

**Presentation to  
the Quincy  
Conservation  
Commission  
June 6, 2018**

# **Long Island Bridge Superstructure Replacement Project**

# Project Objectives

An aerial photograph of a long, multi-span truss bridge crossing a wide body of water. The bridge has several large, rounded piers supporting its structure. In the background, there are small islands with trees and some buildings. The overall scene is in grayscale.

- Minimize Wetland Impacts
  - Minimize Construction Impacts
  - Improve Stormwater Performance
  - 75 Year Life Span
  - Improve Resilience
- All of these objectives are met with the proposed project.

# Proposed Replacement Superstructure

An aerial photograph of a long bridge spanning a wide body of water. The bridge has a central arch section and is supported by numerous piers. A semi-transparent, light-colored overlay of the same bridge structure is shown, representing the proposed replacement superstructure. The background shows a coastline with trees and some buildings.

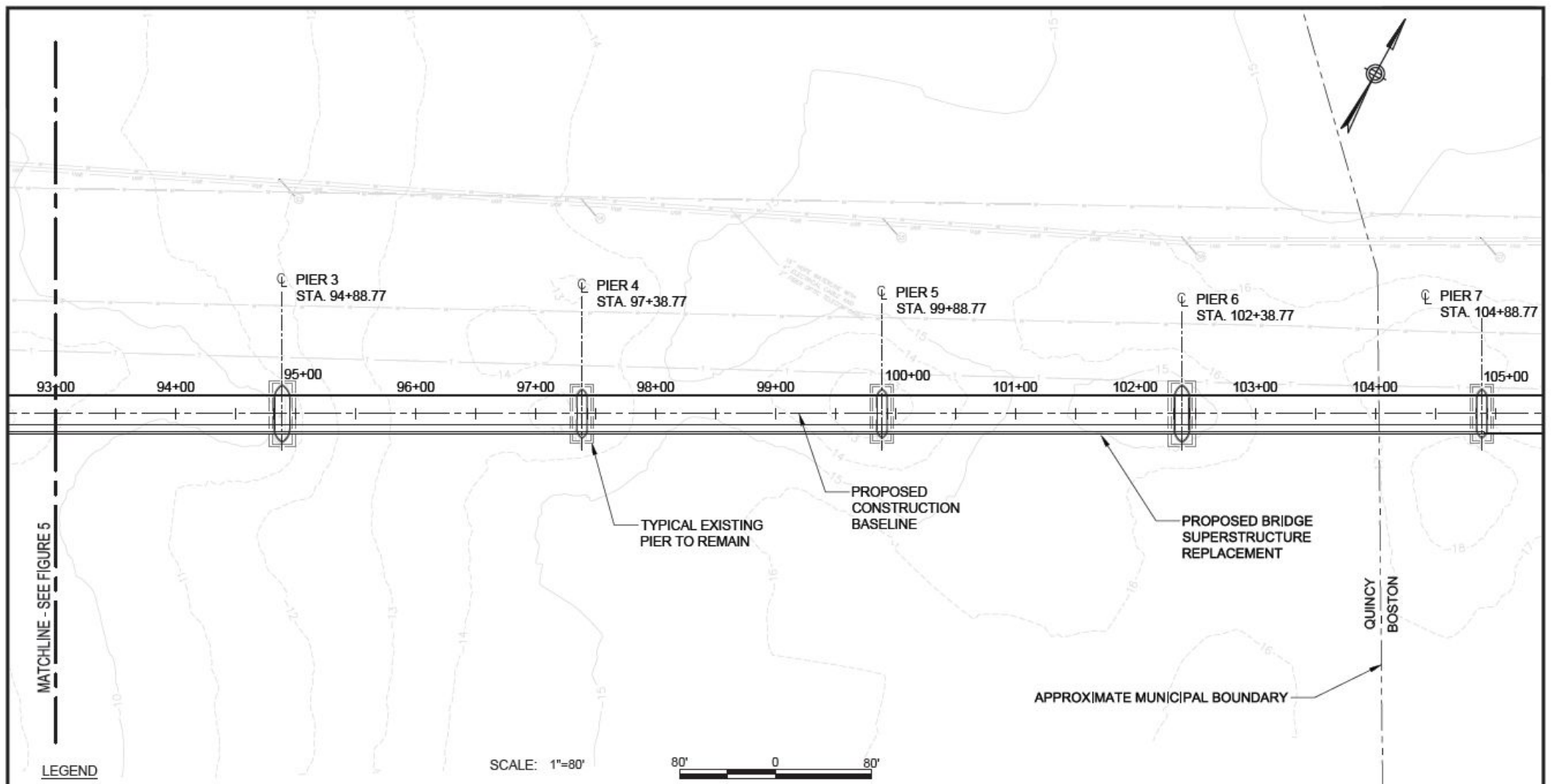
- Same Bridge Width/Profile
- Existing Piers
- Higher Clearance Over Water
- Improvements to Storm Water Management
- Minimized Coastal Wetland Impacts Through Construction Methods
- Meets Coast Guard Permit Requirements
- Resiliency Improvements



**Old Bridge Superstructure**



**Replacement Bridge  
Superstructure**



**LEGEND**

- TEMPORARY IMPACTS WITHIN LIMIT OF COASTAL STORM FLOWAGE (0 SF)
- PERMANENT IMPACTS WITHIN 100' BUFFER (0 SF)
- TEMPORARY IMPACTS WITHIN 100' BUFFER (0 SF)
- TEMPORARY IMPACTS WITHIN COASTAL BANK (0 SF)
- TEMPORARY IMPACTS WITHIN COASTAL BEACH (0 SF)
- TEMPORARY IMPACTS WITHIN LAND UNDER OCEAN (0 SF)

