXISTING WATER MAIN TO PROPOSED WATER MAIN CONNECTIONS SHALL BE RESTRAINED WITH TIE RODS. RODS, FRICTION CLAMP WASHERS, AND HEAVY HEX NUTS SHALL BE AISI 316 SERIES STAINLESS STEEL MANUFACTURED IN THE UNITED STATES IN ACCORDANCE WITH ASTM A193 GRADE B8M CLASS 1. WHERE 316 STAINLESS STEEL IS NOT AVAILABLE THE CONTRACTOR SHALL PROVIDE FUSION BONDED EPOXY COATED HARDWARE. TIE RODS SHALL BE DOUBLE NUTTED ON EACH END.

# RESTRAINED CONNECTION TO EXISTING CAST IRON WATER MAINS



# UTILITY CROSSING DETAIL SCALE: N.T.S.



WATER MAIN CUT AND CAP DETAIL



MASSACHUSETTS PORT AUTHORITY EAST BOSTON, MASSACHUSETTS 02128

PROJECT LOCATION: MASSPORT PIERS PARK II EAST BOSTON, MA 02128

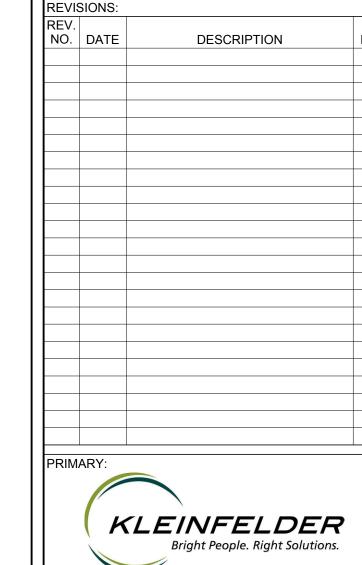
LOCATION CODE: MPA CONTRACT NO.: L1540-C1

PROJECT SUBMISSION PHASE:

60% SUBMISSION REGISTRATION STAMP:







KLEINFELDER Bright People. Right Solutions.	
One Beacon St, Suite 8100 Boston, MA 02108 Phone: 617-497-7800 www.kleinfelder.com	
CONSULTANT:	

PROJECT NUMBER AND TITLE:

MASSPORT PIERS PARK II

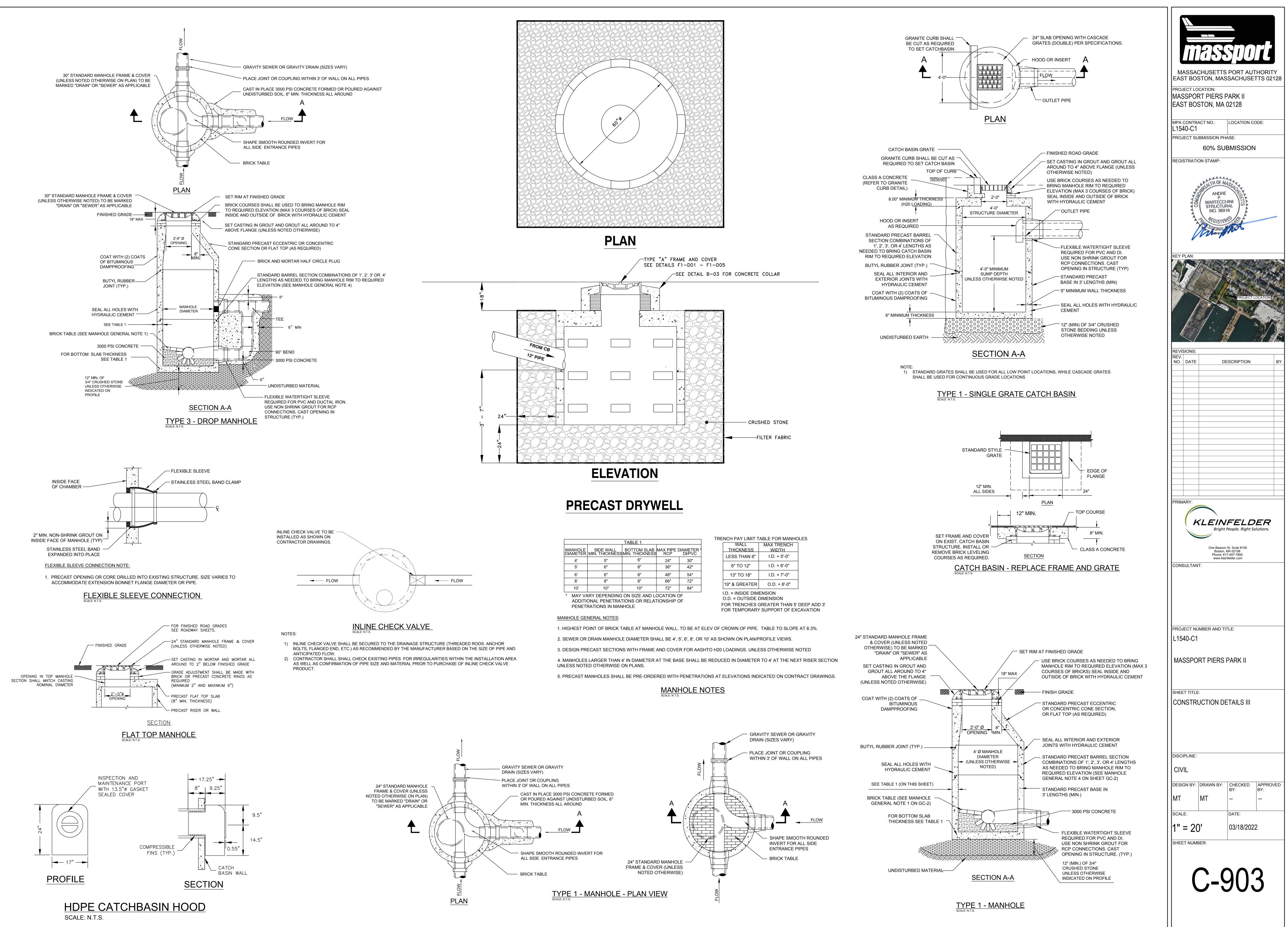
SHEET TITLE:

CONSTRUCTION DETAILS II

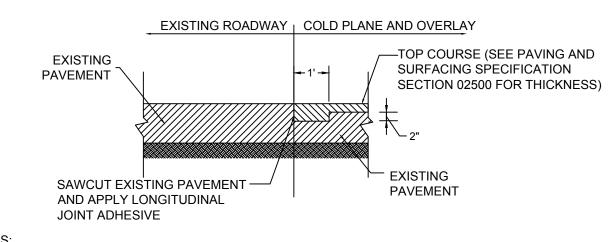
DISCIPLINE:

CIVIL

SHEET NUMBER:

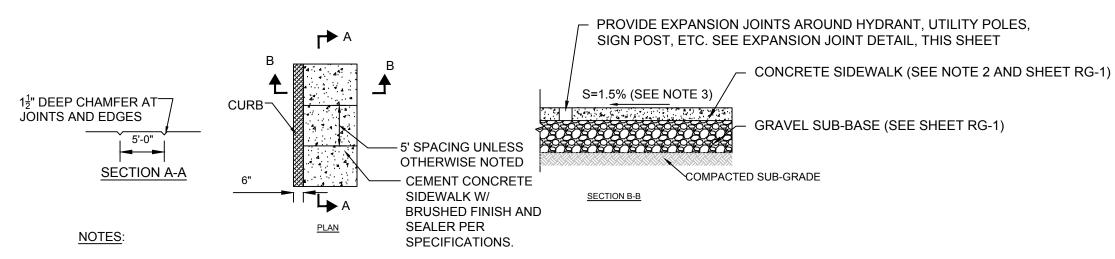


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1. CLEAN ALL COLD PLANED SURFACES BEFORE APPLYING JOINT ADHESIVE AND FINAL PAVEMENT

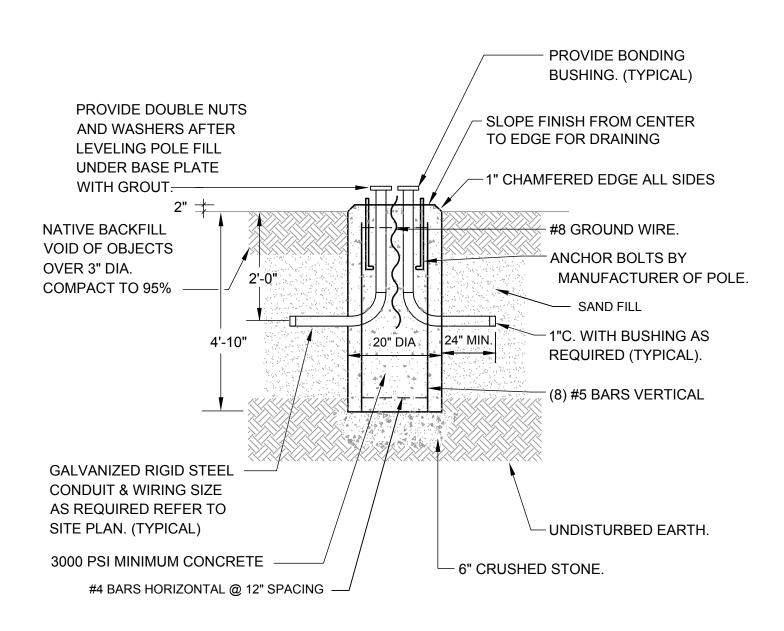
## COLD PLANE AND OVERLAY JOINT SCALE: N.T.S.



- NEW SIDEWALK SHALL MATCH WIDTH OF EXISTING SIDEWALK, UNLESS OTHERWISE NOTED.
- 2. SIDEWALK MATERIAL TO MATCH EXISTING SIDEWALK, UNLESS OTHERWISE NOTED.
- SIDEWALKS TO BE BUILT ACCORDING TO PROWAG AND MA AAB REGULATIONS, 1.5% MAX (0.5% TOLERANCE) CROSS SLOPE.
- 4. AROUND HYDRANTS, UTILITY POLES, SIGN POSTS ETC., SEE EXPANSION JOINT DETAIL (THIS SHEET).
- 5. SEE ROADWAY GRADING AND DETAILED GRADING SHEETS FOR SIDEWALK GRADES.
- MINIMUM CLEARANCE OF 3' SHALL BE PROVIDED AT EXISTING TREE PITS. MINIMUM CLEARANCE OF 4' SHALL BE PROVIDED AT ALL OTHER LOCATIONS.
- 7. CONCRETE SHALL BE 6" THICK WITHIN LIMITS OF BUS STOPS, PEDESTRIAN RAMPS AND DRIVEWAYS. CONCRETE SHALL BE 4" THICK AT ALL OTHER LOCATIONS

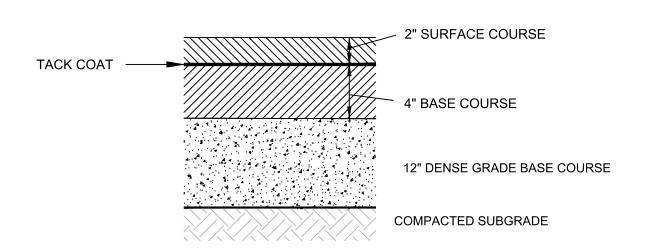
  CONCRETE SIDEWALK

  SOLVENITOR

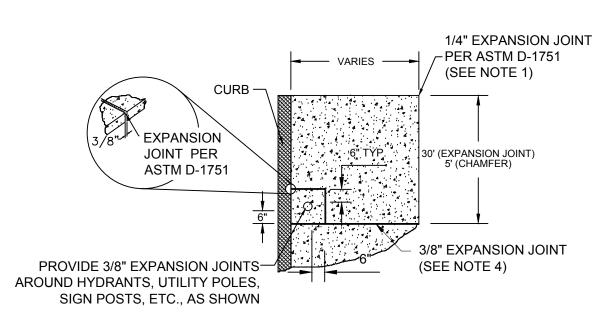


- 1. LOCATE ANCHOR BOLTS SUCH THAT THE POLE AND BOLT COVER ARE
- CENTERED ON THE POLE BASE.
- 2. CONNECT CIRCUIT GROUND WIRE TO THE POLE.



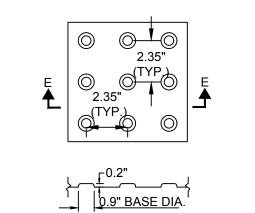






- 1. EXPANSION JOINTS SHALL BE INSTALLED AT BACK OF SIDEWALK STEPS, WALLS, BUILDINGS, AND OTHER STRUCTURES.
- EXPANSION JOINTS AT BUILDINGS SHALL BE CAULKED. EXPANSION JOINTS SHALL BE USED AT TRANSITIONS BETWEEN NEW AND EXISTING
- SIDEWALK JOINTS. 4. EXPANSION JOINTS OF 3/8-IN THICK FOAM SHALL BE PLACED EVERY 30 FEET PERPENDICULAR TO CURB ALIGNMENT EXTENDING THROUGH THE SIDEWALK

EXPANSION JOINT

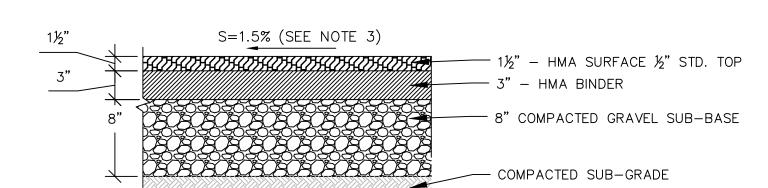


SECTION E-E

PROFILE GRADE CURB >0.00 TO 0.01 | 7'-8" >0.01 TO 0.02 9'-0" >0.02 TO 0.03 | 11'-0" >0.03 TO 0.04 | 14'-0" >0.04 | 15'-0" MAX \* BASED ON A DESIGN SLOPE OF 7.5% AND 6" CURB REVEAL.

- 1. DETECTABLE WARNING SURFACES SHALL CONTRAST VISUALLY WITH ADJACENT WALKING
- SURFACES EITHER LIGHT-ON-DARK OR DARK-ON-LIGHT. 2. DETECTABLE WARNING PANELS SHALL EXTEND A MIN. OF 2' IN RAMP AND BE CONSTRUCTED
- OF CAST IRON. 3. DETECTABLE WARNING PANELS WITHIN THE LIMITS OF BRICK OR CONCRETE PAVER INTERSECTIONS (AT-GRADE OR RAISED) TO BE COATED WITH YELLOW POWDER COAT PAINT PROVIDED BY THE MANUFACTURER.

## DETECTABLE WARNING PANEL SCALE: N.T.S.



NEW SIDEWALK SHALL MATCH WIDTH OF EXISTING SIDEWALK, UNLESS OTHERWISE NOTED. SIDEWALK MATERIAL TO MATCH EXISTING SIDEWALK, UNLESS OTHERWISE NOTED.

SEE LAYOUT PLAN FOR WIDTHS

SEE GRADING PLAN FOR

ELEVATIONS

└─ 4" CEM CONC DOOR APRON

└─ 8" GRAVEL BORROW

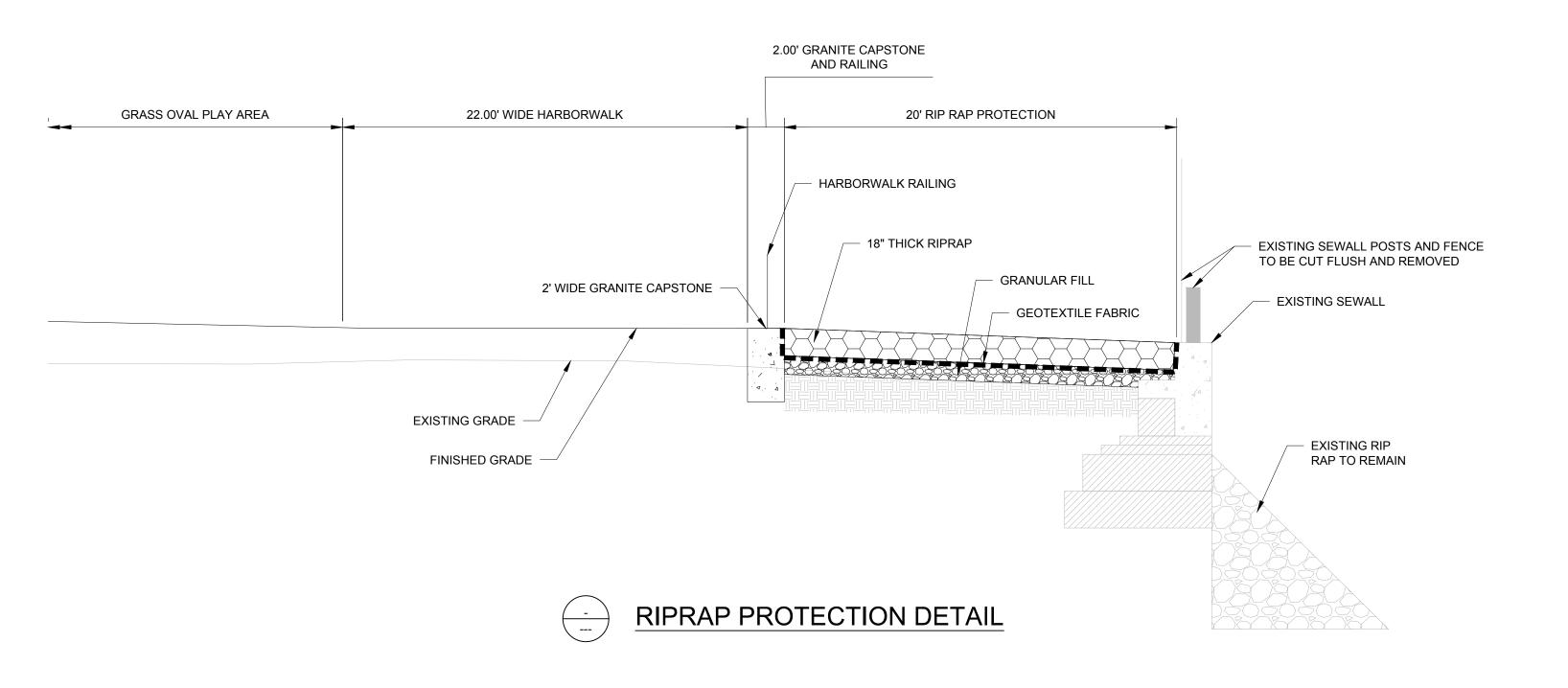
REINFORCED CEMENT CONCRETE DOOR APRON

W.W.F. (6X6 W4XW4) —

SIDEWALKS TO BE BUILT ACCORDING TO ADA AND MA AAB REGULATIONS, 2.0% MAX (0% TOLERANCE) CROSS SLOPE.

