



Environmental Assessment

Adams Shore/Houghs Neck Seawall Repairs and Improvements Project

City of Quincy, Norfolk County, Massachusetts

FEMA-DR-4372-MA

Prepared by the City of Quincy and Tighe & Bond, Inc. in collaboration with FEMA Region 1

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FEMA

**U.S. Department of Homeland Security
Federal Emergency Management Agency Region 1
99 High Street
Boston, MA 02110**

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Document C: Select Pages from the City of Quincy Conservation Commission Order of Conditions and Plan Reference Correction Letter

Document D: Select Pages from MassDEP 401 WQC Authorization

Document E: Reserved for Select Pages from MassDEP Chapter 91 License

Document F: Reserved for Select Pages from USACE Authorization

APPENDIX D: Finding of No Significant Impact (FONSI)

LIST OF ACRONYMS

BMP	Best Management Practice
CEQ	Council on Environmental Quality
CBIA	Coastal Barrier Improvement Act
CBRA	Coastal Barrier Resources Act
CFR	Code of Federal Regulations
CMR	Code of Massachusetts Regulations
CWA	Clean Water Act
CZM	[Massachusetts Office of] Coastal Zone Management
CZMA	Coastal Zone Management Act
CZMP	Coastal Zone Management Plan
DMF	[Massachusetts] Division of Marine Fisheries
EA	Environmental Assessment
EEA	[Massachusetts] Executive Office of Energy and Environmental Affairs
EFH	Essential Fish Habitat
ENF	Environmental Notification Form
EO	Executive Order
EPA	[U.S.] Environmental Protection Agency
ESA	[U.S.] Endangered Species Act
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
HMGP	Hazard Mitigation Grant Program
HTL	High Tide Line
IPaC	Information for Planning and Consultation
LOMR	Letter of Map Revision
MACRIS	Massachusetts Cultural Resource Information System
MassDEP	Massachusetts Department of Environmental Protection
MassDOT	Massachusetts Department of Transportation

MassGIS	Massachusetts Geographic Information System
MEPA	Massachusetts Environmental Policy Act
MHW	Mean High Water
MLW	Mean Low Water
MVP	[Massachusetts] Municipal Vulnerability Preparedness
MWRA	Massachusetts Water Resources Authority
NAAQS	National Ambient Air Quality Standards
NAVD88	North American Vertical Datum of 1988
NEPA	National Environmental Policy Act
NHESP	[Massachusetts] Natural Heritage & Endangered Species Program
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
PA	Public Assistance
PCN	Pre-Construction Notification
SWPPP	Stormwater Pollution Prevention Plan
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

1.0 INTRODUCTION

The City of Quincy has approximately 27 miles of heavily developed coastline, nearly half of which depends upon seawalls for protection. Quincy's seawalls are used to protect the health and safety of residents and their homes, schools, churches, businesses, freshwater wetlands, salt marshes, and utilities (i.e., water, gas, and sewer, including the Massachusetts Water Resources Authority (MWRA) High Level Sewer to the Nut Island Headworks sewage screening facility), and include public access stairways to the beach. The seawall provides protection for Sea Street, the only evacuation route for many residents of the Houghs Neck neighborhood.

The coastal engineering structures in the Adams Shore/Houghs Neck neighborhoods of Quincy were constructed between the 1930s to 1950s, with several improvement/expansion/repair projects having taken place since that time. The seawalls consist of a mixture of construction types, including cast-in-place concrete structures, pre-cast concrete seawall units set on a dry set revetment stone mound, and standalone stone revetment. The majority of the coastal structures consist of precast concrete blocks that include a wave return curved face. Some structures have cast-in-place concrete caps on top of the precast seawall units for additional elevation.

Roughly 80% of the precast concrete blocks exhibit signs of deterioration that indicate that they have reached or are close to reaching their initial design life. Nearly all of the structures within the project area include some form of revetment stone at the base of the structure. Some areas of revetment contained large voids that are the result of stone movement. In some cases, revetment voids were observed to have been filled with either mortar or concrete.

Project area stair construction types include solid core concrete, suspended concrete, and timber. Some of the concrete landing platforms have been severely affected by beach scour. Scour along many of the seawalls has resulted in the loss of supporting soils under the landing slabs and has left some of these platforms well above beach elevation. There are also private structures and stairs within the project area.

Along the project area there are 16 known outfalls that pass through the coastal structures, ranging in outer diameter size from 8 to 36 inches. The smaller (≤ 18 inches diameter) outfall pipes are located within or at the base of the seawall revetment, while the larger (≥ 24 inches diameter) outfall pipes discharge further out on the shoreline or within previously constructed groins. Most of the outfall pipes are obscured by the existing revetment or buried in sand; the condition of the portions that are visible ranges from poor to good. Many of the smaller diameter outfall pipes that discharge stormwater runoff from the closed municipal system have one way or check valves while the larger pipes connect to large concrete chambers with a series of one-way gates. Several of the larger outfall pipes are connected to tide gate structures that provide tidal flow to salt marshes behind the wall, such as the Mallard Road salt marsh.

During the winter of 2018, severe winter storm events resulted in coastal flooding throughout the City. In early January, Winter Storm Grayson, a blizzard with high winds and heavy snow, coincided with high tide, and caused widespread coastal flooding. Three nor'easters then occurred within a period of three weeks in early March of 2018. The first, Winter Storm Riley (March 2-3, 2018, FEMA event DR-4372-MA), resulted in severe damage to coastal infrastructure and homes throughout Quincy, including within the Adams Shore and Houghs Neck neighborhoods. The nor'easter included periods of heavy rains, damaging winds and coastal flooding over three high tide cycles, and storm surges. Two additional nor'easters over the following two weeks (Winter Storm Quinn on March 7, 2018 and Winter Storm Skylar on March 13, 2018) resulted in additional damage to coastal infrastructure and residences from both wave action and coastal flooding.^{1 2}

After the March 2018 storms, the City applied for Public Assistance (PA) for Project #74027 Seawalls (Phase 1 Adams Shore) associated with FEMA disaster event DR-4372-MA (damage #172925, Adams Shore – Terne Road/Shellton Road, Damage #172926, Adams Shore – Shore Ave/Chickatabot Road/Norton Road, Damage #172929, Houghs Neck – Post Island Road, and Damage #172930, Houghs Neck – Sea Street and Babcock Street).

Prior to the March 2018 storms, the City applied for Hazard Mitigation Grant Program (HMGP) funding for reconstruction and improvements to the portion of the seawall near the western end of the Adams Shore/Houghs Neck project area (FEMA-4214-DR-MA) along Chickatabot and Shore Avenue, including resetting 230 linear feet of revetment rock, installation of revetment dowels and staples, relocation and reconstruction of OF-08549 within the existing jetty that contains OF-10028, reconstruction of OF-10028 and associated installation of drainage and road work, and replacement of concrete stairs with timber stairs (from 42.265000, -70.989610 to 42.26566944, -70.9903388). Overlapping work between the proposed HMGP project and PA #74027 consists of 11 cubic yards of concrete required for displaced riprap at Damage #172926 site 2 adjacent to Chickatabot Rd (42.26542, -70.99001).

In accordance with FEMA Directive 108-1 and FEMA Instruction 108-1-1, this Environmental Assessment (EA) has been prepared pursuant to Section 102 of the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. § 4332), and as implemented by the regulations promulgated by the President's Council on Environmental Quality (CEQ) (40 C.F.R. parts 1500-1508). The purpose of the EA is to analyze the potential environmental impacts of the proposed action, and to determine whether to prepare an Environmental Impact Statement or a Finding of No Significant Impact (FONSI).

¹ CBS Boston (2018), Quincy Mayor Calls Nor'easter Damage 'Worst Since The Blizzard Of '78': <https://boston.cbslocal.com/2018/03/03/march-noreaster-quincy-rescues-flooding/>

² The Patriot Ledger (2019), One Year Later, Post Island Homeowners Still Rebuilding After Storm: <https://www.patriotledger.com/news/20190322/one-year-later-post-island-homeowners-still-rebuilding-after-storm>

2.0 PURPOSE AND NEED

When the President declares a disaster based on a request from the Governor, FEMA designates the area eligible for assistance and the types of assistance available. The PA Program is a grant program to assist state and local governments based on whether a public facility was damaged by the disaster event (pre-existing problems do not qualify) and what is not covered by insurance. The PA Program provides:

- Assistance for debris removal
- Implementation of emergency protective measures
- Permanent restoration of infrastructure
- Assistance for hazard measures during the recovery process to encourage protection from future damage

FEMA also provides the HMGP to support cost-effective post-disaster projects. The purpose of the HMGP is to help communities implement hazard mitigation measures following a Presidential Major Disaster Declaration in the areas of the state, tribe, or territory requested by the Governor or Tribal Executive. The key purpose of this grant program is to enact mitigation measures that reduce the risk of loss of life and property from future disasters.

The purpose of the proposed action alternative project presented in this EA is to bring the seawalls that protect residences, utilities, and evacuation routes in Houghs Neck and Adams Shore up to current safety standards, reduce storm damage, and provide additional climate change resiliency while improving stormwater drainage through outfall improvements and maintaining public access to the waterfront.

The Adams Shore/Houghs Neck seawalls are currently experiencing significant deterioration and damage in many areas stretching from Babcock Street to Chickatabot Road. In 2012, the City of Quincy completed a City-wide assessment of seawall structures. Seawalls located around Houghs Neck and Adams Shore, including in the areas of Sea Street, Post Island, Shellton, and Terne Roads, were rated among those in poorest condition and in highest need of replacement. The structural assessment identified deficiencies including loss of backfill, wall subsidence due to structurally deficient wall sections, cracking, and loss of revetment. Additional undermining of the seawall may result in a collapse of the wall structures and subsequent damage to public infrastructure, public access, and property. The coastal structures within the project area currently have an average elevation of 11 feet (North American Vertical Datum 1988 (NAVD88)), with a 100-foot stretch of wall near Post Island Road that has a crest elevation of 10.5 feet. The existing crest elevations are inadequate to provide protection against wave overtopping with rising sea levels.

In addition, the beach access stairs typically have localized concrete deterioration despite targeted spall repairs and new galvanized steel railings installed by the City of Quincy as part of repairs made in 2013. Along the project area there are 16 known outfalls, ranging in outer diameter size from 8 to 36 inches. The smaller diameter outfall pipes are located within or at the base of the revetment while the large outfalls discharge further out on the shoreline or within previously constructed groins. The condition of the portions of the outfalls that are not obscured by the existing revetment or buried in sand ranges from poor to good.

More recently, the City of Quincy experienced three nor'easters within a period of three weeks in early March 2018, which resulted in widespread coastal flooding. The first of the three nor'easters, Winter Storm Riley (March 2-3, 2018, FEMA event DR-4372-MA³) resulted in severe damage to coastal infrastructure and homes throughout the City, including the Adams Shore and Houghs Neck neighborhoods. The damage has been well documented by the City of Quincy.

Based on the results of the condition assessments of the coastal engineering structures in the Houghs Neck and Adams Shore neighborhoods and the damage resulting from the 2018 nor'easters and associated flooding, repairs and improvements to the Adams Shore and Houghs Neck seawall are necessary to extend the useful life of the structure as well as protect the public and private structures located behind it. The City of Quincy was awarded a grant through the Dam and Seawall Fund of the Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs (EEA) to permit and design the repairs to the Adams Shore/Houghs Neck Seawall.⁴ The proposed Adams Shore/Houghs Neck Seawall Repairs and Improvements project will bring the seawalls in this area up to current safety standards, protect public infrastructure, public access, and property, reduce storm damage, and provide additional climate change resiliency.

³ Public Notice of Major Disaster Declaration: FEMA-DR-4372-MA: <https://www.fema.gov/disaster/notices/public-notice-major-disaster-declaration-fema-4372-dr-ma>

⁴ EEA press release (2016), Baker-Polito Administration Awards Over \$10 Million for Dam and Seawall Projects: <https://archives.lib.state.ma.us/bitstream/handle/2452/431639/ocn898221737-2016-11-02.pdf>

3.0 PROJECT LOCATION AND BACKGROUND

The City of Quincy, Massachusetts is the largest municipality south of Boston, with over 96,000 residents living within 16.6 square miles. It is bordered by the Town of Milton to the west, the Towns of Braintree and Randolph to the south, the City of Boston to the north, and the City of Weymouth to the east. Boston, Weymouth and Hull are separated from Quincy by the Neponset River, the Fore River, and Hingham Bay, respectively; Boston is connected to Quincy via the Neponset Bridge.

Quincy is located in Boston Outer Harbor, and has approximately 27 miles of coastline, of which 11.7 miles contain some form of seawall or stone revetment to protect the shoreline. Seawalls along the coast of Quincy provide wave protection and shoreline stabilization for low-lying residential areas exposed to significant flooding potential. The Houghs Neck and Adams Shore neighborhoods of Quincy are particularly susceptible to flooding and erosion from elevated tides and wave forces that accompany winter nor'easters (Figures 1 and 2 in Appendix A).

Adams Shore is a heavily populated residential neighborhood located on the northern shoreline adjacent to Quincy Bay. Adams Shore is bounded on the west by the Merrymount neighborhood and the east by Houghs Neck and provides access to Houghs Neck via Sea and State Streets. There are approximately 1,370 linear feet of coastal structures which protect residences, roads, and utilities within Adams Shore, providing services to the densely populated Houghs Neck area.

Houghs Neck is on a peninsula located on the eastern shoreline of Quincy. Bordered by Hingham Bay to the east, Rock Island Cove to the south and Quincy Bay to the west, Houghs Neck is a densely populated area that is home to the Quincy Yacht Club, Atherton Hough Elementary School, the Houghs Neck fire station, and the Nut Island Headworks sewage screening facility. Houghs Neck, which includes the neighborhoods around Rock Island Road, is surrounded by 16,730 linear feet of coastal structures that are owned by the City. The coastal structures provide protection for the Houghs Neck evacuation route, residences, businesses, and utilities, including a dike that runs parallel to Sea Street that contains the High Level Sewer to the Nut Island sewage facility.

The Adams Shore/Houghs Neck seawall repairs and improvements project area is located on the north side of the peninsula, from the intersection of Babcock Street and Sea Street (latitude 42.266701, longitude -70.968424) to the intersection of Chickatabot Road, Narragansett Road, and Shore Avenue (latitude 42.265674, longitude -70.990352) for seawall repairs and replacement and to latitude 42.266151, longitude -70.991169) for additional embankment repairs above the seawall. The seawall is roughly oriented west-east with Quincy Bay to the north and Adams Shore to the south. The project area consists of approximately 8,000 linear feet of coastal structures constructed at various times from the 1930s up to the 1950s, and consists of precast concrete blocks, cast-in-place concrete, granite blocks, and stone revetment. These structures provide wave protection and

shoreline stabilization for low lying residential areas exposed to significant waves from the northeast to eastern quadrant.

National Oceanic and Atmospheric Administration (NOAA) tide data for this area (Nut Island tide station) indicates a mean tidal range of almost 10 feet, with Mean High Water (MHW) at elevation 4.4 and Mean Low Water (MLW) at elevation -5.1, Mean Higher High Water (MHHW) at elevation 10.2, king tide at elevation 6.9, and astronomical high tide at elevation 9.5 (NAVD88). At low tide, there is a narrow portion of beach exposed along the majority of the seawall, though for much of the tidal cycle, seawall is directly subject to wave action.

At the west end of the seawall in the vicinity of Terne Road, sand has been accreting and there is a wide and substantial sand and gravel beach that provides shoreline protection in all but the highest storm tide conditions. In this area, the seawall is well inshore of the High Tide Line (HTL). Wetlands at the project site consist of an intertidal area the length of the project, and salt marsh areas behind the wall near Mallard Road and Norton Road/Terne Road.⁵

The purpose of the structures in the project area is to protect the shore from erosion and subsidence by reducing and absorbing the wave energy generated by winds blowing across the ocean. However, the types of structures present around the City of Quincy are not intended to hold back flood waters or perform as dikes. Instead they are meant to allow flood waters to flow within the voids of the revetment.

The coastal structures within the project area have crest elevations that vary from 10.5 feet to 12 feet (NAVD88) versus the FEMA flood zone designations which vary from 14 feet to 17 feet (NAVD88). Based on FIRM updates since 2006 and the Letter of Map Revision (LOMR) in 2017,⁶ FEMA base flood elevations have increased by 5 to 7 feet since most of the seawalls were built (Figure 4 in Appendix A).

The conditions of the wall units appear to be dependent on their exposure to wave fetch, which is an indication of wave size and salt spray conditions. Field observations revealed that precast units exposed to the long wave fetches of the Adams Shore/Houghs Neck Area showed greater and more uniform deterioration than other areas of the City.⁷ The table below summarizes the types of deficiencies observed, organized by typical section as shown on Sheet C-501 in Appendix B.

⁵ For additional detail on wetland resource areas subject to the Massachusetts Wetlands Protection Act and the Quincy Wetlands Protection Ordinance, refer to the Notice of Intent application (MassDEP File #059-1415).

⁶ FEMA LOMR, Case No. 16-01-2803P, effective date March 13, 2017: <https://map1.msc.fema.gov/data/25/L/16-01-2803P-255219.pdf?LOC=ac4c2e975ee11b857b72fd1765acfab2>

⁷ City-Wide Seawall Assessment Report Prepared by Tighe & Bond, Inc. for the City of Quincy Department of Public Works, May 2012.

Table 3.1. Adams Shore/Houghs Neck Seawall Deficiencies by Construction Types

Typical Section ID	Survey Stationing	Description of Deficiencies
A	0+00 to 17+06	Failed units in this section, many units have cracks, toe wall needs repair, revetment is insufficient and needs to be reset, sidewalks are showing signs of failure.
B	17+06 to 20+30.55	Cracks, toe wall needs repair, revetment is insufficient and needs to be reset, sidewalks are showing signs of failure.
C	22+85 to 40+78 47+78 to 50+88	Failed units in this section, many units have cracks, toe wall needs repair, revetment is insufficient and needs to be reset, sidewalks are showing signs of failure.
D	40+78 to 41+64	Failed units in this section, toe wall needs repair and revetment needs to be reset or augmented. Some areas of subsidence need to be addressed.
E	41+64 to 47+78	Failed units in this section, toe wall needs repair and revetment needs to be reset or augmented. Some areas of subsidence need to be addressed.
F	50+88 to 54+05	Toe needs to be repaired, units should be raised to protect infrastructure and homes, some areas of subsidence need to be addressed.
G	54+05 to 56+95	Toe needs to be repaired, units should be raised to protect infrastructure and homes, some areas of subsidence need to be addressed.
H	20+44 to 22+85 56+95 to 60+00	Cracks, toe wall needs repair, revetment is insufficient and needs to be reset, sidewalks are showing signs of failure.
I	60+00 to 63+91	Toe needs to be repaired, units should be raised to protect infrastructure and homes, some areas of subsidence need to be addressed.
J	63+91 to 64+48 64+48 to 68+44 71+08 to 71+36 72+81 to 73+32	Private wall section. Toe needs to be repaired, units should be raised to protect infrastructure and homes, some areas of subsidence need to be addressed.
K	70+30 to 71+08 71+36 to 72+81	Private wall section. Failed units in this section, many units have cracks, toe wall needs repair, revetment is insufficient and needs to be reset.
L	73+32 to 73+47 73+60 to 75+87	Toe needs to be repaired, units should be raised to protect infrastructure and homes, some areas of subsidence need to be addressed.
None	75+87 to 76+50	Toe needs to be repaired, units should be raised to protect infrastructure and homes, some areas of subsidence need to be addressed.
None	76+50 to 77+80	Private wall section.

4.0 ALTERNATIVES

This section summarizes the alternatives that were considered for addressing the project purpose and need described in Section 2.0. In this EA, two alternatives are evaluated: the No Action Alternative, and the Proposed Action Alternative, which includes partial reconstruction of the existing seawall with an increase in wall height, replacement of small outfall pipes with larger diameter pipes, and partial reconstruction of larger outfalls. Additional alternatives for coastal engineering structures repair and storm drainage outfall improvements were considered and dismissed as not feasible.⁸

4.1 Alternative 1: No Action Alternative

In this alternative, no repairs, replacement, or improvements of the coastal engineering structures or outfall pipes would be performed. This alternative would result in environmental resource area impacts associated with structure failure, particularly with increases in storm damages, including increasing indirect costs as the coastal engineering structures continue to degrade and provide decreasing protection for the health and safety of residents and their homes, schools, churches, businesses, freshwater wetlands, salt marshes, and utilities (including water, gas, and sewer, and the High Level Sewer Line to the Nut Island sewage headworks facility). Similarly, based on the age and observed condition of outfall pipes and projected increase in frequency and intensity of storm events, no action regarding the outfall pipes is anticipated to result in continued and increased flooding of the neighborhoods behind the seawall, as many of the existing outfalls are undersized for the areas that they are draining.

4.2 Alternative 2: Partial Reconstruction (Proposed Action)

Based on the age of the existing structures and Tighe & Bond field visit observations in 2011, 2012, and 2017, approximately 80% of the precast seawall units along Sea Street are deficient to the point where rehabilitation is not possible. The proposed action is a partial reconstruction alternative, which would consist of the following:

- Resetting approximately 30% of the existing revetment
- Removing and replacing 100% of the concrete leveling pads and blocks
- Raising the seawall 2-4 feet (to elevations 13-15 feet NAVD88 (18.5-20.5 feet NOAA Datum per the plans provided in Appendix B) to provide increased protection relative to anticipated sea level rise within the design life of 50 years
- Removing and replacing public access stairs in 15 locations; one of the public access stair replacements is part of the proposed HMGP project
- Replacement of small outfall pipes (< 24-inches outer diameter) with larger diameter pipes

⁸ For additional details on the considered alternatives, refer to the MEPA ENF (EEA#15861).

- Partial reconstruction of the portion of large outfall pipes (> 24-inches outer diameter) downstream of the last manhole, relocation of replacement outfall pipes where feasible and necessary, installation of check valves in outfalls connected to the storm drain system, construction of outlet protection aprons, and addition of concrete pads and helical anchors along the reconstructed portions of the pipes

The expected design life associated with the partial reconstruction of the seawall/revetment alternative scope of work is approximately 50 years. Replacement of the seawall blocks and leveling pads for typical sections A-I and L (existing and proposed cross-sections are shown on plan sheet C-501 in Appendix B) includes an increase in seawall height by 2 to 4 feet. Private wall sections J and K would be replaced in-kind, by others.

Partial reconstruction would require temporary environmental resource area impacts during construction for access to the structures, resetting of the revetment stone, removal and replacement of the larger outfall pipes, and temporary laydown and storage areas, and permanent impacts from reconstruction of the revetment and raising of the seawall height. The seaward extent of the reset revetment would be limited to the existing footprint in order to minimize impacts. Some damage to the revetment may occur during large storm events but stone revetment structures are tolerant of subsidence, relatively low cost, and can be repaired.

The concrete replacement stairs are to be located no further seaward than the present stairs to the extent practicable. The footings will be on sonotubes or helical piles. In two locations, timber stairs will be replaced with hybrid timber-concrete stairs that are concrete on the landward side of the seawall and down to the top of revetment where they will transition to timber. Two new stairs are proposed to improve public access and are proposed to be hybrid timber-concrete stairs that are concrete on the landward side of the wall and down to the top of revetment where they will transition to timber. In one location associated with the proposed HMGP project (42.265519, -70.990257), existing concrete stairs are proposed to be replaced with timber stairs.

Combining the partial reconstruction of the seawall and revetment with the replacement of the smaller outfall pipes is a cost-effective use of resources, upsizes the drainage pipes to account for the projected increase in frequency and intensity of storm events over the expected design life of the partially reconstructed seawall, and minimizes the environmental impacts that would be associated with a separate outfall replacement project carried out at a later date.

The partial reconstruction of the larger diameter outfalls is not proposed to include alteration of the upstream functions of tide gates. Two of the outfall pipes connect to salt marshes behind the seawall via tide gates (OF-08573 and OF-08590); the remainder of the outfalls are connected directly to the stormwater drainage system. The operations of the existing tide gates are not proposed to be changed as part of the project. One-way check valves will be installed on outfalls that connect to the storm drain system only and that do not connect to salt marshes.

The addition of helical anchors will provide structural stability, and the outlet protection aprons will provide erosion and scour protection. OF-03035 is proposed to be reconstructed in a new orientation to share an outlet protection apron with the Post Island Road outfall, and as part of the HMGP project, OF-08549 is proposed to be removed and reconstructed within the existing groin that protects OF-10028, which will increase outfall protection and minimize impacts to resource areas.

4.3 Alternatives Considered and Dismissed

Other alternatives for seawall improvements considered and dismissed include:

- **Remove Seawall** – The Adams Shore/Houghs Neck shoreline does not have sufficient space to allow for the removal of the seawall and replacement with coastal landscaping or a stone revetment slope without new filling onto the beach. In addition, the taking of private property and building removals would be cost prohibitive. This alternative would require environmental resource area impacts to beach, salt marsh and coastal dune areas, and would require consideration of potential impacts to shellfish habitat.
- **Move Seawall Landward** – Moving the coastal engineering structures landward to the base of the landward landform would minimize increasing encroachment on seaward resource areas and decrease erosion of the shore area in front of the wall. However, the existing coastal engineering structures are directly adjacent to privately owned parcels, residences, or public roads that serve as critical transportation and evacuation routes. Moving the seawalls landward would require significant impacts to existing private properties and would require the municipality to construct new roads to serve as evacuation routes for the City’s residents. In the select areas where the wall is abutted by City-owned property, moving the seawall landward is infeasible due to the presence of sensitive environmental resource areas such as salt marsh.
- **Surficial Repairs** - The surficial repairs alternative would consist of repairing concrete spalls and replacing approximately 20% of concrete seawall units in-kind. Surficial repairs would be only a cosmetic repair and not provide structural restoration or an improvement over existing conditions. Some resource area impacts would still be required for access to the concrete seawall units. By not resetting the revetment in this alternative, the construction period impacts to coastal beach may be limited. However, by not resetting the existing revetment as is proposed in other alternatives, the functionality of the coastal engineering structures is not improved over its current state, nor is an increase in height of the structure proposed. Therefore, increased protection against sea level rise is not provided, and this alternative would not provide any increased resiliency of the coastal engineering structure.
- **Complete Reconstruction** – A complete reconstruction would consist of removing or resetting more than 50% of coastal revetment (including beyond the toe of existing revetment), removing and replacing 100% of concrete pads and blocks, raising the seawall

above the FEMA VE Zone elevation, increasing the base of the seawall to accommodate the increased height, and combining OF-03035 and OF-08590. Eliminating one of the outfall discharge pipes located on Post Island Beach (OF-03035 or OF-08590) through combining the storm drain pipes at a manhole location upland of the seawall would allow for the removal of one of the pipes but would require significant hydraulic and hydrologic assessment in order to design a single pipe capable of providing a comparable ability to safely convey stormwater from the neighborhood behind the seawall and to avoid impacts to the salt marsh areas located behind the seawall. The additional protection and design life provided by the complete reconstruction alternative does not provide enough benefit to merit the increased cost, blocking of views, reduced access, and greater environmental resource area impacts required due to the need for a larger footprint, increased construction period, larger laydown area, and increased access required to construct a larger wall.

4.4 Impact Evaluation

The CEQ notes: “Effects include ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Effects may also include those resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial” (40 CFR 1508.8). When possible, quantitative information is provided to establish potential impacts; otherwise, the potential qualitative impacts are evaluated based on the criteria listed in Table 4.1:

Table 4.1: Impact Significance and Context Evaluation Criteria for Potential Impacts

Impact Scale	Criteria
None / Negligible	The resource area would not be affected and there would be no impact, OR changes or benefits would either be non-detectable or, if detected, would have effects that would be slight and local. Impacts would be well below regulatory standards, as applicable.
Minor	Changes to the resource would be measurable, but the changes would be small and localized. Impacts or benefits would be within or below regulatory standards, as applicable. Mitigation measures would reduce any potential adverse effects.
Moderate	Changes to the resource would be measurable and have either localized or regional scale impacts/benefits. Impacts would be within or below regulatory standards, but historical conditions would be altered on a short-term basis. Mitigation measures would be necessary, and the measures would reduce any potential adverse effects.
Major	Changes to the resource would be readily measurable and would have substantial consequences/benefits on a local or regional level. Impacts would exceed regulatory standards. Mitigation measures to offset the adverse effects would be required to reduce impacts, though long-term changes to the resource would be expected.

The impact analysis in this EA evaluates the potential environmental direct and indirect impact of the No Action and Proposed Action alternatives. A summary table of the potential impacts of the

No Action and Proposed Action alternatives is provided in Table 4.2; Table 4.3 summarizes impact sections eliminated from review based on the scoping checklist.

Table 4.2: Summary of Impacts from Scoping Checklist, Appendix A, and EA Section 5.0

Section	Area of Evaluation	Alternative 1: No Action	Alternative 2: Proposed Action
5.1.1	Physical Resources: Geology and Soils	<u>Major</u> : continued erosion of Coastal Bank	<u>Moderate</u> : short-term impacts during construction, but Coastal Bank will be stabilized
5.1.2	Physical Resources: Air Quality	<u>None</u>	<u>Negligible</u> : temporary impacts from construction equipment
5.1.3	Physical Resources: Visual Quality and Aesthetics	<u>Minor</u> : cracked and crumbling seawall would continue to deteriorate	<u>Negligible</u> : temporary impacts during construction
5.2.1	Water Resources: Water Quality	<u>Minor</u> : continued deterioration of the seawall and associated erosion of coastal bank would result in impacts to waters of the U.S.	<u>Minor</u> : project site located in and would affect waters of the U.S.; project requires authorization under Clean Water Act Sections 401 and 404
5.2.2	Water Resources: Floodplains	<u>Minor</u> : portions of the project area are located within the FEMA Zone VE and the floodplain would be impacted by the continued deterioration of the seawall through loss of sand	<u>Minor</u> : portions of the project area are located within the FEMA Zone VE and involve replacement of an existing seawall
5.2.3	Water Resources: Wetlands	<u>Moderate</u> : the project area is located within wetland resource areas and continued deterioration of the seawall would result in erosion and loss of sand	<u>Minor</u> : the project area is located within wetland resource areas and is expected to have temporary impacts related to construction
5.3.1	Coastal Resources	<u>Minor</u> : project area is located in the Coastal Zone	<u>Minor</u> : project area is located in the Coastal Zone
5.4.1	Biological Resources: Wildlife and Fish	<u>Minor</u> : continued deterioration of the seawall and associated erosion would result in impacts to waters of the U.S. and Essential Fish Habitat	<u>Minor</u> : Installation of replacement outfall pipes will partially occur within Essential Fish Habitat
5.4.2	Biological Resources: Vegetation	<u>None</u>	<u>Minor</u> : No tree removal, private residence landscaping may be affected, salt-resistant plantings on landward side of seawall for stabilization
5.4.3	Biological Resources: Threatened and Endangered Species	<u>None</u>	<u>Negligible</u> : All of New England is potential habitat for the threatened northern long-eared bat; there are no nearby hibernacula and no trees will be removed
5.4.4	Biological Resources: Migratory Birds	<u>Minor</u> : all of New England is located in a flyway zone	<u>Minor</u> : no potential for take of migratory birds

Section	Area of Evaluation	Alternative 1: No Action	Alternative 2: Proposed Action
5.4.5	Biological Resources: Essential Fish Habitat	<u>Minor</u> : Continued deterioration of the seawall and associated erosion may impact waters of the U.S. and Essential Fish Habitat	<u>Minor</u> : Installation of replacement outfall pipes will partially occur within Essential Fish Habitat, project is not anticipated to impact Essential Fish Habitat
5.4.6	Biological Resources: Bald and Golden Eagles	<u>None</u>	<u>None</u> : project area is not located near a bald eagle nest
5.5	Cultural Resources	<u>None</u> : There are no known cultural resources within the project area.	<u>None</u> : There are no known cultural resources within the project area
5.6.1	Socioeconomic Resources: Land Use and Planning, Transportation, Public Services, and Public Health and Safety	<u>Major</u> : If the seawall were not upgraded and failed, the potential impacts to the structures and infrastructure behind the seawall is significant	<u>None</u> : The project is not anticipated to affect current or planned land use, as intent is to repair the existing seawall that protects existing residences
5.6.2	Socioeconomic Resources: Noise	<u>None</u>	<u>Minor</u> : Temporary impacts to noise levels are anticipated due to construction activity and vehicles
5.6.3	Socioeconomic Resources: Environmental Justice	<u>None</u>	<u>Minor</u> : There would be no disproportionately high adverse impact on low income or minority populations

Table 4.3: Impact Sections Eliminated from Review

Topic	Reason for Elimination
Farmland Protection Policy Act	There are no prime or unique soils for farmland within the project area.
Wild and Scenic Rivers Act	The project site is not located near a designated Wild and Scenic River.
Safe Drinking Water Act	There are no Sole Source Aquifers or public water supply wells in the project area.
Hazardous Materials	Project is not located near any known source of contamination and is not located in an area with a high likelihood of contamination.

5.0 AFFECTED ENVIRONMENT AND POTENTIAL IMPACTS

5.1 PHYSICAL RESOURCES

5.1.1 Geology and Soils

5.1.1.1 Existing Conditions

The proposed project area is located along the coastline of the Quincy Bay in the Adams Shore and Houghs Neck neighborhoods of Quincy, Massachusetts. Based on United States Geological Survey (USGS) surficial materials mapping,⁹ ¹⁰ the surficial geology of the project area consists mainly of artificial fill and glacially deposited sand and gravel deposits.

According to the U.S. Department of Agriculture Natural Resources Conservation Service online Web Soil Survey,¹¹ the project area is predominantly underlain by gently sloping beaches unprotected from the ocean that are subject to erosion. Also included in the subject property are areas of Udorthents, wet substratum: disturbed soils that have been removed, filled, or graded, and that are moderately well drained and sandy. Small areas of Merrimac-Urban land complex are also present, characterized by deep and excessively drained fine sandy loam with shallow slopes. These soils are typical of urban areas where original soils have been covered with impervious surfaces.

5.1.1.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

Under the No Action Alternative, there would continue to be erosion and deterioration of the seawall, its foundation, and project area soils.

Alternative 2: Partial Reconstruction

In the Proposed Action Alternative, partial reconstruction of the seawall, replacement of the small outfall pipes, and partial reconstruction of the larger outfall pipes would have temporary construction period impacts to soils. Appropriate erosion and sedimentation Best Management Practices (BMPs) will be incorporated, including the use of silt fence, inlet protection barriers, and construction management techniques such as limiting disturbance. Source control measures including a street sweeping plan will be used to capture and dispose of accumulated sediment.¹²

⁹ USGS Quadrangle 138 – Hull: https://pubs.usgs.gov/sim/3402/sim3402_quadrangle/138_Hull.pdf

¹⁰ USGS Surficial Materials of Massachusetts – A 1:24,000-Scale Geologic Map Database, Pamphlet to accompany Scientific Investigations Map 3402: <https://pubs.usgs.gov/sim/3402/sim3402.pdf>

¹¹ NRCS Web Soil Survey: <https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>

¹² For additional details regarding construction period BMPs, refer to Adams Shore / Houghs Neck Seawall Repairs & Improvements, City of Quincy, Project Manual Vol. 1 of 1, Division 1 – General Requirements, Section 01140: Work Restrictions, Section 01560: Temporary Barriers, and Section 01570: Temporary Controls

5.1.2 Air Quality

The Clean Air Act is a federal law that regulates air emissions from area, stationary, and mobile sources. The act authorized the U.S. Environmental Protection Agency (EPA) to establish National Ambient Air Quality Standards (NAAQS) to protect public health and the environment. The NAAQS include standards for six criteria air pollutants: lead, nitrogen dioxide, ozone, carbon monoxide, sulfur dioxide, and particulate matter (including both particulate matter less than 10 micrometers in diameter [PM10], and fine particulate matter less than 2.5 micrometers in diameter [PM2.5]). Areas where the monitored concentration of a criteria pollutant exceeds the applicable NAAQS are designated as being in non-attainment of the standards; while areas where the monitored concentration of a criteria pollutant is below the standard are classified as in attainment. Non-attainment areas can be re-designated as a maintenance area if monitoring data demonstrate that a non-attainment area meets the NAAQS and a 10-year plan for continuing to meet and maintain such standards is implemented.

Federally funded actions in nonattainment and maintenance areas are subject to EPA conformity regulations (40 CFR Parts 51 and 93), which ensure that emissions of air pollutants from planned federally funded activities would not affect the state's ability to meet the NAAQS. Section 176(c) of the Clean Air Act requires that federally funded projects conform to the purpose of the State Implementation Plan, meaning that federally funded activities would not cause any violations of the NAAQS, increase the frequency or severity of NAAQS violations, or delay timely attainment of the NAAQS or any interim milestone.

The conformity requirements of the Clean Air Act and its regulations limit the ability of federal agencies to assist, fund, permit, and approve projects that do not conform to the applicable State Implementation Plan. When subject to this regulation, the federal agency is responsible for demonstrating conformity for its proposed action. Conformity determinations for federal actions other than those related to transportation plans, programs, and projects that are developed, funded, or approved under title 23 USC or the Federal Transit Act (49 USC 1601 et seq.) must be made according to the federal general conformity regulations (40 CFR 93 Subpart B). The emissions from construction activities are subject to air conformity review, unless they are shown to be below the applicable de minimis levels.

5.1.2.1 Existing Conditions

Per the EPA Nonattainment Areas and Designations Map,¹³ the Adams Shore/Houghs Neck project area is located within a designated nonattainment area for Carbon Monoxide (1990 Standard) and a maintenance area for Ozone 8-hour (1997 Standard).

¹³ US EPA Nonattainment Areas and Designations Map Server:
https://gispub.epa.gov/arcgis/rest/services/OAR_OAQPS/NonattainmentAreas/MapServer

5.1.2.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

Under the No Action alternative, there would be no construction, and therefore no emissions from construction vehicles or equipment.

Alternative 2: Partial Reconstruction

Under the proposed alternative, there would be no long-term impacts on air quality. Negligible short-term impacts on air quality may occur during the construction period from emissions from fuel-burning internal combustion engines (e.g., heavy equipment), which could temporarily increase the levels of some of the criteria pollutants, including Carbon Monoxide. To reduce the emission of criteria pollutants during the construction period, fuel-burning equipment running times would be kept to a minimum and engines would be properly maintained. In addition, the City and its contractors would comply with the Massachusetts Department of Environmental Protection (MassDEP) and Massachusetts Department of Transportation (MassDOT) Diesel Retrofit Program.¹⁴

5.1.3 Visual Quality and Aesthetics

A viewshed is an area of land, water, or other environmental feature visible to the human eye from a fixed vantage point. Viewsheds are areas of particular scenic or historic value that have been deemed worthy of preservation against development or other change.

5.1.3.1 Existing Conditions

The coastal engineering structures in the Adams Shore/Houghs Neck area were constructed between the 1930s to 1950s, with several improvement/expansion projects having taken place since that time. The majority of the coastal structures consist of precast concrete blocks that include a wave return curved face. Some structures were observed to have cast-in-place concrete caps on top of the precast seawall units for additional elevation. These cast-in-place caps are generally secured using reinforcing bars to a precast or cast-in-place unit.

The coastal engineering structures have been grouped into “typical sections” to reflect similar existing conditions as shown on plan sheet C-501 in Appendix C and described in the table below.

¹⁴ MassDOT Diesel Retrofit Specification: <https://www.mass.gov/service-details/massdot-diesel-retrofit-specification>

Table 5.1: Summary of Adams Shore/Houghs Neck Seawall Construction Types

Typical Section ID	Survey Sectioning	Description
A	00+00 to 17+06	Curved wall section sits on a leveling pad that extends landward towards pavement, lawn area or patio. Existing revetment with mortar joints extends below mean high water.
B	17+06 to 30.55	Curved wall section with revetment stone below coastal beach. Wall section is assumed to be constructed on top of existing revetment.
C	22+85 to 40+78 47+78 to 50+88	Curved wall section sits on a shallow leveling pad that extends landward towards pavement, lawn area or patio. Existing revetment with mortar joints extends below mean high water.
D	40+78 to 41+64	Concrete base block topped with a concrete seawall and a curved wall section. Concrete base block and concrete seawall are below mean high water. No revetment or leveling pad.
E	41+64 to 47+78	Curved wall section with revetment containing mortar joints extending below mean high water. Existing pavement, lawn or patio is approximately the same height as the top of the curved wall section.
F	50+88 to 54+05	Sloped wall section with narrow cast in place concrete block on top. Revetment stone with mortar joints extends below mean high water.
G	54+05 to 56+95	Sloped wall section with wider cast in place concrete block on top. Revetment stone with mortar joints extends below mean high water.
H	20+44 to 22+85 56+95 to 60+00	Curved wall section with revetment stone below coastal beach. Wall section is assumed to be constructed on top of existing revetment.
I	60+00 to 63+91	Curved wall section topped with a cast in place concrete block. Revetment is below coastal beach.
J	63+91 to 64+48 64+48 to 68+44 71+08 to 71+36 72+81 to 73+32	Private wall section. Concrete block base with no revetment.
K	70+30 to 71+08 71+36 to 72+81	Private wall section. Curved wall section on leveling pad with existing pavement, lawn or patio at approximately the same height as the top of the curved wall section.
L	73+32 to 73+47 73+60 to 75+87	Curved wall section on leveling pad. Concrete toe block in the landward side of the wall. Revetment with mortar joints extends below average high tide.
None	75+87 to 76+50	Stone and mortar wall. Revetment with mortar joints extends below average high tide.
None	76+50 to 77+80	Private wall section.

5.1.3.2 Potential Impacts and Proposed Mitigation

The wall design is similar to the existing wall design, with a leveling pad added in order to raise the wall height. Visual impacts will consist of a more prominent, higher seawall. The proposed increase in seawall height is required in order to meet current and projected sea level rise conditions. Refer to the discussion of potential impacts in Section 5.5: Cultural Resources.

5.2 WATER RESOURCES

5.2.1 Water Quality

The Clean Water Act regulates discharge of pollutants into water with sections falling under the jurisdiction of the U.S Army Corps of Engineers (USACE) and the EPA. Section 404 of the Clean Water Act (CWA) establishes the USACE permit requirements for discharge of dredged or fill materials into Waters of the United States and traditional navigable waterways. Under the National Pollutant Discharge Elimination System (NPDES), the EPA regulates both point and non-point pollutant sources, including stormwater and stormwater runoff. Activities that disturb one acre of ground or more are required to apply for an NPDES permit through EPA New England.

Section 401 of the CWA authorizes the Commonwealth of Massachusetts to regulate the discharge of dredged or fill material, dredging, and dredged material disposal in waters of the United States within the Commonwealth. A Section 401 Water Quality Certification is triggered by the filing of a federal permit (CWA 404 Permit) if the project results in a loss of 5,000 square feet cumulatively of bordering or isolated vegetated wetlands and land under water, the amount of any proposed dredging is greater than 100 cubic yards , or if any of the other thresholds listed in 314 CMR 9.04¹⁵ are met.¹⁶

Section 1424(e) of the Safe Drinking Water Act of 1974 [Public Law 93–523] authorizes EPA to designate an aquifer for special protection under the sole source aquifer program if the aquifer is the sole or principal drinking water resource for an area (i.e., it supplies 50 percent or more of the drinking water in a particular area) and if its contamination would create a significant hazard to public health. No commitment for federal financial assistance may be provided for any project that EPA determines may contaminate a sole source aquifer such that a significant hazard to public health is created.

5.2.1.1 Existing Conditions

Within the project area, Section 401 fill jurisdiction extends from MHW seaward to the boundary of Quincy’s jurisdiction. Section 401 dredge jurisdiction includes the removal or repositioning of sediment or other material from below the mean HTL.

The Adams Shore/Houghs Neck project area is located within the Monaquot River-Frontal Quincy Bay watershed.¹⁷ There are no sole source aquifers or water supply locations within the

¹⁵ MassDEP Division of Water Pollution Control 401 Water Quality Certification Regulations: <https://www.mass.gov/doc/314-cmr-900-401-water-quality-certification/download>

¹⁶ For additional details, refer to the 401 Water Quality Certification for Transmittal X280912 , issued on December 17, 2018 by MassDEP.

¹⁷ EPA WATERS Geoviewer: <https://www.epa.gov/waterdata/waters-geoviewer>

project area.¹⁸ Quincy Bay is classified by MassDEP per the Massachusetts Surface Water Quality Standards as Class SA, “excellent habitat for fish, other aquatic life and wildlife and for primary and secondary contact recreation”.

Quincy Bay segments MA70-04 and MA70-05 are listed in the Massachusetts Year 2014 Integrated List of Waters¹⁹ and the draft Massachusetts Year 2016 Integrated List of Waters²⁰ as Category 5 – “Waters requiring a Total Maximum Daily Load”, for Enterococcus, Fecal Coliform, Other (Contaminants in Fish and Shellfish), and Polychlorinated Biphenyls in Fish Tissue.

5.2.1.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

The No Action Alternative will result in continued erosion of coastal bank due to the ongoing deterioration of the existing seawall and lack of resilience to coastal storms and sea level rise.

Alternative 2: Partial Reconstruction

The project has been designed to avoid and minimize impacts to the identified resource areas. The proposed project will result in approximately 189,350 square feet of temporary alterations and 22,350 square feet of permanent alterations below the HTL. These alterations include the placement of new revetment stone and the construction of replacement outfalls. The project area does not extend below MLW.

Dredging includes the repositioning of sediment or other material from below the mean HTL for coastal waters. Approximately 6,930 cubic yards of dredged material (including approximately 3,315 cubic yards of repositioned revetment and jetty stone) will be repositioned/ replaced below the mean HTL. Dredging will be conducted to minimize short-term, long-term, and cumulative impacts on the aquatic ecosystem and to provide protection to human health. Per the sediment laboratory analytical results, the sediments proposed for dredging do not contain contaminants of concern at concentrations above Massachusetts Contingency Plan RCS-1 standards.

The re-suspension of fine particulate matter will be minimized by completing excavation activities in the dry to the extent possible using daily low tides. Repositioning and removal of sediment below the MHW line will occur only after waters have receded. Work will be performed from the land where possible. Due to the wave-and-wake exposed nature of the site and the potential for failure or generation of turbidity through movement under wave forces or tidal current blockage, calm-water BMPs such as staked silt fencing and turbidity booms are not appropriate for the site.

¹⁸ EPA Sole Source Aquifer Viewer: <https://www.epa.gov/dwssa/map-sole-source-aquifer-locations>

¹⁹ Massachusetts Year 2014 Integrated List of Waters:
https://www.mass.gov/files/documents/2016/08/sa/14list2_0.pdf

²⁰ Draft Massachusetts Year 2016 Integrated List of Waters:
<https://www.mass.gov/files/documents/2017/08/zu/16ilwplist.pdf>

The contractor will be required to maintain appropriate siltation/turbidity controls around the downgradient side of sediment excavations while working.

As part of compliance with the conditions of the 401 Water Quality Certification issued by MassDEP on December 17, 2018 (Transmittal No. X280912), the City developed a notification procedure outlining the process to be implemented for incidents relating to the dredging activities impacting surrounding resource areas and habitat such as, but not limited to, sediment spill, turbidity plume, and equipment accident/spill.

Under the EPA NPDES program, a Notice of Intent (NOI) for coverage under the Construction General Permit and Stormwater Pollution Prevention Plan (SWPPP) for discharge of stormwater are required for construction site disturbances larger than one acre. As construction activities are anticipated to result in the cumulative disturbance of one or more acres of land, an NOI will be submitted to the EPA for coverage under the NPDES Construction General Permit and a SWPPP will be developed for the project.

5.2.2 Floodplains

Executive Order (EO) 11988 Floodplain Management requires Federal agencies to avoid funding activities that may affect, or be affected by, floodplains whenever there are practicable alternatives. FEMA uses the eight-step decision-making process to evaluate potential effects on and mitigate impacts to floodplains in compliance with EO 11988. MassDEP and the City of Quincy Conservation Commission administers and regulates wetland resource areas in the Commonwealth of Massachusetts, including floodplains, under the Massachusetts Wetland Protection Act (310 CMR 10.00²¹) and the City of Quincy Wetlands Protection Ordinance (City of Quincy Ordinances Title 18, chapter 08²²).

Floodplain development in the City of Quincy is also regulated under City of Quincy Zoning Ordinances Chapter 17.40 per the Floodplain Overlay District. As outlined in section 8.1.5 of the City of Quincy's Zoning Ordinance, Floodplain Overlay District Use Limitations,²³ no new building or structure shall be erected, constructed, altered, enlarged or moved. Per email communication with the City of Quincy's Director of Inspectional Services, reconstruction of the existing seawall within the Flood Plain Overlay District does not require a Special Permit.²⁴

²¹ 310 CMR 10.00: Wetlands Protection: <https://www.mass.gov/doc/310-cmr-1000-the-wetlands-protection-act/download>

²² City of Quincy Ordinances 18.08 - Wetlands Protection Regulations: <https://www.quincyma.gov/civicax/filebank/blobdload.aspx?BlobID=23286>

²³ City of Quincy Zoning Ordinance, Section 8.0 Special Districts, Subsection 8.1 Flood Plain Overlay District: <https://www.quincyma.gov/civicax/filebank/blobdload.aspx?t=38765.3&BlobID=35003>

²⁴ J. Duca, City of Quincy Director of Inspectional Services, Personal Communication, December 13, 2019

5.2.2.1 Existing Conditions

According to the FEMA Flood Insurance Rate Map (FIRM) Panels No. 25021C0088F and 25021C0089F (revised to reflect Letter of Map Revision (LOMR) effective March 1, 2017), portions of the project area are within the Special Flood Hazard Area Zones AE (base flood elevation 12 feet NAVD) and VE (base flood elevations 14, 16, and 17 feet NAVD) (Figure 4 in Appendix A).

Consistent with EO 11988 and 4 C.F.R. part 9, an Eight-Step Planning Analysis for actions located in a floodplain was prepared as part of this EA (Document A in Appendix C).

5.2.2.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

Under the No Action Alternative, seawall repairs and improvements would not occur; deterioration of the existing seawall would continue, and the existing outfalls would remain undersized. Continued seawall deterioration and undersized stormwater outfalls pose a risk to the communities behind the wall that depend on the seawall for protection and put utilities and an evacuation route at risk from flooding and erosion. Beach sand loss would continue to occur under the No Action alternative with the continued deterioration of the seawall. The No Action alternative would have no effect on the base flood elevation.

Alternative 2: Partial Reconstruction

Portions of the project area are located within FEMA Zone VE; storm surge and waves overtop the seawall and may overtop the proposed partially reconstructed seawall. The Proposed Alternative, partial reconstruction of the existing seawall, replacement of undersized outfall pipes, and partial reconstruction of larger diameter outfall pipes, will address the deterioration of the existing structures and add climate change and sea level rise resiliency to protect public infrastructure, public access, and property.

The overall amount of permanent impacts associated with the proposed project is anticipated to be comparable to existing disturbance due to the project goal of replacing the existing coastal engineering structures and resetting the revetment within the existing footprint, with a limited increase in impacts due to the installation of replacement concrete public stairs on landing slabs and outfall outlet protection aprons. Continued beach sand loss may occur post-construction that may eventually require beach nourishment.

The Proposed Action is not anticipated to directly or indirectly support additional floodplain or wetland development. The intent of the project is to repair and improve an existing seawall that protects existing residences in a densely developed single family residential area.

The project incorporates specific design elements to avoid or minimize impacts to resource areas, including maintaining the existing footprint and seaward extent of the seawall and limit of

revetment, limiting seaward construction access and the construction footprint at the outfalls to the extent feasible, removing the Chickatabot outfall from the beach and relocating to an existing groin, redirecting the Shoreside Road outfall to outlet at the location of the Post Island Road outfall outlet, and avoiding sensitive resource areas.

Although beach sand loss may continue after the proposed partial reconstruction alternative, the rate of erosion is anticipated to decrease based on the increase in porosity of the revetment. The higher seawall could modify the flood map data, including the existing base flood elevation of the community that will be protected by the seawall. Potential changes to the existing base flood elevation will be evaluated through a FEMA LOMR process post-construction.

Based on the Eight-Step Decision Making Process, the Proposed Alternative is the most practicable alternative available. 44 CFR. § 9.11 (Mitigation of Effects) requirements will be satisfied by the City obtaining, complying with conditions, and maintaining documentation of necessary permits.

5.2.3 Wetlands

EO 11990: Wetlands Management requires Federal agencies to avoid funding activities that directly or indirectly support occupancy, modification, or development of wetlands, whenever there are practicable alternatives. FEMA uses the eight-step decision-making process to evaluate potential effects on, and mitigate impacts to, wetlands and floodplains in compliance with EO 11990 and EO 11988. MassDEP and the City of Quincy Conservation Commission administers and regulates wetlands in the Commonwealth of Massachusetts under the Massachusetts Wetland Protection Act (310 CMR 10.00) and the City of Quincy Wetlands Protection Ordinance (Title 18, chapter 08).