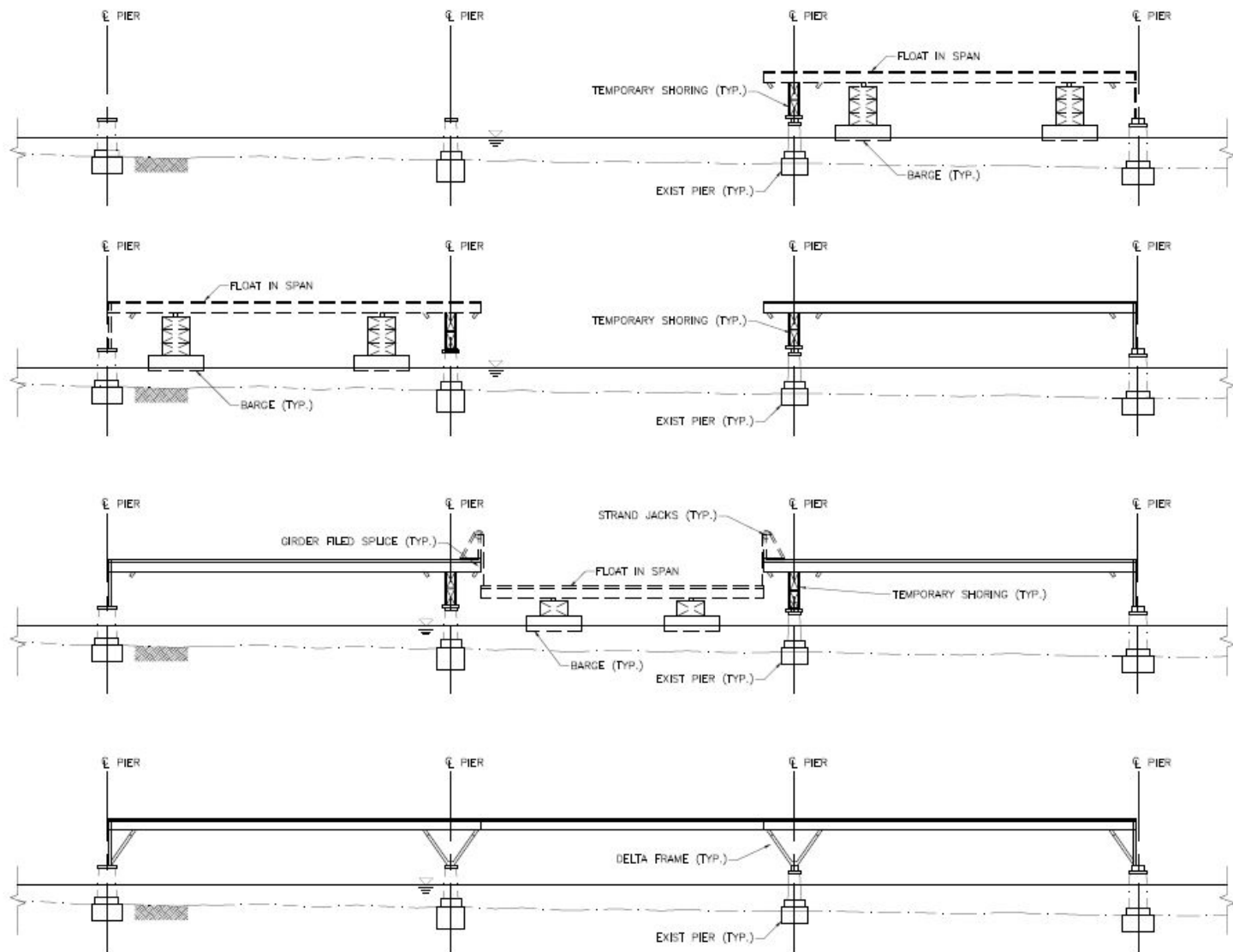
SCALE: 1"=80'



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**STV** 100 Years  
 ONE FINANCIAL CENTER,  
 3RD FLOOR,  
 BOSTON, MA 02111

CITY OF BOSTON PUBLIC WORKS DEPARTMENT  
 BRIDGE SUPERSTRUCTURE REPLACEMENT  
 LONG ISLAND BRIDGE  
 FIGURE 6: PROPOSED PLAN 2 OF 2  
 DATE: MAY 14, 2018

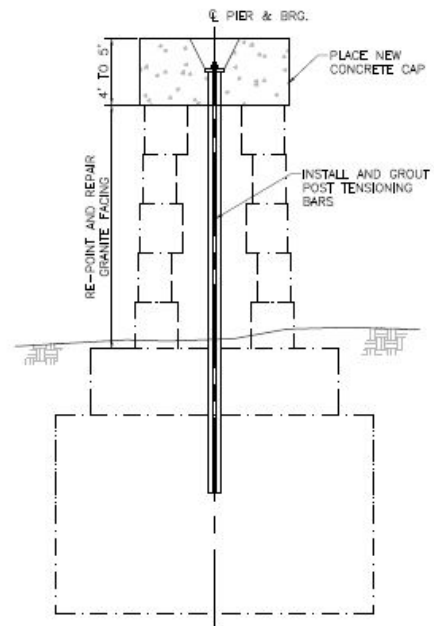
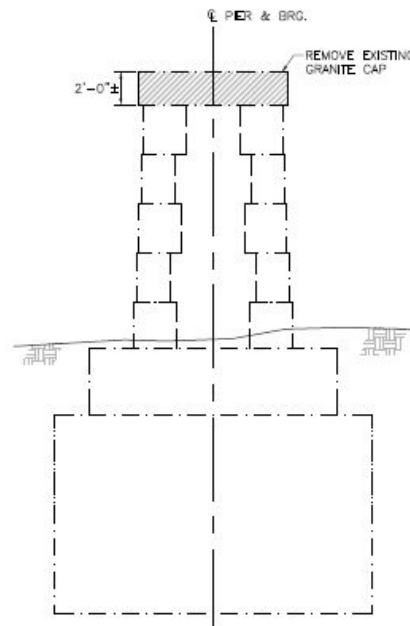
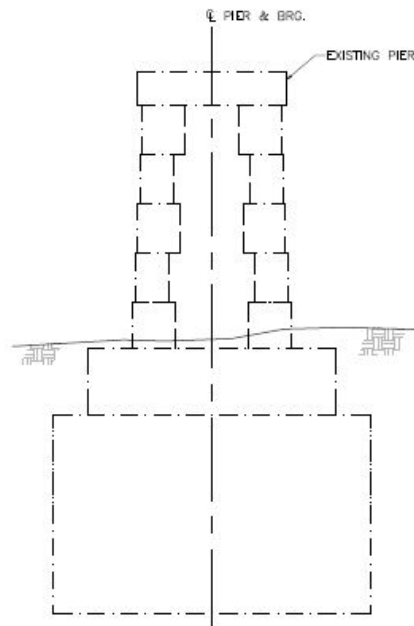