5. SEE SITE LAYOUT PLANS AND GRADING PLANS FOR SIDEWALK WIDTHS AND GRADES.

HMA SIDEWALK
SCALE: N.T.S.



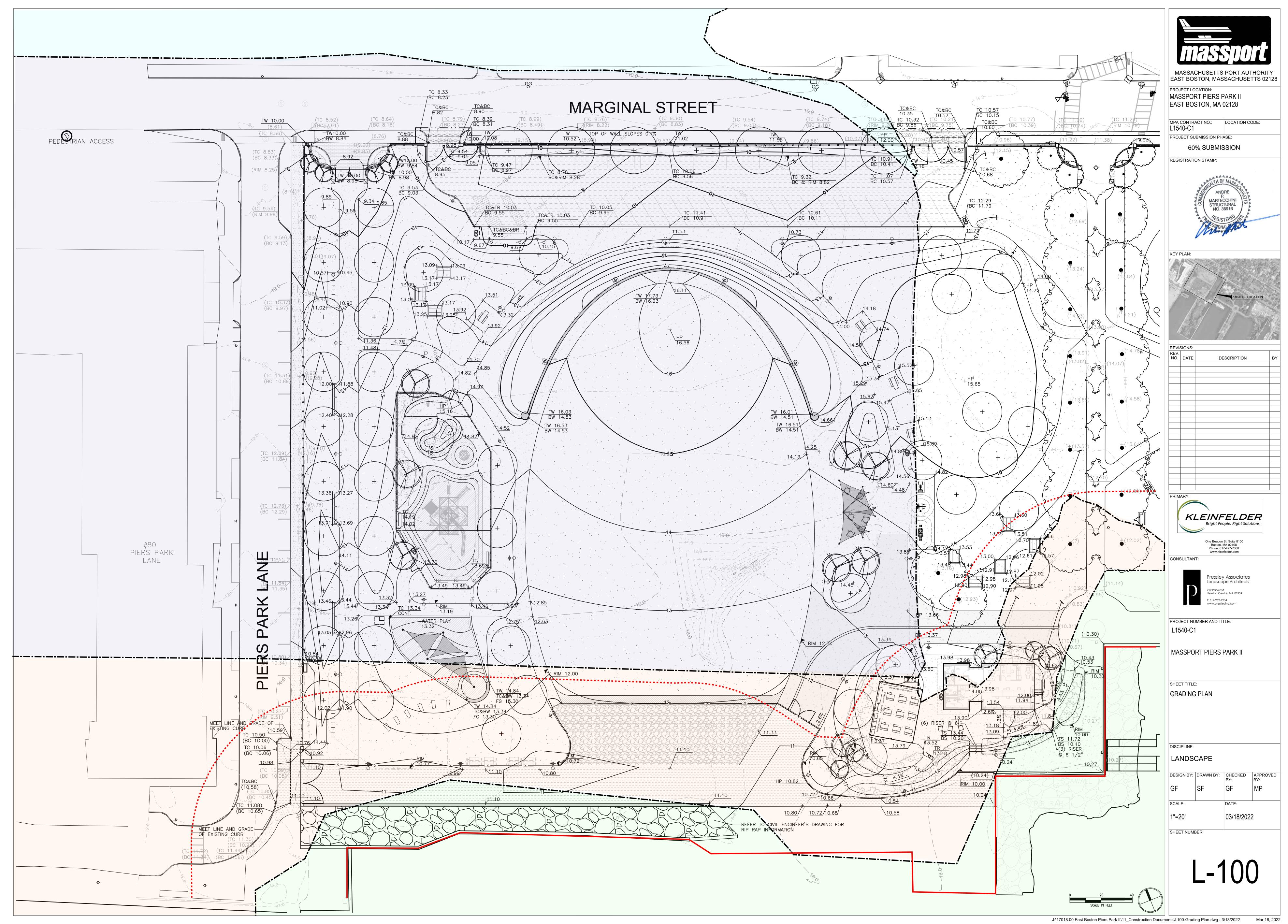
MASSACHUSETTS PORT AUTHORITY EAST BOSTON, MASSACHUSETTS 02128 PROJECT LOCATION: MASSPORT PIERS PARK II EAST BOSTON, MA 02128 MPA CONTRACT NO.: LOCATION CODE: L1540-C1 PROJECT SUBMISSION PHASE: 60% SUBMISSION REGISTRATION STAMP: STRUCTURAL KEY PLAN: **REVISIONS:** NO. DATE DESCRIPTION PRIMARY KLEINFELDER Bright People. Right Solutions. One Beacon St, Suite 8100 Boston, MA 02108 Phone: 617-497-7800 CONSULTANT PROJECT NUMBER AND TITLE: L1540-C1 MASSPORT PIERS PARK II SHEET TITLE: CONSTRUCTION DETAILS IV DISCIPLINE: CIVIL DESIGN BY: DRAWN BY: CHECKED APPROVED

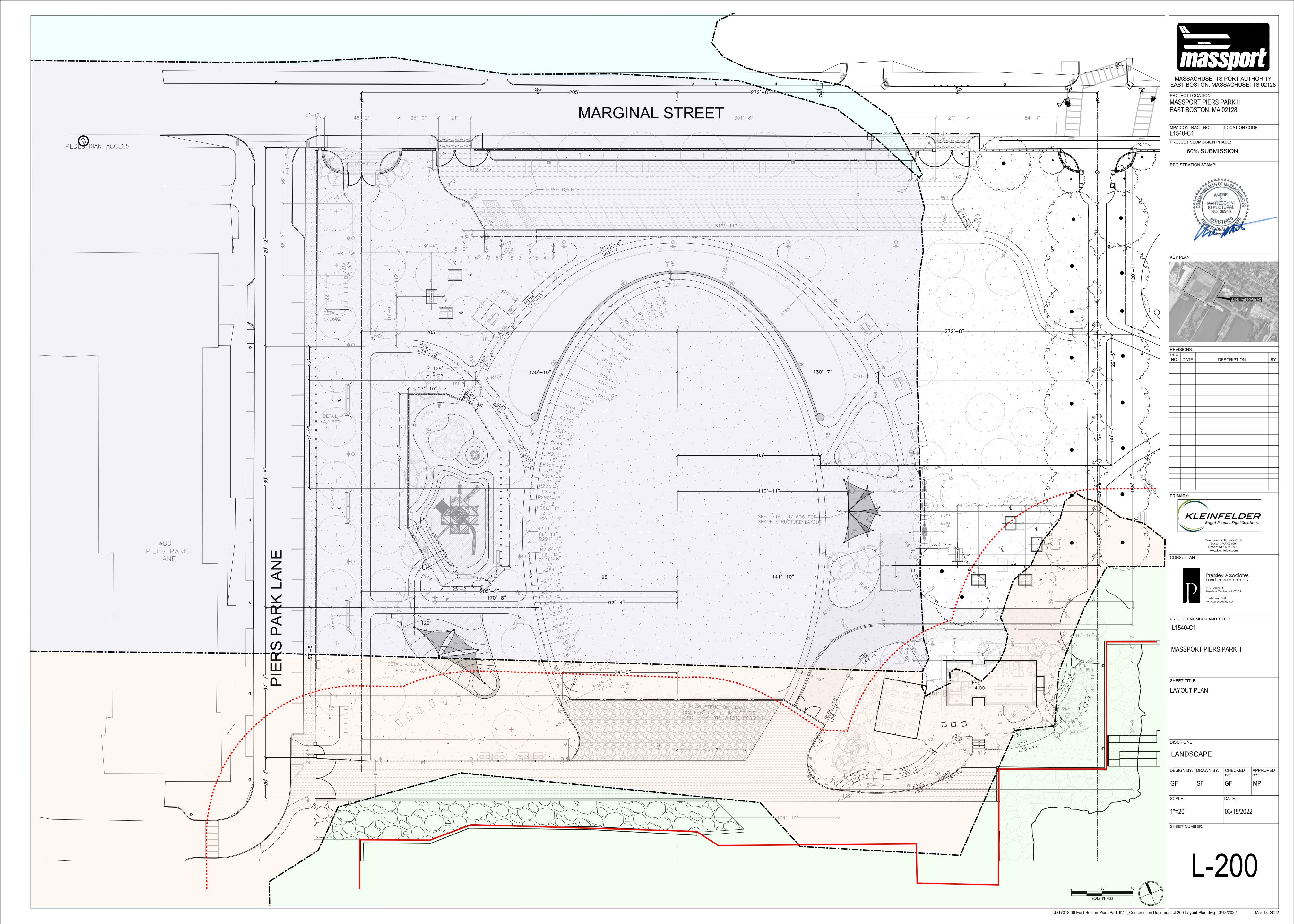
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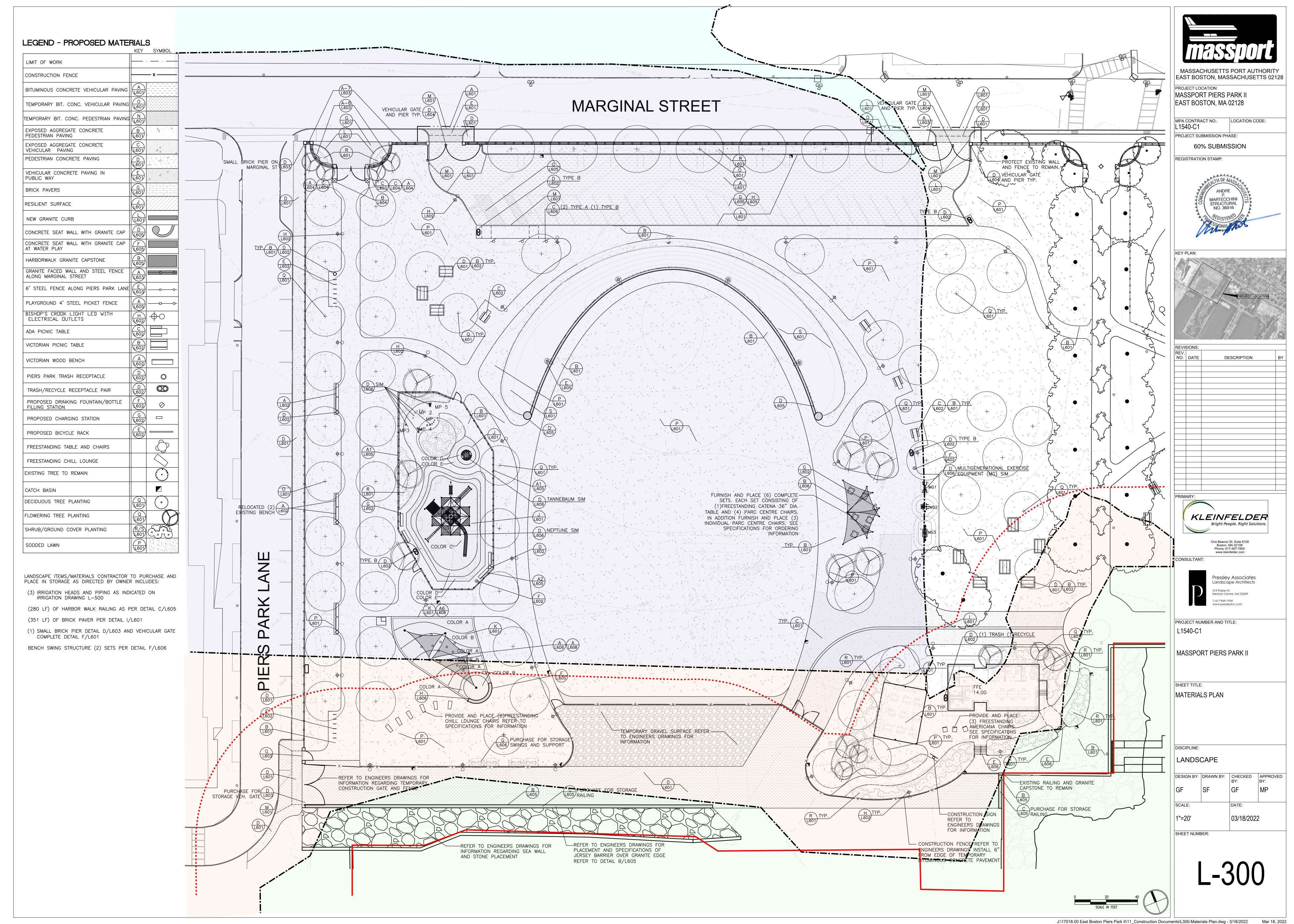
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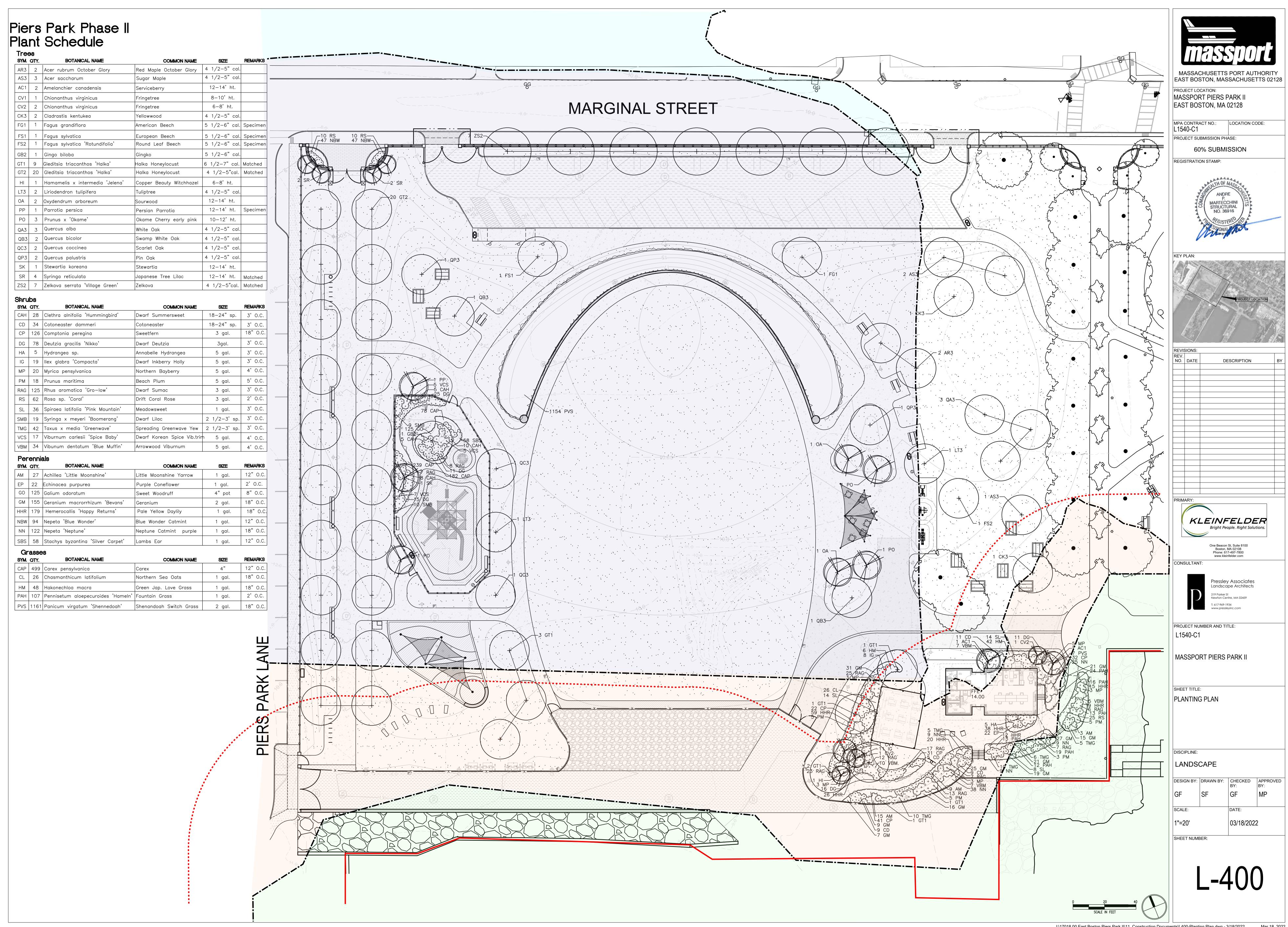
SHEET NUMBER:

03/18/2022









#### IRRIGATION GENERAL NOTES:

- 3. COORDINATE FINAL LOCATION OF ALL IRRIGATION EQUIPMENT WITH THE LANDSCAPE AND SITE CONDITIONS. ALL FIELD CHANGES SHALL BE APPROVED BY THE LANDSCAPE ARCHITECT PRIOR TO THE START OF CONSTRUCTION.
- 4. ALL PIPE AND VALVE LOCATIONS ARE DIAGRAMMATIC, CONTRACTOR TO VERIFY IN THE FIELD PRIOR TO INSTALLATION. VERIFY CONTROLLER LOCATION WITH OWNER REPRESENTATIVE. 5. RAIN SHUTOFF LOCATION SHALL BE APPROVED BY THE LANDSCAPE ARCHITECT BEFORE
- 7. CONTRACTOR SHALL ROUTE THE PIPE AS NECESSARY TO PREVENT DAMAGE TO TREE ROOTS, WHERE TRENCHING MUST OCCUR NEAR TREES, THE CONTRACTOR SHALL DISCUSS THE ROUTING WITH THE OWNER REPRESENTATIVE.
- 8. QUICK COUPLING VALVES ARE TO BE INSTALLED AT THE POINT OF CONNECTION TO WINTERIZE THE SYSTEM AND AT SOME LOCATIONS AS INDICATED ON THE DRAWING. 9. ALL MAINLINE TO BE INSTALLED AT A MINIMUM OF 16 INCHES DEEP AND LATERAL AT 12 INCHES DEEP. 10. USE DRIP IRRIGATION IN DESIGNATED AREAS.
- 11. DRIP LINES SHOULD BE SPACED NOT EXCEEDING 18" BETWEEN LINES AND 12" BETWEEN EMITTERS. ROUND DRIP LINES ONE RING FOR SMALL SHRUBS, TWO RINGS FOR MEDIUM ONES AND THREE TIMES FOR BIG ONES, MINIMUM RING LENGTH SHOULD BE 8 FOOT IN LENGTH.
- 12. INSTALL AT LEAST ONE FLUSH VALVE PER DRIP IRRIGATION ZONE AND ONE AIR/VACCUUM RELIEF VALVE. AIR VALVE SHOULD BE INSTALLED AT THE HIGHEST POINT OF THE ZONE AND FLUSH VALVES AT THE END OF LINES. AIR VALVES AND FLUSH VALVES
- SHOULD BE INSTALLED IN AT LEAST 10" ROUND VALVE BOX. 13. INSTALL A BALL VALVE BEFORE EVERY ELECTRIC ZONE VALVE (SIZE EQUAL THE ELECTRIC VALVE AFTER IT).
- 14. INSTALL A BOOSTER PUMP AND BACKFLOW DEVICE INSIDE AN ENCLOSURE. ( ENCLOSURE SIZE AND BACKFLOW WILL BE DETERMINED LATER).

#### IRRIGATION LEGEND

IRRIGATION LEGEND			
△ 5Q	RAINBIRD 1804 SAM-PRS HEAD 5'RADIUS, 90 DEG. ARC.		
△ 5H	RAINBIRD 1804 SAM-PRS HEAD 5'RADIUS,180 DEG. ARC.		
△ 8Q	RAINBIRD 1804 SAM-PRS HEAD 8'RADIUS,90 DEG. ARC.		
△ 8H	RAINBIRD 1804 SAM-PRS HEAD 8'RADIUS,180 DEG. ARC.		
△ 10Q	RAINBIRD 1804 SAM-PRS HEAD 10' RADIUS,90 DEG. ARC.		
△ 10H	RAINBIRD 1804 SAM-PRS HEAD 10' RADIUS,180 DEG. ARC.		
△ <sub>12Q</sub>	RAINBIRD 1804 SAM-PRS HEAD 12'RADIUS,90 DEG. ARC.		
△ 12H	RAINBIRD 1804 SAM-PRS HEAD 12'RADIUS,180 DEG. ARC.		
△ <sub>12F</sub>	RAINBIRD 1804 SAM-PRS HEAD 12'RADIUS,360 DEG. ARC.		
△ 15Q	RAINBIRD 1804 SAM-PRS HEAD 15'RADIUS,90 DEG. ARC.		
△ 15H	RAINBIRD 1804 SAM-PRS HEAD 15'RADIUS,180 DEG. ARC.		
△ 15F	RAINBIRD 1804 SAM-PRS HEAD 15'RADIUS,360 DEG. ARC.		
△ 6V	RAINBIRD 1804 SAM-PRS HEAD 6' RADIUS ADJUSTABLE ARC.		
△ 8∨	RAINBIRD 1804 SAM-PRS HEAD 8' RADIUS ADJUSTABLE ARC.		
△10V	RAINBIRD 1804 SAM-PRS HEAD 10' RADIUS ADJUSTABLE ARC.		
△ 12V	RAINBIRD 1804 SAM-PRS HEAD 12'RADIUS, ADJUSTABLE ARC.		
△ 15V	RAINBIRD 1804 SAM-PRS HEAD 15'RADIUS, ADJUSTABLE ARC.		
△ 18V	RAINBIRD 1804 SAM-PRS HEAD 18'RADIUS, ADJUSTABLE ARC.		
△ sst	RAINBIRD 1804 SAM-PRS HEAD 4'X15' SIDE STRIP 15SST.		
△ EST	RAINBIRD 1804 SAM-PRS HEAD 4'X15' END STRIP 15EST.		
△ CST	RAINBIRD 1804 SAM-PRS HEAD 4'X15'CENTER STRIP15CST.		
#3 🔾	HUNTER PGP ULTRA ADJUSTABLE ARC #3 NOZZLE.		
#6 🔾	HUNTER PGP ULTRA ADJUSTABLE ARC #6 NOZZLE.		
	HUNTER PGP ULTRA ADJUSTABLE ARC #8 NOZZLE.		

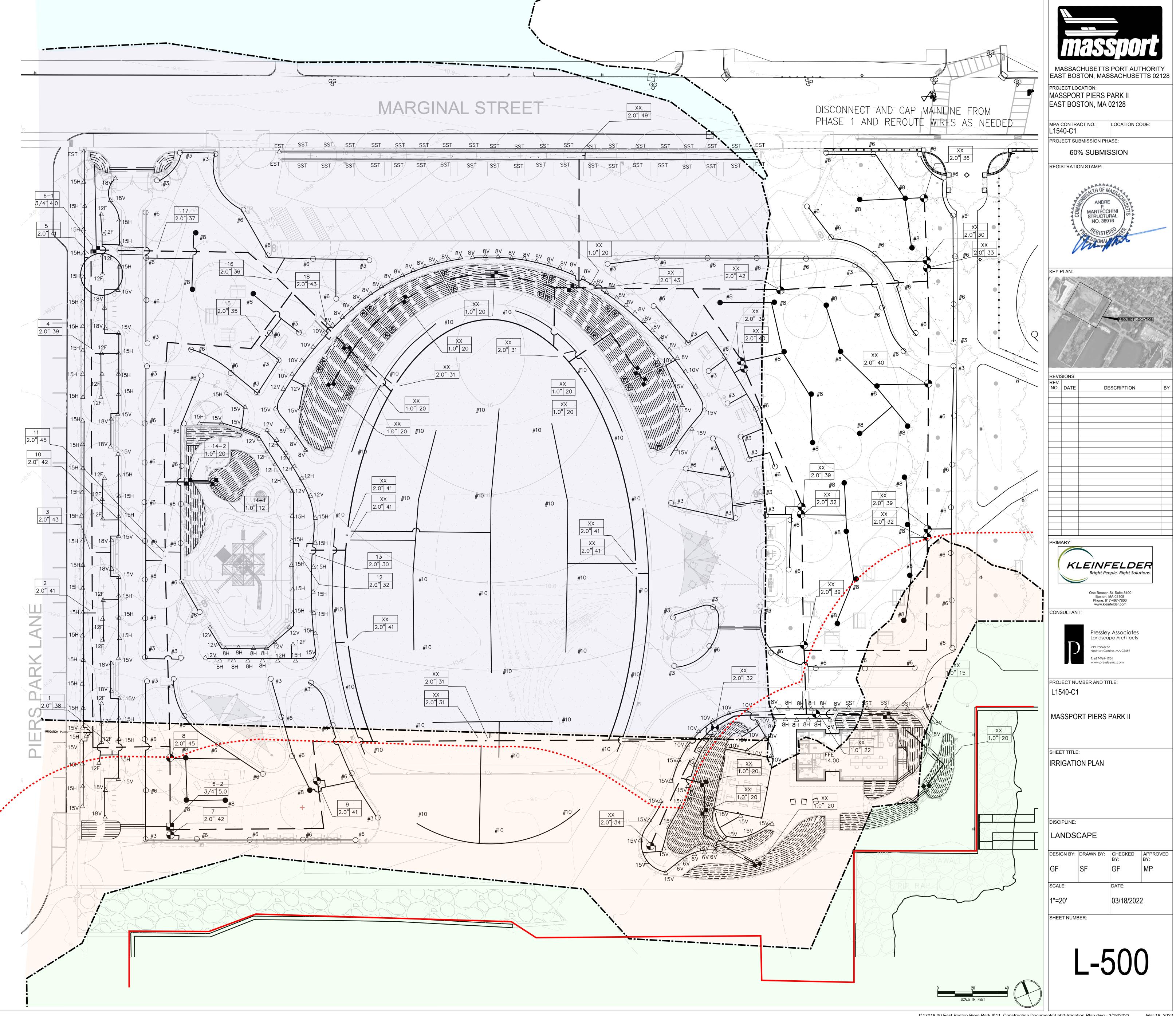
#10 <b>(</b>	Hunter I-25-36V, 360 degree #10 Nozzle.	
	T	
Р	Booster Pump To Be installed in outside cabinet. (See specs for details).	
P.O.C	Point of Connection.	
#10⊘	Hunter I-25-ADS Adjustable Arc #10 Nozzle.	
#10 <b>(</b>	Hunter I-25-36V, 360 degree #10 Nozzle.	
€	Hunter ACC-99D.	
•	Rainbird PEB Series 24 Volt Electric Zone Valve (size as indicated on drawing)	
	21/2" P.V.C. SDR-21 Mainline.	
	2",1.5" P.V.C. SDR-21 And 1",1.25" POLYETHYLENE Lateral. (SIZE AS INDICATED ON PLANS OR IN PIPE SCHEDULE)	
	SDR-26 Sleeve, 6" for Mainline and 4" for Lateral.	
®	HUNTER SOLAR-SYNC-SEN, SENSOR.	
Q	Rainbird 3/4" Quick Coupling Valve Model 33DLRC.	
X	21/2" Isolation Gate Valve.	
	4" P.V.C. SDR-21 Supply Pipe.	
F	NETAFIM INLINE FLUSH VALVE, MODEL TLFV-1	
(A) NETAFIM AIR/VACUUM RELIEF VALVE, MODEL TLAVRV.		
	NETAFIM TECHLINE, MODEL TLDL-12	
	RAINBIRD DRIP CONTROL ZONE, MODEL XCZ-100-PRB-COM.	
	STATION NUMBER	
	G.P.M. OF ZONE	
L	ZONE VALVE SIZE	

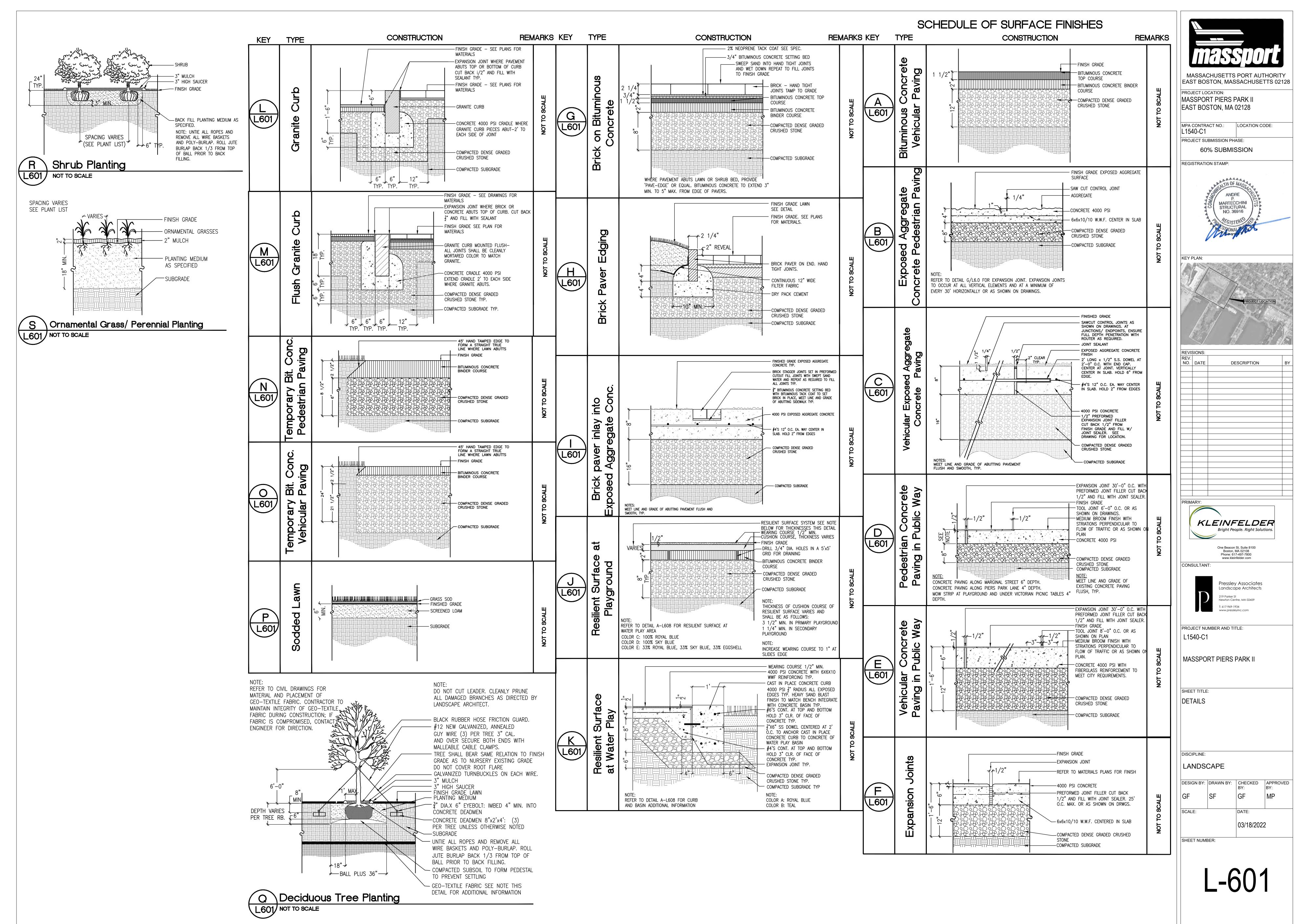
#8 ● HUNTER PGP ULTRA FULL CIRCLE #8 NOZZLE.

#10 Hunter I-25-ADS Adjustable Arc #10 Nozzle.