5.2.3.1 Existing Conditions

Consistent with EO 11988 and 4 CFR. part 9, an Eight-Step Planning Analysis for actions located in a floodplain and wetlands was prepared as part of this EA (Document A in Appendix C). Per the U.S. Fish and Wildlife Service's National Wetlands Inventory Mapper²⁵ (Figure 3 in Appendix A), wetland classes (using the Cowardin et al. (1979)²⁶ system for wetlands and deep-water habitats) within the project area include estuarine intertidal, regularly and irregularly flooded, and palustrine seasonally flooded – tidal.

Boundaries of wetlands and waters of the U.S. within the general project area were delineated by a Tighe & Bond wetland scientist on April 14 and 15, 2017. No vegetated wetlands in accordance with the Regional Supplement to the USACE Wetland Delineation Manual: Northcentral and

²⁵ National Wetlands Inventory Wetlands Mapper: <https://www.fws.gov/wetlands/data/mapper.html>

²⁶ Classification of Wetlands and Deepwater Habitats of the United States (1979), U.S. Department of the Interior: <https://www.nrc.gov/docs/ML1801/ML18019A904.pdf>

Northeast Region (Version 2.0, USACE, January 2012²⁷) were identified within the vicinity of the proposed project. MHW marks were determined in accordance with 33 CFR 329.12(a)²⁸ and HTL was determined in accordance with 33 CFR 328(c)(7).^{29 30}

The majority of the project area from the seawall to the seaward edge of the limits of work is intertidal, with several areas of salt marsh behind the wall near Mallard Road and Norton Road/Terne Road. Two of the outfalls within the project area connect to tide gates to the salt marsh areas, OF-08573 and OF-08590.

5.2.3.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

No construction would occur under the No Action Alternative, which therefore would not result in construction period impacts to wetland areas. The project area is located within wetland resource areas and continued deterioration of the seawall under the No Action Alternative would result in erosion of coastal bank and loss of sand from the beach.

Alternative 2: Partial Reconstruction

The nature of this project will require repositioning of existing revetment below the HTL. The delineated salt marsh near the intersection of Terne Road and Crane Road (survey station 53+50) is located waterward of the seawall and revetment and is approximately 10 feet from the edge of the revetment proposed to be reset. The landward edge of dredging associated with the proposed reconstruction of the Norton Road beach outfall (OF-08573) will occur approximately 20 feet from mapped salt marsh near survey station 60+00; the salt marsh is located landward of the outfall, outside of the project area, and is not anticipated to be impacted by the proposed outfall reconstruction dredging.

Project impacts have been minimized through the use of construction period BMPs, reuse of existing disturbed footprints to the maximum extent feasible, phasing of removal and reconstruction work to limit temporal accumulation of impacts to the subtidal, and avoidance of sensitive resource areas through project work area design.³¹

²⁷ Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0, January 2012): <https://usace.contentdm.oclc.org/utills/getfile/collection/p266001coll1/id/7640>

²⁸ 33 CFR § 329.12 - Geographic and jurisdictional limits of oceanic and tidal waters: <https://www.law.cornell.edu/cfr/text/33/329.12>

²⁹ 33 CFR 328 -Definition of Waters of the United States: <https://www.law.cornell.edu/cfr/text/33/part-328>

³⁰ For additional detail on wetland resource areas, refer to the Notice of Intent application (MassDEP File #059-1415).

³¹ For additional information regarding limits of construction, construction period constraints, and construction period BMPs, refer to the Adams Shore / Houghs Neck Seawall Repairs & Improvements, City of Quincy, Project Manual Vol. 1 of 1, Division 1 – General Requirements, Section 01140: Work Restrictions, Section 01560: Temporary

The project is not proposed to impact the landform located underneath the seawall, the project area does not extend below MLW, and the project limits of work have been designed to avoid delineated salt marsh areas.

As the Adams Shore/Houghs Neck seawall repairs and improvements project consists of repairs to the existing seawall, the majority of the anticipated wetland resource area impacts are associated with temporary construction-period impacts within the existing developed area. Temporary impacts during the construction period are anticipated due to staging, access, and work associated with the removal and replacement of the existing precast seawall units and leveling pads. The upstream functions of tide gates will not be altered as part of the project.

It is anticipated that there will be approximately 3,645 square feet of permanent impacts below the HTL associated with the relocation of two existing outfalls, and replacement of public stairs. The project includes the repositioning of approximately 3,315 cubic yards of existing revetment stone that will be repositioned below the HTL and 3,615 cy of sediment to be removed and replaced *in situ* for the trenching associated with the reconstruction of the larger outfall pipes.

The overall amount of permanent impacts is anticipated to be comparable to existing disturbance due to the project goal of replacing the existing coastal engineering structures and resetting the revetment within the existing footprint, with a limited increase in impacts due to the installation of concrete stairs with landing slabs for the replacement concrete public stairs and outfall outlet protection aprons.

The upstream functions of tide gates will not be altered as part of the project. The project includes repairs to existing outfalls, without changes to the operation and maintenance or hydraulic regime of the existing tide gates at OF-08573 and OF-08590. One-way check valves will be installed on outfalls that connect to the storm drain system only and that do not connect to salt marshes. No check valves will be installed on the two outfalls that connect to salt marshes, OF-08573 and OF-08590.

5.3 COASTAL RESOURCES

5.3.1 Coastal Zone Management Act (CZMA) / Coastal Barrier Resources Act (CBRA) / Coastal Barrier Improvement Act (CBIA) of 1990

The CZMA, administered by states with shorelines in coastal zones, requires those states to have a Coastal Zone Management Plan (CZMP) to manage coastal development. Projects falling within designated coastal zones must be evaluated to ensure they are consistent with the CZMP. Projects

receiving federal assistance must follow the procedures outlined in 15 CFR 930.90 – 930.101 for federal coastal zone consistency determinations.

To guide development and resource management within the state’s coastal area, substantive policies have been identified and promulgated by MassDEP and the Massachusetts Office of Coastal Zone Management (CZM). The CBRA of 1982 created the designated areas, called System Units, under the jurisdiction of the USFWS that are ineligible for both direct and indirect federal expenditures. This act was amended by the CBIA of 1990, which added a new category of coastal barriers called Otherwise Protected Areas.

5.3.1.1 Existing Conditions

The Adams Shore/Houghs Neck seawall area is located in the Coastal Zone, but based on the CBRA mapper,³² the project area is not located in or near a Coastal Barrier Resources Act System Unit or an Otherwise Protected Area.

5.3.1.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

The No Action Alternative will result in the continued deterioration of the existing seawall and continued erosion within the Coastal Zone.

Alternative 2: Partial Reconstruction

As the project area is located within the Coastal Zone, and the proposed alternative involves Partial Reconstruction of the existing seawall, outfalls, and stairs, CZM has consulted with the City throughout the planning and permitting process. Consistency of the proposed alternative with Massachusetts Coastal Program Policies³³ is summarized as follows:

Coastal Hazards Policy #1 and Growth Management Policy #2: The proposed project is the maintenance and repair of existing seawalls and drainage outfalls in the Houghs Neck and Adams Shore areas, which were built in the 1930s-1950s. A non-structural alternative is not an option, as the existing seawall protects existing residences, infrastructure including evacuation routes, and utilities such as the MWRA High Level Sewer Line to the Nut Island sewage facility. The alternatives analysis includes an analysis of the feasibility of replacing the existing coastal engineering structures with non-structural measures.

³² USFWS CBRA Mapper: <http://www.fws.gov/ecological-services/habitat-conservation/cbra/maps/mapper.html>

³³ Massachusetts Coastal Program Policies: <https://www.mass.gov/files/documents/2016/08/ox/czm-policy-guide-policies.pdf>

Coastal Hazards Policy #2: The proposed maintenance and repair project will utilize BMPs such as site planning and nonstructural measures to minimize construction period impacts on resource areas and sediment transport. The revetment will be reset within the existing revetment footprint.

Coastal Hazards Policy #3 and Growth Management Policy #1: The project will not exacerbate existing hazards or cause additional damage to buffer zones or natural resources, and the project area is not located within an Area of Critical Environmental Concern. The project work area has been limited to the extent feasible and excludes sensitive resource areas such as delineated salt marsh. The seawall repair increases the height of the existing seawall to protect existing development but does not promote growth and development in hazard-prone areas.

Habitat Policy #1: The project will comply with the Massachusetts Wetlands Protection Act, Chapter 91 Waterways Regulations, and Section 401 Water Quality Certification requirements.

Public Access Policy #1 and Public Access Policy #2: The water-dependent project will improve public access to tidelands and existing coastal recreation facilities by improving the safety of access stairs and railings.

Water Quality Policy #1: No new point-source discharges are proposed.

Water Quality Policy #2: Erosion and sedimentation controls will be incorporated into the construction practices to minimize impacts to resource areas during the construction process and in compliance with the Massachusetts Stormwater Management Policy and Massachusetts Wetlands Protection Act Regulations.

5.4 BIOLOGICAL RESOURCES

5.4.1 Wildlife and Fish

5.4.1.1 Existing Conditions

Per Massachusetts Geographic Information System (MassGIS) mapping,³⁴ Massachusetts Division of Marine Fisheries (DMF)-designated conditionally restricted shellfish growing areas (GBH2.1) are located in the vicinity of the project (Chickatabot Beach and the Moons). MassGIS further indicates that the project area is potentially suitable for Soft-shell clam, Razor Clam, European Oyster, and Blue Mussel.³⁵

Based upon the results of an informal survey conducted by Tighe & Bond on April 26, 2018, no live shellfish were identified within 35 feet of the limit of work. Essential Fish Habitat (EFH) is discussed in Section 5.4.2.

³⁴ OLIVER: MassGIS's Online Mapping Tool: http://maps.massgis.state.ma.us/map_ol/oliver.php

³⁵ Figure 4: Shellfish Suitability in Appendix A of the ENF (EEA #15861)

5.4.1.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

Under the No Action Alternative, there would no construction period impacts to wildlife and fish. Continued deterioration of the seawall and associated erosion may impact waters of the U.S. and EFH.

Alternative 2: Proposed Alternative

As part of the proposed HMGP project, the Chickatabot Road outfall is proposed to be relocated to the existing groin that currently protects the existing Narragansett Road outfall, which will allow the former outfall pipe area on Chickatabot Beach to be naturally restored post-removal. The Shoreside Road outfall is proposed to be removed and reconstructed in a new orientation to share an outfall protection apron with the existing Post Island Road outfall, which minimizes impacts in the Post Island Beach area.

On April 26, 2018, Tighe & Bond staff visited the intertidal area along Houghs Neck and Adams Shore in the vicinity of the project area to perform an informal assessment of shellfish viability below HTL in the vicinity of the project area. The informal survey observed anaerobic subsurface conditions in the majority of the area surveyed and did not find living bivalves within 35 feet of the limit of work. Additionally, the USACE conducted an EFH consultation with the National Marine Fisheries Service (NMFS) per the Magnuson-Stevens Fishery Conservation and Management Act as part of the Pre-Construction Notification (PCN) review process; based on the consultation, the project will not adversely affect EFH.

Per the most recent edition of the Massachusetts Natural Heritage & Endangered Species Program (NHESP) Natural Heritage Atlas (14th edition, effective August 1, 2017³⁶), the Adams Shore/Houghs Neck Seawall Repairs and Improvement project is not located within designated Priority Habitats of Rare Species or Estimated Habitats of Rare Wildlife.

The proposed alternative incorporates specific design elements to avoid or minimize impacts to resource areas, including:

- Maintain existing footprint and seaward extent of seawall and limit of revetment
- Limit seaward construction access to 12-15 feet from the toe of revetment
- Limit construction footprint at the outfalls to 5 feet on either side of the outfall
- Remove Chickatabot outfall from Coastal Beach and relocate outfall in existing groin
- Redirect Shoreside Road outfall to outlet at location of Post Island Road outfall outlet
- Remove stairs at survey station 54+25 to avoid impacts to salt marsh

³⁶ NHESP Natural Heritage Atlas: <https://www.mass.gov/service-details/regulatory-maps-priority-estimated-habitats>

5.4.2 Vegetation

EO 13112, Invasive Species, requires federal agencies, to the extent practicable, to prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause. Invasive species prefer disturbed habitats and generally possess high dispersal abilities, enabling them to out-compete native species.

5.4.2.1 Existing Conditions

Several areas within the project limits, such as between survey station 19+50 and survey station 22+20 near Norton Road beach, have mapped dune grass. Salt marsh has been identified seaward of the coastal engineering structure at survey station 53+65 to survey station 54+75 and survey station 55+15 to survey station 55+50, near Terne Road (refer to the project plans provided in Appendix B). The salt marsh near Terne Road is limited in extent and is currently in a stressed state due to wave action and snail degradation (refer to the project photographs provided in Appendix B). Private residences behind the wall have grassed yards with landscaping.

5.4.2.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

Under the No Action Alternative, there would no impact to vegetation.

Alternative 2: Partial Reconstruction

Permanent impacts to coastal dune have been minimized to the extent feasible and are associated with the replacement of the existing concrete public access stair with a new concrete public access stair with a foundation of sonotubes or helical piles.

The project also includes removal and repair of private landscaping and stabilization of the coastal banks landward of the seawalls with natural fiber blankets and erosion control vegetation instead of the lawn grass previously used. Per recommendations from CZM, specifications include the use of blankets made of natural fibers with biodegradable anchors, as synthetic fibers do not readily break down and can become marine debris. CZM fact sheets regarding coastal landscaping³⁷ will be used as part of education and outreach to area residents regarding the erosion and wave splash resistant vegetation. Vegetation repair and replacement will include non-invasive species only.

³⁷ CZM StormSmart Properties Fact Sheet 3: Planting Vegetation to Reduce Erosion and Storm Damage: <https://www.mass.gov/files/documents/2018/05/29/ssp-factsheet-3-vegetation-new.pdf>

No invasive species have been identified in the project area, but the following measures are proposed to limit the potential for introduction of invasive species during the project:

- Construction equipment will be cleaned of loose soils and plant matter before mobilization to the site.
- Minor amounts of plant matter inadvertently imported, if found, will be placed in plastic bags and disposed of.
- If found, invasive plants will be removed and replaced with appropriate native plants if they are preventing establishment of erosion-control vegetation.

5.4.3 Threatened and Endangered Species

The Endangered Species Act (ESA) provides for the conservation of threatened and endangered plants and animals and the habitats in which they are found. The lead Federal agencies for implementing ESA are the USFWS and NMFS. The law requires Federal agencies to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species. The law also prohibits any action that causes a “taking” of any listed species of endangered fish or wildlife.

5.4.3.1 Existing Conditions

Based on the USFWS Information for Planning and Consultation (IPaC³⁸) Official Species List, there is no designated critical habitat within the project area under the jurisdiction of the USFWS, but the northern long-eared bat (*Myotis septentrionalis*) may be present in the project area. The northern long-eared bat is listed as Threatened under the ESA and is also listed as Endangered under the Massachusetts Endangered Species Act (M.G.L. c 131 A). All of New England is designated as potential habitat for the northern long-eared bat.

There are no trees within the project area, and the project will not result in tree removal activities. NHESP provides a map with known locations of winter hibernacula and maternity roost trees in Massachusetts (last updated June 4, 2019).³⁹ Based on this map, the nearest winter hibernaculum is located approximately 14 miles northwest of the project site in Wellesley, Massachusetts and the nearest known maternity roost tree is located approximately 43 miles southeast of the project site in Sandwich, Massachusetts.

Based on the NOAA NMFS- ESA Section 7 Mapper results, the larger diameter outfall pipes that extend onto the beach identified that the project is located in the consultation area for eight species: Atlantic sturgeon, North Atlantic right whale, fin whale, green sea turtle, Kemp's Ridley sea turtle,

³⁸ USFWS IPaC Planning Tool: <https://ecos.fws.gov/ipac/>

³⁹NHESP Massachusetts northern long-eared bat Locations Map: <https://mass-eoea.maps.arcgis.com/apps/Viewer/index.html?appid=de59364ebbb348a9b0de55f6febfdf52>

loggerhead sea turtle, leatherback sea turtle, and shortnose sturgeon. The proposed project does not occur in any designated critical habitat. The project area does not extend below MLW.

5.4.3.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

No effect to species or designated critical habitat as no action would occur.

Alternative 2: Partial Reconstruction

The northern long-eared bat is listed as potentially present within the project area as all of New England is listed as potential habitat for the northern long-eared bat. No tree removal is proposed as part of the project and the closest mapped winter hibernaculum is located more than 14 miles from the project site. Given that the proposed action does not involve tree removal and the distance of the proposed action from either a hibernaculum and/or maternity roost tree, the proposed action will have no effect on northern long-eared bats.

USACE conducted a consultation with NMFS per the section 7 of the ESA as part of their PCN permit review process; based on the results of the consultation, the project will not adversely affect Atlantic sturgeon, North Atlantic right whale, fin whale, green sea turtle, Kemp's Ridley sea turtle, loggerhead sea turtle, leatherback sea turtle, or shortnose sturgeon.

5.4.4 Migratory Birds

The Migratory Bird Treaty Act of 1918 (16 U.S. Code § 703) provides a program for the conservation of migratory birds that fly through lands of the United States. The lead Federal agency for implementing the Migratory Bird Treaty Act is the USFWS. The law makes it unlawful at any time, by any means or in any manner to take any part, nest, or egg of migratory birds. "Take" is defined in regulation (50 CFR 10.12) as "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or any attempt to carry out these activities."

5.4.4.1 Existing Conditions

Based on the USFWS IPaC Resources List for the project area, there are potentially 22 migratory birds that potentially could be present within the project area.

5.4.4.2 Potential Impacts and Proposed Mitigation

As all of New England is located in a flyway zone for migratory birds, but there is no potential for a take of migratory birds, both the No Action and Partial Reconstruction alternative would have Minor impacts. As the project is located in a highly developed area and is regularly used by the public, impacts to nesting sites are not anticipated.

5.4.5 Essential Fish Habitat

Federal agencies are required to assess the potential impacts that proposed actions and alternatives may have on EFH, in accordance with the Magnuson-Stevens Fishery Conservation and Management Act.

5.4.5.1 Existing Conditions

Based on the NOAA EFH Mapper results, the larger diameter outfall pipes that extend onto the beach may be located in mapped EFH for 26 species: Atlantic wolfish, winter flounder, little skate, ocean pout, Atlantic herring, Atlantic cod, pollock, red hake, silver hake, yellowtail flounder, white hake, windowpane flounder, winter skate, American plaice, thorny skate, bluefin tuna, white shark, northern shortfin squid, longfin inshore squid, Atlantic mackerel, bluefish, Atlantic butterfish, spiny dogfish, Atlantic surfclam, scup and black sea bass. No Habitat Areas of Particular Concern were identified. The project area does not extend below MLW.

5.4.5.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

The project is located in or near EFH but would not adversely affect EFH habitat during the construction period as no project work would occur. Continued deterioration of the seawall and associated erosion may impact Waters of the U.S. and EFH.

Alternative 2: Partial Reconstruction

The installation of the replacement larger diameter outfall pipes will partially occur within mapped EFH and USACE conducted an EFH consultation with NMFS per the Magnuson-Stevens Fishery Conservation and Management Act as part of the PCN review process.

The project area does not extend below MLW and based on prior experience with similar ocean shoreline/beach repair work with wave-sorted coarse-grained sediments (sand, cobble, shingle, shell hash), minimal turbidity concerns are anticipated. The contractor will be required to maintain appropriate siltation/turbidity controls around the downgradient side of sediment excavations while working.⁴⁰ Due to the wave-and-wake exposed nature of the site and the potential for failure or generation of turbidity through movement under wave forces or tidal current blockage, calm-water BMPs such as staked silt fencing and turbidity booms are not appropriate for the site.

Based on the results of the consultation, the proposed project will not adversely affect EFH.

5.4.6 Bald and Golden Eagles

The Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c), enacted in 1940, prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" Bald and Golden Eagles, including their parts, nests, or eggs. Like the Migratory Bird Treaty Act, the law makes it illegal for anyone to "take," possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or their parts, feathers, nests, or eggs. "Take" is

⁴⁰ For additional information regarding construction period BMPs, refer to the Adams Shore / Houghs Neck Seawall Repairs & Improvements, City of Quincy, Project Manual Vol. 1 of 1, Division 1 – General Requirements, Section 01560: Temporary Barriers, Section 01570: Temporary Controls, and Division 2 – Site Construction, Section 02315: Excavation, Backfill, Compaction, and Dewatering

defined as “to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or any attempt to carry out these activities.”

5.4.6.1 Existing Conditions

Based on information provided by NHESP⁴¹, the project area is not located near a Bald Eagle nest.

5.4.6.2 Potential Impacts and Proposed Mitigation

As the project area is not located near a Bald or Golden Eagle nest, both the No Action and Partial Reconstruction Alternatives would be considered as “None” for potential impacts.

5.5 CULTURAL RESOURCES

As a federal agency, FEMA must consider the potential effects of its actions upon cultural resources prior to engaging in any project. There are several laws a federal agency must consider when working with and identifying cultural resources. For the Quincy project, FEMA will meet this obligation through its Section 106 of the National Historic Preservation Act of 1966 (NHPA) consultation. Section 106 of the NHPA, as amended and implemented by 36 CFR Part 800 outlines the required process for federal agencies to consider a project’s effects to historic properties.

The Massachusetts Historical Commission maintains a database of the Commonwealth of Massachusetts’ historic properties: the Massachusetts Cultural Resource Information System (MACRIS), which is regularly updated. FEMA uses this database as part of its efforts to identify of significant cultural resources that may be impacted by a project. Cultural resources are defined as prehistoric and historic sites, structures, districts, buildings, objects, artifacts, or any other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, religious, or other reasons.

5.5.1 Existing Conditions

Historic Properties

According to the MACRIS database, there are 10 inventoried properties or areas located within 0.5 miles of the project; none are located within immediate vicinity of the project.

There are also 115 properties, districts, and sites in Quincy that are listed in the National Register of Historic Places (NRHP), including several National Historic Landmarks. However, none of the listed resources are located within the vicinity of the project.

Neither the properties listed in MACRIS nor the NRHP-listed properties, districts, or sites will be affected either directly or indirectly by the Quincy project. A FEMA Historic Preservation Specialist documented all of the properties within the project vicinity (one property inland of the seawall) for the project and determined that none of the properties are eligible for listing in the NRHP as they do not meet the criteria for inclusion on the NRHP. The buildings within the area

⁴¹ NHESP Bald Eagle Fact Sheet: <https://www.mass.gov/files/documents/2016/08/rf/haliaeetus-leucocephalus.pdf>

of effect for this project are generally undistinguished coastal residences from the late nineteenth to mid-twentieth centuries, or recent (late twentieth or twenty-first century) in-fill residential development.

Archaeological Resources

According to the MACRIS database, there are no previously identified precontact or historic archaeological sites within the project area for the project.

The City of Quincy submitted an Environmental Notification Form (ENF) to the Massachusetts Bureau of Underwater Archaeological Resources in 2018. The Bureau of Underwater Archaeological Resources responded in May of 2018 stating that based on the prior disturbance of the area and the nature of the proposed project, the project is unlikely to impact submerged cultural resources.

FEMA submitted a Section 106 consultation letter to the State Historic Preservation Office and the Tribal nations whose areas of interest include Quincy- the Mashpee Wampanoag Tribe, the Mohegan Tribe of Indians of Connecticut, and the Narragansett Indian Tribe- in January of 2020. Responses to the consultation letters have not yet been received as of the writing of this document.

5.5.2 Potential Impacts and Proposed Mitigation to Standing Historic Structures

Alternative 1: No Action

The Adams Shore and Houghs Neck neighborhoods adjacent to the seawalls will continue to be susceptible to flooding and damage if no action is taken. However, as there are no known historic standing structures immediately adjacent to the seawalls there will be no impact to known cultural resources.

Alternative 2: Partial Reconstruction

No impact to any cultural resources is expected as a result of the proposed construction work due to the fact that there are no known cultural resources identified within or adjacent to the project location for the undertaking.

5.5.3 Potential Impacts and Proposed Mitigation to Archaeological Resources

Alternative 1: No Action

The Adams Shore and Houghs Neck coastline will continue to be susceptible to erosion if no action is taken. However, no impact to archaeological resources is expected as no archaeological resources have been identified within or near the project location.

Alternative 2: Partial Reconstruction

Although the scope of work for a partial reconstruction requires ground disturbance for the reconstruction of the seawall and outfalls, the work will take place largely within the footprint of the existing seawall and along existing drainage lines, and the disturbance will be located within areas that would have been previously disturbed during the construction of the original seawall

and municipal utilities. Additionally, equipment and materials will be staged along existing roadways, pathways, or in existing beach parking lots. Therefore, based on the previous disturbances associated with the seawall and utility construction, the absence of previously recorded precontact or historic archaeological sites within the Area of Potential Effect, and the fact that the extent of proposed ground disturbance substantially conforms to the footprint of the original structure, there is limited potential for archaeological impacts within the project location.

5.6 SOCIOECONOMIC RESOURCES

5.6.1 Land Use and Planning, Transportation, Public Services, and Public Health and Safety

5.6.1.1 Existing Conditions

The seawalls around Houghs Neck and Adams Shore are a critical part of Quincy's flood management system. These structures protect the shoreline, residential homes, public utilities, and critical transportation and evacuation routes. The Adams Shore/Houghs Neck seawall project area is predominantly single-family residential, with two schools, Atherton Hough and Broad Meadow Elementary Schools (refer to Figures 1 and 2 in Appendix A and project photographs provided in Appendix B). There are several public recreation areas including Post Island, Heron Road and Shell Beaches, and Arthur Boyson Park. The seawall sections in this area directly protect over 100 homes along the northern shore of the Adams Shore and Hough Neck neighborhoods.

Sewer, gas and water services are located beneath the roadways protected by the seawall and, in some instances, are located directly behind the seawalls. The general area includes a dike that runs parallel to Sea Street that contains the High Level Sewer to the MWRA Nut Island sewage facility.

Transportation infrastructure within the project area consists of local roads and Sea Street, the evacuation route for Houghs Neck. Sea Street runs almost the entire length of Houghs Neck peninsula, connecting interior sections of the peninsula with major road networks and access to emergency services. Under certain storm conditions, the marsh areas between Post Island and Rock Island effectively become one water body, flooding low lying sections including Sea Street, and separating the eastern and western upland segments of Houghs Neck. The outlying parts of Houghs Neck become stranded until flood waters subside, and evacuation becomes mandatory to protect residents from flood waters and because access to emergency services is cut off.

5.6.1.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

Under the No Action Alternative, no repairs to the existing, deteriorating seawall and undersized outfalls would be made, placing the residences, utilities, and evacuation route at risk of damages from storm events and future sea level rise. Storm damages to roadways increases the risk of utility damages such as sewer main breaks, with subsequent long-lasting environmental impacts.

Alternative 2: Partial Reconstruction

The proposed alternative will bring the seawalls in this area up to current safety standards, reduce storm damage, and provide additional climate change resiliency. The project is not anticipated to affect current or planned land use, as the intent is to repair existing coastal infrastructure that protects existing residences. As outlined in section 8.1.5 of the City of Quincy's Zoning Ordinance, Flood Plain Overlay District Use Limitations,⁴² no new building or structure shall be erected, constructed, altered, enlarged or moved. Per email communication with the City of Quincy's Director of Inspectional Services, reconstruction of the existing seawall within the Flood Plain Overlay District does not require a Special Permit.⁴³

City planning documents such as the City of Quincy 2015-2019 Housing Production Plan,⁴⁴ which was developed to identify housing needs and demand, do not identify the project area as in need of housing or identify any proposed development projects near the project area, and identify that the area is constrained by the 100-year flood zone and sea level rise. Therefore, the project is not anticipated to affect housing density or demand for public services.

Temporary impacts to traffic are anticipated to be limited to single-lane closure allowing for continued use of a minimum 12-foot wide travel lane (refer to sheet C-505 in the design plans in Appendix B). Based on consultation with the MWRA, the project is not anticipated to impact the High Level Sewers to the Nut Island Facility.

5.6.2 Noise

Under the Clean Air Act, EPA has authority to investigate and study noise and its effect, disseminate information to the public regarding noise pollution and its adverse health effects, respond to inquiries on matters related to noise, and evaluate the effectiveness of existing regulations for protecting the public health and welfare.

5.6.2.1 Existing Conditions

Noise includes sounds produced by loud music, barking animals, truck deliveries or operations, commercial landscaping equipment and/or construction equipment. The Adams Shore/Houghs Neck seawall is located in a residential area, with an assumed outdoor sound level of 55 decibels.

⁴² City of Quincy Zoning Ordinance, Section 8.0 Special Districts, Subsection 8.1 Flood Plain Overlay District: <https://www.quincyma.gov/civicax/filebank/blobdload.aspx?t=38765.3&BlobID=35003>

⁴³ J. Duca, City of Quincy Director of Inspectional Services, Personal Communication, December 13, 2019

⁴⁴ City of Quincy 2015-2019 Housing Production Plan: <https://www.quincyma.gov/civicax/filebank/blobdload.aspx?BlobID=23468>

5.6.2.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

Under the No Action Alternative, there would be no construction and no impacts to noise levels.

Alternative 2: Partial Reconstruction

Under the preferred alternative, temporary short-term increases in noise levels are anticipated during the construction period. To reduce construction period noise levels, site work would be performed within hours specified by the City of Quincy work hour requirements.^{45 46} Equipment and machinery used at the project site during construction would meet all local, State, and Federal noise regulations.

5.6.3 Environmental Justice

5.6.3.1 Existing Conditions

EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires agencies to identify and address disproportionately high and adverse human health or environmental effects activities may have on minority or low-income populations.

According to the EPA Environmental Justice Screening Tool⁴⁷, the population in the project area is 23% minority, 21% low income, and 5% linguistically isolated, all of which are lower than the Massachusetts average. Based on the MassGIS Environmental Justice Viewer,⁴⁸ there are mapped Environmental Justice populations less than 0.10 miles away from sections of the proposed project. These are minority and low-income populations within both the Adams Shore and Houghs Neck neighborhoods. Per the 2010 U.S. Census,⁴⁹ the City of Quincy has a population of 94,580 individuals, a median household income of \$71,808, and 10.5% of individuals living below the poverty level. The median household income reported in all of Norfolk County was \$95,668 with 6.7% of individuals living below the poverty level. The median household income in the State of Massachusetts was \$74,167, with 10.0% of individuals living below the poverty level.

⁴⁵ City of Quincy, Summary of Work Hour Restrictions related to noise:
https://www.quincyma.gov/govt/depts/cs/good_neighbor.htm

⁴⁶ For additional details regarding work hour restrictions, refer to Adams Shore / Houghs Neck Seawall Repairs & Improvements, City of Quincy, Project Manual Vol. 1 of 1, Division 1 – General Requirements, Section 01140: Work Restrictions

⁴⁷ EPA's Environmental Justice Screening and Mapping Tool: <https://ejscreen.epa.gov/mapper/>

⁴⁸ MassGIS Environmental Justice Viewer: http://maps.massgis.state.ma.us/map_ol/ej.php

⁴⁹ United States Census Bureau Fact Finder:
https://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml?src=bkmk

5.6.3.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

Under the No Action Alternative, there would be no short-term impacts on environmental justice populations. All populations would remain at risk during storm surges under this alternative. The seawalls that are part of this proposed project provide protection for Sea Street, the only evacuation route for many residents of the Houghs Neck neighborhood. There would be no disproportionately high or adverse impact on minority or low-income portions of this neighborhood, as all residents would continue to be at risk.

Alternative 2: Partial Reconstruction

The Proposed Action Alternative would benefit the city population as a whole by preventing flooding to business and residential structures within Adams Shore and Houghs Neck from storm surges. There would be no disproportionately high or adverse impact on minority or low-income portions of the population, as all populations would benefit from the protection provided by the proposed project.

5.7 Cumulative Impacts

In accordance with NEPA, this section considers the overall cumulative impact of the Proposed Action and other actions that are related in terms of time or proximity. Per CEQ regulations, cumulative impacts represent the “impact on the environment which results from the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what federal agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time” (40 CFR 1508.7). The statutory basis for considering cumulative impacts of federal actions is the NEPA of 1969, 42 U.S.C. 4321 et seq. In the context of evaluating the scope of a Proposed Action, direct, indirect and cumulative impacts must be considered.

The Adams Shore/Houghs Neck neighborhoods of the City of Quincy are heavily populated residential neighborhoods.⁵⁰ The parcels abutting the seawall are within Residence A zoning,⁵¹ which only allows for single-family residence use, and are also within the Flood Plain Overlay District. The average size of parcels abutting the seawall is 0.30 acres, and all abutting parcels are either City-owned, developed with a single family residence, or beach parcels on the seaward side of the wall associated with residences on the landward side of the wall.

The coastal structures were constructed between the 1930s and 1950s, and many of the existing residences protected by the seawall were built prior to 1978.⁵² Previous projects in the project area

⁵⁰ City of Quincy, 2012-2018 Open Space & Recreation Plan Update, City of Quincy Population Density Map

⁵¹ City of Quincy Zoning Map 2014: <https://files.masscec.com/Quincy%20zoningmap-2014.pdf>

⁵² City of Quincy Online GIS: <https://quincyma.mapgeo.io/>

have included repairs to the seawalls, outfalls, and public access stairs and, with assistance from the NOAA Restoration Center's Community-based Restoration Program, restoration of tidal flow to the Mallard Road marsh.⁵³ The proposed seawall repairs and improvements project would improve overall conditions over the ongoing existing erosion and continued deterioration and would not significantly add to past adverse effects.

Based on City planning documents,^{54 55 56} there are no plans to revise zoning in the Adams Shore or Houghs Neck area, and there are no plans for development projects. There are no plans to increase the width of City-owned road sections that abut the seawall after the proposed partial reconstruction project, as those road sections are also directly abutted by existing residences.

Future projects proposed by the City of Quincy in the vicinity of the proposed Adams Shore/Houghs Neck Repairs and Improvements project area include partial reconstruction of the portion of the existing seawall adjacent to and north of the Adams Shore/Houghs Neck project area, in Houghs Neck from Babcock Street and Manet Avenue (42.266714, -70.968391) north to Bayswater Road (42.270999, -70.956106), and hydraulic analysis and preliminary design of coastal flood mitigation storm drainage improvements in three areas along Terne Road, Post Island Road, and Bayswater Road in the Adams Shore and Houghs Neck neighborhoods.

The City of Quincy was awarded grants from the EEA Dam, Levee and Seawall Protection Repair and Removal Fund in Fiscal Years 2018 and 2019 for the design and permitting of Manet Avenue seawall repairs and improvements project to improve coastal resiliency in this area. As with the proposed Adams Shore/Houghs Neck seawall repairs and improvements project, improvements to the Manet Avenue seawall will extend the useful life of the structure as well as protect the public and private structures located behind it. The structures are necessary to provide continued protection of evacuation routes, public ways, utilities, public access to the waterfront, and additional climate change resiliency. The Manet Avenue seawall repairs and improvements project is expected to utilize a similar approach to seawall repairs as the proposed Adams Shore/Houghs Neck seawall repairs and improvements project, and is anticipated to result in similar temporary construction-period impacts to noise, traffic, floodplains, and wetlands due to the location of the structures in the coastal zone adjacent to a densely developed residential area.

⁵³ Mallard Road Salt Marsh Restoration Quincy, Massachusetts: <http://www.gulfofmaine.org/restoration-gulfofmaine-org/projects/factsheets/MallardRoadFactSheet.pdf>

⁵⁴ Spring 2015 Quincy Economic Development Snapshot, Future City Projects: <https://thequincychamber.com/wp-content/uploads/2015/09/EconomicDevReportFINAL.pdf>

⁵⁵ City of Quincy Hazard Mitigation Plan Update 2012, Land Use and Development Trends

⁵⁶ City of Quincy and the Quincy HOME Consortium Program Year 2019 Action Plan for Community Development, Housing, Homelessness and Special Needs: <https://www.quincyma.gov/civicax/filebank/blobdload.aspx?t=49367.49&BlobID=33399>

The Manet Avenue seawall repairs and improvements project is currently in the design and permitting stage.

The City recently applied for a FEMA Pre-Disaster Mitigation grant and a Massachusetts Municipal Vulnerability Preparedness (MVP) program grant to complete a detailed analysis and design relative to drainage improvements and the need for construction of flood water pump stations in the Adams Shore and Houghs Neck neighborhoods to help mitigate flooding due to large rain events, particularly when combined with coastal storms and storm surges.

The City did not receive the Pre-Disaster Mitigation grant, but was awarded a \$167,000 MVP grant to conduct hydraulic modeling in three areas along Terne Road, Post Island Road and Bayswater Road that have been targeted as potential locations requiring pump stations based on vulnerability to coastal and inland flooding and the severe flood damage resulting from the March 2018 storms and past storms. Once fully implemented, the project will improve flood protection for over 150 low-lying residential structures, protect critical public infrastructure and transportation/evacuation routes, and help to prevent future damages to municipal property and infrastructure. The funding will be used to analyze the nature and extent of drainage improvements needed to reduce flooding in the area. The design of the pump stations would be completed after the detailed drainage improvements analysis has been conducted. Pump stations would likely be constructed at low lying, flood-prone areas in the area with existing outfalls utilized to the extent practical for pump discharge.

The City's potential reconstruction and flood mitigation projects that may occur in the vicinity of the proposed project may have cumulative temporary impacts on visual aesthetics, noise, traffic, wetland resources, and air quality in the Adams Shore and Houghs Neck neighborhoods during construction activities that may occur in consecutive construction seasons, but the proposed projects are intended to improve existing infrastructure to protect existing residences and improve the resiliency of these densely developed coastal neighborhoods. Construction of the projects is not expected to occur contemporaneously as the Manet Avenue seawall project is in the design phase and the drainage improvements project is in the conceptual phase. Due to the mitigation measures described herein and proposed as part of the planned future projects, no cumulative permanent impacts to water, biological, or cultural resources are anticipated.

6.0 PERMITS AND PROJECT CONDITIONS

The following agencies and organizations were consulted during the environmental permitting process prior to preparation of this Draft EA. Representative pages from resulting permits and authorizations are provided in Appendix C.

- Massachusetts Environmental Policy Act (MEPA), Certificate of the Secretary on the Environmental Notification Form (ENF) received on July 6, 2018
- Quincy Conservation Commission, Order of Conditions received on November 7, 2018
- MassDEP, 401 Water Quality Certification received on December 17, 2018
- MassDEP, Chapter 91 Waterways License [pending]
- USACE, PCN Authorization [pending]

Other agencies consulted during the permitting/planning process include:

- DMF
- CZM
- Massachusetts Board of Underwater Archaeological Resources
- Massachusetts Historical Commission
- MWRA
- NMFS
- EPA Region 1

In accordance with applicable local, State, and Federal regulations, the applicant would be responsible for obtaining any additional necessary permits before starting construction at the proposed site.

7.0 AGENCY COORDINATION AND PUBLIC INVOLVEMENT

The City of Quincy and Tighe & Bond have led and participated in a number of neighborhood information sessions regarding the proposed project to date, as summarized in Table 7.1. Additionally, as part of the local and State agency permitting processes, the project has undergone multiple public notice periods with opportunity for public input and comment, public hearings, and a site visit, as summarized in Table 7.2. Input from the public hearings, comments, and community meetings has been incorporated into the design of the project.

Table 7.1: Summary of Neighborhood Information Sessions to Date

Date	Location	Description
May 11, 2017	Central Middle School	Neighborhood meeting
August 15, 2018	Basement of Old City Hall	Neighborhood meeting
October 2, 2018	Basement of Old City Hall	Meeting with Sea Street neighbors (Willows to Post Island Road)
October 8, 2018	Basement of Old City Hall	Meeting with Post Island Road neighbors
November 1, 2018	Basement of Old City Hall	Meeting with Shelton/ Terne/ Norton/ Chickatabot neighbors
May 3, 2018	School in Houghs Neck	Public meeting
October 29, 2019	Basement of Old City Hall	Post-bid award public meeting

Table 7.2: Summary of Agency Coordination and Public Hearing/Comment Processes

Permit	Public Hearing / Public Comment Period
Local Permit(s)	
Quincy Wetlands Protection Ordinance / MA Wetlands Protection Act Order of Conditions	Yes, public hearing at Quincy City Hall on November 7, 2018
State Permit(s)	
MassDEP Section 401 of the CWA, Water Quality Certificate	Yes, public comment period from July 10, 2018 to July 31, 2018 as publicly noticed on July 10, 2018 in the Patriot Ledger, no comments received
MassDEP Chapter 91 License	Yes, public comment period from July 25, 2018 to August 24, 2018 as publicly noticed on July 25, 2018 in the Patriot Ledger, comments received and responded to
MEPA Environmental Notification Form	Yes, public notice published in Environmental Monitor and Patriot Ledger on May 23, 2018; public consultation site visit held on June 4, 2018, public comment period from May 23, 2018 to June 12, 2018, public comments received and responded to
Federal Permit(s)	
USACE Section 404 of the CWA, PCN	None

8.0 LIST OF PREPARERS

Tighe & Bond

53 Southampton Road
Westfield, MA 01085

City of Quincy

1305 Hancock Street
Quincy, MA 02169

FEMA

99 High Street
Boston, MA 02110

9.0 REFERENCES

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12. NRCS Web Soil Survey: <https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>
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14. US EPA Nonattainment Areas and Designations Map Server: https://gispub.epa.gov/arcgis/rest/services/OAR_OAQPS/NonattainmentAreas/MapServer

15. MassDOT Diesel Retrofit Specification: <https://www.mass.gov/service-details/massdot-diesel-retrofit-specification>
16. MassDEP Division of Water Pollution Control 401 Water Quality Certification Regulations: <https://www.mass.gov/doc/314-cmr-900-401-water-quality-certification/download>
17. 401 Water Quality Certification for Transmittal X280912 , issued on December 17, 2018 by MassDEP
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19. EPA Sole Source Aquifer Viewer: <https://www.epa.gov/dwssa/map-sole-source-aquifer-locations>
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30. 33 CFR 328 -Definition of Waters of the United States: <https://www.law.cornell.edu/cfr/text/33/part-328>
31. Adams Shore/Houghs Neck Seawall Repairs and Improvements Project NOI (MassDEP File #059-1415)
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37. NHESP Natural Heritage Atlas: <https://www.mass.gov/service-details/regulatory-maps-priority-estimated-habitats>
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42. Adams Shore / Houghs Neck Seawall Repairs & Improvements, City of Quincy, Project Manual Vol. 1 of 1, Division 1 – General Requirements, Section 01560: Temporary Barriers, Section 01570: Temporary Controls, and Division 2 – Site Construction, Section 02315: Excavation, Backfill, Compaction, and Dewatering
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54. City of Quincy Online GIS: <https://quincyma.mapgeo.io/>
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<https://www.quincyma.gov/civicax/filebank/blobdload.aspx?t=49367.49&BlobID=33399>

10.0 COMMENTS/RESPONSE

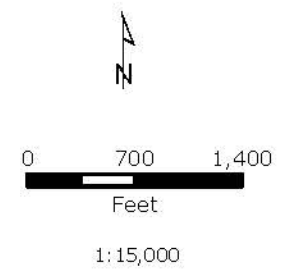
Tighe&Bond

APPENDIX A



**FIGURE 1
SITE LOCATION**

LOCUS MAP



NOTES

1. Based on USGS Topographic Map for Quincy, Massachusetts, Revised 1987. Contour Interval Equals 3m.

**Adams Shore/Houghs Neck
Seawall Repairs and
Improvements Project
Quincy, Massachusetts**

April 2018



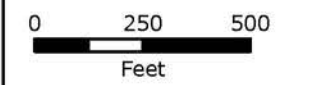


Project Area

LEGEND

--- Limit of Work

LOCUS MAP



1:5,351

NOTES

1. Based on MassGIS Color Orthophotography (2013-2014)
2. Data source: Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, MassIT Executive Office of Environmental Affairs. Data valid as of December 2019.

Adams Shore/Houghs Neck Seawall Repairs and Improvements Project Quincy, Massachusetts

December 2019





Wetland Resources

LEGEND

- Limit of Work
- National Wetland Inventory
 - Estuarine and Marine Wetland
 - Freshwater Emergent Wetland
 - Freshwater Forested/Shrub Wetland
 - Estuarine and Marine Deepwater
 - Freshwater Pond
 - Lake
 - Riverine
 - Other

LOCUS MAP

0 250 500
Feet

1:5,351

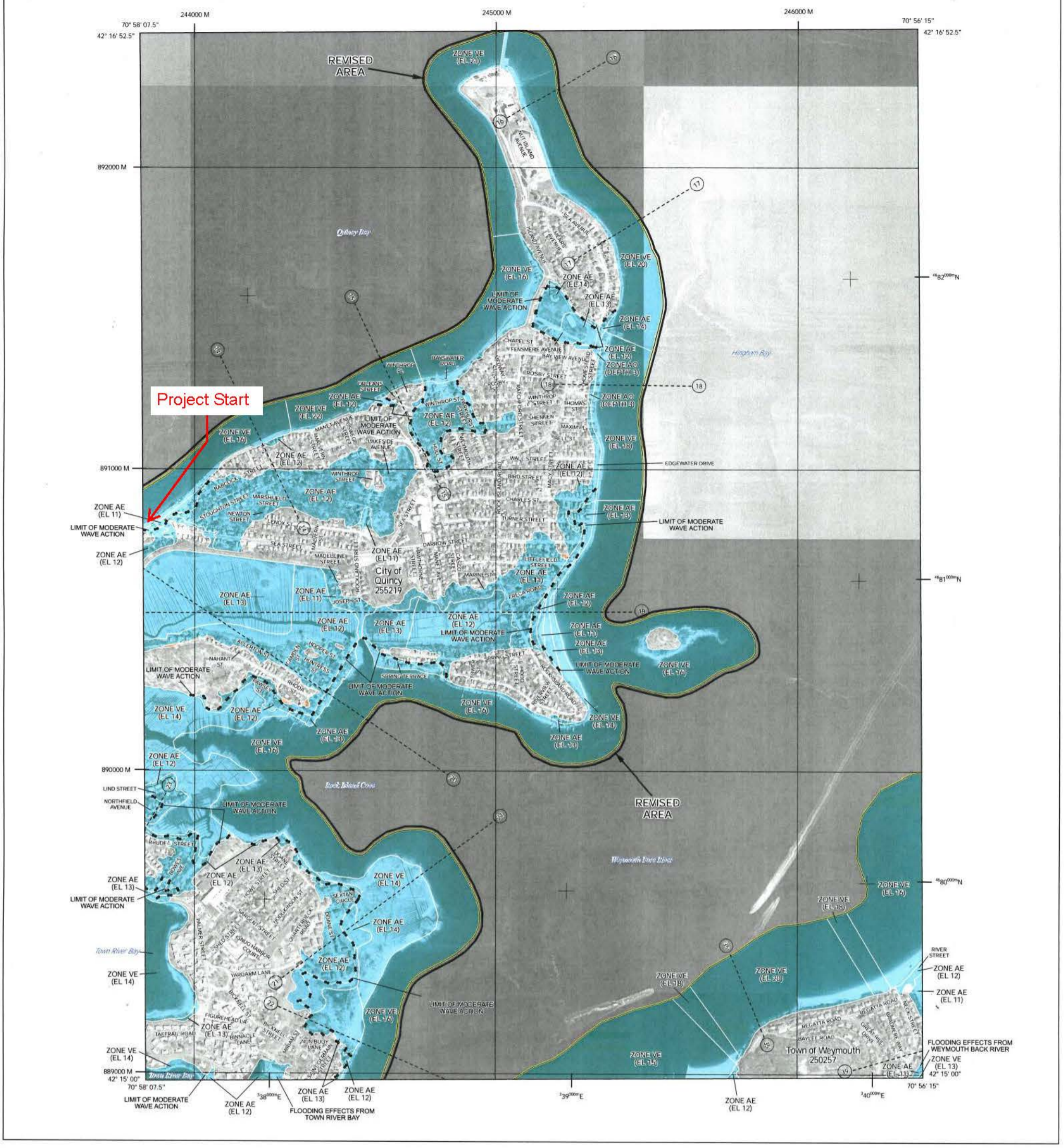
NOTES

1. Based on MassGIS Color Orthophotography (2013-2014)
2. Data source: Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, MassIT Executive Office of Environmental Affairs. Data valid as of December 2019.

Adams Shore/Houghs Neck Seawall Repairs and Improvements Project Quincy, Massachusetts

December 2019

Tighe & Bond
Engineers | Environmental Specialists



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING
DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
[HTTP://MSC.FEMA.GOV](http://msc.fema.gov)

SPECIAL FLOOD HAZARD AREAS

- Without Base Flood Elevation (BFE)
- With BFE or Depth Zone AE, AO, AH, VE, AH
- Regulatory Floodway
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
- Future Conditions 1% Annual Chance Flood Hazard
- Area with Reduced Flood Risk due to Levee See Notes, Zone X

OTHER AREAS OF FLOOD HAZARD

- NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain Zone X
- Area of Undetermined Flood Hazard Zone D

OTHER AREAS

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

GENERAL STRUCTURES

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

OTHER FEATURES

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map data for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at <http://msc.fema.gov>. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in the community, contact your insurance agent or call the National Flood Insurance Program at 1-800-436-6620.

Base map information shown on this FIRM was derived from digital orthophotography. Base map files were provided in digital format by Massachusetts Geographic Information Systems (MassGIS). Ortho imagery was produced at 15 and 30 centimeter resolution. Aerial photography is dated Spring 2008.

LIMIT OF MODERATE WAVE ACTION: Zone AE has been divided by a Limit of Moderate Wave Action (LIMWA). The LIMWA represents the approximate landward limit of the 1.5-foot breaking wave. The effects of wave hazards between the Zone VE and the LIMWA (or between the shoreline and the LIMWA for areas where Zone VE is not identified) will be similar to, but less severe than, those in the Zone VE.

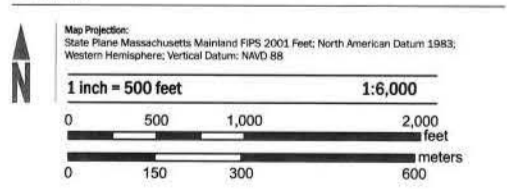
- Limit of Moderate Wave Action
- Limit of Moderate Wave Action coincident with Zone Break

COASTAL BARRIER RESOURCES SYSTEM (CBRS)

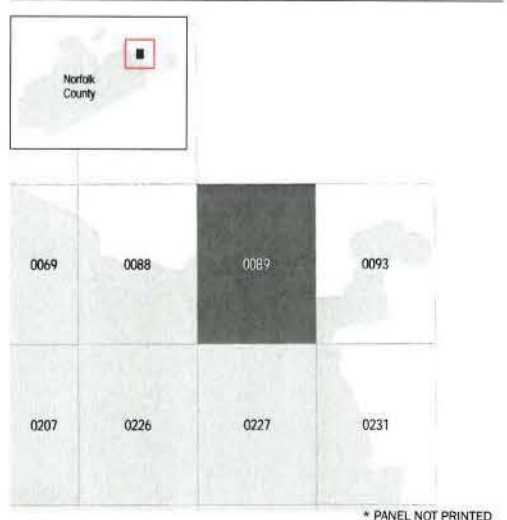
This map includes approximate boundaries of the CBRS for informational purposes only. Flood insurance is not available within CBRS areas for structures that are newly built or substantially improved on or after the date(s) indicated on the map. For more information see <http://www.fws.gov/cbrs>, the FIS Report, or call the U.S. Fish and Wildlife Service Customer Service Center at 1-800-344-WILD.