**CONTINUOUS GIRDER STRUCTURE ERECTION**  
**(GIRDER STRUCTURES B & C)**  
 NOT TO SCALE

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 LONG ISLAND BRIDGE  
 FIGURE 14: GIRDER SPAN ERECTION  
 DATE: MAY 14, 2018

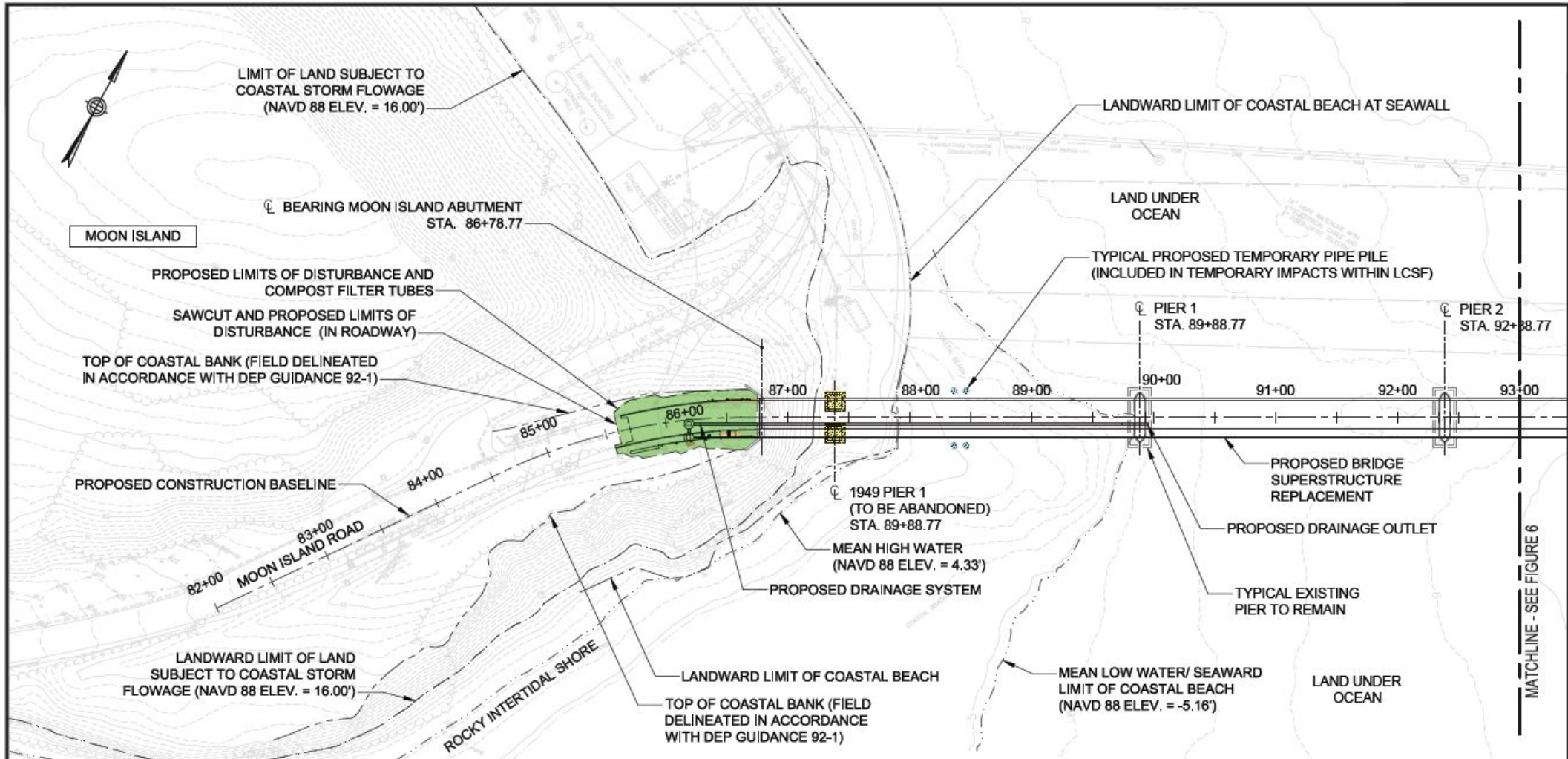


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BRIDGE SUPERSTRUCTURE REPLACEMENT  
LONG ISLAND BRIDGE  
FIGURE 11: TYPICAL PIER MODIFICATIONS

DATE: MAY 14, 2018

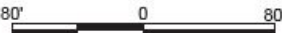


MATCHLINE - SEE FIGURE 6

**LEGEND**

- TEMPORARY IMPACTS WITHIN LAND SUBJECT TO COASTAL STORM FLOWAGE (592 SF)
- PERMANENT IMPACTS WITHIN 100' BUFFER (126 SF)
- TEMPORARY IMPACTS WITHIN 100' BUFFER (5218 SF)
- TEMPORARY IMPACTS WITHIN COASTAL BANK (512 SF)
- TEMPORARY IMPACTS WITHIN COASTAL BEACH (80 SF)
- TEMPORARY IMPACTS WITHIN LAND UNDER OCEAN (0 SF)

SCALE: 1"=80'