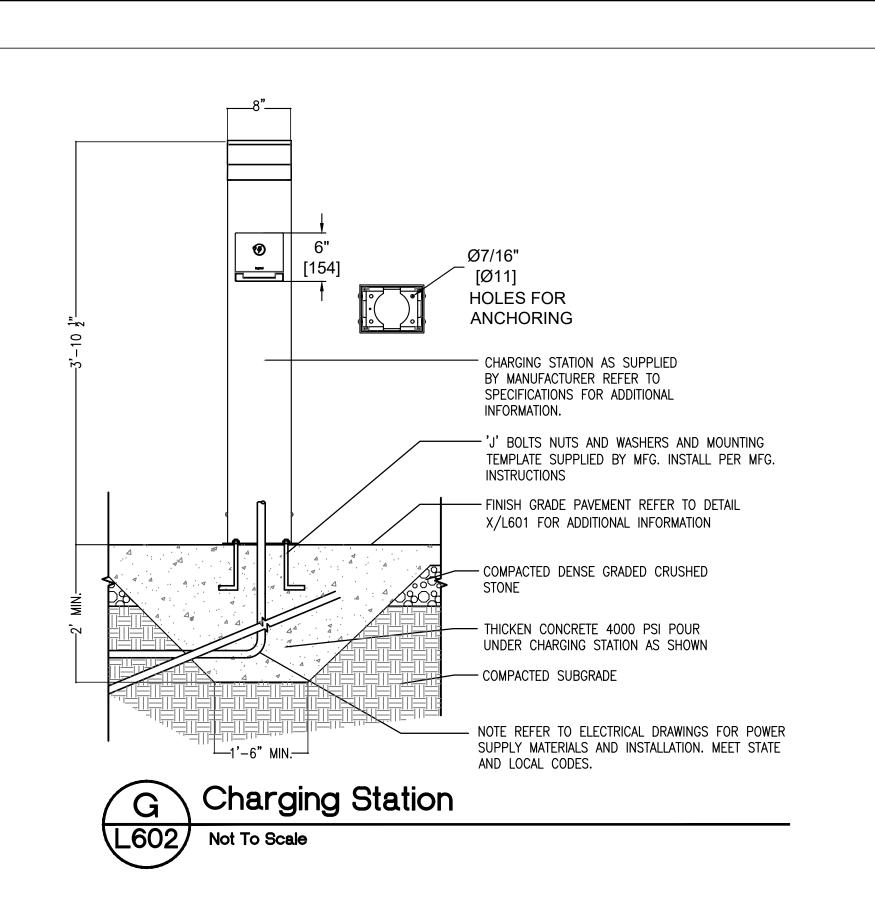
## lateral pipe size schedule:

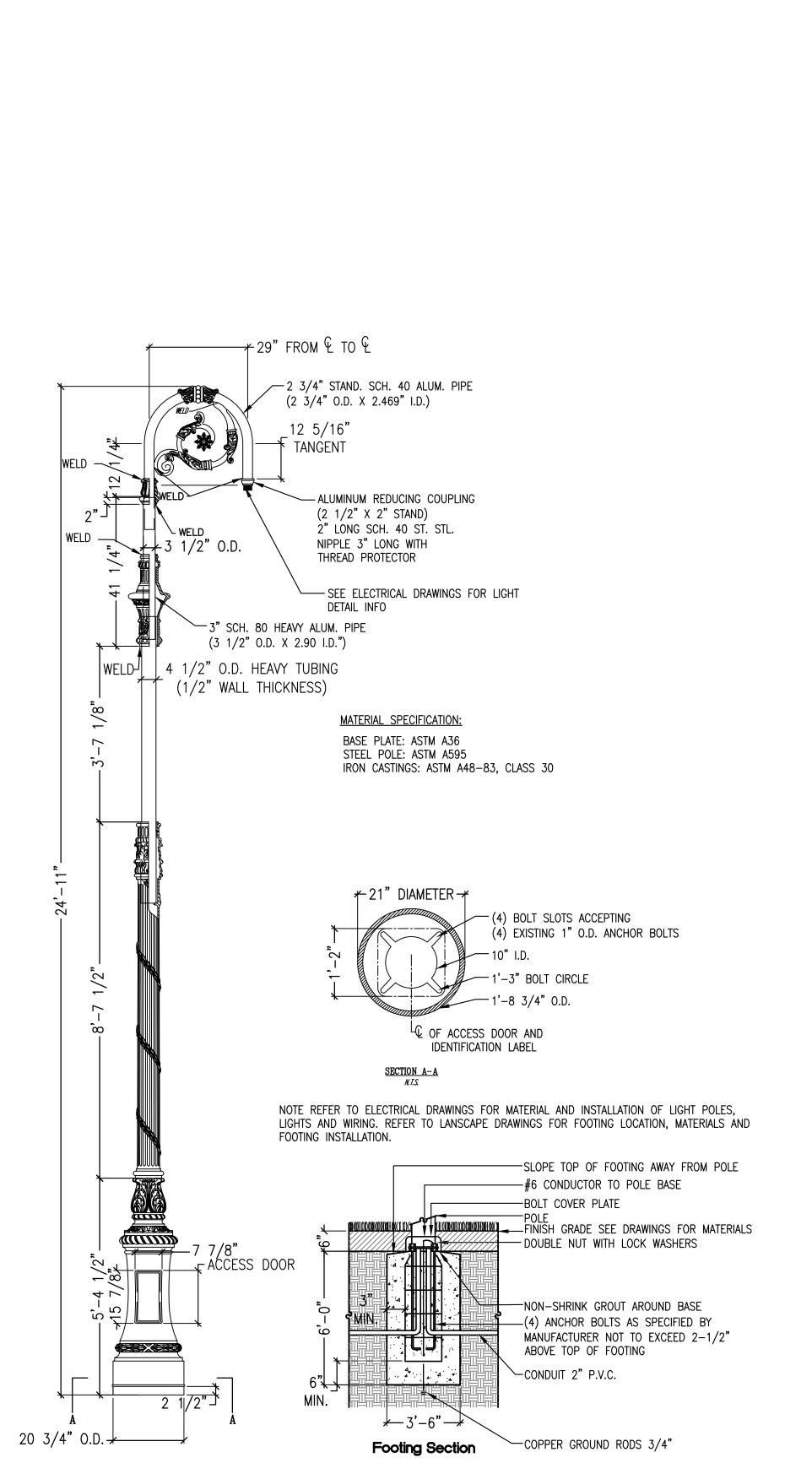
Flow	Pipe Size/ Type	
0-13 GPM	1" 100 PSI Polyethylene	
14-22 GPM	1.25" 100 PSI Polyethylen	
23-35 GPM	1.5" Class -200 PVC	
36-55 GPM	2" Class -200 PVC	
56-80 GPM	2.5" Class -200 PVC	





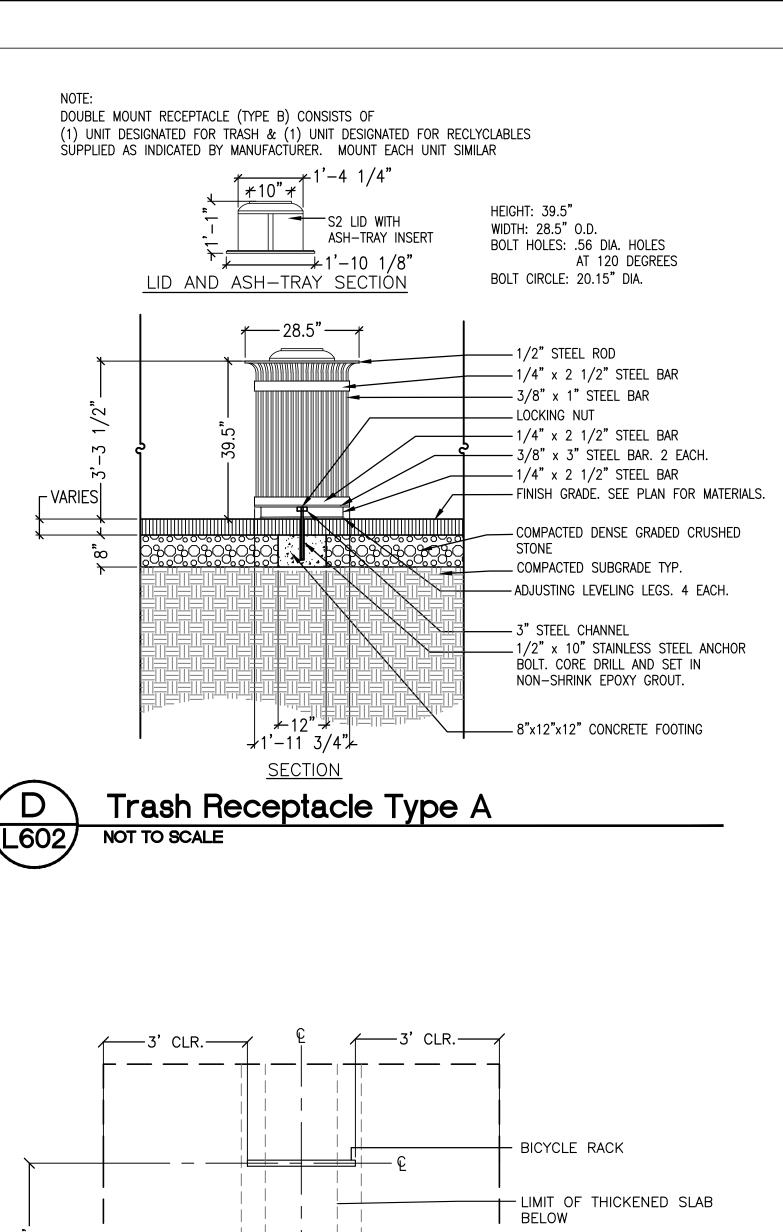
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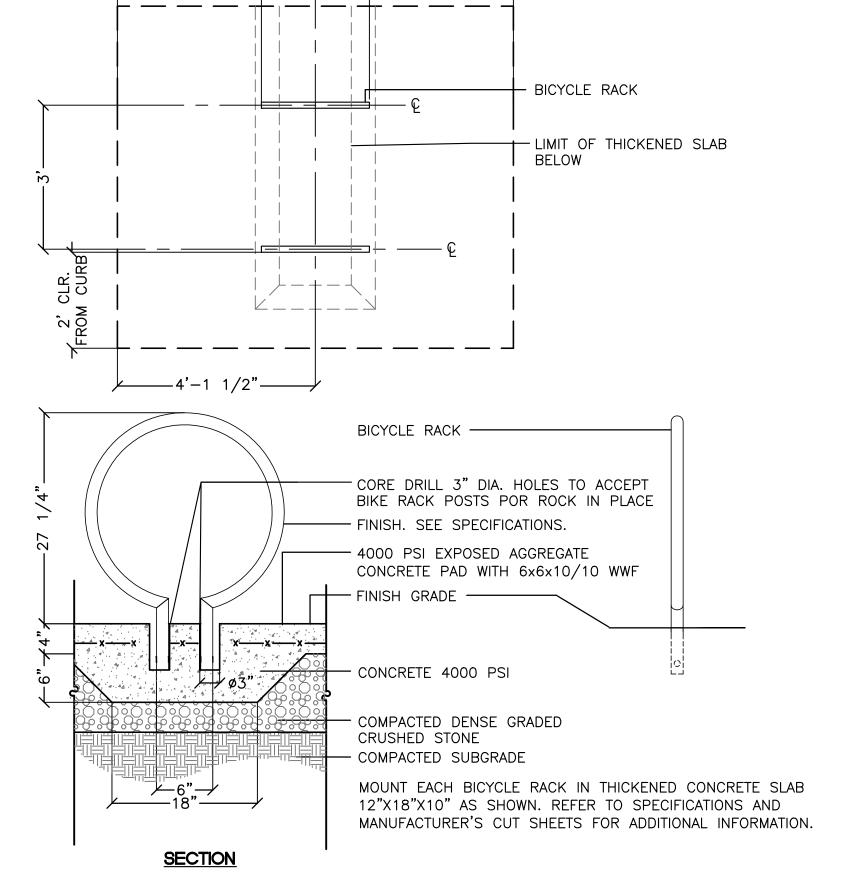