- CBRS Area
- Otherwise Protected Area

SCALE



PANEL LOCATOR



FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

NORFOLK COUNTY, MASSACHUSETTS
 (All Jurisdictions)
PANEL 89 OF 430

Community: QUINCY, CITY OF (255219) and WEYMOUTH, TOWN OF (250257)

Panel: 0089

Suffix: F

REVISOR: REFLECT LOMR
 DATED: March 1, 2017

VERSION NUMBER: 2.1.3.0
 MAP NUMBER: 25021C0089F
 MAP REVISED: JUNE 9, 2014

Tighe&Bond

APPENDIX B

CITY OF QUINCY, MASSACHUSETTS

ADAMS SHORE/HOUGHS NECK SEAWALL

REPAIRS & IMPROVEMENTS

July 1st 2019

PREPARED FOR:
CITY OF QUINCY
DEPARTMENT OF PUBLIC WORKS
100 SEA STREET
QUINCY, MA 02139



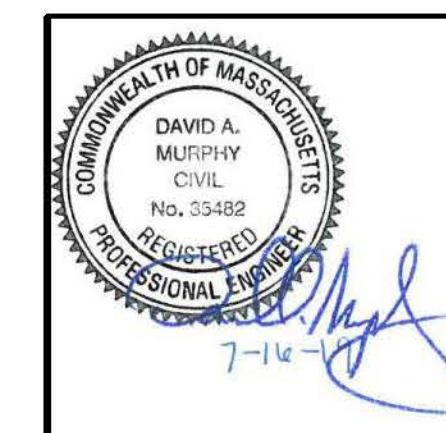
MAYOR:
THOMAS P. KOCH
COMMISSIONER:
ALFRED GRACIOSO
CITY ENGINEER
PAUL COSTELLO

LIST OF DRAWINGS	
SHEET NO.	SHEET TITLE
	COVER SHEET
G-101	GENERAL NOTES & LEGEND
G-102	KEY PLAN
C-101 - C-110	DESIGN PLAN & ELEVATION VIEW PLANS
C-101 - C-108	CROSS SECTIONS
C-101	TYPICAL SECTIONS
C-102 - C-110	DETAILS
C-801 - C-810	REVETMENT IMPACT PLANS
D-101 - D-110	EXISTING CONDITIONS & DEMOLITION PLANS



LOCATION MAP

PREPARED BY:
Tighe & Bond
www.tighebond.com
100 Corporate Drive
Portsmouth, NH 03801
(603) 433-8818



DAVID A. MURPHY, P.E.

THIS PROJECT IS
FUNDED BY:
THE EXECUTIVE OFFICE OF
ENERGY AND
ENVIRONMENTAL AFFAIRS



COMPLETE SET 81 SHEETS

Last Saved: 7/17/2019 11:42:14 AM By: JAKallmerten
 Plotted On: Jul 17 2019 11:42:14 AM
 Tighe & Bond: J:\00019 Quincy, MA Consultant Review Services\00019_010 Adams Shore Houghs Neck Seawall Drawings - Figures\AutoCAD\Sheet\Q_0019_010-G-COVER.dwg

PROJECT NAME AND LOCATION
ADAMS SHORE/HOUGHS NECK SEAWALL REPAIRS & IMPROVEMENTS
SHELTON DRIVE
QUINCY, MA 02169

42°-15'-54"N
70°-58'-48"W

DESCRIPTION
THE PROJECT CONSISTS OF THE REPAIR AND RECONSTRUCTION OF THE REVETMENT ALONG THE EXISTING SEAWALL, PORTIONS OF THE EXISTING SEAWALL, AND PUBLIC ACCESS TO ADAMS SHORE IN QUINCY, MA. AS PART OF THE PROJECT, DAMAGED DRAINAGE OUTFALLS WILL BE REPAIRED. THE WORK IS ANTICIPATED TO START IN SPRING OF 2019, AND BE COMPLETED BY FALL OF 2020.

DISTURBED AREA
THE TOTAL LIMIT OF WORK IS APPROXIMATELY 10.17 ACRES.

GENERAL NOTES:

- EXISTING CONDITIONS DETAIL AND TOPOGRAPHY SHOWN HEREON ARE DERIVED FROM FIELD SURVEY PERFORMED BY CORNER POST LAND SURVEYING INC., BETWEEN JUNE AND JULY, 2017.
- BOLD TEXT AND LINES INDICATE PROPOSED WORK, LIGHT TEXT AND LINES INDICATE APPROXIMATE EXISTING CONDITIONS.
- TOPOGRAPHIC INFORMATION SHOWN HEREON WAS THE RESULT OF AN "ON THE GROUND SURVEY" PERFORMED BY CORNER POST LAND SURVEYING, INC. UTILIZING A LEICA P40 SCANNER TO DATA THAT HAS A THREE-DIMENSIONAL POSITIONAL ACCURACY OF SIX MILLIMETER (3/16") IN 100 METER (328 FEET). THE RESULTANT CLOUD POINT AND EXCEED CURRENT CONVENTIONAL SURVEY TOPOGRAPHIC COLLECTION METHODS. THE LIMITS OF THE SEAWALL PROJECT ARE SHOWN ON THE CITY OF QUINCY ASSESSOR'S MAPS 1076, 1077, 1078, 1079, 1080, 1081, 1088, 1089, 1090, 1092, 1093 AND 1097A THEREON.
- PROPERTY LINE CONFIGURATION AS SHOWN HEREON WAS COMPILED FROM RECORD PLANS AND ASSESSORS INFORMATION AND SUPPLEMENTED BY ON-THE-GROUND FIELD SURVEY BY CORNER POST LAND SURVEYING INC. BEING THAT A PROPERTY LINE RETRACEMENT SURVEY HAS NOT BEEN PERFORMED BY CORNER POST LAND SURVEYING INC., TIGHE & BOND NOR CORNER POST LAND SURVEYING INC. BEARS RESPONSIBILITY FOR THE DEFINITION THEREOF.
- PRIOR TO CONSTRUCTION OR ANY RELIANCE HEREON, THE LOCATION OF REMAINING EXISTING DETAILS WITH RESPECT TO THE DATA SHOWN HEREON MUST BE VERIFIED BY A COMPREHENSIVE REVIEW BY CORNER POST LAND SURVEYING INC.
- LOCATION AND DEPTH OF UTILITIES AS SHOWN HEREON HAVE BEEN COMPILED FROM VISIBLE STRUCTURES AND GIS INFORMATION OBTAINED FROM TIGHE & BOND. THE ACTUAL LOCATION OF ALL UTILITIES AND UNDERGROUND STRUCTURES SHALL BE CONSIDERED APPROXIMATE AND SHALL BE VERIFIED BY THE OWNER PRIOR TO ANY CONSTRUCTION. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICES OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED.
- THE PROJECT LIMITS ARE LOCATED IN A FLOOD ZONE AE (ELEV. 11 & 12) AS WELL AS FLOOD ZONE VE (ELEV. 14, 16 & 17) NAVD 1988, AS INDICATED ON FIRM PANEL NUMBER 25021C0088F HAVING AN EFFECTIVE DATE OF JUNE 9, 2014. THE FLOOD LINES AS DELINEATED HEREON ARE SHOWN BASED ON A SCALED GRAPHICAL REPRESENTATION OF THE SEALED FLOOD MAP.
- HORIZONTAL DATUM: BEARINGS SHOWN HEREON ARE GRID NORTH AND REFER TO THE MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, FIPS ZONE 2001, NORTH AMERICAN DATUM 1983; UNIT: SURVEY FEET. DETERMINED UTILIZING A LEICA GS09 "RTK GPS UNIT" (REAL TIME KINEMATIC POSITIONING SYSTEM).
- VERTICAL DATUM: TOPOGRAPHIC INFORMATION SHOWN HEREON IS THE RESULT OF AN "ON THE GROUND SURVEY" PERFORMED BY CORNER POST LAND SURVEYING, INC. ELEVATIONS SHOWN HEREON ARE BASED ON THE NATIONAL TIDAL DATUM EPOCH (1989-2001) AND WAS ESTABLISHED USING DISC 4525 B 2000, "NUT ISLAND" QUINCY BAY, MASSACHUSETTS, STATION ID 8444525. TO CONVERT TO NAVD 1988 SUBTRACT 5.52 FEET, THE CONVERSION WAS COMPUTED BASED ON THE 1989 STATION 807 X, WHICH IS A BRASS RIVET IN THE BASE OF LIGHT POLE #30 AND IS LOCATED ON THE NORTH SIDE OF FURNACE BROOK PARKWAY AT ITS INTERSECTION OF HUDSON STREET.
- DATUM CONVERSIONS: TIDAL DATUM TO NAVD83 = (5.52)
- THE CONTRACTOR SHALL NOT RELY ON SCALED DIMENSIONS AND SHALL CONTACT THE ENGINEER FOR CLARIFICATION IF A REQUIRED DIMENSION IS NOT PROVIDED ON THE PLANS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION MEANS AND METHODS AND FOR SITE CONDITIONS THROUGHOUT CONSTRUCTION. NEITHER THE PLANS NOR THE SEAL OF THE ENGINEER AFFIXED HEREON EXTEND TO OR INCLUDE SYSTEMS REQUIRED FOR THE SAFETY OF THE CONTRACTOR, THEIR EMPLOYEES, AGENTS, OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING AND IMPLEMENTING SAFETY PROCEDURES AND SYSTEMS AS REQUIRED BY THE UNITED STATES OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND ANY STATE OR LOCAL SAFETY REGULATIONS.
- TIGHE & BOND ASSUMES NO RESPONSIBILITY FOR ANY ISSUES LEGAL OR OTHERWISE RESULTING FROM CHANGES MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION OF TIGHE & BOND.
- ALL WORK SHALL CONFORM TO THE CITY OF QUINCY DEPARTMENT OF PUBLIC WORKS, STANDARD SPECIFICATIONS.
- INSTALL EROSION CONTROL BARRIERS AS SHOWN AS FIRST ORDER OF WORK.
- DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, DRAINS, DITCHES, SILT FENCES, SEDIMENT TRAPS, ETC., MULCH AND SEED AS REQUIRED.
- PROVIDE INLET PROTECTION AROUND ALL EXISTING CATCHBASIN INLETS WITHIN THE WORK LIMITS AND MAINTAIN FOR THE DURATION OF THE PROJECT UNTIL PAVEMENT HAS BEEN INSTALLED.
- INSTALL STABILIZED CONSTRUCTION ENTRANCES AS NECESSARY.
- INSPECT INLET PROTECTION AND SILT FENCES DAILY AND AFTER EACH RAIN STORM OF 0.25 INCH OR GREATER. REPAIR/MODIFY PROTECTION AS NECESSARY TO MAXIMIZE EFFICIENCY OF FILTER. REPLACE ALL FILTERS WHEN SEDIMENT IS 1/3 THE FILTER HEIGHT.
- ALL DISTURBED AREAS ON THE LAND SIDE OF THE SEAWALL NOT TO BE PAVED OR OTHERWISE TREATED SHALL RECEIVE 6" LOAM, SEED, FERTILIZER, AND MULCH.
- PRIOR TO ANY WORK OR SOIL DISTURBANCE COMMENCING ON THE SUBJECT PROPERTY, INCLUDING MOVING OF EARTH, THE APPLICANT SHALL INSTALL ALL EROSION AND SILTATION MITIGATION AND CONTROL MEASURES AS REQUIRED BY STATE AND LOCAL REGULATIONS.
- CONTRACTOR SHALL BE RESPONSIBLE TO CONTROL DUST AND WIND EROSION THROUGHOUT THE CONSTRUCTION PERIOD. DUST CONTROL MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, SPRINKLING WATER ON UNSTABLE SOILS SUBJECT TO ARID CONDITIONS.
- THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL TEMPORARY EROSION CONTROL DEVICES UPON COMPLETION OF CONSTRUCTION.
- ALL CATCH BASIN SUMPS AND PIPING SHALL BE THOROUGHLY CLEANED TO REMOVE ALL SEDIMENT AND DEBRIS AFTER THE PROJECT HAS BEEN STABILIZED.
- TEMPORARY SOIL STOCKPILE (INCLUDING BUT NOT LIMITED TO LOAM FROM STAGING AREA) SHALL BE SURROUNDED BY SILT FENCE OR SILT SOCK. STOCKPILE AREAS TO BE LOCATED AS FAR AS POSSIBLE FROM THE DELINEATED EDGE OF WETLAND.
- SAFETY FENCING SHALL BE PROVIDED AROUND STOCKPILES OVER 10 FT.
- CONCRETE TRUCKS WILL BE REQUIRED TO WASH OUT (IF NECESSARY) SHOOTS ONLY WITHIN AREAS WHERE CONCRETE HAS BEEN PLACED. NO OTHER WASHOUT WILL BE ALLOWED.
- ALL STORM DRAINAGE PIPES SHALL BE DUCTILE IRON UNLESS OTHERWISE SPECIFIED.
- ALL STORM DRAIN CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE MASSACHUSETTS HIGHWAY DEPARTMENT (MHD), STANDARDS FOR HIGHWAYS AND BRIDGES, LATEST EDITION.
- CONTRACTOR TO SUBMIT AS-BUILT PLANS ON REPRODUCIBLE NYLARS AND IN DIGITAL FORMAT (.DWG FILE) ON DISK TO THE OWNER AND ENGINEER UPON COMPLETION OF THE PROJECT. AS-BUILTS SHALL BE PREPARED AND CERTIFIED BY A LICENSED LAND SURVEYOR OR PROFESSIONAL ENGINEER.
- COASTAL BEACH IS DEFINED AS THE AREA BETWEEN THE LIMIT OF EXISTING REVETMENT AND THE MEAN LOW WATER (MLW) LINE.
- EXISTING REVETMENT THAT IS EMBEDDED MORE THAN ONE (1) FOOT INTO SEDIMENT SHALL NOT BE REMOVED FROM COASTAL BEACH.
- REMOVE EROSION AND SEDIMENT CONTROLS OUT OF THE WAVE ENVIRONMENT ON A DAILY/NIGHTLY BASIS WHEN NOT IN USE.
- THE CONTRACTOR SHALL NOT PERFORM WORK BEYOND THE LIMIT OF WORK AS SHOWN ON THE PLANS. CONSTRUCTION VEHICLES ARE PROHIBITED FROM WORKING ON THE BEACH UNLESS APPROVED BY THE ENGINEER.
- STRUCTURAL WORK SHALL CONFORM TO MASSACHUSETTS STATE BUILDING CODE, LATEST EDITION, INCLUDING MOST RECENT ADDENDA, AND CONTRACT DOCUMENTS. IN CASE OF CONFLICT, MOST STRINGENT REQUIREMENT SHALL GOVERN.
- CONTRACTOR SHALL VERIFY AND COORDINATE DIMENSIONS RELATED TO THIS PROJECT.
- ALL ELEVATIONS ARE BASED ON USGS DATUM.
- THE ENGINEER, MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION (MADEP), AND MASSACHUSETTS DIVISION OF MARINE FISHERIES (DMF) SHALL BE NOTIFIED IMMEDIATELY IN THE EVENT A BREACH OF SEWAGE PIPES OR RELATED STRUCTURES OCCURS DURING CONSTRUCTION.
- THE DMF SHALL BE NOTIFIED IF ANY BURIED SALT MARSH (E.G. PEAT AND VEGETATION SUCH AS SALT MARSH CORD GRASS) IS EXPOSED DURING EXCAVATION WORK ON THE SEAWARD SIDE OF THE SEAWALL.
- CONTRACTOR SHALL INSTALL NEW CHECK VALVE ON ALL OUTFALL PIPES THAT ARE CONNECTED INTO THE MUNICIPAL STORMWATER SYSTEM.
- CONTRACTOR SHALL REMOVE AND RECONSTRUCT EXISTING FEATURES ON PRIVATE PROPERTY AS NECESSARY FOR CONSTRUCTION OF THE SEAWALL AND SHALL COORDINATE WITH THE PROPERTY OWNER FOR RECONSTRUCTION UNLESS OTHERWISE STATED ON THE PLANS.
- THESE PLANS ARE SUBJECT TO POSSIBLE REVISIONS PRIOR TO CONSTRUCTION AWARD.

REINFORCEMENT:

- WHERE REINFORCEMENT IS CALLED FOR IN SECTION, REINFORCEMENT IS CONSIDERED TYPICAL WHEREVER THE SECTION APPLIES.
- REINFORCEMENT SHALL BE CONTINUOUS THROUGH ALL CONSTRUCTION JOINTS UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
- REINFORCEMENT COUPLER SPLICES SHALL BE MECHANICAL DEVICES CAPABLE OF TRANSMITTING THE ULTIMATE TENSILE AND COMPRESSIVE STRENGTH OF THE BAR.
- INSTALLATION OF REINFORCEMENT SHALL BE COMPLETED AT LEAST 24 HOURS PRIOR TO SCHEDULED CONCRETE PLACEMENT. NOTIFY ENGINEER OF COMPLETION AT LEAST 24 HOURS PRIOR TO SCHEDULED COMPLETION OF PLACEMENT OR REINFORCEMENT.
- REINFORCEMENT SHALL BE SET BEFORE PLACING CONCRETE. SETTING ANY REINFORCEMENT INTO WET CONCRETE IS PROHIBITED.

CONCRETE:

- CONCRETE WORK SHALL CONFORM TO THE LATEST EDITIONS OF THE BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318) AND SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDING (ACI 301).
- CONCRETE SHALL BE CONTROLLED CONCRETE, PROPORTIONED, MIXED, AND PLACED UNDER THE SUPERVISION OF AN APPROVED CONCRETE TESTING AGENCY OR THE ENGINEER.

- CONCRETE SHALL BE NORMAL WEIGHT CONCRETE AND SHALL HAVE A COMPRESSIVE STRENGTH OF 4,000 PSI AT 28 DAYS, UNLESS OTHERWISE NOTED, AND SHALL BE AIR ENTRAINED (SEE SPECS)
- THE USE OF CONSTRUCTION JOINTS WHERE SHOWN ON THE DRAWINGS IS MANDATORY. OMISSIONS, ADDITIONS, OR CHANGES SHALL NOT BE MADE EXCEPT WITH THE SUBMISSION OF A WRITTEN REQUEST TOGETHER WITH DRAWINGS OF THE PROPOSED JOINT LOCATIONS FOR APPROVAL OF THE STRUCTURAL ENGINEER.
- WHERE CONSTRUCTION JOINTS ARE NOT SHOWN, DRAWINGS SHOWING LOCATION OF CONSTRUCTION JOINTS AND CONCRETE PLACING SEQUENCE SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO PREPARATION OF THE REINFORCEMENT SHOP DRAWINGS.
- CONCRETE SLABS SHALL BE CAST SO THAT THE SLAB THICKNESS IS AT NO POINT LESS THAN THAT INDICATED ON THE DRAWINGS.
- CONCRETE SLABS AND WALLS SHALL BE CAST ALTERNATELY OR IN A CHECKERBOARD FASHION SO THAT ADJACENT SECTIONS ARE PLACED NO SOONER THAN THREE DAYS APART. AT LEAST TWO DAYS MUST ELAPSE AFTER PLACING CONCRETE IN WALLS BEFORE PLACING FLOOR SYSTEM SUPPORTED THEREON.
- CONCRETE SHALL BE PLACED WITHOUT HORIZONTAL CONSTRUCTION JOINTS EXCEPT WHERE SHOWN OR NOTED.
- EXPOSED EDGES OF CONCRETE ELEMENTS SHALL HAVE CHAMFERED CORNERS.
- ONLY CRITICAL CONSTRUCTION JOINTS ARE SHOWN. SEE SPECIFICATIONS FOR REQUIRED MAXIMUM SPACING OF CONSTRUCTION JOINTS.

FOUNDATIONS:

- NO CONCRETE SHALL BE PLACED IN WATER OR ON FROZEN GROUND.
- BOTTOM OF FOUNDATION ELEVATIONS GIVEN ON DRAWINGS ARE TO BE CONSIDERED MINIMUM DEPTHS. CONTRACTOR SHALL HAVE FURTHER EXCAVATION AS REQUIRED TO REACH GOOD BEARING.
- ALL EXCAVATIONS FOR FOOTINGS SHALL BE FINISHED BY HAND FOR THE LAST 6".
- ALL FINISHED EXCAVATIONS SHALL BE INSPECTED BY THE ENGINEER BEFORE ANY CONCRETE IS PLACED.
- ALL BACKFILL UNDER OR ADJACENT TO ANY PORTION OF THE STRUCTURES SHALL BE COMPACTED IN 6" LIFTS. SEE SPECIFICATIONS.
- REMOVE UNSUITABLE FILL AND/OR IMPROVE THE SUBGRADE PER SPECIFICATION REQUIREMENTS. BACKFILL WITH COMPACTED STRUCTURAL (GRANULAR) FILL UP TO THE UNDERSIDE OF THE BUILDING SLABS. SEE SPECIFICATIONS.

ROUGH CARPENTRY:

- STRUCTURAL LUMBER SHALL CONFORM TO THE NFPA, "NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION" AND SUPPLEMENT "DESIGN VALUES FOR WOOD CONSTRUCTION" LATEST EDITION. MAXIMUM MOISTURE CONTENT SHALL BE 19%.
- WOOD SHALL BE SOUTHERN PINE NO. 1 OR BETTER, INCLUDING STRINGERS, POSTS, BALUSTERS, TREADS, CLEATS, AND GUARDS.
- NOTCHING OF STRINGERS SHALL BE PERMITTED ONLY AS SHOWN ON THE DRAWINGS.
- ALL CONNECTORS AND FASTENERS SHALL BE HOT-DIP GALVANIZED TO MINIMUM 690 COATING WEIGHT.

STRUCTURAL STEEL:

- ALL STRUCTURAL STEEL WORK SHALL CONFORM TO A.I.S.C. SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS, LATEST EDITION.
- UNLESS MODIFIED BELOW OR ON THE CONTRACT DRAWINGS, THE FABRICATION AND ERECTION OF ALL STRUCTURAL STEEL SHALL BE ACCORDING TO THE A.I.S.C. CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES, LATEST EDITION.
- STRUCTURAL STEEL SHALL BE NEW STEEL CONFORMING TO ASTM A992 UNLESS NOTED OTHERWISE ON DRAWINGS. ALL STEEL SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A394 AND A395. IN THE DESIGN OF THE FRAMED BEAM CONNECTIONS (BOLTED), THE FOLLOWING SHALL GOVERN, UNLESS OTHERWISE SPECIFICALLY INDICATED:
 - FASTENER DIAMETER - 1/2" MINIMUM.
 - FASTENER DESIGNATION - F1554 GRADE 36 WITH A563a HEX NUTS, HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM A153.
 - CONNECTION ANGLE THICKNESS - 1/4" MINIMUM UNLESS NOTED OTHERWISE ON DRAWINGS.
 - MINIMUM CONNECTION PLATE THICKNESS SHALL BE 1/4".
 - WELDED CONNECTIONS - SERIES E-70 ELECTRODES. THE MINIMUM WELD SIZE FOR ANY CONNECTION SHALL NOT BE LESS THAN 1/4".
 - USE HARDENED WASHERS UNDER BOLT HEAD AND NUT, CONFORMING TO ASTM F436. USE NO MORE THAN 2 WASHERS.
- ALL WELDING SHALL CONFORM TO A.W.S. D1.1, LATEST REVISION, "STRUCTURAL WELDING CODE" HOLES, CUTS, AND OTHER MODIFICATIONS TO THE STRUCTURAL STEEL SHALL NOT BE MADE IN THE FIELD EXCEPT WITH THE SPECIFIC PERMISSION OF THE ENGINEER.
- COUNCIL SPECIFICATIONS PREPARATION SHALL BE ACCORDING TO SSPC-SP3 FOR STEEL TO BE LEFT UNPAINTED AND SSPC-SP6 FOR STEEL TO BE FINISHED. REFER TO SPECIFICATIONS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD REPAIR OF ANY DAMAGE TO HOT-DIP GALVANIZED COATINGS IN ACCORDANCE WITH ASTM A780.
- THE STRUCTURAL STEEL CONTRACTOR SHALL INSPECT ALL FOUNDATIONS INCLUDING ANCHOR BOLTS FOR ACCEPTABILITY AND PROVIDE A WRITTEN REPORT TO THE RESIDENT ENGINEER TO THIS EFFECT PRIOR TO INITIATING WORK.
- ANCHOR BOLTS, LEVELING PLATES, OR BEARING PLATES SHALL BE LOCATED AND BUILT INTO CONNECTING WORK, PRESET BY TEMPLATES OR SIMILAR METHODS. PLATES SHALL BE SET IN FULL BEDS OF NON-SHRINK GROUT.
- STRUCTURAL STEEL DETAILS NOT SPECIFICALLY SHOWN SHALL BE SIMILAR TO THOSE SHOWN FOR MOST NEARLY SIMILAR SITUATIONS AS DETERMINED BY THE STRUCTURAL ENGINEER.
- STRUCTURAL STEEL FRAMING SHALL BE TRUE AND PLUMB BEFORE CONNECTIONS ARE FINALLY BOLTED OR WELDED.
- TEMPORARY ERECTION BRACING AND SUPPORTS SHALL BE PROVIDED TO HOLD STRUCTURAL STEEL FRAMING SECURELY IN POSITION. SUCH TEMPORARY BRACING AND SUPPORTS SHALL NOT BE REMOVED UNTIL PERMANENT BRACING HAS BEEN INSTALLED AND FLOOR SLABS HAVE ATTAINED 75 PERCENT OF SPECIFIED CONCRETE STRENGTH.

ALLOWABLE NON-STORMWATER DISCHARGES:

- DISCHARGES FROM FIREFIGHTING ACTIVITIES
- FIRE HYDRANT FLUSHINGS
- WATERS USED TO WASH VEHICLES WHERE DETERGENTS ARE NOT USED
- WATER USED TO CONTROL DUST
- POTABLE WATER
- PAVEMENT WASH WATERS - NO SPILLS OR DETERGENTS
- LANDSCAPE IRRIGATION
- UNCONTAMINATED AIR CONDITIONING/COMPRESSOR CONDENSATE
- UNCONTAMINATED GROUND WATER OR SPRING WATER
- FOUNDATION OR FOOTING DRAINS - NOT CONTAMINATED

WASTE DISPOSAL:

- WASTE MATERIALS ALL WASTE MATERIALS WILL BE COLLECTED AND STORED IN SECURELY LIDDED RECEPTACLES. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE WILL BE DEPOSITED IN A DUMPSTER. NO CONSTRUCTION WASTE MATERIALS WILL BE BURIED ON SITE. ALL PERSONNEL WILL BE INSTRUCTED REGARDING THE CORRECT PROCEDURE FOR WASTE DISPOSAL BY THE SUPERINTENDENT.
- HAZARDOUS WASTE ALL HAZARDOUS WASTE MATERIALS WILL BE DISPOSED OF IN THE MANNER SPECIFIED BY LOCAL OR STATE REGULATION OR BY THE MANUFACTURER. SITE PERSONNEL WILL BE INSTRUCTED IN THESE PRACTICES BY THE SUPERINTENDENT.
- SANITARY WASTE ALL SANITARY WASTE WILL BE COLLECTED FROM THE PORTABLE UNITS A MINIMUM OF ONCE PER WEEK BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR.

TIDAL ELEVATIONS:

THE ELEVATIONS NOTED BELOW ARE REFERENCED TO THE TIDAL DATA REFERRED TO MEAN LOWER LOW WATER (MLLW) FOR NUT ISLAND, QUINCY BAY, MASSACHUSETTS STATION ID 8444525 AS PROVIDED BY THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION.

MEAN HIGHER HIGH WATER LINE (MHHW)	=	10.21'
MEAN HIGH WATER LINE (MHW)	=	9.76'
MEAN LOWER WATER LINE (MLW)	=	9.34'
MEAN LOW LOW WATER LINE (MLLW)	=	0.00'

SEQUENCE OF MAJOR ACTIVITIES:

- CONSTRUCT TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY EARTH MOVING OPERATIONS THAT WILL INFLUENCE STORMWATER RUNOFF SUCH AS
 - NEW CONSTRUCTION
 - DISPOSAL OF SEDIMENT SPOIL, STUMP, AND OTHER SOLID WASTE
 - FLOOD PLAIN EXCAVATION WORK
 - CONTROL OF DUST
 - NEARNESS OF CONSTRUCTION SITE TO RECEIVING WATERS
 - CONSTRUCTION DURING LATE WINTER AND EARLY SPRING
- CLEAR AND DISPOSE OF DEBRIS.
- BEGIN PERMANENT AND TEMPORARY SEEDING AND MULCHING. ALL CUT AND FILL SLOPES, ON THE LANDSIDE OF THE SEAWALL, SHALL BE SEEDED AND MULCHED IMMEDIATELY AFTER THEIR CONSTRUCTION.
- CONSTRUCT ADAMS SHORE/HOUGHS NECK BEACH OUTFALL.
- RESET EXISTING STONE REVETMENT AND RESTORE COASTAL BEACH.
- RECONSTRUCT NEW OUTFALLS AND WALL STABILIZATION MEASURES INCLUDING REVETMENT.
- CONSTRUCT NEW AMENITIES INCLUDING CONCRETE SIDEWALKS, PARK BENCHES, AND BIKE RACKS, IF NECESSARY.
- COMPLETE PERMANENT SEEDING AND LANDSCAPING ON LANDSIDE OF THE SEAWALL.
- REMOVE TRAPPED SEDIMENT FROM COLLECTOR DEVICES AS APPROPRIATE AND THEN REMOVE TEMPORARY EROSION CONTROL MEASURES.
- NOTE: THE CONSTRUCTION SEQUENCE MUST LIMIT THE DURATION AND AREA OF DISTURBANCE.

EROSION AND SEDIMENT CONTROLS AND STABILIZATION PRACTICES:

- STABILIZATION SHALL BE INITIATED ON ALL LOAM STOCKPILES AND DISTURBED AREAS, ON THE LANDSIDE OF THE SEAWALL, WHERE CONSTRUCTION ACTIVITY WILL NOT OCCUR FOR MORE THAN TWENTY ONE (21) CALENDAR DAYS BY THE FOURTEENTH (14TH) DAY AFTER CONSTRUCTION ACTIVITY HAS PERMANENTLY OR TEMPORARILY CEASED IN THAT AREA. STABILIZATION MEASURES TO BE USED INCLUDE:
 - TEMPORARY SEEDING
 - MULCHING
- DURING CONSTRUCTION, RUNOFF WILL BE DIVERTED AROUND THE SITE WITH EARTH DIKES, PIPING, OR STABILIZED CHANNELS WHERE POSSIBLE. SHEET PROOF FROM THE SITE WILL BE FILTERED THROUGH SILT SOCKS. ALL STORM DRAIN BASIN INLETS SHALL BE PROVIDED WITH FLARED END SECTIONS AND TRASH RACKS. THE SITE SHALL BE STABILIZED FOR THE WINTER BY NOVEMBER 15.
- AN AREA SHALL BE CONSIDERED STABLE WHEN ONE OF THE FOLLOWING HAS OCCURRED:
 - BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED.
 - A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED.
 - A MINIMUM OF 2" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIPRAP HAS BEEN INSTALLED.
 - EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
- WINTER STABILIZATION PRACTICES:
 - ALL PROPOSED POST-DEVELOPMENT VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85%

- VEGETATED GROWTH BY NOVEMBER 15TH, OR WHICH ARE DISTURBED AFTER NOVEMBER 15TH, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 4:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURE WITH ANCHOR NETTING, ELSEWHERE
- ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITION.
- AFTER NOVEMBER 15TH, INCOMPLETE ROAD OR PARKING SURFACES SHALL BE PROTECTED WITH A MINIMUM OF 3" OF CRUSHED GRAVEL, OR IF CONSTRUCTION IS TO CONTINUE THROUGH THE WINTER SEASON, BE CLEARED OF ANY ACCUMULATED SNOW AFTER EACH STORM EVENT.

GENERAL INSPECTION AND MAINTENANCE PRACTICES FOR EROSION AND SEDIMENT CONTROLS:

- THE SMALLEST PRACTICAL PORTION OF THE SEAWALL WILL BE DEMOLISHED AT ONE TIME. UNDER NO CIRCUMSTANCES SHALL MORE THAN 1.0 ACRE OF THE PROJECT SITE BE UNSTABILIZED AT ONE TIME.
- ALL CONTROL MEASURES WILL BE INSPECTED AT LEAST ONCE EACH WEEK AND FOLLOWING ANY STORM EVENT OF 1/4 INCH OR GREATER.
- ALL MEASURES WILL BE MAINTAINED IN GOOD WORKING ORDER; IF A REPAIR IS NECESSARY, IT WILL BE INITIATED WITHIN 24 HOURS OF REPORT.
- BUILT UP SEDIMENT FROM SILT FENCE OR HAYBALE BARRIERS WHEN IT HAS REACHED ONE THIRD (1/3) THE HEIGHT OF THE FENCE OR BALE.
- ALL DIVERSION DIKES WILL BE INSPECTED AND ANY BREACHES PROMPTLY REPAIRED.
- TEMPORARY SEEDING AND PLANTING WILL BE INSPECTED FOR BARE SPOTS, WASHOUTS, AND UNHEALTHY GROWTH.
- ALL DRAINAGE OUTFALLS SHALL BE INSPECTED FOR SIGNS OF EROSION AND BUILD UP OF SEDIMENT QUARTERLY, AT A MINIMUM.
- A MAINTENANCE INSPECTION REPORT WILL BE MADE AFTER EACH INSPECTION.
- A REPRESENTATIVE OF THE SITE CONTRACTOR WILL BE RESPONSIBLE FOR INSPECTIONS, MAINTENANCE AND REPAIR ACTIVITIES, AND FILLING OUT THE INSPECTION AND MAINTENANCE REPORT.
- THE EROSION CONTROL PROCEDURES SHALL CONFORM TO THE "MASSACHUSETTS EROSION AND SEDIMENT CONTROL GUIDELINES FOR URBAN AND SUBURBAN AREAS" PREPARED BY THE FRANKLIN, HAMPDEN, HAMPSHIRE CONSERVATION DISTRICT.
- ALL FILLS SHALL BE COMPACTED AS REQUIRED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE, OR OTHER RELATED PROBLEMS. FILL INTENDED TO SUPPORT BUILDINGS, STRUCTURES, AND CONDUITS, ETC., SHALL BE COMPACTED IN ACCORDANCE WITH LOCAL CODES OR SPECIFICATIONS.
- THE USE OF SAND FOR THE PURPOSE OF PEDESTRIAN SAFETY AND SAFE DRIVING CONDITION SHALL BE MINIMIZED.
- THE OWNER SHALL CLEAN ALL CATCH BASINS, DRAIN MANHOLES, AND TIDE GATE STRUCTURES ON AN ANNUAL BASIS.
- STREET SWEEPING:
 - CONTRACTOR SHALL PERFORM WEEKLY SWEEPING OF PAVED AREAS UTILIZED FOR TEMPORARY CONSTRUCTION ACCESS OR WORK.
 - CONTRACTOR SHALL DISPOSE OF STREET SWEEPING WASTE IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL CODES AND LAWS.

CONCRETE WASHOUT AREA:

- THE CONCRETE CONTRACTOR SHOULD BE ENCOURAGED, WHERE POSSIBLE, TO USE WASHOUT FACILITIES AT THEIR OWN PLANT OR DISPATCH FACILITY.
- IF IT IS NECESSARY, SITE CONTRACTOR SHALL WASH OUT ONLY WITHIN AREAS WHERE CONCRETE HAS BEEN PLACED.
- ATTEMPTS SHOULD BE MADE TO LOCATE WASHOUT AREA AT LEAST 50 YARDS AWAY FROM STORM DRAINS AND WATERWAYS WHENEVER POSSIBLE.
- NO OTHER WASHOUT WILL BE ALLOWED.

WASTE DISPOSAL:

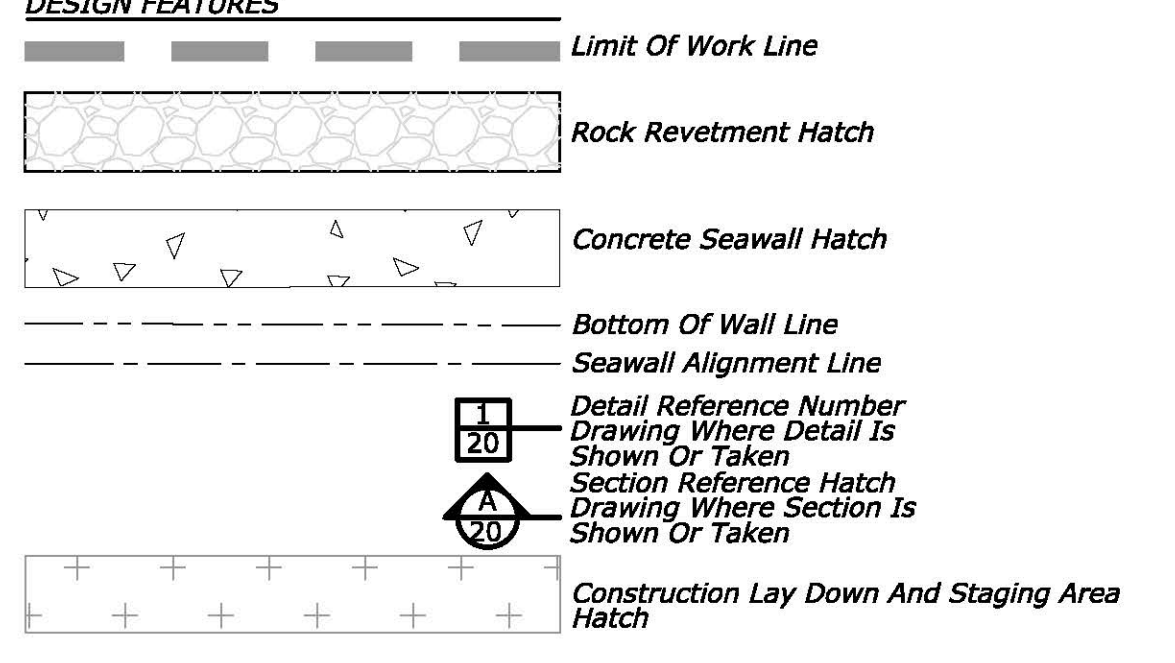
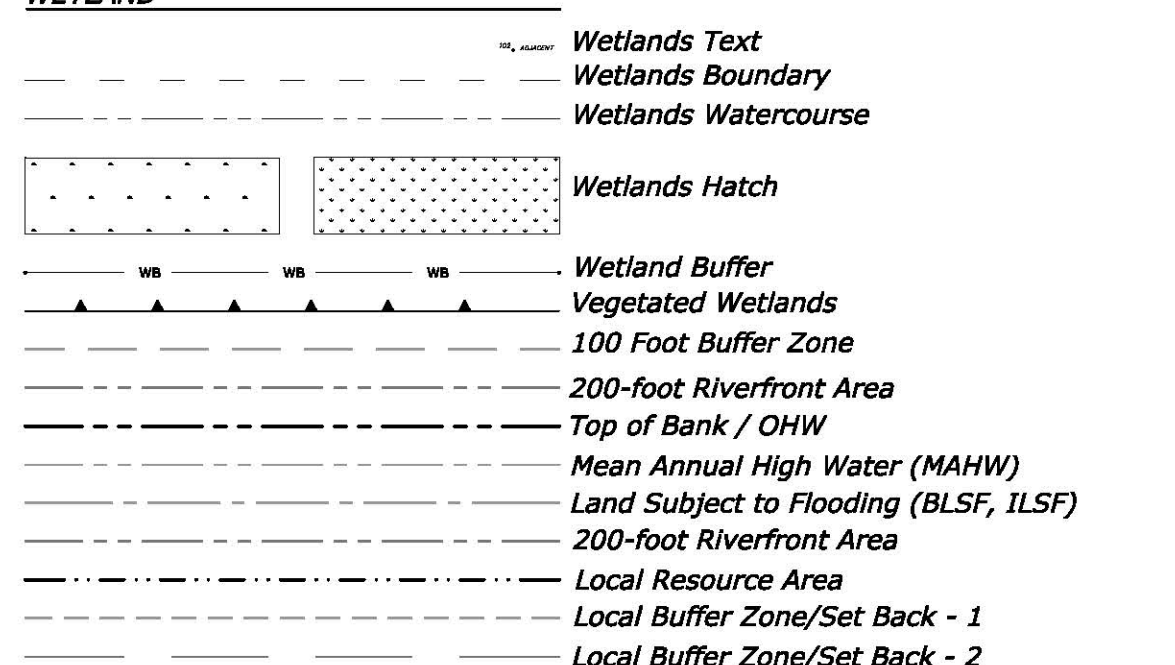
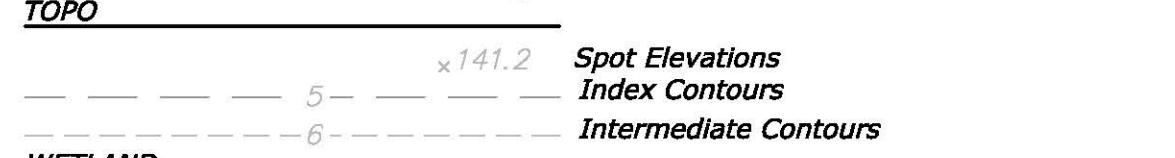
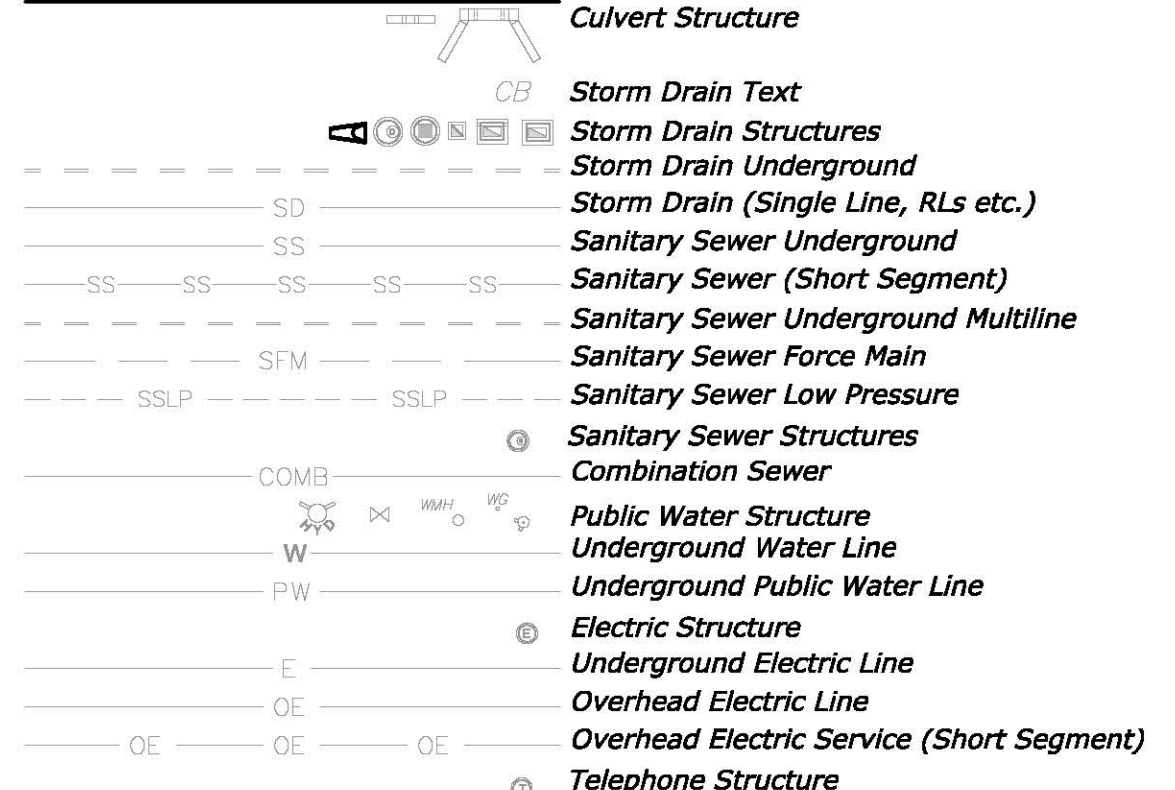
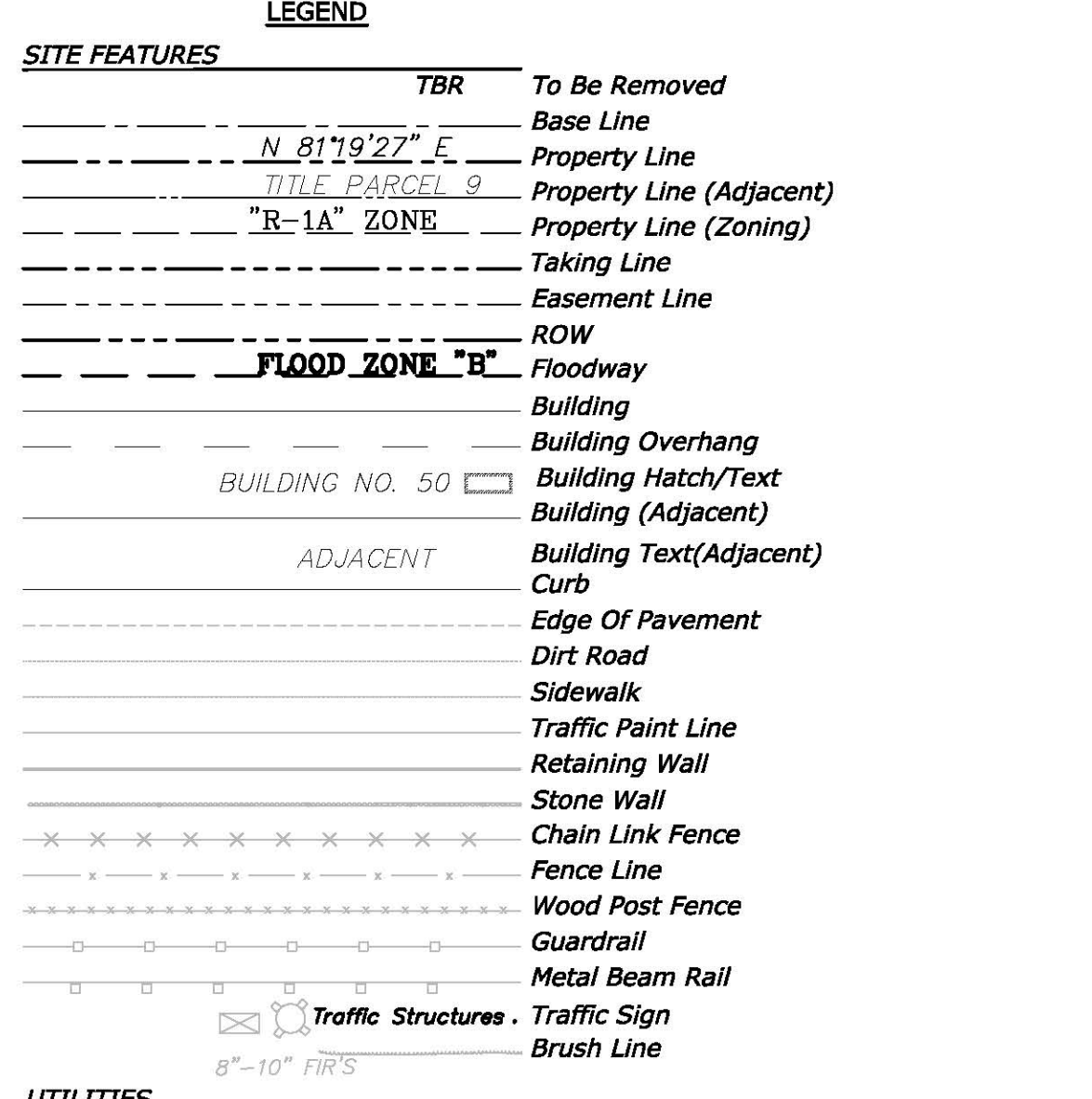
- WASTE MATERIALS ALL WASTE MATERIALS WILL BE COLLECTED AND STORED IN SECURELY LIDDED RECEPTACLES. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE WILL BE DEPOSITED IN A DUMPSTER. NO CONSTRUCTION WASTE MATERIALS WILL BE BURIED ON SITE. ALL PERSONNEL WILL BE INSTRUCTED REGARDING THE CORRECT PROCEDURE FOR WASTE DISPOSAL BY THE SUPERINTENDENT.
- HAZARDOUS WASTE ALL HAZARDOUS WASTE MATERIALS WILL BE DISPOSED OF IN THE MANNER SPECIFIED BY LOCAL OR STATE REGULATION OR BY THE MANUFACTURER. SITE PERSONNEL WILL BE INSTRUCTED IN THESE PRACTICES BY THE SUPERINTENDENT.
- SANITARY WASTE ALL SANITARY WASTE WILL BE COLLECTED FROM THE PORTABLE UNITS A MINIMUM OF ONCE PER WEEK BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR.

TIMING OF CONTROLS/MEASURES:

AS INDICATED IN THE SEQUENCE OF MAJOR ACTIVITIES, THE EROSION CONTROL DEVICES SHALL BE INSTALLED PRIOR TO COMMENCING ANY CLEARING OR GRADING OF THE SITE AND MOVED OUT OF THE WAVE ENVIRONMENT DURING HIGH TIDES. STRUCTURAL CONTROLS SHALL BE INSTALLED CONCURRENTLY WITH THE APPLICABLE ACTIVITY. AREAS, ON THE LANDSIDE OF THE SEAWALL, WHERE CONSTRUCTION ACTIVITY TEMPORARILY CEASES FOR MORE THAN TWENTY ONE (21) DAYS WILL BE STABILIZED WITH A TEMPORARY SEED AND MULCH WITHIN FOURTEEN (14) DAYS OF THE LAST DISTURBANCE. WHEN CONSTRUCTION ACTIVITY PERMANENTLY OR TEMPORARILY CEASES WITHIN 100 FEET OF ANY WETLAND OR STREAM, THE AREA SHALL BE STABILIZED WITHIN 7 DAYS OR PRIOR TO A RAIN EVENT. ONCE CONSTRUCTION ACTIVITY CEASES PERMANENTLY IN AN AREA, PERMANENT MEASURES WILL BE ESTABLISHED AND EROSION CONTROL DEVICES WILL BE REMOVED.

PLAN REFERENCE:

- "ADAMS SHORE/HOUGHS NECK SEAWALL REPAIRS & IMPROVEMENTS", BY CORNER POST LAND SURVEYING, INC.
- "PLAN OF STORM DRAIN ON PETERSON ROAD" DATED 1968 ON FILE AT THE CITY OF QUINCY.
- "PLAN OF STORM DRAIN ON SEA STREET" DATED 1937, REVISED 1951 ON FILE AT THE CITY OF QUINCY.
- "PLAN OF STORM DRAIN ON SEA STREET" DATED 1937, REVISED 1951, 1954 AND 1977 ON FILES AT THE CITY OF QUINCY.
- "PLAN OF STORM DRAIN ON SEA STREET" DATED 1955 ON FILE AT THE CITY OF QUINCY.