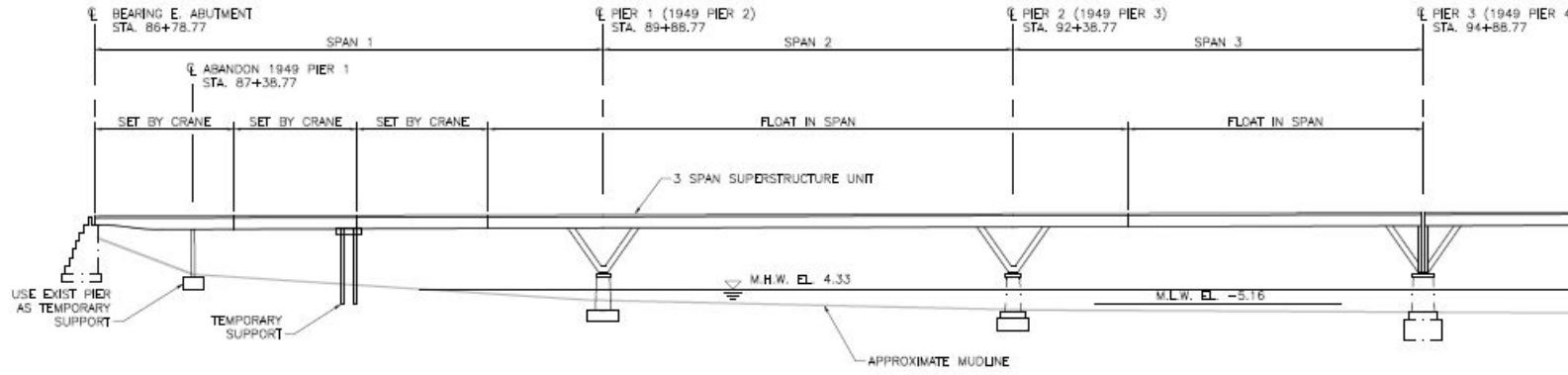


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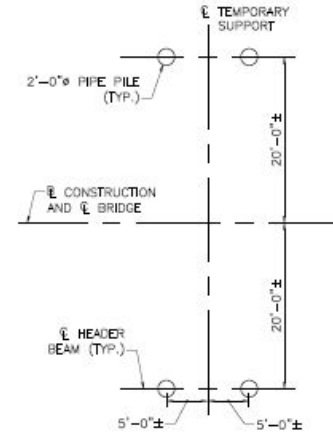
CITY OF BOSTON PUBLIC WORKS DEPARTMENT  
 BRIDGE SUPERSTRUCTURE REPLACEMENT  
 LONG ISLAND BRIDGE  
 FIGURE 5: PROPOSED PLAN 1 OF 2  
 DATE: MAY 14, 2018

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**3-SPAN CONTINUOUS GIRDER STRUCTURE A**  
SCALE: N.T.S.



**TEMPORARY SUPPORT PILE LAYOUT**  
SCALE: 1/8" = 1'-0"

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BRIDGE SUPERSTRUCTURE REPLACEMENT  
LONG ISLAND BRIDGE  
FIGURE 13: ERECTION STAGING

DATE: MAY 14, 2018



# Summary & Questions

An aerial photograph of a long, multi-span bridge crossing a wide body of water. The bridge has several large, rounded piers supporting its structure. In the background, there is a large, forested island. The water is calm, and the sky is overcast.

- Land Under the Ocean: None Proposed
- Coastal Beach and Land Containing Shellfish: 80 Square Feet (Temporary)
- Coastal Bank: 512 Square Feet (Temporary)
- Land Subject to Coastal Storm Flowage: 592 Square Feet (Temporary)
- Buffer Zone: 126 Square Feet (Permanent)



# Team Bridge & Environmental Prequalifications (MassDOT)



- STV Bridge

- Basic Bridge Design/Rating
- Intermediate Bridge Design/Rating
- Complex Bridge Design/Rating
- Movable Bridge Design/Rating
- Movable Bridge Design Inspection

- TRC

- Major Environmental Documentation
- Geotechnical Engineering
- Cultural Resources
- Hazardous Waste - Site Investigation and Assessment
- Hazardous Waste – Remediation
- Wetlands - Delineation and Assessment
- Wetlands – Mitigation
- Water Quality – Assessment
- Water Quality - Mitigation