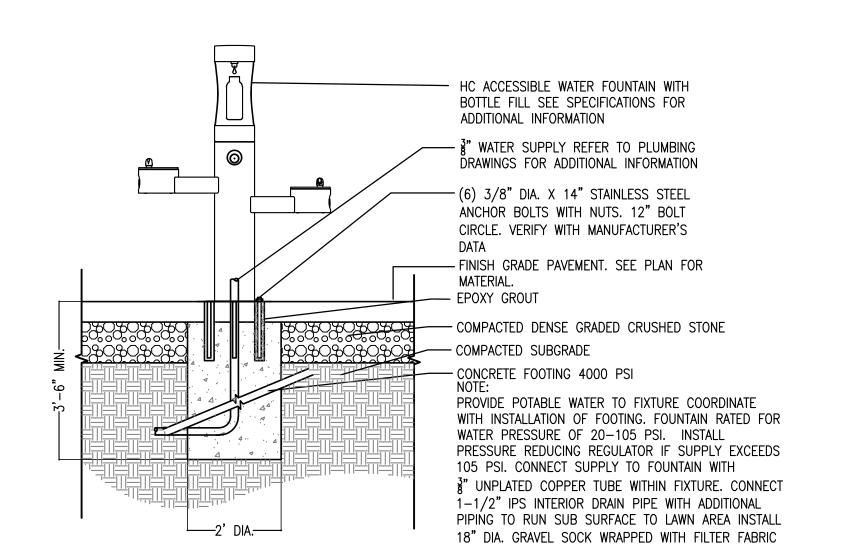


Pedestrian Pole Light and Footing

L602 NOT TO SCALE



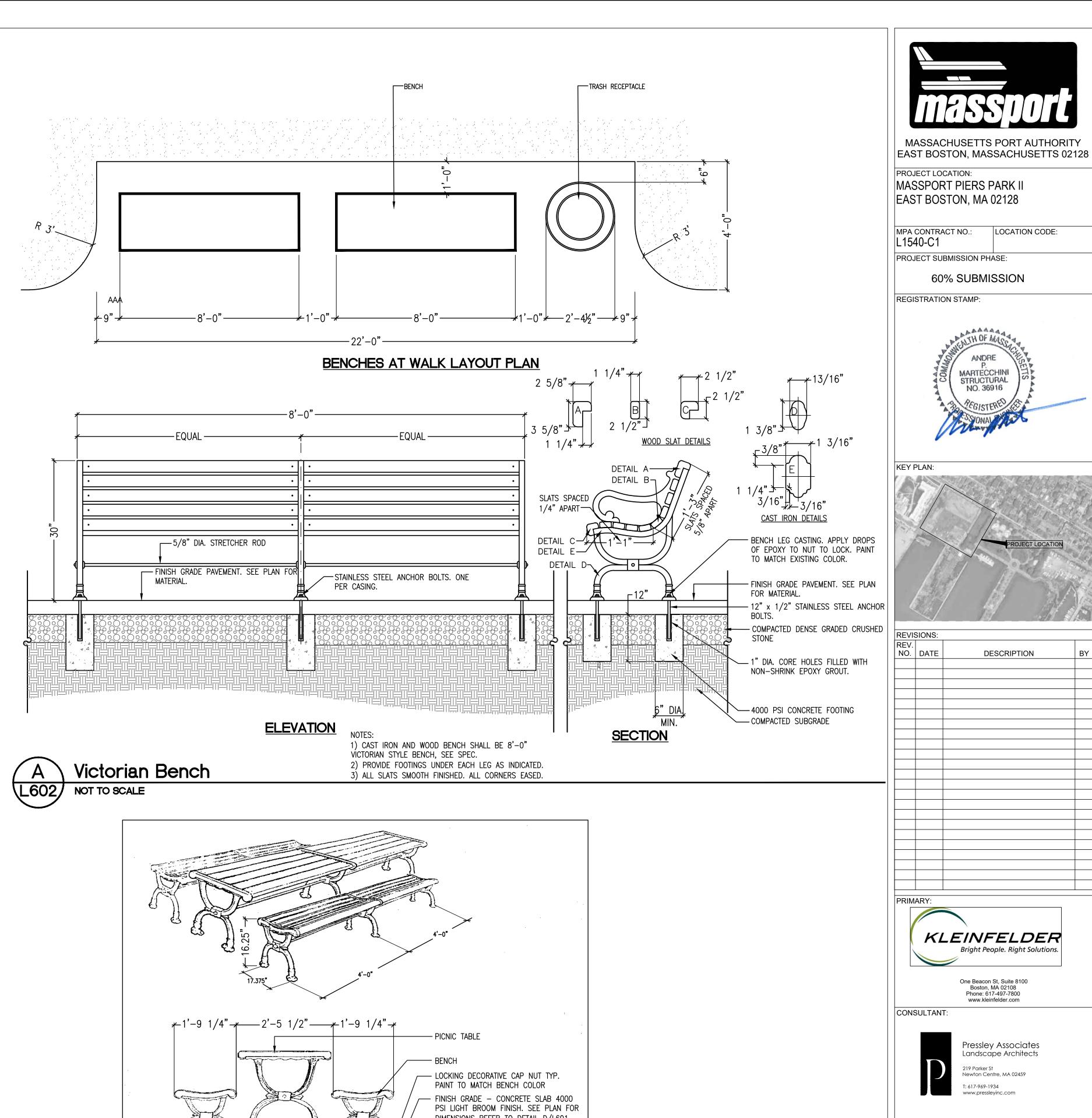


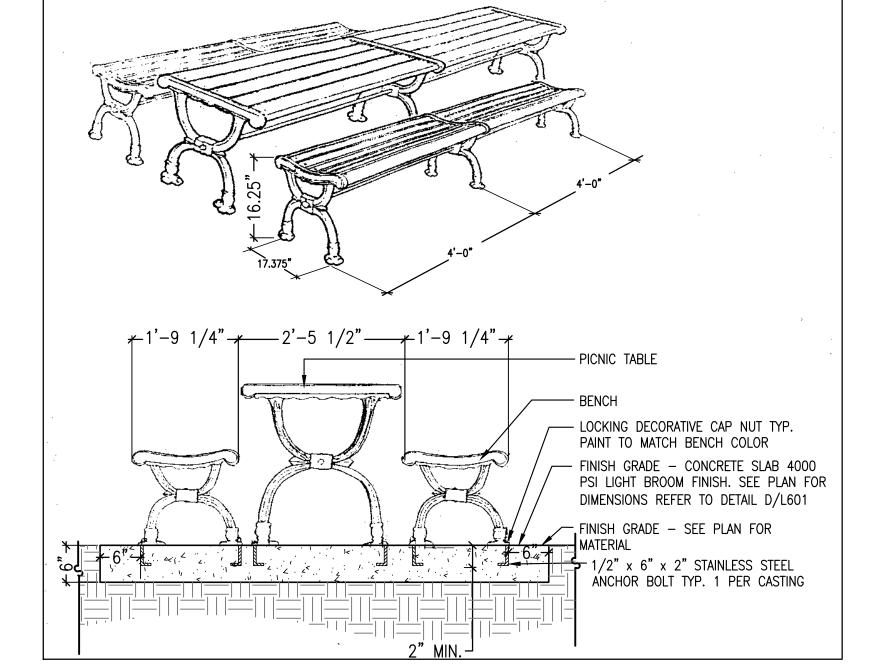


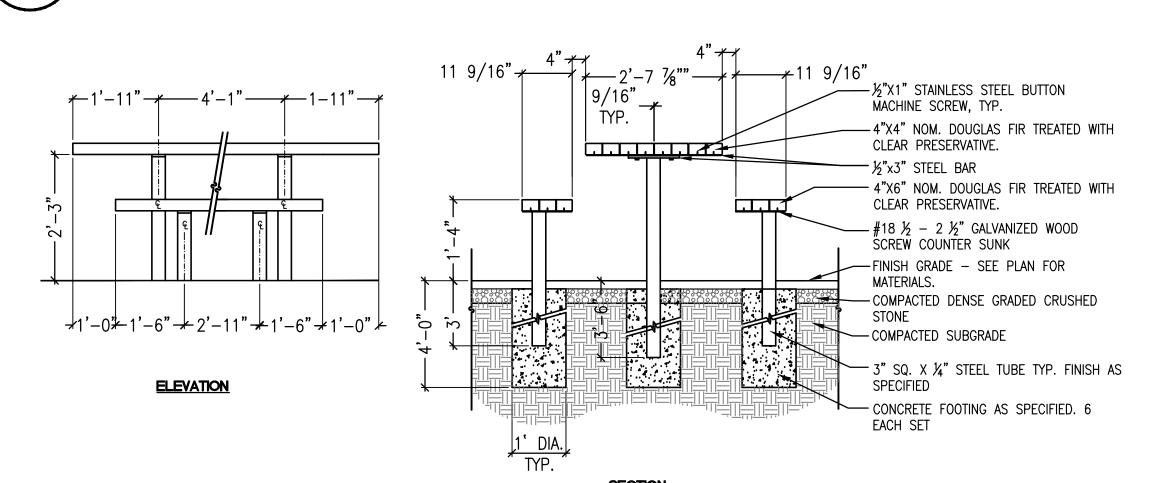
Bicycle Rack

L602 NOT TO SCALE





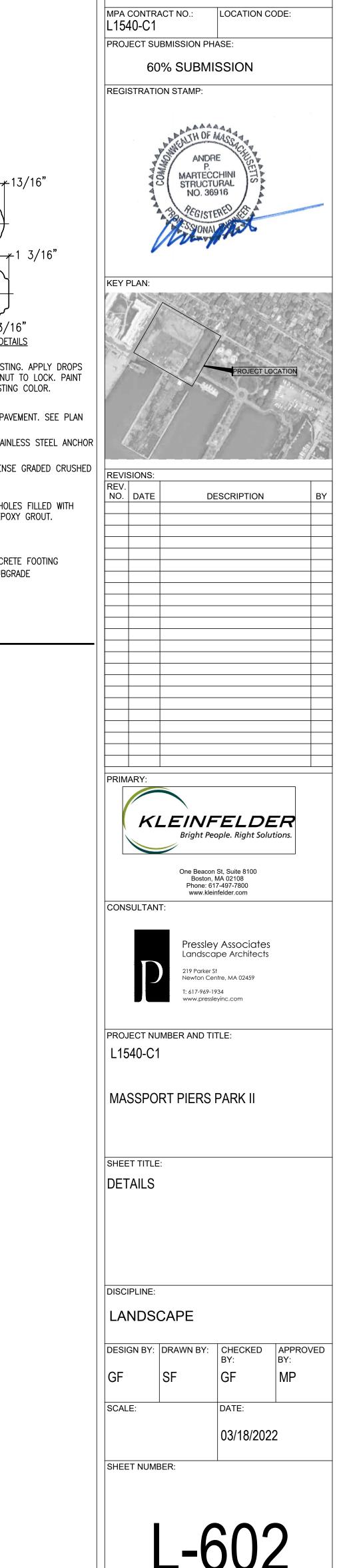


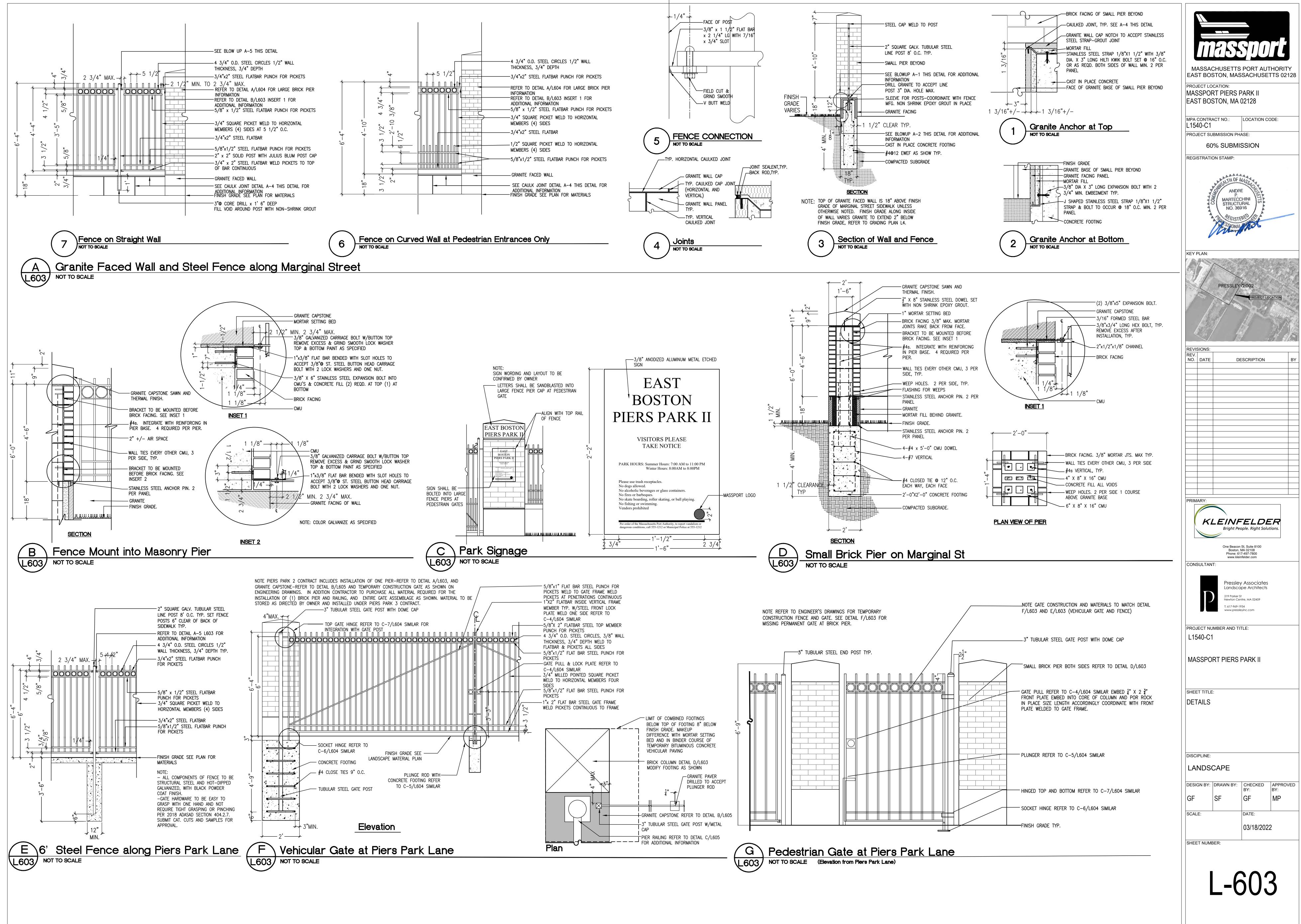


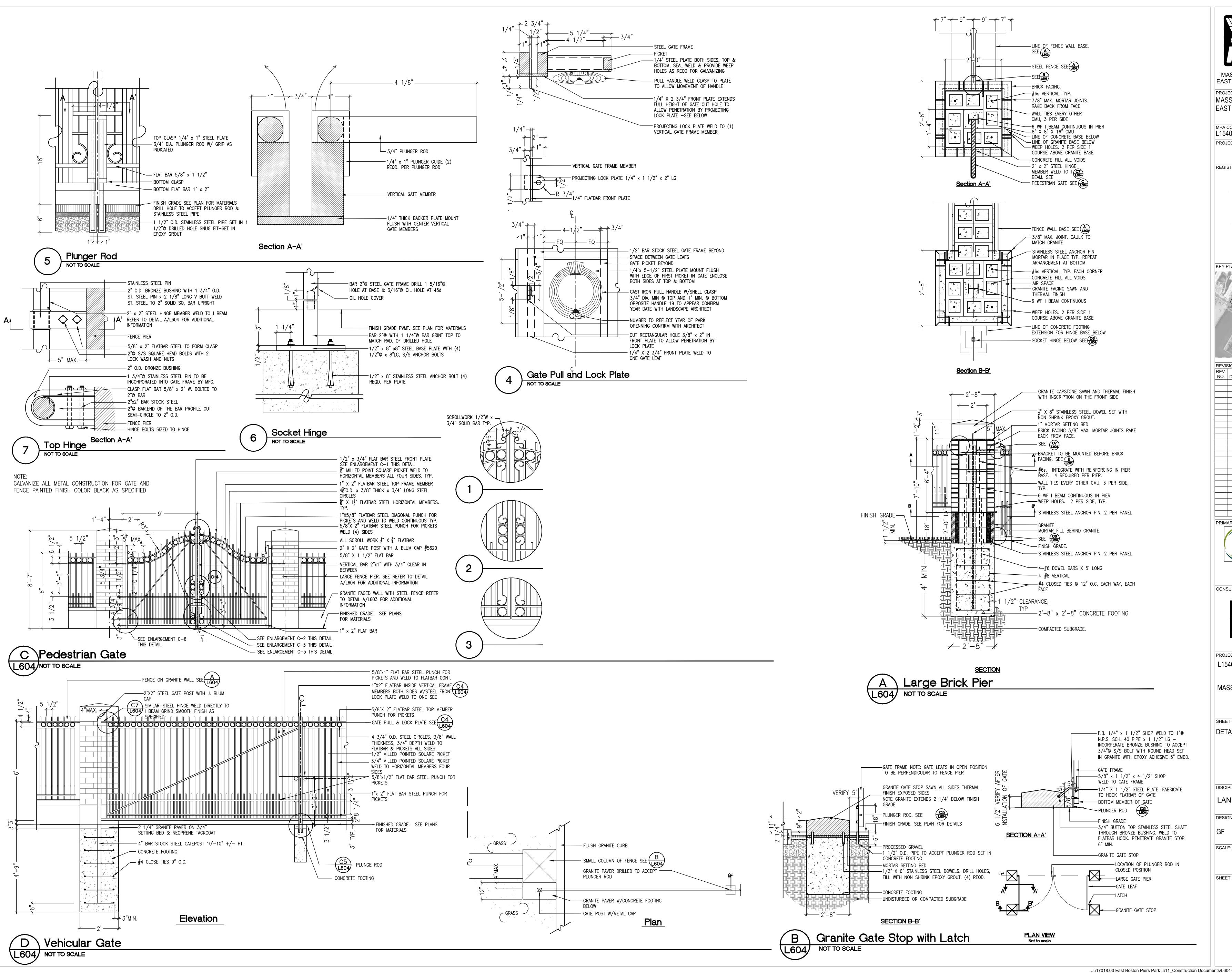


Victorian Picnic Table

L602 NOT TO SCALE







MASSPORT PIERS PARK II EAST BOSTON, MA 02128

MPA CONTRACT NO.: LOCATION CODE: L1540-C1 PROJECT SUBMISSION PHASE

60% SUBMISSION



KEY PLAN:

REVISIONS: NO. DATE DESCRIPTION

> KLEINFELDER Bright People. Right Solutions One Beacon St, Suite 8100 Boston, MA 02108 Phone: 617-497-7800

CONSULTANT

Pressley Associates Landscape Architects Newton Centre, MA 02459 T: 617-969-1934

PROJECT NUMBER AND TITLE: L1540-C1

MASSPORT PIERS PARK II

SHEET TITLE: DETAILS

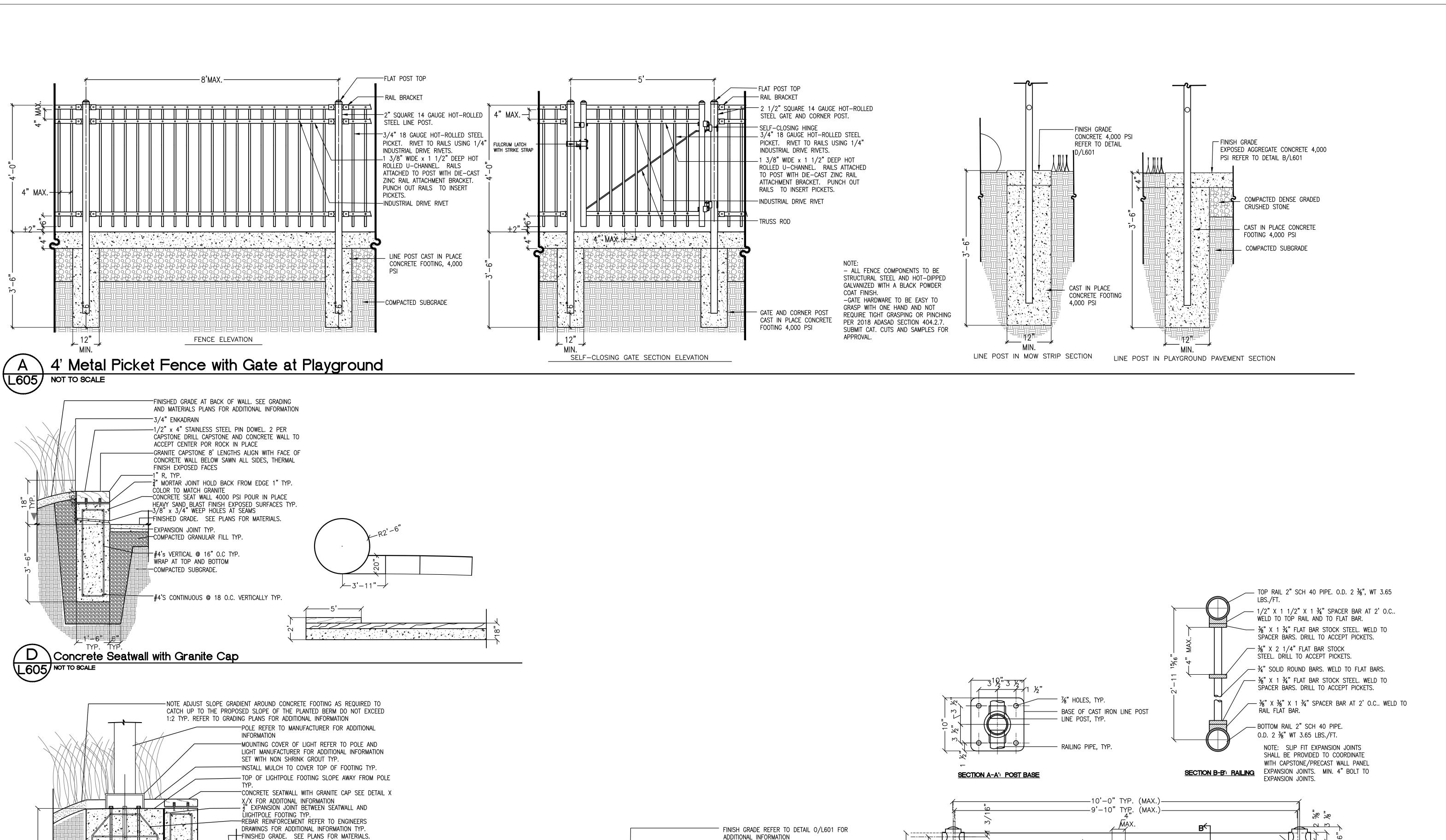
DISCIPLINE:

LANDSCAPE

DESIGN BY: DRAWN BY:

03/18/2022

SHEET NUMBER:



FINISH GRADE SEE ENGINEER'S PLANS FOR

—6" GRANITE SEAWALL CAPSTONE. SPLIT FACE FRONT

1"X3" SS PINS MIN. OF (2) PER GRANITE PIECE DRILL

L605 NOT TO SCALE

GRANITE AND CONCRETE TO ACCEPT AND POR ROCK

SAWN ALL OTHER SIDES. THERMAL FINISH TOP.