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Adams Shore/Houghs Neck Seawall Repairs & Improvements

City of Quincy

Quincy, Massachusetts

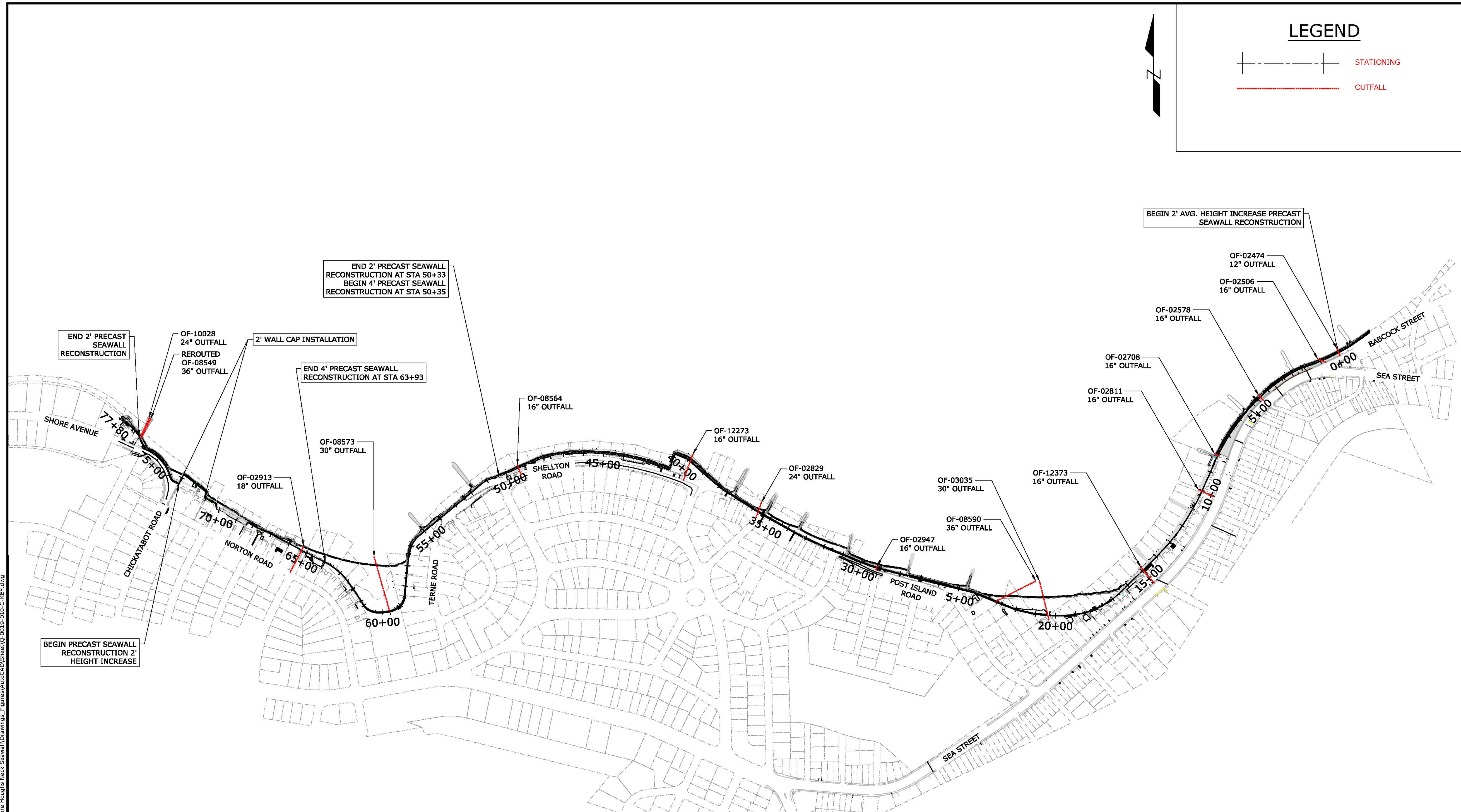
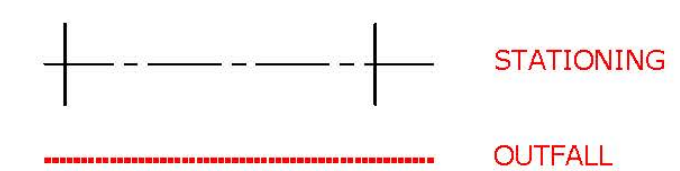
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DATE:	July 10, 2018
FILE:	Q-0019-010-G-NOTES.DWG
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CHECKED:	KAM
APPROVED:	BLM

GENERAL NOTES & LEGEND

SCALE: AS SHOWN

LEGEND



ISSUED FOR BIDDING

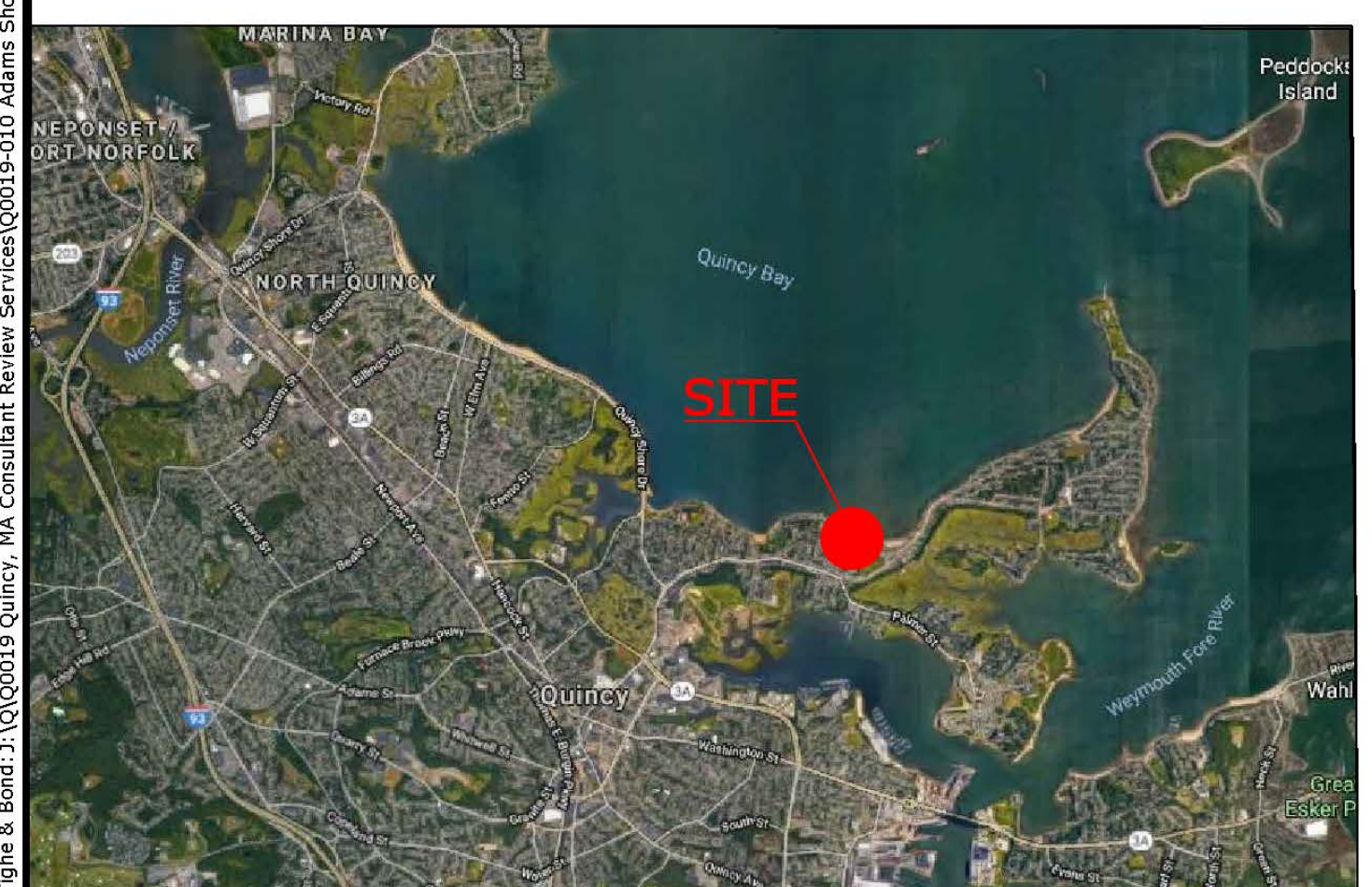
Adams Shore/Houghs Neck Seawall Repairs & Improvements

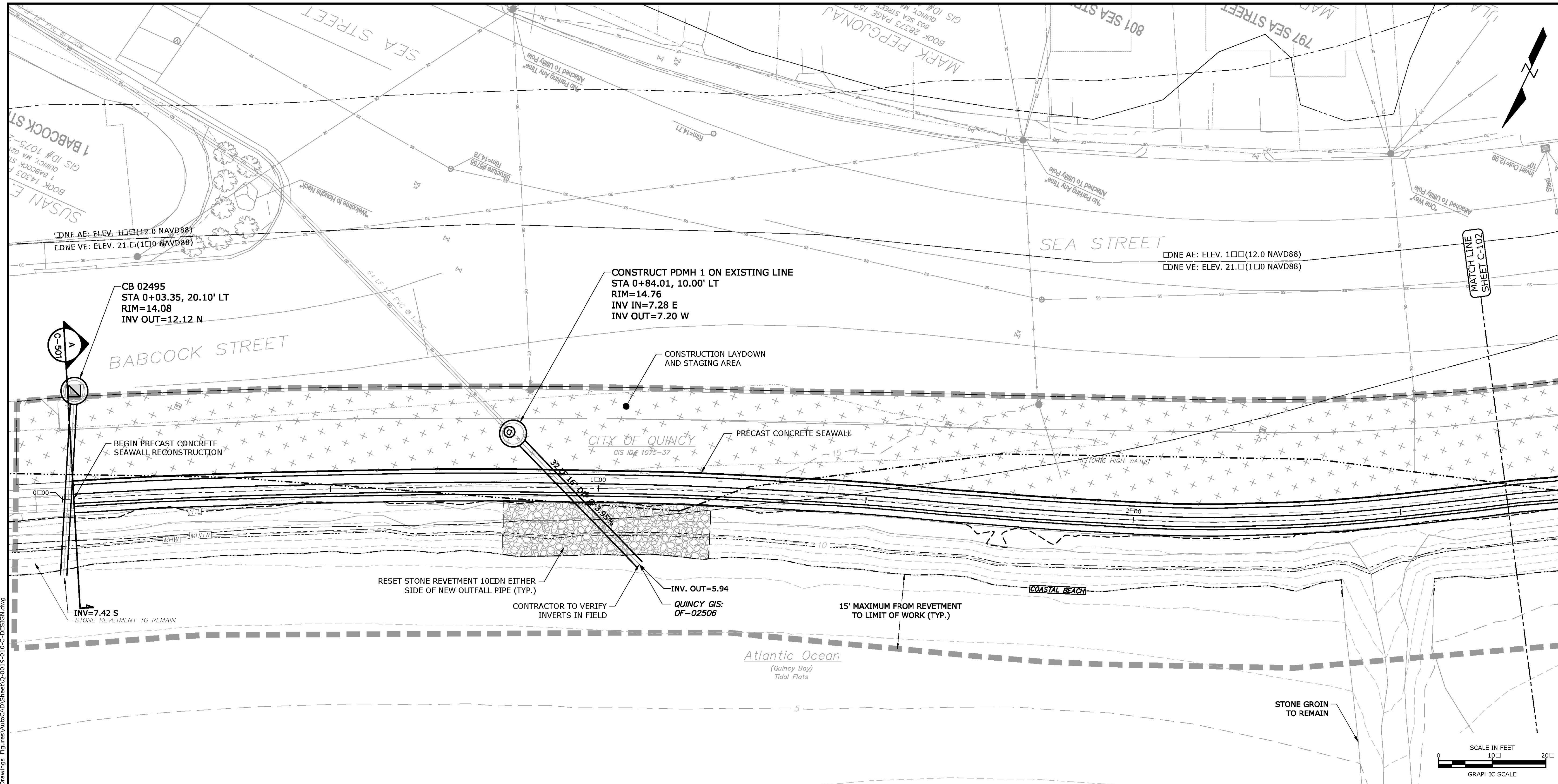
City of Quincy
Quincy, Massachusetts

MARK	DATE	DESCRIPTION

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DRAWN BY:	JPC
CHECKED:	KAM
APPROVED:	BLM
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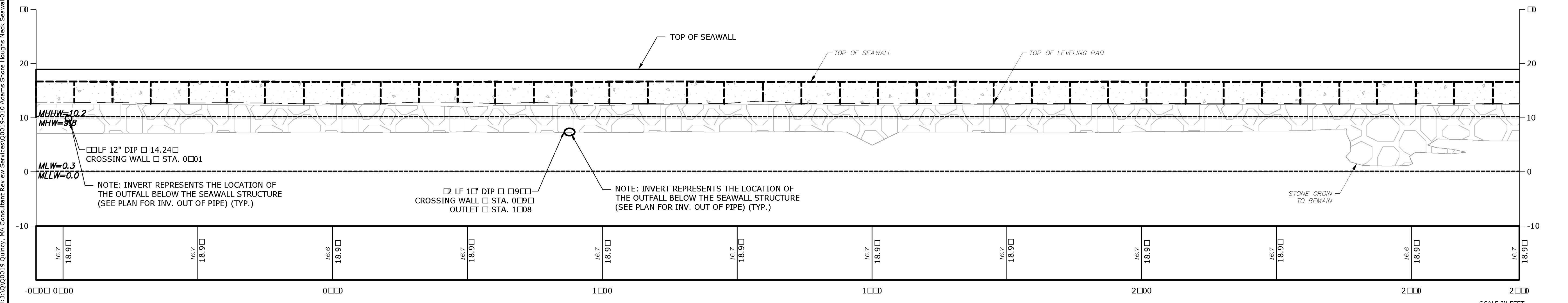




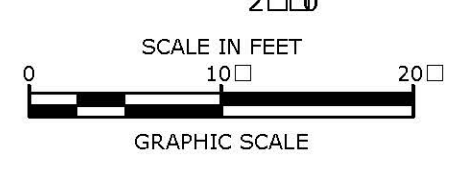
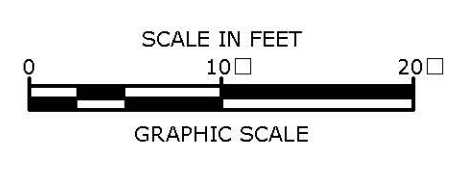
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Adams Shore/Houghs Neck Seawall Repairs & Improvements

City of Quincy
Quincy, Massachusetts



ELEVATION VIEW



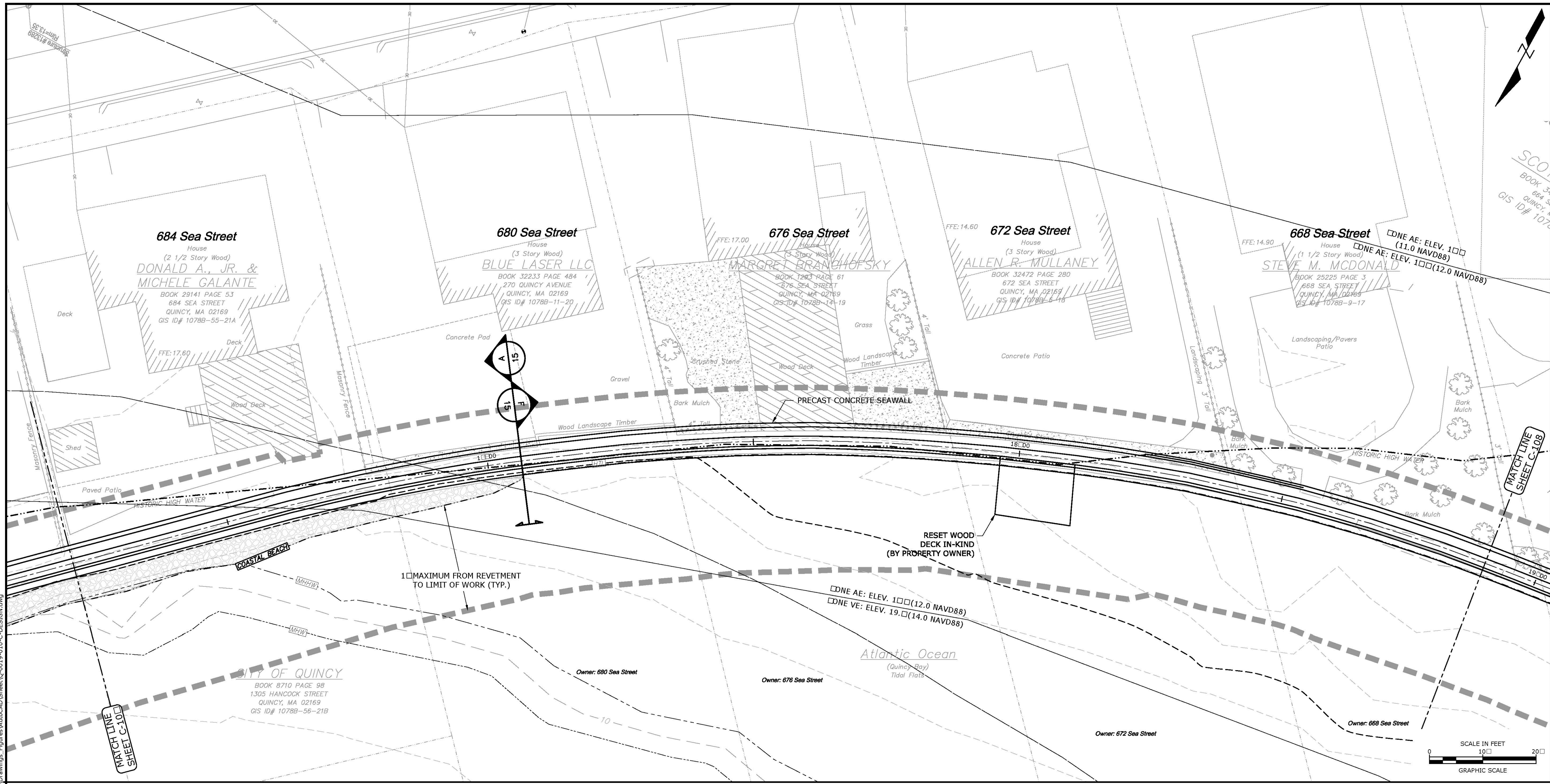
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DATE: July 10, 2018
FILE: Q-0019-010-C-DESIGN.DWG
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CHECKED BY: KAM
APPROVED BY: BLM

DESIGN PLAN & ELEVATION VIEW

SCALE: AS SHOWN

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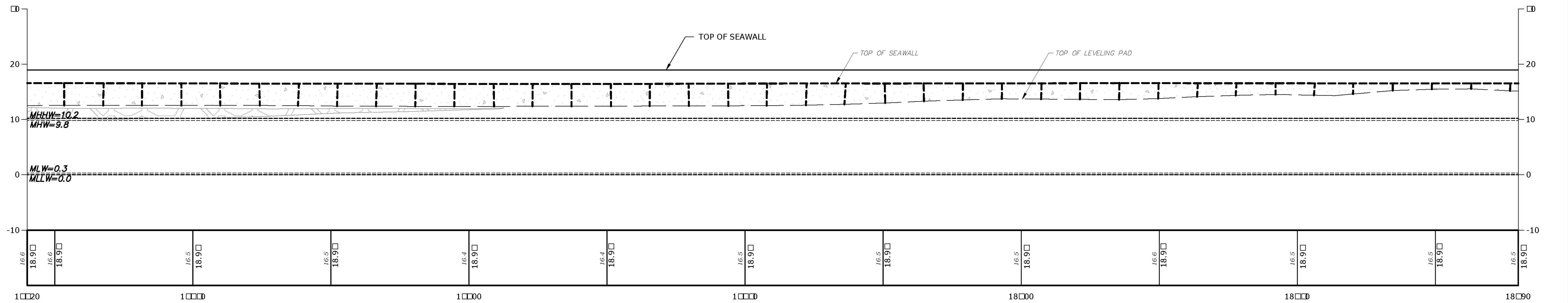
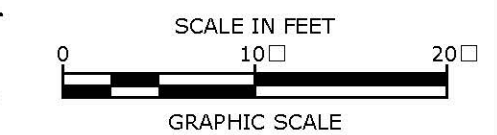


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**Adams
 Shore/Houghs
 Neck Seawall
 Repairs &
 Improvements**

City of Quincy

Quincy,
 Massachusetts



ELEVATION VIEW

MARK	DATE	DESCRIPTION

PROJECT NO: Q-0019-010
 DATE: July 10, 2018
 FILE: Q-0019-010-C-DESIGN.DWG
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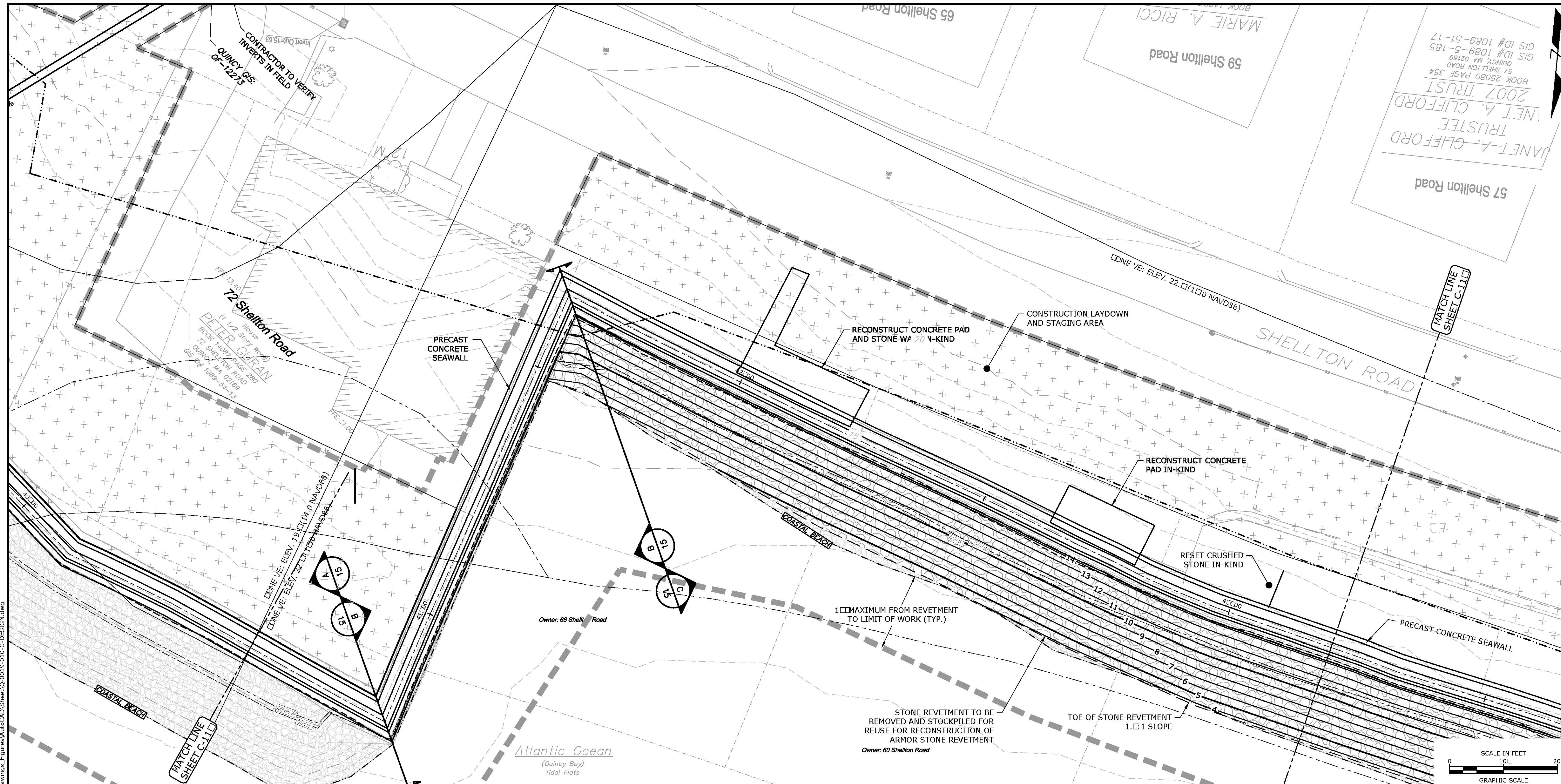
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C-10

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JANET A. CLIFFORD
TRUSTEE
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57 SHELLTON ROAD
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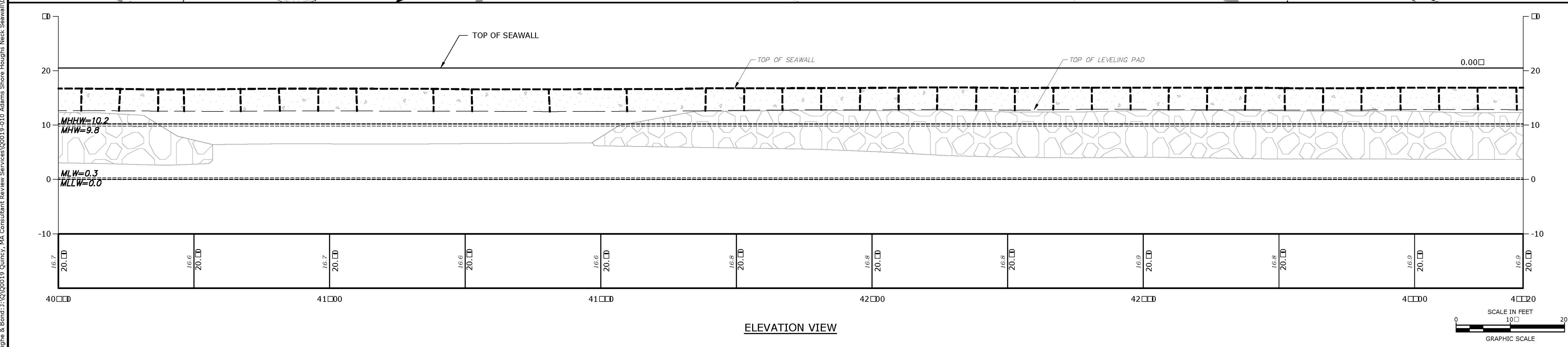
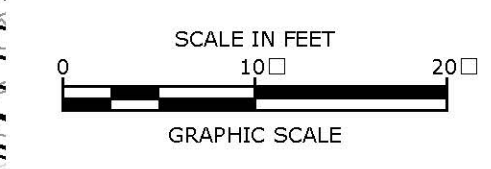


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Adams Shore/Houghs Neck Seawall Repairs & Improvements

City of Quincy

Quincy, Massachusetts



ELEVATION VIEW

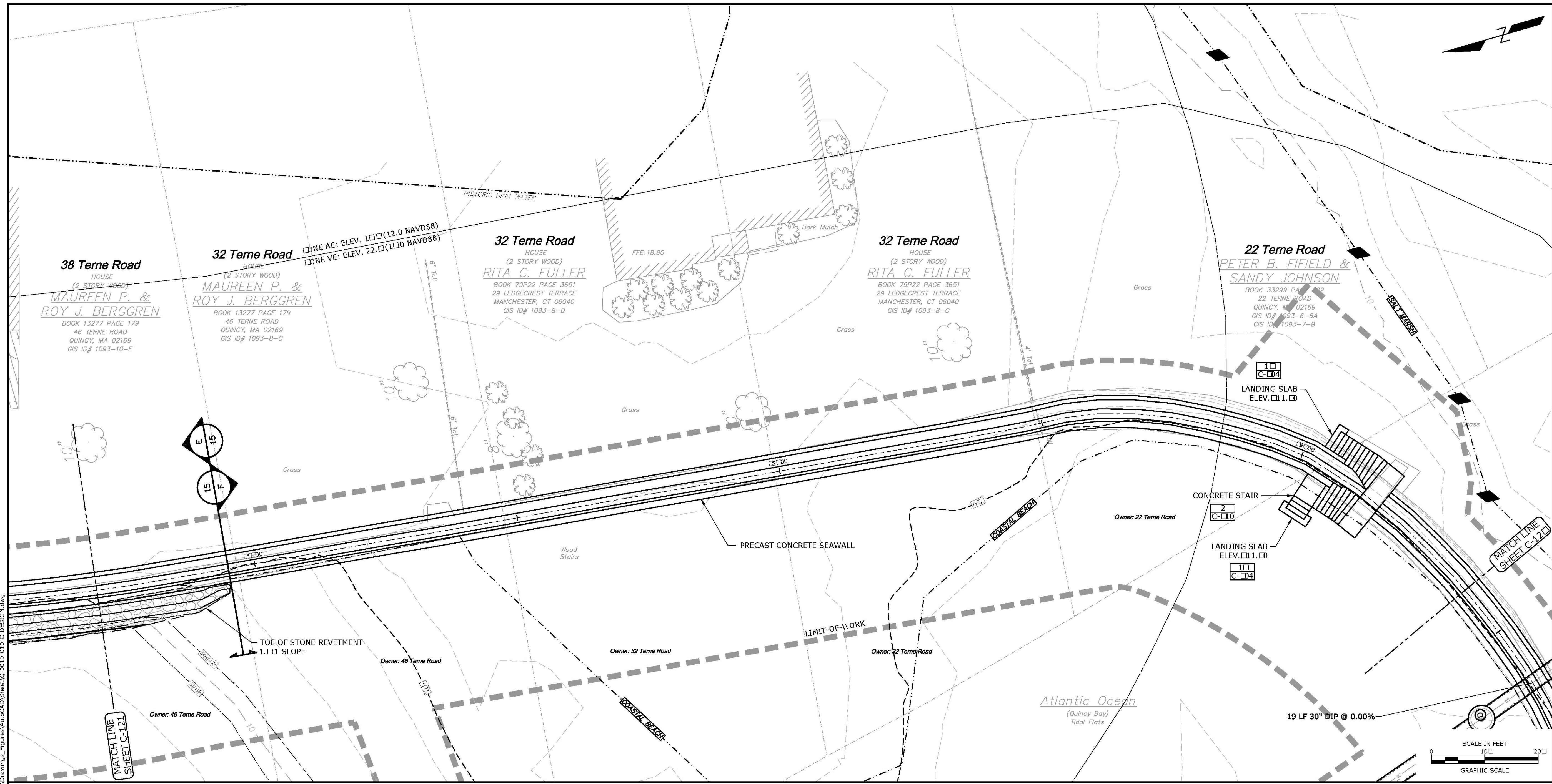
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DESIGN PLAN & ELEVATION VIEW

SCALE: AS SHOWN

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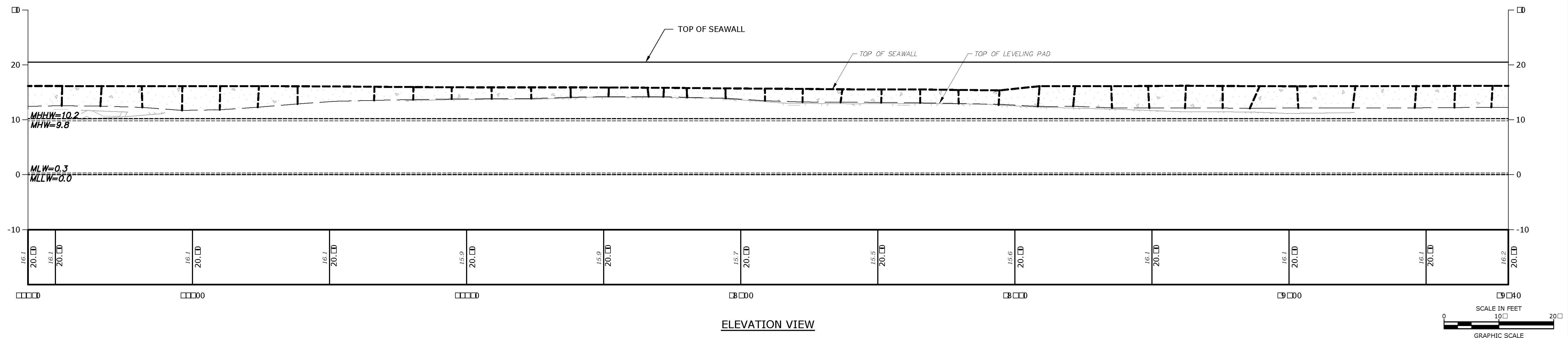


ISSUED FOR BIDDING

**Adams
Shore/Houghs
Neck Seawall
Repairs &
Improvements**

City of Quincy

Quincy,
Massachusetts



ELEVATION VIEW

MARK	DATE	DESCRIPTION

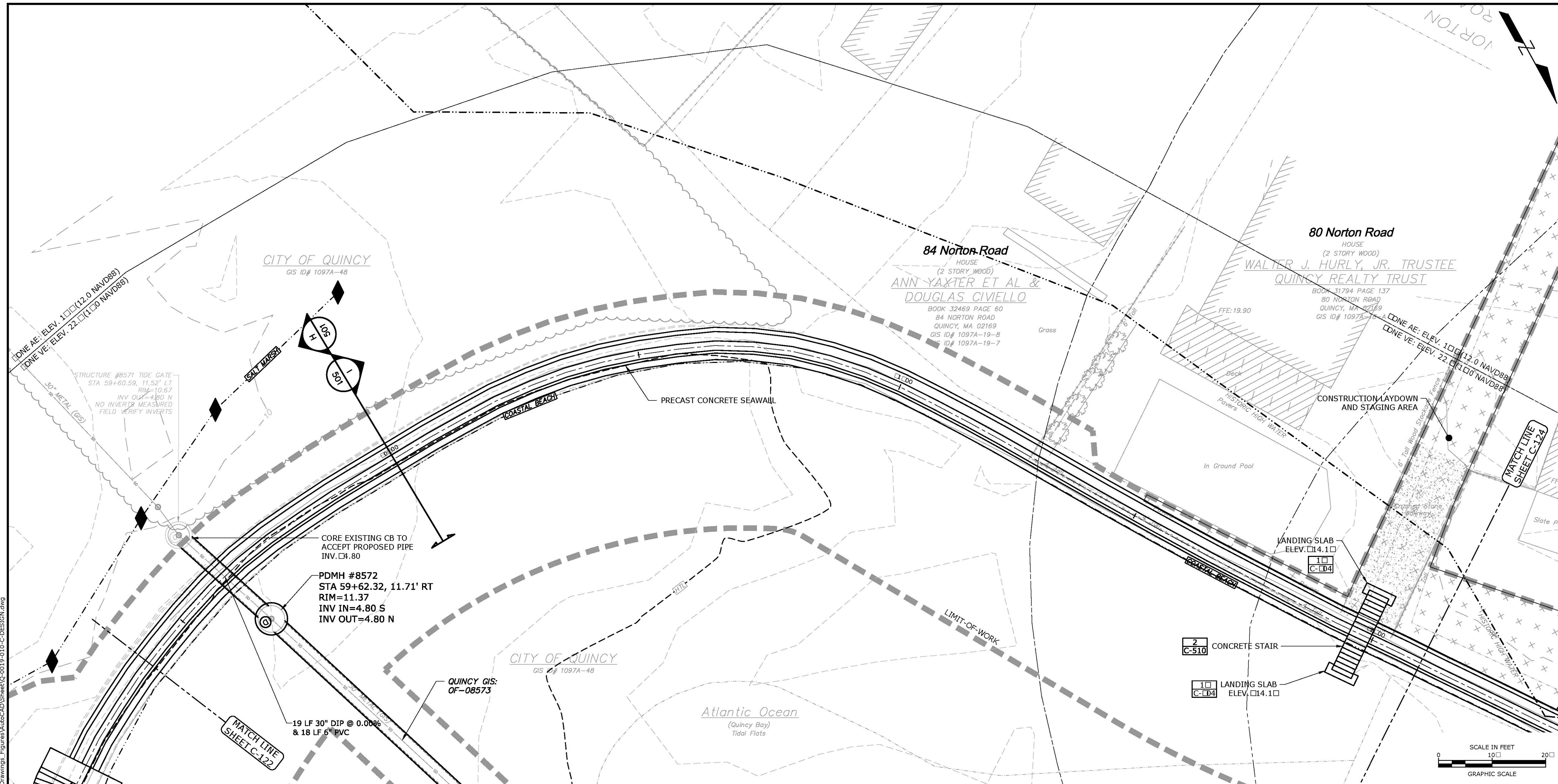
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DESIGN PLAN &
ELEVATION VIEW

SCALE: AS SHOWN

C-122

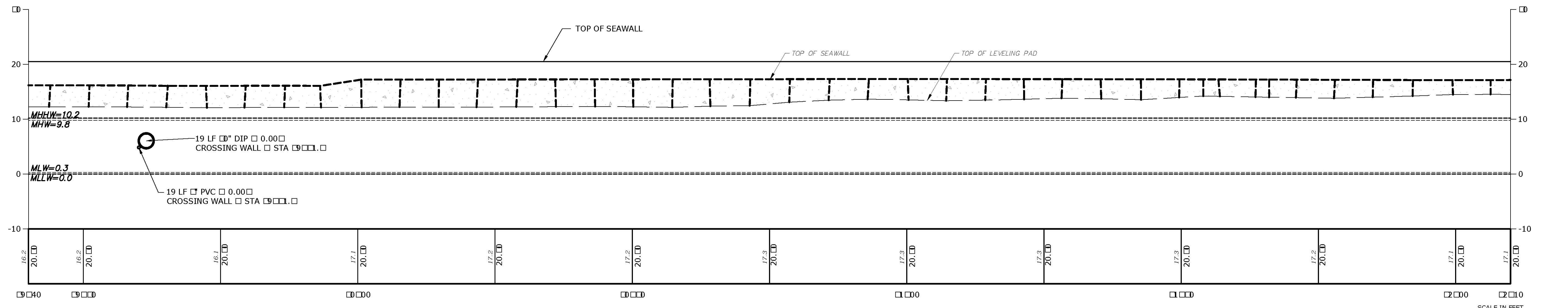
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Adams Shore/Houghs Neck Seawall Repairs & Improvements

City of Quincy
Quincy, Massachusetts



ELEVATION VIEW

MARK	DATE	DESCRIPTION
1	7/27/2019	ADDENDUM 1

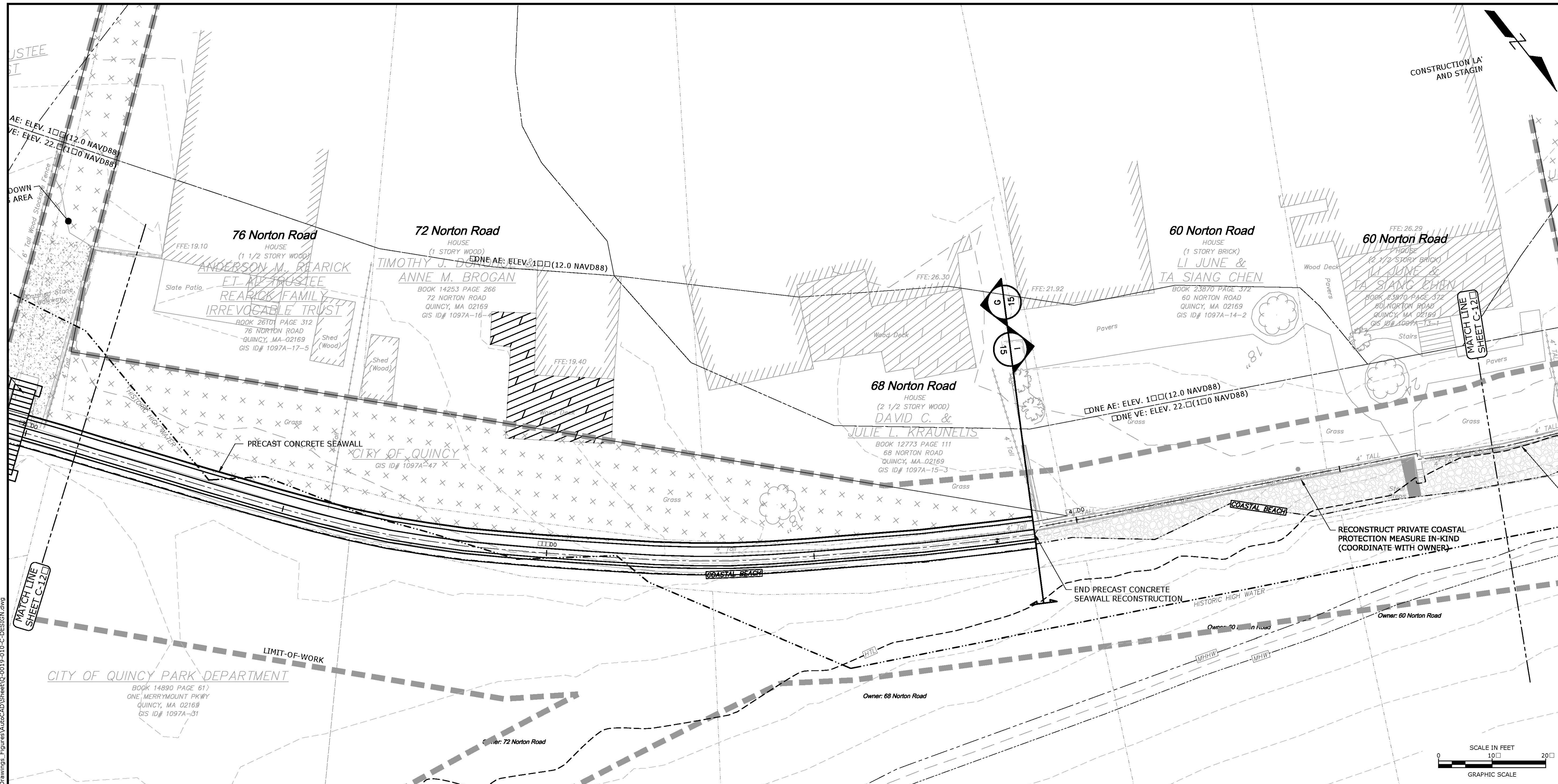
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DESIGN PLAN & ELEVATION VIEW

SCALE: AS SHOWN

C-12

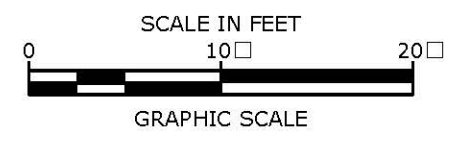
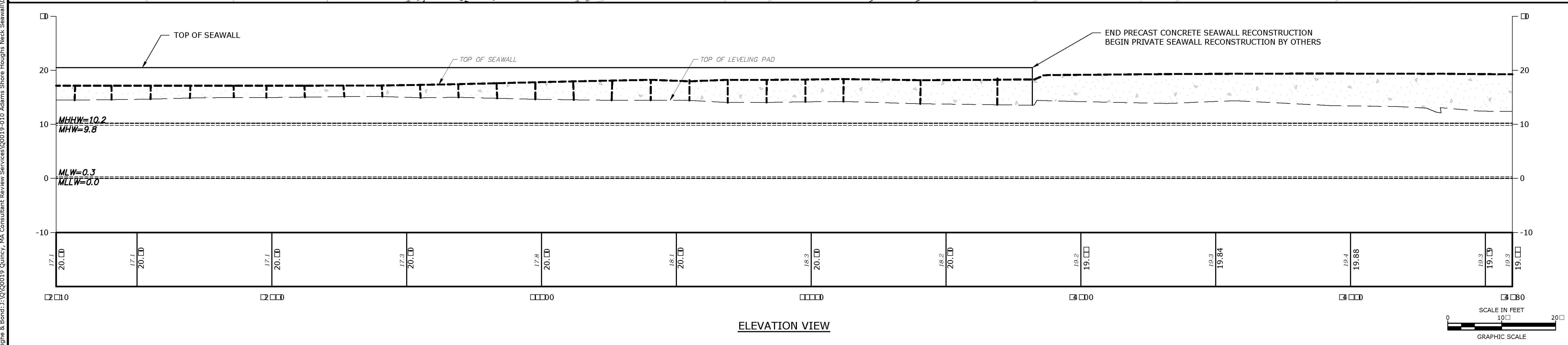
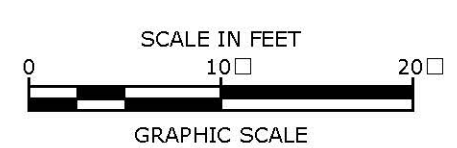
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**Adams
Shore/Houghs
Neck Seawall
Repairs &
Improvements**

City of Quincy
Quincy, Massachusetts



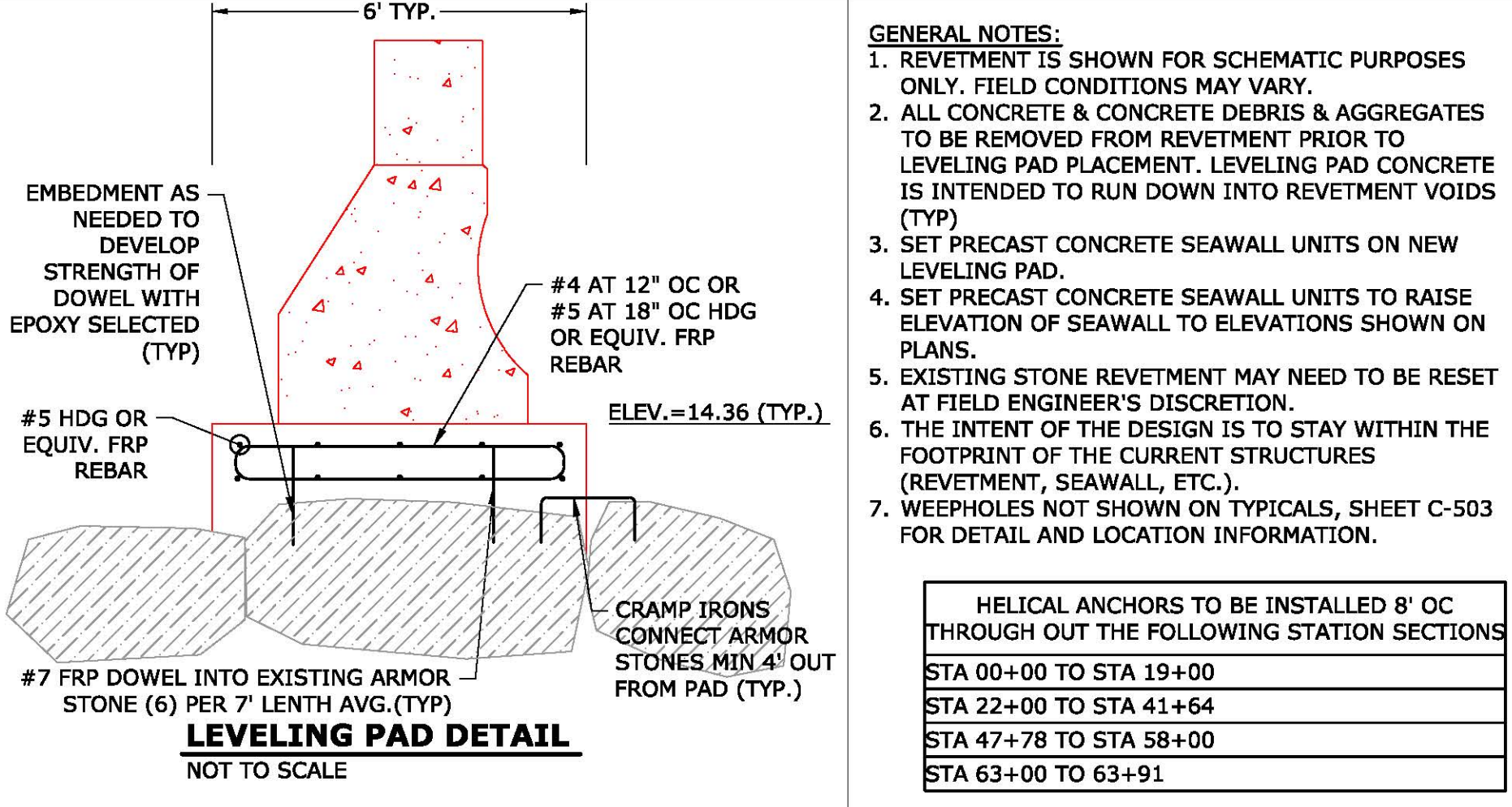
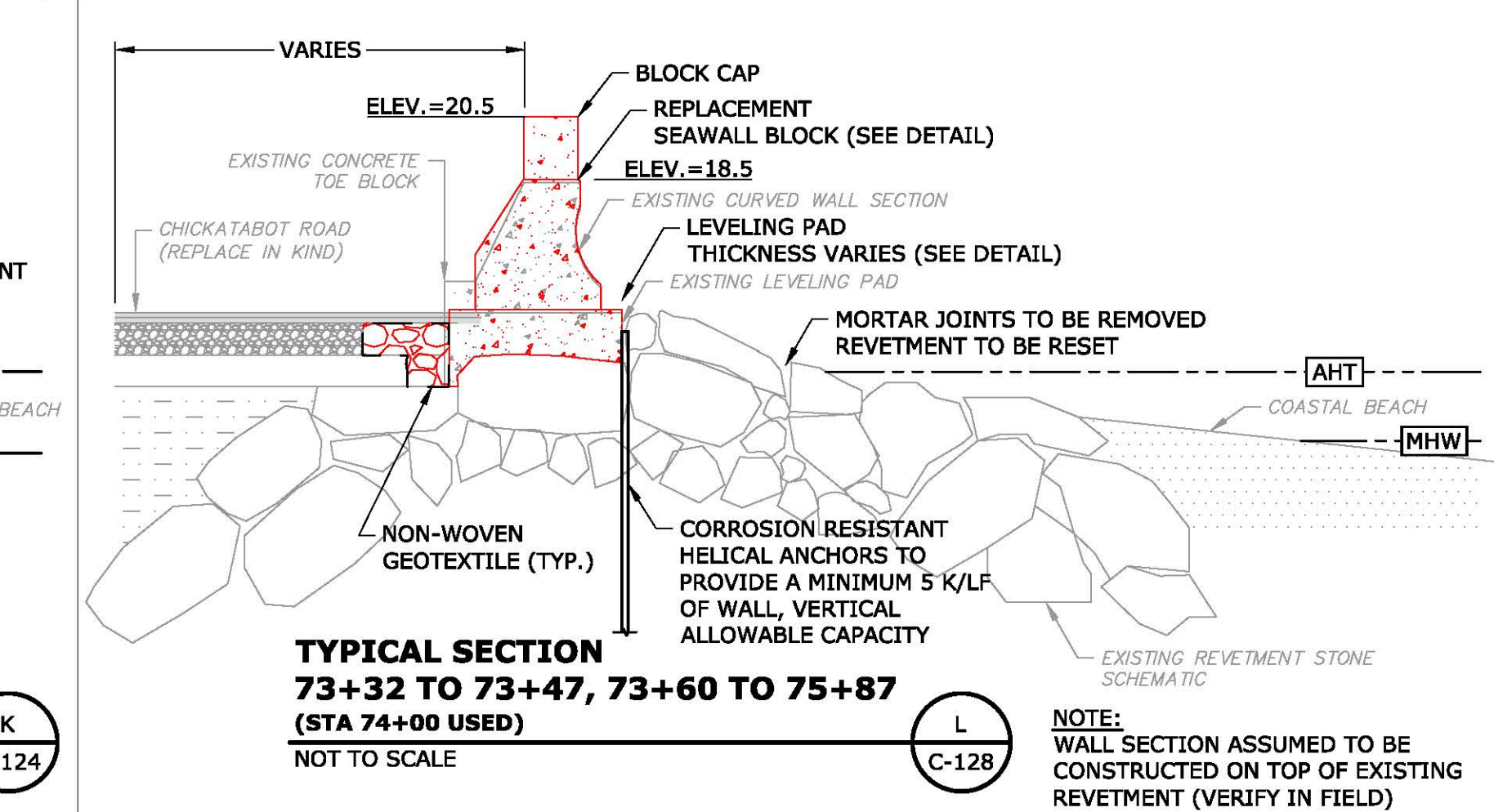
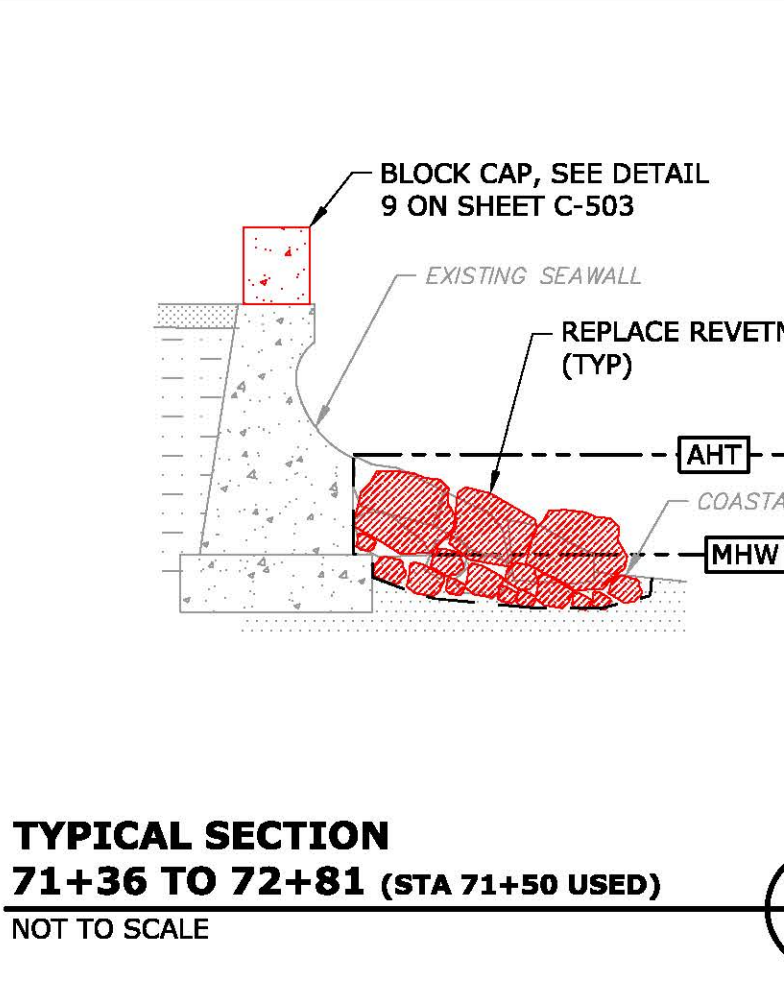
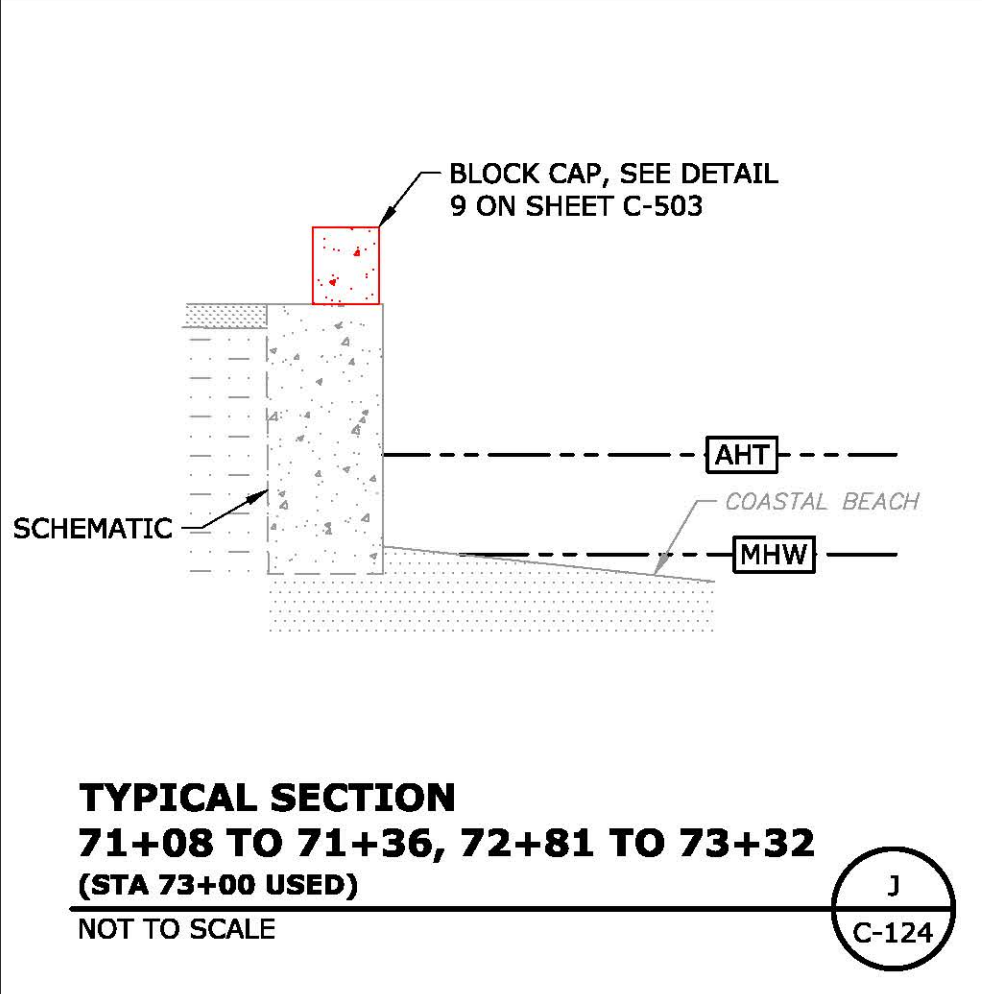
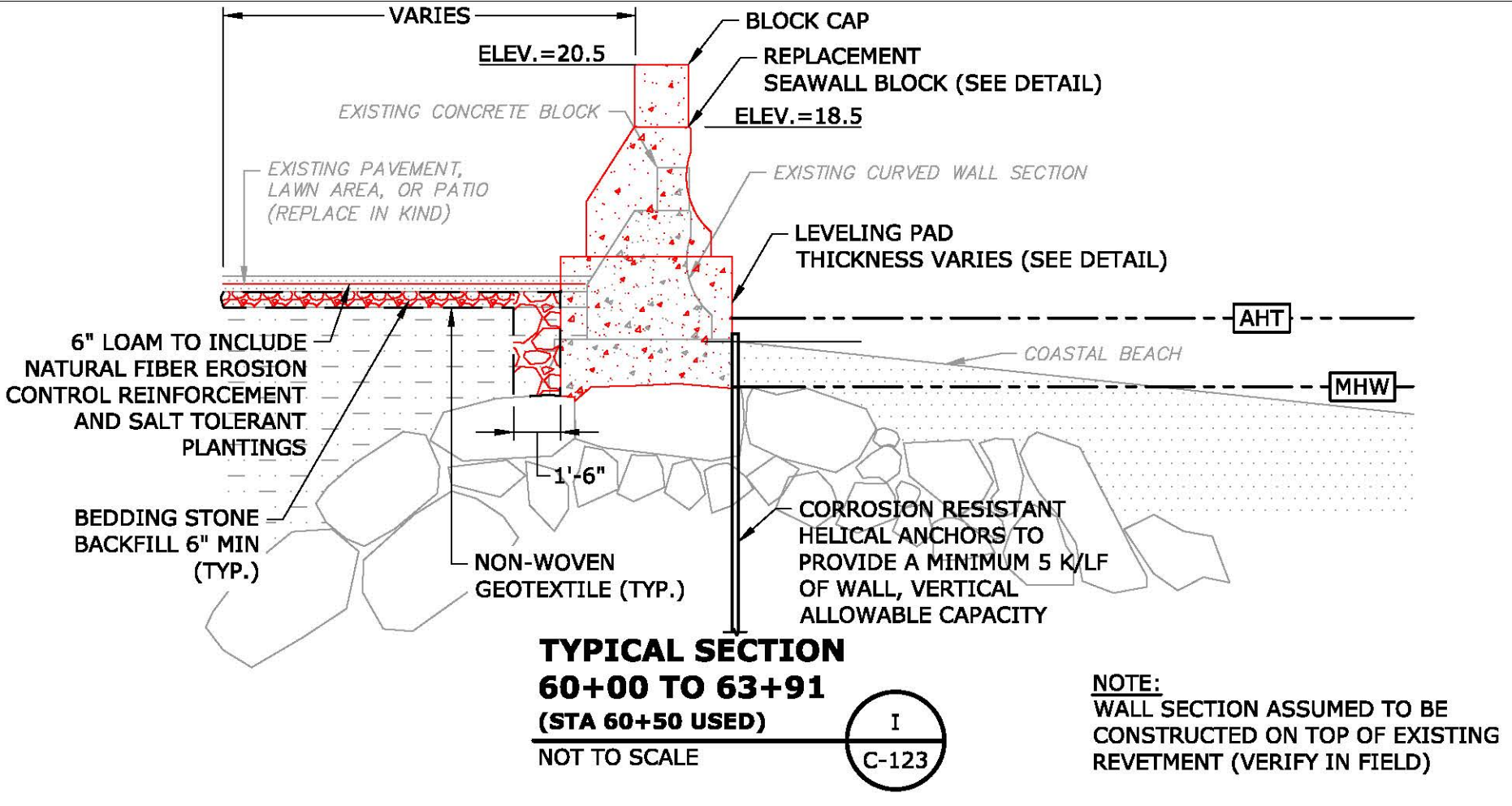
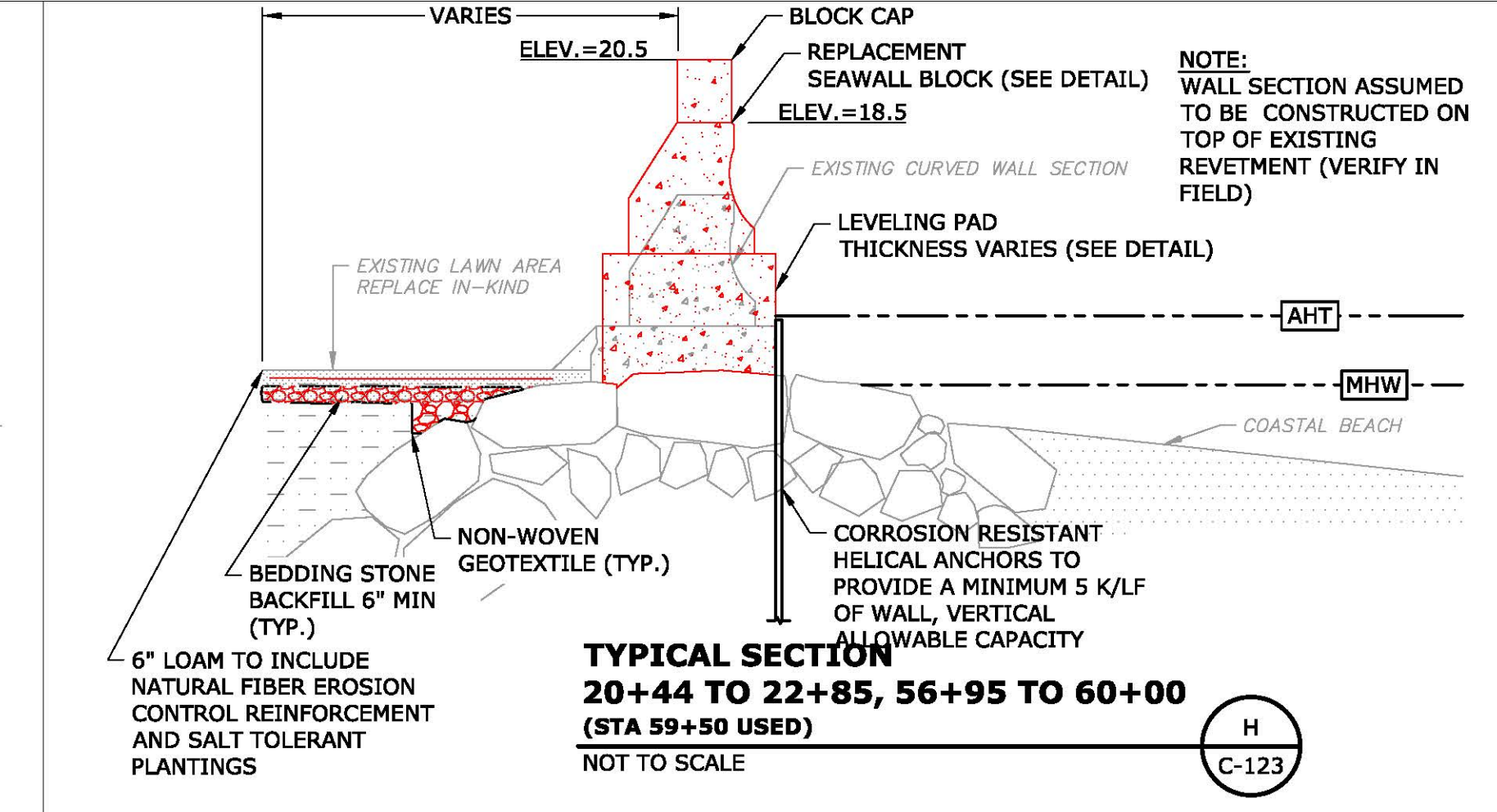
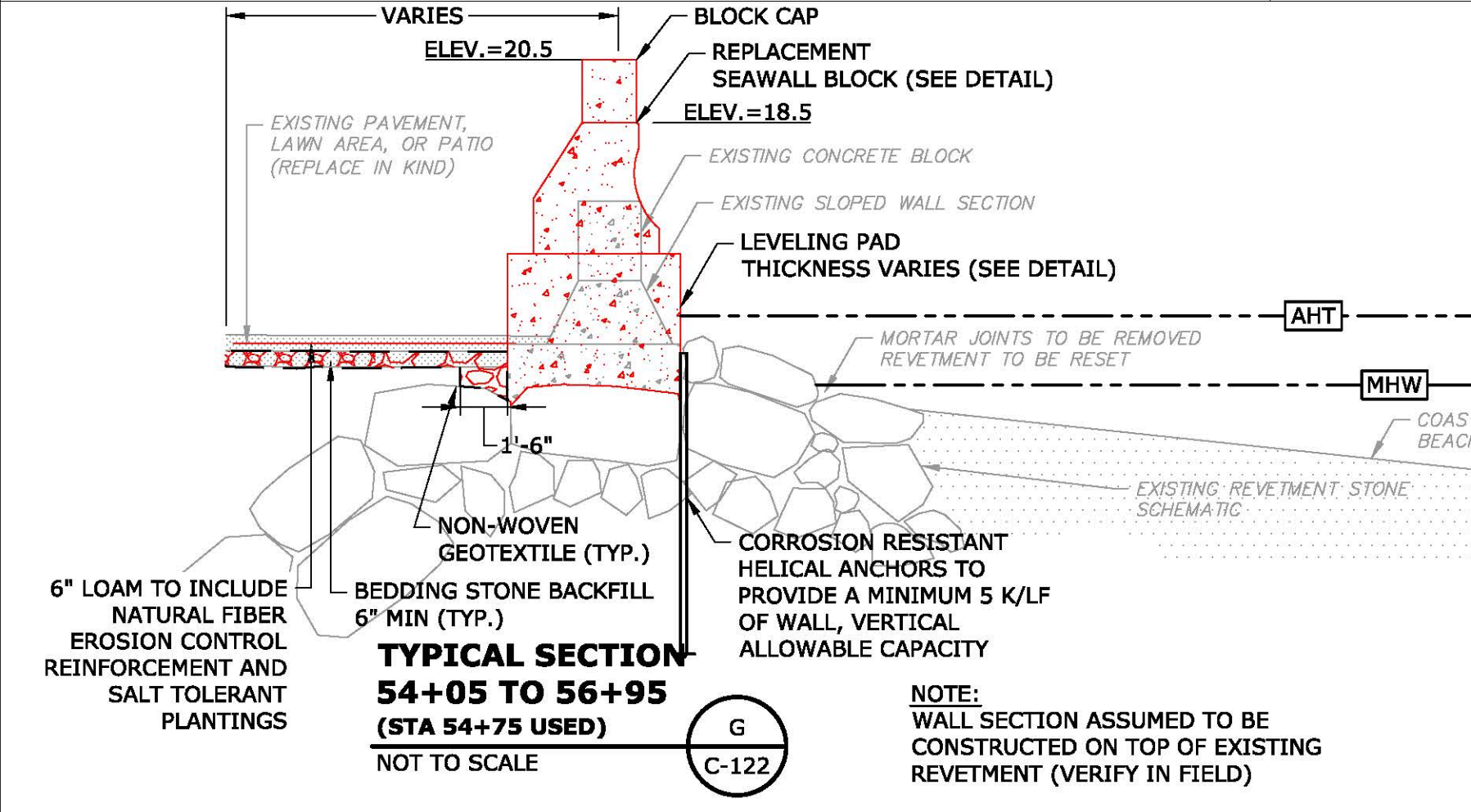
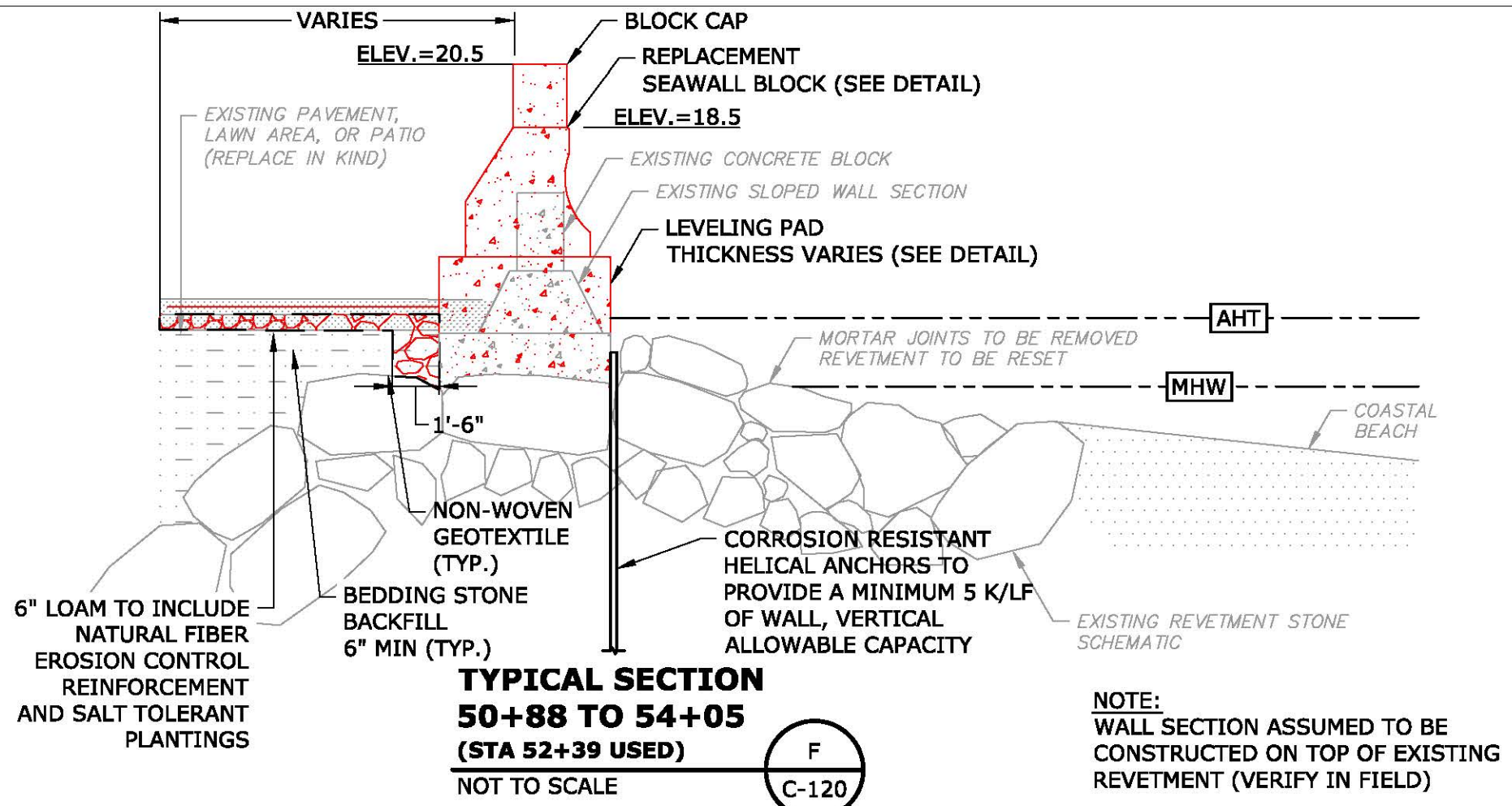
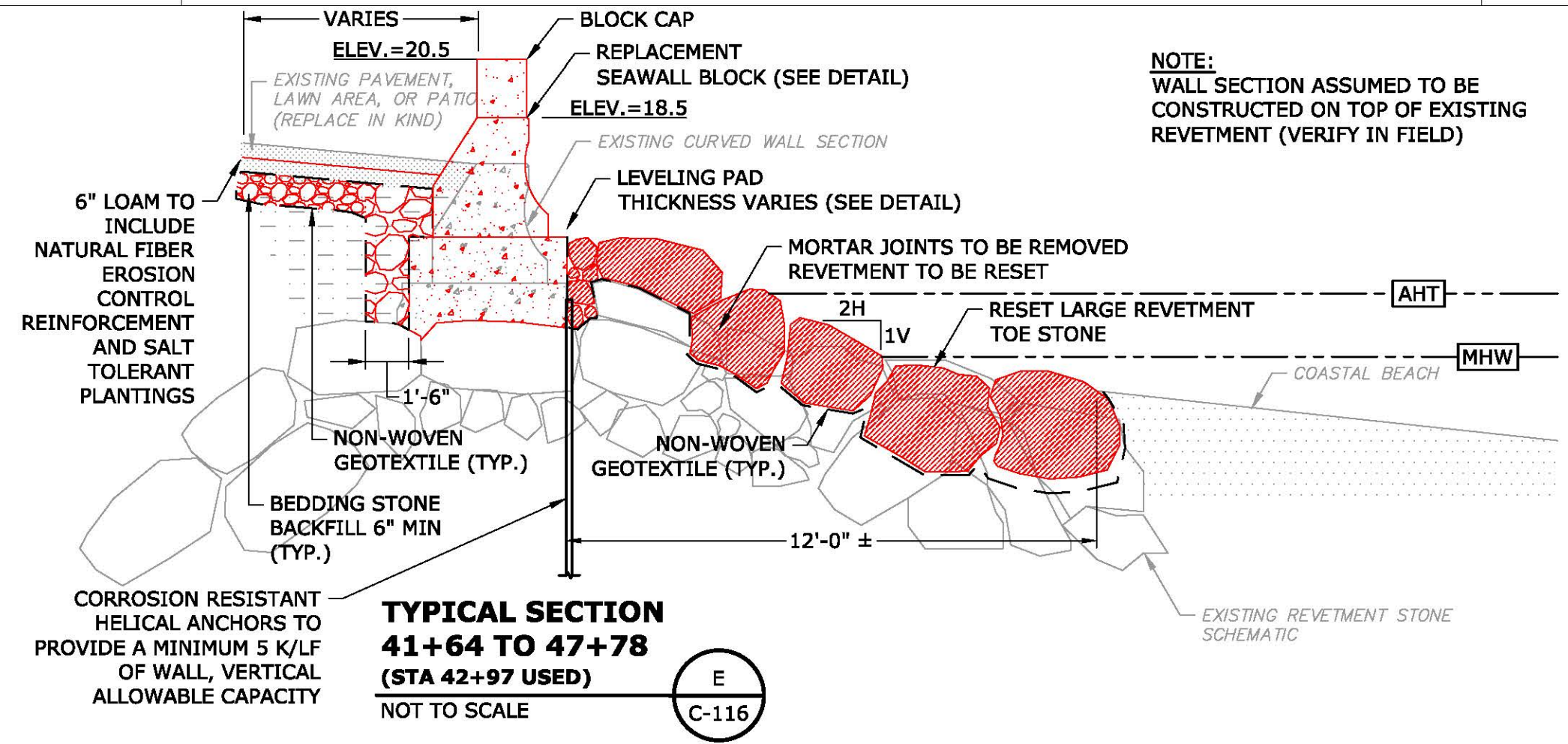
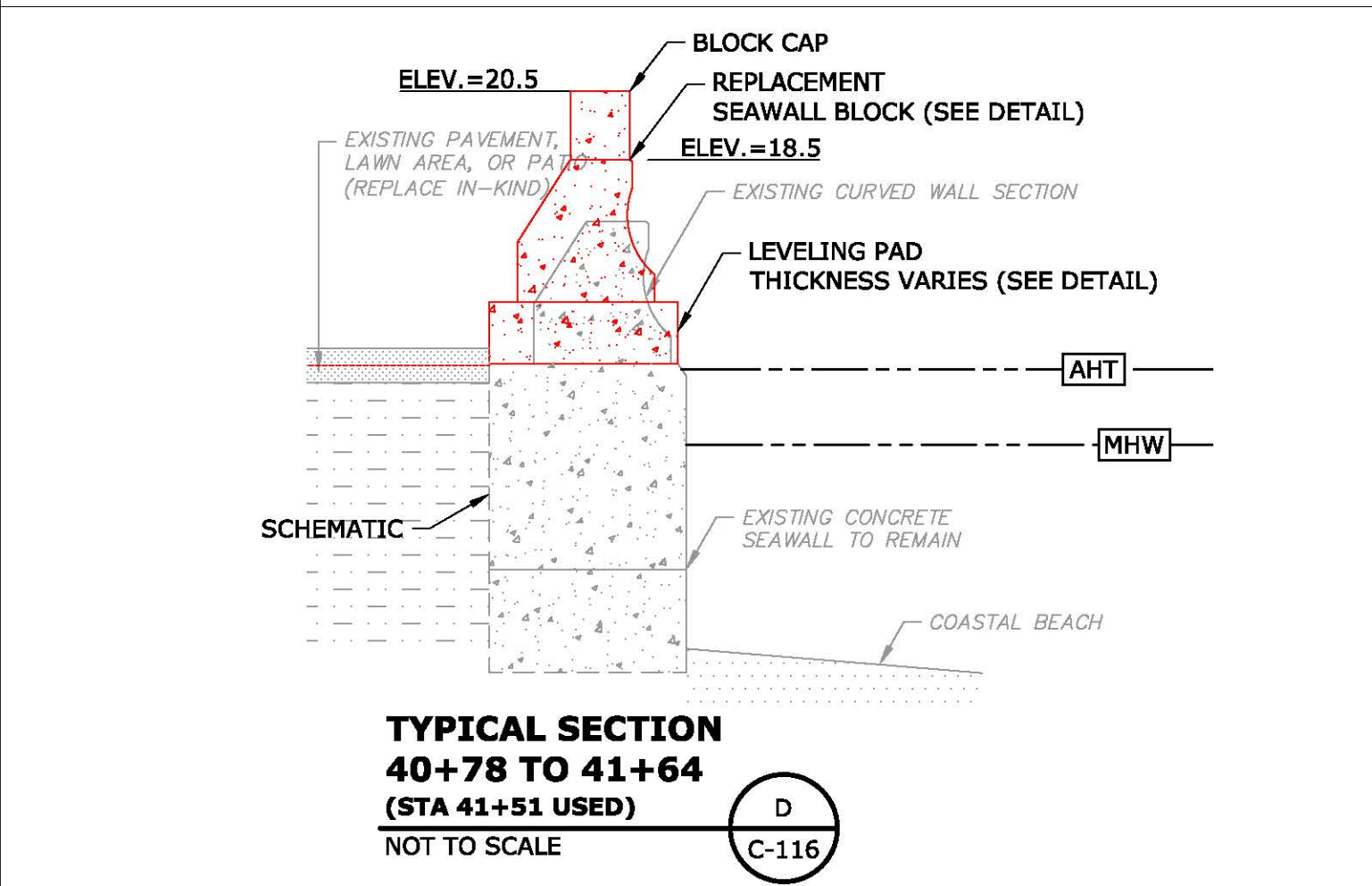
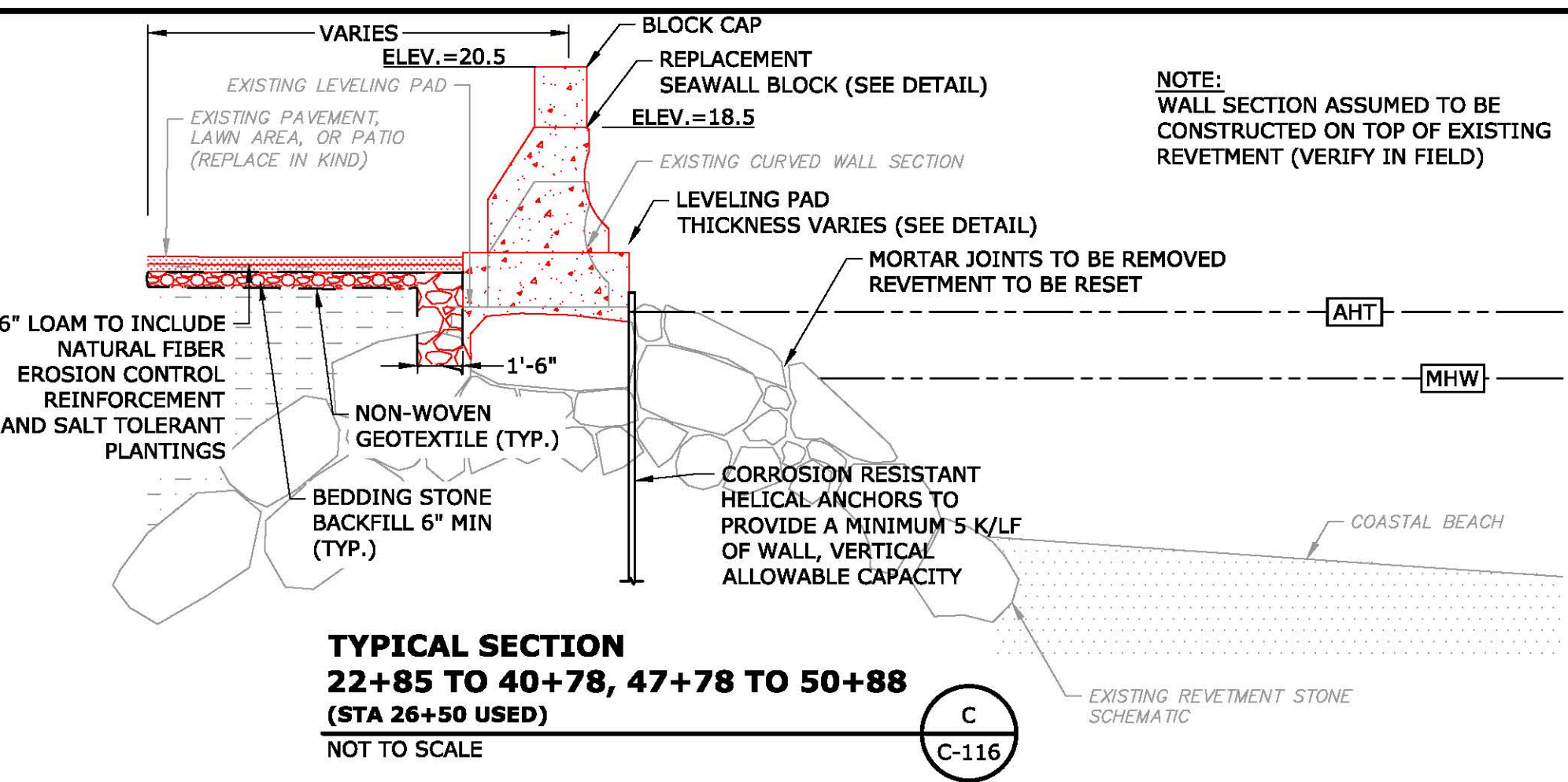
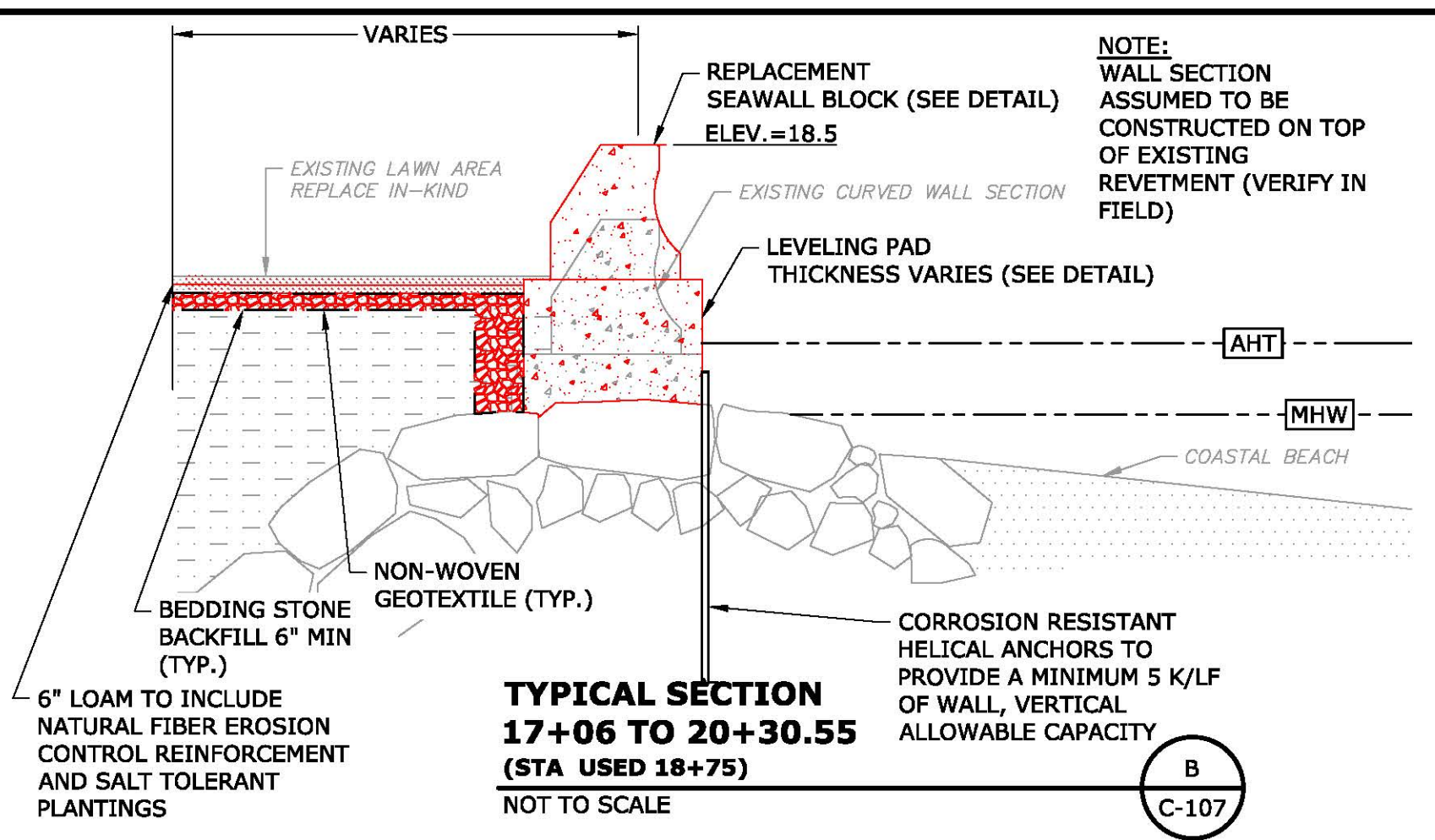
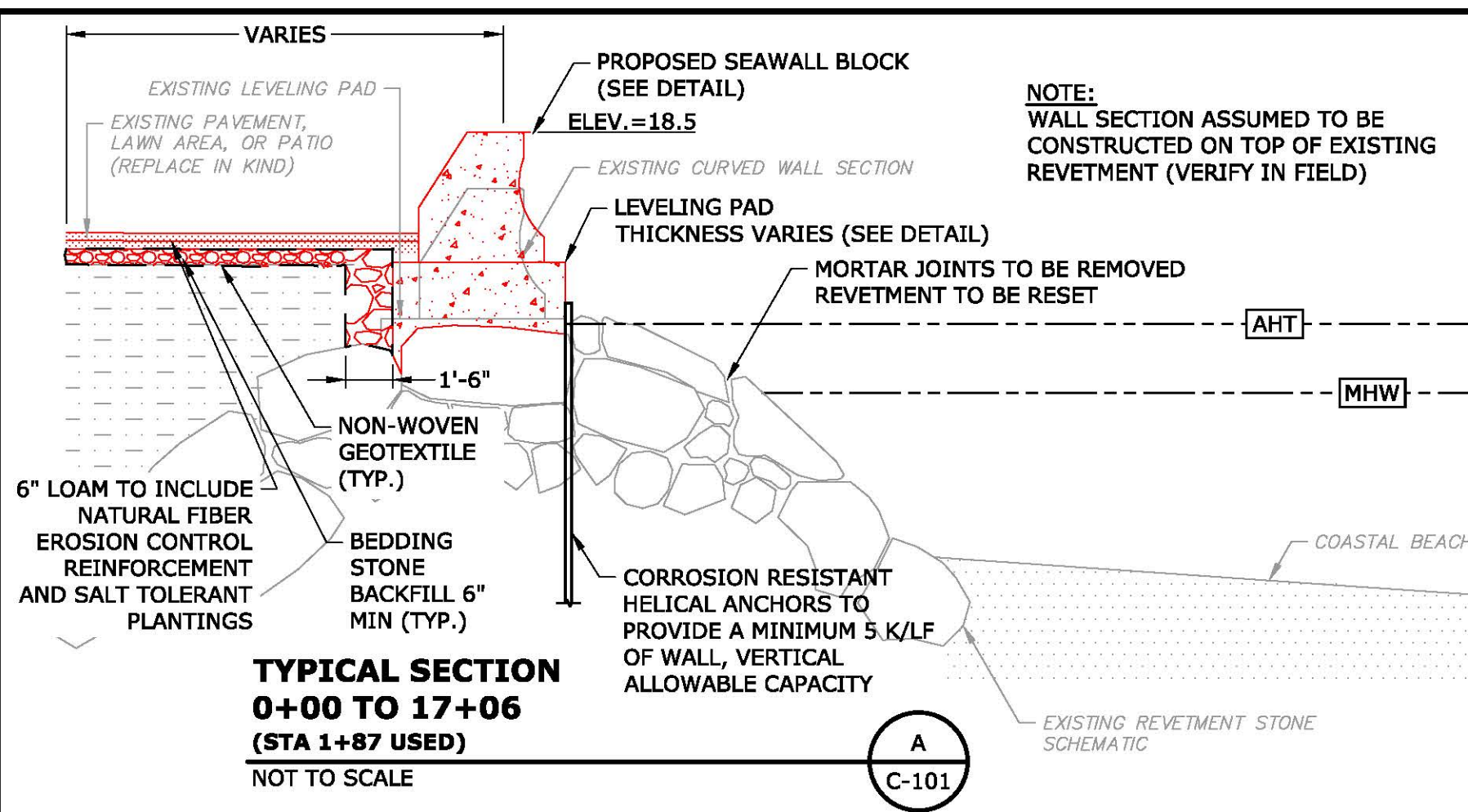
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CHECKED: KAM
APPROVED: BLM

**DESIGN PLAN &
ELEVATION VIEW**

SCALE: AS SHOWN

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 Tighe & Bond 233 State St Quincy, MA
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ISSUED FOR BIDDING

Adams Shore/Houghs Neck Seawall Repairs & Improvements

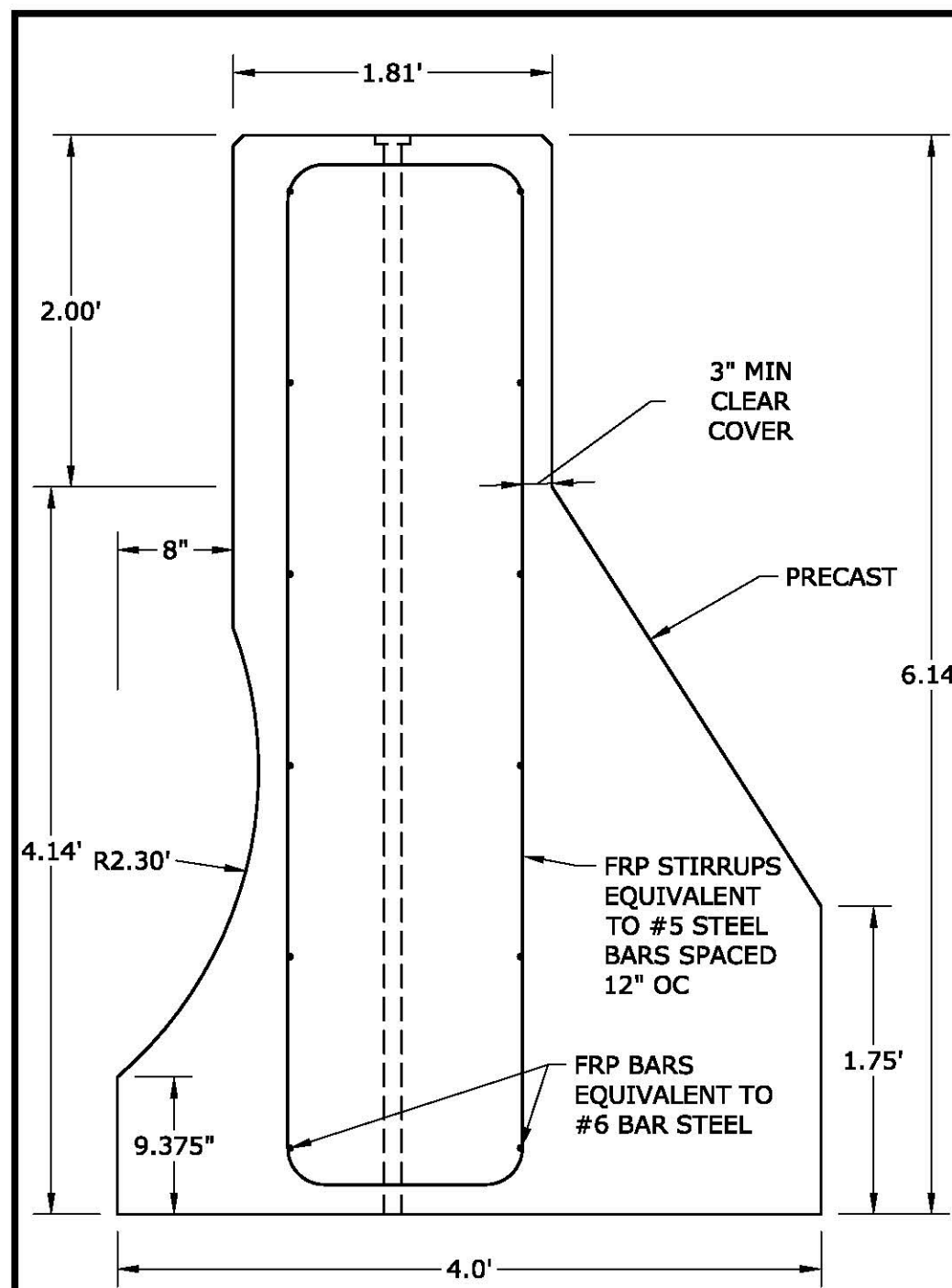
City of Quincy
Quincy, Massachusetts

MARK	DATE	DESCRIPTION
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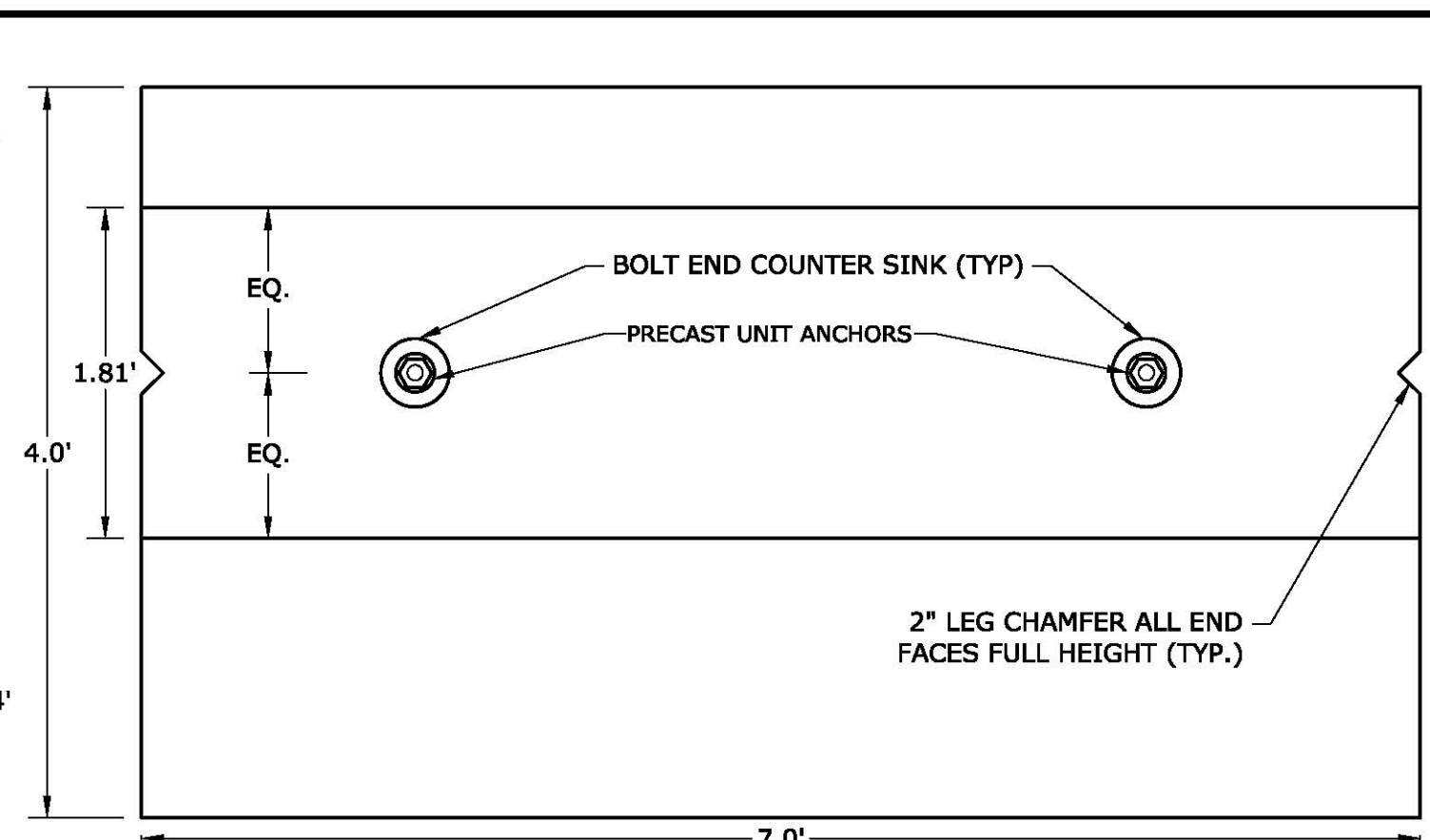
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 Project: On-Arge (U) 2019-010 Adams Shore/Houghs Neck Seawall Repairs & Improvements (Q0019-010-010-C-TYPICALS.DWG)
 Tighe & Bond, Inc. (S) 2019 Quincy, MA (Consistent Review Services) (Q0019-010-010-C-TYPICALS.DWG)

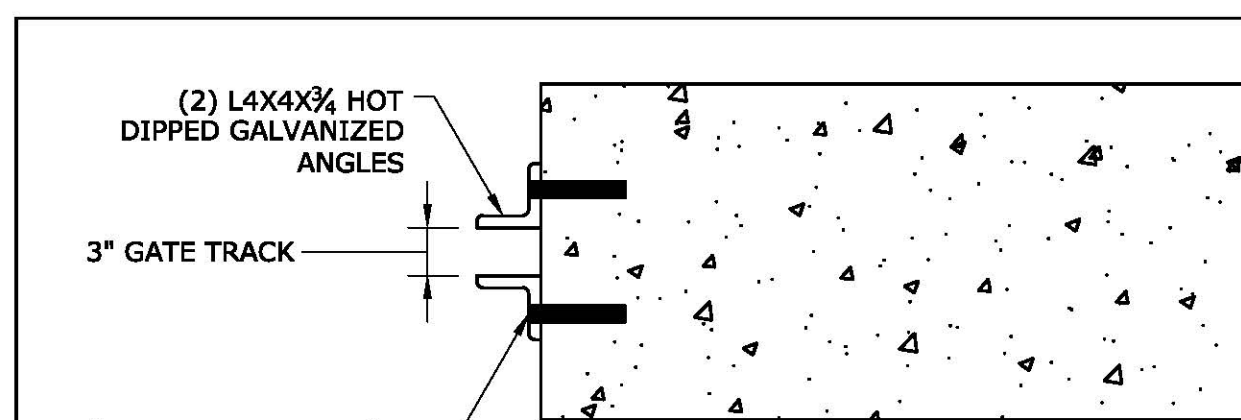


PRECAST SEAWALL BLOCK: OPTION A 1
NO SCALE

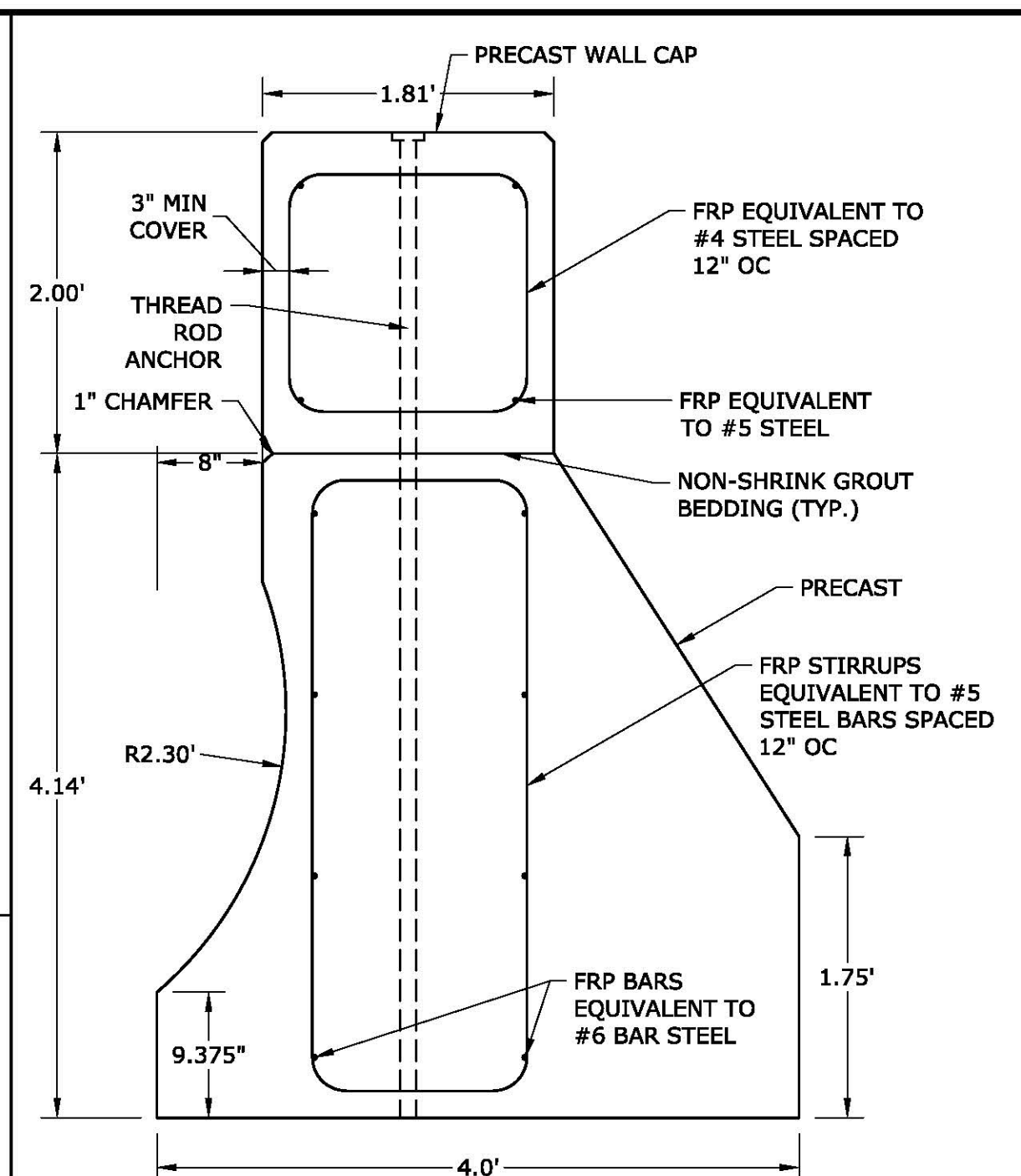
NOTE:
1. SEAWALL ANCHOR THREAD RODS SHALL BE 1" DIA. A193 GRADE BE WITH HEAVY HEX HUT AND 4" OD X 0.375" PLATE WASHER, ALL HDG, OR EQUAL, BOTTOM LEVELING SLAB EMBED. AS NEEDED FOR 30 KIP LOAD, PERMANENT, WITH THE EPOXY RESIGN SELECTED, LOCK OFF AT 30 KIPS (TYP.) ANCHOR RODS MAY BE EMBEDDED IN LEVELING SLAB AS LONG AS LAYOUT IS NOT IMPACTED.



PLAN VIEW
NOTE: BOLT COUNTERSINKS TO BE FILLED WITH SELF-LEVELING GRAY URETHANE SEALANT AFTER LOCK-OFF (DRY, CLEAN POCKETS) (TYP)

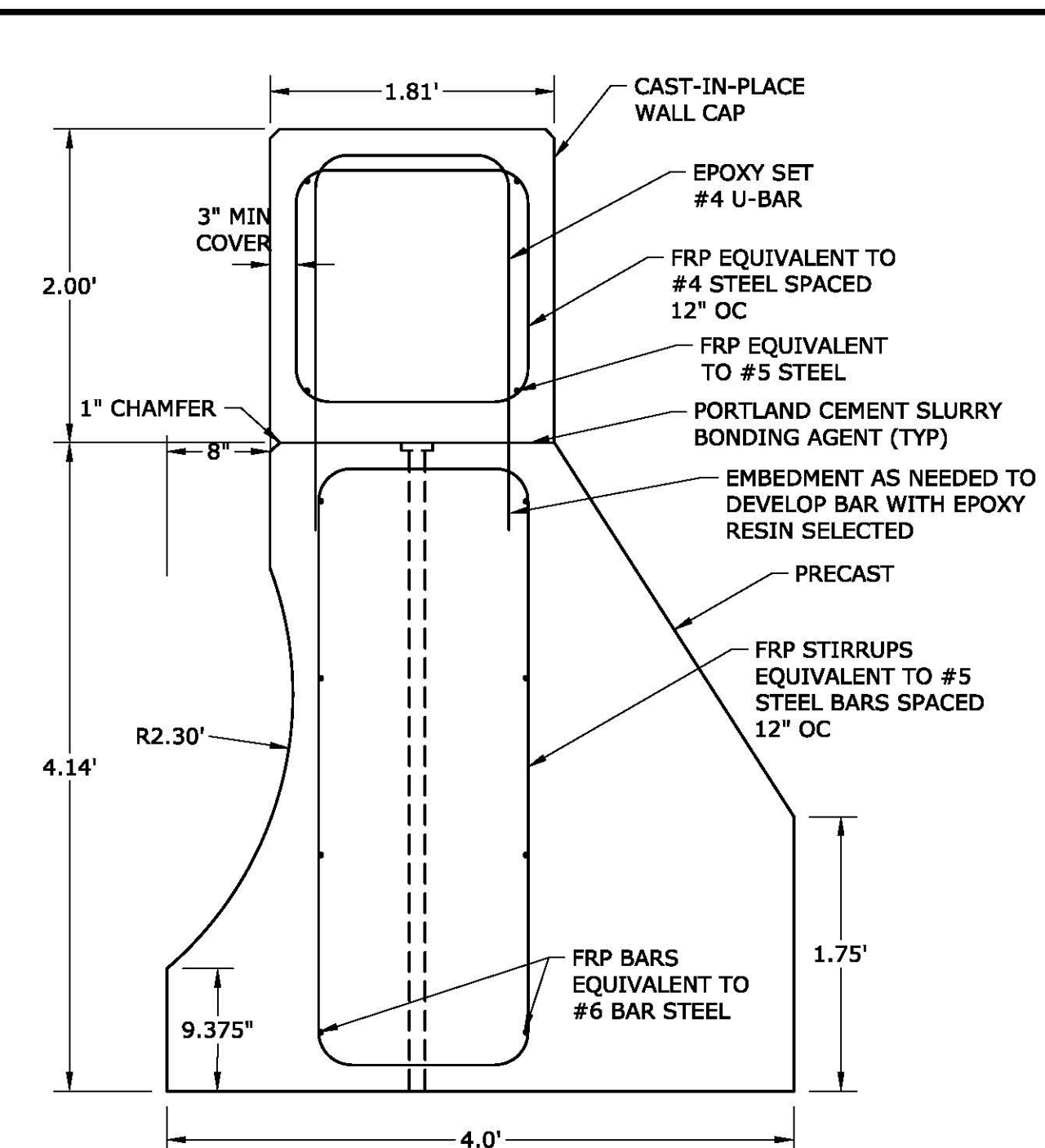


GATE TRACK DETAIL 5
NO SCALE



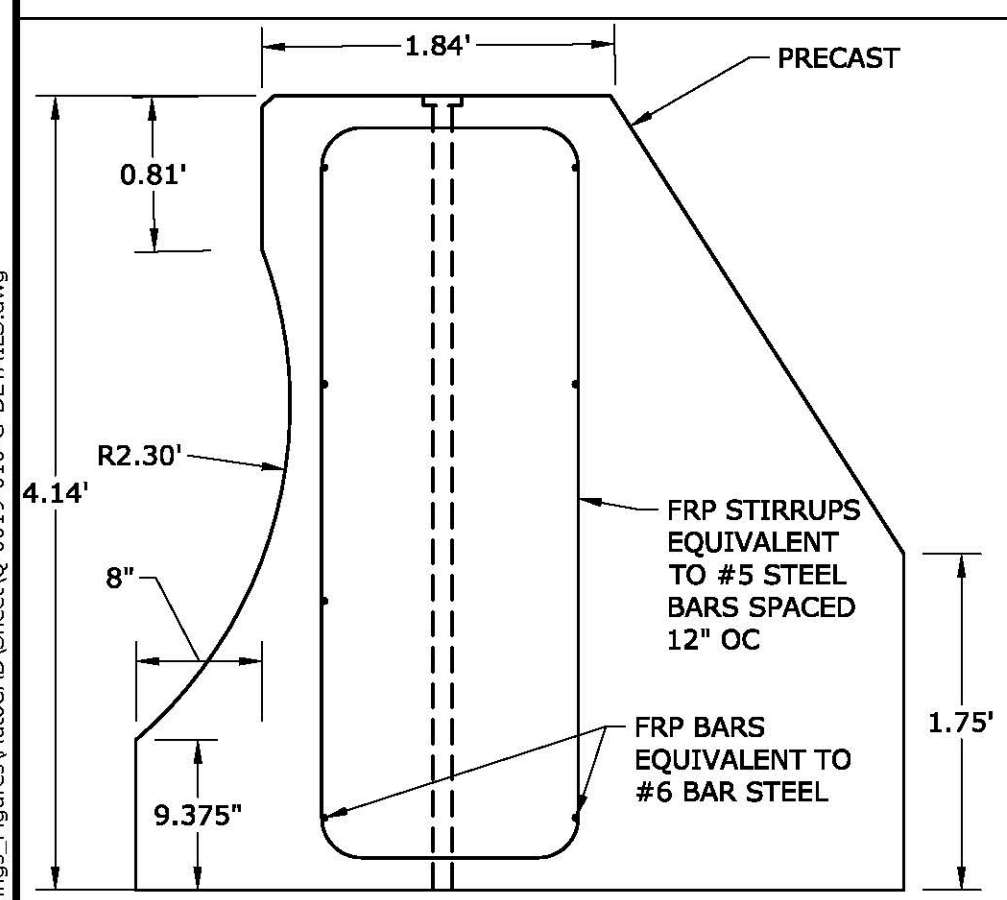
PRECAST SEAWALL BLOCK: OPTION B 2
NO SCALE

NOTE:
1. SEAWALL ANCHOR THREAD RODS SHALL BE 1" DIA. A193 GRADE BE WITH HEAVY HEX HUT AND 4" OD X 0.375" PLATE WASHER, ALL HDG, OR EQUAL, BOTTOM LEVELING SLAB EMBED. AS NEEDED FOR 30 KIP LOAD, PERMANENT, WITH THE EPOXY RESIGN SELECTED, LOCK OFF AT 30 KIPS (TYP.) ANCHOR RODS MAY BE EMBEDDED IN LEVELING SLAB AS LONG AS LAYOUT IS NOT IMPACTED.



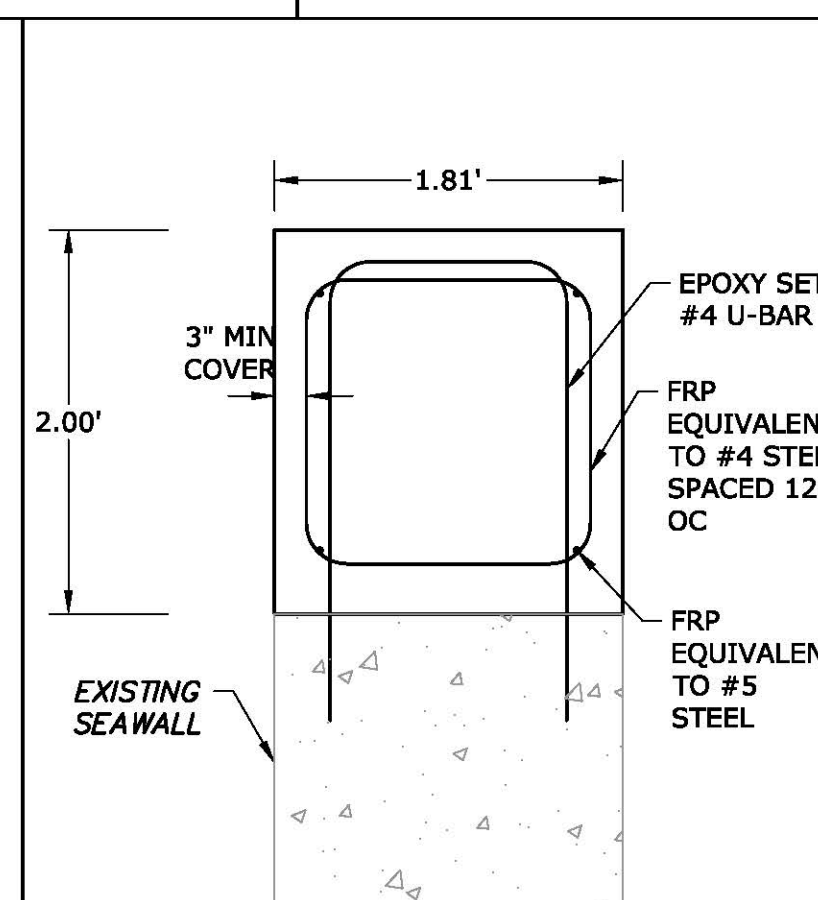
PRECAST SEAWALL BLOCK: OPTION C 3
NO SCALE

NOTE:
1. SEAWALL ANCHOR THREAD RODS SHALL BE 1" DIA. A193 GRADE BE WITH HEAVY HEX HUT AND 4" OD X 0.375" PLATE WASHER, ALL HDG, OR EQUAL, BOTTOM LEVELING SLAB EMBED. AS NEEDED FOR 30 KIP LOAD, PERMANENT, WITH THE EPOXY RESIGN SELECTED, LOCK OFF AT 30 KIPS (TYP.) ANCHOR RODS MAY BE EMBEDDED IN LEVELING SLAB AS LONG AS LAYOUT IS NOT IMPACTED.

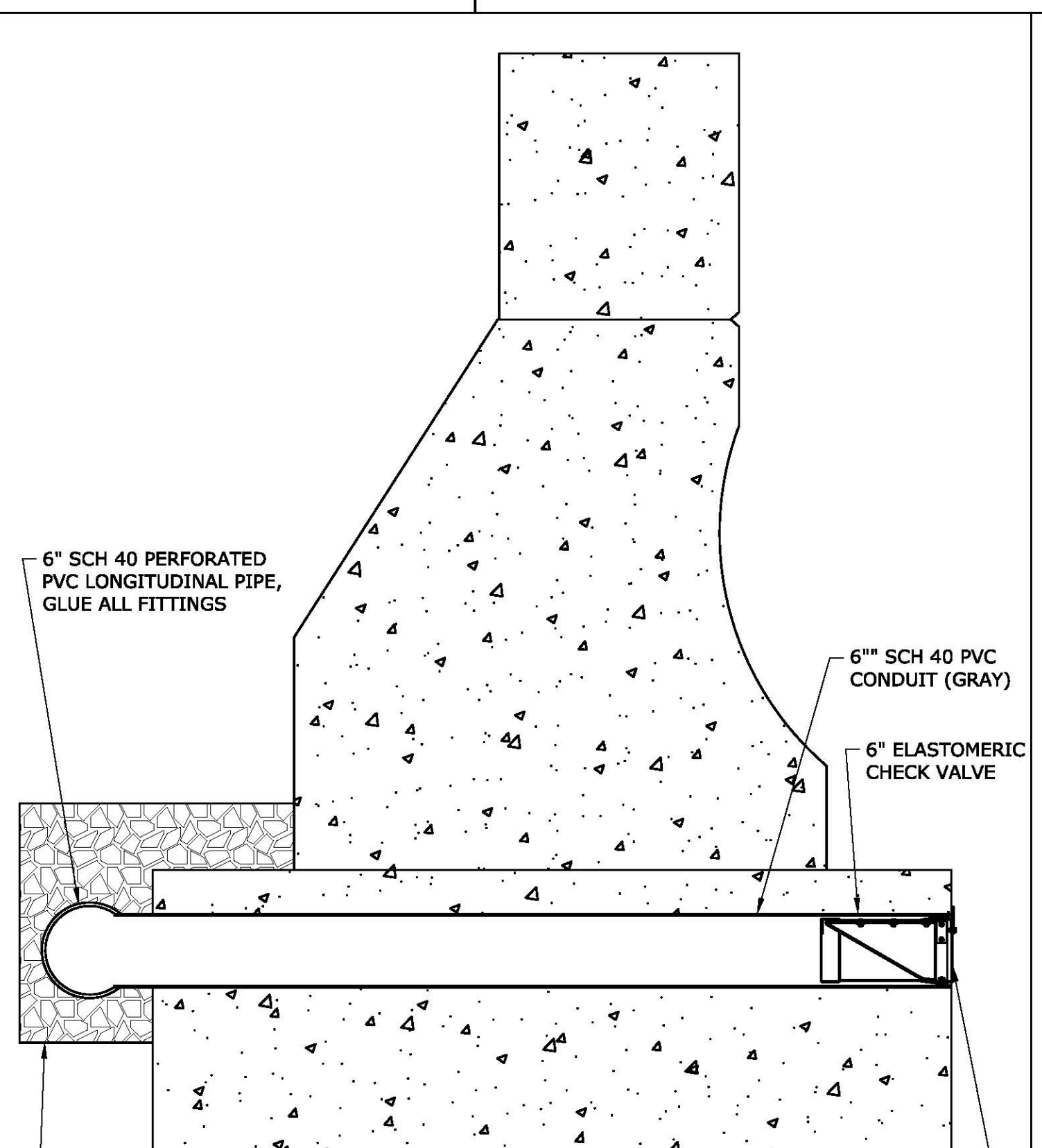


2' PRECAST SEAWALL BLOCK 4
NO SCALE

NOTE:
1. SEAWALL ANCHOR THREAD RODS SHALL BE 1" DIA. A193 GRADE BE WITH HEAVY HEX HUT AND 4" OD X 0.375" PLATE WASHER, ALL HDG, OR EQUAL, BOTTOM LEVELING SLAB EMBED. AS NEEDED FOR 30 KIP LOAD, PERMANENT, WITH THE EPOXY RESIGN SELECTED, LOCK OFF AT 30 KIPS (TYP.) ANCHOR RODS MAY BE EMBEDDED IN LEVELING SLAB AS LONG AS LAYOUT IS NOT IMPACTED.



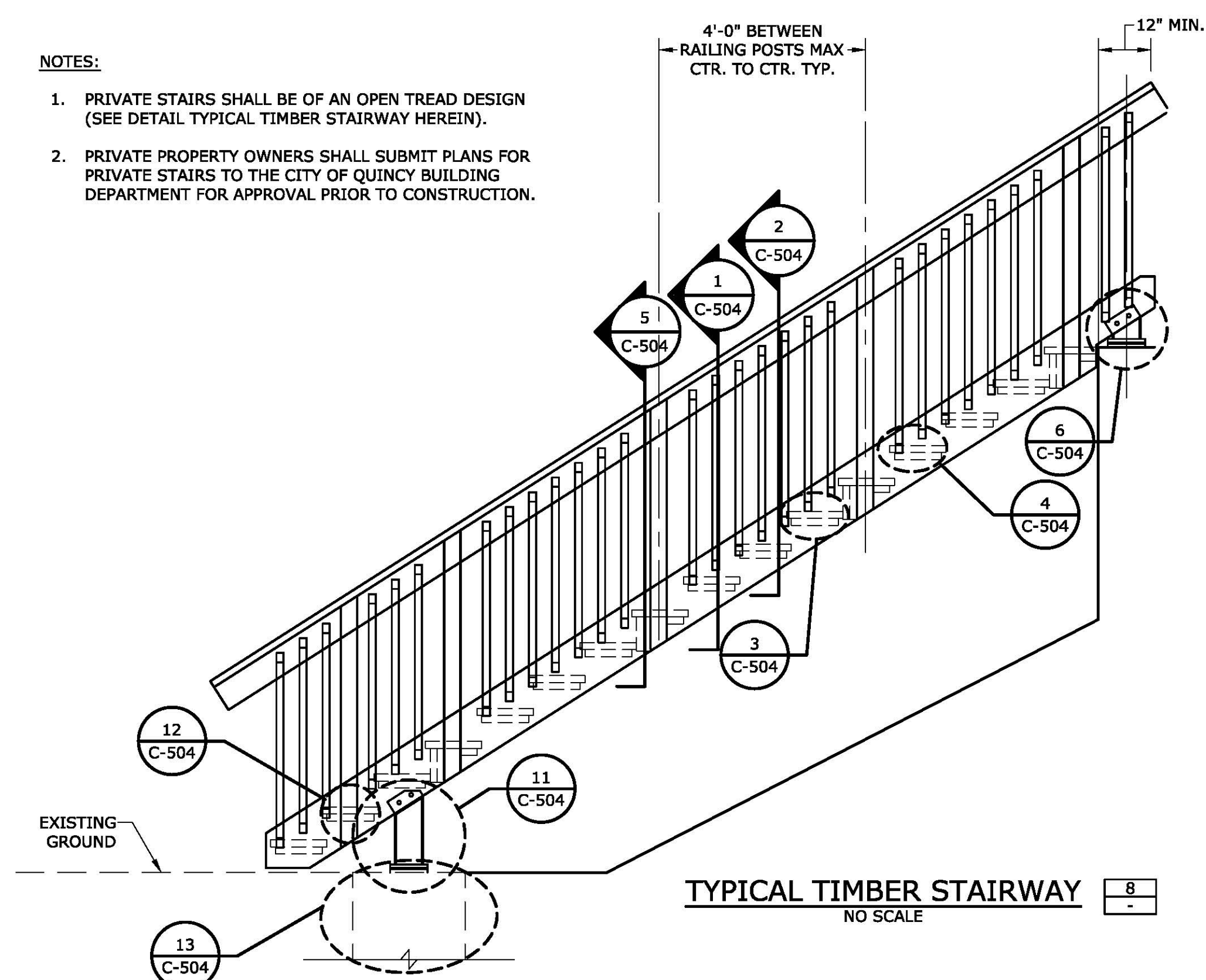
SEAWALL CAP BLOCK 9
NO SCALE



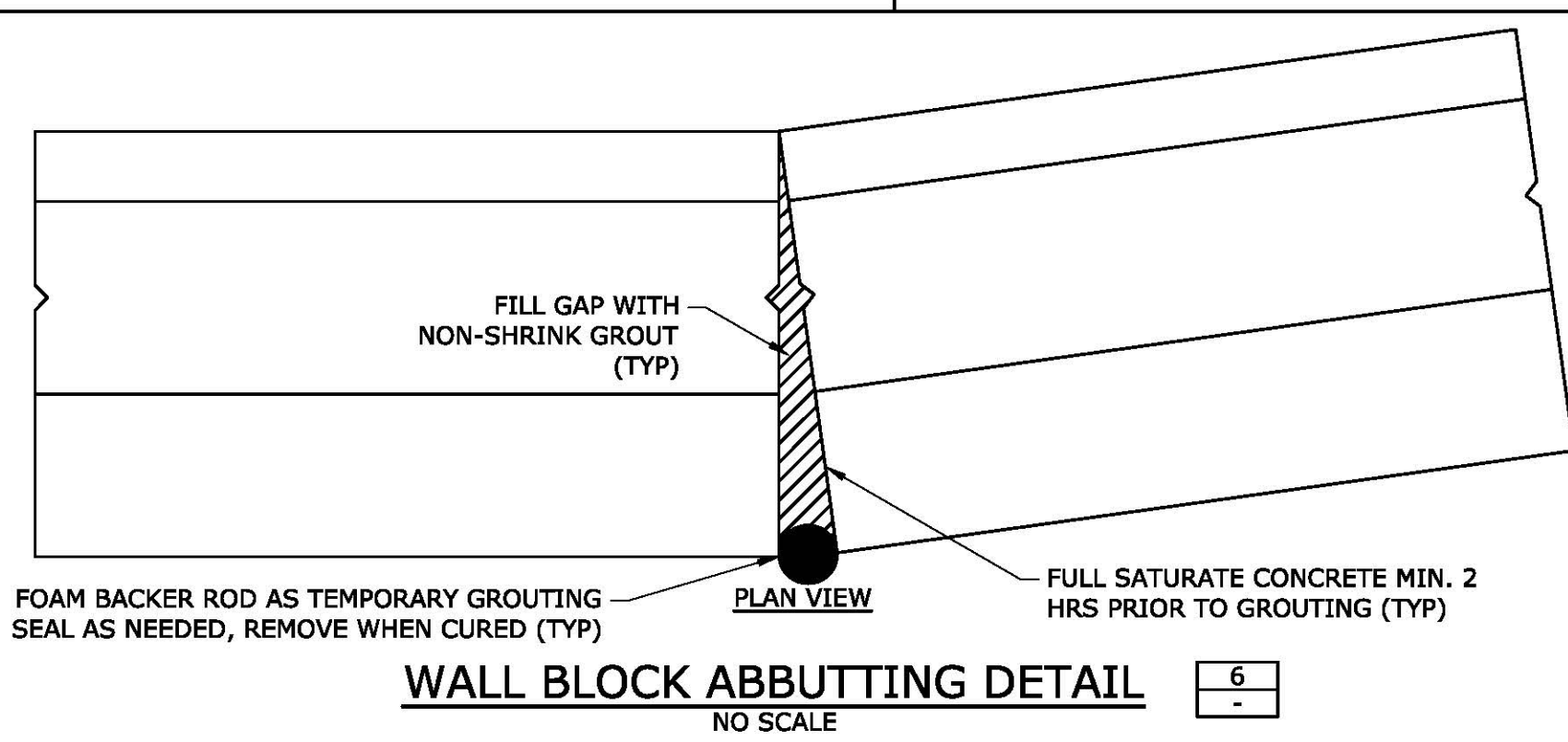
6" WEEPHOLE DETAIL 7
NO SCALE

INSTALL EVERY 10' FROM STA 08+04 TO STA 20+31
INSTALL EVERY 50' FROM STA 20+31 TO STA 63+91
INSTALL EVERY 50' FROM STA 73+33 TO STA 75+87

NOTES:
1. PRIVATE STAIRS SHALL BE OF AN OPEN TREAD DESIGN (SEE DETAIL TYPICAL TIMBER STAIRWAY HEREIN).
2. PRIVATE PROPERTY OWNERS SHALL SUBMIT PLANS FOR PRIVATE STAIRS TO THE CITY OF QUINCY BUILDING DEPARTMENT FOR APPROVAL PRIOR TO CONSTRUCTION.



TYPICAL TIMBER STAIRWAY 8
NO SCALE



WALL BLOCK ABUTTING DETAIL 6
NO SCALE

ISSUED FOR BIDDING

Adams Shore/Houghs Neck Seawall Repairs & Improvements

City of Quincy
Quincy, Massachusetts

MARK	DATE	DESCRIPTION
1	7/27/2019	ADDENDUM 1

PROJECT NO: Q-0019-010
DATE: July 10, 2018
FILE: Q-0019-010-G-DETAILS.DWG
DRAWN BY: JAK
CHECKED: KAM
APPROVED: BLM

DETAILS

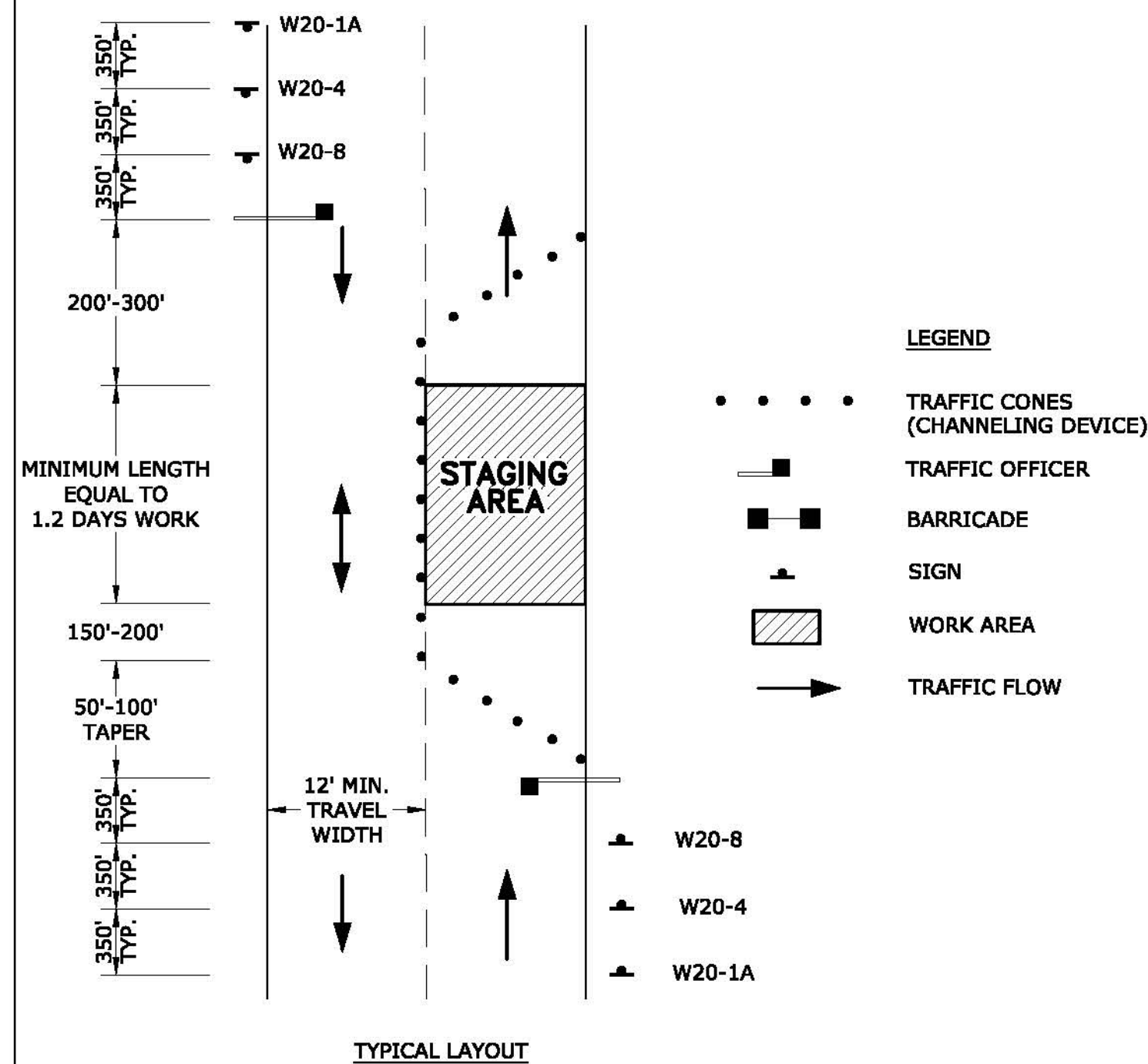
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Last Saved: 7/27/2019 11:41:14 AM By: JAK/MLM/tgh
Tighe & Bond 2100 Quincy, MA Consultant Review Services 00019-010 Adams Shore/Houghs Neck Seawall Repairs & Improvements Figures/Autocad/Sheet/0019-010-G-DETAILS.dwg

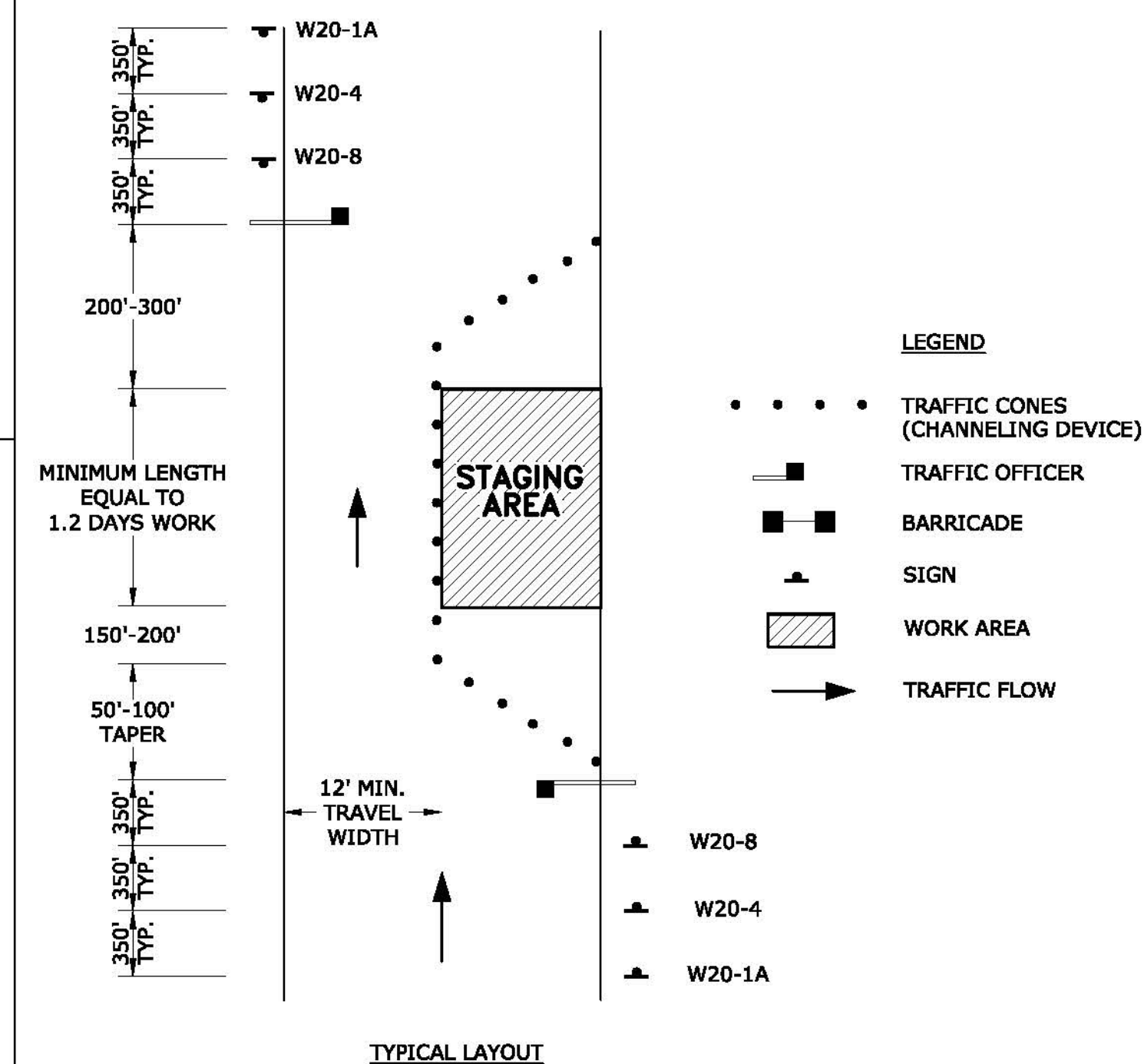
NOTES

1. FLAGS SHALL BE AT LEAST 16" X 16".
2. DISTANCES ARE A GUIDE AND MAY BE ADJUSTED IN FIELD BY ENGINEER.
3. MAXIMUM SPACING OF CHANNELIZING DEVICES IS EQUAL IN FEET TO SPEED LIMIT.
4. NO TRAFFIC CONTROL DEVICES SHALL REMAIN ON THE ROADWAY AT THE END OF EACH WORK DAY.
5. ALL WARNING SIGNS SHALL BE BLACK LEGEND ON A REFLECTIVE ORANGE BACKGROUND. FLAGS SHALL BE ATTACHED TO ALL ADVANCED WARNING SIGNS.
6. ALL SIGNS AND SUPPORTS SHALL BE INSTALLED IN ACCORDANCE WITH MASS HIGHWAY DEPARTMENT STANDARDS.
7. ALL TRAFFIC CONTROL DEVICES USED SHALL CONFORM TO THE LATEST EDITION OF THE "FHWA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" (MUTCD) IN BOTH SPECIFICATION AND APPLICATION.
8. TRAFFIC SIGNS USED DURING WORK HOUR SETUPS SHALL REMAIN IN PLACE ONLY DURING WORK HOURS. TRIPOD MOUNTING IS ACCEPTABLE.
9. REFLECTORIZED CONES SHALL REMAIN IN PLACE DURING CONSTRUCTION ACTIVITIES AND/OR WHEN A ROADSIDE HAZARD EXISTS. ANY REFLECTORIZED CONES REQUIRED TO REMAIN IN PLACE DURING DARKNESS SHALL BE EQUIPPED WITH STEADY BURN (TYPE C) WARNING LIGHT PER MUTCD.
7. ALL DISTANCES SHOWN ARE MINIMUM AND MAY BE ADJUSTED TO MEET FIELD CONDITIONS, WITH APPROVAL OF THE ENGINEER.
8. SIGNS MUST BE COVERED OR REMOVED AT THE END OF EACH WORK DAY, OR WHENEVER BOTH LANES ARE OPEN TO TRAFFIC.
9. DURING ALL CONSTRUCTION ACTIVITIES ON THE ROADWAYS A MINIMUM OF ONE LANE TRAFFIC FLOW SHALL BE MAINTAINED ON ALL CITY STREETS.
10. FULL ROADWAY WIDTH MUST BE RETURNED AT THE END OF EACH WORK DAY.
11. THE NUMBER OF POLICE OFFICERS AT ANY LOCATION IS TO BE DETERMINED BY THE PUBLIC SAFETY OFFICIAL.
12. AS CONSTRUCTION OPERATIONS CHANGE, SO SHALL WARNING SIGNS. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING AND ARRANGING SIGNS AS CONSTRUCTION VARIES AND PROCEEDS.
13. THE CONTRACTOR SHALL NOTIFY EACH ABUTTER IN WRITING AT LEAST 24 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY CLOSURE OF ACCESS, SUCH AS EXISTING PAVEMENT EXCAVATION, TEMPORARY DRIVEWAY PAVEMENT PLACEMENT AND SIMILAR OPERATIONS.
14. ADVISORY SPEED PLATES (W13-1) TO BE USED WHERE APPROPRIATE.
15. THE WORK ZONE AS SHOWN ON THESE PLANS IS REPRESENTATIVE ONLY AND MAY VARY IN BOTH LENGTH AND LOCATION AS CONSTRUCTION PROGRESSES. REGARDLESS OF THESE VARIATIONS, THE OFFSET DISTANCES TO THE TRAFFIC CONTROL DEVICES SHOWN SHALL BE MAINTAINED.
16. THE NUMBER AND LOCATION OF ALL SIGNS AND DEVICES SHALL BE AS DEEMED NECESSARY BY THE CITY'S PUBLIC SAFETY OFFICIAL FOR THE SAFE AND EFFICIENT PERFORMANCE OF THE WORK AND THE SAFETY OF THE TRAVELING PUBLIC. ALL WARNING DEVICES SHALL BE SUBJECT TO REMOVAL, REPLACEMENT AND/OR REPOSITIONING BY THE CONTRACTOR AS OFTEN AS DEEMED NECESSARY BY THE CITY'S PUBLIC SAFETY OFFICIAL.
17. NO TRENCH SHALL BE LEFT OPEN OVERNIGHT. IF IT BECOMES NECESSARY FOR SAID TRENCH TO BE LEFT OVERNIGHT, THEN IT SHALL BE COVERED WITH STEEL PLATES AND A COLD PATCH TRANSITION SHALL BE APPLIED AROUND THE STEEL PLATE LIMITS.
18. DETOURS SHALL BE COORDINATED WITH CITY ENGINEERS.
19. ALL OPERATIONS SHALL BE CONDUCTED SO AS NOT TO INTERFERE WITH, INTERRUPT, OR ENDANGER THE GENERAL PUBLIC OR THE TRAFFIC FLOW.
20. NO CONSTRUCTION EQUIPMENT OR MATERIALS (EXCEPT THOSE IN USE) SHALL BE STORED CLOSER THAN 8 FEET TO THE EDGE OF TRAVELED LANES.
21. SEE SPECIFICATION SECTION 01550



TWO LANE ROADWAY WITH ONE LANE CLOSED
NO SCALE

1
C-505

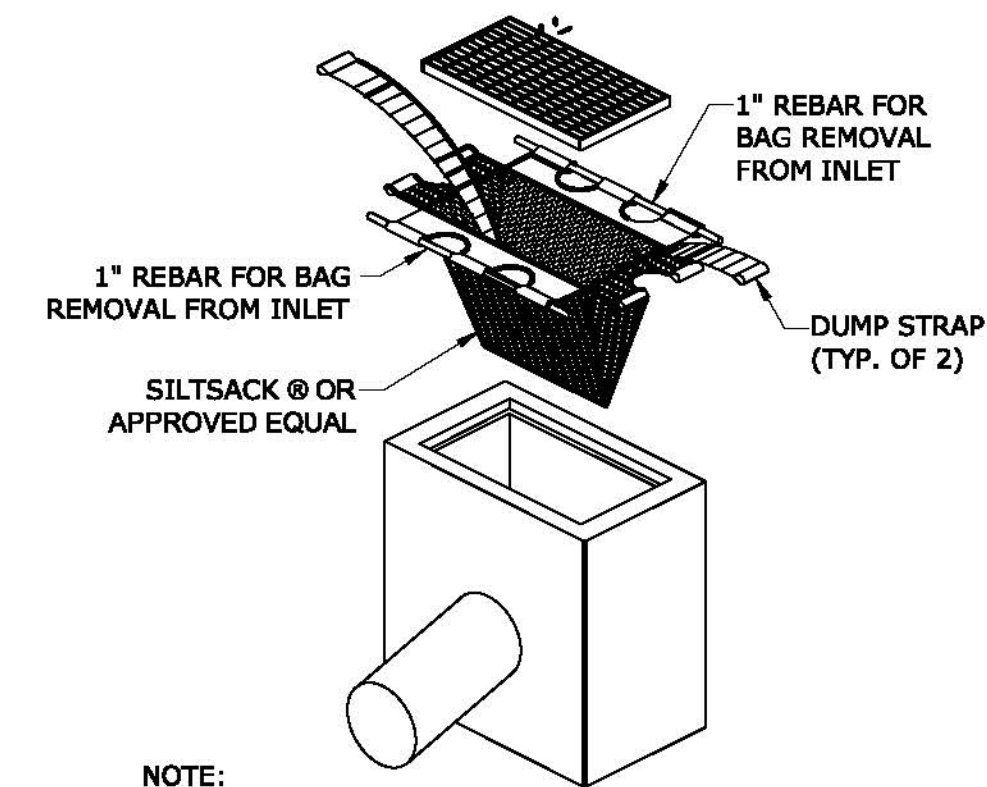


ONE LANE ROADWAY WITH ONE LANE CLOSED
NO SCALE

2
C-505

IDENTIFICATION NUMBER	SIZE OF SIGN (IN)		TEXT	AREA IN SQ. FT.
	WIDTH	HEIGHT		
W20-1A	36	36	ROAD CLOSED AHEAD	9
R11-2	60	30	ROAD CLOSED AHEAD LOCAL TRAFFIC ONLY	12.5
W20-8	36	36	POLICE OFFICER AHEAD	9
R9-9	36	18	SIDEWALK CLOSED	4.5
W13-1	24	24	XX MPH (SPEED DETERMINED BY CITY ENGINEER)	4

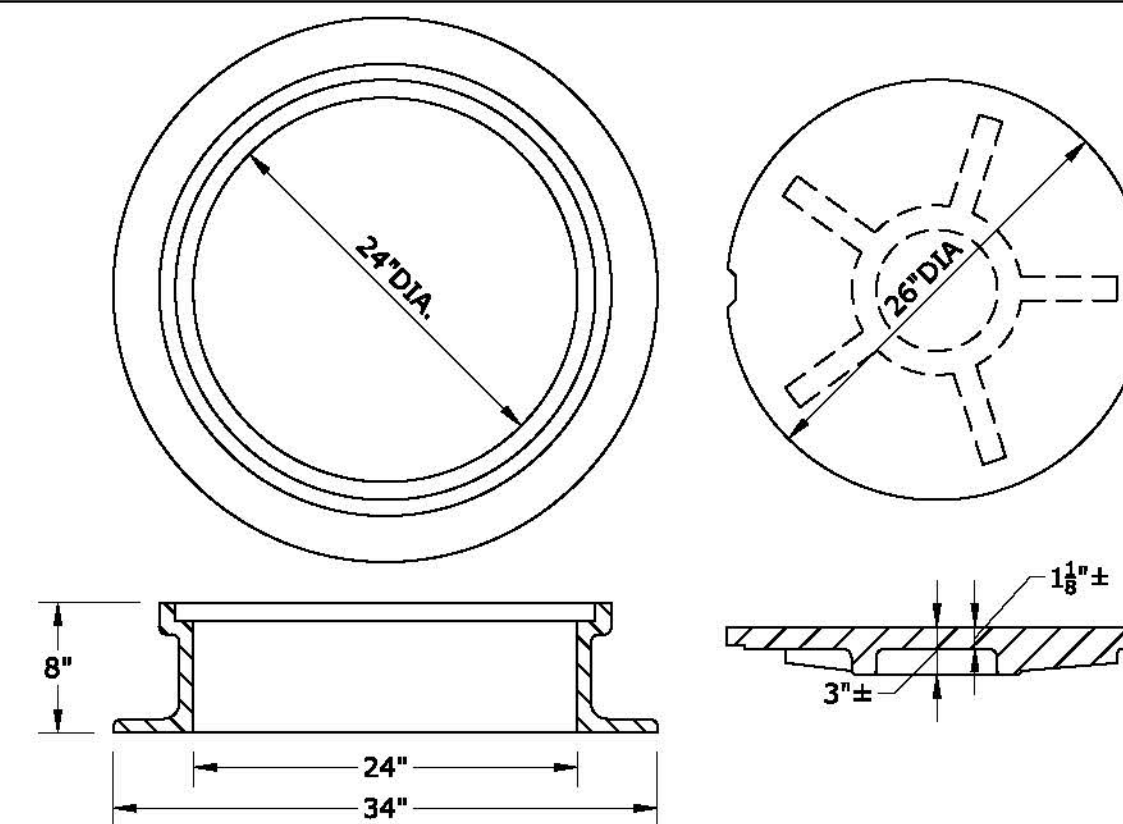
SIGN LEGEND
NO SCALE



NOTE:
INSTALL PER MANUFACTURERS RECOMMENDATIONS.

INLET PROTECTION BARRIER
NO SCALE

4
-



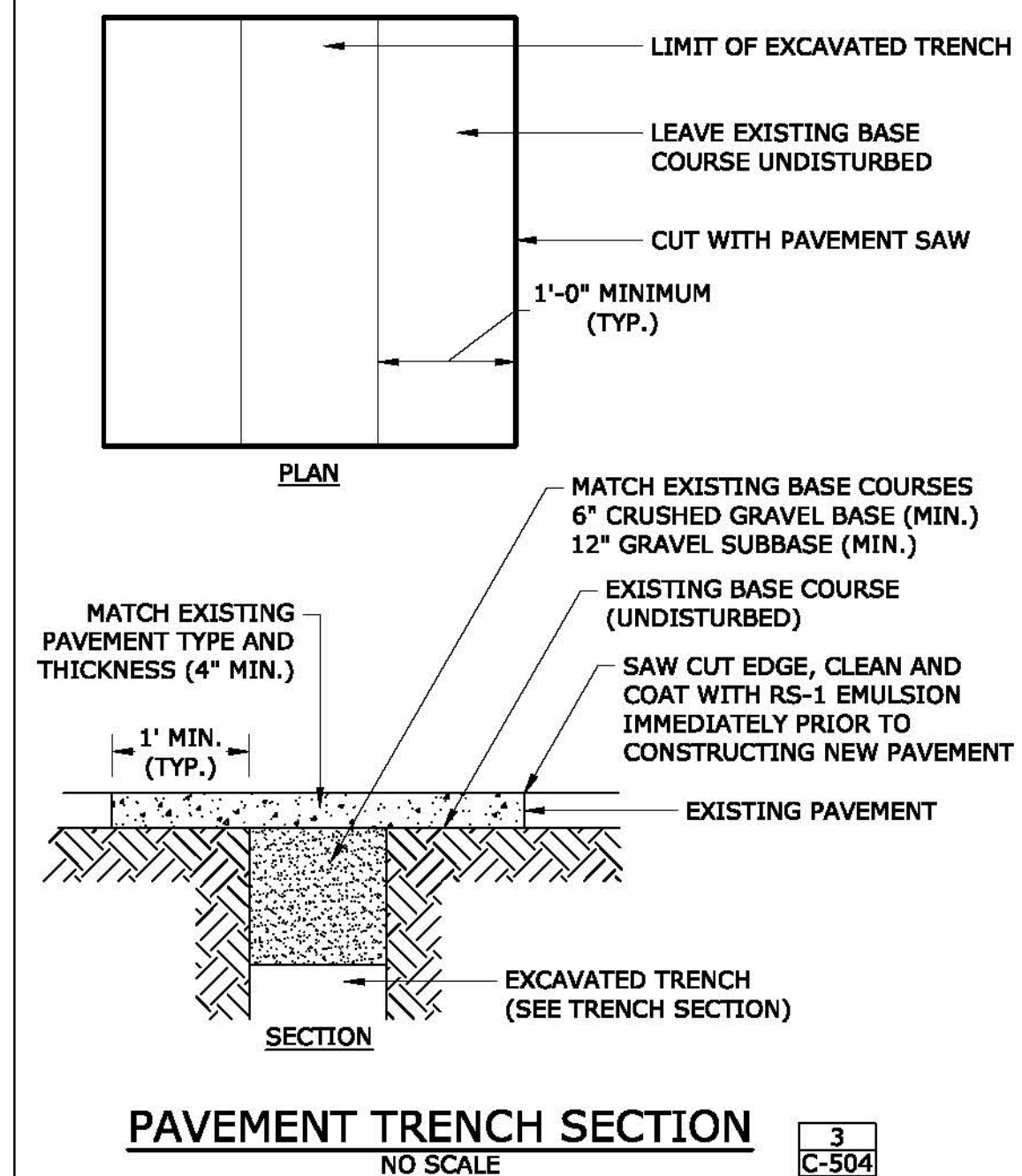
STANDARD MANHOLE FRAME
MINIMUM WEIGHT: 240 LBS.

STANDARD MANHOLE COVER
MINIMUM WEIGHT: 200 LBS.

- NOTES:
1. FRAME AND COVER SHALL BE PROVIDED FROM THE SAME MANUFACTURER.
 2. LETTERING SHALL BE CAST INTO COVERS AS SPECIFIED.

MANHOLE FRAME & COVER
NO SCALE

5
-



PAVEMENT TRENCH SECTION
NO SCALE

3
C-504



ISSUED FOR BIDDING

Adams Shore/Houghs Neck Seawall Repairs & Improvements

City of Quincy

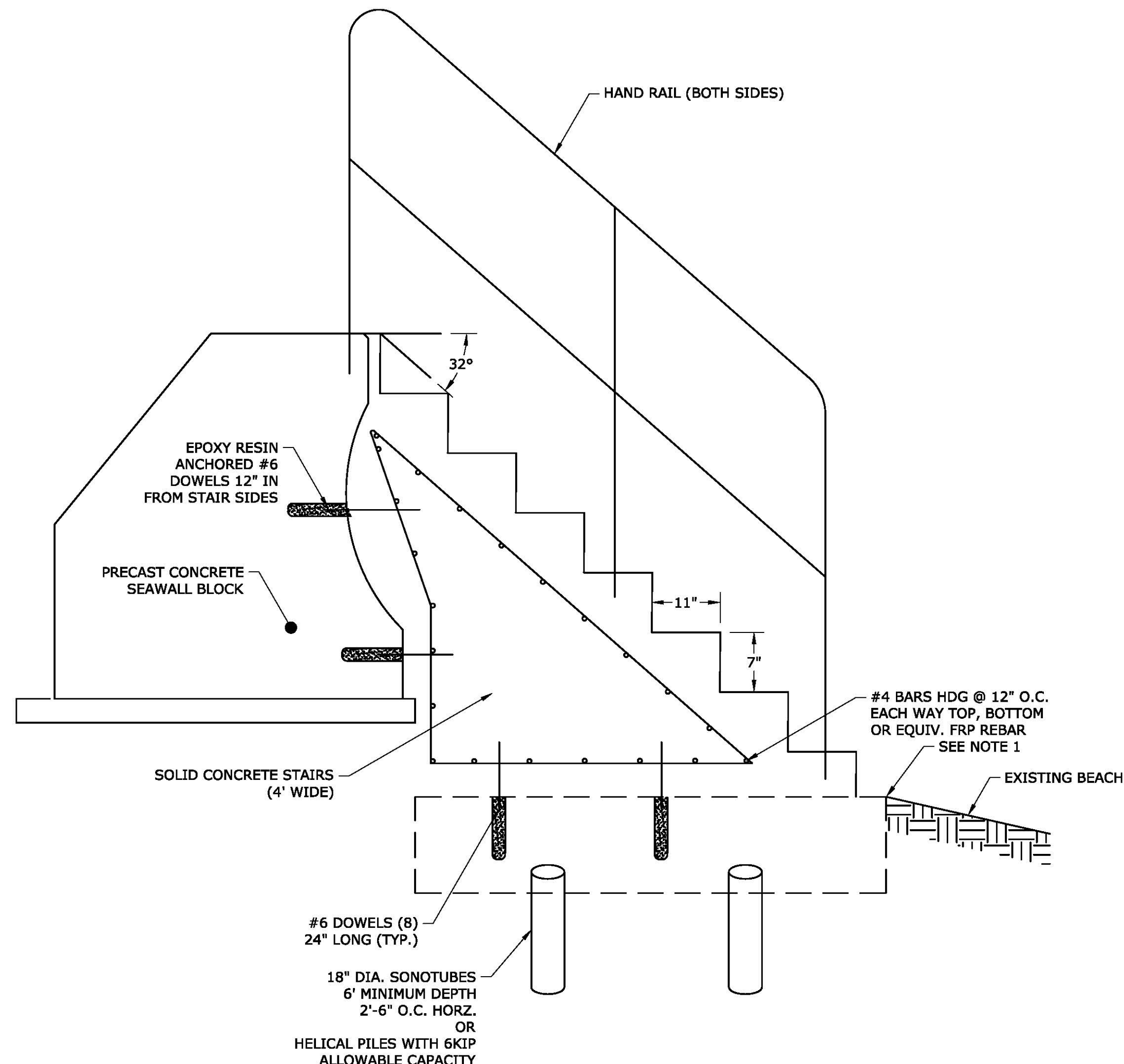
Quincy, Massachusetts

MARK	DATE	DESCRIPTION
PROJECT NO:	Q-0019-010	
DATE:	July 10, 2018	
FILE:	Q-0019-010-G-DETAILS.DWG	
DRAWN BY:	JPC	
CHECKED:	KAM	
APPROVED:	BLM	

DETAILS

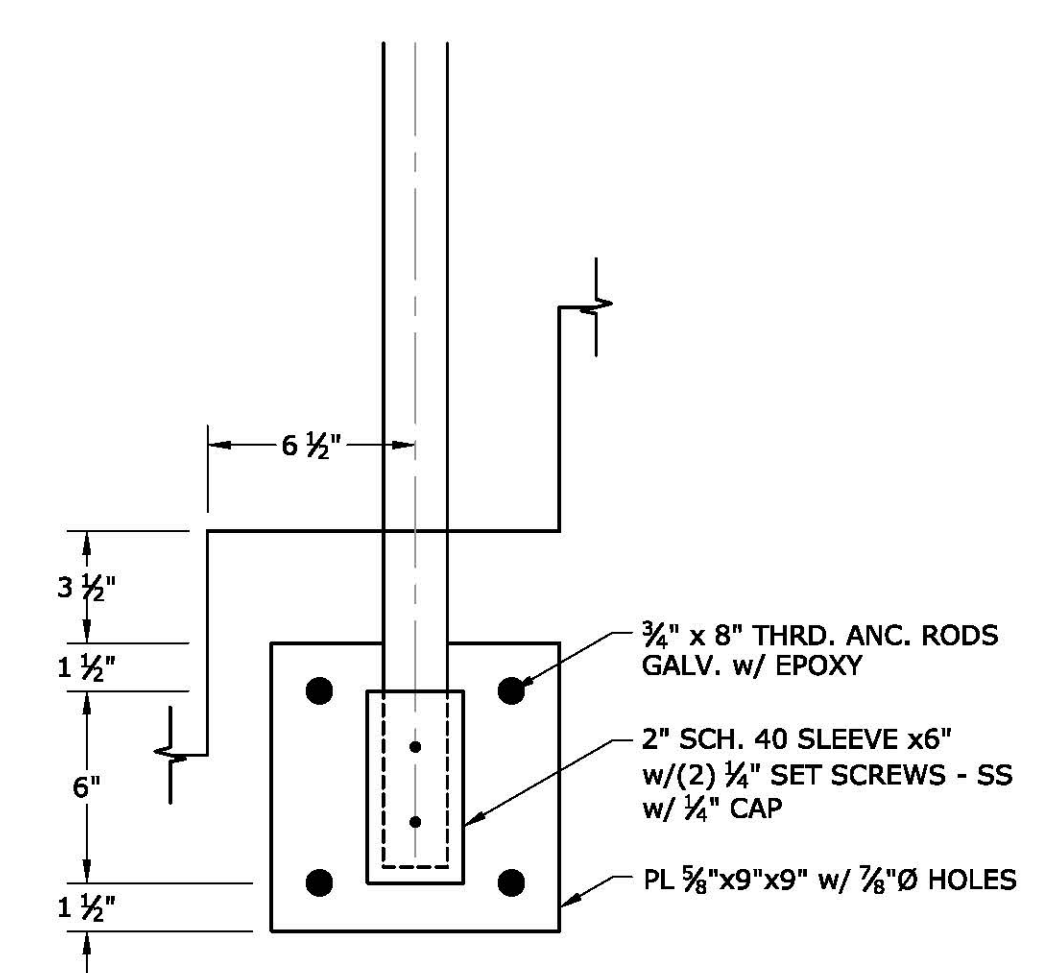
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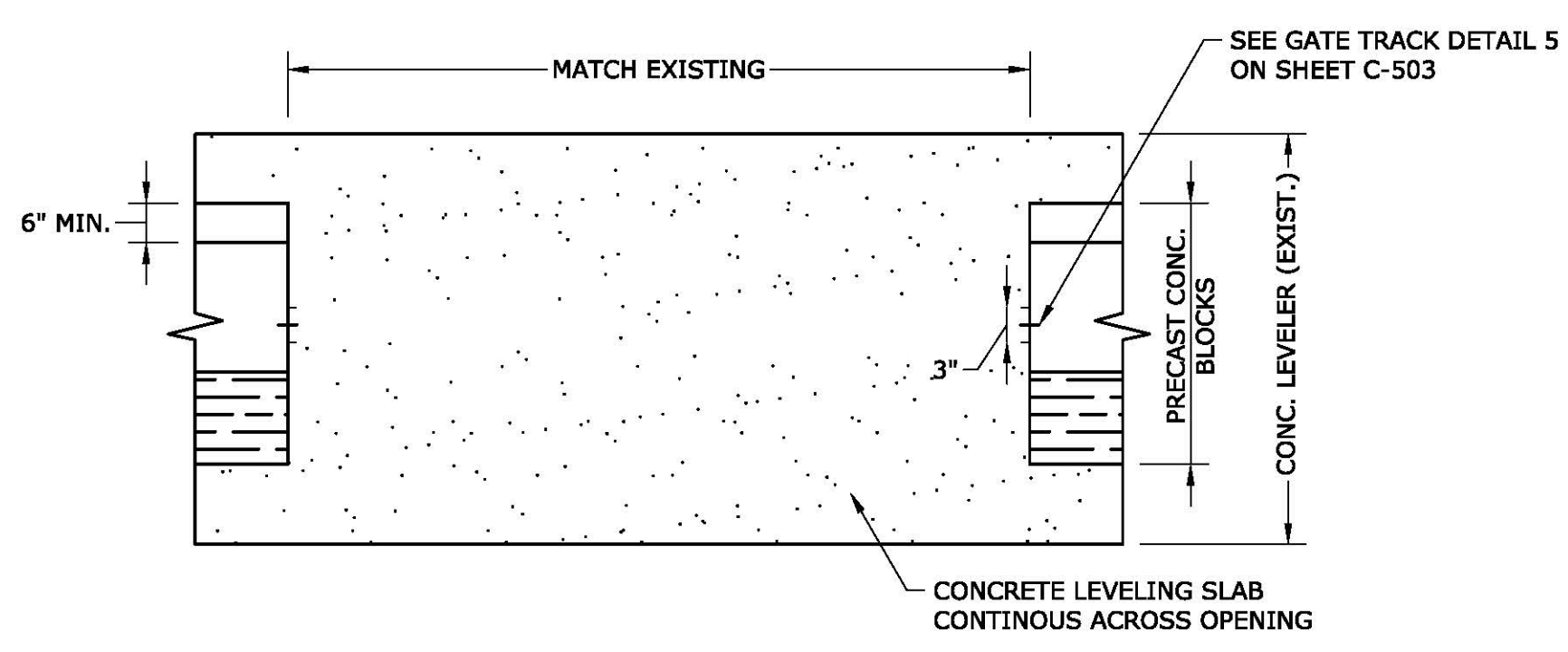


NOTE:
1. EXACT CONFIGURATION OF CONCRETE STAIRS MAY VARY. BOTTOM OF PROPOSED SOLID CORE CONCRETE STAIR SHALL NOT EXTEND BEYOND THE FOOTPRINT OF THE EXISTING SOLID CORE CONCRETE STAIRS. MINIMUM SIZE SHALL BE THE STAIR FOOTPRINT.

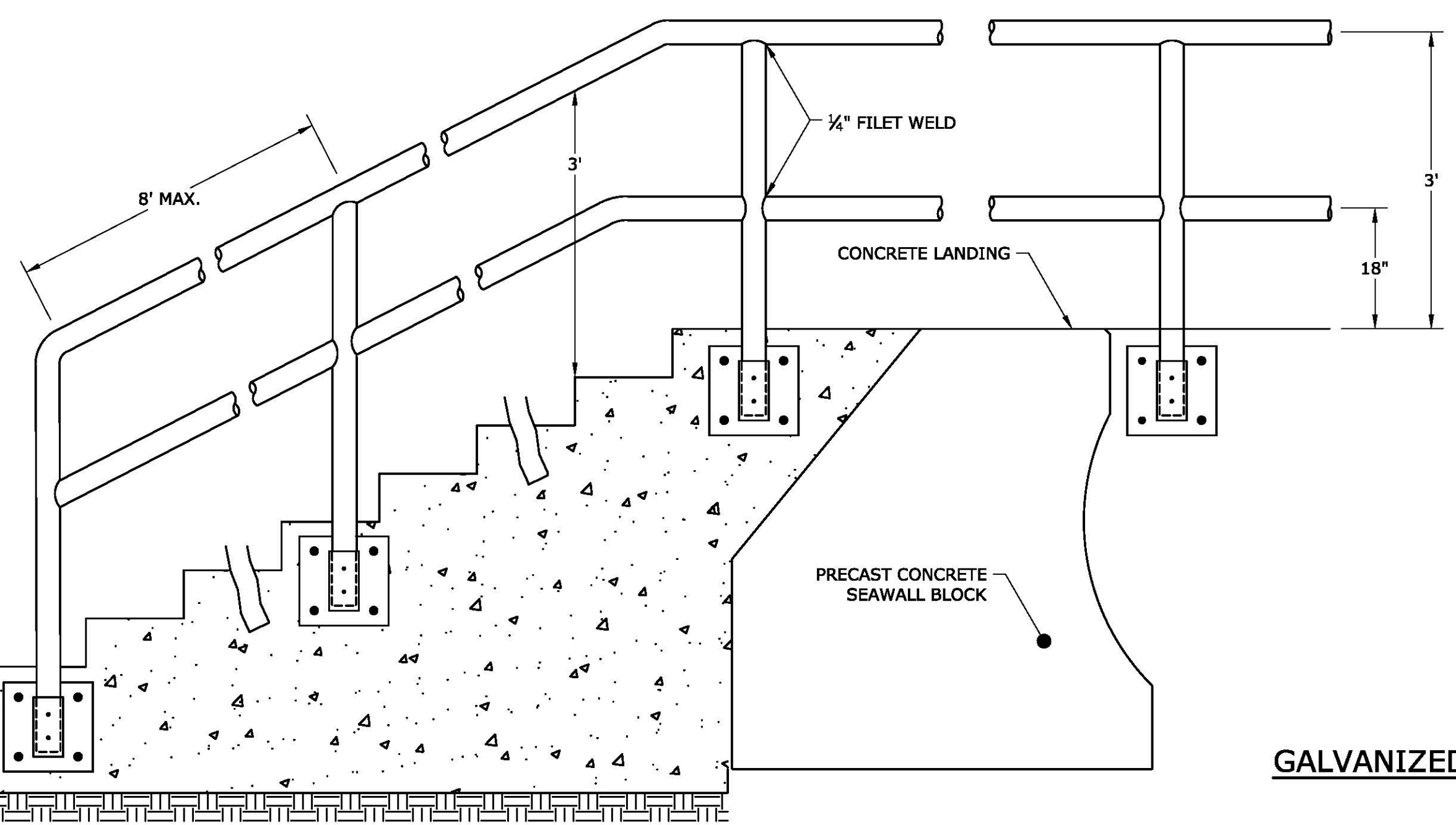
SOLID CONCRETE STAIRS DETAIL 3
NO SCALE



TYPICAL RAIL BRACKET 5
NO SCALE

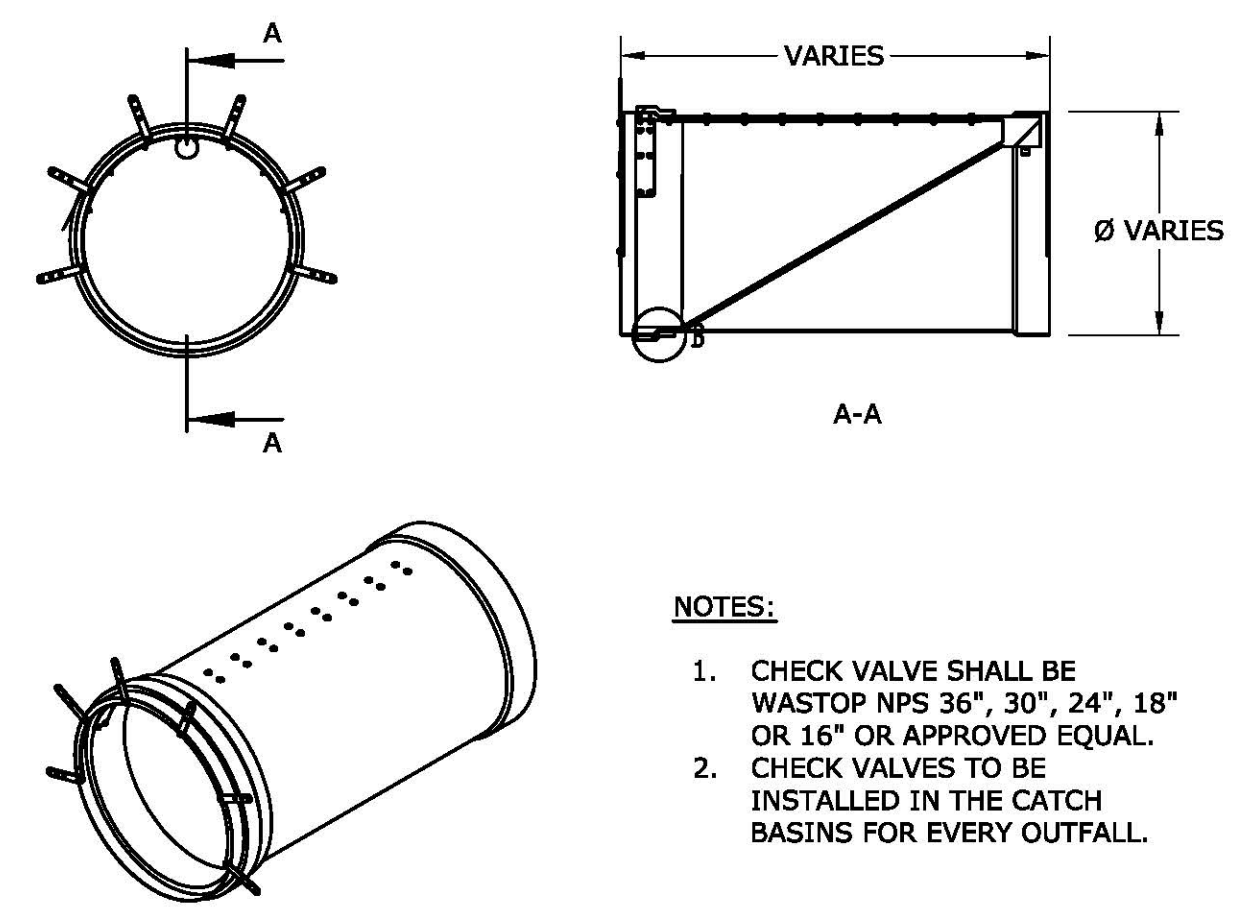


STOP LOG OPENING: PLAN VIEW 2
NO SCALE



NOTES:
1. WHEN USED ON A CURVE ALL RAILINGS TO BE CURVED TO LINE BEFORE ERECTION.
2. GALV. STEEL PIPE FENCE & HAND RAIL TO FOLLOW GRADE OF COPING OR STRUCTURE.
3. STANDARD OR SPECIAL FITTING ARE TO BE USED OR JOINTS MAY BE WELDED.
4. FOR DESCRIPTIONS, MATERIALS AND CONSTRUCTION METHODS, SEE LATEST SPECS.
5. STAIR STEPS TO BE 12" WIDE. STAIR RISER TO BE 6-7" HIGH. STAIR INCLINE NOT TO EXCEED 45 DEGREES.
6. EXACT CONFIGURATION OF CONCRETE STAIRS MAY VARY. BOTTOM OF PROPOSED SOLID CORE CONCRETE STAIR SHALL NOT EXTEND BEYOND THE FOOTPRINT OF THE EXISTING SOLID CORE CONCRETE STAIRS.
7. RAILINGS BELOW MHW TO BE STAINLESS STEEL, SS MOUNTS & BOLTS.

GALVANIZED STEEL PIPE HANDRAIL 6
NO SCALE



NOTES:
1. CHECK VALVE SHALL BE WASTOP NPS 36", 30", 24", 18" OR 16" OR APPROVED EQUAL.
2. CHECK VALVES TO BE INSTALLED IN THE CATCH BASINS FOR EVERY OUTFALL.

IN-LINE CHECK VALVE 7
NO SCALE

ISSUED FOR BIDDING

Adams Shore/Houghs Neck Seawall Repairs & Improvements

City of Quincy

Quincy, Massachusetts

MARK	DATE	DESCRIPTION
1	7/2/2019	ADDENDUM 1

PROJECT NO: Q-0019-010
DATE: July 10, 2018
FILE: Q-0019-010-G-DETAILS.DWG
DRAWN BY: JAK
CHECKED: KAM
APPROVED: BLM

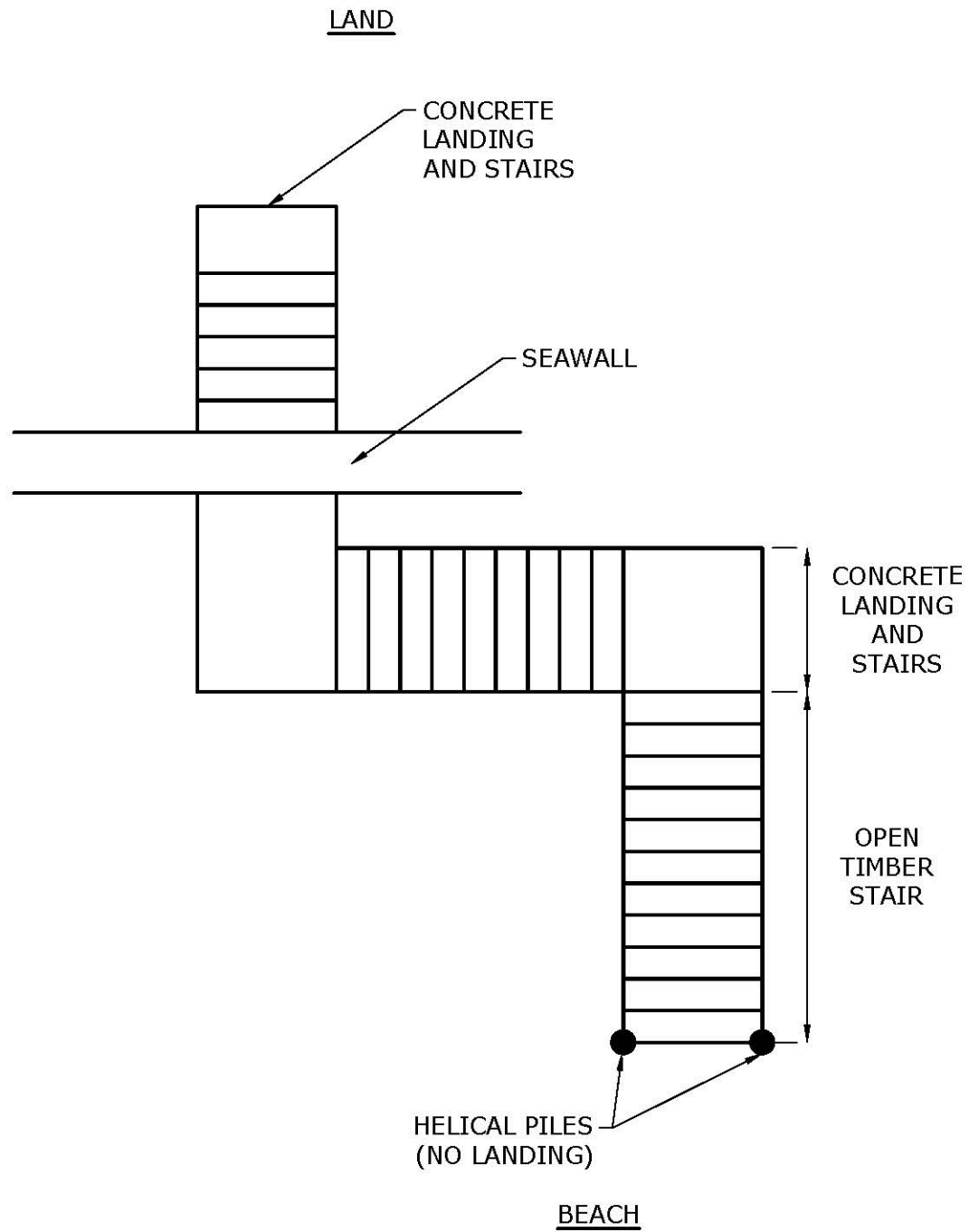
DETAILS

SCALE: AS SHOWN

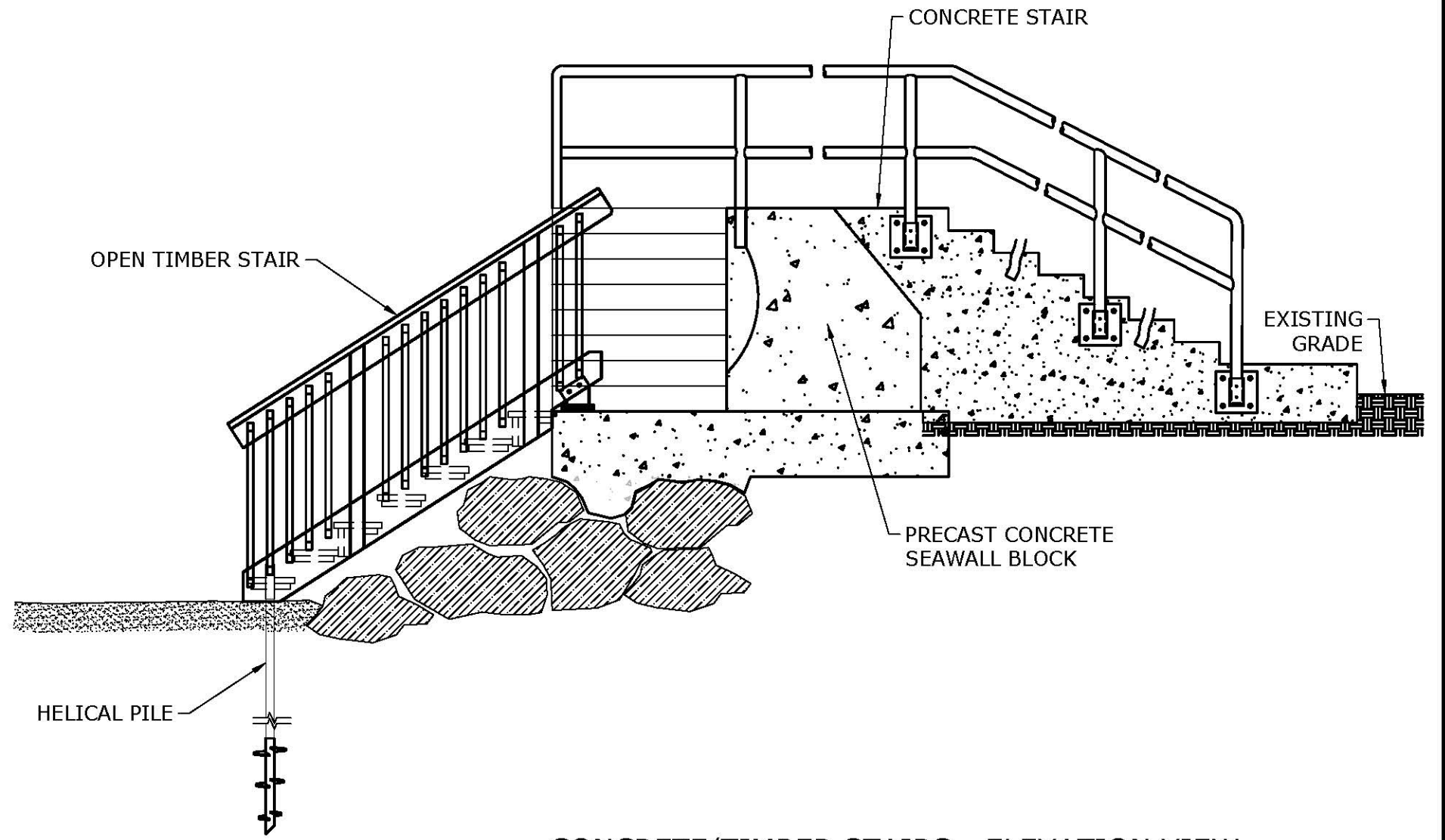
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Jan 10, 2020 8:41am Plotted By: B.L. Tighe & Bond, Inc. J:\Q00019 Quincy, MA Consultant Review Services\Q0019-010 Adams Shore Houghs Neck Seawall\Drawings\Figures\AutoCAD\Sheet\Q0019-010 Stair Detail.dwg



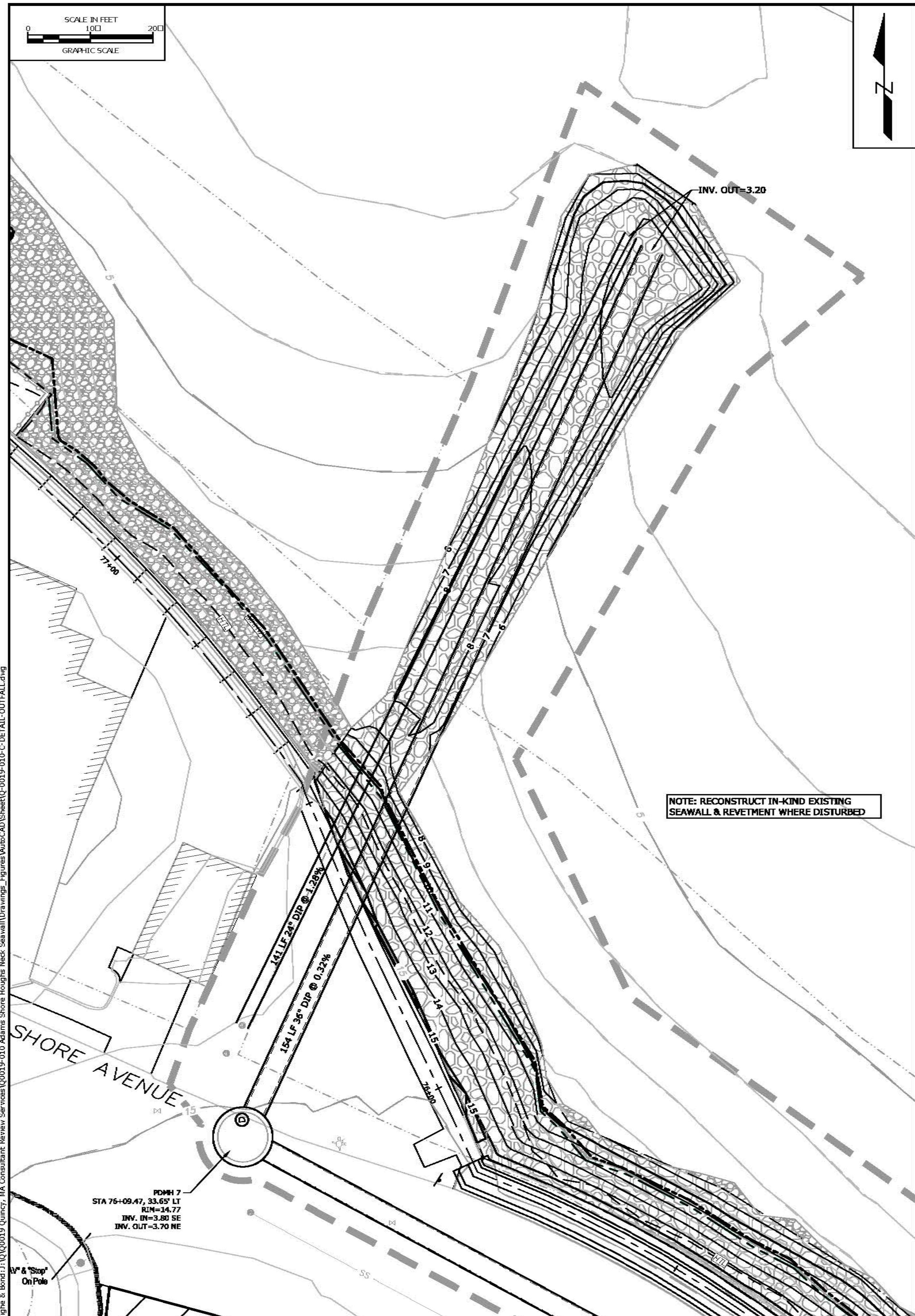
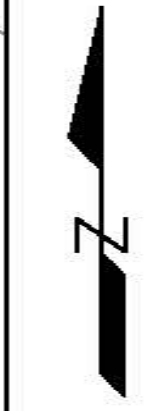
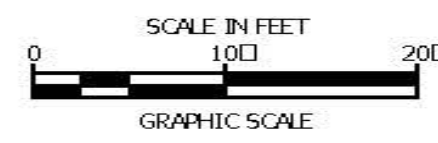
CONCRETE/TIMBER STAIRS - PLAN VIEW
NO SCALE



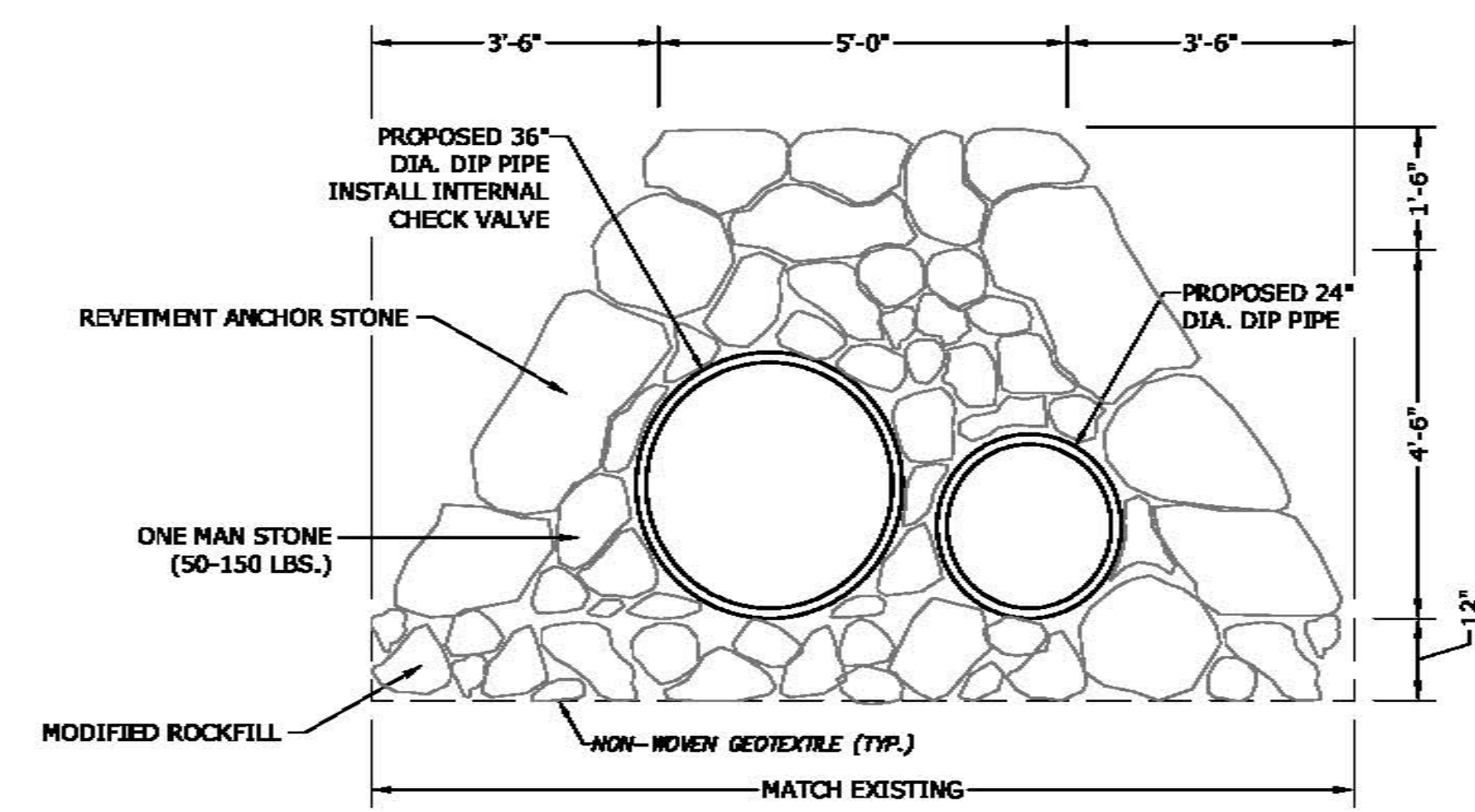
CONCRETE/TIMBER STAIRS - ELEVATION VIEW
NO SCALE

CONCRETE / TIMBER STAIRS DETAIL	
ADAMS SHORE/HOUGH'S NECK SEAWALL QUINCY, MASSACHUSETTS	
DATE:	1/10/2020
SCALE:	NTS
FIGURE:	#1





NOTE: RECONSTRUCT IN-KIND EXISTING SEAWALL & REVETMENT WHERE DISTURBED



NOTES:

1. GROIN TO BE RECONSTRUCTED IN-KIND FOR CONFORMANCE WITH PREVIOUSLY ISSUED PERMITS.
2. RECONSTRUCT EXISTING 24" OUTFALL PIPE TO FIT WITH 36" PROPOSED OUTFALL PIPE INSIDE RECONSTRUCTED STONE GROIN.
3. REVETMENT IS SHOWN FOR SCHEMATIC PURPOSES ONLY.
4. NON-WOVEN GEOTEXTILE BELOW STONE REVETMENT SHALL BE PROPEX GEOTEX 1601 OR APPROVED EQUAL.
5. SURFACE ARMOR STONE SHALL HAVE AVERAGE WEIGHT EQUAL TO 4 TONS.
6. CONTRACTOR TO VERIFY SPACING BETWEEN EXISTING OUTFALL AND PROPOSED OUTFALL.

NARRAGANSETT ROAD OUTFALL
NO SCALE

ISSUED FOR BIDDING

Adams Shore/Houghs Neck Seawall Repairs & Improvements

City of Quincy

Quincy, Massachusetts

MARK	DATE	DESCRIPTION
1	7/12/18	OUTFALL DETAIL REV.

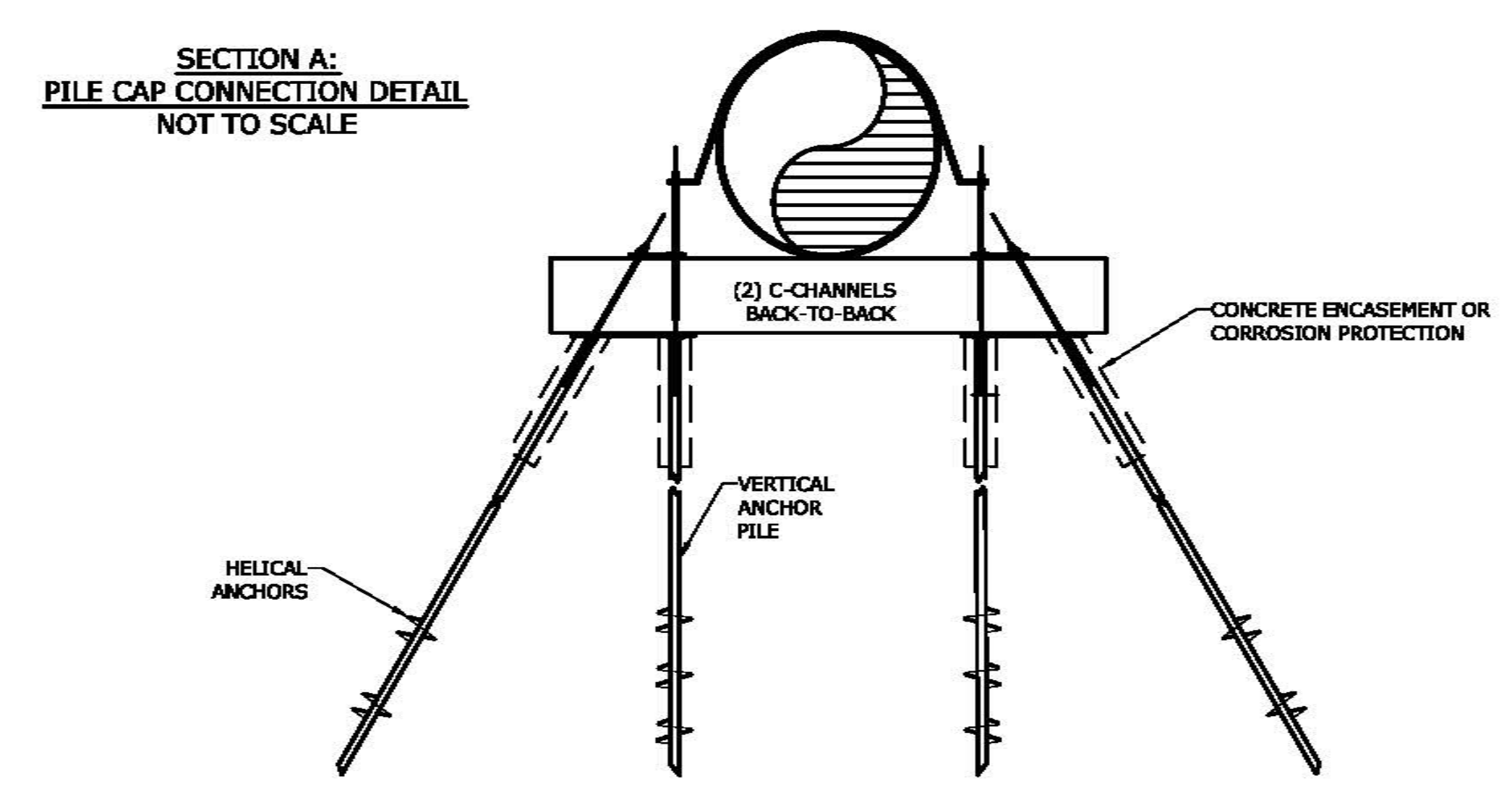
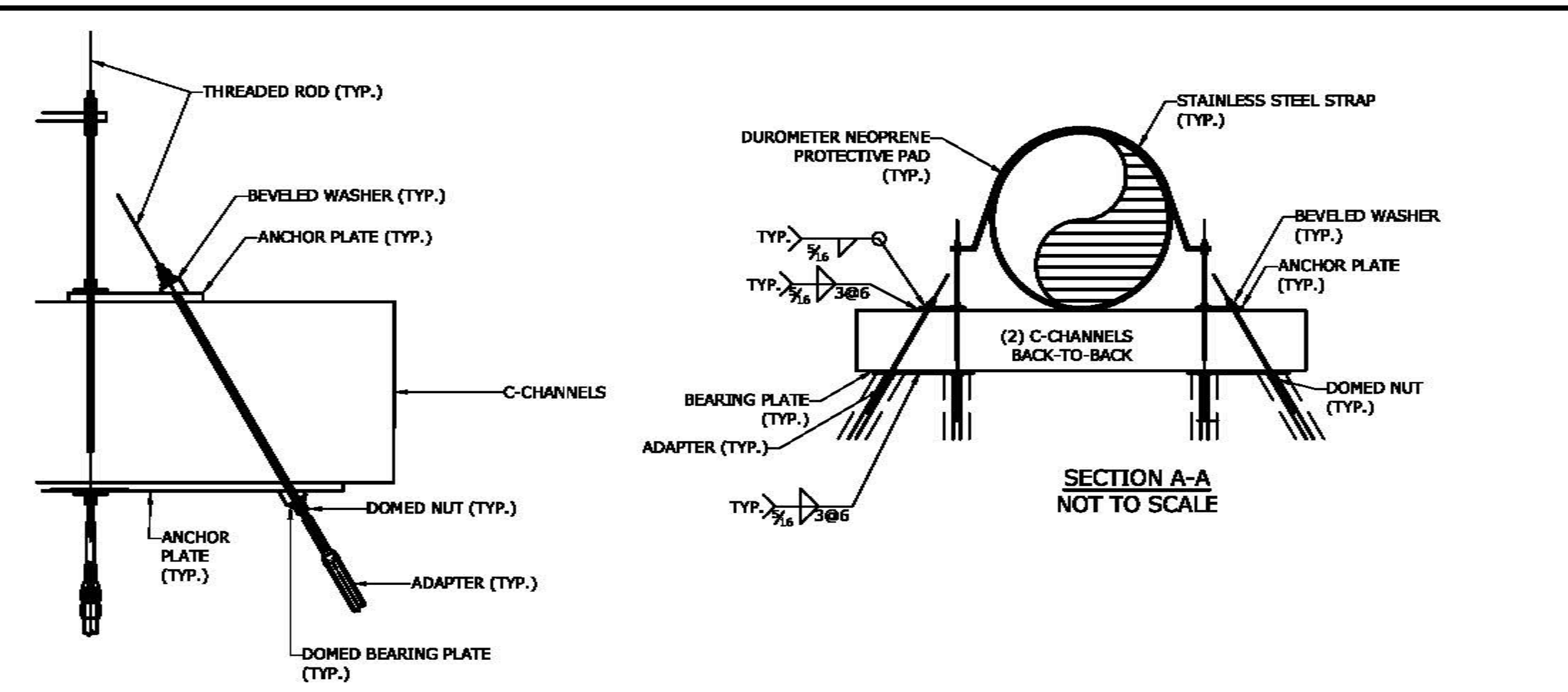
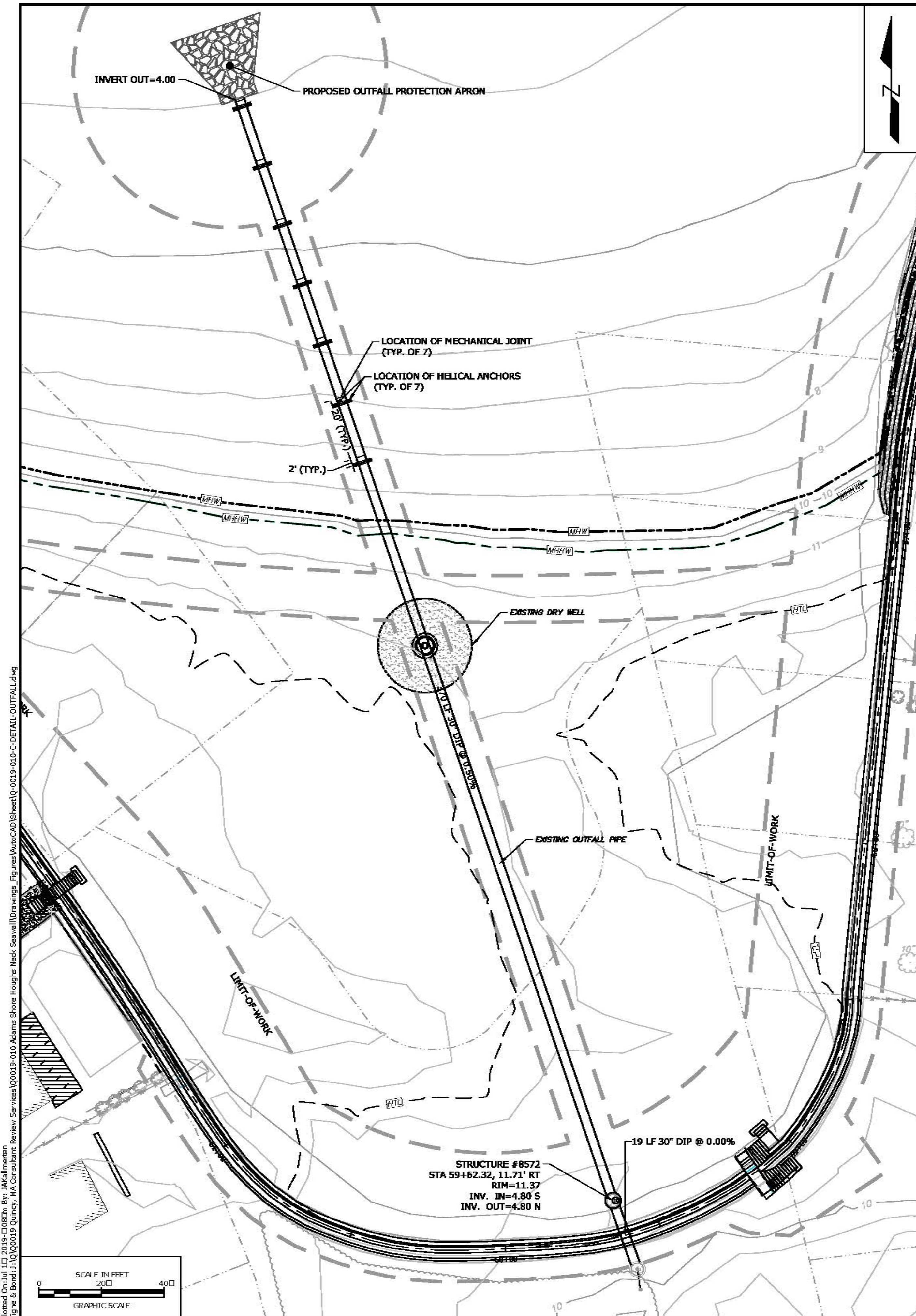
PROJECT NO: Q-0019-010
 DATE: July 10, 2018
 FILE: Q-0019-010-C-DETAIL-OUTFALL.DWG
 DRAWN BY: JPC
 CHECKED: KAM
 APPROVED: BLM

PROPOSED OUTFALL DETAILS

SCALE: AS SHOWN

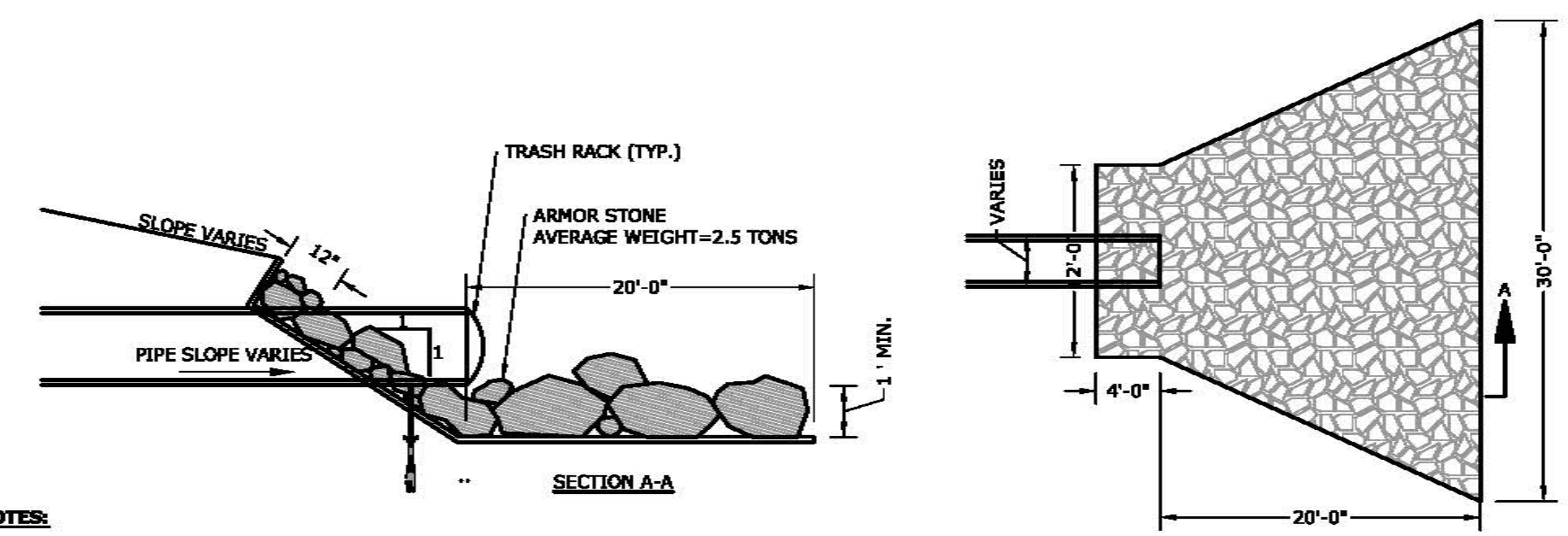
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 Title: C-08



- NOTES:**
1. ALL STEEL SHALL BE HOT DIP GALVANIZED PER ASTM-A153 (LATEST REVISION).
 2. PIPE BAND SHALL BE CAPABLE OF RESISTING 1,500 LBF.
 3. HELICAL ANCHORS SHALL BE MANUFACTURED BY A.B. CHANCE COMPANY OR APPROVED EQUAL.
 4. CONTRACTOR SHALL PROVIDE PILE AND PIPE SUPPORT DESIGN AND SUPPORTING CALCULATION STAMPED BY A LICENSED PROFESSIONAL ENGINEER IN THE COMMONWEALTH OF MASSACHUSETTS.
 5. TRIM BACK THREAD ROD ENDS AFTER FINAL TENSIONING AND INSTALL PLASTIC REBAR END CAPS (TYP) PRIOR TO BACKFILLING.

PIPE PILE SUPPORT ASSEMBLY
NOT TO SCALE



- NOTES:**
1. ARMOR STONE TO BE PLACED AT PROPOSED OUTFALL OUTLETS OF 30" DIA. OR GREATER.
 2. NON-WOVEN GEOTEXTILE BELOW STONE REVETMENT SHALL BE PROPEX GEOTEX 1601 OR APPROVED EQUAL.

OUTLET PROTECTION APRON
NOT TO SCALE

ISSUED FOR
BIDDING

**Adams
Shore/Houghs
Neck Seawall
Repairs &
Improvements**

City of Quincy

Quincy,
Massachusetts

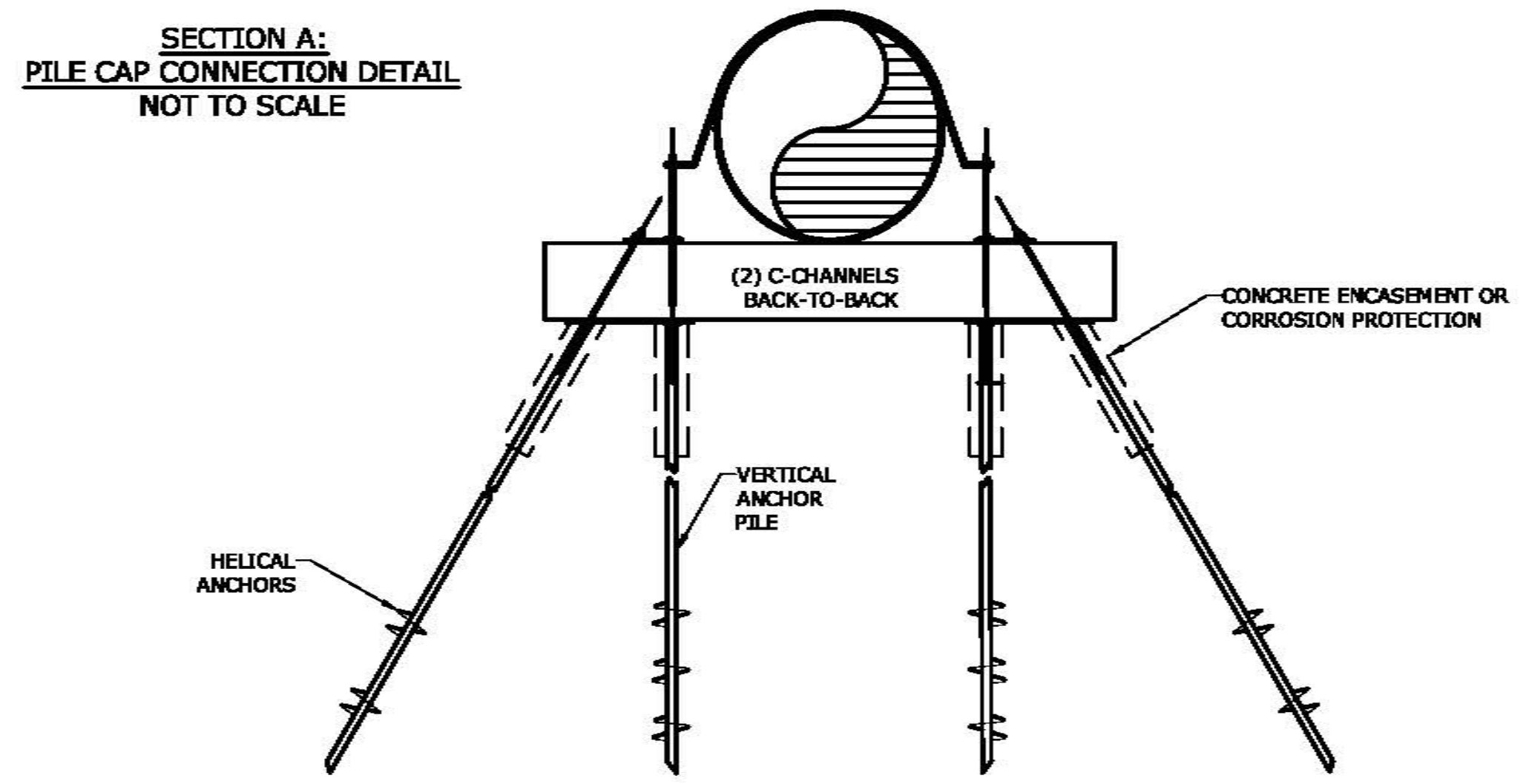
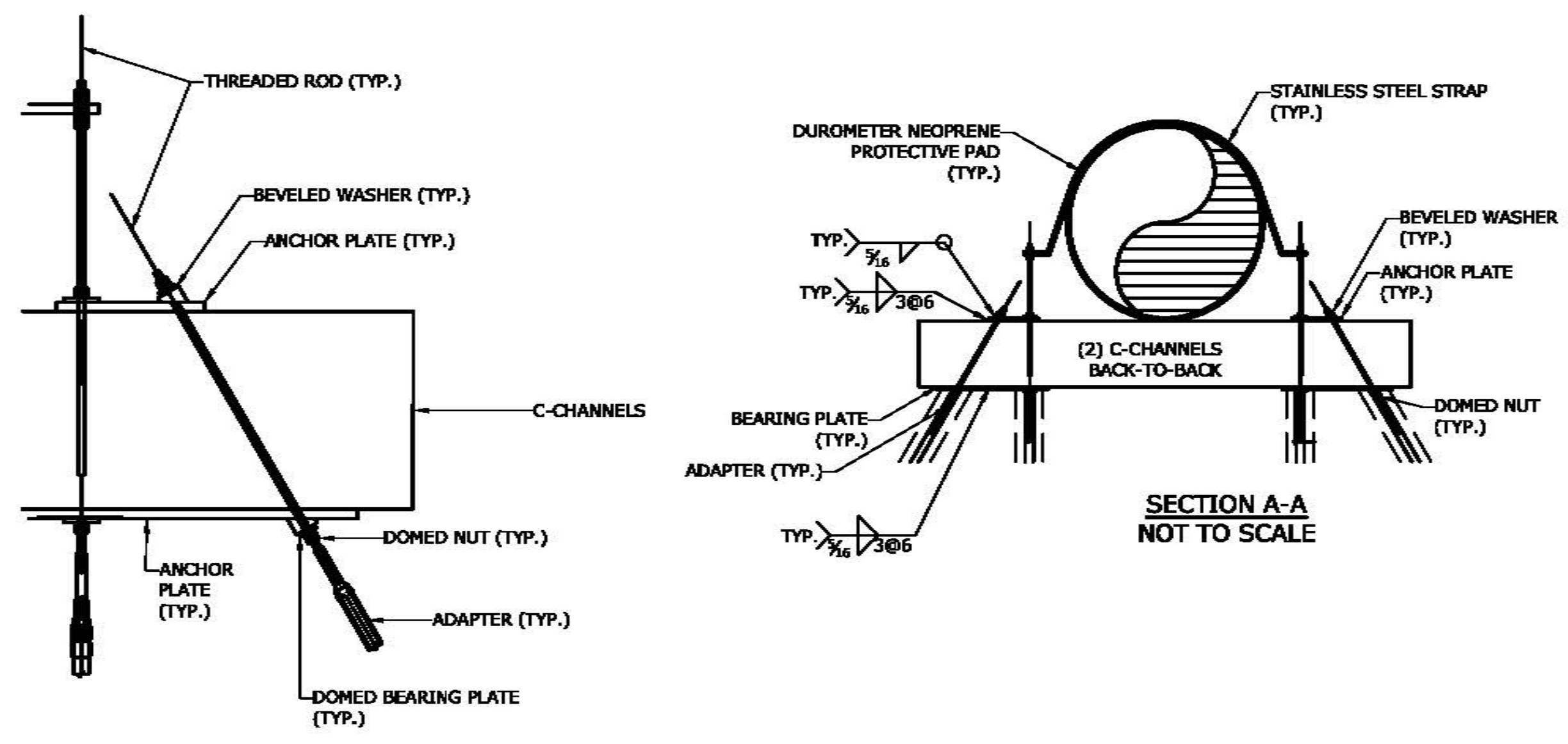
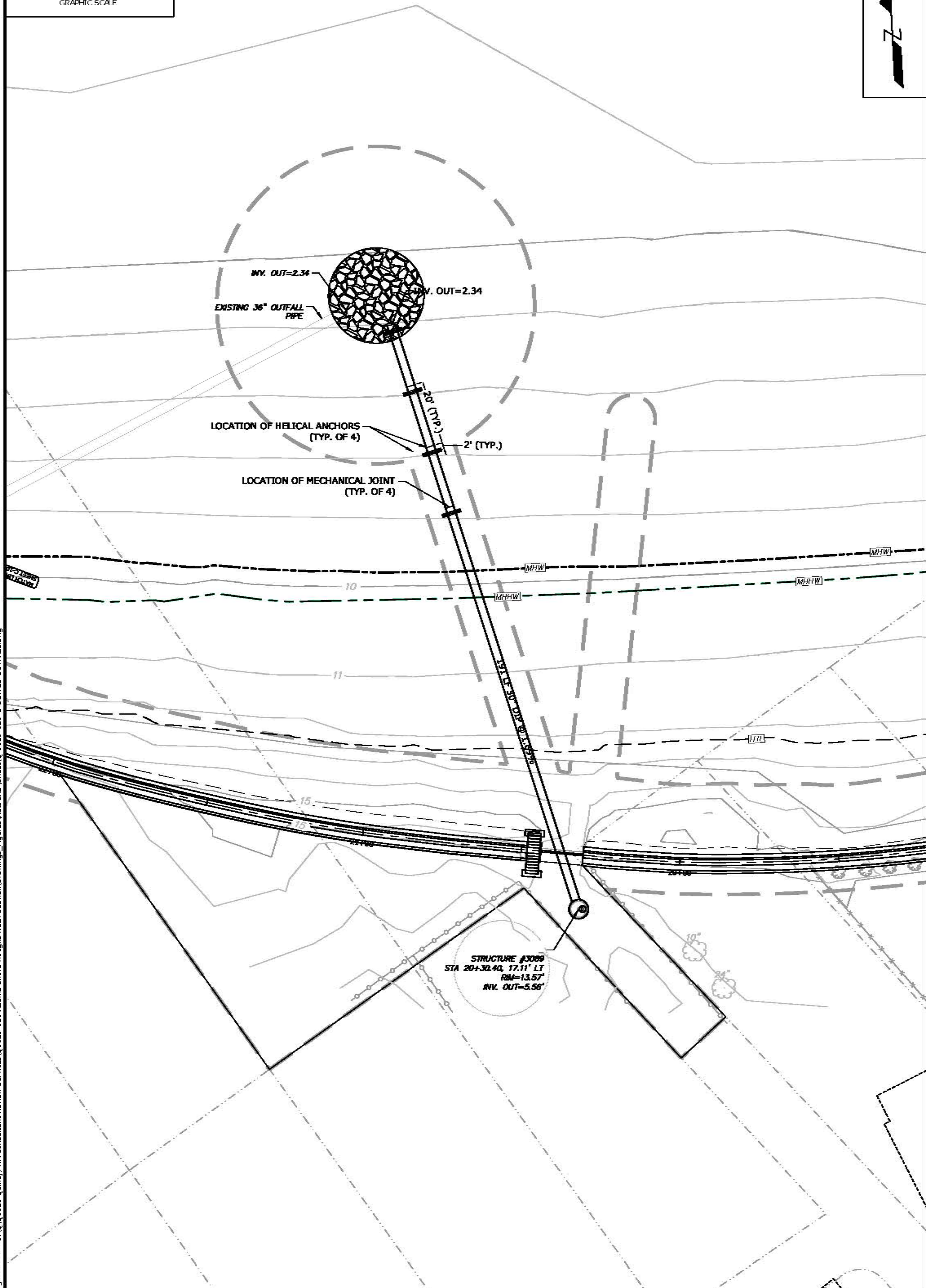
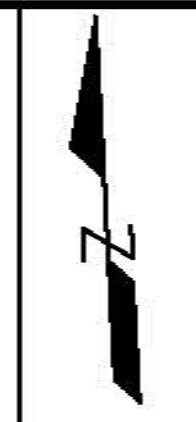
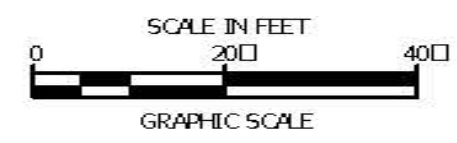
MARK	DATE	DESCRIPTION
PROJECT NO.	Q-0019-010	
DATE:	July 10, 2018	
FILE:	Q-0019-010-C-DETAIL-OUTFALL.DWG	
DRAWN BY:	JPC	
CHECKED:	KAM	
APPROVED:	BLM	

PROPOSED OUTFALL
DETAILS

SCALE: AS SHOWN

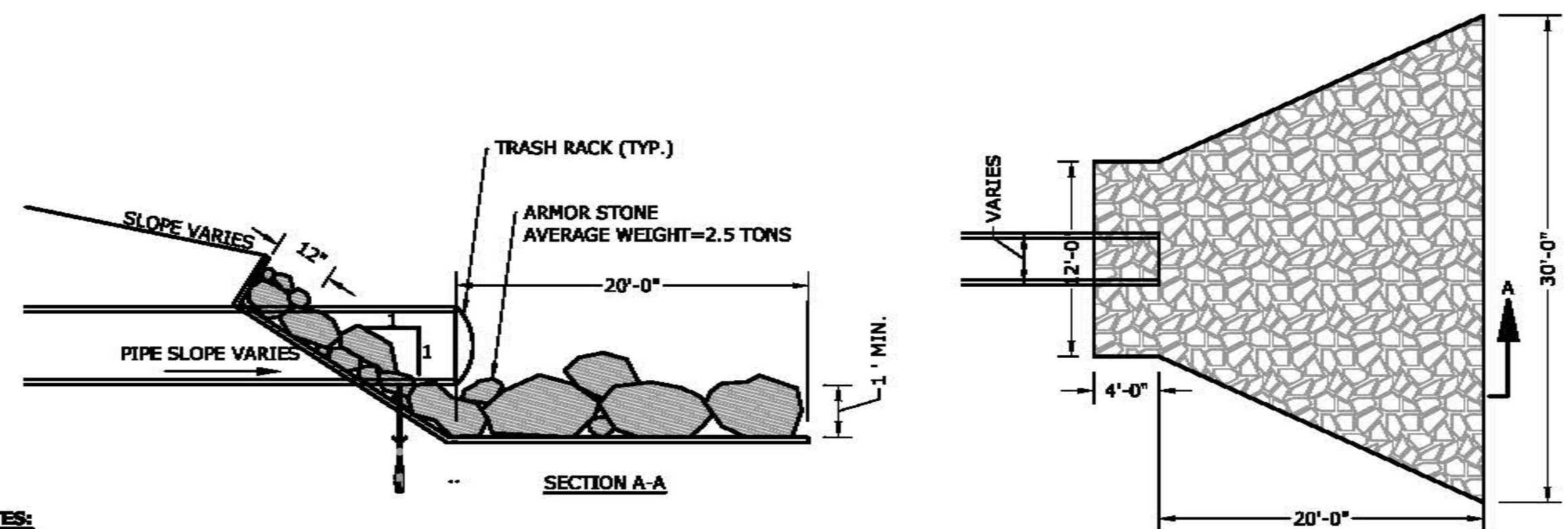
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Date Saved: 07/17/2018 09:02AM By: MKM/llm/etn
 Project: Adams Shore/Houghs Neck Seawall Repairs & Improvements
 Tighe & Bond 3110 Quince Orchard Road, Suite 100, Gaithersburg, MD 20878
 File: Q-0019-010-C-DETAIL-OUTFALL.dwg



- NOTES:**
1. ALL STEEL SHALL BE HOT DIP GALVANIZED PER ASTM-A153 (LATEST REVISION).
 2. PIPE BAND SHALL BE CAPABLE OF RESISTING 1,500 LBF.
 3. HELICAL ANCHORS SHALL BE MANUFACTURED BY A.B. CHANCE COMPANY OR APPROVED EQUAL
 4. CONTRACTOR SHALL PROVIDE PILE AND PIPE SUPPORT DESIGN AND SUPPORTING CALCULATION STAMPED BY A LICENSED PROFESSIONAL ENGINEER IN THE COMMONWEALTH OF MASSACHUSETTS
 5. TRIM BACK THREAD ROD ENDS AFTER FINAL TENSIONING AND INSTALL PLASTIC REBAR END CAPS (TYP) PRIOR TO BACKFILLING.

PIPE PILE SUPPORT ASSEMBLY
NOT TO SCALE



- NOTES:**
1. ARMOR STONE TO BE PLACED AT PROPOSED OUTFALL OUTLETS OF 30" DIA. OR GREATER
 2. NON-WOVEN GEOTEXTILE BELOW STONE REVETMENT SHALL BE PROPEX GEOTEX 1601 OR APPROVED EQUAL

OUTLET PROTECTION APRON
NOT TO SCALE

ISSUED FOR BIDDING

Adams Shore/Houghs Neck Seawall Repairs & Improvements

City of Quincy

Quincy, Massachusetts

MARK	DATE	DESCRIPTION

PROJECT NO: Q-0019-010
 DATE: July 10, 2018
 FILE: Q-0019-010-C-DETAIL-OUTFALL.DWG
 DRAWN BY: JPC
 CHECKED: KAM
 APPROVED: BLM

PROPOSED OUTFALL DETAILS

SCALE: AS SHOWN

Date Saved: 07/17/2018 09:07AM By: JMcMillen
 Tighe & Bond 2100 Quincy, MA
 Project: Adams Shore/Houghs Neck Seawall Repairs & Improvements
 Drawing: Figures/Seawall/Drawings - Figures/Seawall/Sheet/0019-010-C-DETAIL-OUTFALL.dwg



Photo 1: View of the seawall looking west-southwest along Babcock Street toward Sea Street (12/14/17).



Photo 2: Looking north from the seawall at a 12-inch diameter outfall (OF-02506) near the intersection of Sea Street and Babcock Street (12/14/17).



Photo 3: View of precast concrete seawall along Sea Street looking west toward the intersection of Babcock Street and Sea Street (12/14/17).



Photo 4: Looking west at a gazebo and ramp on the seaward side of precast concrete seawall, adjacent to a groin and 12-inch diameter outfall (OF-02708) near 752 Sea Street (12/14/17).



Photo 5: View looking northeast along precast concrete seawall and revetment toward stairs, groins, and the gazebo near OF-02708 (12/14/17).



Photo 6: View looking west-southwest along the seawall and revetment toward the beach near Post Island Road (12/14/17).



Photo 7: Looking east from a wooden deck on the beach near Post Island Road (12/14/17).



Photo 8: Photo of dune grass on beach area on seaward side of seawall near 680 Sea Street. Pool in top left of photo is adjacent to fenced area for outfall OF-03035 (12/14/17).



Photo 9: View of seawall and dune grass looking west from wood gate and stairs near outfall OF-03035 (12/14/17).



Photo 10: Looking east from the grassed area adjacent to Post Island Road near the intersection with Poplar Street (12/14/17).



Photo 11: View of the seawall and revetment looking west. Elcott Road intersects Post Island Road in the top left corner of the photo (12/14/17).



Photo 12: View of seawall and revetment looking east-southeast toward the intersection of Elcott Street and Post Island Road (in top right of photo) (12/14/17).



Photo 13: Looking south at a manhole structure near the salt marsh west of 5 Post Island Road (12/14/17).



Photo 14: View looking northwest at the seawall, revetment, and rip-rap behind the wall; Arthur Boyson Park is in the top of the photo (12/14/17).



Photo 15: Photo of seawall, revetment, and gravel behind the wall in the area of Arthur Boyson Park, looking east-southeast (12/14/17).



Photo 16: View looking northwest at seawall, revetment, and stairs near Mallard Road (12/14/17).



Photo 17: Photo of precast concrete seawall units on top of sheet pile/cast in place wall around 72 Shellton Road, looking north from the southwest corner (12/14/17).



Photo 18: View looking southeast toward 72 Shelton Road at shifted seawall units and dislodged revetment, post Winter Storm Riley (3/4/18).

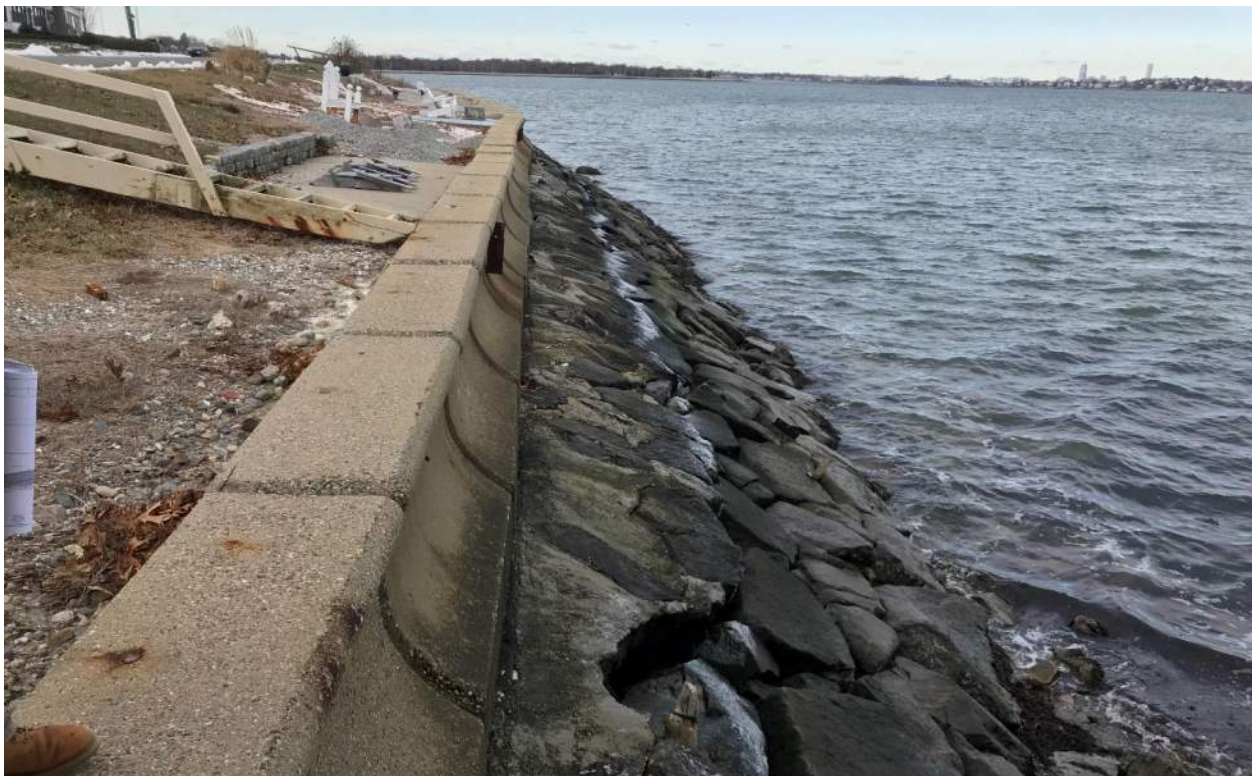


Photo 19: View looking north-northwest from near 72 Shelton Road toward the precast concrete seawall and revetment; revetment voids are filled with concrete (12/14/17).



Photo 20: Dislodged revetment and seawall block off Shellton Road, post Winter Storm Riley (3/4/18).



Photo 21: Photo of private patio, stairs, retaining wall, and gazebo between Shellton Road and precast concrete seawall, looking southwest (12/14/17).



Photo 22: View looking west-southwest at dislodged seawall units off Shellton Road, post-Winter Storm Riley (3/4/18).



Photo 23: View looking northeast at the precast concrete seawall and revetment, near the intersection of Crane Road and Shellton/Terne Roads (12/14/17).



Photo 24: Dislodged revetment near the intersection of Crane Road and Shellton/Terne Roads, post-Winter Storm Riley (3/4/18).



Photo 25: Seawall spalling off Terne Road, post-Winter Storm Riley (3/4/18).



Photo 25: Leveling pad failure off Terne Road, post-Winter Storm Riley (3/4/18).



Photo 26: Photo of the outfall at the Norton-Terne beach area, looking south toward the beach area and seawall (12/14/17).



Photo 27: View looking south at cast in place concrete seawall near Norton-Terne beach area; beach area is on right, 32 Terne Road is on left side of photo (12/14/17).



Photo 28: Photo of precast concrete seawall and cap near Norton Road, looking west; beach area is on the right, salt marsh area is on the left (12/14/17).



Photo 29: View looking southwest at precast concrete seawall near Norton Road; beach area is on left (12/14/17).



Photo 30: Photo of the start of the private coastal engineering structure area of the seawall, looking southwest near 60 Norton Road (12/14/17).



Photo 31: View looking southwest at private concrete block and mortar wall near 54 Norton Road (12/14/17).



Photo 32: Photo of broken concrete wall (private), looking west-southwest near 48 Norton Road (12/14/17).



Photo 33: View of private stone and mortar wall capped with poured concrete looking south-southwest toward revetment area near 24 Norton Road (12/14/17).



Photo 34: Photo looking west at poured concrete wall with fence and right angle for patio near 14 Norton Road (12/14/17).



Photo 35: View of outfall OF-08549 (Chickatabot outfall), looking southeast toward the Chickatabot Road, the seawall, and revetment. (12/14/17).



Photo 36: Photo looking northwest at outfall OF-08549 (Chickatabot outfall) (12/14/17). Groin currently protecting Narragansett outfall is in the top left corner of the photo.

Tighe&Bond

APPENDIX C

Document A:

8-Step Analysis – Executive Order 11988 & 11990

EXECUTIVE ORDER 11988, FLOODPLAIN MANAGEMENT

EXECUTIVE ORDER 11990, PROTECTION OF WETLANDS

44 C.F.R. Part 9, Floodplain Management and Protection of Wetlands

TITLE: Adams Shore/Houghs Neck Seawall Repairs and Improvements Project, City of Quincy, Massachusetts

DESCRIPTION OF PROJECT: The purpose of this project is to repair existing seawall and improve coastal resiliency along an approximately 8,000-foot long section of seawall along the northern shore of the Adams Shore and Houghs Neck neighborhoods of Quincy, Massachusetts, from the intersection of Babcock Street and Sea Street (latitude 42.266701, longitude -70.968424) to the intersection of Chickatabot Road, Narragansett Road, and Shore Avenue (latitude 42.265674, longitude -70.990352) for seawall repairs and replacement and to (latitude 42.266151, longitude -70.991169) for additional embankment repairs above the seawall.

The following project description is from the US Army Corps of Engineers Pre-Construction Notification application (NAE-2017-03109), the City of Quincy Conservation Commission Notice of Intent (MassDEP File 059-1415), and the Massachusetts Environmental Policy Act (MEPA) Environmental Notification Form (ENF) (EEA File 15861).

The City of Quincy has approximately 27 miles of heavily developed coastline, nearly half of which depends upon seawalls for protection. Many of the seawalls that currently protect over 100 homes along Adams Shore and Houghs Neck (and hundreds more indirectly) exhibit signs of deterioration that indicate that they have reached or are close to reaching their expected design life.

The City of Quincy experienced three nor'easter storms within a period of three weeks in early March 2018, which resulted in widespread coastal flooding. The first nor'easter of March 2018, Winter Storm Riley (March 2-3, 2018, FEMA event DR-4372-MA), resulted in severe damage to coastal infrastructure throughout the City of Quincy, reinforcing the need for the proposed project.

After the March 2018 storms, the City applied for Public Assistance (PA) for Project #74027 Seawalls (Phase 1 Adams Shore) associated with FEMA disaster event DR-4372-MA (damage #172925, Adams Shore- Terne Road/Shellton Road, Damage #172926, Adam's Shore- Shore Ave/Chickatabot Road/Norton Road, Damage #172929, Houghs Neck- Post Island Road, and Damage #172930, Houghs Neck- Sea Street and Babcock Street).

Prior to the March 2018 storms, the City applied for Hazard Mitigation Grant Program (HMGP) funding for reconstruction and improvements to the portion of the seawall near the western end of the Adams Shore/Houghs Neck project area (FEMA-DR-4214-MA) along Chickatabot and Shore Avenue, including resetting 230 linear feet of revetment rock, installation of revetment dowels and staples, relocation and reconstruction of OF-08549 within the existing jetty that contains OF-10028, reconstruction of OF-10028 and associated installation of drainage and road work, and replacement of concrete stairs with timber stairs (from 42.265000, -70.989610 to 42.26566944, -

70.9903388). Overlapping work between the proposed HMGP project and PA#74027 consists of 11 cubic yards of concrete required for displaced rip rap at Damage #172926 site 2 adjacent to Chickatabot Rd (42.26542, -70.99001).

The proposed project consists of improvements to the seawall, revetment, outfalls, and associated stairs in order to bring the seawalls in this area up to current safety standards, reduce future storm damage, and provide additional climate change resiliency.

The proposed project includes removal of the existing precast concrete seawall units and cast-in-place leveling pads throughout the project area; precast seawall units that are determined to be salvageable by the engineer will be salvaged and stored at the Quincy DPW for reuse. New precast seawall units and cast-in-place reinforced concrete leveling pads will be installed to raise the wall height by two to four feet, and approximately 30% of the existing stone revetment will be reset within the existing revetment footprint, with the addition of supplemental stone to fill void areas, removal of grout from the voids within the existing ocean facing stone revetment where possible, and installation of well graded freely draining granular stone backfill, natural fiber blankets, and erosion control vegetation landward of the wall.

Stormwater drainage outfall improvements are proposed to occur during seawall repairs, including replacement of smaller outfall pipes with larger diameter pipes, replacement of larger outfall pipes in-kind where needed and feasible, installation of outlet protection aprons, installation of one-way check valves in outfall pipes connected to the stormwater drainage system, and installation of concrete pads and helical anchors along reconstructed pipe segments, as summarized in the table below. Two of the outfall pipes connect to salt marshes behind the seawall via tide gates (OF-08573, Norton Road beach outfall and OF-08590, Post Island Road beach outfall); the remainder of the outfalls are connected directly to the stormwater drainage system. The operations of the existing tide gates upstream of the proposed outfall replacements are not proposed to be changed as part of the project.

Outfall ID¹	Latitude, Longitude²	Existing Pipe Size³	Proposed Pipe Size³	Notes
OF-02474	42.266701, 70.968424	12"	16"	
OF-02506	42.266591, -70.968750	12"	16"	
OF-02578	42.266119, -70.969843	12"	16"	
OF-02708	42.265325, -70.970644	12"	16"	
OF-02811	42.264841, -70.970936	12"	16"	
OF-12373	42.263766, -70.972026	12"	16"	
OF-03035	42.263153 -70.973729	18"	30"	To be relocated to share new outlet protection apron with OF-08590
OF-08590	42.263339, -70.974689	36" to 48"	No Change	Connected to tide gate to Mallard Road salt marsh; no work on the pipe or outfall is proposed; outlet protection apron to be added and shared with OF-03035
OF-02947	42.263823, -70.976898	6"	16"	

Outfall ID ¹	Latitude, Longitude ²	Existing Pipe Size ³	Proposed Pipe Size ³	Notes
OF-02829	42.264587, -70.979035	15"	24"	
OF-12273	42.265177, -70.980113	10"	16"	
OF-08564	42.265195, -70.983422	10"	16"	
OF-08573	42.263264, -70.985783	30"	30"	Connected to tide gate to salt marsh near Norton Road/Terne Road, portion to be replaced is from the manhole on the seaward side of the wall to the beach
OF-02913	42.264091, -70.987393	12"	18"	
OF-08549 ⁽⁴⁾	42.265030, -70.989650	36"	36"	Existing outfall to be removed and relocated to existing stone groin protecting OF-10028
OF-10028 ⁽⁴⁾	42.265638, -70.990330	24"	No change	Existing groin to be reset to accommodate addition of relocated OF-08549

Notes:

¹ Per City of Quincy Geographic Information System

² World Geodetic System of 1984 (WGS84) datum, location is approximately where the outfall intersects with the seawall

³ Outer diameter sizing

⁴ OF-08549 and OF-10028 are part of the proposed HMGP Grant.

Public stairs within the project area are also proposed to be removed and replaced at the locations summarized in the table below. The concrete replacement stairs are to be located no further seaward than the present stairs to the extent practicable. The footings will be on sonotubes or helical piles. In two locations, timber stairs will be replaced with hybrid timber-concrete stairs that are concrete on the landward side of the seawall and down to the top of revetment where they will transition to timber. Two new stairs are proposed to improve public access, which are proposed to also be concrete on the landward side of the seawall and down to the top of revetment and transition to timber. In one location associated with the proposed HMGP project at the Chickatabot Road location (42.265519, -70.990257), existing concrete stairs are proposed to be replaced with timber stairs.

Latitude, Longitude ¹	Proposed Work
42.266058, -70.969923	Remove and replace existing concrete stairs
42.265415, -70.970578	Timber-concrete hybrid stairs to be installed to provide public access
42.264852, -70.970927	Timber-concrete hybrid stairs to be installed to provide public access
42.263774, -70.972011	Remove and replace existing concrete stairs
42.263160, -70.973791	Remove and replace existing concrete stairs
42.263391, -70.974836	Remove and replace existing timber stairs with timber-concrete hybrid stairs
42.263660, -70.976082	Remove and replace existing concrete stairs
42.263809, -70.976844	Remove and replace existing concrete stairs

Latitude, Longitude ¹	Proposed Work
42.264065, -70.977699	Remove and replace existing timber stairs with timber-concrete hybrid stairs
42.264552, -70.978962	Remove and replace existing concrete stairs
42.264795, -70.984420	Remove and replace existing concrete stairs
42.264524, -70.984867	Existing stairs to be removed and not replaced due to proximity of salt marsh
42.263315, -70.985627	Remove and replace existing concrete stairs
42.263569, -70.986451	Remove and replace existing concrete stairs
42.265519, -70.990257	Remove existing concrete stairs and replace with timber stairs, part of proposed HMGP project

Notes:

¹ WGS84 datum, location is approximately where the stairs intersect with the seawall

EIGHT STEP PLANNING ANALYSIS: Executive Order 11988 (Floodplain Management) and Executive Order 11990 (Protection of Wetlands) require Federal agencies “to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of the floodplains/wetlands and to avoid direct or indirect support of floodplains/wetland development wherever there is a practicable alternative.” FEMA’s implementing regulations are contained in 44 CFR Part 9, which includes an Eight-Step Decision Making Process for compliance with this part.

The City of Quincy seeks funding from FEMA for the completion of the proposed seawall improvements project through a Hazard Mitigation Grant and the Public Assistance program. The decision-making process consists of subsequent eight steps per 44 CFR Part 9.5(d), as follows:

STEP 1 Determine whether the proposed action is located in the 100-year floodplain and/or in a wetland, or whether the proposed action has the potential to affect or be affected by a floodplain or wetland:

RESPONSE: According to the FEMA Flood Insurance Rate Map (FIRM) Panels No. 25021C0088F and 2521C0089F (revised to reflect Letter of Map Revision (LOMR) effective March 1, 2017), portions of the project area are within the Special Flood Hazard Area Zones AE (base flood elevation (BFE) 12 feet NAVD) and VE (BFE 14, 16, and 17 feet NAVD); therefore, the 100-year floodplain is present in the project area limits of work.

NOAA tide data for this area indicates a mean tide range of almost 10 feet. At low tide, there is a narrow portion of beach exposed along the majority of the seawall, though for much of the tidal cycle, the sections of the seawall are directly subject to wave action.

Per the National Wetlands Inventory (NWI), wetland classes within the project area (classified using the Cowardin et al. 1979 system for wetlands and deep-water habitats) include:

- E2USN, Estuarine Intertidal Unconsolidated Shore, Regularly Flooded
- E2USP, Estuarine Intertidal Unconsolidated Shore, Irregularly Flooded
- E2USPd, Estuarine Intertidal Unconsolidated Shore, Irregularly Flooded, Partially Drained/Ditched
- PEM1R, Palustrine Emergent Persistent, Seasonally Flooded – Tidal

The majority of the project area from the seawall to the seaward edge of the limits of work is identified as E2USN. Areas landward of the wall are identified as E2USP, with an area from Peterson Road to Seagull Road identified as E2USPd. A discrete area near Mallard Road is classified as PEM1R. Several areas behind the seawall are classified as E2EM1Pd, Estuarine Intertidal Emergent Persistent Irregularly Flooded Partially Drained/Ditched, near Norton Road/Terne Road, Mallard Road/Post Island Road, and on the far side of Sea Street from the project area (Joseph Street).

STEP 2 Notify the public at earliest possible time of the intent to carry out an action in a floodplain or wetland, and involve the affected and interested public in the decision-making process:

RESPONSE: The project has undergone local and state permitting processes for the proposed work in the floodplain and wetlands that include public notice requirements. Additionally, the City and their contractors, Tighe & Bond, have held multiple open and advertised public informational sessions with and in the Adams Shore and Houghs Neck neighborhoods to obtain public input on the design process, including four sessions in the summer of 2018, one session in the spring of 2018, and one session in October of 2019 with the contractor present.

As part of the Massachusetts Environmental Policy Act (MEPA) Environmental Notification Form (ENF) process, a public notice was issued on May 23, 2018 in the Patriot Ledger, a newspaper of general circulation, that notified the public and applicable regulatory agencies regarding the review of the project and inviting public comment. Notice of the ENF was also published in the edition of the Environmental Monitor, a state publication providing information on projects under review, recent decisions, and State Agency public notices, and a site visit was held on June 24, 2018. A notice of the public hearing in which the City of Quincy Conservation Commission reviewed the Notice of Intent (NOI) of the proposed action's wetland and floodplain impacts was published in the Patriot Ledger on July 25, 2018. Public notice of MassDEP's review of the 401 Water Quality Certification application for the project was published in the Patriot Ledger on July 10, 2018, and public notice of MassDEP's review of the Waterways License application was published in the Patriot Ledger on July 25, 2018. The public notices included a summary of the proposed project and solicitation of public comments.

The public will be notified of the availability of the draft EA through publication of a public notice in the Patriot Ledger when the EA is made available for public review.

Public notice of Major Disaster Declaration FEMA DR-4372 was published in the Boston Globe on 7/20/2018.

STEP 3 Identify and evaluate practicable alternatives to locating the Proposed Action in a floodplain or wetland:

RESPONSE: As the proposed project involves repairs and improvements to an existing seawall that protects existing residences, infrastructure, and an evacuation route, practicable alternatives to locating the Proposed Action (partial reconstruction) in a floodplain or wetland are limited. Alternatives outside the floodplain are limited to elevating homes above the BFE, moving the existing structures protected by the seawall outside of the floodplain, or acquiring and demolishing the existing structures. None of these options are financially practicable given the number of privately owned buildings in the densely developed area.

There are no practicable alternatives to this project outside of the floodplain or wetland, as the wall's purpose is to act as a physical barrier to coastal wave action and is a functionally dependent use to achieve shoreline protection; therefore, the alternatives used in the eight-step process will be a No Action alternative and the Proposed Project alternative.

Under the No Action Alternative, the seawall in the proposed area will not be repaired and the coastal engineering structure will continue to deteriorate. Although no new construction would occur in the floodplain, continued seawall deterioration will pose a risk to the communities behind the wall that depend on it for protection, and the floodplain would be impacted through continued erosion and loss of sand.

The Proposed Alternative, partial reconstruction of the existing seawall, replacement of undersized outfall pipes, and partial reconstruction of larger diameter outfall pipes, will address the deterioration of the existing structures and add resiliency to protect public infrastructure, public access, and property.

STEP 4 Identify the full range of potential direct or indirect impacts associated with the occupancy or modification of floodplains and wetlands, and the potential direct and indirect support of floodplain and wetland development that could result from the Proposed Action:

RESPONSE: The overall amount of permanent impacts is anticipated to be comparable to existing disturbance due to the project goal of replacing the existing coastal engineering structures and resetting the revetment within the existing footprint, with a limited increase in impacts due to the installation of landing pads on sonotubes or helical piles for the replacement public stairs and outfall outlet protection aprons.

It is anticipated that there will be approximately 3,645 square feet of permanent impacts below the High Tide Line (HTL) associated with the relocation of two existing outfalls, and replacement of public stairs. The construction period is expected to result in

temporary impacts below HTL, primarily within existing developed area. The project includes the repositioning of approximately 3,315 cubic yards of existing revetment stone that will be repositioned below the HTL and 3,615 cy of sediment to be removed and replaced *in situ* for the trenching associated with the reconstruction of the larger outfall pipes. Temporary impacts during the construction period are anticipated due to staging, access, and work associated with the removal and replacement of the existing precast seawall units and leveling pads. The upstream functions of tide gates will not be altered as part of the project. The project includes repairs to existing outfalls, without changes to the operation and maintenance or hydraulic regime of the existing tide gates at OF-08573 and OF-08590. One-way check valves will be installed on outfalls that connect to the storm drain system only and that do not connect to salt marshes. No check valves will be installed on the two outfalls that connect to salt marshes, OF-08573 and OF-08590.

The Proposed Action is not anticipated to directly or indirectly support additional floodplain or wetland development. The intent of the project is to repair and improve an existing seawall that protects existing residences in a densely developed single family residential area. The seawall and residences behind the seawall are located in the Flood Plain Overlay District (FPOD); the City of Quincy's Zoning Ordinance limits development in the FPOD such that no new building or structure shall be erected, constructed, altered, enlarged or moved per Section 8.1.

STEP 5 Minimize the potential adverse impacts from work within floodplains and wetlands (identified under Step 4), restore and preserve the natural and beneficial values served by wetlands:

RESPONSE: The project incorporates specific design elements to avoid or minimize impacts to resource areas, including maintaining the existing footprint and seaward extent of the seawall and limit of revetment, limiting seaward construction access and the construction footprint at the outfalls to the extent feasible, removing the Chickatabot outfall (OF-08549) from the beach and relocating to an existing groin, redirecting the Shoreside Road outfall to outlet at the location of the Post Island Road outfall outlet, and avoiding sensitive resource areas.

The site resource areas will be protected during the project. Where possible, work will be completed from the landward side of the seawall to minimize intertidal disturbance. Where it is not feasible to conduct the work from the landward side of the seawall, portions of the work may occur from the beach. When on the seaward side of the wall, construction activities will be restricted to the limit of work depicted on the permit plans, which will prohibit vehicle access and travel on the tidal flats.

Much of the shoreline repair work will be within the tidal zone. In order to ensure quality workmanship and minimize potential environmental disturbances, the tidal work will be performed in the dry utilizing daily low tides. As the times of these low tides change from day to day, the tidal zone work hours will also vary and will be

subject to periodic weather related shut-downs. The contractor will be required to maintain appropriate siltation/turbidity controls, such as wood chip filled filtering tubes around the downgradient side of sediment excavations while working. To minimize the potential for these BMP controls themselves to contribute to marine litter, they will be moved out of the wave environment when not in use (on a daily/nightly basis).

The project includes sediment removal associated with the reconstruction of the larger diameter outfall pipes, as the pipes are currently partially buried, and will need to be uncovered in order to replace the pipes and add helical anchors and outfall protection aprons. OF-03035 is proposed to be reconstructed in a new orientation to share an outlet protection apron with the Post Island Road outfall, and as part of the proposed HMGP project, OF-08549 is proposed to be removed and reconstructed within the existing groin that protects OF-10028, which will increase outfall protection and minimize impacts to resource areas. Sediment removed during outfall reconstruction is anticipated to be reused on site by reinstalling the material into the excavations created for the outfalls. The work area is proposed to be limited to 5 feet on either side of the outfalls in order to minimize impacts. The project area does not extend below Mean Low Water, and appropriate siltation/turbidity controls are required to be used by the contractor during excavation.

Excavation will be completed in the dry to the extent possible using daily low tides. Repositioning and removal of sediment below the Mean High Water line will occur only after waters have receded. The landward edge of sediment removal associated with the proposed reconstruction of the Norton Road beach outfall (OF-08573) will occur approximately 20 feet from mapped salt marsh near Terne Road; the salt marsh is located landward of the outfall, outside of the project area, and is not anticipated to be impacted by the proposed outfall reconstruction.

Due to the project occurring largely within the overall existing disturbed footprint and the proposed removal of the Chickatabot outfall (OF-08549) from the beach and replacement within the existing Narragansett outfall (OF-10028) groin, the project is anticipated to result in a similar footprint below HTL relative to existing conditions.

STEP 6 Re-evaluate the Proposed Action to determine first, if it is practicable in light of its exposure to flood hazards, the extent to which it will aggravate the hazards to others, and its potential to disrupt floodplain and wetland resources and second, if alternatives preliminarily rejected at Step 3 are practicable in light of the information gained in Steps 4 and 5. FEMA shall not act in a floodplain or wetland unless it is the only practicable location:

RESPONSE: There is no practicable alternative to this project outside of the floodplain or wetlands, as the seawall's purpose is to act as a physical barrier to coastal wave action and is a functionally dependent use to achieve shoreline protection.

STEP 7 Prepare and provide the public with a finding and public explanation of any final decision that the floodplain or wetland is the only practicable alternative:

RESPONSE: Public Notice requirements for this project are considered satisfied as part of the public comment process associated with the State and local permitting processes and Environmental Assessment. FEMA will post a separate Public Notice to address the EA for this project, and to present a Finding of No Significant Impact. This notice will include rationale for floodplain impacts, a description of all significant facts considered in making the determination, a list of alternatives considered, a statement indicating whether the action conforms to State and local floodplain protection standards, a statement indicating how the action affects the floodplain, and a statement of how mitigation will be achieved.

STEP 8 Review the implementation and post – implementation phases of the proposed action to ensure that the requirements stated in Section 9.11 are fully implemented:

RESPONSE: The Proposed Alternative is the most practicable alternative available. 44 C.F.R. § 9.11 (Mitigation of Effects) requirements will be satisfied by the City obtaining, complying with conditions, and maintaining documentation of necessary permits. Permit documentation review by FEMA is integrated into the NEPA review process.

Document B:

Select Pages from the Certificate of the Secretary of
Energy and Environmental Affairs on the Environmental
Notification Form and Advisory Opinion Letter



The Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Charles D. Baker
GOVERNOR

Karyn E. Polito
LIEUTENANT GOVERNOR

Matthew A. Beaton
SECRETARY

Tel: (617) 626-1000
Fax: (617) 626-1181
<http://www.mass.gov/envir>

July 6, 2018

CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS
ON THE
ENVIRONMENTAL NOTIFICATION FORM

PROJECT NAME : Adams Shore/Houghs Neck Seawall Repairs
and Improvements Project
PROJECT MUNICIPALITY : Quincy
PROJECT WATERSHED : Boston Harbor
EEA NUMBER : 15861
PROJECT PROPONENT : City of Quincy Department of Public Works
DATE NOTICED IN MONITOR : May 23, 2018

Pursuant to the Massachusetts Environmental Policy Act (MEPA) (M.G. L. c. 30, ss. 61-62I) and Section 11.06 of the MEPA regulations (301 CMR 11.00), I hereby determine that this project **does not require** an Environmental Impact Report (EIR).

Project Description

As described in the Environmental Notification Form (ENF) and supplemental information¹, the project consists of reconstruction of seawalls, revetments, outfalls, and associated beach access stairs along 8,000 linear feet (lf) of shoreline in Quincy. The project includes replacement of deteriorated precast concrete seawall units and cast-in-place leveling pads to raise the wall height by a minimum of two feet; resetting approximately 30 percent of the revetments with additional stone within existing footprints; removal of grout from the voids in revetments; removal of temporary rip rap placed on Coastal Bank landward of the seawalls and revetments following the three nor'easters in March 2018; installation of granular stone backfill on landward side of the walls; grading and stabilization of eroded banks landward of the coastal engineering structures with natural fiber blankets and erosion control vegetation; replacement of public access stairs; and improvements to stormwater drainage outfalls including installation of one-way check valves, repairs to tide gates, and reconstruction of the groin at

¹ Email from Tracy Adamski, Tighe & Bond, on June 13, 2018 on behalf of the City of Quincy.

construction period to reduce emissions. The project will require a Section 8(m) Permit from MWRA because of its proximity to the MWRA's High Level Sewer. I encourage the City to consult with MWRA prior to completing final design to ensure that the project will not affect MWRA infrastructure.

Conclusion

The ENF has sufficiently defined the nature and general elements of the project for the purposes of MEPA review and demonstrated that the project's environmental impacts will be avoided, minimized and/or mitigated to the extent practicable. Based on the information in the ENF and after consultation with State Agencies, I find that no further MEPA review is required at this time. Remaining issues can be addressed through the local, State and federal permitting and review processes.

July 6, 2018

Date



Matthew A. Beaton

Comments Received:

05/29/2018	Massachusetts Board of Underwater Archaeological Resources (BUAR)
06/18/2018	Massachusetts Department of Environmental Protection (MassDEP) – Southeast Regional Office (SERO)
06/19/2018	Massachusetts Division of Marine Fisheries (DMF)
06/19/2018	Massachusetts Water Resources Authority (MWRA)
06/26/2018	Massachusetts Office of Coastal Zone Management (CZM)

MAB/PPP/ppp



The Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Charles D. Baker
GOVERNOR

Karyn E. Polito
LIEUTENANT GOVERNOR

Kathleen A. Theoharides
SECRETARY

Tel: (617) 626-1000
Fax: (617) 626-1181
<http://www.mass.gov/envir>

September 6, 2019

Tracy J. Adamski
Tighe & Bond, Inc.
One University Avenue, Suite 104
Westwood, MA 02090

Re: Request for Advisory Opinion
Adams Shore/Houghs Neck Seawall Repairs and Improvements Project - Quincy (EEA# 15861)

Dear Ms. Adamski:

On behalf of Secretary Theoharides, I am writing in response to your letter of August 12, 2019 in which you requested a determination as to whether additional review under the Massachusetts Environmental Policy Act (MEPA) would be required for the above referenced project.

As described in the Environmental Notification Form (ENF), the project consists of reconstruction of seawalls, revetments, outfalls, and associated beach access stairs along 8,000 linear feet (lf) of shoreline in Quincy. The project is proposed to reduce storm damage and provide resiliency to the effects of climate change. The seawall is located along the northern shore of the Adams Shore and Houghs Neck neighborhoods from Babcock Street and Sea Street to Chickatabot Road and Shore Avenue. The project includes replacement of deteriorated precast concrete seawall units and cast-in-place leveling pads to increase the height of the wall by a minimum of two feet. On July 6, 2018, the Secretary issued a Certificate on the ENF that determined that the project does not require an Environmental Impact Report (EIR).

The regulations at 310 CMR 11.10 indicate that a Notice of Project Change (NPC) is required if there is a material change to a project that would increase environmental impacts prior to the taking of all Agency Actions.

According to your letter, the City of Quincy is proposing to increase the height of the seawall, within certain sections, by an additional two feet (for a total of four feet compared to existing

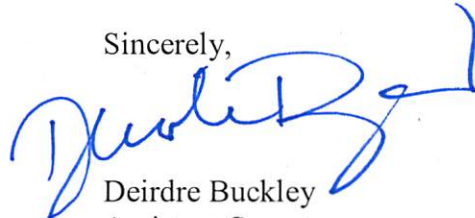
conditions) to address comments received through a series of public meetings. Remaining sections, which will be raised by two feet above existing conditions, will be designed to accommodate an additional two-foot increase at a future date. Your letter includes revised cross-sections for sections of the seawall. Proposed modifications do not change the footprint or environmental impacts associated with the project.

You indicate that the Massachusetts Department of Environmental Protection (MassDEP) has issued a Section 401 Water Quality Certification and that the project is proceeding through the permitting processes to obtain a Chapter 91 License from MassDEP and a Section 8(m) Permit from the Massachusetts Water Resources Authority (MWRA). The project is subject to Federal Consistency Review by the Massachusetts Office of Coastal Zone Management (CZM). In addition, the City is seeking Financial Assistance in the form of funding through the Executive Office of Energy and Environmental Affairs (EEA) Dam and Seawall Program.

Your letter indicates that the modifications will not require any Agency Actions that were not previously identified through MEPA review. Based on the foregoing, and consultation with MassDEP and CZM, I have determined that the proposed change will not increase environmental impacts compared to the ENF and that additional MEPA review, in the form of a NPC, is not warranted.

If you have any questions regarding this matter, please contact Purvi Patel at (617) 626-1029.

Sincerely,



Deirdre Buckley
Assistant Secretary

CDB/PPP/ppp

Document C:

Select Pages from the City of Quincy Conservation
Commission Order of Conditions and Plan Reference
Correction Letter



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
 059-1415
 MassDEP File #
 eDEP Transaction #
 Quincy
 City/Town

A. General Information

Please note:
 this form has been modified with added space to accommodate the Registry of Deeds Requirements

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



1. From: Quincy
 Conservation Commission

2. This issuance is for (check one):
 a. Order of Conditions b. Amended Order of Conditions

3. To: Applicant:
 Paul Costello
 a. First Name b. Last Name
 City Engineer, City of Quincy
 c. Organization
 55 Sea Street
 d. Mailing Address
 Quincy MA 0269
 e. City/Town f. State g. Zip Code

4. Property Owner (if different from applicant):
 a. First Name b. Last Name
 c. Organization
 d. Mailing Address
 e. City/Town f. State g. Zip Code

5. Project Location:
 The Adams Shore/Houghs Neck Seawall Quincy
 a. Street Address b. City/Town
 Per NOI Attached Table
 c. Assessors Map/Plat Number d. Parcel/Lot Number
 Latitude and Longitude, if known: 42.265d194m s -70.98d0134m s
 d. Latitude e. Longitude



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
 059-1415
 MassDEP File #
 eDEP Transaction #
 Quincy
 City/Town

E. Signatures

This Order is valid for three years, unless otherwise specified as a special condition pursuant to General Conditions #4, from the date of issuance.

November 7, 2018

Please indicate the number of members who will sign this form.
 This Order must be signed by a majority of the Conservation Commission.

1. Date of Issuance

4
 2. Number of Signers

The Order must be mailed by certified mail (return receipt requested) or hand delivered to the applicant. A copy also must be mailed or hand delivered at the same time to the appropriate Department of Environmental Protection Regional Office, if not filing electronically, and the property owner, if different from applicant.

Signatures:

John T. Brennan
 John T. Brennan

Maureen C. Glynn
 Jeffrey Graeber
 Maureen C. Glynn

Toti LeBate
 Toti LeBate

Thomas Carroll
 Thomas Carroll

E.J. Iorio
 E.J. Iorio

William Keener
 by certified mail, return receipt requested, on

by hand delivery on

November 8, 2018

Date

Date

F. Appeals

The applicant, the owner, any person aggrieved by this Order, any owner of land abutting the land subject to this Order, or any ten residents of the city or town in which such land is located, are hereby notified of their right to request the appropriate MassDEP Regional Office to issue a Superseding Order of Conditions. The request must be made by certified mail or hand delivery to the Department, with the appropriate filing fee and a completed Request for Departmental Action Fee Transmittal Form, as provided in 310 CMR 10.03(7) within ten business days from the date of issuance of this Order. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellatant.

Any appellants seeking to appeal the Department's Superseding Order associated with this appeal will be required to demonstrate prior participation in the review of this project. Previous participation in the permit proceeding means the submission of written information to the Conservation Commission prior to the close of the public hearing, requesting a Superseding Order, or providing written information to the Department prior to issuance of a Superseding Order.

The request shall state clearly and concisely the objections to the Order which is being appealed and how the Order does not contribute to the protection of the interests identified in the Massachusetts Wetlands Protection Act (M.G.L. c. 131, § 40), and is inconsistent with the wetlands regulations (310 CMR 10.00). To the extent that the Order is based on a municipal ordinance or bylaw, and not on the Massachusetts Wetlands Protection Act or regulations, the Department has no appellate jurisdiction.



City of Quincy Inspectional Services

Thomas P. Koch
Mayor

Jay Duca
Director

September 30, 2019

Paul Costello, City Engineer
City of Quincy
55 Sea Street
Quincy, MA

Re: **DEP File No. 054-1415**
Adams Shore / Houghs Neck Seawall Repairs and Improvements Project

Dear Mr. Costello,

At the Quincy Conservation Commission's public hearing on November 7, 2018, the Commission reviewed and approved the plan set entitled "City of Quincy, Massachusetts Adams Shore/Houghs Neck Seawall Repairs & Improvements" dated November 7, 2018 and prepared by Tighe & Bond. It has come to our attention that the Order of Conditions references the June 16, 2018 plan set.

This is a typographical error and should reference the November 7, 2018 plan set. The wetland impacts were consistent between plan sets, with the major change being for a change of seawall height in specific locations. Therefore, the project as proposed in the November 7, 2018 plan set is approved under the Order of Conditions DEP File No. 054-1415.

Regards,

Jay Duca
Quincy Conservation Agent

Cc: MassDEP NERO

Document D:

Select Pages from MassDEP 401 WQC Authorization



Department of Environmental Protection

One Winter Street Boston, MA 02108 • 617-292-5500

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Matthew A. Beaton
Secretary

Martin Suuberg
Commissioner

December 17, 2018

Paul Costello
City of Quincy Department of Public Works
55 Sea Street
Quincy, MA 02169

Re: **401 WATER QUALITY CERTIFICATION**
Application for BRP WW 07, Major project dredging

At: QUINCY Bay, QUINCY

401 WQC Transmittal №: X280912
Wetlands File №:
ACoE Application №:

Dear Mr. Costello

The Department has reviewed your application for Water Quality Certification (WQC) referenced above. In accordance with the provisions of Section 401 of the Federal Clean Water Act as amended (33 U.S.C. §1251 et seq.), MGL c.21, §§ 26-53, and 314 CMR 9.00, the Department has determined there is reasonable assurance the project or activity will be conducted in a manner which will not violate applicable water quality standards (314 CMR 4.00) and other applicable requirements of state law.

The waters of Quincy Bay are designated in the Massachusetts Surface Water Quality Standards as Class SA. Such waters are designated "as excellent habitat for fish, other aquatic life and wildlife and for primary and secondary contact recreation." Anti-degradation provisions of these Standards require that "existing uses and the level of water quality necessary to protect the existing uses shall be maintained and protected."

Background: The City of Quincy encompasses about 27 miles of heavily developed coastline, almost half of which relies upon seawalls for the protection of residents and their homes, local infrastructure, utilities, and surrounding natural ecologies. The seawalls were constructed at various times between the 1930s and 1950s, and the portion located in the Houghs Neck neighborhood is in poor condition, and has suffered significant loss of backfill material due to large storm events. Beach access stairs exhibit concrete deterioration despite repairs done in 2013.

Management (when the certificate concerns projects in Areas of Critical Environmental Concern), the public or private water supplier where the project is located (when the certificate concerns projects in Outstanding Resource Waters), and any other entity with responsibility for the resource where the project is located.

The hearing request along with a DEP Fee Transmittal Form and a valid check or money order payable to the Commonwealth of Massachusetts in the amount of one hundred dollars (\$100) must be mailed to:

Commonwealth of Massachusetts
Department of Environmental Protection
Commonwealth Master Lockbox
P.O. Box 4062
Boston, MA 02211

The request will be dismissed if the filing fee is not paid, unless the appellant is exempt or granted a waiver. The filing fee is not required if the appellant is a city or town (or municipal agency), county, or district of the Commonwealth of Massachusetts, or a municipal housing authority. The Department may waive the adjudicatory-hearing filing fee pursuant to 310 CMR 4.06(2) for a person who shows that paying the fee will create an undue financial hardship. A person seeking a waiver must file an affidavit setting forth the facts believed to support the claim of undue financial hardship together with the hearing request as provided above.

Failure to comply with this certification is grounds for enforcement, including civil and criminal penalties, under MGL c.21 §42, 314 CMR 9.00, MGL c. 21A §16, 310 CMR 5.00, or other possible actions/penalties as authorized by the General Laws of the Commonwealth.

If you have questions about this decision, please contact David Wong at 617-292-5893.

Sincerely,



Lealdon Langley
Director
Wetlands and Waterways Program

enclosure: Departmental Action Fee Transmittal Form

ecc: Barbara Newman, Regulatory/Enforcement Division, U.S. Army Corps of Engineers
696 Virginia Road, Concord, MA 01742-2751
Robert Boeri, CZM, 251 Causeway Street, Suite 800, Boston, MA 02114
Jillian Carr, DMF, 30 Emerson Ave., Gloucester, MA 01930
Phil DiPietro, NERO
David Wong, Boston Office
Tracy Adamski, Tighe & Bond Inc., 53 Southampton Road, Westfield, MA 01085

cc: Quincy Conservation Commission, 1305 Hancock Street, Quincy, MA 02169

KC/X280912

Document E:

Reserved for Select Pages from MassDEP
Chapter 91 License

Document F:

Reserved for Select Pages from USACE Authorization