## City of Boston Summer Street Bridge Rehabilitation

Boston, MA



## MassDOT Fore River Bridge Replacement

Quincy & Weymouth, MA



## MassDOT DiTomasso Bridge Replacement

Fitchburg, MA



## MassDOT University Avenue Bridge Replacement

Lowell, MA



## MassDOT Longfellow Bridge Rehabilitation

Boston & Cambridge, MA



## MassDOT Boston University Bridge Rehabilitation

Boston & Cambridge, MA



## City of Westfield Great River Bridge Project

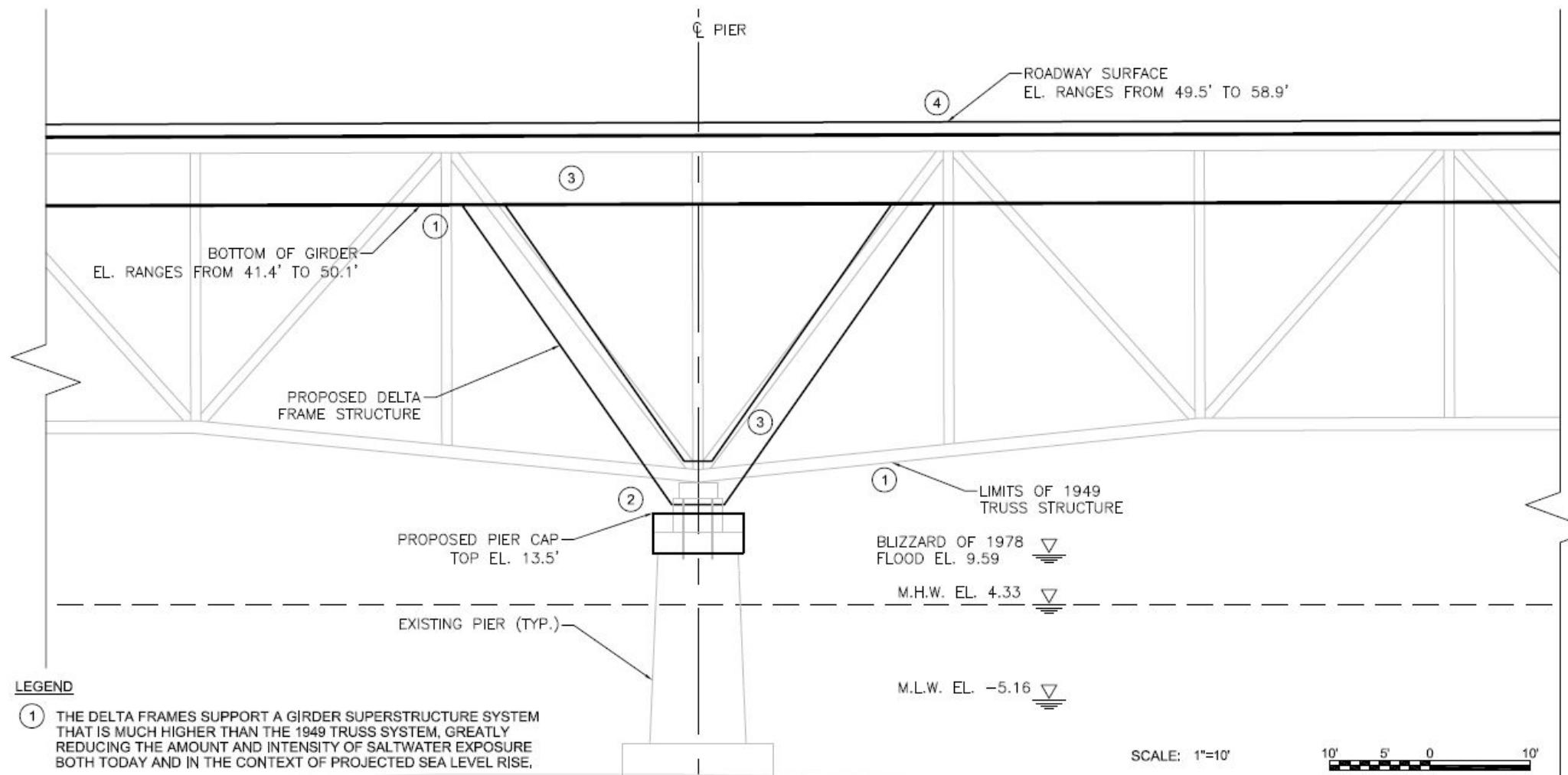
Westfield, MA



## City of Boston Congress Street Bridge Rehabilitation

Boston, MA





**LEGEND**

- ① THE DELTA FRAMES SUPPORT A GIRDER SUPERSTRUCTURE SYSTEM THAT IS MUCH HIGHER THAN THE 1949 TRUSS SYSTEM, GREATLY REDUCING THE AMOUNT AND INTENSITY OF SALTWATER EXPOSURE BOTH TODAY AND IN THE CONTEXT OF PROJECTED SEA LEVEL RISE.
- ② THE DELTA FRAME DESIGN PLACES ALL TOPS OF PIER CAPS AT ELEVATION 13.5', APPROXIMATELY TWO FEET HIGHER THAN THE MAJORITY OF THE EXISTING PIER CAPS.
- ③ IMPROVED COATING SYSTEMS SUCH AS MASSDOT-APPROVED MULTI-LAYER PAINT SYSTEMS, GALVANIZING AND METALIZING WILL COMBAT DETERIORATION FROM EXPOSURE TO THE SALTWATER ENVIRONMENT, WHICH COULD WORSEN WITH PROJECTED SEA LEVEL RISE.
- ④ ROADWAY SURFACE ELEVATIONS RANGING FROM ABOUT 49.5' AT THE ABUTMENTS TO 58.9' OVER THE NAVIGABLE OPENING WILL BE WELL ABOVE ANY FORECASTED SEA LEVEL.

NOTE: ALL ELEVATIONS REFERENCE NAVD 88 DATUM, WATER ELEVATIONS FROM NOAA TIDAL STATION 8443970 IN BOSTON, MA.

SCALE: 1"=10'