- EXPANSION JOINT. SEE DETAIL.

1" MORTAR SETTING BED CONTINUOUS

- #4'S WRAP HORIZONTALS AT 18" O.C.

(2) #6'S CONTINUOUS TOP AND BOTTOM

TREATMENT

IN PLACE

- 4000 PSI CONCRETE

COMPACTED SUBGRADE

Granite Capstone at Harbor Walk

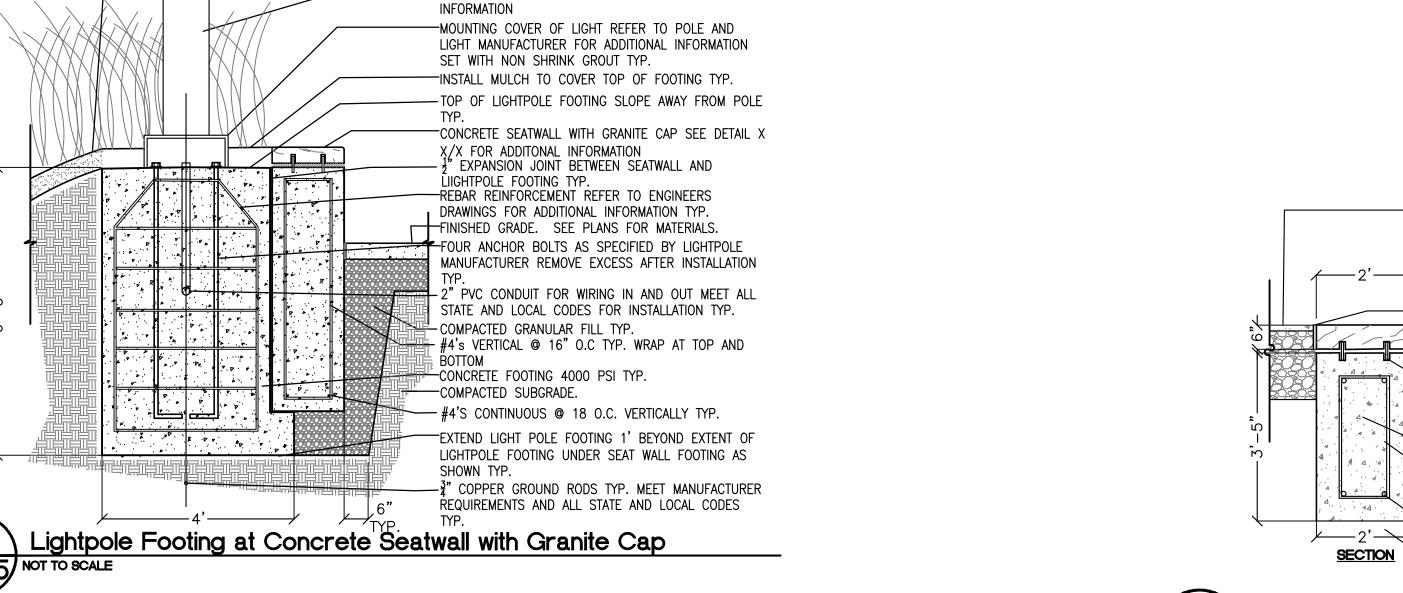
-4" WIDE WHITE PAINTED LINE (TYP.)

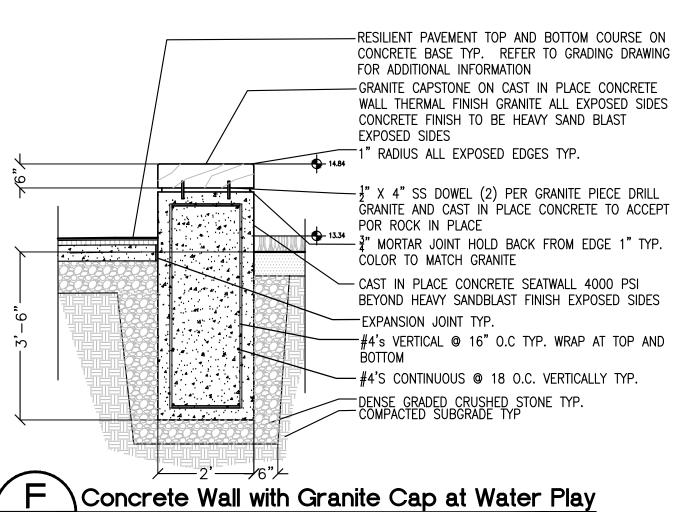
SYMBOL OF ACCESS

WHITE PAINTED LINE, TYP.

- BITUMINOUS CONCRETE PAVEMENT, TYP.

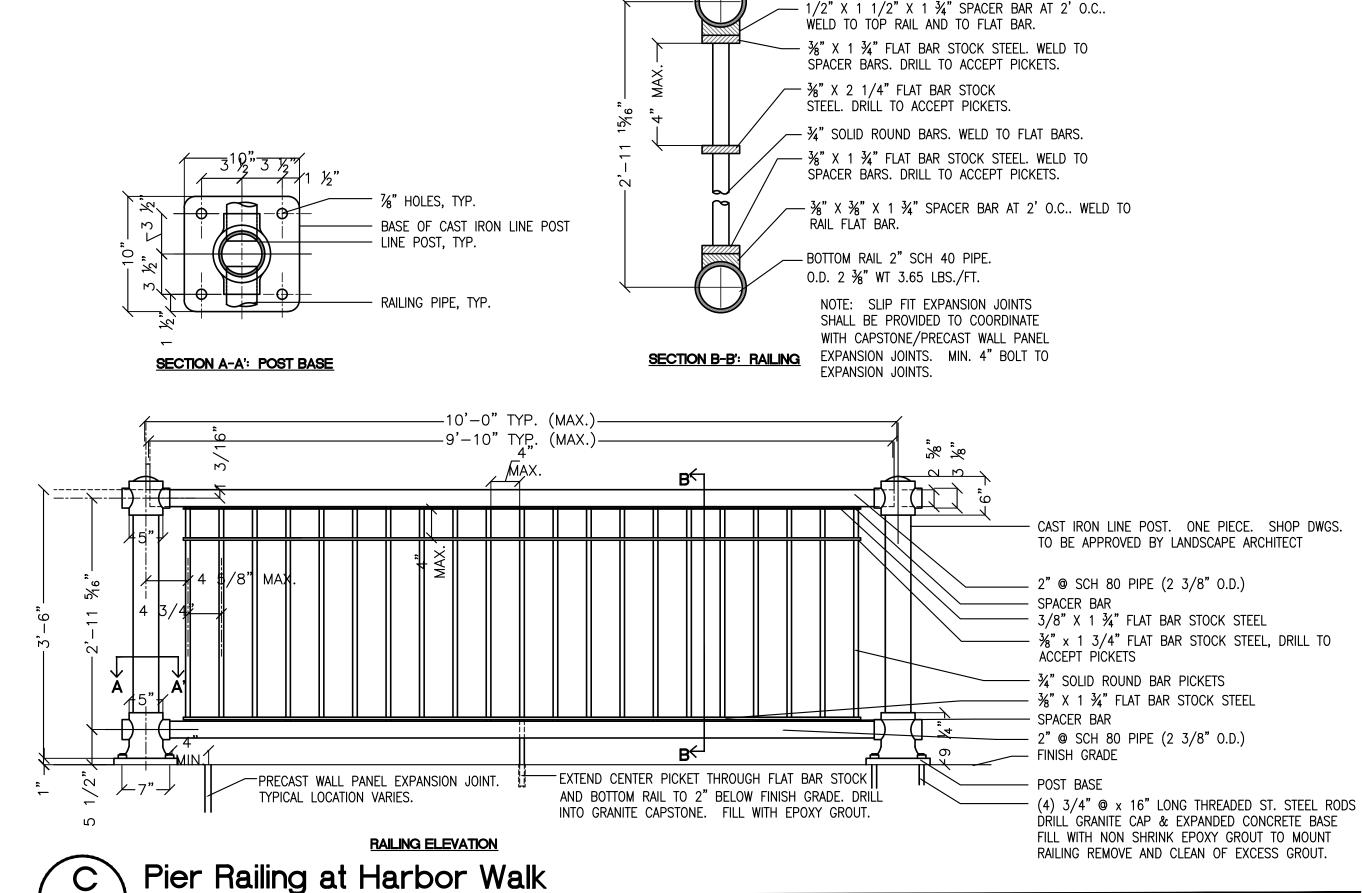
L605) NOT TO SCALE







4" WIDE WHITE PAINTED LINE (TYP.)



MASSACHUSETTS PORT AUTHORITY

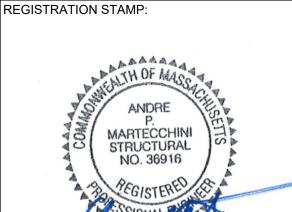
EAST BOSTON, MASSACHUSETTS 02128

PROJECT LOCATION: MASSPORT PIERS PARK II EAST BOSTON, MA 02128

MPA CONTRACT NO.: LOCATION CODE:

PROJECT SUBMISSION PHASE

60% SUBMISSION





REVISIONS: DESCRIPTION

KLEINFELDER Bright People. Right Solutions.

One Beacon St, Suite 8100

CONSULTANT



Pressley Associates Landscape Architects Newton Centre, MA 02459 T: 617-969-1934

PROJECT NUMBER AND TITLE: L1540-C1

MASSPORT PIERS PARK II

SHEET TITLE: DETAILS

DISCIPLINE:

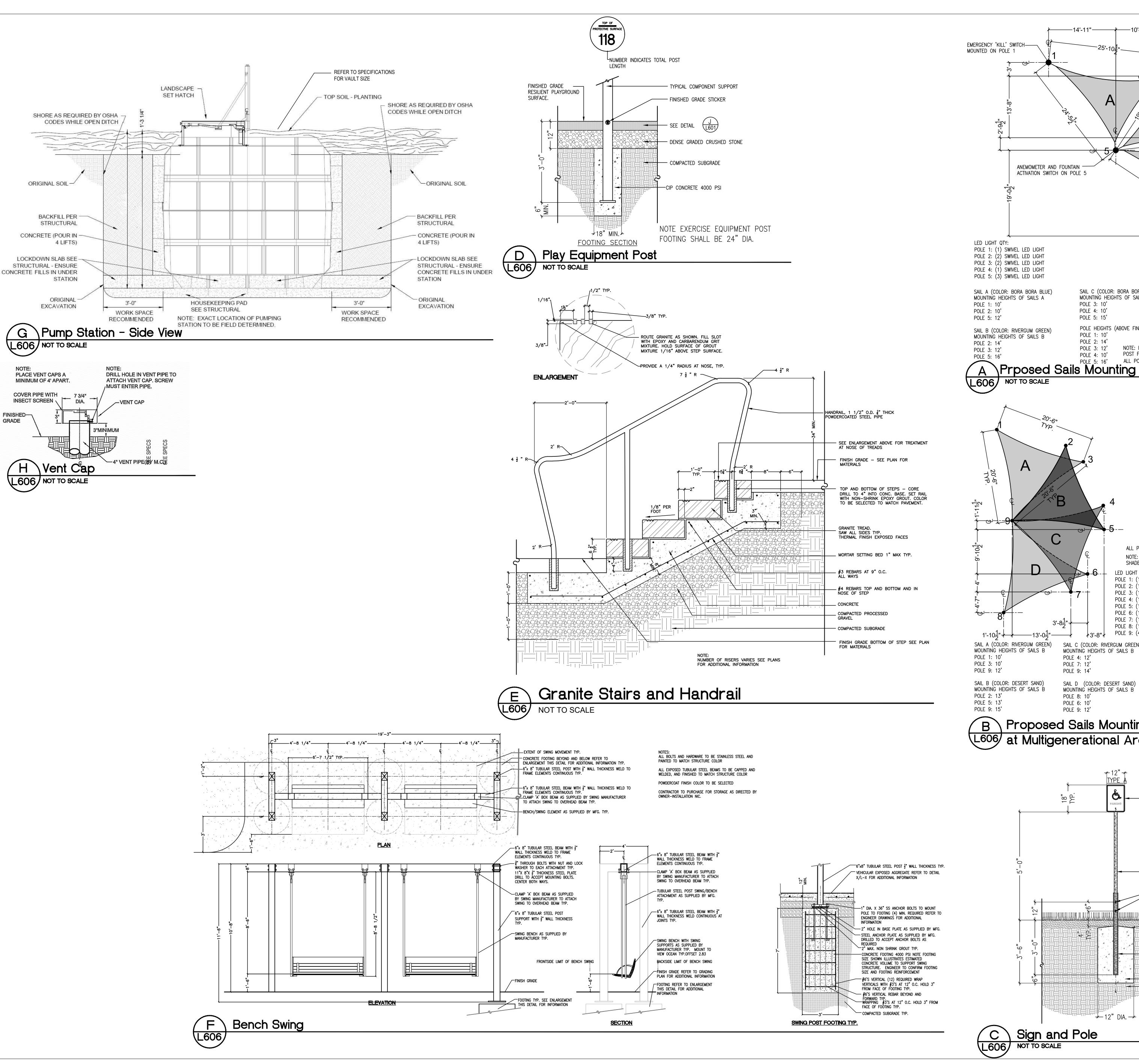
LANDSCAPE

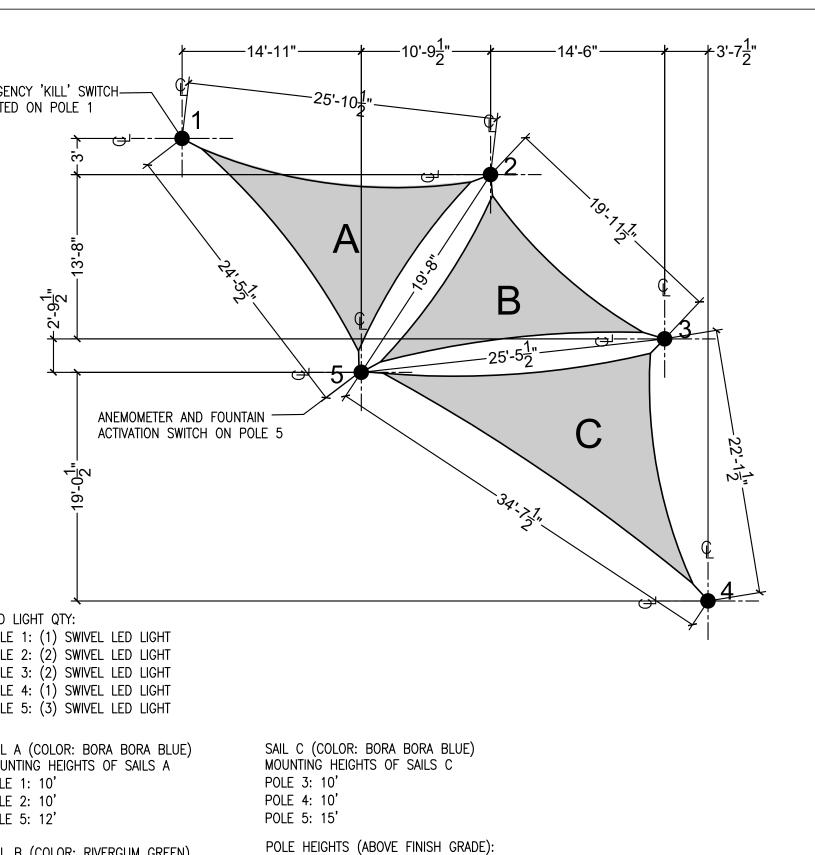
DESIGN BY: DRAWN BY:

SCALE:

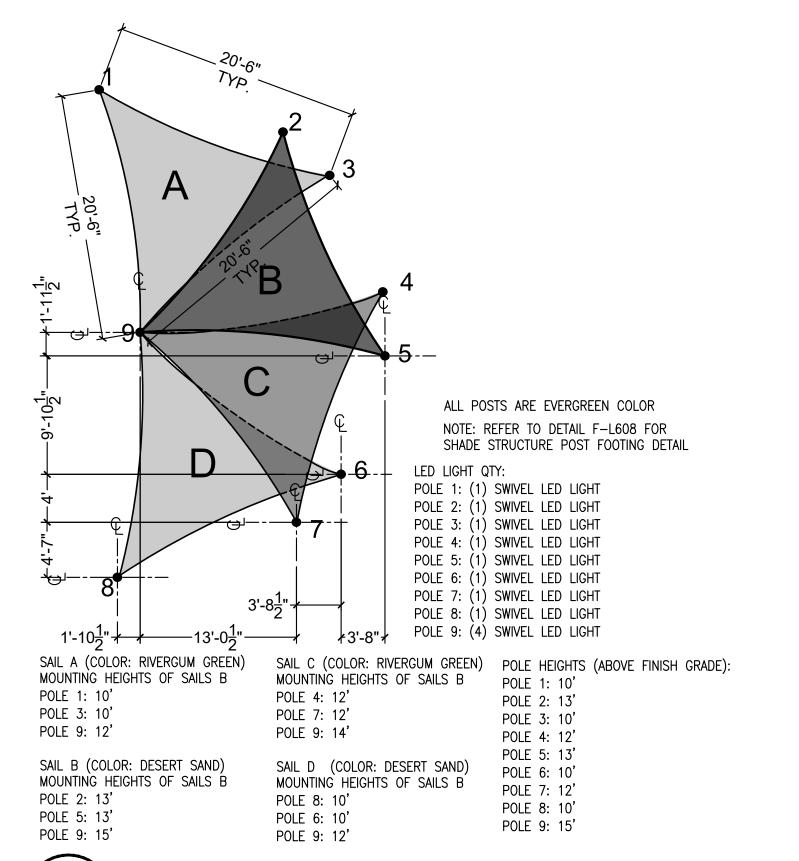
03/18/2022

SHEET NUMBER:



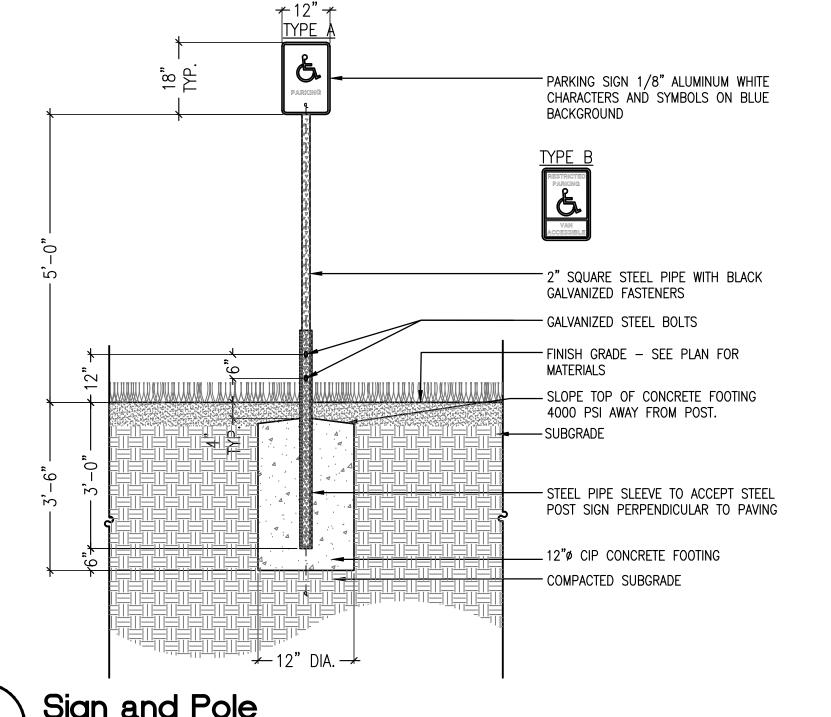


POLE 3: 12' NOTE: REFER TO DETAIL F-L608 FOR SHADE STRUCTURE POST FOOTING DETAIL POLE 5: 16' ALL POSTS AREA GUNMETAL GRAY COLOR POLE SINGLE POSTS AREA GUNMETAL GRAY COLOR Play



\ \ Proposed Sails Mounting Heights L606 at Multigenerational Area

NOT TO SCALE

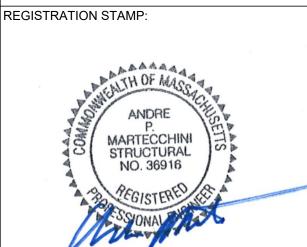




MASSPORT PIERS PARK II EAST BOSTON, MA 02128

MPA CONTRACT NO.: LOCATION CODE: L1540-C1 PROJECT SUBMISSION PHASE

60% SUBMISSION



KEY PLAN:

DESCRIPTION

REVISIONS:

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CONSULTANT Pressley Associates Landscape Architects Newton Centre, MA 02459

PROJECT NUMBER AND TITLE L1540-C1

MASSPORT PIERS PARK II

SHEET TITLE: DETAILS

DISCIPLINE:

LANDSCAPE

DESIGN BY: DRAWN BY: CHECKED SCALE: DATE:

1"=20' 03/18/2022 SHEET NUMBER:

### GENERAL CONTRACTOR NOTES

"O" INDICATES MATERIAL PROVIDED BY FOUNTAIN EQUIPMENT SUPPLIER. REMAINDER BY DESIGNATED CONTRACTOR.

CONTRACTOR SHALL INSURE THAT INSTALLATION COMPLIES WITH ALL APPLICABLE NATIONAL AND LOCAL CODES AND PROJECT SPECIFICATIONS.

ALL POOLS SHALL BE WATERPROOFED BY SPECIFIED APPROVED MEANS.

PRIOR TO ANY FINISHING MATERIALS (I.E. LIGHTS, JETS, COVER PLATES) BEING INSTALLED, ALL POOLS SHALL BE TESTED FOR LEAKS FOR A MINIMUM OF 72 HOURS AND ALL WATERPROOFING AND TILE WORK SHALL BE COMPLETED.

REFER TO MECHANICAL AND ELECTRICAL NOTES FOR FURTHER INFORMATION.

FIELD VERIFY ALL DIMENSIONS.

CONSULT ARCHITECTURAL, STRUCTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR ADDITIONAL DETAILS NOT SHOWN ON THESE DRAWINGS.

ALL WEIRS SHALL BE INSTALLED WITH AN ACCURACY OF "+" OR "-" 1\16" OVER THE ENTIRE WEIR LENGTH, UNLESS OTHERWISE NOTED, REFER TO THE ARCHITECTURAL DRAWINGS FOR WEIR DETAILS.

GENERAL CONTRACTOR SHALL PROVIDE ALL CONCRETE WORK AS REQUIRED BY ALL MECHANICAL AND ELECTRICAL FOUNTAIN EQUIPMENT REQUIREMENTS INCLUDING, BUT NOT LIMITED TO, HOUSE KEEPING PADS, LOCK-DOWN SLABS, THRUST BLOCKS, (SEE MECH'L NOTES AND ALL DETAILS) WHERE INDICATED.

GENERAL CONTRACTOR SHALL PROVIDE ALL UTILITIES SUCH AS POWER SUPPLIES, WATER SUPPLIES AND SEWER CONNECTIONS UNDER THE BUILDING CONTRACT UP TO THE FOUNTAIN CONTROLS, EQUIPMENT AND/OR POOL FITTINGS. (SEE MECH'L NOTES AND ALL DETAILS) WHERE INDICATED.

GENERAL CONTRACTOR SHALL PROVIDE AND IS RESPONSIBLE FOR ALL ELEVATION AND X-Y COORDINATES RELATING TO ALL FOUNTAIN EQUIPMENT INCLUDING VAULTS, POOL FLOORS AND PUMPS.

GENERAL CONTRACTOR SHALL PROVIDE AND IS RESPONSIBLE FOR ALL REQUIRED EARTHWORK INCL. EXCAVATION & BACKFILL.

SYMBOL INDICATES FOUNTAIN POOL EQUIPMENT, DESCRIPTION IS LOCATED IN FOUNTAIN LEGEND ON RESPECTIVE SHEETS.

SYMBOL INDICATES FOUNTAIN RELATED PIPING AND CONDUITS. SIZE IS LOCATED IN FOUNTAIN LEGEND DESCRIPTION ON RESPECTIVE SHEETS.

SYMBOL INDICATES GENERAL NOTE. LETTER BESIDE SYMBOL INDICATES TYPE OF GENERAL NOTE. G REPRESENTS GENERAL CONSTRUCTION NOTE. M REPRESENTS MECHANICAL NOTE AND E REPRESENTS ELECTRICAL NOTE, SYMBOL WITHOUT LETTER INDICATES NOTE APPLIES TO MORE THAN ONE DISCIPLINE.

SYMBOL INDICATES FOUNTAIN SHEET REVISION NUMBER. REVISION DESCRIPTION IS LOCATED IN REVISION BLOCK OF TITLE BLOCK ON RESPECTIVE SHEETS. SYMBOL WITH REVISION NUMBER WILL APPEAR NEXT TO REVISIONS THAT HAVE BEEN MADE.

### MECHANICAL CONTRACTOR NOTES

"@" INDICATES MATERIAL PROVIDED BY FOUNTAIN EQUIPMENT SUPPLIER, REMAINDER BY DESIGNATED CONTRACTOR.

CONTRACTOR SHALL INSURE THAT INSTALLATION COMPLIES WITH ALL APPLICABLE NATIONAL AND LOCAL CODES AND PROJECT SPECIFICATIONS.

ALL PIPING RUNS ARE DRAWN FOR CLARITY AND DO NOT NECESSARILY SHOW EXACT ROUTING, CONTRACTOR SHALL INSTALL PIPES WITH AS FEW CHANGES IN DIRECTION AS JOBSITE CONDITIONS WILL ALLOW.

INDICATES CONNECTION POINT PROVIDED BY FOUNTAIN EQUIPMENT MANUFACTURER. ALL PIPING BETWEEN THIS POINT AND THE POOL EQUIPMENT TO BE PROVIDED BY THE DESIGNATED CONTRACTOR.

INDICATES MIDPOINT OF PIPES CONNECTING RESPECTIVE FOUNTAIN EQUIPMENT COMPONENTS.

PRESSURE TESTING ON ALL PIPE RUNS BETWEEN THE PUMPING EQUIPMENT AND THE FOUNTAIN BASIN SHALL BE DONE BY THE CONTRACTOR AFTER "ROUGH INS" (PIPES LAID AND STUBBED UP) ARE COMPLETE AND AGAIN BEFORE ANY CONCRETE IS POURED. IT IS RECOMMENDED TO MAINTAIN ALL PIPING UNDER PRESSURE DURING CONSTRUCTION PHASE TO DETECT ANY DAMAGE EARLY ON. ALL TESTS SHALL USE WATER, NOT AIR,

THE INCOMING WATER SUPPLY LINE PRESSURE MUST NOT EXCEED 50 PSI AND IS PART OF THE BUILDING CONTRACT, NOT THE FOUNTAIN.

UTILITY CONTRACTOR SHALL OBTAIN ALL NECESSARY INSTALLATION PERMITS AND INSPECTIONS.

ALL PIPING SHALL BE INSTALLED LEVEL OR WITH A DOWNWARD SLOPE FROM THE POOL TO THE PUMP ROOM.

ALL SUCTION PIPING BETWEEN PUMP EQUIPMENT AND POOL EQUIPMENT

SHALL BE SCHEDULE 40 PVC. ALL DISPLAY DISCHARGE PIPING SHALL BE SCHEDULE 80 PVC UNLESS OTHERWISE NOTED. ALL PIPING SHALL BE PRESSURE TESTED AFTER INSTALLATION IN

WATER SHALL BE USED FOR THESE TESTS. DRAIN P-TRAP AND UTILITY DRAIN PIPING TO BE INSTALLED BY PERMITTING CONTRACTOR WHERE REQUIRED BY CODE

ACCORDANCE WITH PROJECT TESTING STANDARDS (MINIMUM

OF 50 PSI). TESTING SHALL NOT BE DONE BY COMPRESSED AIR.

## **ELECTRICAL CONTRACTOR NOTES**

"@" INDICATES MATERIAL PROVIDED BY FOUNTAIN EQUIPMENT SUPPLIER, REMAINDER BY DESIGNATED CONTRACTOR.

CONTRACTOR SHALL INSURE THAT INSTALLATION COMPLIES WITH ALL APPLICABLE NATIONAL AND LOCAL CODES, ESPECIALLY 2011 N.E.C. SECTION 680 E, SECTION 682 (IF APPLICABLE), AND PROJECT SPECIFICATIONS.

CONDUITS ARE DRAWN FOR CLARITY AND DO NOT NECESSARILY SHOW EXACT ROUTING. CONTRACTOR SHALL INSTALL CONDUITS WITH AS FEW CHANGES IN DIRECTION AS JOBSITE CONDITIONS WILL ALLOW.

INDICATES CONNECTION POINT PROVIDED BY FOUNTAIN EQUIPMENT MANUFACTURER. ALL MATERIALS BETWEEN THIS POINT AND THE POOL EQUIPMENT TO BE PROVIDED BY THE DESIGNATED CONTRACTOR.

CONTRACTOR SHALL OBTAIN ALL NECESSARY INSTALLATION PERMITS AND INSPECTIONS.

ELECTRICAL CONDUIT INSIDE A STRUCTURE AREA TO BE EMT. ELECTRICAL CONDUIT UNDERGROUND TO BE PVC.

CONTRACTOR TO INSURE THAT ALL BONDING CODES ARE COMPLIED WITH FOR EACH METAL FOUNTAIN EQUIPMENT COMPONENT.

AFTER TESTING, JUNCTION BOXES SHALL BE SEALED WITH SCOTCH 3M RE-ENTERABLE COMPOUND OR OTHER APPROVED FILLING COMPOUND (SEE 2 ABOVE). THE USE OF PARAFFIN WAX IS PROHIBITED.

WIRES FOR WATER LEVEL SENSORS MUST BE RUN IN A SEPARATE CONDUIT TO THE FOUNTAIN CONTROL PANEL. ALL CONDUIT PENETRATIONS THROUGH STRUCTURE WALLS INTO

TRADE AREAS BELOW THE POOL STRUCTURE MUST HAVE THE NECESSARY ALLOWANCES MADE FOR SETTLEMENT. CONTRACTOR INSTALLING FOUNTAIN MANUFACTURER SUPPLIED

DECK BOXES IN CONCRETE FOR FOUNTAIN LIGHTING IS TO INSURE

THAT ALL OPEN CONDUIT PORTS ARE PLUGGED WATERTIGHT PRIOR TO SLAB POUR AROUND DECK BOXES. ALL CONNECTIONS IN THE BASIN/ FOUNTAIN SHALL BE MADE WITH

THE ASSISTANCE OF A PLUMBER USING TEFLON PASTE OR TEFLON TAPE. USE ONLY TAPERED (NPT) BRASS OR SST FITTINGS AND NIPPLES. THE USE OF GALVANIZED, BLACK OR STEEL PIPING IS PROHIBITED!!

ALL PVC CONDUIT FITTINGS UNDERGROUND SHALL BE TYPE SCH80 PVC PRESSURE FITTINGS (MALE, FEMALE ADAPTERS & COUPLINGS). THE USE OF NORMAL ELECTRICAL PVC FITTINGS IS PROHIBITED! USE NORMAL PVC ELECTRICAL CONDUIT ONLY, USE COLOR CODED PRIMER. PVC GLUE & TEFLON PASTE FOR ALL PVC CONNECTIONS. THE USE OF NORMAL ELECTRICAL PVC FITTINGS IS PROHIBITED!