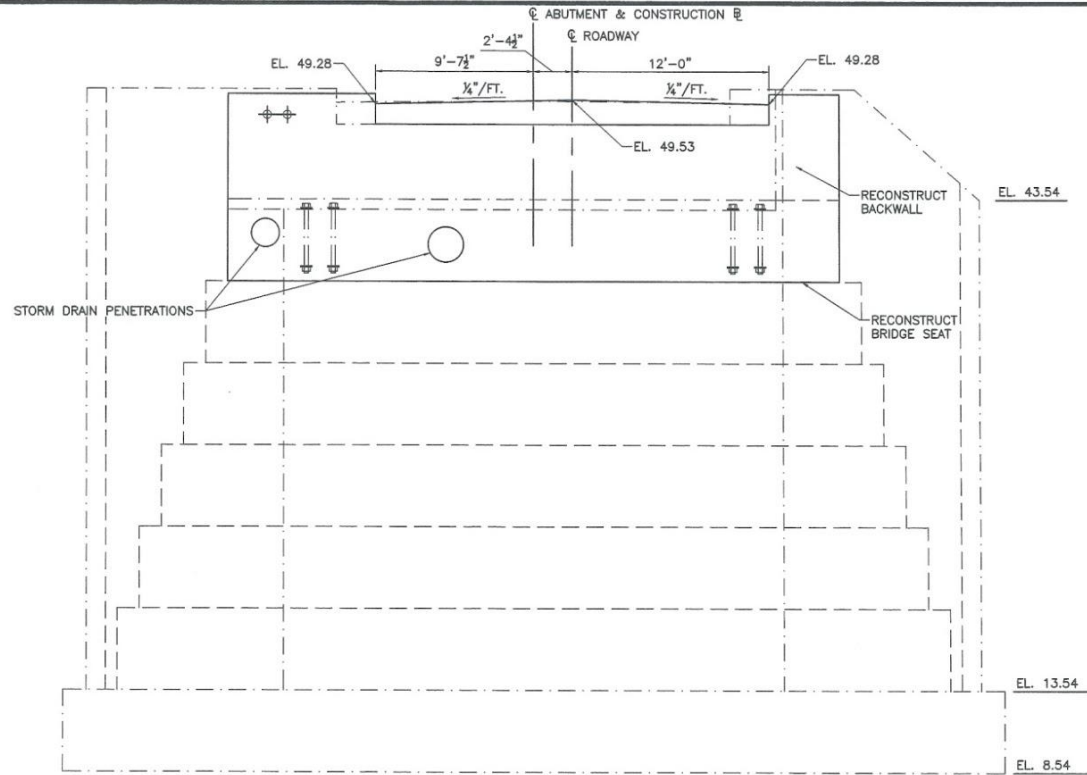


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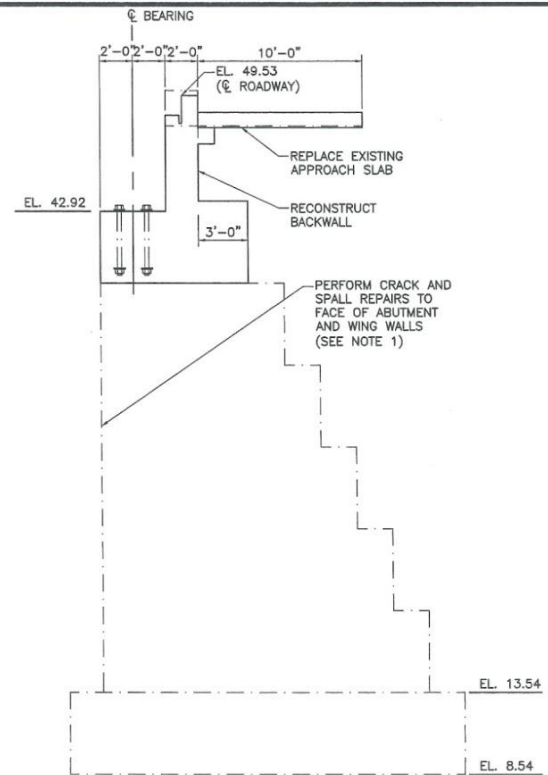
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 LONG ISLAND BRIDGE  
 SEA LEVEL RISE: PROPOSED SUPERSTRUCTURE  
 DATE: MAY 30, 2018

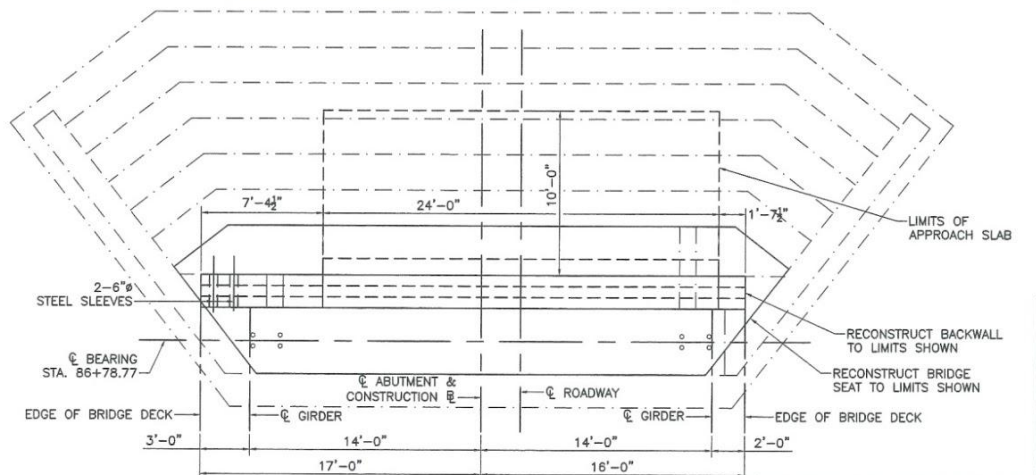




MOON ISLAND ABUTMENT ELEVATION (LOOKING WEST)



MOON ISLAND ABUTMENT SECTION



MOON ISLAND ABUTMENT PLAN

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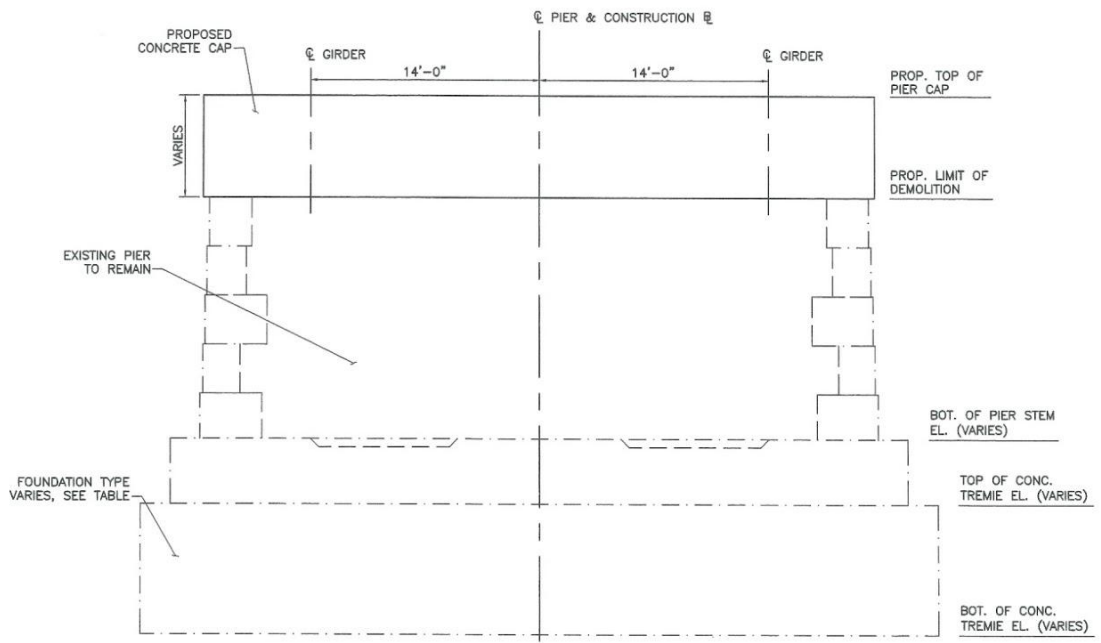


NOTES:  
 1. CRACK AND SPALL REPAIRS TO BE BASED ON ABUTMENT INSPECTION. ANTICIPATED TYPES OF REPAIRS INCLUDE EPOXY INJECTION AT CRACKS, CHIPPING OUT EXISTING CONCRETE AT SPALL LOCATIONS, AND PERFORMING SHALLOW CONCRETE REPAIRS.

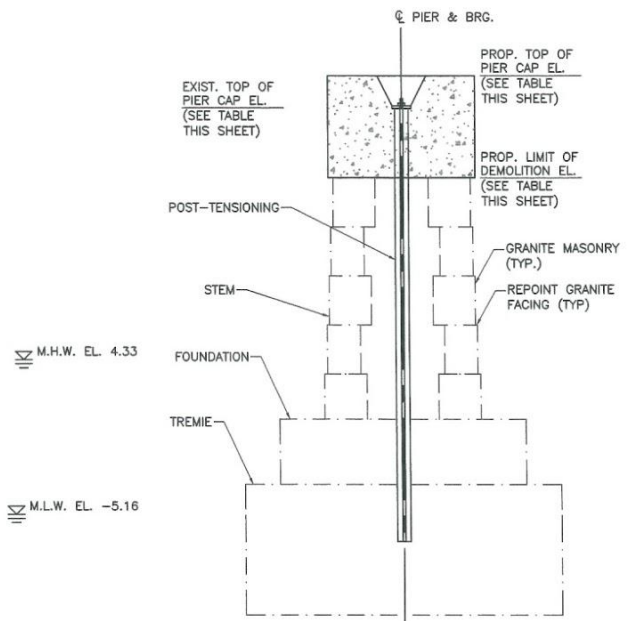
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 LONG ISLAND BRIDGE  
 FIGURE 9: MOON ISLAND ABUTMENT DETAILS

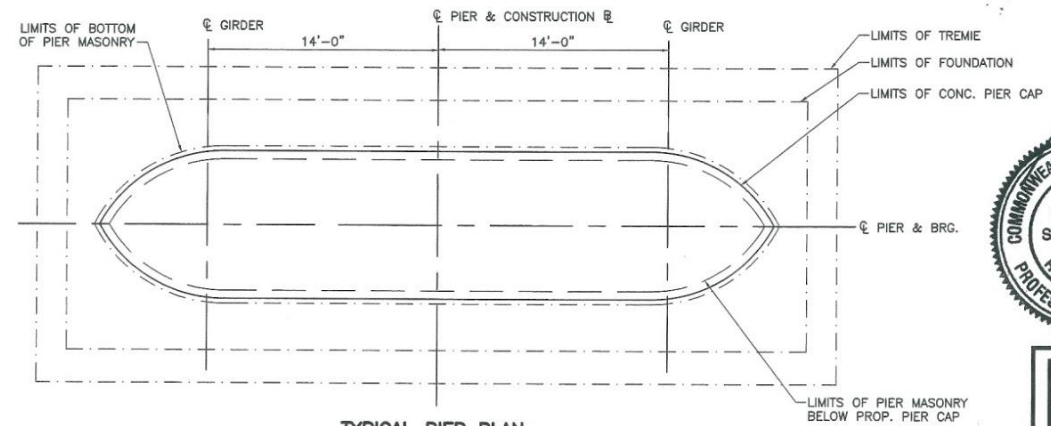
DATE: MAY 14, 2018



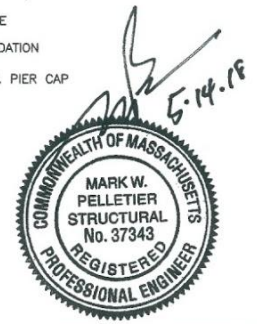
**TYPICAL PIER ELEVATION**



**TYPICAL PIER SECTION**



**TYPICAL PIER PLAN**



PIER NO.	FOUNDATION TYPE	EXISTING T.O. CAP EL.	LIMIT OF DEMOLITION EL.	PROPOSED T.O. CAP EL.
1	SPREAD FOOTING	12.35	10.35	13.50
2	SPREAD FOOTING	13.01	11.01	13.50
3	SPREAD FOOTING	13.66	8.91	13.50
4	SPREAD FOOTING	14.32	9.57	13.50
5	SPREAD FOOTING	11.54	9.54	13.50
6	SPREAD FOOTING	11.54	9.54	13.50

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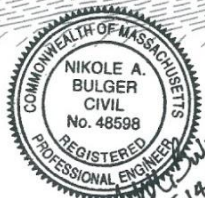
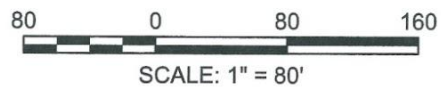
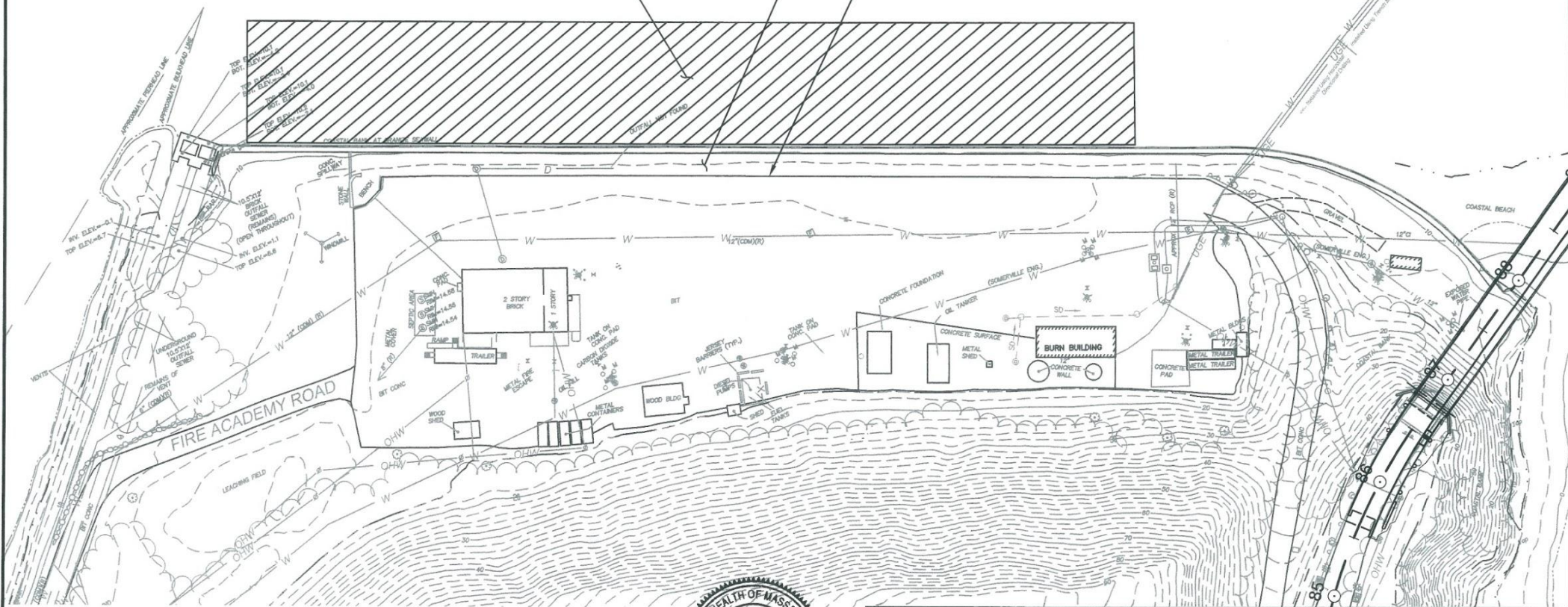
CITY OF BOSTON PUBLIC WORKS DEPARTMENT  
 BRIDGE SUPERSTRUCTURE REPLACEMENT  
 LONG ISLAND BRIDGE  
 FIGURE 10: TYPICAL PIER DETAILS  
 DATE: MAY 14, 2018



RETAIN EXISTING RIP RAP BETWEEN SEAWALL AND ASPHALT

EXISTING RAILING TO BE REMOVED AND REPLACED AS NEEDED

POTENTIAL BARGE STAGING AREA

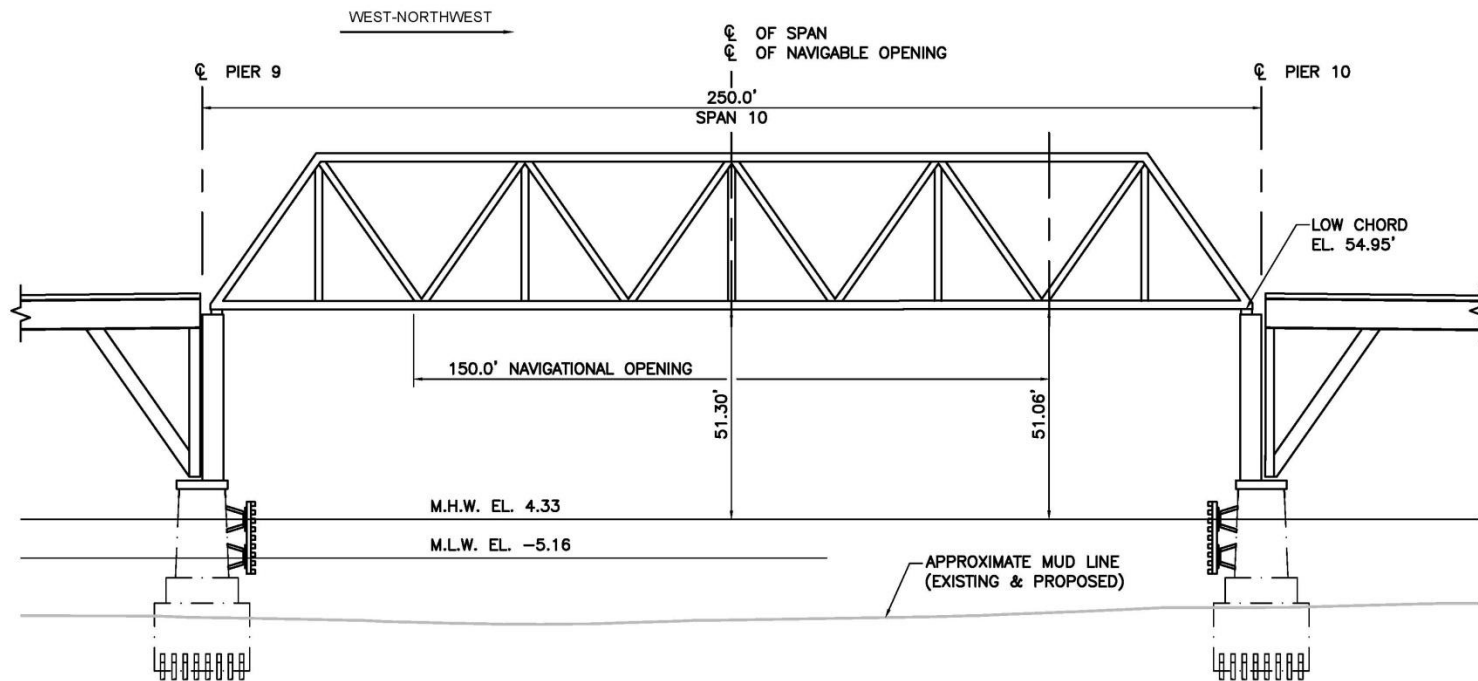


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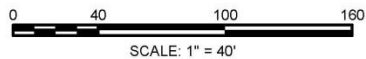
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CITY OF BOSTON PUBLIC WORKS DEPARTMENT  
BRIDGE SUPERSTRUCTURE REPLACEMENT  
LONG ISLAND BRIDGE  
FIGURE 12: BARGE STAGING AREA

DATE: MAY 14, 2018



### TRUSS ELEVATION



#### NOTES:

1. ELEVATIONS REFERENCE NAVD 88 DATUM.
2. 51.0' MINIMUM VERTICAL CLEARANCE PROVIDED WITHIN 150.0' NAVIGABLE OPENING.
3. CONCEPTUAL PLANS UTILIZED TO OBTAIN COAST GUARD BRIDGE PERMIT.
4. NO FILL IS PROPOSED.
5. PER FEMA FIRM, 100-YEAR FLOOD ELEVATIONS ARE 16' (QUINCY) AND 19' (BOSTON).

#### OWNER/APPLICANT:



CITY OF BOSTON  
PUBLIC WORKS DEPARTMENT

LONG ISLAND BRIDGE  
OVER BOSTON HARBOR  
BOSTON AND QUINCY  
NORFOLK AND SUFFOLK  
COUNTY, MA

BRIDGE NO. B-16-368 (91M)

CONSULTANT: STV INC.

DATE: JUNE 6, 2018

FIGURE: 4 OF 6

# United States Coast Guard Permit Requirements