## WATER PLAY EQUIPMENT MATERIAL LIST

Qty Description: Description: **EQUIPMENT LOCATED IN VAULT CONTINUED EQUIPMENT LOCATED IN CONCRETE PLAZA** Sump Pump Assembly: - cast bronze base and machined brass nozzle. cast iron motor and pump housing. 15 degree adjustable from vertical. water tight square neoprene. float operated mechanical switch. 0.472" orifice size. - 3/4" male N.P.T. connection. stainless steel fasteners and switch arm. 1-1/2" female N.P.T. connection. Pop/Stream Jet Sleeve Can: - made of all stainless steel 16 guage construction. Discharge assembly includes the following: - Discharge Manifold, PVC, Sch. 80 construction, with 11 guage top support plate for bronze cover. - with 1" NPT bottom incoming water line. (1) 2" 2" log with (15) 1" lines NPT bottom side drain line. - (15) 1" Ball Valve, true union, PVC, S x S. with slotted stainless steel cover. - (15) 1" In-Line Strainer, PVC, S x S. - (15) 1" Solenoid Valve, bronze, 120 volt, Tx T. - overall size dimention is 8" diameter and 8" long. Water Control Manifold: **Emergency Stop Button:** Automatic Fill/Level Control Manifold. - miscellaneous copper tube and fittings. Touch and Go Pole: made of 4" type 304 stainless steel, schedule 10 pipe with - 2" pressure reducing valve, brs base will consist of 3/4" type 304 stainless steel plate with - (2) 1-1/2" ball valves, bronze. 1/2 - 13 tamper resistant 18/8 stainless steel. - 2" ball valve, bronze. with 1/8" flat neoprene gasket. - 2" backflow preventor, bronze with Push Button Actvator Switch mounted to top. - 1" water hammer arrestor. - 12 volt. DC or 24 volt. DC. - 3/4" hose bibb, bronze. - supplied with 50 feet of #18/3 STOW cable. - finished color is a powder coated finish. Control Panel: U.L. Listed and Labeled; Includes the following: Touch and Go Pole Anchor Base: - made of 4" type 304 stainless steel with 3/4" NPT side connection. - two sets of anchor bolts 1/2" x 12" x 4" 18/8 stainless steel W/2N2W. - flush mounted door; gasketted

Niche Air Vent: - cast brass body - Brass slotted grate with 5 sq. in. open area. - 3" x 6" rectangular face. - bonding screw. - 2" female N.P.T. connection. **EQUIPMENT HOUSED IN VAULT** 

Panel and Valve Vault Station: and control equipment is engineered, factory tested, and preassembled in a reinforced 6'-0" x 5'-0" x 6'-0" high fiberglass housing unit. Station is equipped with the following: - (2) 3/4" Bulk Head Fittings, PVC, S x S - (15) 1" Bulk Head Fittings, PVC, S x S - (2) 2" Bulk Head Fittings, PVC, S x S

- (2) 4" Bulk Head Fittings, PVC, S x S Single Floodtight Hatch: 2'-5-1/2" x 2'-11" aluminum construction. aluminum extension piece. noeprene draft seal. - inside handle with spring latch.

- 1" rigid insulation

12" Hatch Extension: - 2'-6" x 3'-0" x 12" high aluminum construction. - 2 ea. 7" aluminum mounting brackets. aluminum construction. - 8'-0" long. - round rung type steps

Convenience Florescent Light. florescent fixture for wet location and light bulb. Convenience Outlet. duplex outlet.

Ventilation Fan: - 1/3 Hp 115/230 V., 1 phase, 60 Hz. Vent Caps: cast iron construction. - 4", 3" or 2" slip connection.

- NEMA 4/12 Steel Enclosure : Sized for application: 135 Deg. opening; bonded to mtg. plate - phosphated steel construction - ANSI 61 gray acrylic enamel finish - internal mounting plate

- 115/230V AC: 1 PHASE rated at 30 Amps. - door mounted interlocking red handle padlock capable device. - door mounted label: MAIN POWER DISCONNECT

- Main Power Disconnect:

- Panel Board and Circuit Breakers: - 120/240V AC 2 pole, 1 Phase, 12 Space. equipped with circuit breakers: - 2 ea. 1 pole CB 15A (for controls) - 1 ea. 2 pole CB 15A (for controls)

- Control transformer circuit: - 230 V primary / 120 V secondary - 250 VA, fused primary and secondary - complete with GFCI protection switch - U.L. standard 508 circuit.

- 24 HR Time Clock: JET OPERATION 1 min. interval actuators. - 7 day skip-a-day feature 120V power supply. - 2 ea. SPDT contact set 2 channel digital operation

 All control panel components installed. - All control panel components prewired to field terminals. - Supplied with current flow schematics. Fountain Programmer

spreadsheet work book

for (15) On/Off Pop/Stream Jets solenoid Controls - (1) PLC Programmable Controller with (8) 24VDC inputs on master unit. - with (6) 24VDC outputs on master unit - master unit complete with built-in EE-prom communication shall be RS232 standard. software shall be provided and pre-programmed as a complete running system. - (2) 2 or 4 GB SD cards shall be provided & shall contain a copy of the PLC and user program on an Microsoft Excel

Complete pre-wired to field terminals, U.L. Listed Assembly included are 2 copies of wiring diagrams for the project.

MASSACHUSETTS PORT AUTHORITY EAST BOSTON, MASSACHUSETTS 02128

PROJECT LOCATION: MASSPORT PIERS PARK II EAST BOSTON, MA 02128

MPA CONTRACT NO.: LOCATION CODE: L1540-C1

PROJECT SUBMISSION PHASE

60% SUBMISSION

**REGISTRATION STAMP:** 



DESCRIPTION

REVISIONS



One Beacon St, Suite 8100

CONSULTANT



Presslev Associates Landscape Architects Newton Centre, MA 02459

PROJECT NUMBER AND TITLE L1540-C1

MASSPORT PIERS PARK II

SHEET TITLE:

DETAILS- WATER PLAY

DISCIPLINE:

**LANDSCAPE** DESIGN BY: DRAWN BY: CHECKED APPROVED

SCALE: 03/18/2022

SHEET NUMBER:

# VAULT INSTALLATION NOTES

THE FOLLOWING IS A GUIDELINE FOR THE INSTALLATION OF ALL PUMP VAULTS:

CHECK FOR FAVORABLE AND DRY METEOROLOGICAL FORECAST PRIOR TO BEGINNING INSTALLATION OF PUMP

ALL THE FOLLOWING SHALL BE COMPLETED WITHOUT FAIL ON A MINIMUM OF 3'-0" CLEAR ON ALL SIDES OF PUMP STATION. THE SAME DAY THE PUMP VAULT IS LOWERED DOWN INTO THE DESIGNATED SPACE. AT MINIMUM:

AND ROUTE THEM TO THEIR DESIGNATED LOCATION AND: MINIMUM 24" ABOVE GRADE.

2. CONNECT ALL ELECTRICAL CONDUIT CONNECTIONS TO THEIR RESPECTIVE CONDUITS AND/OR: ROUTE THEM TO A MINIMUM OF 24" ABOVE GRADE. 3. CONNECT THE 1-1/2" OR 2" BACKWASH/SUMP PUMP

OR STORM, PER LOCAL CODES OR AS DESIGNATED ON MECHANICAL DRAWINGS (BY OTHERS).

DISCHARGES LINE TO THE SEWER SYSTEM; EITHER SANITARY

4. CHECK THAT THE SUMP PUMP DISCHARGE VALVE IS OPEN! 5. CONNECT A DEDICATED 24 HOUR PER DAY OPERATIONAL 120VAC, 60 Hz, 20A POWER SUPPLY TO THE SUMP PUMP. THIS FLOOR RUNNERS, SERVICE CAN BE ROUTED TEMPORARILY THROUGH THE VENTILATION SYSTEM (AIR SUPPLY - THE CLOSEST LINE TO

6. TEST SUMP PUMP BY LIFTING THE FLOAT SWITCH TEMPORARILY.

THE FLOOR).

7. MAKE SURE THE ENTRY HATCH REMAINS CLOSED AT ALL TIMES WHILE UNATTENDED.

8. THE VAULT SHALL HAVE THE ENTRY HATCH, THE VENTILATION CONNECTIONS AND THE CONDUIT CONNECTIONS COVERED DURING STORAGE IN AN UNPROTECTED ENVIRONMENT, ESPECIALLY OUTDOORS.

9. WHILE OPERATING UNDER TEMPORARY POWER IN AN UNFINISHED STATE, CHECK STATION DAILY; ESPECIALLY BEFORE AND AFTER RAIN.

10. POUR LOCKDOWN SLAB. SEE INSTALLATION PROCEDURES.

FLOODING OF THE VAULT VOIDS ALL WARRANTIES.

11. INSTALL A TEMPORARY AUTOMATIC FUNCTIONAL SUMP PUMP OUTSIDE STATION'S EXCAVATED AREA OVERNIGHT.

THE ABOVE LISTED GUIDELINES WILL AID IN THE PREVENTION OF FLOODING, CONSULT, IN ADDITION, ALL INSTALLATION DETAILS PROVIDED ON PROJECT CONSTRUCTION DOCUMENTS AND DETAILS PROVIDED BY GEORGIA FOUNTAIN COMPANY, INC.

PUMP STATION INSTALLATION PROCEDURE:

VAULT.

1. FIELD VERIFY ALL EQUIPMENT DIMENSIONS PRIOR TO EXCAVATION. DIMENSIONS ARE SUJECT TO CHANGE WITHOUT

2. PROVIDE EXCAVATED AREA FOR PUMP STATION ALLOWING THE ODEPTH OF EXCAVATION CAN BE DETERMINED FROM **DETAILS. FIELD VERIFY EQUIPMENT DIMENSIONS! FOR DEEP EXCAVATIONS, ALLOW** 

SUPPORT PER OSHA 3. CHECK FOR FAVORABLE AND DRY METEOROLOGICAL FORECAST PRIOR TO BEGINNING INSTALLATION OF PUMP

4. POUR 6" THICK CONCRETE HOUSEKEEPING PAD AND ALLOW TO CURE.

5. SET PUMP STATION ON HOUSEKEEPING PAD AND POSITION AS REQUIRED.

6. POUR 6" TO 8" LOCKDOWN SLAB ON TOP OF HOUSEKEEPING SLAB TO LOCK PUMP STATION DOWN TO HOUSEKEEPING SLAB. MAKE SURE CONCRETE MIGRATES 100% UNDER THE STATION ALLOW TO CURE.

7. IMMEDIATELY CONNECT VENTILATION LINES AND ELECTRICAL CONDUITS AND ROUTE TO ABOVE FINISH GRADE. CONNECT SUMP PUMP DISCHARGE LINE TO SEWER SYSTEM,

WARNING: IF VENTING, ELECTRICAL AND DRAIN LINES ARE

STATED, FLOODING WILL OCCUR DURING ADVERSE WEATHER

NOT HOOKED UP, ROUTED ABOVE GRADE AND CAPPED AS

CONDITIONS, IT IS RECOMMEND TO COMPLETE THE

INSTALLATION IN ONE DAY.

WILL VOID WARRANTIES.

THE FOLLOWING IS REQUIRED FOR INSTALLATION OF ALL VAULTS PRIOR TO BACKFILLING

STATION.

A) BRACE INSIDE WALLS WITH 4EA. 4 x 4 LUMBER AND D) POUR THE CONCRETE IN FOUR SEPARATE AND EQUAL

REFER TO DETAIL G-L606 FOR ADDITIONAL VAULT INSTALLATION INFORMATION

FULLY OPEN. (ROUTE TEMPORARY POWER THROUGH **VENTILATION LINE IF NECESSARY.)** 9. PLACE 6" FRENCH DRAIN PIPE AND ROUTE TO STORM SEWER. 10. BRACE INSIDE OF PUMP STATION WITH 4 X 4'S.

8. IMMEDIATELY CONNECT UNINTERRUPTED TEMPORARY

POWER SOURCE TO THE EMERGENCY SUMP PUMP, 120V, 20

AMPS AND CHECK TO SEE THAT SUMP PUMP SERVICE VALVE IS

MAKE ALL NECESSARY CONNECTIONS. PLACE VENT FITTINGS ON VENT LINES AT DESIRED LOCATION. 12. BACKFILL PUMP STATION WITH #57 STONE AND ORIGINAL

PREVIOUSLY CAPPED, TO THEIR REQUIRED LOCATIONS AND

11. ROUTE ALL ELECTRICAL AND VENTILATION LINES,

SOIL AS SHOWN IN DETAIL. WARNING: DO NOT USE SAND!!!

13. LEAVE BRACING INSIDE OF PUMP STATION (4 X 4'S) UNTIL CONSTRUCTION PHASE IS COMPLETE. REMOVE PRIOR TO COMMISSIONING.

NOT RUN OVER STATION ANYTIME WITH ANY VEHICLE OF ANYKIND!!! CAVE IN OR STATION DAMAGE WILL OCCUR AND

1. INSTALL FRENCH DRAIN AROUND PERIMETER OF

2. FOR VAULTS IN AREAS OF HIGH GROUND WATER TABLES IT IS RECOMMENDED TO ENCASE THE VAULT IN CONRETE:

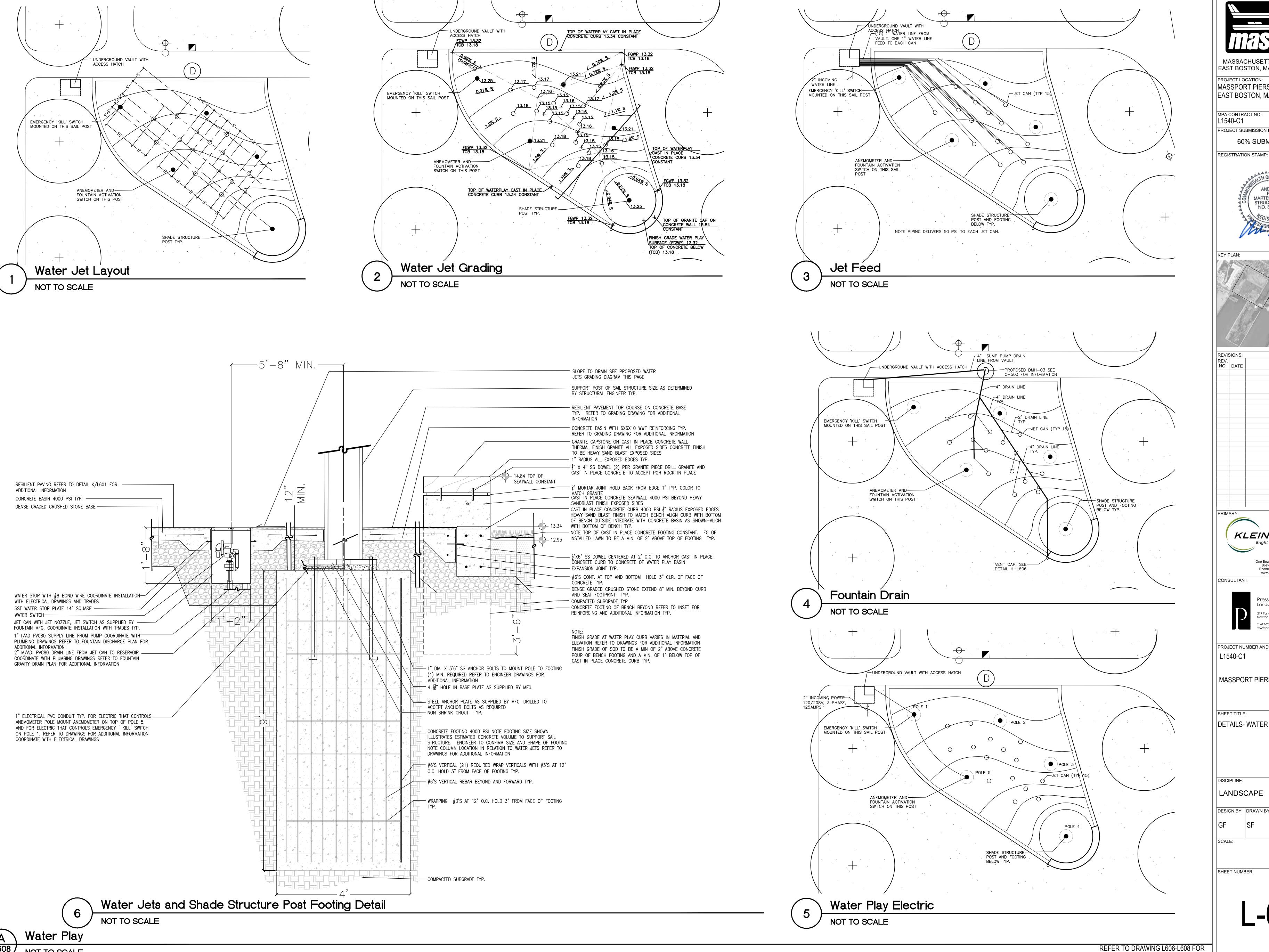
**2EA.CROSS MEMBERS.** B) BRACE INSIDE CIELING WITH 4EA. 4 x 4 LUMBER AND 2EA. CROSS MEMBERS. C) FORM THE OUTER SHELL BY CONVENTIONAL MEANS. THE VAULT ITSELF WILL BE USED AS THE INSIDE FORM.

GUARD THE VAULT AGAINST CROSSING BY ANY HEAVY MACHINERY OR CONCRETE TRUCKS

> REFER TO DRAWING L606-L608 FOR ADDITIONAL FOUNTAIN INFORMATION

J:\17018.00 East Boston Piers Park II\11\_Construction Documents\L607-Water Play.dwg - 3/18/2022

Mar 18, 2022



MASSACHUSETTS PORT AUTHORITY EAST BOSTON, MASSACHUSETTS 02128

PROJECT LOCATION: MASSPORT PIERS PARK II EAST BOSTON, MA 02128

MPA CONTRACT NO.: LOCATION CODE:

PROJECT SUBMISSION PHASE

60% SUBMISSION

MARTECCHINI STRUCTURAL

REVISIONS:



DESCRIPTION

KLEINFELDER Bright People. Right Solutions.

One Beacon St, Suite 8100 CONSULTANT

> Pressley Associates Landscape Architects Newton Centre, MA 02459

T: 617-969-1934 PROJECT NUMBER AND TITLE:

MASSPORT PIERS PARK II

L1540-C1

DETAILS- WATER PLAY

LANDSCAPE

03/18/2022

SHEET NUMBER: