



City of Boston Public Works Department  
Long Island Over Boston Harbor  
Bridge Superstructure Replacement

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## Navigation Impact Study

June 2021



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**TABLE OF CONTENTS**

**1. EXECUTIVE SUMMARY** ..... 1

**2. INTRODUCTION**..... 4

    2.1 Original Bridge Structure ..... 4

    2.2 Project Context ..... 5

    2.3 Project Purpose and Need ..... 6

    2.4 Alternatives Analyses ..... 6

    2.5 Report Guidelines ..... 9

**3. PRESENT GOVERNING BRIDGES OR AERIAL STRUCTURES ON THE WATERWAY**.. 9

    3.1 Bridges ..... 9

    3.2 Proposed Bridge Superstructure - Navigational Clearance ..... 9

    3.3 Horizontal Clearance on the Waterway..... 10

    3.4 Vertical Clearance on the Waterway ..... 10

    3.5 Restrictions of the Proposed Bridges..... 10

**4. WATERWAY CHARACTERISTICS** ..... 10

    4.1 Waterway Stages ..... 10

    4.2 Sea Level Rise ..... 11

    4.3 Natural Flow of the Waterway..... 11

    4.4 Width of the Waterway at the Bridge Site..... 12

    4.5 Depth of the Waterway ..... 12

    4.6 Waterway Layout and Geometry (Dams, Locks, Etc.)..... 13

    4.7 Channel and Waterway Alignment ..... 13

    4.8 Other limiting factors (Bends in the Waterway, Etc.)..... 13

**5. EMERGENCY OPERATIONS/MAINTENANCE VESSELS**..... 13

**6. FEDERAL NAVIGATION PROJECT** ..... 14

**7. RECREATIONAL NAVIGATION**..... 15

**8. COMMERCIAL NAVIGATION** ..... 23

**9. MARINE FACILITIES (PUBLIC BOAT RAMPS, MARINAS, ETC.)** ..... 24

**10. ACCESS TO MARINE FACILITIES (PUBLIC BOAT RAMPS, MARINAS, ETC.)**..... 27

**11. ALTERNATE ROUTES BYPASSING THE PROPOSED BRIDGE**..... 27

**12. LOCAL HARBOR OF REFUGE**..... 30

**13. BENDS IN THE WATERWAY**..... 31

**14. HAZARDOUS PASSAGE THROUGH PROPOSED STRUCTURE**..... 31

<b>15.</b>	<b>LOCAL HYDRAULIC CONDITIONS - HAZARDOUS PASSAGE</b> .....	<b>31</b>
<b>16.</b>	<b>LOCAL ATMOSPHERIC CONDITIONS - HAZARDOUS PASSAGE</b> .....	<b>31</b>
<b>17.</b>	<b>GUIDE CLEARANCES</b> .....	<b>31</b>
<b>18.</b>	<b>OTHER NATURAL OR MAN-MADE CONDITIONS THAT AFFECT NAVIGATION</b> ...	<b>32</b>
<b>19.</b>	<b>OTHER FACTORS NECESSARY FOR SAFE PASSAGE THROUGH BRIDGE</b> .....	<b>32</b>
<b>20.</b>	<b>MITIGATION</b> .....	<b>32</b>
<b>21.</b>	<b>CONCLUSION</b> .....	<b>33</b>
<b>APPENDIX 1 - FIGURES</b> .....		<b>A1</b>
1.	SITE LOCATION MAP .....	A1-1
2.	PERMITTED BRIDGE NAVIGATIONAL CLEARANCES.....	A1-2
3.	PROPOSED BRIDGE NAVIGATIONAL CLEARANCES.....	A1-2
4.	USACE FEDERAL NAVIGATION PROJECTS IN BOSTON HARBOR.....	A1-3
5.	MARINE FACILITIES SURROUNDING PROJECT AREA .....	A1-4
6.	ALTERNATE ROUTES 1&2 – BOSTON INNER HARBOR TO QUINCY BAY .....	A1-5
7.	ALTERNATE ROUTES 3, 4 & 5 – BOSTON INNER HARBOR TO HINGHAM BAY – WEYMOUTH DESTINATIONS .....	A1-6
8.	ALTERNATE ROUTES 6 & 7 – BOSTON INNER HARBOR TO HINGHAM BAY – HINGHAM DESTINATIONS .....	A1-7
9.	ALTERNATE ROUTES 8, 9 & 10 – BOSTON INNER HARBOR TO HULL BAY.....	A1-8
10.	ALTERNATE ROUTES 11 & 12 – DORCHESTER BAY TO QUINCY BAY.....	A1-9
11.	ALTERNATE ROUTES 13, 14 & 15– DORCHESTER BAY TO HINGHAM BAY – WEYMOUTH DESTINATIONS .....	A1-10
12.	ALTERNATE ROUTES 16 & 17 – DORCHESTER BAY TO HINGHAM BAY – HINGHAM DESTINATIONS .....	A1-11
13.	ALTERNATE ROUTES 18, 19 & 20 – DORCHESTER BAY TO HULL BAY .....	A1-12
<b>APPENDIX 2 – 1949 LEGISLATIVE ACTION</b> .....		<b>A2</b>
<b>APPENDIX 3 – 1950 PERMITTING DOCUMENTATION</b> .....		<b>A3</b>
<b>APPENDIX 4 – SAFETY ZONE REGULATION</b> .....		<b>A4</b>
<b>APPENDIX 5 – USCG BRIDGE APPLICATION PLAN FIGURES</b> .....		<b>A5</b>
<b>APPENDIX 6 – USCG PROJECT CORRESPONDENCE</b> .....		<b>A6</b>
<b>APPENDIX 7 – SURVEY FOR MARINE COMMUNITY</b> .....		<b>A7</b>
<b>APPENDIX 8 – VESSEL DATA RECEIVED FOR REPORTING</b> .....		<b>A8</b>
<b>APPENDIX 9 – NOAA TIDAL CURRENTS PREDICTION 2021</b> .....		<b>A9</b>



## 1. EXECUTIVE SUMMARY

As requested by the U.S. Coast Guard (USCG) in February 2021, this Navigation Impact Study describes existing conditions and potential impacts to navigation that could result from the proposed replacement of the superstructure of the Long Island Bridge, No. B-16-368, located in Boston and Quincy, Massachusetts (see Figure 1 in Appendix 1 for a site location map). The bridge was authorized by the Commonwealth of Massachusetts legislature on July 1, 1949 and by the United States Government on January 30, 1950 (see Appendices 2 and 3 for authorization documentation). The originally permitted 16-span bridge carried Dorchester Street (Moon Island Road) over Boston Harbor between Long Island in Boston and Moon Island in Quincy.

STV Incorporated was contracted by the City of Boston Public Works Department in 2014 to provide design, engineering and construction phase services in support of the replacement of the Long Island Bridge superstructure with the intent of maintaining vehicular access throughout construction. The bridge superstructure was found to be structurally deficient in October 2014 and was closed immediately to vehicular and pedestrian traffic, necessitating the evacuation of the public health facilities on Long Island. The Massachusetts Secretary of Energy and Environmental Affairs then granted the City of Boston emergency authorization for expedited removal of the bridge superstructure due to concern for public safety.

The superstructure was removed in 2015, and during the project the USCG issued a Safety Zone regulation that closed the navigable waterway for marine vessels for ten months except as specifically authorized. During this time, the bridge superstructure was removed and the design of the superstructure replacement continued. This effort included a geotechnical boring program to inform the evaluation of the existing substructure foundations which were retained to be reused for the proposed bridge superstructure replacement. As memorialized in the USCG letter to the City of Boston on March 9, 2017 (see Appendix 6, note that the letter is incorrectly dated 2016), both the U.S. Army Corps of Engineers (USACE) and USCG recognized Boston's intent to reactivate a bridge at this location, potentially utilizing the existing substructures.

The proposed replacement bridge superstructure was designed to match the footprint of the originally permitted bridge superstructure, while improving the bridge stormwater management system and minimizing the environmental impacts of construction within the waterway and on both shores. As the City of Boston progressed the design, detailed consideration was also given to navigational clearances, sea level rise, and roadway and sidewalk requirements for users on the bridge.

In January 2018, then-Boston Mayor Martin J. Walsh announced that the public health facilities on Long Island would be reopened as a recovery campus for individuals suffering from opioid and other substance use disorders<sup>1</sup>. This announcement followed one of the

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<sup>1</sup> In January 2021, then-President-Elect Joseph R. Biden, Jr. appointed Martin J. Walsh to the position of United States Secretary of Labor. Martin J. Walsh was confirmed to the position by the United States Senate in March 2021, and Martin J. Walsh promptly resigned as Mayor of Boston and was sworn in as Secretary of Labor. Then-  
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June 2021

deadliest years in Massachusetts for opioid-related overdose deaths. While the novel Coronavirus (COVID-19) pandemic that began in 2020 has overshadowed the opioid use epidemic in Massachusetts, opioid-related deaths have not abated. Based on publicly available data of the Commonwealth of Massachusetts Department of Public Health, in 2020, there were 2,104 opioid-related overdose deaths in Massachusetts, which is 102 more opioid-related overdose deaths than had occurred in the prior year and two more deaths than had occurred in what had been the prior peak year of 2016.<sup>2</sup>

The City filed permit applications with local and state regulatory agencies in early 2018 for the superstructure replacement project as presented to the USCG in December 2018. The bridge permit application formally filed in February 2019 requested an amendment to the 1950 federal bridge authorization to reconstruct the bridge superstructure with the same horizontal and vertical clearances at the navigable waterway. All design-related USCG comments on the application were received and fully addressed in 2019 and the final design for the bridge was completed.

In February 2021, the USCG requested that the City of Boston prepare this Navigation Impact Study to evaluate the reasonableness of the potential impact the reinstatement of the superstructure could have on waterborne traffic that has used the navigable waterway since the superstructure removal in 2015. This Navigation Impact Study summarizes data collected from surveys of the marine community and details the potential navigational implications of the navigable waterway clearances afforded by both the originally permitted bridge structure and the proposed bridge superstructure replacement for marine traffic in Boston Harbor.

All vessels that could transit under the 1950 bridge superstructure will be able to transit under the proposed bridge superstructure. The City of Boston understands that some vessels requiring more vertical clearance than will be afforded by the proposed bridge superstructure have enjoyed traversing the Long Island Bridge site since the emergency superstructure removal in 2015. However, this condition during the design and permitting process was never anticipated to be permanent. If needed, both sides of the bridge can be accessed by vessels via alternate routes.

Replacement of the superstructure does not block vessel access to any marine facility or location. However it will provide the only vehicular access to important existing public health facilities on Long Island, which will be restored as a recovery campus for those suffering from opioid and other substance use disorders. The campus will provide those in

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Boston City Council President Kim Janey became Acting Mayor under the Boston City Charter. Mayor Janey is continuing the master planning effort for the Long Island Recovery Campus.

<sup>2</sup> Massachusetts Dep't of Pub. Health, *Data Brief: Opioid-Related Overdose Deaths among Massachusetts Residents*, at 1 (May 2021), <http://www.mass.gov/doc/opioid-related-overdose-deaths-among-ma-residents-may-2021/download>; Felice J. Freyer, *Opioid deaths rose 5 percent in Massachusetts last year*, *The Boston Globe* (May 12, 2021, 6:54 PM), <http://www.bostonglobe.com/2021/05/12/metro/opioid-deaths-rose-5-percent-massachusetts-last-year>.

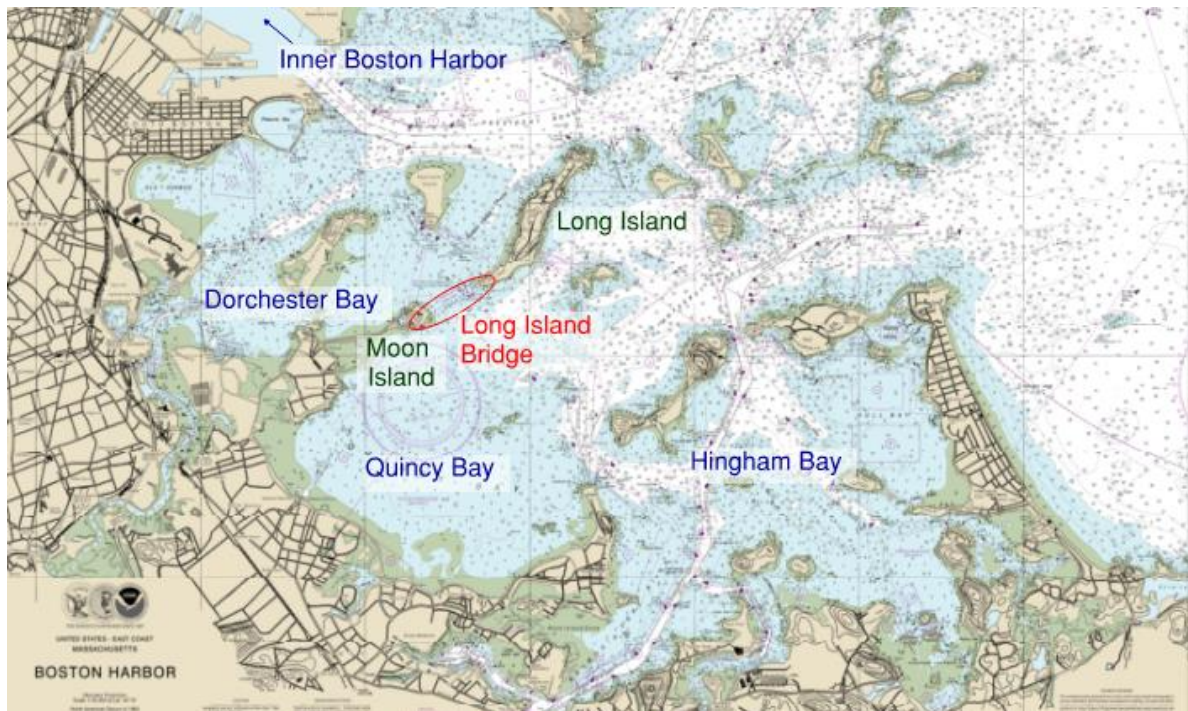
recovery with short- and long-term care and treatment programs, housing stability during recovery, and workforce development. Pursuant to 33 CFR 116.01, the USCG, in its evaluation of the reasonableness of impacts to navigation, is to consider Boston's important land-based transportation needs and objectives.

**As the sole vehicular route to Long Island, the bridge serves the needs of land transportation while allowing for the reasonable needs of navigation.**

## 2. INTRODUCTION

### 2.1 Original Bridge Structure

The Long Island Bridge was originally authorized by the Commonwealth of Massachusetts legislature in 1949 and was permitted by the federal government in 1950. Prior to the emergency removal of the bridge superstructure in 2015, the Long Island Bridge carried Dorchester Street (Moon Island Road) from Moon Island in Quincy over Boston Harbor to Long Island, in the City of Boston. It provided the only vehicular access between Long Island and the mainland. The section of Boston Harbor under the thru-truss span of this bridge is a navigable waterway commonly referred to as “Western Way” that connects Dorchester Bay and Quincy Bay (see Chart 1 below).



**Chart 1: NOAA Chart 13270 with project location**

<https://charts.noaa.gov/PDFs/13270.pdf>

The original bridge, constructed between 1950 and 1951, was a 16-span steel bridge with a total span length of 3,450 feet. The permitted vertical clearance for the navigation span, a simply supported, single span, steel thru-truss, is 51 feet over the mean highwater elevation. All of the spans were 250 feet long as shown in Appendix 5 Plan Figure 3.

The bridge substructures remaining in place after the emergency superstructure removal include two concrete abutments on spread footings and 15 piers on spread footings and pile foundations. The Moon Island abutment (west) is a stepped-down concrete gravity wall structure with flared wingwalls. The Long Island abutment (east) is a reinforced concrete stub abutment with U-shaped wingwalls. The pier closest to Long Island is a two-column reinforced concrete bent pier on a spread footing and the remaining piers are concrete stem-

walls with granite block facing and granite block pier caps with reinforced concrete pedestals for bridge bearings.

## 2.2 Project Context

In August 2014, the City of Boston issued a solicitation for Engineering Design Services Relative to the Design of a New Long Island Bridge. The scope of work defined the project as a Superstructure Replacement and required that the new superstructure design minimize impacts to vehicular traffic through the use of accelerated construction techniques to limit the amount of time that the superstructure was out of service.

In October 2014, routine inspections and associated bridge rating efforts found that the Long Island Bridge superstructure was no longer safe for use because of a previously unidentified area of weakness. This determination was based on newer federal evaluation requirements for gusset plates that were issued in response to the Minnesota I-35W bridge collapse. Facilities on Long Island were evacuated and the bridge was closed to traffic.

An emergency project was undertaken at this time to immediately remove the failing superstructure for safety reasons. Navigation through the waterway under the bridge was also temporarily closed by a safety zone regulation from the Coast Guard (see Appendix 4), in which “entering into, transiting through, remaining in, anchoring, or mooring within this safety zone [was] prohibited unless authorized by the Captain of the Port (COTP) Sector Boston” from March 2, 2015 until December 31, 2015. The MBTA modified its ferry routes to detour around Long Island, and other marine traffic followed suit.

Controlled detonation was used to demolish the superstructure, releasing structural elements into the harbor that were then removed by cranes and excavators, leaving the existing substructures in place. During the superstructure demolition phase, a geotechnical soil boring program was carried out as part of the superstructure replacement design project. As memorialized in the USCG letter to the City of Boston on March 9, 2017 (see Appendix 6), both the USACE and USCG recognized Boston’s intent to reconstruct the bridge. The City prepared a preliminary design and ultimately filed permit applications with local and state regulatory agencies in early 2018 for the project as presented to the USCG in December 2018. The bridge permit application formally filed in February 2019 requested an amendment to the 1950 federal bridge authorization to reconstruct the bridge superstructure on the existing bridge substructures with the same horizontal and vertical clearances at the navigable waterway.

In response to the bridge permit application, the USCG issued a letter dated March 5, 2019 (see Appendix 6 for a complete copy) stating that the application would not be complete until the following items were finalized and/or received: revised plans to address USCG comments, the final Categorical Exclusion from the USCG, a Water Quality Certificate if needed for the project, a Coastal Zone Management Act consistency determination, a U.S. Army Corps of Engineers (USACE) permit if needed for the project, consultation with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service with associated explanations of compliance, documentation of compliance with the Migratory Bird Treaty

Act, and documentation of response to a 2018 Massachusetts Historical Commission letter. The City submitted responses to the USCG letter in October 2019, received additional plan figure comments from the USCG, and transmitted revised plan figures in November 2019. The USCG indicated that the plan figures were acceptable for the application on November 26, 2019, and the USCG requested that the plan figures be stamped by a professional engineer and resubmitted in January 2020. See Appendix 5 for a copy of the USCG Bridge Permit Application plan figures.

In February 2021, the USCG requested that the City of Boston prepare this Navigation Impact Study to evaluate the reasonableness of the potential impact the reinstallation of the superstructure could have on waterborne traffic that has used the navigable waterway since the emergency superstructure removal in 2015.

### **2.3 Project Purpose and Need**

Long Island was the site of public health facilities that were evacuated when the bridge superstructure was closed to traffic, including substance use disorder treatment facilities and programs, a homeless shelter, and a juvenile rehabilitation program. Reestablishing vehicular access to the public health facilities will allow the reopening of this existing campus, which will in turn provide public health services that are critical to the City's efforts against the region's opioid crisis. Pursuant to 33 CFR 116.01, the USCG, in its evaluation of the reasonableness of impacts to navigation, is to consider Boston's important land-based transportation needs and objectives.

### **2.4 Alternatives Analyses**

Project alternatives were evaluated in the MEPA Notice of Project Change submitted to the Massachusetts Executive Office of Energy and Environmental Affairs in July 2018 and are summarized below:

- **No Build:** If no further action was taken by the City to restore the roadway access to Long Island, the proposed treatment and recovery programs at the existing public health facilities could not proceed, and those in need of addiction treatment services would not have access to the existing public health facilities on Long Island. Due to the urgency of the public health emergency surrounding the opioid crisis, the City does not consider this to be a viable alternative. This alternative would end the long-term and successful use of the island as a supportive environment to aid addiction recovery.

Additionally, a decision to take no further action to restore the roadway access to Long Island would require the removal of the Long Island Bridge piers from Boston Harbor (in compliance with United States Coast Guard guidance, see Appendix 6) to eliminate them as a navigational hazard. Removal of the piers would require significant alterations to the seafloor and shellfish habitat caused by dredging and in-water work, and would require the placement of cofferdams to minimize undesirable impacts to marine resources including fish, shellfish and their habitats and potentially

transient species, such as marine mammals. Because this alternative would not meet the project purpose and need, would generate significant costs, and would generate significant negative environmental impacts due to the removal of the existing bridge piers, it was discarded by the City.

- **Ferry Service as the Sole Access:** Ferry service as supplemental access has always been an option for the City to access the island in the past, as evidenced by an existing dock facility at Long Island that was constructed while the originally permitted bridge superstructure was still in service. However, this dock facility was designed for pedestrians only. The existing dock cannot accommodate the transfer of large equipment or vehicles, and its use would thus preclude ambulance access to transport patients in need of critical medical attention and preclude additional fire and other protective service vehicles in the event of a large fire or other catastrophic event. In addition, the existing dock is situated at a location on Long Island that is some distance away from the public health facilities and it is therefore not appropriate for use by staff and addiction recovery patients to gain access to the public health facilities.

To appropriately address urgent care issues with ferry service as a sole access, dedicated dock facilities on both Long Island and on the mainland would be required. These docks would need to be staffed 24 hours per day and seven days per week by professional personnel hired by the City. The docks would also need to be sized to accommodate first responder vehicles, passenger buses or vans, service delivery vehicles, and other types of vehicles so that reliable access to the public health facilities is maintained to support public health service operations there at any time of day and at any time of the year. The potential for inclement weather and its impact on the reliable and safe operation of ferry service during emergencies is also a significant issue of concern. The unpredictable weather in the region could make regular marine vessel transports difficult as well as hamper the need for emergency evacuations for health or safety reasons.

The environmental impacts of establishing and operating a ferry service would include construction of the docking facilities described above with associated utility connections and parking facilities at the Boston ferry facility. It is anticipated that significant dredging of the seafloor for the construction of new dock facilities and future dredging to maintain ferry navigation would be required. Given the shallow water present around much of Long Island and the substantial tidal influences found in Boston Harbor, it is anticipated that a substantial volume of sediment would need to be dredged, dewatered, and disposed of. In addition, the existing Long Island Bridge piers would still have to be removed as described in the “No Build” alternative above. Long-term environmental impacts associated with the operation of ferry dock facilities to support heavy vehicle transport and 24-hour access would also likely include turbidity impacts and noise and disruption that would affect environmental resources along the shorelines and abutters. In addition, the operations of the ferry

service would generate vessel air emissions and noise associated with the ferry engines.

Costs that would be associated with establishing and operating a new ferry service to Long Island would be significant and would include the demolition cost of existing bridge piers; cost of procuring and maintaining ferry vessel(s) of sufficient size to accommodate vehicles; cost of siting, designing, permitting, constructing, operating and maintaining two docking facilities (one on Long Island and another somewhere on the mainland); and the cost of operating the ferry service 24/7 for as long as the City operates the public health facilities on Long Island. This would include the costs of full-time ferry skippers and vessel staff, marine fuel, maintenance of ferry vessels, maintenance of ferry terminals and maintenance dredging of terminal areas.

Based on the above considerations, this alternative was discarded by the City.

- **Replacement In Kind (Replicate Original Superstructure):** The City considered replacing the original superstructure with a new superstructure of exactly the same design, including the same riveted steel deck truss span types that extend down significantly below the roadway surface. However, this reuse of the existing 1950 bridge design would not address the issues associated with sea level rise that are addressed by the proposed design. In addition, it was determined that this alternative would take significantly longer to construct and result in a significantly higher cost. For these reasons, this alternative was discarded by the City.
- **Proposed Design Submitted for Approval in USCG Bridge Permit Application:** The proposed replacement Long Island Bridge superstructure will reuse the existing piers and abutments, which will be strengthened and repaired. Reusing the existing substructure reduces construction cost and eliminates the need for construction of new abutments and associated wetlands/seafloor impacts. The proposed replacement superstructure includes a steel girder system and delta frames at the piers instead of the truss system of the originally permitted bridge. The main navigation span will have a thru-truss that provides a navigable waterway in the same location as the originally permitted bridge, meeting or exceeding the original navigational clearances. The delta frame design approach will produce a more reliable bridge superstructure that is dimensionally similar to the former Long Island Bridge superstructure that was removed in 2015, with the same roadway surface width. The new superstructure will also feature certain improvements, such as improved stormwater management performance and architectural lighting.

Because it meets the project purpose and need with only minimal environmental impacts, this Project alternative has been selected as preferred by the City and was submitted to the USCG for approval.

In addition to the above alternatives analysis performed in 2018, the USCG asked the City in April 2021 to evaluate whether or not the proposed bridge superstructure as currently designed could be raised to accommodate vessels with higher air drafts. Many of the



structural components including piers, bearings, and girders that would be impacted already have demand-to-capacity ratios at or near 100%. The City of Boston has determined that increasing the height of the superstructure to increase the available vertical clearance would unacceptably increase the demand-to-capacity ratios on these components.

## 2.5 Report Guidelines

Appendix 1 of the U.S. Coast Guard Office of Bridge Programs COMDTPUB P16591.3D Bridge Permit Application Guide provides a list of items that should be identified and/or considered in navigation impact studies. The following sections provide applicable information in accordance with that guidance.

## 3. PRESENT GOVERNING BRIDGES OR AERIAL STRUCTURES ON THE WATERWAY

### 3.1 Bridges

The project site is located in the outer Boston Harbor in an open waterway with islands situated throughout. A navigable water known as Western Way traverses the bridge alignment. The only relevant structure in the area is the originally permitted bridge that will have its superstructure replaced as part of this project. No other bridges or structures affect marine traffic in the outer Boston Harbor.



*Navigation span of originally permitted bridge*

### 3.2 Proposed Bridge Superstructure - Navigational Clearance

The proposed bridge superstructure will be aligned to match the footprint of the original superstructure, generally in a northeast-southwest direction. The replacement bridge superstructure will extend over the waters of Boston Harbor approximately 3,450 feet between existing abutments. Navigational clearance for the proposed bridge superstructure will meet or exceed the originally permitted bridge clearance of 150 feet wide by 51 feet high. See Figures 2 and 3 in Appendix 1 for the clearances afforded by the originally permitted bridge and proposed bridge superstructure replacement.

### 3.3 Horizontal Clearance on the Waterway

The most restrictive horizontal clearance within the project area is the originally permitted Long Island Bridge that will have its superstructure replaced as part of the proposed project. As shown in Appendix 1 Figure 2, the navigation span is between piers that are 250 feet apart and has a navigable opening width of 150 feet. The proposed bridge superstructure will match the originally permitted bridge by providing a navigable horizontal clearance of 150 feet.

### 3.4 Vertical Clearance on the Waterway

The most restrictive vertical clearance within the Project Area is the originally permitted Long Island Bridge that will have its superstructure replaced as part of this project. The main navigation span had a vertical clearance of 51.0' above Mean High Water (MHW) in the navigable opening, which equates to 60.5' feet above Mean Low Water (MLW). The proposed bridge superstructure will slightly exceed the originally permitted clearances; the proposed bridge plans show a minimum vertical clearance of 51.75' of vertical clearance over MHW in the navigable opening, or approximately nine inches more than the clearance provided by the originally permitted bridge.

### 3.5 Restrictions of the Proposed Bridges

As with the originally permitted bridge, the proposed Long Island Bridge superstructure will remain as the most restrictive structure for clearances on the waterway in the vicinity of the project area.

## 4. WATERWAY CHARACTERISTICS

The Long Island Bridge is in the outer Boston Harbor, between Dorchester Bay and Quincy Bay and does not span a defined navigation channel or Federal Navigation Project (see Appendix 1 Figure 4).

### 4.1 Waterway Stages

The various waterway stages are listed in the table below. The datum for all elevations listed is NAVD88.

**Table 1: Waterway Stages near Project Area**

Waterway Stage		Elevation (NAVD88)
Record Flood Elevation	Recorded 1/4/2018	9.66
MHHW	Mean Higher – High Water	4.73
MHW	Mean High Water	4.33
MLW	Mean Low Water	-5.16
MLLW	Mean Lower – Low Water	-5.46

## 4.2 Sea Level Rise

Sea level rise must be considered in terms of the navigational limits of the structure. Climate Ready Boston (CRB) is an ongoing initiative of the City of Boston to work with the community and other partners to plan for the impacts of climate change and build a resilient future for the city. As part of this initiative, the Boston Research Advisory Group, a team of the region’s top climate scientists, developed a Climate Projection Consensus. The Steering Committee for this group includes representatives from the Environmental Protection Agency (EPA) and the National Oceanic and Atmospheric Administration (NOAA), among other organizations. In this report<sup>3</sup>, the research group projected the magnitude of sea level rise values that could be expected during the twenty-first century. Table 2 below lists the average values for each published range, along with the resultant vertical clearance values at the Long Island Bridge:

**Table 2: Average Projected Sea Level Rise Impacts**

	2000	2030 <sup>1</sup>	2050 <sup>1</sup>	2070 <sup>2</sup>	2100 <sup>2</sup>
Average Increase	0’	0.5’	1.0’	2.2’	4.9’
MHW Clearance	51.8’	51.3’	50.7’	49.6’	46.9’
MLW Clearance	61.2’	60.7’	60.2’	59.0’	56.3’

*1 – Likely under all emission scenarios*

*2 – Likely under moderate to high emission scenarios*

This Navigation Impact Study considers current waterway use and projected future use. The year 2050 was found to be most applicable for this analysis and carries a most likely sea level rise of seven to 18 inches under all emission scenarios. This results in the average project vertical clearance values of 50.7’ above MHW and 60.2’ above MLW which are used throughout this Navigation Impact Study. The vertical clearance for the proposed replacement superstructure remains greater than the vertical clearance provided by the originally permitted bridge (see Section 1.4).

The design of the proposed bridge superstructure replacement project takes sea level rise into consideration. The use of girders and delta frames at the existing piers instead of the truss system of the originally permitted bridge, increased pier cap heights, and an improved coating system will all help to reduce the amount and intensity of saltwater exposure and any corresponding deterioration on the bridge structure.

## 4.3 Natural Flow of the Waterway

The natural flow of the waterway through the bridge switches with the tide. Tides are normally semi-diurnal on the waterway (two lows and two highs for each daily cycle on average). The waterway experiences both ebb and flood tidal flows, with direction and velocity of flow varying with tidal cycles. The maximum speed of the tidal current through the bridge is approximately 0.5 knots, according to

<sup>3</sup> Climate Ready Boston Final Report, December 2016

National Oceanic and Atmospheric Administration (NOAA) current yearly predictions (see Appendix 9 and link below).

By reusing the existing piers for the proposed bridge, no change to the flow or new navigational challenge due to the flow is expected.

[https://tidesandcurrents.noaa.gov/noaacurrents/Annual?id=ACT1406\\_1](https://tidesandcurrents.noaa.gov/noaacurrents/Annual?id=ACT1406_1)

#### 4.4 Width of the Waterway at the Bridge Site

The width of Boston Harbor between Moon Island and Long Island at the bridge site is approximately 3,200 feet. The navigable waterway is 150 feet wide.

#### 4.5 Depth of the Waterway

The waterway at the bridge site is relatively shallow for Boston Harbor. The water depth along the navigable opening ranges from 11.3 feet to 15.3 feet below Mean Low Water (MLW). The depth is shallower toward the shores of Long Island and Moon Island.

The depth ranges at various waterway stages within the navigable opening are shown in the table below. These values are based on survey data collected for the project.

**Table 3: Depth of Navigable Waterway at Long Island Bridge**

Waterway Stage		Depth at Navigable Opening (feet)
MHHW	Mean Higher High Water	21.1 to 25.1
MHW	Mean High Water	20.8 to 24.8
MLW	Mean Low Water	11.3 to 15.3
MLLW	Mean Lower Low Water	11.0 to 15.0

The navigable opening at the bridge is not the most restrictive depth of waterway in the area. For a vessel to transit through the bridge, it must pass over a shallower section on the northern side of the bridge. According to NOAA Chart 13270 (Reference Chart 1 in Section 2 or <https://charts.noaa.gov/PDFs/13270.pdf>), any approach from Dorchester Bay (either Western Way between Thompson and Spectacle Islands or Sculpin Ledge Channel between Spectacle and Long Islands) must pass through a section that is 10 feet deep or less at MLLW, as compared to the surveyed 11- to 15-foot depths at MLLW through the bridge (marked as 14 feet on the NOAA chart).

Given the absence of a federal navigation project or channel designation at the bridge site (see Appendix 1 Figure 4), future dredging is not expected in this area. The shallower depth throughout Quincy Bay (5 to 7 feet in the mooring field area up to 10 to 17 feet in the middle of the bay at MLLW according to the NOAA chart in Section 1) limits the benefit to providing a deeper access under the bridge via dredging. The shores surrounding the project area are well-developed, so any

additional marinas or other developments that would require deeper access through the area are unlikely. Additionally, dredging for a deeper waterway at the bridge site or a new marina would generate significant environmental impacts and require lengthy regulatory approval processes.

#### **4.6 Waterway Layout and Geometry (Dams, Locks, Etc.)**

The islands surrounding the bridge site, in addition to Moon Island and Long Island that the bridge serves, include Thompson Island to the northwest of the bridge, Spectacle Island north of the bridge, and Rainsford Island east-northeast of the bridge.

The waterways immediately surrounding the bridge include Western Way between Thompson Island and Spectacle Island, Sculpin Ledge Channel between Spectacle Island and Long Island, and Quincy Bay on the southeast side of the bridge. These waterways are all accessible via alternate routes if the bridge location cannot be traversed.

There are no dams or locks in the vicinity of Long Island Bridge that change the elevation or impact the required bridge clearance.

#### **4.7 Channel and Waterway Alignment**

The channels in and out of Boston Harbor do not pass under the bridge or through the project area. The navigable opening through the bridge runs approximately northwest-southeast, roughly perpendicular to the opening between Moon Island and Long Island. The deepest route through the bridge and Western Way is marked by green cans in a nearly straight line from the northeast tip of Thompson Island through the Long Island Bridge navigable opening to Quincy Bay, where the marked waterway ends in the open bay.

#### **4.8 Other limiting factors (Bends in the Waterway, Etc.)**

Navigational hazards in the vicinity that may limit the vessels that navigate in the project vicinity include Sculpin Ledge, situated just north of the bridge site, and Quarantine Rocks off of Rainsford Island in Quincy Bay, just east of the bridge site. See NOAA Chart 13270 (Reference Chart 1 in Section 2 or <https://charts.noaa.gov/PDFs/13270.pdf>) for the location of these hazards in relation to the bridge site.

### **5. EMERGENCY OPERATIONS/MAINTENANCE VESSELS**

Numerous agencies and companies have marine vessels for emergency operations, law enforcement, fire, and rescue in the vicinity of the Long Island Bridge, including the Massachusetts State Police Marine Services, Boston Police Department Harbor Unit, Quincy Police Marine Unit, Hingham Police Harbormaster, USCG (stations in Boston and Hull),

Boston Fire Department, Massachusetts Environmental Police, Sea Tow, and TowBoatUS Boston.

The proposed bridge does not limit the ability of any of these groups to conduct essential functions. The navigational clearance of the proposed bridge superstructure provides at least as much clearance as the originally permitted bridge.

The largest known emergency vessels in the area are fire boats for the Boston Fire Department Marine Division and Massport Fire. The “John S. Damrell”, Boston Fire’s largest vessel, has a Length Overall (LOA) of 70 feet, a beam of 22 feet, a draft of 3 feet and an air draft of 25 feet. According to the Boston Fire Marine Division, this vessel transits through Western Way frequently for emergency response operations. Massport Fire 31 has a fireboat, “American United;” with a length of 80 feet, a beam of 22 feet, a draft of 7 feet and an air draft of 41 feet. Both fire boats have sufficient clearance to travel under the proposed Long Island Bridge superstructure replacement.

The USCG has multiple vessels that frequently transit Western Way through the bridge for faster response to Weymouth Fore River. Most of these boats would not be restricted by the proposed bridge superstructure vertical clearance, including the 49-foot-long Buoy Boats with low air drafts and a 65-foot-long Ice Breaking Harbor Tug with a max air draft of 30 feet and a water draft of 6.5 feet. Two vessels in the USCG fleet would be affected by the presence of the replacement bridge superstructure. These include a patrol boat with a length of 87 feet, draft of 6 feet and air draft of 55 feet that transits Western Way through the bridge for weather avoidance for faster response to Weymouth Fore River if needed. The proposed bridge superstructure replacement would limit routes for this vessel, only allowing use of Western Way during time periods outside of high tide. A coastal buoy tender with a length of 175 feet, draft of 8 feet and air draft of 67 feet services navigation aids for both Western Way and Fore River; this vessel would be restricted from using the bridge with the proposed bridge superstructure replacement vertical clearance, but could still reach both sides via alternate routes to perform its typical maintenance activities.

As with the originally permitted Long Island Bridge superstructure, all marine emergency and maintenance vessels in Boston Harbor have sufficient clearance to pass under the proposed Long Island Bridge superstructure replacement during any tide cycle, with the exception of the two USCG vessels described above.

## 6. FEDERAL NAVIGATION PROJECT

The U.S. Army Corps of Engineers (USACE) has completed federal navigation projects throughout Boston Harbor, but not in the vicinity of the bridge. These include a study of the Dorchester Bay channel, the main ship channels in Boston Harbor, Nubble Channel, and Weymouth Fore River Channel, which together surround the Long Island Bridge project area and connect without requiring navigation through the bridge. See Figure 4 in Appendix 1 for a map of USACE navigation projects in Boston Harbor.

## 7. RECREATIONAL NAVIGATION

Boston Harbor is a busy waterway for recreational navigation. Many boats travel in and out of Boston Harbor and also operate within the harbor, navigating around and between local sites, including in the vicinity of the Long Island Bridge. As with the originally permitted bridge, the proposed bridge has the potential to impact recreational vessels traveling through the bridge site if the combination of their air drafts and preferred air gap exceed the vertical clearance provided at a given tide cycle. Because the bridge crosses open water in connecting to an island, it does not block access to any marine facility or location.

The vast majority of vessels from the surrounding area are able to travel under the originally permitted as well as proposed Long Island Bridge, with the navigational clearances far exceeding the air draft and beam dimensions of the vessels. A smaller percentage of recreational vessels are taller sailboats, with a small enough draft to be able to operate in the vicinity of the bridge, but with an air draft that exceeds the vertical clearance of the originally permitted bridge and proposed replacement bridge superstructure. Although these sailboats are limited from operating under the proposed bridge superstructure, they are still able to access all surrounding facilities or waterways by using the alternate route around Long Island.

Alternate routes can be used to get to either side of the bridge, or to reach other destinations in Boston Harbor. As part of this Navigation Impact Study, several alternate routes were evaluated to quantify impacts to taller vessels based on additional vessel travel time or distance, mainly affecting vessels that hail from the southwestern quadrant of Boston Harbor. This area includes Dorchester Bay, Quincy Bay, Hull Bay, and Hingham Bay.

As requested by the USCG in February 2021, the City reached out to marine stakeholders to identify the number of vessels with air drafts exceeding the vertical clearance afforded by the replacement superstructure, and to estimate the frequency at which those vessels have transited the bridge site since the emergency superstructure removal in 2015. On April 7, 2021, a navigational survey was distributed by the City to 400 email addresses including the Port Operators Group, the Massachusetts Bay Harbor Safety Committee (MBHSC), and a variety of yacht clubs, marinas, and marine facilities identified as being within the vicinity of the project. The survey requested that organizations fill out a one-page Facility Questionnaire and also distribute a similar one-page Vessel Owner Questionnaire to their members, and that all data be submitted by April 28, 2021. The survey specifically requested response from owners of vessels with air drafts exceeding 46 feet. Copies of the two questionnaires can be found in Appendix 7. Following an additional request from the USCG, the City redistributed the survey to the same email distribution list on May 13, 2021 and extended the response period to June 18, 2021 through an email stating:

*The Coast Guard has now extended the date to return the survey to June 18, 2021, so that the Coast Guard has sufficient data to make an informed decision on the adequacy of the proposed clearances. Consequently, the Coast Guard has requested that the City redistribute the survey on behalf of the Coast Guard. Please forward this survey to all vessel owners who may be affected by the*

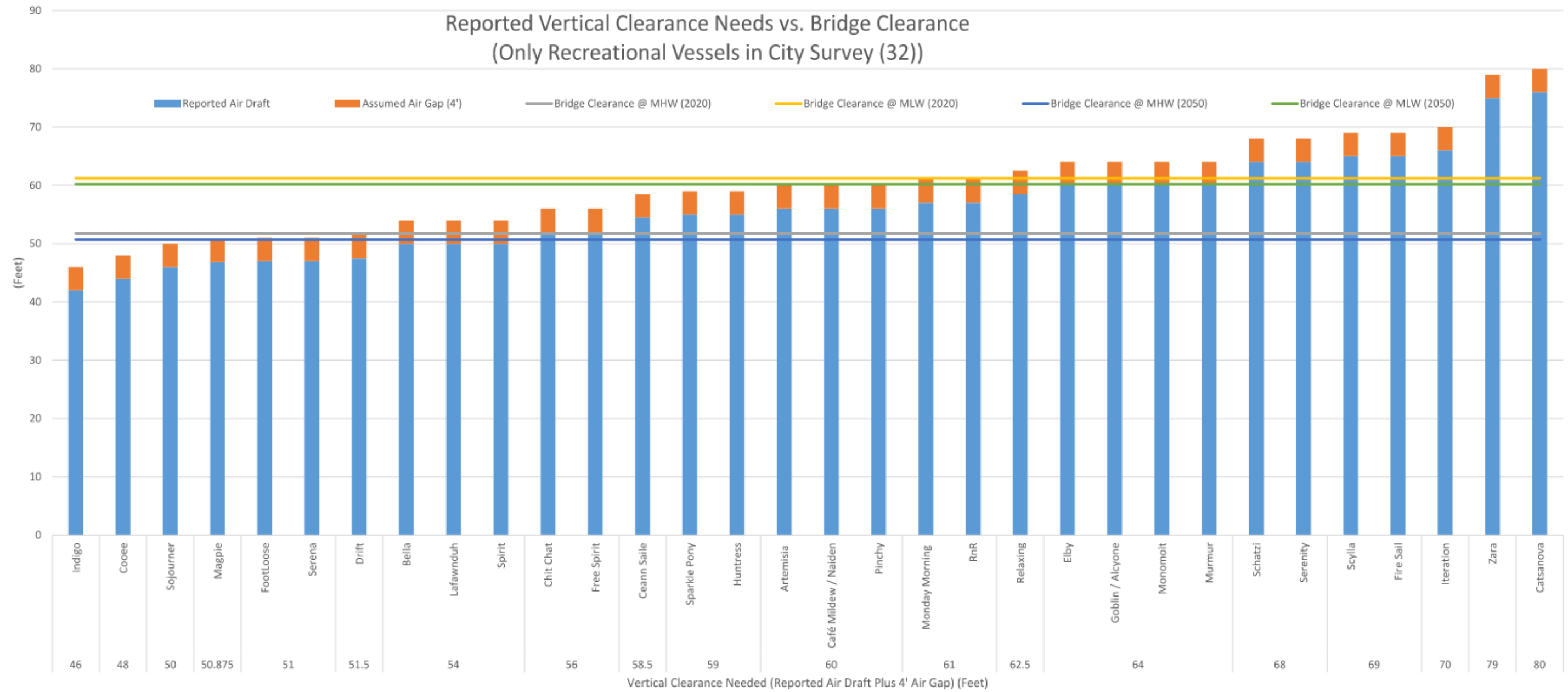
*proposed change – the Coast Guard would like to hear from all vessels over 46 feet tall.... If your vessel or facility will be impacted by proposed clearances you are requested to submit the survey prior to June 18. If you have completed the attached vessel or facility survey previously there is no need to complete another one. If you responded previously by any other means, you are requested to complete the attached surveys as they are designed to provide the Coast Guard the information it needs.*

Copies of both the April 7 and May 13, 2021 emails can also be found in Appendix 7. As of June 18, 2021, 32 applicable survey responses had been received for recreational vessels. These surveys generally included all requested information, which included owner contact information; mooring/dock location; vessel type, name, registration, size, and operating information; and historical monthly bridge site transits from 2016-2021 with specific instructions to count a roundtrip as two transits. It should be noted that the survey also requested that vessel operators indicate their preferred air gap measurements for transiting a bridge site, but these values varied from 0 feet to 20 feet and could not be verified as necessary, significantly skewing required vertical clearance estimates. To address this data reliability issue, the median requested air gap value of 4 feet was applied to all vessels.

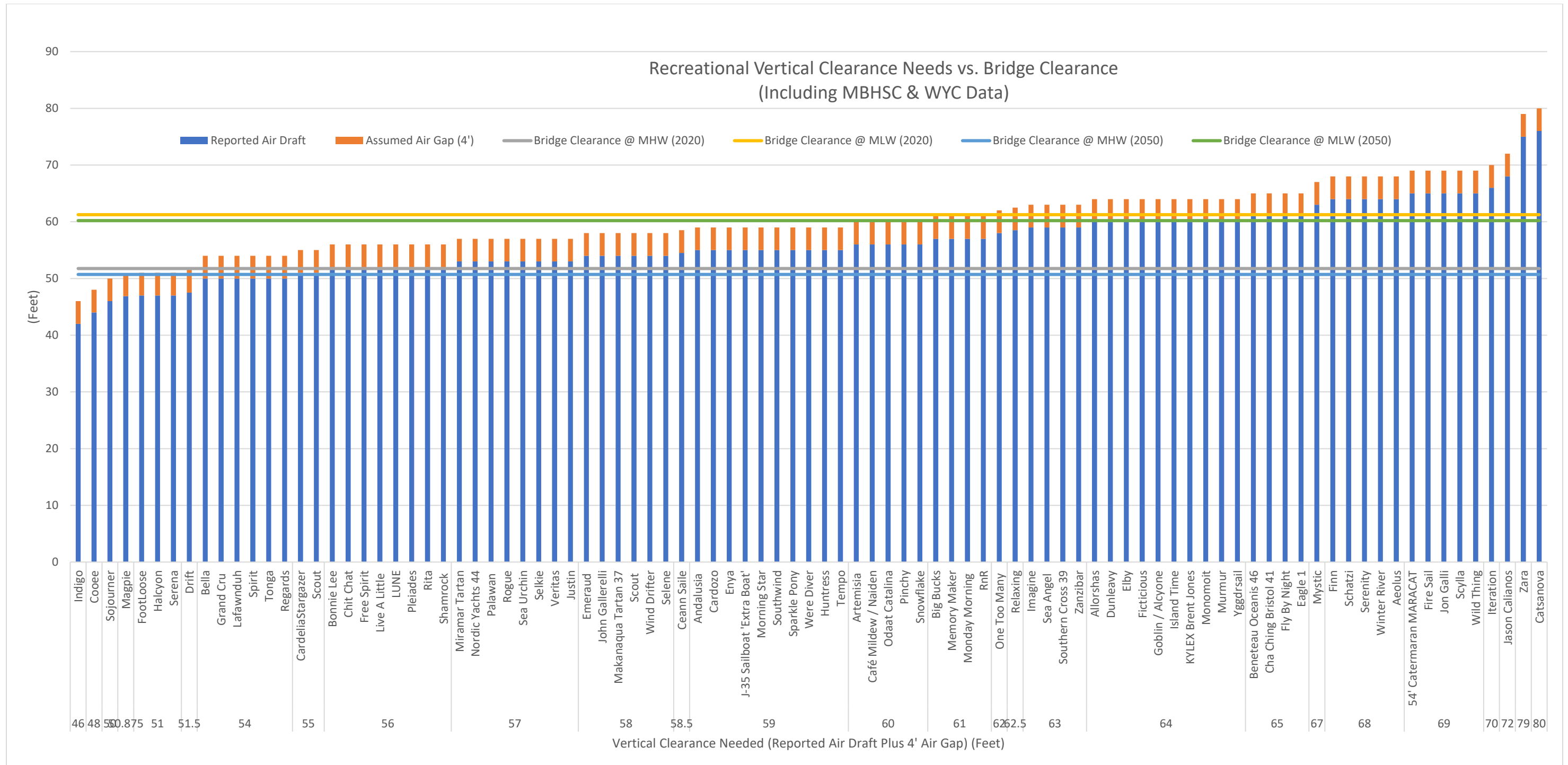
In addition to the survey data provided directly by vessel owners, the USCG received vessel data from the Wessagussett Yacht Club (WYC) and the MBHSC. On April 5, 2021, the WYC provided a list of eleven recreational vessels, eight of which had air drafts identified (see Appendix 8). These eight vessels were included in the listing of recreational vessels, but the transit information was too vague to include in the transit analysis. The MBHSC also submitted a collection of data for 59 recreational vessels to respond to a January 2021 request from the USCG. This data, submitted via email on April 20, 2021 and included in Appendix 8, included vessel name, mooring/docking location, air draft, and approximate frequency of transit. However, the transit frequency information was not sufficiently detailed and did not include the ownership contact information that would have been required to verify the intent of the responses. As examples, transit frequencies listed as “weekly” did not indicate the length of season for a particular vessel or if it typically transited one-way or roundtrip through the bridge site. In the five cases where recreational vessel owners submitted surveys for vessels included in the MBHSC data as transiting “weekly,” the owners reported a wide range of 18 to 54 annual one-way transits. The USCG contacted the MBHSC via email on April 21, 2021 and June 8, 2021 to request that their members instead submit individual survey responses as requested via the City of Boston emails on April 7<sup>th</sup> and May 13<sup>th</sup>. One of the recreational vessels from the WYC list and five of the recreational vessels from the MBHSC list did submit completed copies of the City survey and have been included in the transit analysis; the transit frequency data provided by WYC and MBHSC for the other 61 recreational vessels has been excluded from this report and is not reflected in Chart 2 below. However, those 61 recreational vessels are included in the evaluation of vertical clearance needs in Chart 3 and Table 4 further below. In general, data that was not submitted directly by the vessel owners is not considered to be as reliable.



In total, the City of Boston received vessel names and approximate air draft measurements for 32 recreational vessels via the City survey and 93 recreational vessels total (including MBHSC and WYC information) as shown in Charts 2 and 3, respectively, on the following pages. These charts list each vessel and identify its air draft plus a four-foot air gap allowance, with the shortest vessels on the left sides of the charts. The available vertical clearances provided by the proposed replacement superstructure at MHW (51.75') and MLW (61.25') are shown as horizontal lines on the chart. Additional lines reflect how the same available vertical clearance values would change with the average forecasted sea level rise in approximately thirty years (2050) as described in Section 4.2.



**Chart 2: City Survey Reported Recreational Vessel Vertical Clearance Needs (assuming 4-foot air gap)**



**Chart 3: Reported Recreational Vessel Vertical Clearance Needs (assuming 4-foot air gap)**

Assuming a required air gap of four feet, Table 4 below summarizes the general ability of the responding vessels to transit the bridge site with the bridge superstructure installed. Note that the number of vessels identified in the first row of the table (able to transit anytime) does not reflect the actual number of smaller vessels using the channel because the survey only requested response from vessels with air drafts over 46 feet.

**Table 4: Ability of Vessels to Transit Under Proposed Superstructure – City Survey Only**

Ability to Transit (assumes 4' air gap)	Number of Vessels Identified
Anytime (<51.75' Vertical Clearance Needed)	7
Tide-Dependent (51.75'-61.24' Needed)	13
Cannot Transit (>61.24' Needed)	12
<b>Total</b>	<b>32</b>

Following is a breakdown of the mooring/docking locations for the vessels identified in Table 4 as needing a vertical clearance greater than 61.24 feet. As summarized in Table 5 below, the data shows that only four of these vessels for which the owners submitted City surveys are moored or docked within the southwestern quadrant of Boston Harbor which includes the Long Island Bridge site, Dorchester Bay, Quincy Bay, Hingham Bay, and Hull Bay. Vessels moored or docked within this quadrant are expected to utilize Western Way more frequently than those vessels from other portions of Boston Harbor or outside of Boston Harbor entirely.

**Table 5: Mooring/Docking Locations for Vessels Requiring >61.24' Vertical Clearance – City Survey Only**

Location	Number of Vessels
Dorchester, Quincy, Hull, and Hingham Bays	4
Boston Inner Harbor	5
Winthrop	1
Not in Boston Harbor	2
<b>Total</b>	<b>12</b>

Although the reliability of the data submitted by the MBHSC and WYC is uncertain, the following tables were prepared using all of the submitted data (City surveys and other sources). Table 6 below summarizes the ability of reported recreational vessels to transit based on reported air draft and Table 7 identifies the reported mooring/docking locations for the Table 6 vessels reported to require more than 61.24' of vertical clearance.

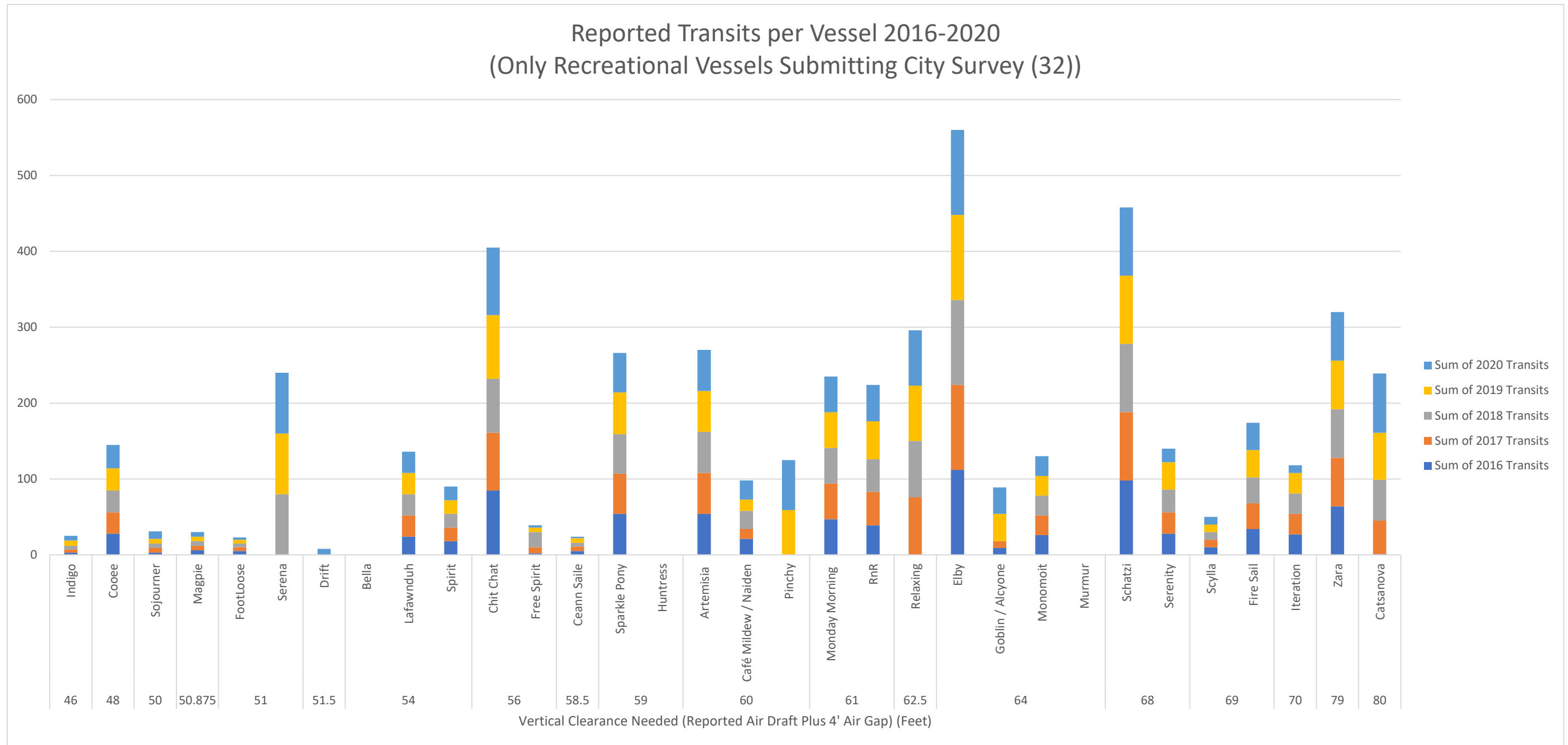
**Table 6: Ability of Vessels to Transit Under Proposed Superstructure – Including Data From Sources Other Than City Survey**

Ability to Transit (assumes 4' air gap)	Number of Vessels Identified
Anytime (<51.75' Vertical Clearance Needed)	8
Tide-Dependent (51.75'-61.24' Needed)	50
Cannot Transit (>61.24' Needed)	35
<b>Total</b>	<b>93</b>

**Table 7: Mooring/Docking Locations for Vessels Requiring >61.24’ Vertical Clearance – Including Data From Sources Other Than City Surveys**

Location	Number of Vessels
Dorchester, Quincy, Hull, and Hingham Bays	9
Boston Inner Harbor	6
Winthrop	10
Not in Boston Harbor	8
Insufficient Information Provided	2
<b>Total</b>	<b>35</b>

All of the aforementioned data has been reported by the vessel owners, the MBHSC, and/or the WYC. As previously stated, data provided directly by vessel owners (City surveys) is considered more reliable. Even so, neither air draft needs nor reported transit frequencies have been confirmed for any of the data. It is understood that taller vessels currently transiting the bridge site while the superstructure is removed would enjoy continuing to do so in the future and therefore the vessel owner responses could reflect a preference for the project not proceeding. It is further understood that even unbiased vessel owners likely did not keep exact records for when they transited the bridge site over the past five years, so they have likely made rough estimates that may not account for weather impacts or other unforeseen issues that reduced the ideal number of times they would have liked to have made the trip. Because it is not necessary for any of these vessels to transit the bridge site to reach particular destinations, it is not possible to verify how many times they did so because they can complete their trips using other routes. Chart 4 on the following page provides a summary of the number of bridge transits reported by recreational vessels submitting the City survey, grouped by required vertical clearance assuming air gaps of four feet.



**Chart 4: Reported Annual Transits Sorted by Vertical Clearance Needs (assuming 4-foot air gap)**

## 8. COMMERCIAL NAVIGATION

The majority of the commercial navigation on Boston Harbor in the vicinity of the bridge is for MBTA ferry service and sightseeing tours. The MBTA vessels are the most frequent users of the crossing and had 36 scheduled transits per weekday in 2018 (most recent pre-pandemic schedule available for review). Larger commercial vessels used for sightseeing tours, shipping, fishing, cruises, and more are common in Boston Harbor, but they are limited to using the main channels due to depth requirements and are not affected by the Long Island Bridge. There are local marine-based sightseeing companies with smaller vessels known to transit the bridge site, so those companies were contacted to obtain transit frequency estimates and vertical clearance needs, as applicable.



*MBTA vessel currently used for Hingham-Hull ferry service*

The MBTA offers ferry service between Boston, Hingham and Hull, with the route between Hingham and Boston passing through the Long Island Bridge. This route is currently served by two vessels, Champion and Glory, owned by the MBTA. Both vessels are catamarans with a 28.7-foot beam, 4.2-foot draft, and 35.0-foot air draft, easily within the navigational clearances of the originally permitted bridge and proposed bridge superstructure, even with future navigational clearances impacted by worst-case scenario sea-level rise projections.

As more fully described in Section 7, based on a request from the USCG in February 2021, the City reached out to marine stakeholders to identify the number of vessels that could potentially be impacted by constructing the replacement superstructure, and to estimate the frequency at which those vessels transit the bridge site. Five survey responses were received for commercial vessels prior to the June 18, 2021 extended deadline. To supplement the data received, the City of Boston project team reached out by phone to known commercial vessel operators and sightseeing tour companies in Boston Harbor to gather information about the commercial vessel fleets and to request that the surveys be filled out as applicable. The MBHSC data submission on April 20, 2021 also included two of the commercial vessels for which City surveys were obtained, the Odyssey and the Spirit [of Boston]. Although the MBHSC categorized the transit frequency of these vessels as “Daily,” the owner-supplied City surveys show only ten to fourteen annual vessel transits between 2016 and 2020.

The table below summarizes the information obtained from submitted surveys and outreach to known commercial passenger ferry and sightseeing vessel operators potentially using the navigable waterway.

**Table 8: Commercial Ferry and Sightseeing Waterway Usage Information**

Owner or Operator	Bridge Waterway Usage	Able to Transit Under Proposed Bridge
MBTA	Passenger ferries multiple times per day	Yes
Boston Harbor Cruises/ City Experiences by Hornblower (including DCR ferries)	Passenger ferries multiple times per day; occasional chartered sightseeing cruises	Yes
	Dining/excursion cruises averaging 10-14 annual transits per vessel.	No for two vessels: M/V Odyssey (67' air draft) M/V Spirit of Boston (78' air draft)
Classic Harbor Line	Daily sightseeing tours	No for two vessels: S/V Adirondack III (70' air draft) M/V Northern Lights (55' air draft)
Boston Harbor Sailing Cruises	No usage	N/A
Bay State Cruise Company	Passenger ferries about six times per year when LNG ships obstruct main channel	Yes, but one of ten vessels could not transit the original bridge within two hours of high tide: M/V Provincetown II (57' air draft)
Boatonian	Sightseeing tours	Yes
Massachusetts Bay Lines	Regular passenger ferry and sightseeing tours	Yes
Come Sail Away Now	Sightseeing tours	Yes
UMass Boston M/V Columbia Point	Education/research/sight-seeing tours	Yes

Note: M/V and S/V indicate Motor Vessel and Sailing Vessel, respectively

## 9. MARINE FACILITIES (PUBLIC BOAT RAMPS, MARINAS, ETC.)

Marine facilities including public boat ramps, marinas, yacht clubs, major docking facilities and boat repair facilities, etc. in Boston Harbor are listed in the table below. See Figure 5 in Appendix 1 for locations of the marine facilities in the vicinity of the bridge within the southwestern quadrant of Boston Harbor including Dorchester Bay, Quincy Bay, Hull Bay, and Hingham Bay.

**Table 9: Marine Facilities in Boston Harbor**

Area	Name	Location	Phone
Dorchester Bay	Boston Harbor Yacht Club	South Boston	617-269-5641
	Columbia Yacht Club	South Boston	617-269-9831
	South Boston Yacht Club	South Boston	617-268-6132
	John T. Fallon State Pier	Dorchester	617-287-5404
	Fox Point Pavilion and Dock	Dorchester	617-287-5404
	Savin Hill Yacht Club	Dorchester	617-288-9293



Area	Name	Location	Phone
	Dorchester Yacht Club	Dorchester	617-436-1002
	Old Colony Yacht Club	Dorchester	617-436-0513
	Port Norfolk Yacht Club	Dorchester	617-822-3333
	Marina Bay Ferry	Quincy	617-376-1266
	Norwood Yacht Sales	Quincy	617-328-4001
	Safe Harbor Marina Bay	Quincy	617-847-1800
Quincy Bay	Squantum Yacht Club	Quincy	617-770-4811
	Wollaston Yacht Club	Quincy	617-477-8448
	Quincy Shores Reservation	Quincy	617-727-5290
Hingham Bay	Houghs Neck Maritime Center	Quincy	617-745-5896
	Quincy Yacht Club	Quincy	617-471-6163
	Clipper Marina	Quincy	617-479-1449
	Captain's Cove Marina	Quincy	617-479-2440
	Town River Yacht Club	Quincy	617-471-2716
	MarineMax Boston, Bay Pointe Marina	Quincy	617-288-1000
	Accurate Marine Services	Braintree	781-848-6228
	Metropolitan Yacht Club	Braintree	781-843-9882
	Scalisi Marine	North Weymouth	781-331-0446
	Mass Maritime Marine	North Weymouth	781-337-6903
	Wessagusset Yacht Club	North Weymouth	781-335-9800
	South Shore Yacht Club	North Weymouth	781-335-9440
	Tern Marine Services	North Weymouth	781-337-1964
	McCann's Marine Service	North Weymouth	781-337-1856
	Foley Marine Solutions	Hingham	617-429-1035
	Hingham Shipyard Marinas	Hingham	781-749-2222
	Hingham Yacht Club	Hingham	781-749-3806
	Hingham Town Boat Ramp	Hingham	781-741-1450
	Bare Cove Marina	Hingham	781-733-0068
	Hingham Harbor Marina	Hingham	781-749-0076
Hingham Maritime Center	Hingham	781-741-5225	
Hull Bay	Steamboat Wharf Marina	Hull	781-925-0044
	Safe Harbor Sunset Bay	Hull	781-925-2828
	Hull Yacht Club	Hull	781-925-9739
	Goodwin Marine Services	Hull	781-925-1593
	Nantasket Beach Saltwater Club	Hull	781-925-9801
Inner Boston Harbor	Peninsula Yacht Club	South Boston	617-464-7901
	Boston Police Harbor Patrol	South Boston	617-343-4721
	Black Falcon Cruise Terminal	South Boston	617-330-1500
	Boston Ship Repair	South Boston	617-330-5045
	The Marina at Liberty Wharf	South Boston	617-624-9100
	Bay State Cruise Company	South Boston	617-748-1428
	Fan Pier Marina	South Boston	617-865-5757

Area	Name	Location	Phone
	SailTime Boston at Fan Pier	South Boston	888-607-7245
	Massachusetts Bay Lines	Boston	617-542-8000
	The Marina at Rowes Wharf	Boston	617-590-5790
	Rowes Wharf Water Transport	Boston	617-261-6620
	Classic Harbor Line Boston	Boston	617-951-2460
	Boston Harbor City Cruises	Boston	781-661-5458
	The Boatonian	Boston	617-306-3347
	Boston Harbor Sailing Club	Boston	617-720-0049
	Freedom Boat Club	Boston	508-321-7222
	Birch Marine Inc.	Boston	617-723-4900
	Waterboat Marina	Boston	617-523-1027
	Commercial Wharf	Boston	617-367-5050
	Boston Sailing Center	Boston	617-227-4198
	Ravosa Mobile Marine Services	Boston	774-286-1908
	Constitution Marina	Charlestown	617-241-9640
	MBTA Navy Yard Ferry Terminal	Charlestown	617-222-3200
	Courageous Sailing Center	Charlestown	857-452-1769
	BoatRx	Charlestown	617-444-9532
	Come Sail Away Now	Charlestown	617-828-9005
	Charlestown Marina	Charlestown	617-242-2020
	Boston Boat Works	Charlestown	617-561-9111
	Boston Fuel Injection	Charlestown	617-884-5151
	Marina at Admiral's Hill	Chelsea	617-997-4772
	Chelsea Yacht Club	Chelsea	617-884-9864
	Global Petroleum	Chelsea	617-660-1100
	Fitzgerald Shipyard	Chelsea	617-884-8586
	Harbor Fuels	East Boston	617-720-3835
	Eastern Harbor Service	East Boston	617-990-7846
	LV Marine Services	East Boston	857-256-2954
	Sea Tow Boston	East Boston	617-567-8053
	Boston Bay Marina	East Boston	617-569-5212
	Piers Park Sailing Center	East Boston	617-561-6677
Boston Harbor Shipyard & Marina	East Boston	617-561-1400	
Jeffries Yacht Club	East Boston	617-567-9656	
Winthrop Area	East Boston Yacht Club	East Boston	617-567-9698
	Orient Heights Yacht Club	East Boston	617-567-9439
	Pleasant Park Yacht Club	Winthrop	617-846-9869
	Atlantis Marina	Winthrop	617-846-5262
	Cottage Park Yacht Club	Winthrop	617-846-9801
	Crystal Cove Marina	Winthrop	617-846-7245
	Winthrop Yacht Club	Winthrop	617-846-6209
	Winthrop Boat Ramp	Winthrop	617-202-9092

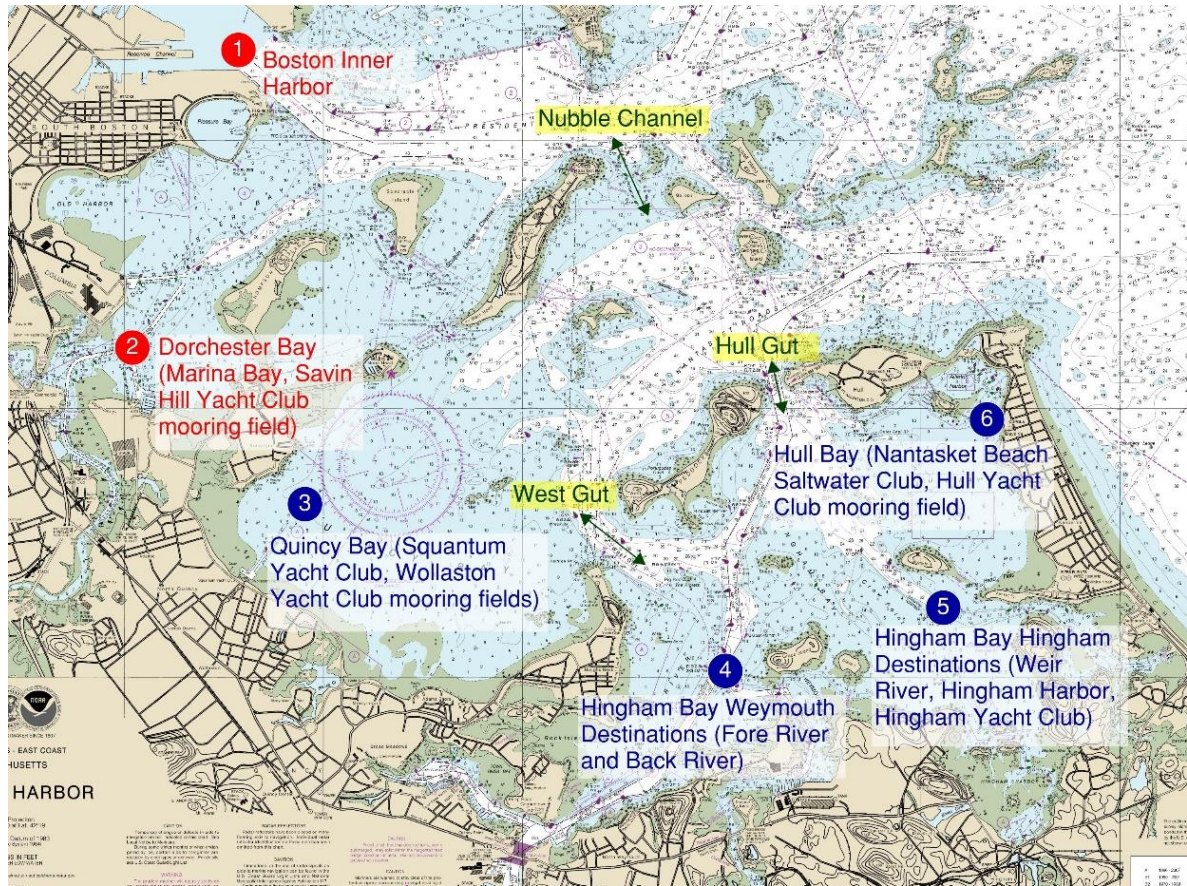
## **10. ACCESS TO MARINE FACILITIES (PUBLIC BOAT RAMPS, MARINAS, ETC.)**

The proposed bridge superstructure, like the originally permitted bridge superstructure it replaces, does not prevent access to any marine facilities, including public boat ramps, marinas, yacht clubs, major docking facilities, fuel stations, or boat repair facilities.

## **11. ALTERNATE ROUTES BYPASSING THE PROPOSED BRIDGE**

The alternate route to bypass the bridge site is around the easterly end of Long Island. Depending on the starting and ending location of a given route, the additional distance and time to use the alternate route instead of using Western Way under the bridge varies. The most common routes that typically include passage through the Long Island Bridge area are between Hingham Bay or Quincy Bay and the inner Boston Harbor or Dorchester Bay. Chart 5 below shows six popular destinations or access points to destinations. These include:

1. Entrance to inner Boston Harbor
2. Dorchester Bay in the channel used to access Marina Bay and Savin Hill Yacht Club
3. Quincy Bay in the mooring field used by Squantum Yacht Club and Wollaston Yacht Club
4. Hingham Bay near the entrances to Weymouth Fore River and Weymouth Back River
5. Hingham Bay near Weir River, Hingham Harbor, and Hingham Yacht Club
6. Entrance to Hull Bay, where Nantasket Beach Saltwater Club and Hull Yacht Club have docks and mooring fields



**Chart 5: Common Origins/Destinations Surrounding Project Location**

Routes that would typically transit through the Long Island Bridge navigable opening go from one of the destinations shown in red in the graphic above to one of the destinations shown in blue, or vice versa for vessels traveling in the opposite direction.

The following table compares the distances for various routes between these destinations, including the routes using Long Island Bridge and alternate routes. These routes were charted using PRO CHARTS by Miratrex, considering any hazards or shallow areas to be avoided, providing at least as much depth in the alternate routes as in the routes through Western Way that utilize the bridge. The distance for each route is given, with the difference between the most efficient alternate routes around Long Island and through Long Island Bridge shown in the last column. See Appendix 1 Figures 6 – 13 for each charted route.



**Table 10: Common Routes Through Long Island Bridge and Alternate Routes**

Start	End	Route No.	Traveling Via	Dist. (nm)	Δ (nm)	t* (min)
Inner Harbor	Quincy Bay	1	Long Island Bridge	4.49		
		2	Nubble Channel	6.79	+2.3	+23
	Hingham Bay-Weymouth	3	Long Island Bridge, West Gut	6.14		
		4	Nubble Channel, West Gut	7.56	+1.42	
		5	Nubble Channel, Hull Gut	7.25	+1.11	+11
	Hingham Bay-Hingham	6	Long Island Bridge, West Gut	7.34		
		7	Nubble Channel, Hull Gut	7.13	-0.21	-2
	Hull Bay	8	Long Island Bridge, West Gut	7.73		
		9	Long Island Bridge, Hull Gut	7.07		
		10	Nubble Channel, Hull Gut	6.83	-0.24	-2
Dorchester Bay	Quincy Bay	11	Long Island Bridge	5.09		
		12	Nubble Channel	8.02	+2.93	+30
	Hingham Bay-Weymouth	13	Long Island Bridge, West Gut	6.74		
		14	Nubble Channel, West Gut	8.86	+2.12	
		15	Nubble Channel, Hull Gut	8.47	+1.73	+17
	Hingham Bay-Hingham	16	Long Island Bridge, West Gut	7.93		
		17	Nubble Channel, Hull Gut	8.36	+0.43	+5
	Hull Bay	18	Long Island Bridge, West Gut	8.33		
19		Long Island Bridge, Hull Gut	7.47			
20		Via Nubble Channel, Hull Gut	7.98	+0.51	+5	

\*Assuming 6-knot travel speed

As seen in Table 7 above, the alternate route around Long Island adds 2.3 nm compared to a route through the bridge for a trip between Boston Inner Harbor and Quincy Bay. This alternate route equates to 23 additional minutes for a vessel traveling 6 knots. The depth of Quincy Bay near the mooring fields is shallow, limiting the vessels that utilize the moorings; based on recent visual observations, there are not currently any known vessels based in Quincy Bay that would be limited by the proposed bridge and would need to utilize the alternate route.

For vessels traveling between the inner Boston Harbor and the Hingham Bay destinations near Weymouth, including Fore River and Back River, using the alternate route around Long Island adds approximately 1.11 nm, or 11 minutes for a vessel traveling 6 knots, to the route as opposed to going under the Long Island Bridge.

For vessels traveling between Boston and Hingham Bay near the Hingham destinations, including Weir River, Hingham Harbor and Hingham Yacht Club or between Boston and Hull Bay, the fastest route is not through the Long Island Bridge, but rather through Nubble Channel and Hull Gut.

For a trip between Dorchester Bay and Quincy Bay, the alternate route around Long Island adds 2.93 nm compared to a route transiting through the bridge. This alternate route equates to approximately 30 additional minutes for a vessel traveling 6 knots. The depth of Quincy

Bay near the mooring fields is shallow, limiting the vessels that utilize the moorings; based on recent visual observations, there are not currently any known vessels based in Quincy Bay that would be limited by the proposed bridge and would need to utilize the alternate route.

For vessels traveling between Dorchester Bay and the Hingham Bay destinations near Weymouth, including Fore River and Back River, using the alternate route around Long Island adds approximately 1.73 nm, or 17 minutes for a vessel traveling 6 knots, to the route as opposed to going under the Long Island Bridge.

For vessels traveling between Dorchester Bay and Hingham Bay near the Hingham destinations, including Weir River, Hingham Harbor and Hingham Yacht Club, the fastest route uses Long Island Bridge and West Gut. The alternative route around Long Island and through Hull Gut adds 0.43 nm or about 5 minutes travel time for a vessel going 6 knots.

Between Dorchester Bay and Hull Bay, the fastest route utilizes Long Island Bridge and Hull Gut. The alternate route around Long Island and through Hull Gut is 0.51 nm longer than the bridge route, which, for a vessel traveling at 6 knots, takes about 5 minutes longer to use than going under the bridge.

The use of an alternate route is not new to vessels in the project area. With the proposed bridge vertical clearance exceeding that of the originally permitted bridge, all vessels with combined air draft and air gap values of more than 51 feet have relied on alternate routes to travel between Quincy Bay and Dorchester Bay since the 1950s. Additionally, all vessels made use of alternate routes when passage under the originally permitted bridge was deemed unsafe, just prior to and during the superstructure demolition. The USCG issued a notice for a Safety Zone around the project for the duration of the demolition activities in 2015 (see Appendix 4 or link below) and approved the construction plan for the removal of the originally permitted bridge superstructure (see Appendix 6).

<https://www.federalregister.gov/documents/2015/03/02/2015-04282/safety-zone-moon-island-long-island-bridge-demolition-boston-inner-harbor-quincy-bay-quincy-ma>

## 12. LOCAL HARBOR OF REFUGE

A local harbor of refuge is a naturally or artificially protected water area that provides a place of relative safety or refuge for commercial and recreational vessels traveling along the coast or operating in a region. There are no designated areas within Boston Harbor that are considered harbors of refuge. Depending on the wind and wave direction in inclement weather, vessels may shelter in the lee of one of the harbor islands for a brief time until the wind and waves subside. There are islands to use as shelter for boats on either side of the Long Island Bridge, so the bridge does not limit any vessels from reaching a harbor of refuge.

### **13. BENDS IN THE WATERWAY**

There are no bends in the waterway that affect the safe passage of vessels through either the originally permitted or proposed bridge. Because the bridge is on a harbor and not a river, there is open water on either side of the bridge opening. The only bends in the waterway are due to other islands in the area, but there is a clear path from the navigable opening in the bridge on either side for over a half mile. The closest islands to the northwest are Thompson and Spectacle Islands, approximately three quarters of a mile from the bridge, with a straight path from the navigable opening to the water in between the islands. To the southeast of the bridge, Quincy Bay is open water for over a mile to the closest island or hazard, with Hangman Island and Sunken Ledge on the approximate course from the bridge opening.

### **14. HAZARDOUS PASSAGE THROUGH PROPOSED STRUCTURE**

There are no dockages, lightering areas, or existing bridges within a half mile of the bridge. The only hazard within a half mile of the bridge is Sculpin Ledge, which is north of the navigable opening to the bridge by about 0.45 miles and is uncovered at low tide. This ledge is clearly marked on navigation charts, and there is clear open water on all sides of the hazard, with plenty of room between the ledge and the bridge, so the impact to safe passage through the bridge is minimal and unchanged from the current condition.

### **15. LOCAL HYDRAULIC CONDITIONS - HAZARDOUS PASSAGE**

Local hydraulic conditions will not increase the hazard of passage through the proposed bridge. Wave chop is minimal in the area, with protection from surrounding islands, and will not have a great effect on navigation. Tidal currents exist, with a maximum flow of approximately 0.5 knots, which will have minimal effect on navigation through the bridge. The proposed bridge makes no changes to the hazard of navigation due to local hydraulic conditions compared to the originally permitted bridge.

### **16. LOCAL ATMOSPHERIC CONDITIONS - HAZARDOUS PASSAGE**

Hazards due to local atmospheric conditions will not be altered by the proposed superstructure replacement. The existing piers remain in place today and are unchanged from the existing condition, the proposed navigation lighting and fender system will suffice as mitigation measures for the instances when vessels need to pass through the bridge during hazardous atmospheric conditions.

### **17. GUIDE CLEARANCES**

Guide clearances have not been established for Boston Harbor (see link below).

<https://www.dco.uscg.mil/Our-Organization/Assistant-Commandant-for-Prevention-Policy-CG-5P/Marine-Transportation-Systems-CG-5PW/Office-of-Bridge-Programs/Bridge-Guide-Clearances/>

## **18. OTHER NATURAL OR MAN-MADE CONDITIONS THAT AFFECT NAVIGATION**

There are no other natural or man-made conditions, such as atmospheric or exclusion zones, that affect navigation near the bridge.

## **19. OTHER FACTORS NECESSARY FOR SAFE PASSAGE THROUGH THE PROPOSED BRIDGE**

Fixed navigation lighting on the main navigation span, included in the design of the proposed structure, is necessary for safe passage through the proposed bridge. Clearance gauges were not included on the originally permitted bridge but could be added to increase safety. Vessels that can only transit the bridge at certain tides would be able to gauge their access at any time without referencing a tide chart.

## **20. MITIGATION**

Alternate routes that do not transit the bridge site are available for all vessels traveling between Quincy Bay and Dorchester Bay, so their abilities to reach marine and marine-dependent destinations are not impacted. Aids to navigation in the vicinity of the bridge and navigation lights on the bridge act as mitigation for any vessels that use the waterway under the bridge to assist in safe navigation away from any navigational hazards, including the effects of hydraulic and atmospheric conditions as described above.

Mitigation for other issues, including sea level rise and environmental impacts, are considered in the design of the proposed bridge superstructure replacement. The reuse of the existing bridge piers and the proposed construction approach avoid the need for temporary impacts, fill or dredging, thereby limiting environmental impacts. Increased pier cap heights and the structure type (girder system with delta frames at the piers) help to reduce the impact of sea level rise by reducing the amount and intensity of saltwater exposure to the structure, plus improved coating systems will combat deterioration from saltwater exposure.



## 21. CONCLUSION

In January 2018, the City of Boston announced that the public health facilities on Long Island would be reopened as a recovery campus for individuals suffering from opioid and other substance use disorders. Based on publicly available data of the Commonwealth of Massachusetts Department of Public Health, in 2020, there were 2,104 confirmed and estimated opioid-related overdose deaths in Massachusetts. Boston's replacement of the Long Island Bridge superstructure will provide the required vehicular access to the Long Island public health facilities, which is critical to the reactivation and licensing of services.

The construction of the Long Island Bridge superstructure replacement as proposed will not generate any additional permanent navigational impacts when compared to the originally permitted bridge superstructure. There is an alternate route around Long Island for any vessels in the area that are too tall to transit under the bridge, and the vast majority of marine traffic in the area can continue to use the Long Island Bridge navigable opening to travel between Dorchester and Quincy bays.

The proposed bridge superstructure replacement will limit route options for a limited number of vessels with vertical clearance needs exceeding the prior available clearance afforded by the 1950 bridge. However, these route limitations for a subset of vessels are not unreasonable. The City of Boston understands that some of these taller vessels have enjoyed traversing the bridge site since the emergency superstructure removal in 2015, but this condition was never anticipated to be permanent. If needed, both sides of the bridge can be accessed by vessels via alternate routes. Replacement of the superstructure does not block vessel access to any marine facility or location.

**As the sole vehicular route to Long Island, the proposed Long Island Bridge superstructure replacement serves the needs of land transportation while allowing for the reasonable needs of navigation.**

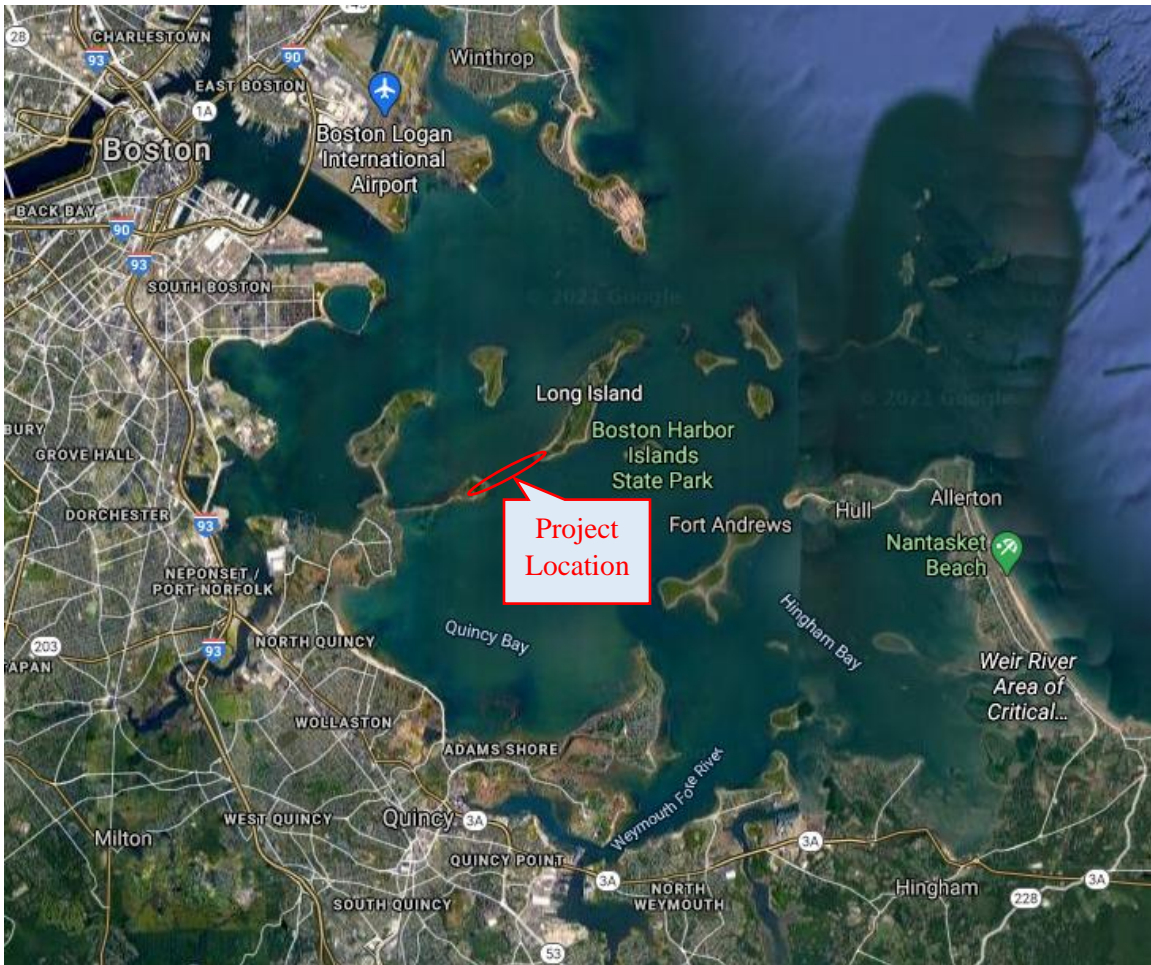
Department of Public Health data shows that 2020 was the deadliest year in Massachusetts for opioid-related deaths, and that 2021 is on track to be even deadlier.<sup>4</sup> Expediency is critical at this point to move the project forward and build the new superstructure to address these public health needs.

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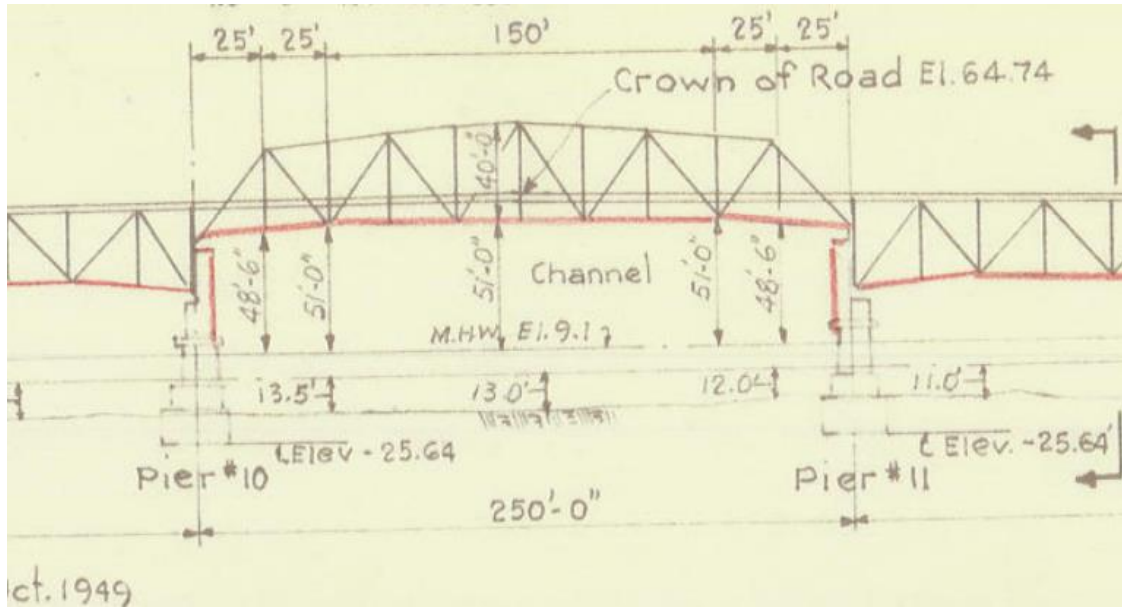
<sup>4</sup> Massachusetts Dep't of Pub. Health, *Data Brief: Opioid-Related Overdose Deaths among Massachusetts Residents*, at 1 (May 2021), <http://www.mass.gov/doc/opioid-related-overdose-deaths-among-ma-residents-may-2021/download>; Felice J. Freyer, *Opioid deaths rose 5 percent in Massachusetts last year*, *The Boston Globe* (May 12, 2021, 6:54 PM), <http://www.bostonglobe.com/2021/05/12/metro/opioid-deaths-rose-5-percent-massachusetts-last-year>.

## APPENDIX 1 - FIGURES

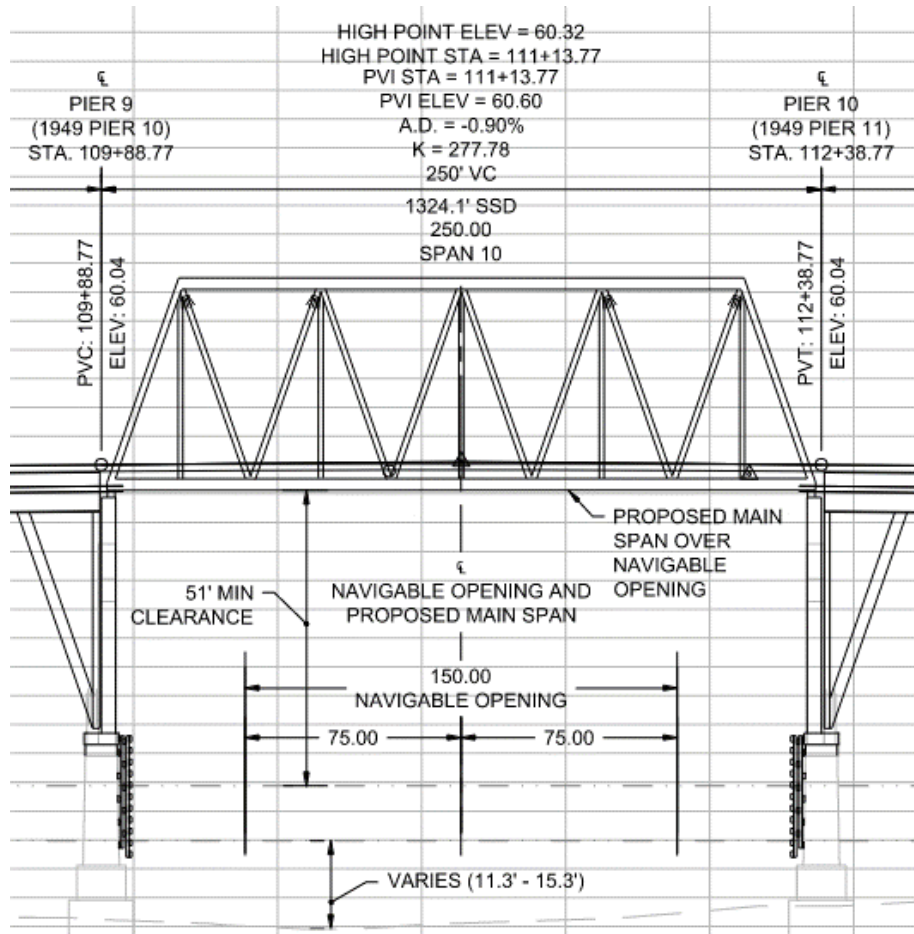
### 1. SITE LOCATION MAP



**2. PERMITTED BRIDGE NAVIGATIONAL CLEARANCES**

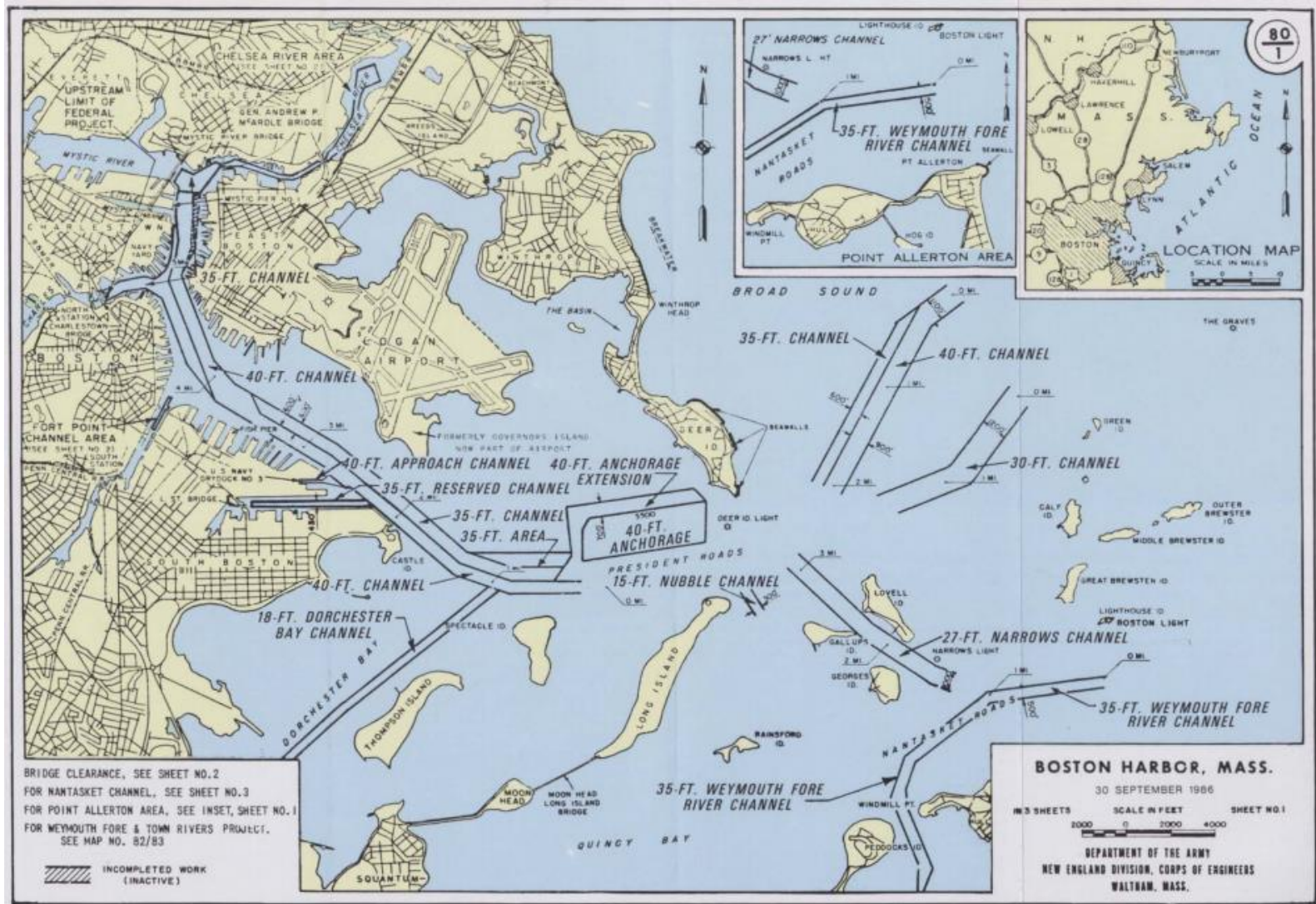


**3. PROPOSED BRIDGE NAVIGATIONAL CLEARANCES**





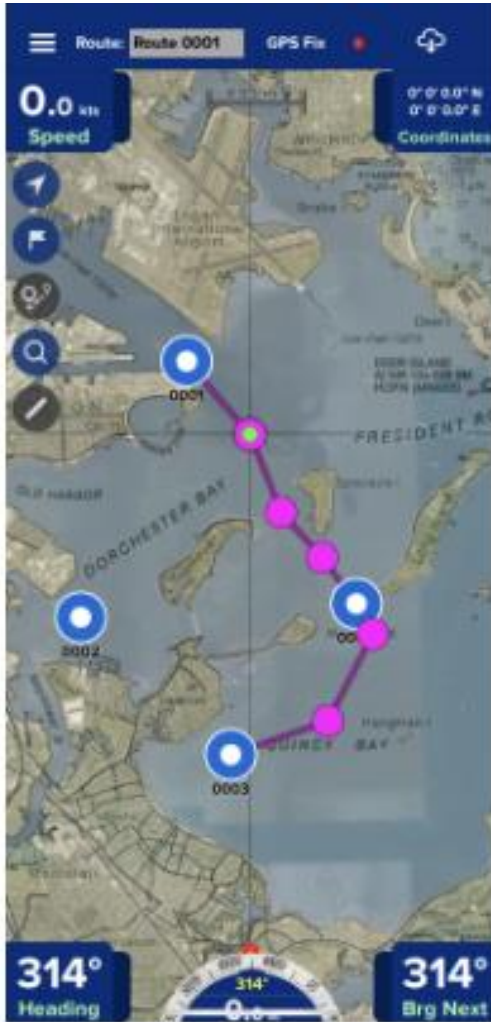
4. USACE FEDERAL NAVIGATION PROJECTS IN BOSTON HARBOR



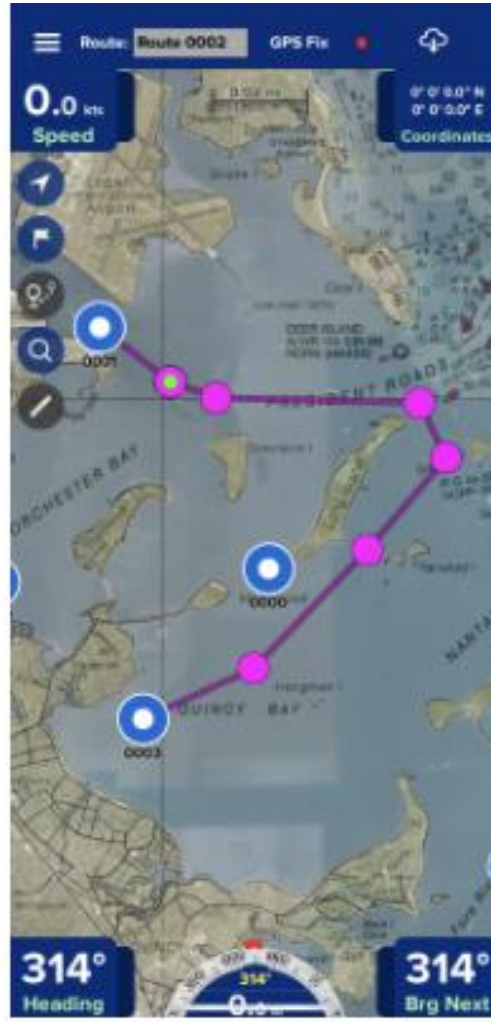




**6. ALTERNATE ROUTES 1&2 – BOSTON INNER HARBOR TO QUINCY BAY**



Route 1: Boston to Quincy via  
Long Island Bridge  
Route Distance: 4.49 nm



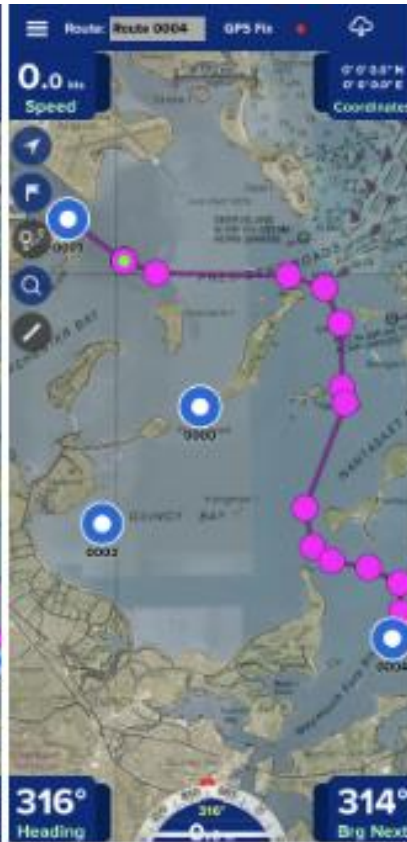
Route 2: Boston to Quincy via  
Nubble Channel  
Route Distance: 6.79 nm



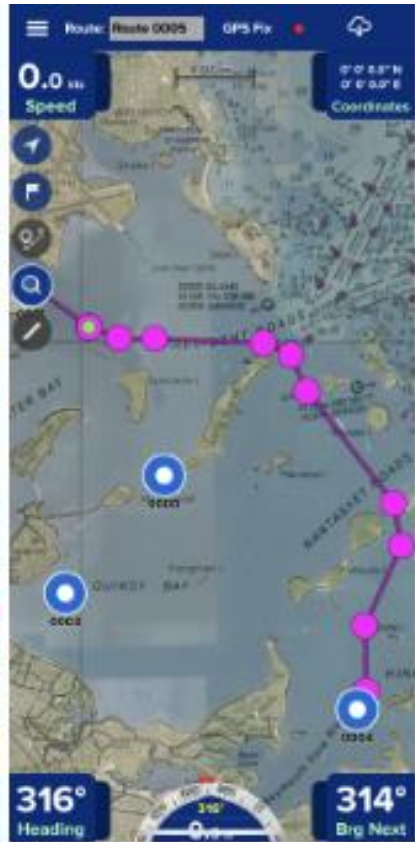
**7. ALTERNATE ROUTES 3, 4 & 5 – BOSTON INNER HARBOR TO HINGHAM BAY – WEYMOUTH DESTINATIONS**



Route 3: Boston to Hingham Bay - Weymouth via Long Island Bridge  
Route Distance: 6.14 nm



Route 4: Boston to Hingham Bay - Weymouth via Nubble Channel and West Gut  
Route Distance: 7.56 nm

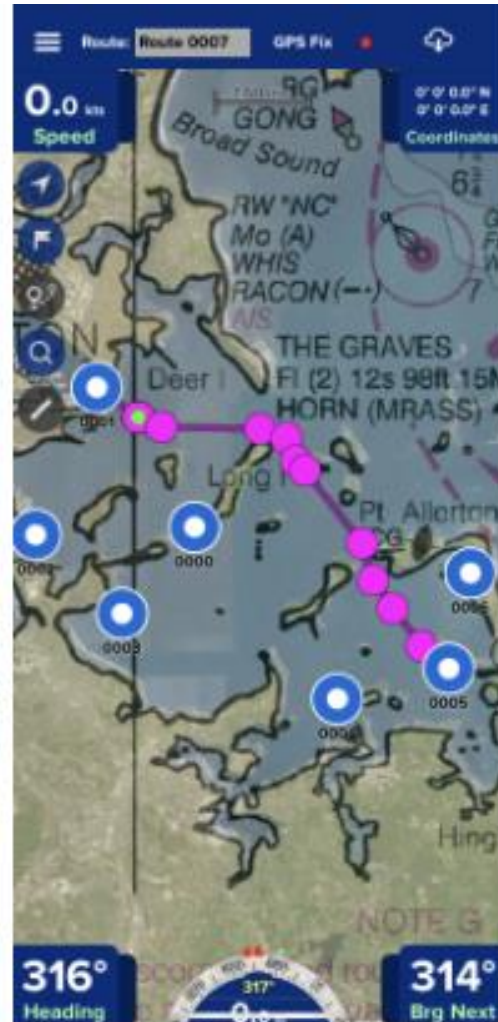


Route 5: Boston to Hingham Bay - Weymouth via Nubble Channel and Hull Gut  
Route Distance: 7.25 nm

**8. ALTERNATE ROUTES 6 & 7 – BOSTON INNER HARBOR TO HINGHAM BAY  
– HINGHAM DESTINATIONS**



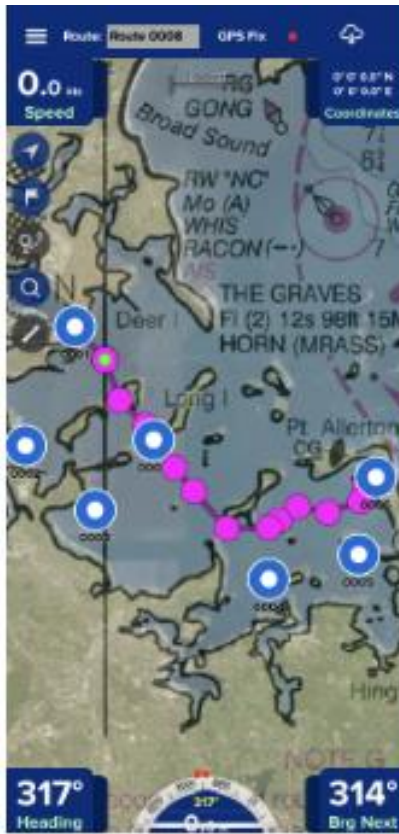
Route 6: Boston to Hingham Bay - Hingham via Long Island Bridge and West Gut  
Route Distance: 7.34 nm



Route 7: Boston to Hingham Bay - Hingham via Nubble Channel and Hull Gut  
Route Distance: 7.13 nm



9. ALTERNATE ROUTES 8, 9 & 10 – BOSTON INNER HARBOR TO HULL BAY



Route 8: Boston to Hull Bay via Long Island Bridge and West Gut  
Route Distance: 7.73 nm



Route 9: Boston to Hull Bay via Long Island Bridge and Hull Gut  
Route Distance: 7.07 nm



Route 10: Boston to Hull Bay via Nubble Channel and Hull Gut  
Route Distance: 6.83 nm

**10. ALTERNATE ROUTES 11 & 12 – DORCHESTER BAY TO QUINCY BAY**



Route 11: Dorchester to Quincy Bay via Long Island Bridge  
Route Distance: 5.09 nm



Route 12: Dorchester to Quincy Bay via Nubble Channel  
Route Distance: 8.02 nm



**11. ALTERNATE ROUTES 13, 14 & 15– DORCHESTER BAY TO HINGHAM BAY – WEYMOUTH DESTINATIONS**



Route 13: Dorchester to Hingham Bay - Hingham via Long Island Bridge and West Gut  
Route Distance: 6.74 nm



Route 14: Dorchester to Hingham Bay - Hingham via Nubble Channel and West Gut  
Route Distance: 8.86 nm



Route 15: Dorchester to Hingham Bay - Hingham via Nubble Channel and Hull Gut  
Route Distance: 8.47 nm

**12. ALTERNATE ROUTES 16 & 17 – DORCHESTER BAY TO HINGHAM BAY –  
HINGHAM DESTINATIONS**



Route 16: Dorchester to Hingham Bay - Weymouth via Long Island Bridge and West Gut  
Route Distance: 7.93 nm



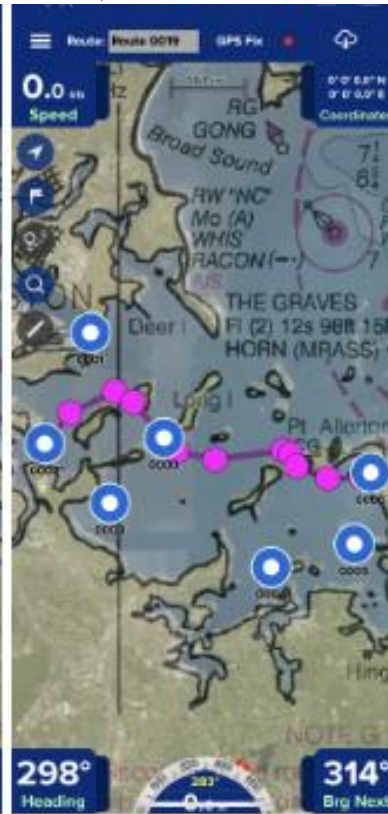
Route 17: Dorchester to Hingham Bay - Weymouth via Nubble Channel and Hull Gut  
Route Distance: 8.36 nm



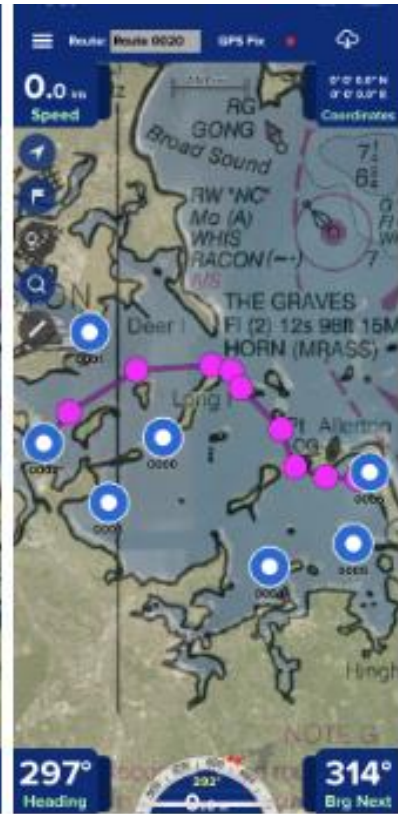
**13. ALTERNATE ROUTES 18, 19 & 20 – DORCHESTER BAY TO HULL BAY**



Route18: Dorchester to Hull Bay via Long Island Bridge and West Gut  
Route Distance: 8.83 nm



Route 19: Dorchester to Hull Bay via Long Island Bridge and Hull Gut  
Route Distance: 7.47 nm



Route 20: Dorchester to Hull Bay via Nubble Channel and Hull Gut  
Route Distance: 7.98 nm

## **APPENDIX 2 – 1949 LEGISLATIVE ACTION**

dollars, and may issue notes of the town therefor, which shall bear on their face the words, Hardwick Fire Protection and Sewer Loan, Act of 1949. Each authorized issue shall constitute a separate loan and such loans shall be paid in not more than seven years from their dates. No loan shall be authorized under this act unless an amount of five hundred dollars is voted for the same purpose to be provided from taxation or available revenue funds in the year when authorized. Indebtedness incurred under this act shall be in excess of the statutory limit and shall, except as provided herein, be subject to the applicable provisions of chapter forty-four of the General Laws exclusive of the limitation contained in the first paragraph of section seven thereof.

SECTION 3. This act shall take effect upon its passage.

*Approved July 1, 1949.*

**Chap.479** AN ACT PROVIDING FOR THE INSTALLATION OF A GAUGING STATION ON THE SQUANNAHOOK RIVER.

*Be it enacted, etc., as follows:*

The department of public health is hereby authorized and directed to install a gauging station on the Squannacook river between West Groton and Townsend harbor in co-operation with the Geological Survey of the United States Department of the Interior, and may expend for such purpose such sums as may be appropriated therefor.

*Approved July 1, 1949.*

**Chap.480** AN ACT TO AUTHORIZE THE CITY OF BOSTON TO CONSTRUCT AND MAINTAIN A VIADUCT OVER AND ACROSS THE PASSAGE OF WATER KNOWN AS THE "BACK WAY" IN LOWER BOSTON HARBOR, BETWEEN LONG ISLAND AND MOON ISLAND, AND APPROACHES THERETO ON BOTH LONG ISLAND AND MOON ISLAND.

*Be it enacted, etc., as follows:*

SECTION 1. The city of Boston is hereby authorized to construct, as a part of the facilities of its institution on Long Island, a viaduct over and across the passage of water known as the "Back Way" in the lower Boston harbor between Long Island and Moon Island, and shall construct approaches to said viaduct on each end thereof. Said city may acquire by eminent domain under chapter seventy-nine or chapter eighty A of the General Laws or by purchase, gift, devise or otherwise such public or private lands or such interest therein as the commissioner of institutions of said city may deem necessary for carrying out the provisions of sections one, two and three of this act.

SECTION 2. Said viaduct shall be built not less than thirty-one feet in width over-all, and with masonry piers and abutments and masonry or steel superstructure, according to plans and specifications prepared under the supervision of said commissioner of institutions. Said viaduct shall be constructed and maintained subject to the provisions of chapter ninety-one of the General Laws and of all other general laws which now are or hereafter may be in force relating to bridges

over tidewater, except that no compensation for displacement of tidewater, or for occupying any lands or flats of the commonwealth, shall be required from said city.

SECTION 3. The approach to said viaduct on the Moon Island side shall be laid out and constructed from Dorchester street in the Squantum district of the city of Quincy, extending easterly and northeasterly to the westerly abutment of the viaduct on Moon Island. The approach to said viaduct on the Long Island side shall be laid out and constructed from the main buildings of Long Island hospital extending westerly to the easterly abutment of said viaduct. Said city shall construct said approaches immediately before, at the time of, or immediately after, completion of said viaduct.

SECTION 4. Said viaduct and approaches shall be maintained by said city through its institutions department; and the commissioner of institutions of said city shall exclusively authorize poles, wires or other structures to be placed on any part or all of the same, in such places as he may deem proper.

SECTION 5. Said viaduct and approaches shall be deemed to be held by said city in its governmental capacity; and the said city shall not be liable for any injury, loss or damage suffered by any person or property on or about said viaduct or approaches.

SECTION 6. For the purpose of providing funds to meet the expenses of carrying out the provisions of sections one, two and three of this act, the city of Boston may borrow, from time to time within a period of five years from the effective date of this act, not exceeding, in the aggregate, two million dollars, and may issue bonds or notes therefor which shall bear on their face the words:— City of Boston, Long Island Viaduct Loan, Act of 1949. Each authorized issue shall constitute a separate loan and such loans shall be paid in not more than twenty years. No loan shall be authorized in any year under this act unless a sum equal to ten cents on each one thousand dollars of the assessed valuation of the city for the preceding year, exclusive of the value of motor vehicles and the value of ships and vessels on which a vessel excise tax is based, has been appropriated from available revenue funds or voted to be raised by taxation for the purposes of this act in the year when the loan is authorized. Indebtedness incurred under this act shall be outside the statutory limit of indebtedness, but shall, except as herein otherwise provided, be subject to all laws relative to the incurring of debt by said city.

SECTION 7. This act shall take full effect upon its acceptance by vote of the city council of said city, subject to the provisions of its charter, but not otherwise.

*Approved July 1, 1949.*

AN ACT RELATIVE TO PREPARATION OF COUNTY BUDGETS *Chap. 481*  
AND TO CONTRACTS MADE BY COUNTIES.

*Be it enacted, etc., as follows:*

SECTION 1. Section 28 of chapter 35 of the General Laws, G. L. (Ter. Ed.), 35, § 28, etc., amended.  
as most recently amended by section 1 of chapter 158 of



## **APPENDIX 3 – 1950 PERMITTING DOCUMENTATION**

# APPROVAL OF LOCATION AND PLANS OF BRIDGE

# 9

Whereas by Title V of an act of Congress approved August 2, 1946, entitled General Bridge Act of 1946 (Public Law 601—79th Congress) the consent of Congress was granted for the construction, maintenance, and operation of bridges and approaches thereto over the navigable waters of the United States;

And whereas section 502(b) of said act provides that: "The location and plans for such bridges shall be approved by the Chief of Engineers and the Secretary of the Army before construction is commenced, and, in approving the location and plans of any bridge, they may impose any specific conditions relating to the maintenance and operation of the structure which they may deem necessary in the interest of public navigation, and the conditions so imposed shall have the force of law;"

And whereas the ~~INSTITUTIONS DEPARTMENT, CITY OF BOSTON, MASSACHUSETTS~~ has submitted plans and a map of the location of a bridge to be constructed across "BACK WAY" between Moon Head and Long Island in Boston Harbor, in the State of Massachusetts ;

823 (Boston Harbor - (Back Way) - Moon Head - Long Island, Mass.) - 2/20/49

Now therefore, This is to certify that the location and attached plans are hereby approved by the Chief of Engineers and by the Secretary of the Army, pursuant to the above-mentioned act of Congress, subject to the following conditions:

1. The district engineer in charge of the locality within which the bridge is to be built may supervise its construction in order that said plans shall be complied with.
2. All work shall be so conducted so that the free navigation of the waterway shall not be unreasonably interfered with and the present navigable depths shall not be impaired. The channel or channels through the structure shall be promptly cleared of all falsework, piling, or other obstructions placed therein or caused by the construction of the bridge, to the satisfaction of the said district engineer, when in his judgment the construction work has reached a point where such action should be taken, and in any case not later than ninety days after the bridge has been opened to traffic.
3. The approval hereby granted shall cease and be null and void unless the actual construction of the bridge be commenced within <sup>2</sup> year(s) and completed within <sup>4</sup> years from the date of this instrument.

Incl. 7'

4. No deviation from the approved plans shall be made either before or after completion of the structure unless the modification of said plans has previously been submitted to and received the approval of the Chief of Engineers and of the Secretary of the Army.

WITNESS my hand this ~~26th~~ day of ~~January~~ 1950

(S)

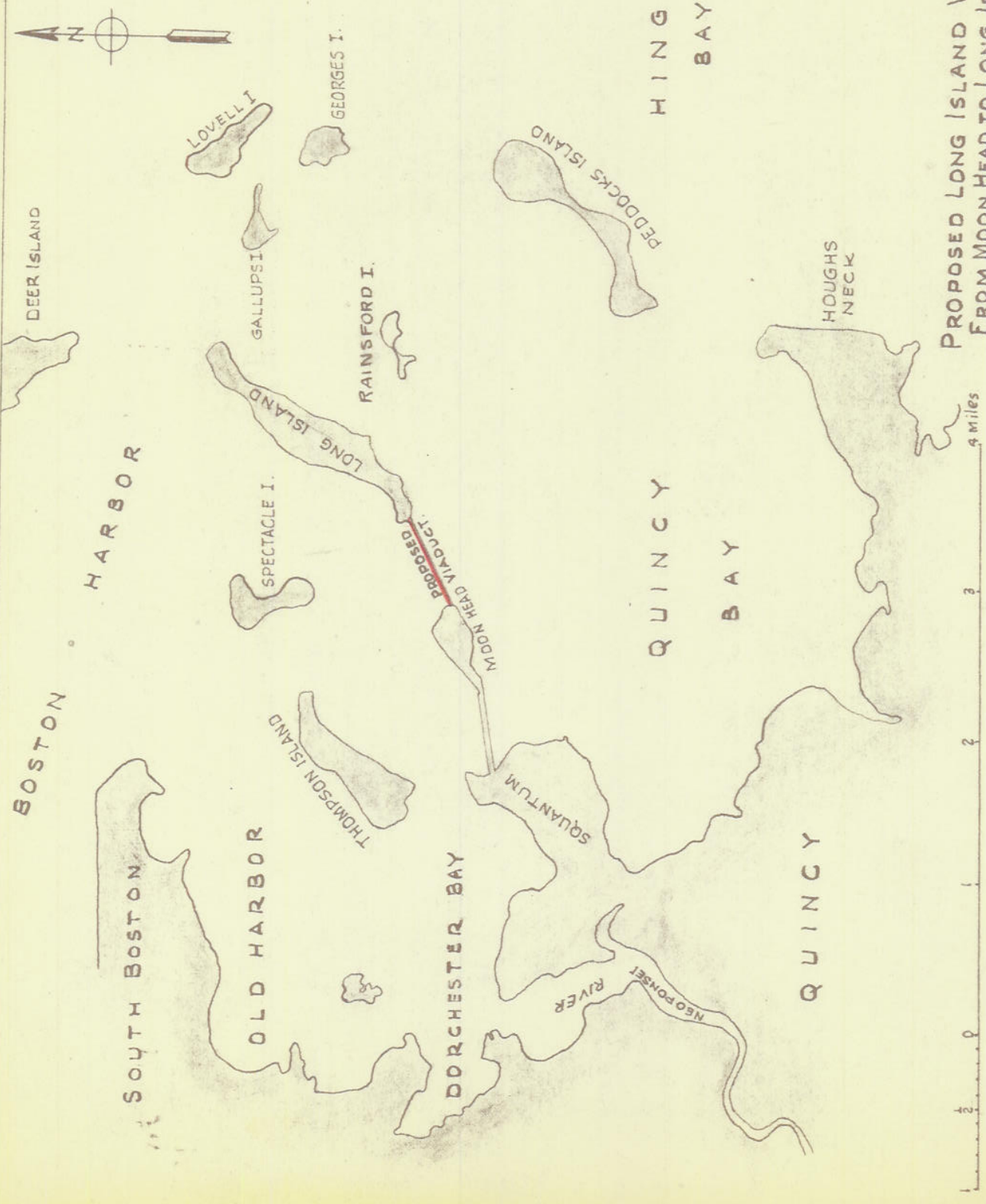
J. S. BRAGDON  
Brigadier General  
Acting Chief of Engineers

IN WITNESS WHEREOF I have hereunto set my hand  
by direction of the Assistant Secretary of the Army  
this ~~30~~ day of ~~January~~ 1950

(S)

HARRY C. CHUCK  
Colonel, JAGC  
Chief, Civil and Legal Branch  
OTASofA



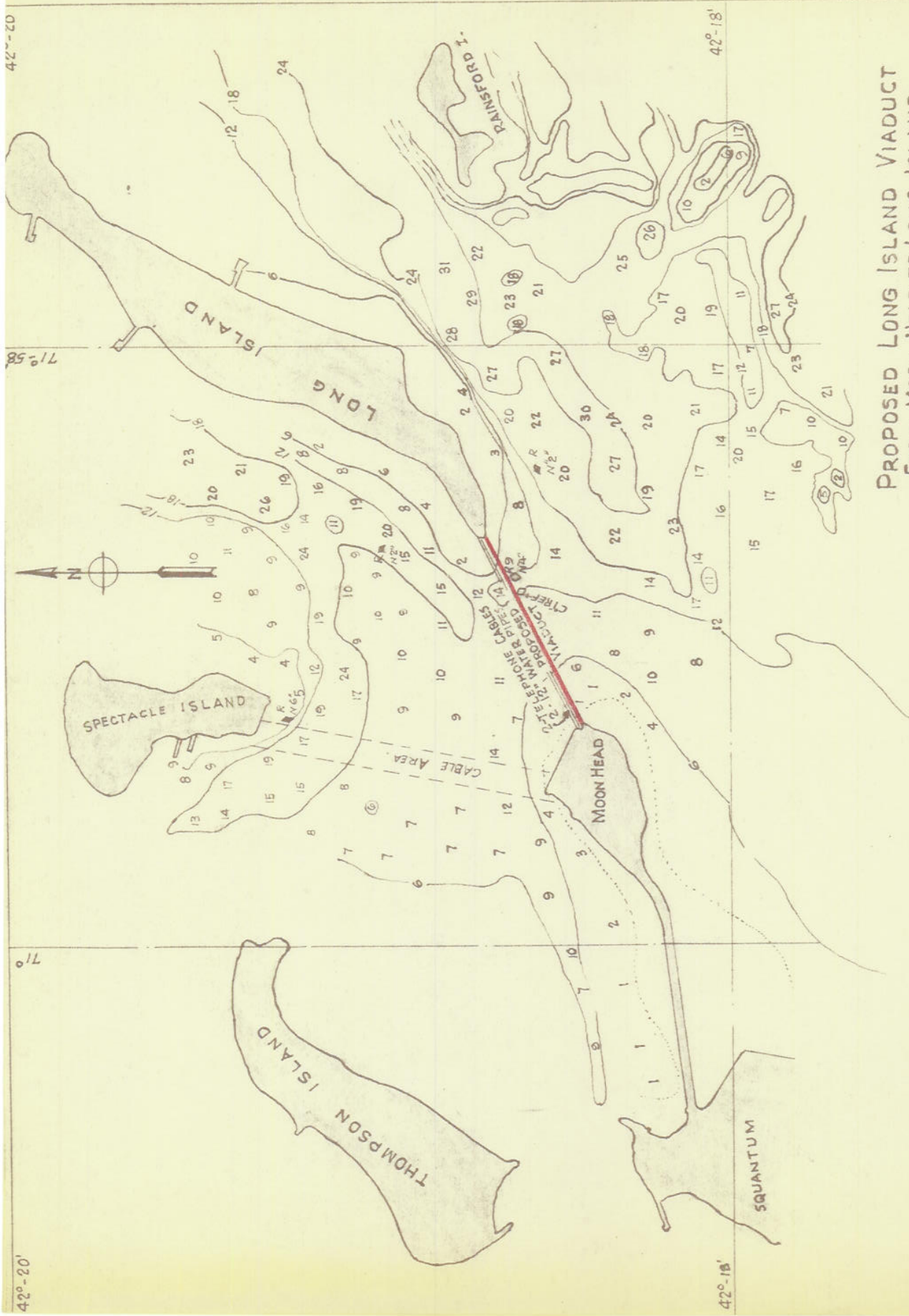


**PROPOSED LONG ISLAND VIADUCT  
FROM MOON HEAD TO LONG ISLAND  
BOSTON, MASS.**

GENERAL LOCATION  
APPLICATION BY CITY OF BOSTON  
INSTITUTIONS DEPARTMENT  
DATE: OCT. 1949.  
SHT. 1 of 3

COPIED FROM U.S.G. SURVEY-1917.

COMMISSIONER OF INSTITUTIONS



**PROPOSED LONG ISLAND VIADUCT  
FROM MOON HEAD TO LONG ISLAND**

BOSTON, MASS.

GENERAL VICINITY  
APPLICATION BY-CITY OF BOSTON  
INSTITUTIONS DEPARTMENT

DATE: Oct. 1949.

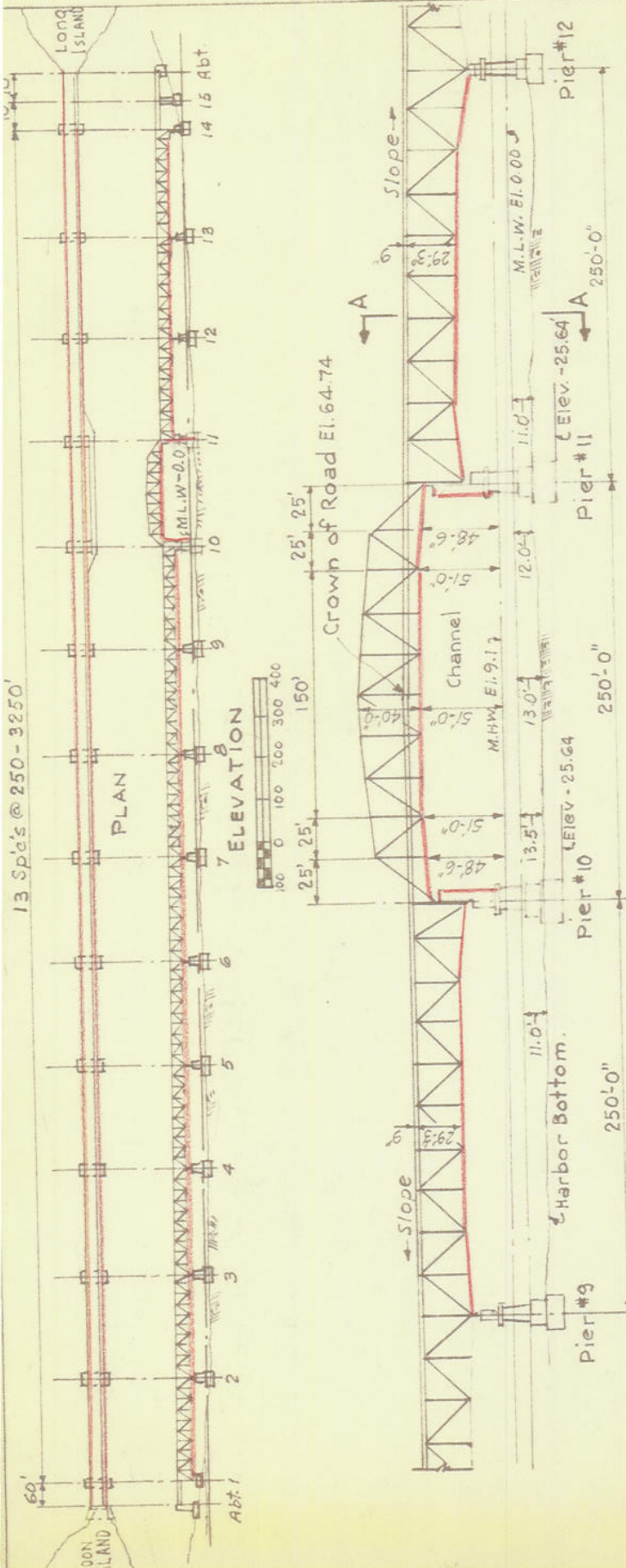
SHT. 2 of 3

COPIED FROM U.S.C. & G.S. 246

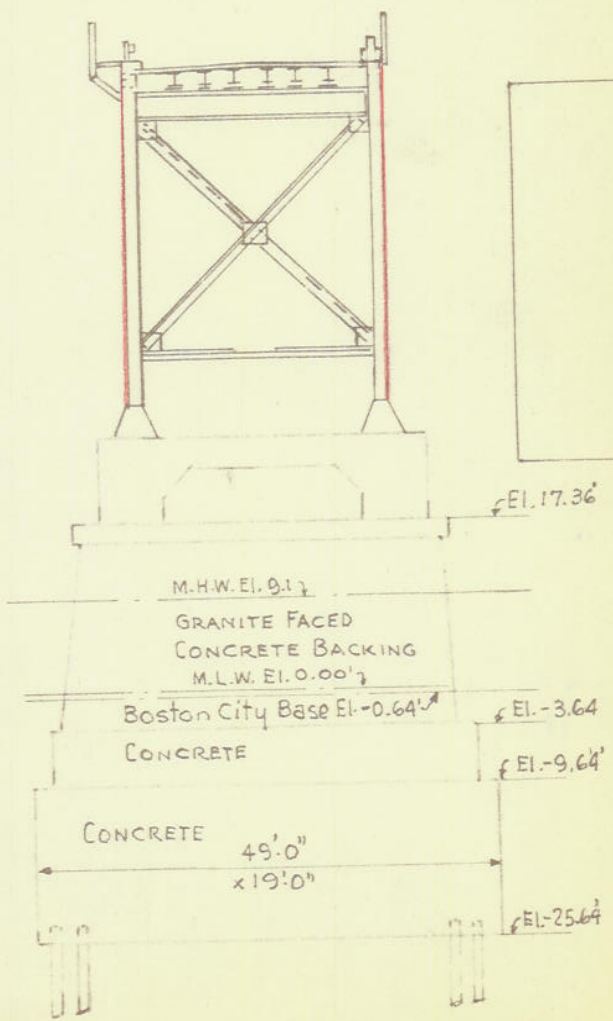
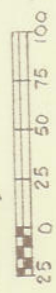




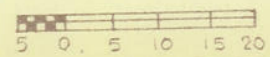
13 Sp's @ 250' - 3250'



Note: Soundings taken Oct. 1949



SECTION A-A



PROPOSED LONG ISLAND VIADUCT  
FROM MOON HEAD TO LONG ISLAND  
BOSTON, MASS.

ELEVATIONS  
APPLICATION BY CITY OF BOSTON.  
INSTITUTIONS DEPARTMENT  
DATE: OCT 1949  
SHT. 3 of 3

COMMISSIONER OF INSTITUTIONS

## **APPENDIX 4 – SAFETY ZONE REGULATION**

## LEGAL STATUS

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LEGAL STATUS

# Safety Zone; Moon Island-Long Island Bridge Demolition; Boston Inner Harbor, Quincy Bay; Quincy, MA

A Rule by the [Coast Guard](#) on [03/02/2015](#)

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**DOCUMENT DETAILS****Printed version:**

PDF (<https://www.govinfo.gov/content/pkg/FR-2015-03-02/pdf/2015-04282.pdf>)

**Publication Date:**

03/02/2015 (/documents/2015/03/02)

**Agencies:**

Coast Guard (<https://www.federalregister.gov/agencies/coast-guard>)

**Dates:**

This rule is effective without actual notice from 12:01 a.m. on March 2, 2015 until 11:59 p.m. on December 31, 2015. For the purposes of enforcement, actual notice will be used from the date the rule was signed, February 13, 2015, until March 2, 2015.

**Effective Date:**

03/02/2015

**Document Type:**

Rule

**Document Citation:**

80 FR 11123

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33 CFR 165

**Agency/Docket Number:**

Docket No. USCG-2014-1059

**RIN:**

1625-AA00 (<https://www.federalregister.gov/regulations/1625-AA00/safety-zone-regulations>)

**Document Number:**

2015-04282

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## DOCUMENT STATISTICS

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## ENHANCED CONTENT



## Docket Number:

USCG-2014-1059 (<https://beta.regulations.gov/docket/USCG-2014-1059>)

## Supporting/Related Materials:

Environmental Checklist (<https://www.regulations.gov/document?D=USCG-2014-1059-0002>)

## PUBLISHED DOCUMENT

**AGENCY:**

Coast Guard, DHS.

**ACTION:**

Temporary final rule.

**SUMMARY:**

The Coast Guard is establishing two temporary safety zones within the Sector Boston, Captain of the Port (COTP) Zone on the navigable waters of the Boston Inner Harbor, Quincy Bay for the demolition of the Moon Island—Long Island Bridge, between Moon Island and Long Island, Boston, MA. This action is necessary to provide for the safety of life on navigable waters prior to and during demolition and removal of the bridge spans. Entering into, transiting through, remaining in, anchoring, or mooring within this safety zone is prohibited unless authorized by the Captain of the Port (COTP) Sector Boston.

**DATES:**

This rule is effective without actual notice from 12:01 a.m. on March 2, 2015 until 11:59 p.m. on December 31, 2015. For the purposes of enforcement, actual notice will be used from the date the rule was signed, February 13, 2015, until March 2, 2015.

**ADDRESSES:**

Documents indicated in this preamble as being available in the docket are part of docket USCG-2014-1059 and are available online by going to <http://www.regulations.gov> (<http://www.regulations.gov>), inserting USCG-2014-1059 in the “Keyword” box, and then clicking “Search.” They are also available for inspection or

copying at the Docket Management Facility (M-30), U.S. Department of Transportation, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

## FOR FURTHER INFORMATION CONTACT:

If you have questions on this notice, contact Mr. Mark Cutter, Coast Guard Sector Boston Waterways Management Division, telephone 617-223-4000, email [Mark.E.Cutter@uscg.mil](mailto:Mark.E.Cutter@uscg.mil) (<mailto:Mark.E.Cutter@uscg.mil>). If you have questions on viewing material related to the docket, call Cheryl Collins, Program Manager, Docket Operations, telephone 202-366-9826.

## SUPPLEMENTARY INFORMATION:

### Table of Acronyms

DHS Department of Homeland Security

COTP Captain of the Port

FR Federal Register

NPRM Notice of Proposed Rulemaking

NAD 83 North American Datum of 1983

### A. Regulatory Information and Information

The Coast Guard is issuing this temporary final rule without prior notice and opportunity to comment pursuant to authority under section 4(a) of the Administrative Procedure Act (APA) (5 U.S.C. 553 (<https://api.fdsys.gov/link?collection=uscode&title=5&year=mostrecent&section=553&type=usc&link-type=html>)(b)). This provision authorizes an agency to issue a rule without prior notice and opportunity to comment when the agency for good cause finds that those procedures are “impracticable, unnecessary, or contrary to the public interest.” Under 5 U.S.C. 553 (<https://api.fdsys.gov/link?collection=uscode&title=5&year=mostrecent&section=553&type=usc&link-type=html>)(b)(B), the Coast Guard finds that good cause exists for not publishing an NPRM with respect to this rule because publishing an NPRM would be impracticable and contrary to the public interest. Sufficient information regarding the severe deteriorating condition of this bridge was only received by the City of Boston in October 2014 after an inspection was conducted in accordance with the new Federal Highways Administration (FHWA) guidelines. That inspection deemed the bridge unsafe for a live load rating for vehicular traffic, dropping the bridge below the minimum standards. Further, in January 2015, a 60 foot by 12 inch water main broke off the bridge above the navigational channel and fell into the channel. Although the pipe was later removed, the condition of the bridge remains a hazard.

The demolition of the bridge will start immediately and will take approximate three to five months. Accordingly, there is insufficient time to publish an NPRM and solicit comments from the public before the demolition takes place. Thus, waiting for a comment period to run would inhibit the Coast Guard's ability to fulfill its mission to keep the ports and waterways safe.

It is crucial to the operation of the waterway that this \$21 million-demolition project remains on schedule and is completed before the recreational boating season traffic starts. The commuter ferry service that transits between Weymouth-Hingham and Boston has adapted to another route, adding approximately 10 minutes of time to their scheduled runs. The contractor is expected to remove the 225 foot navigational span first, so that commuter ferries can resume transiting their normal route. The actual removal of the sixteen spans is complex and involves a combination of a controlled detonation and conventional demolition. If the bridge demolition project is delayed up it would have serious ramifications to the waterway stakeholders, especially during the summer boating season when it is heavily used by recreational boaters. Due to the dangers posed by the condition of the bridge and the controlled and conventional demolition of such a large structure over a waterway, the different safety zones are necessary to provide for the safety of any vessels transiting the area. For the safety concerns noted, it is in the public interest to have these regulations in effect immediately and during the demolition phases.

Under 5 U.S.C. 553 (<https://api.fdsys.gov/link?collection=uscode&title=5&year=mostrecent&section=553&type=usc&link-type=html>)(d)(3), the Coast Guard finds that good cause exists for making this rule effective less than 30 days after publication in the **Federal Register**. For the same reasons discussed in the preceding paragraph, delaying the effective date of this rule would be impracticable and contrary to the public interest.

## B. Basis and Purpose

The legal basis for the temporary rule is 33 U.S.C., 1231, 46 U.S.C. Chapter 701, 3306, 3703; 50 U.S.C. 191 (<https://api.fdsys.gov/link?collection=uscode&title=50&year=mostrecent&section=191&type=usc&link-type=html>), 195; Pub. L. 107-295 (<https://api.fdsys.gov/link?collection=plaw&congress=107&lawtype=public&lawnum=295&link-type=html>), 116 Stat. 2064; and Department of Homeland Security Delegation No. 0170.1, which collectively authorize the Coast Guard to define regulatory safety zones.

The temporary safety zones are being established to prohibit vessels from transiting the navigational channel until the span is permanently removed and from transiting in the vicinity of the existing Long Island Bridge during the bridge's demolition and removal.

## C. Discussion of the Temporary Final Rule

For the reasons discussed above, the COTP is establishing temporary safety zones in the vicinity of the Moon Island □ Long Island Bridge to ensure the safety of vessels and other property from the hazards associated with the current condition of the bridge and the bridge demolition. The COTP Boston has determined that the actual condition of the bridge and the demolition of such a large structure over the waterway pose a significant risk to public safety and property. Hazards include the falling of parts from the deteriorated bridge to include large pieces of heavy metal, possible flying fragments from the controlled detonation and the obstructions to the waterway that may contribute to marine casualties, such as crane barges, work vessels, and construction equipment, and large pieces of debris falling into the water that may cause death or serious bodily harm. Establishing a safety zone around the location of the navigational channel until it is permanently removed and during the controlled detonation and the conventional demolition operations will help ensure the safety of vessels and other property and help minimize the associated risks.

The Coast Guard has been coordinating with contractors and local stakeholders regarding the scope of the overall project. The stakeholders that may be affected by this rulemaking have been notified of the risks of transiting this navigational channel and have since modified their ferry routes. They also know the potential

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Page 11124

impacts to the waterway from this project.

Vessels may enter or transit through the safety zones during the effective period if authorized by the COTP Boston or the designated representative.

The COTP will cause notice of enforcement or suspension of enforcement of the safety zones to be made by all appropriate means to affect the widest distribution among the affected segments of the public. Such means of notification will include, but is not limited to, Broadcast Notice to Mariners and Local Notice to Mariners.

## **D. Regulatory Analyses**

We developed this rule after considering numerous statutes and executive orders related to rulemaking. Below we summarize our analyses based on 13 of these statutes or executive orders.

### **1. Regulatory Planning and Review**

This rule is not a significant regulatory action under section 3(f) of Executive Order 12866, Regulatory Planning and Review, as supplemented by Executive Order 13563, (</executive-order/13563>) and does not require an assessment of potential costs and benefits under section 6(a)(3) of that Order. The Office of Management and Budget has not reviewed it under that Order.

The Coast Guard determined that this rule is not a significant regulatory action for the following reasons: The safety zone for the navigational channel will be of limited duration, expecting to be completed by the end of February 2015, and the commuter ferries have already rerouted out of safety concerns with the previous falling debris from the bridge and have requested that the navigational bridge span be removed at the earliest stages of the project. This time of the season there is no recreational boating traffic.

Persons and/or vessels may enter the safety zone if they obtain permission from the Coast Guard COTP, Boston.

Notifications will be made to the local maritime community through the Local Notice to Mariners and Broadcast Notice to Mariners well in advance of the demolition.

### **2. Impact on Small Entities**

The Regulatory Flexibility Act of 1980 (RFA), 5 U.S.C. 601 (<https://api.fdsys.gov/link?collection=uscode&title=5&year=mostrecent&section=601&type=usc&link-type=html>)-612, as amended, requires federal agencies to consider the potential impact of regulations on small entities during rulemaking. The term “small entities” comprises small businesses, not-for-profit organizations that are independently owned and operated and are not dominant in their fields, and governmental jurisdictions with populations of less than 50,000.

For all of the reasons discussed in the Regulatory Planning And Review section, the Coast Guard certifies under 5 U.S.C. 605 (<https://api.fdsys.gov/link?collection=uscode&title=5&year=mostrecent&section=605&type=usc&link-type=html>)(b) that this rule would not have a significant economic impact on a substantial number of small entities.

If you think that your business, organization, or governmental jurisdiction qualifies as a small entity and that this rule would have a significant economic impact on it, please submit a comment (see **ADDRESSES**) explaining why you think it qualifies and how and to what degree this rule would economically affect it.

### 3. Assistance for Small Entities

Under section 213(a) of the Small Business Regulatory Enforcement Fairness Act of 1996 (Pub. L. 104-121 (<https://api.fdsys.gov/link?collection=plaw&congress=104&lawtype=public&lawnum=121&link-type=html>)), we offer to assist small entities in understanding the rule so that they can better evaluate its effects on them and participate in the rulemaking process. If the rule would affect your small business, organization, or governmental jurisdiction and you have questions concerning its provisions or options for compliance, please contact Mr. Mark Cutter at the telephone number or email address indicated under the **FOR FURTHER INFORMATION CONTACT** section of this notice.

Small businesses may send comments on the actions of Federal employees who enforce, or otherwise determine compliance with, Federal regulations to the Small Business and Agriculture Regulatory Enforcement Ombudsman and the Regional Small Business Regulatory Fairness Boards. The Ombudsman evaluates these actions annually and rates each agency's responsiveness to small business. If you wish to comment on actions by employees of the Coast Guard, call 1-888-REG-FAIR (1-888-734-3247). The Coast Guard will not retaliate against small entities that question or complain about this rule or any policy or action of the Coast Guard.

### 4. Collection of Information

This rule calls for no new collection of information under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 (<https://api.fdsys.gov/link?collection=uscode&title=44&year=mostrecent&section=3501&type=usc&link-type=html>)-3520).

### 5. Federalism

A rule has implications for federalism under Executive Order 13132, (</executive-order/13132>) Federalism, if it has a substantial direct effect on State or local governments and would either preempt State law or impose a substantial direct cost of compliance on them. We have analyzed this rule under that Order and have determined that it does not have implications for federalism.

### 6. Protest Activities

The Coast Guard respects the First Amendment rights of protesters. Protesters are asked to contact the person listed in the "**FOR FURTHER INFORMATION CONTACT**" section to coordinate protest activities so that your message can be received without jeopardizing the safety or security of people, places or vessels.

### 7. Unfunded Mandates Reform Act

The Unfunded Mandates Reform Act of 1995 (2 U.S.C. 1531 (<https://api.fdsys.gov/link?collection=uscode&title=2&year=mostrecent&section=1531&type=usc&link-type=html>)-1538) requires Federal agencies to assess the effects of their discretionary regulatory actions. In particular, the Act addresses actions that may result in the expenditure by a State, local, or tribal government, in the aggregate, or by the private sector of \$100,000,000 (adjusted for inflation) or more in any one year. Though this rule will not result in such expenditure, we do discuss the effects of this rule elsewhere in this preamble.

### 8. Taking of Private Property

This rule will not cause a taking of private property or otherwise have taking implications under Executive Order 12630, Governmental Actions and Interference with Constitutionally Protected Property Rights.

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Page 11125

## 9. Civil Justice Reform

This rule meets applicable standards in sections 3(a) and 3(b)(2) of Executive Order 12988, (/executive-order/12988) Civil Justice Reform, to minimize litigation, eliminate ambiguity, and reduce burden.

## 10. Protection of Children From Environmental Health Risks

We have analyzed this rule under Executive Order 13045, (/executive-order/13045) Protection of Children from Environmental Health Risks and Safety Risks. This rule is not an economically significant rule and does not create an environmental risk to health or risk to safety that may disproportionately affect children.

## 11. Indian Tribal Governments

This rule does not have tribal implications under Executive Order 13175, (/executive-order/13175) Consultation and Coordination with Indian Tribal Governments, because it does not have a substantial direct effect on one or more Indian tribes, on the relationship between the Federal Government and Indian tribes, or on the distribution of power and responsibilities between the Federal Government and Indian tribes.

## 12. Energy Effects

This action is not a “significant energy action” under Executive Order 13211, (/executive-order/13211) Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use.

## 13. Technical Standards

This rule does not use technical standards. Therefore, we did not consider the use of voluntary consensus standards.

## 14. Environment

We have analyzed this rule under Department of Homeland Security Management Directive 023-01 and Commandant Instruction M16475.1D, which guide the Coast Guard in complying with the National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. 4321 (<https://api.fdsys.gov/link?collection=uscode&title=42&year=mostrecent&section=4321&type=usc&link-type=html>)-4370f), and have determined that this action is one of a category of actions that do not individually or cumulatively have a significant effect on the human environment. This rule involves the establishment of a safety zone. This rule is categorically excluded from further review under paragraph 34(g) of Figure 2-1 of the Commandant Instruction. An environmental analysis checklist supporting this determination and a Categorical Exclusion Determination are available in the docket where indicated under **ADDRESSES**. We seek any comments or information that may lead to the discovery of a significant environmental impact from this rule.

## List of Subjects in 33 CFR Part 165 (/select-citation/2015/03/02/33-CFR-165)

- Harbors
- Marine safety
- Navigation (water)
- Reporting and recordkeeping requirements
- Security measures
- Waterways

For the reasons discussed in the preamble, the Coast Guard amends 33 CFR part 165 (/select-citation/2015/03/02/33-CFR-165) as follows:

## PART 165—REGULATED NAVIGATION AREAS AND LIMITED ACCESS AREAS

1. The authority citation for part 165 continues to read as follows:

**Authority:** 33 U.S.C., 1231; 46 U.S.C. Chapter 701, 3306, 3703; 50 U.S.C. 191 (https://api.fdsys.gov/link?collection=uscode&title=50&year=mostrecent&section=191&type=usc&link-type=html), 195; 33 CFR 1.05 (/select-citation/2015/03/02/33-CFR-1.05)-1(g), 6.04-1, 6.04-6, and 160.5; Pub. L. 107-295 (https://api.fdsys.gov/link?collection=plaw&congress=107&lawtype=public&lawnum=295&link-type=html), 116 Stat. 2064; Department of Homeland Security Delegation No. 0170.1.2

2. Add § 165.T01-1059 to read as follows:

### § 165.T01-1059 Moon Island—Long Island Bridge Demolition, Boston Inner Harbor—Quincy Bay, Massachusetts.

(a) *General.* A temporary safety zone is established for the bridge demolition as follows:

(1) *Location.* The following area is a safety zone: All navigable waters, from surface to bottom, within two hundred (200) yards of the Moon Island—Long Island Bridge, Boston Inner Harbor—Quincy Bay, MA, and enclosed by a line connecting the following points (NAD 83):

Latitude	Longitude
42°18'44" N	70°58'40" W; thence to
42°18'33" N	70°58'31" W; thence to
42°18'18" N	70°59'10" W; thence to
42°18'29" N	70°59'20" W; thence to point of origin.

(2) *Effective and Enforcement Period.* This rule will be effective and enforced from 12:01 a.m. on February 13, 2015 to 11:59 p.m. on December 31, 2015.

(b) *General.* A temporary safety zone is established for the controlled detonation demolition phase as follows:

(1) *Location.* The following area is a safety zone: All navigable waters, from surface to bottom, within approximately one thousand (1000) yards of the Moon Island—Long Island Bridge, Boston Inner Harbor—Quincy Bay, Massachusetts, and enclosed by a line connecting the following points (NAD 83):

Latitude	Longitude
42°18'38" N	70°58'36" W; thence to
42°18'30" N	70°57'37" W; thence to
42°17'44" N	70°59'20" W; thence to

<b>Latitude</b>	<b>Longitude</b>
42°18'23" N	70°59'14" W; thence to
42°18'41" N	70°59'54" W; thence to
42°19'11" N	70°58'43" W; thence to point of origin.

(2) *Effective and Enforcement Period.* This rule will be effective from 12:01 a.m. on February 13, 2015 to 11:59 p.m. on December 31, 2015, however it will be enforced on the actual date(s) of the controlled detonation, to be determined at a later date. Coast Guard Sector Boston will give actual notice to mariners via Local Notice to Mariners and Broadcast Notice to Mariners

(c) *Regulations.* While this safety zone is being enforced, the following regulations, along with those contained in 33 CFR 165.23 (/select-citation/2015/03/02/33-CFR-165.23), apply:

(1) No person or vessel may enter or remain in this safety zone without the permission of the Captain of the Port (COTP), Sector Boston the COTP's representatives. However, any vessel that is granted permission by the COTP or the COTP's representatives must proceed through the area with caution and operate at a speed no faster than that speed necessary to maintain a safe course, unless otherwise required by the Navigation Rules.

(2) Any person or vessel permitted to enter the security zone shall comply with the directions and orders of the COTP or the COTP's representatives. Upon being hailed by a U.S. Coast Guard vessel by siren, radio, flashing lights, or other means, the operator of a vessel within the zone shall proceed as directed. Any person or vessel within the security zone shall exit the zone when directed by the COTP or the COTP's representatives.

(3) To obtain permissions required by this regulation, individuals may reach the COTP or a COTP representative via VHF channel 16 or 617-223-5757 (Sector Boston Command Center) to obtain permission.

(4) *Penalties.* Those who violate this section are subject to the penalties set forth in 33 U.S.C. 1232 (<https://api.fdsys.gov/link?collection=uscode&title=33&year=mostrecent&section=1232&type=usc&link-type=html>) and 50 U.S.C. 1226 (<https://api.fdsys.gov/link?collection=uscode&title=50&year=mostrecent&section=1226&type=usc&link-type=html>).

(d) *Notification.* Coast Guard Sector Boston will give actual notice through the Local Notice to Mariners, Broadcast Notice to Mariners and to mariners for the purpose of enforcement of this temporary safety zone. Also, Sector Boston will notify the public to the greatest extent possible of any period in □ which the Coast Guard will suspend enforcement of this safety zone.

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Page 11126

(e) *COTP Representative.* The COTP's representative may be any Coast Guard commissioned, warrant, or petty officer or any Federal, state, or local law enforcement officer who has been designated by the COTP to act on the COTP's behalf. The COTP's representative may be on a Coast Guard vessel, a Coast Guard Auxiliary vessel, a state or local law enforcement vessel, or a location on shore.

Dated: February 13, 2015.



J.C. O'Connor III,

Captain, U.S. Coast Guard, Captain of the Port Boston.

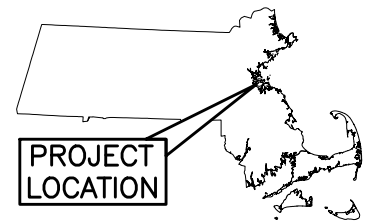
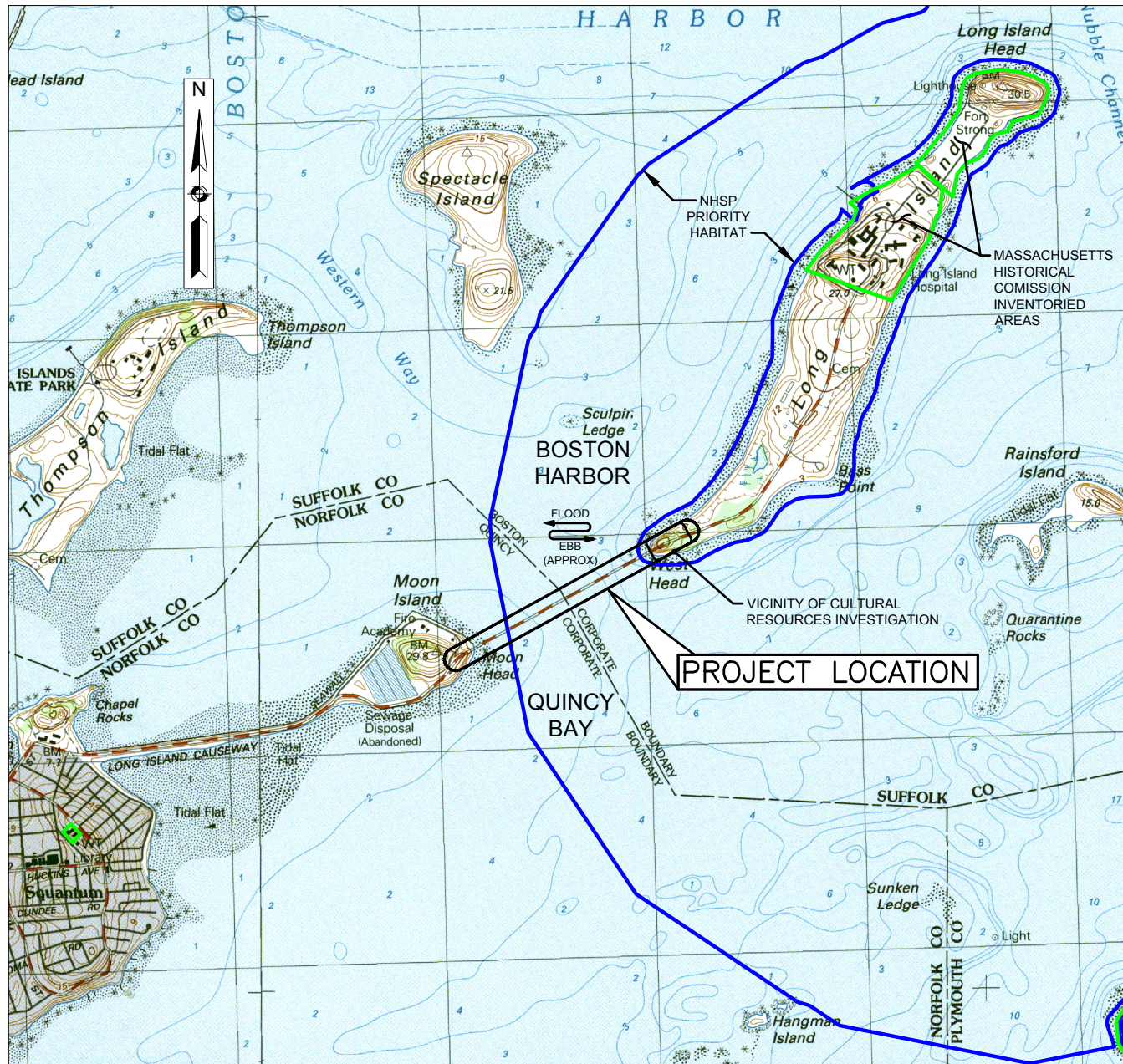
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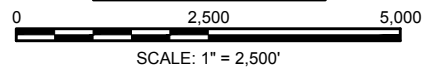
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**PUBLISHED DOCUMENT**

## **APPENDIX 5 – USCG BRIDGE APPLICATION PLAN FIGURES**

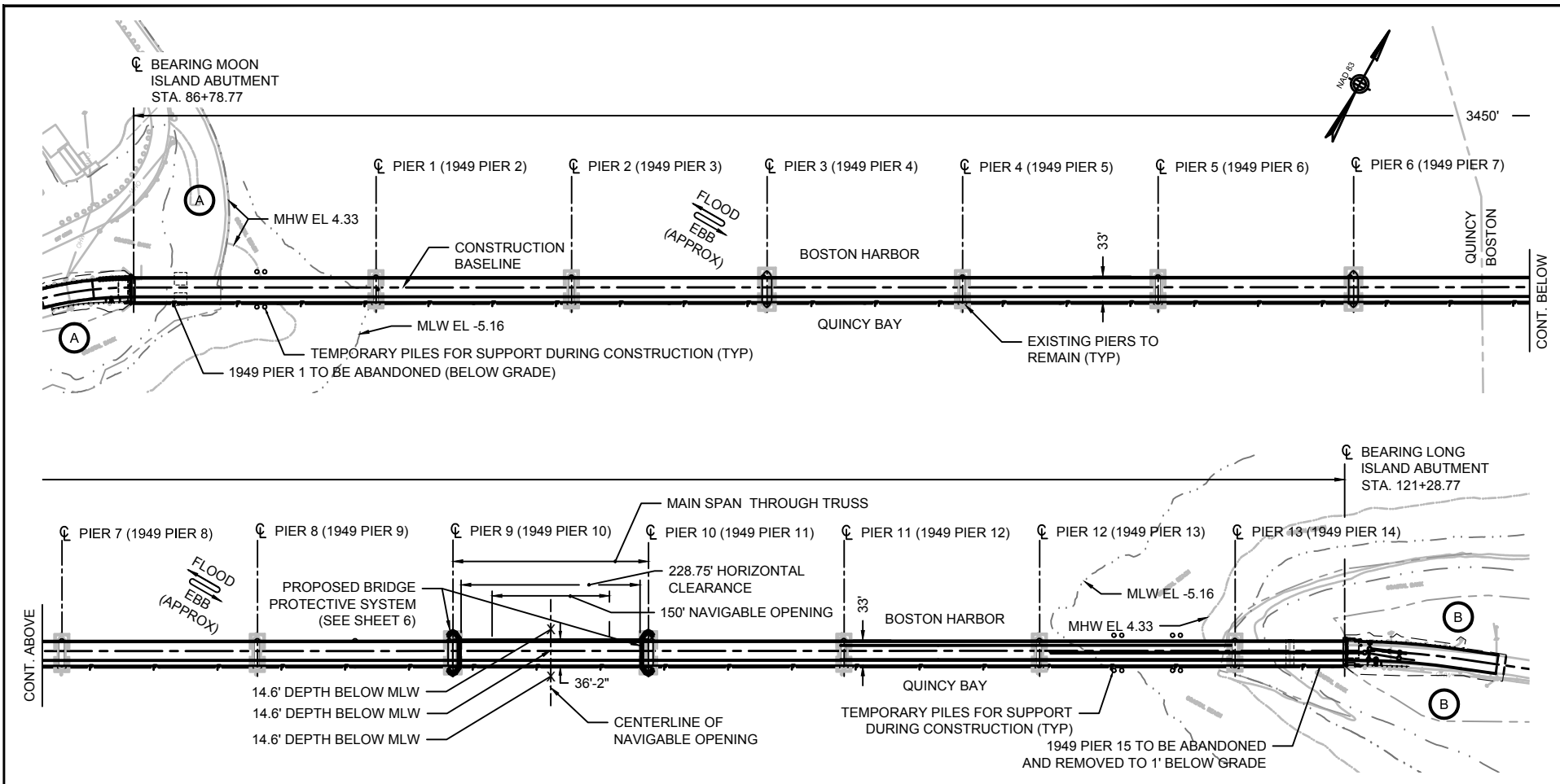


**VICINITY MAP**

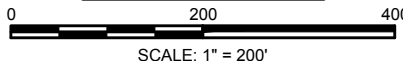


OWNER/APPLICANT:	
	CITY OF BOSTON PUBLIC WORKS DEPARTMENT
LONG ISLAND BRIDGE OVER BOSTON HARBOR BOSTON AND QUINCY NORFOLK AND SUFFOLK COUNTY, MA MILE POINT (MP) 0.0	
BRIDGE NO. B-16-368 (91M)	
CONSULTANT: STV INC.	
DATE: NOVEMBER 18, 2019	
SHEET: 1 OF 7	





**OVERALL PLAN**




**PROPERTY OWNERS**

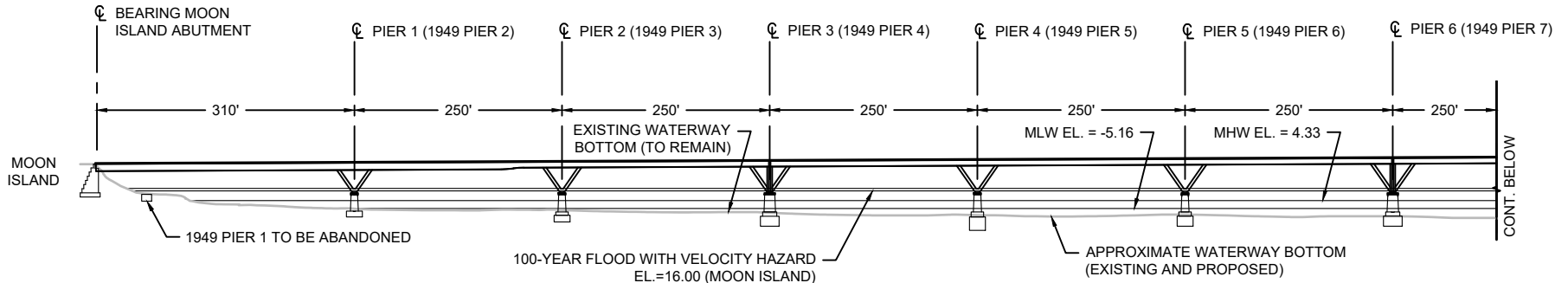
- (A) CITY OF BOSTON
- (B) CITY OF BOSTON

**NOTES:**

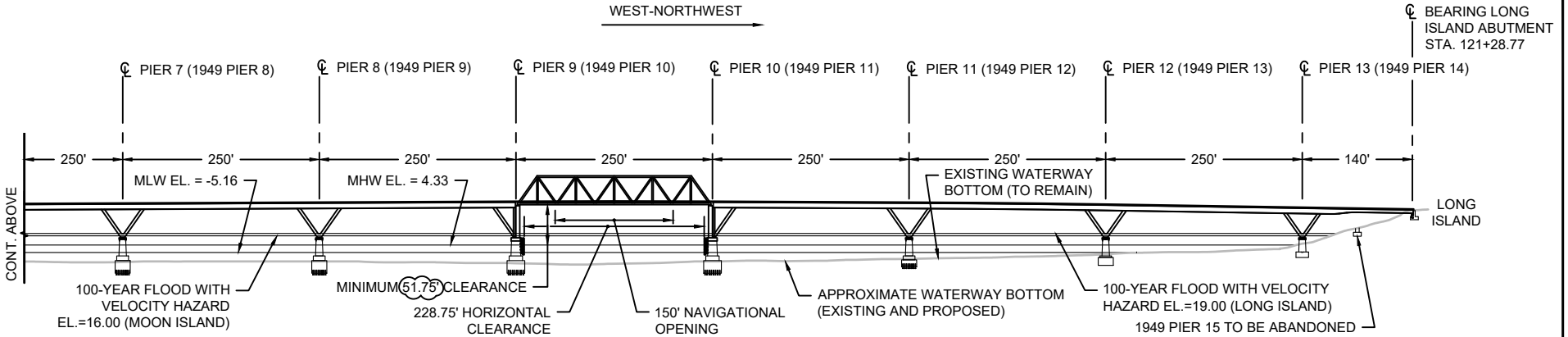
1. ELEVATIONS REFERENCE NAVD 88 DATUM.
2. CONCEPTUAL PLANS UTILIZED TO OBTAIN COAST GUARD BRIDGE PERMIT.
3. BRIDGE PROTECTIVE SYSTEM TO BE ATTACHED TO PIERS 9 & 10. SEE FIGURE 6.
4. EXISTING (1949) PIERS 2 - 14 TO REMAIN, AND BE REHABILITATED TO SUPPORT PROPOSED SUPERSTRUCTURE.
5. ORIGINAL (1949) SUPERSTRUCTURE REMOVED IN 2015.
6. NO RIPRAP OR FILL PROPOSED.

<b>OWNER/APPLICANT:</b>	
	CITY OF BOSTON PUBLIC WORKS DEPARTMENT
<b>LONG ISLAND BRIDGE OVER BOSTON HARBOR BOSTON AND QUINCY NORFOLK AND SUFFOLK COUNTY, MA MILE POINT (MP) 0.0</b>	
BRIDGE NO. B-16-368 (91M)	
CONSULTANT: STV INC.	
DATE: NOVEMBER 18, 2019	
SHEET: 2 OF 7	

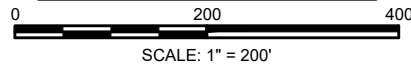
WEST-NORTHWEST



WEST-NORTHWEST



### OVERALL ELEVATION



#### NOTES:

1. ELEVATIONS REFERENCE NAVD 88 DATUM. BRIDGE PERMIT APPROVED IN 1950 REFERENCED BOSTON CITY BASE. SUBTRACT 6.46' TO CONVERT (EL. 18.00' BCB = EL. 11.54 NAVD88).
2. CONCEPTUAL PLANS UTILIZED TO OBTAIN COAST GUARD BRIDGE PERMIT.
3. 51' MINIMUM VERTICAL CLEARANCE PROVIDED FOR 150' NAVIGABLE OPENING.
4. NO RIPRAP OR FILL PROPOSED BELOW MHW.

OWNER/APPLICANT:



CITY OF BOSTON  
PUBLIC WORKS DEPARTMENT

LONG ISLAND BRIDGE  
OVER BOSTON HARBOR  
BOSTON AND QUINCY  
NORFOLK AND SUFFOLK  
COUNTY, MA  
MILE POINT (MP) 0.0

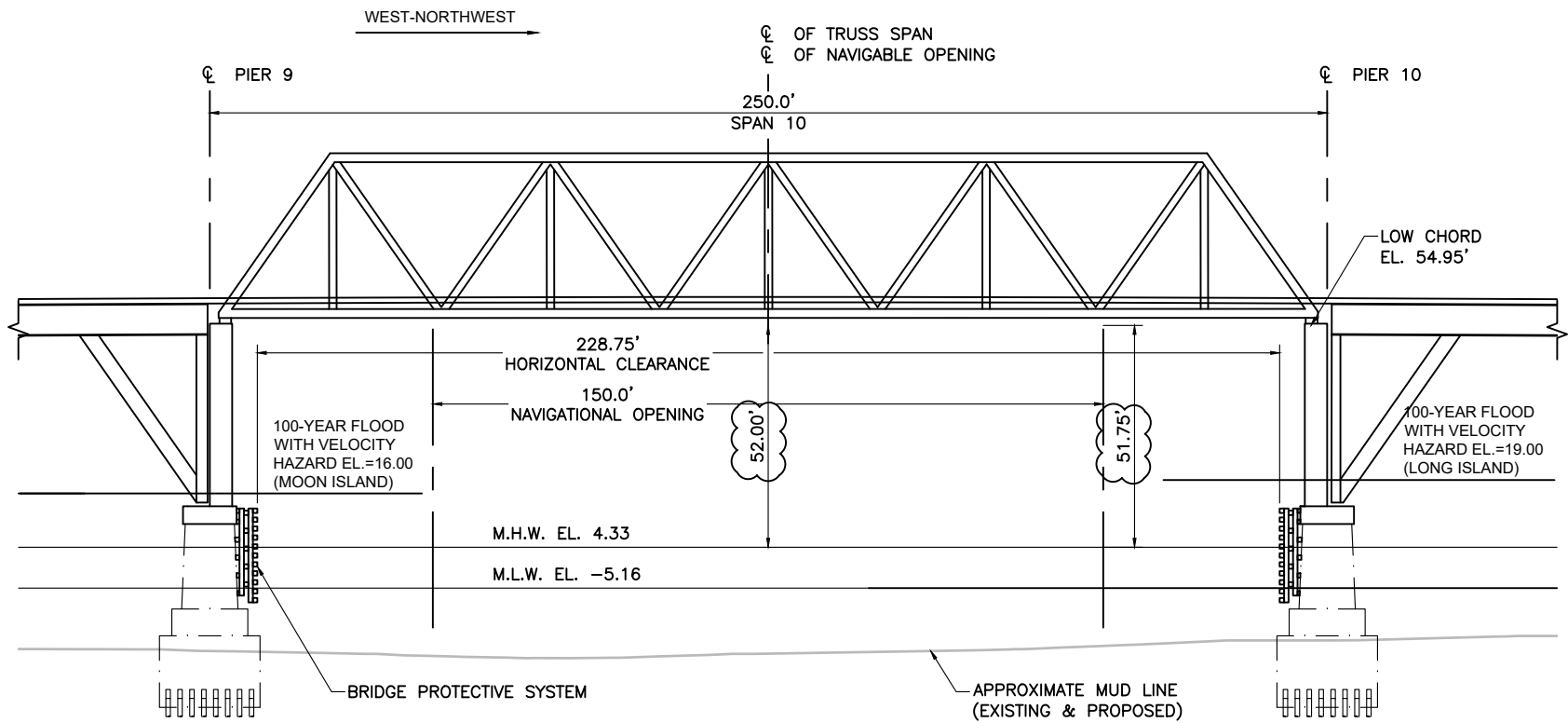
BRIDGE NO. B-16-368 (91M)

CONSULTANT: STV INC.

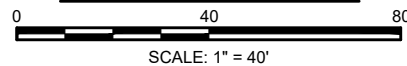
DATE: NOVEMBER 18, 2019

SHEET: 3 OF 7

REVISED JUNE 17, 2021 TO INCREASE  
PROPOSED VERTICAL CLEARANCE




### TRUSS ELEVATION



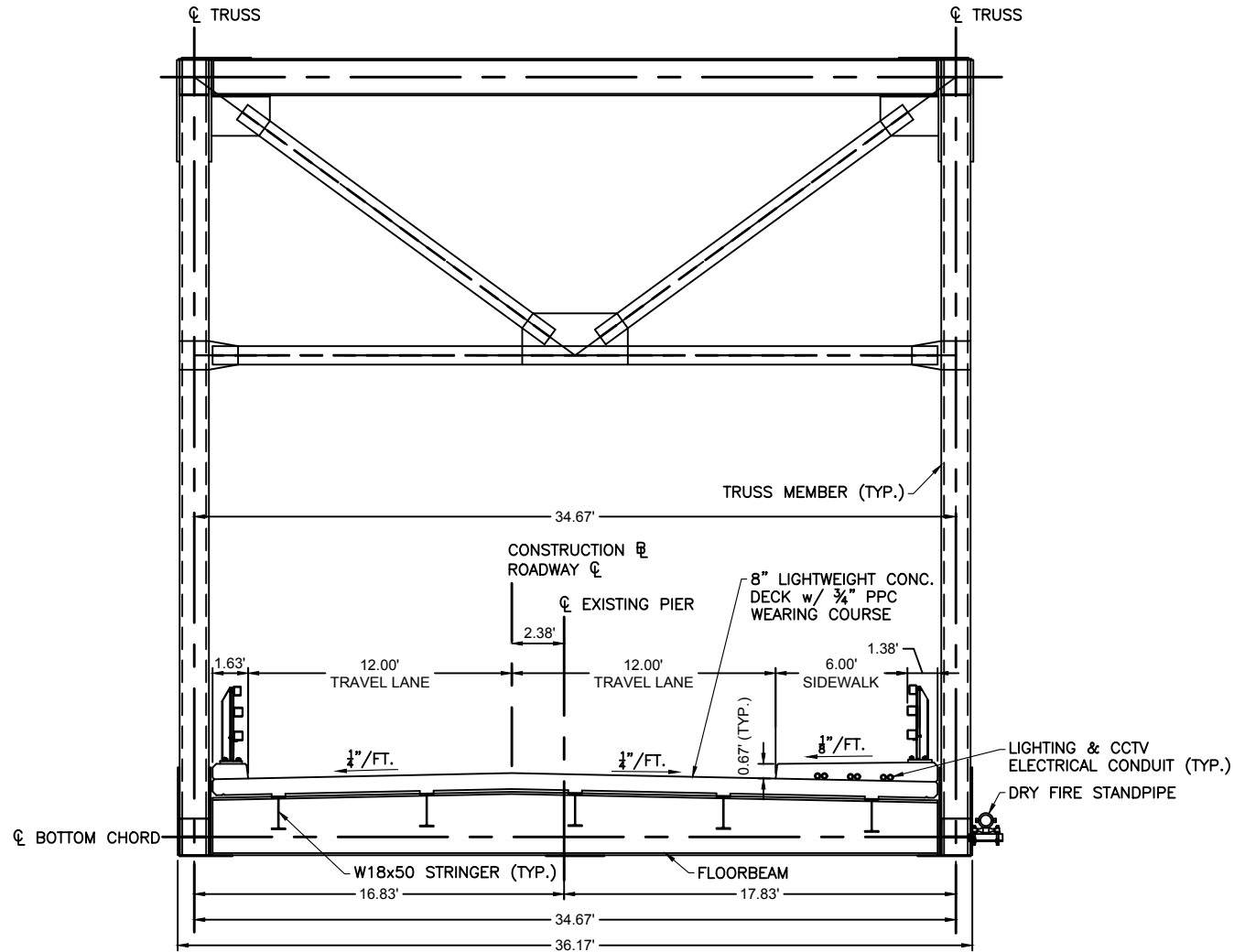
**NOTES:**

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 BELOW MHW.
5. COASTAL FLOOD ZONE VELOCITY HAZARD BASE ELEVATIONS DETERMINED FROM FEMA FIRM.

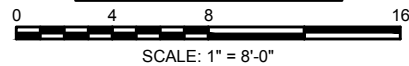
REVISED JUNE 17, 2021 TO INCREASE PROPOSED VERTICAL CLEARANCE

OWNER/APPLICANT:	
	CITY OF BOSTON PUBLIC WORKS DEPARTMENT
LONG ISLAND BRIDGE OVER BOSTON HARBOR BOSTON AND QUINCY NORFOLK AND SUFFOLK COUNTY, MA MILE POINT (MP) 0.0	
BRIDGE NO. B-16-368 (91M)	
CONSULTANT: STV INC.	
DATE: NOVEMBER 18, 2019	
SHEET: 4 OF 7	






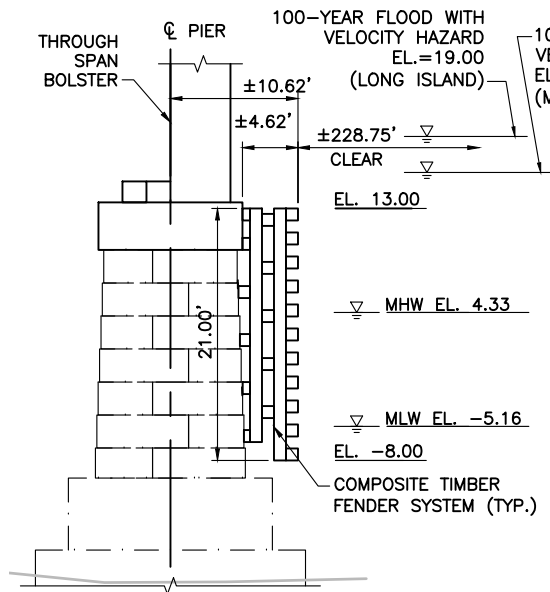
**CROSS SECTION**



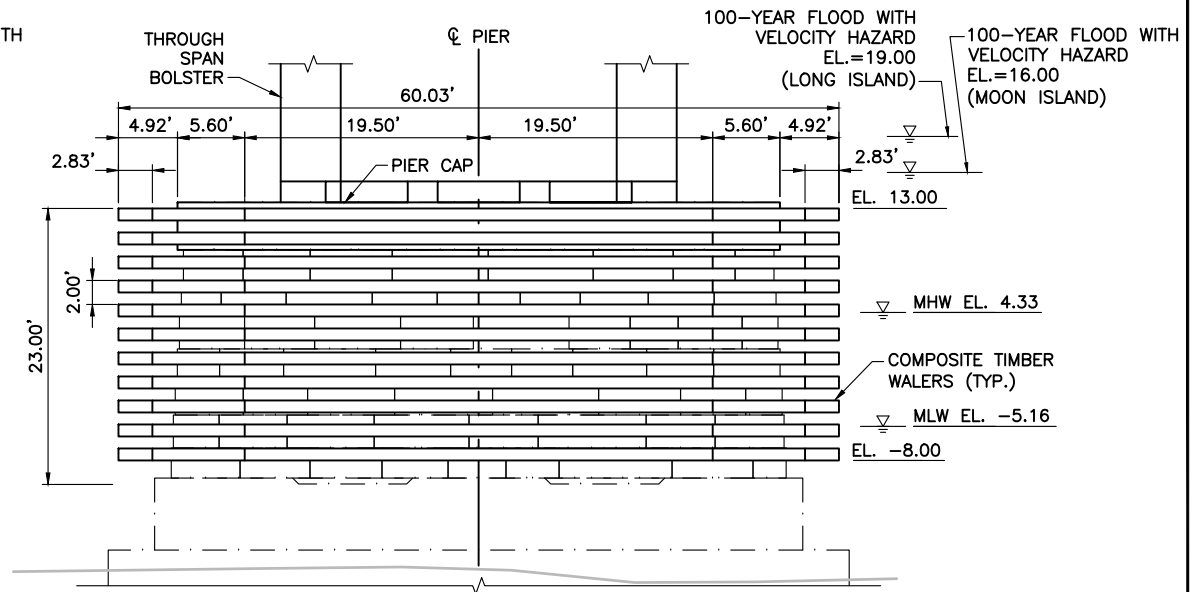
**NOTES:**

1. PORTAL FRAME BRACING IS SHOWN EXAGGERATED VERTICALLY DUE TO SLOPE OF FRAME.
2. CONCEPTUAL PLANS UTILIZED TO OBTAIN COAST GUARD BRIDGE PERMIT.

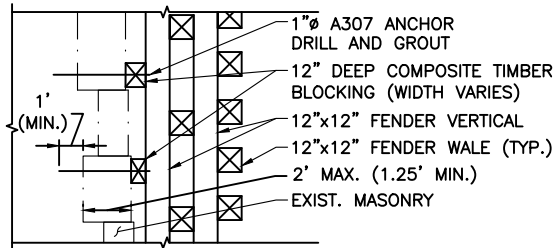
OWNER/APPLICANT:	
	CITY OF BOSTON PUBLIC WORKS DEPARTMENT
<b>LONG ISLAND BRIDGE OVER BOSTON HARBOR BOSTON AND QUINCY NORFOLK AND SUFFOLK COUNTY, MA MILE POINT (MP) 0.0</b>	
BRIDGE NO. B-16-368 (91M)	
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DATE: NOVEMBER 18, 2019	
SHEET: 5 OF 7	



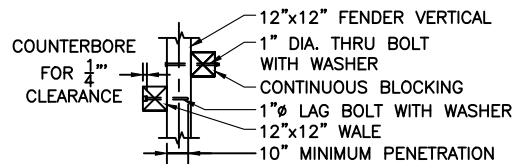
**SECTION**



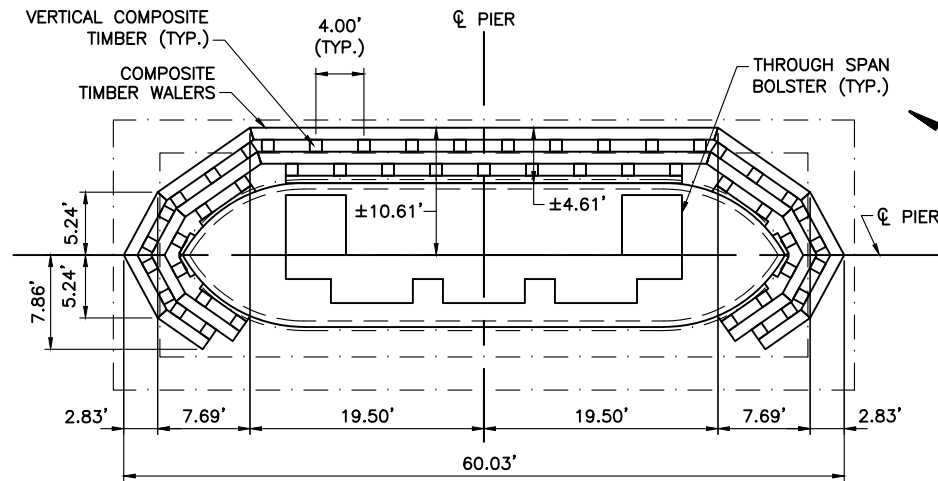
**ELEVATION (LOOKING WEST)**



**FENDER ATTACHMENT TO PIER STEM**



**TYPICAL LAG BOLT INSTALLATION**




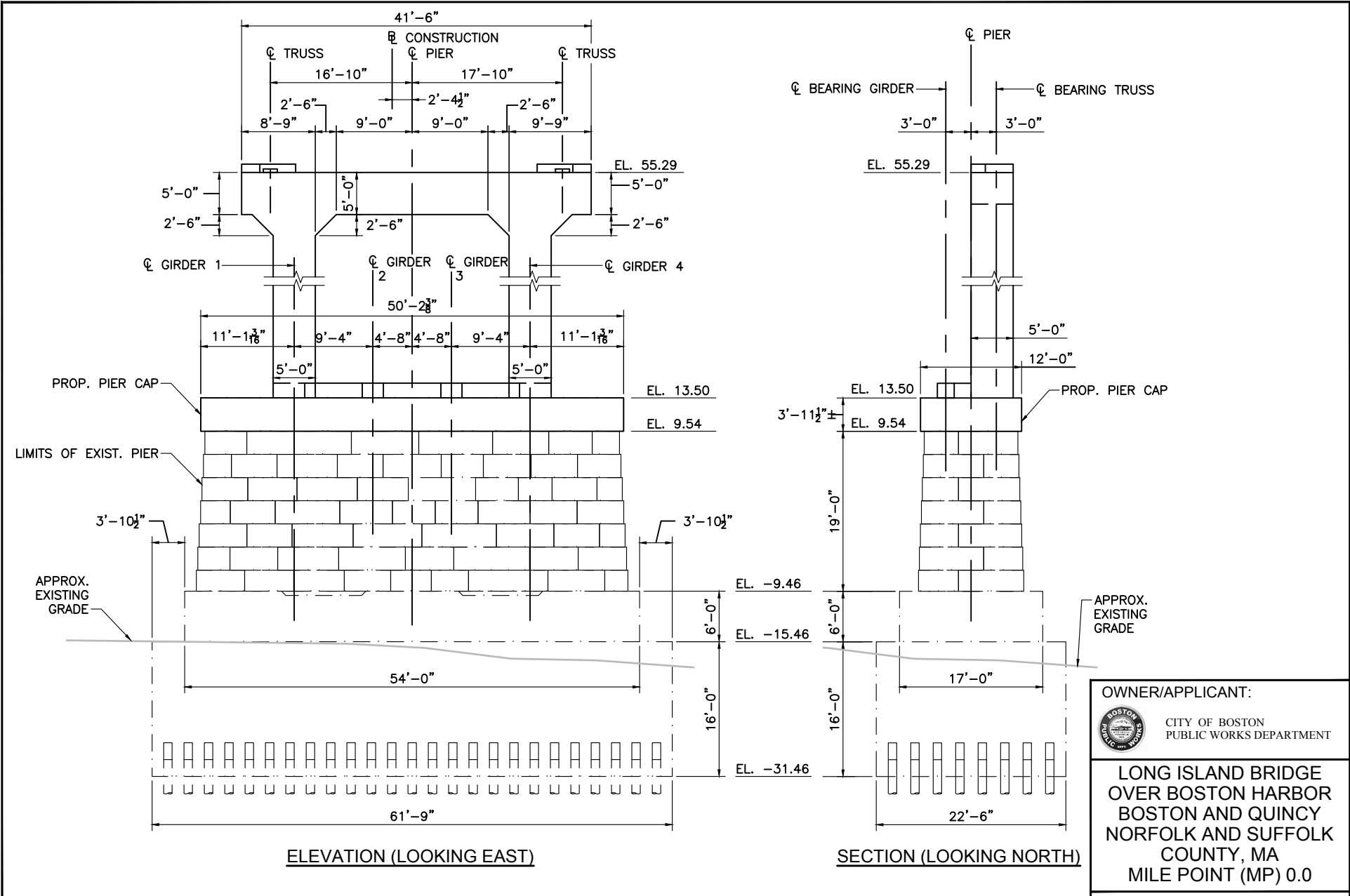
**PLAN**

**BRIDGE PROTECTIVE SYSTEM**

**NOTES:**

1. VIEWS SHOWN ARE NOT TO SCALE
2. ELEVATIONS REFERENCE NAVD 88 DATUM.
3. CONCEPTUAL PLANS UTILIZED TO OBTAIN COAST GUARD BRIDGE PERMIT.

OWNER/APPLICANT:	
	CITY OF BOSTON PUBLIC WORKS DEPARTMENT
LONG ISLAND BRIDGE OVER BOSTON HARBOR BOSTON AND QUINCY NORFOLK AND SUFFOLK COUNTY, MA MILE POINT (MP) 0.0	
BRIDGE NO. B-16-368 (91M)	
CONSULTANT: STV INC.	
DATE: NOVEMBER 18, 2019	
SHEET: 6 OF 7	




**ELEVATION (LOOKING EAST)**

**SECTION (LOOKING NORTH)**

**MAIN SPAN BOLSTER**

- NOTES:**
1. VIEWS SHOWN ARE NOT TO SCALE
  2. ELEVATIONS REFERENCE NAVD 88 DATUM.
  3. CONCEPTUAL PLANS UTILIZED TO OBTAIN COAST GUARD BRIDGE PERMIT.

OWNER/APPLICANT:	
	CITY OF BOSTON PUBLIC WORKS DEPARTMENT
LONG ISLAND BRIDGE OVER BOSTON HARBOR BOSTON AND QUINCY NORFOLK AND SUFFOLK COUNTY, MA MILE POINT (MP) 0.0	
BRIDGE NO. B-16-368 (91M)	
CONSULTANT: STV INC.	
DATE: NOVEMBER 18, 2019	
SHEET: 7 OF 7	

## **APPENDIX 6 – USCG PROJECT CORRESPONDENCE**

U.S. Department of  
Homeland Security

United States  
Coast Guard



Commander  
First Coast Guard District

408 Atlantic Avenue  
Boston, MA 02110-3350  
Staff Symbol: dpb  
Phone: (617) 223-8364  
Fax: (617) 223-8291  
Email: john.w.mcdonald@uscg.mil

16594  
February 17, 2015

Mr. Para Jayasinghe  
City Engineer  
City of Boston  
One City Hall Plaza  
Boston, MA 02201

Dear Mr. Jayasinghe,

We have completed our review of the plan and sequence for the removal of the superstructure of the Long Island-Moon Island Bridge across Quincy Bay/Boston Harbor at mile 0.0, between Moon Island and Long Island, Massachusetts.

Approval is granted conditioned upon full compliance with all the stipulations in the attached enclosure (1) entitled "General Bridge Construction Requirements." and the following additional requirements:

1. Upon completion of the removal of each bridge span the bridge owner/contractor shall perform a bottom sweep and provide the Coast Guard with a written certification that the waterway depths have not been impaired and all construction/demolition materials have been removed before any vessel traffic may transit the area.
2. All remaining bridge support piers no longer used to support the bridge superstructure must be permanently lighted with either red or white flashing (60 flashes per minute) lights.
3. If permanent bridge navigational lighting cannot be maintained operational during any phase of this project, temporary battery/power lights must be installed at the same locations. These temporary lights must be visible for a distance of 2,000 yards on 90% of the nights of the year. Generally, a lamp of (50 candela) will meet these requirements.

All stipulations in enclosure (1) and the additional requirements listed above must be followed in their entirety for all work on, over, or affecting the waterway in any manner.

These stipulations are based on the facts you have provided presently; however, additional requirements may be imposed if additional information or conditions not anticipated warrant.

If you have any questions, please contact me at (617) 223-8364.

Sincerely,



John W. McDonald  
First Coast Guard District  
Bridge Management Specialist  
By direction

Encl: (1) General Construction Requirements  
Copy: Sector Boston



March 2, 2017

Mr. Jim Rousseau  
Senior Bridge Management Specialist  
United States Coast Guard District 1  
408 Atlantic Avenue  
Boston, MA 02110-3350

**Re: City of Boston-Long Island Bridge  
Withdrawal of Section 10 Application-Change in Use of Existing Bridge Piers**

Dear Mr. Rousseau:

I am writing to provide the United States Coast Guard ("USCG") with notification that the City of Boston ("the City") has today communicated to the United States Army Corps of Engineers ("USACOE") its wish to withdraw the above referenced application for a Section 10 permit.

Withdrawal of this application enables the City to explore the full range of alternative concepts for the future of the bridge in a structured manner. This, in turn, will allow the City to prepare a detailed proposal for the future of the bridge.

The City is very grateful to you and the United States Coast Guard for your collective continued assistance and guidance with all matters related to this bridge project.

If you have any questions or need additional information, please feel free to contact me at (617) 635-4968.

Very truly yours,



Para M. Jayasinghe  
City Engineer

cc: Chris Osgood, Chief of Streets, Transportation & Sanitation, BPWD  
Chris Bisignano, Bridge Branch Chief, USCG, 1<sup>st</sup> District  
Mark Cutter, USCG  
Steve Pothier, USCG  
Benjamin Sun, BPWD



**PUBLIC WORKS DEPARTMENT**

Boston City Hall • 1 City Hall Sq Rm 714 • Boston MA 02201-2024  
**CHRIS OSGOOD** • Chief of Streets, Transportation, and Sanitation  
Phone (617) 635-2854 • Fax (617) 635-7499

U.S. Department of  
Homeland Security

United States  
Coast Guard



Commander  
First Coast Guard District

408 Atlantic Avenue  
Boston, MA 02110-3350  
Staff Symbol: dpb  
Phone: (617) 223-8619  
Fax: (617) 223-8291  
Email:  
Christopher.J.Bisignano@uscg.mil

16594/0.0H/  
Boston Harbor/MA  
March 9, ~~2016~~ 2017 [SIC.]

Mr. Para M. Jayasinghe  
City Engineer  
City of Boston  
Public Works Department  
1 City Hall Sq Rm 714  
Boston, MA 02201-2024

Dear Mr. Jayasinghe:

I have received your letter dated March 2, 2017, regarding the City of Boston's intention to change the use of the bridge piers across Boston Harbor, between Moon Island and Long Island, Boston, MA.

According to Coast Guard policy, a bridge must be removed in its entirety, or to an elevation deemed appropriate by the District Commander and the waterway cleared to the satisfaction of the District Commander. However, as indicated in your submittal and withdrawal of the application for retaining these structures from the U.S. Army Corps of Engineers (USACE), you are planning to explore a full range of alternatives for a future bridge in this location, including possible utilization of the existing structures.

The Coast Guard understands you have withdrawn your USACE application to retain the piers and a reapplication to the USACE will be submitted within 18 months. This allows the Coast Guard to suspend action at this time. You must apply for a Privately owned Aids to Navigation (PATON) status for the piers which you propose to mark and light as PATON. The City of Boston must comply with PATON requirements. This process should be completed with-in two months of this letter.

You are responsible for compliance with the requirements of any other Federal, state, or local agency that may have jurisdiction over any aspect of the project. Please contact me at the above listed number if you have any questions.

Sincerely,

A handwritten signature in blue ink, appearing to read "C. J. Bisignano", with a horizontal line extending to the right.

C. J. Bisignano  
Supervisory Bridge Management Specialist  
U.S. Coast Guard  
By direction

E Copy: U. S. Coast Guard Sector Boston, Waterways Management Division



16591  
March 5, 2019

TRC Environmental Corporation  
Attn: Mr. Jeffrey Brandt  
Senior Project Manager  
Wannalancit Mills  
650 Suffolk Street, Suite 200  
Lowell, MA 01854

Dear Mr. Brandt:

We have completed our review of your Bridge Permit Application dated February 8, 2019, submitted on behalf of the City of Boston, for the superstructure replacement of the Long Island Bridge, mile 0.0, over Boston Harbor. Since the City of Boston has chosen to forego any funding strategy that would have prompted the Federal Highway Administration to accept the responsibility as federal lead agency, the Coast Guard (CG) must accept that role as the federal agency since we are the agency with the most significant federal action (40 CFR 1501.5(c)) in this undertaking.

Your application is not complete until we receive the following:

- a. Plan sheets in accordance with the Bridge Permit Application Guide requirements. Initial specific comments regarding the submitted plan sheets are attached as an enclosure.
- b. USCG Categorical Exclusion needs to be obtained from the Coast Guard.
- c. A Water Quality Certificate or waiver from the issuing state agency.
- d. Coastal Zone Management Act consistency determination or explanation of why one is not required.
- e. A copy of the Army Corps of Engineers permit or an explanation of why one is not required.
- f. Documentation of the Army Corps of Engineers removal requirements for parts of the 1912 structure not used in the new bridge and removal requirements for the existing timber fender system.
- g. Explanation and documentation of formal or informal consultation with the United States Fish and Wildlife Service or explanation of why consultation is not required.
- h. Explanation of compliance with Fish and Wildlife Coordination Act.
- i. Documentation of formal or informal consultation with the National Marine Fisheries Service and compliance with the Magnuson-Stevens Fishery Management Act, i.e. EFH Assessment review.
- j. Documentation of compliance with the Migratory Bird Treaty Act or explanation why the Act does not apply.
- k. Documentation of response to Massachusetts Historical Commission letter dated December 18, 2018.



Upon receipt of these items, we will provide you with notification that your application is complete.

In addition, we recommend a meeting or conference call with the Environmental Protection Agency (EPA) – Region 1 to discuss application of General Conformity for this project.

Please contact Mr. Jim Rousseau at 617-223-8619 or [James.L.Rousseau2@uscg.mil](mailto:James.L.Rousseau2@uscg.mil) if you have questions regarding our comments or requirements.

Sincerely,



C. J. BISIGNANO  
Supervisory Bridge Management Specialist  
U.S. Coast Guard  
By direction

- E-Copy:
- 1) USCG, Sector Boston (waterways)
  - 2) USACE, New England Division, Regulatory Division
  - 3) City of Boston Engineer
  - 4) Massachusetts Historical Commission

USCG comments to City of Boston plan sheets 1 thru 6 (of 6) dated February 1, 2019

General

- (1) All final plan sheets should bear an engineer stamp and signature.
- (2) Replace the word "Figure" with "Sheet" on all Title Blocks.
- (3) Include the Mile Point (MP) 0.0 in all Title Blocks

Plan sheet 1 –Vicinity Map

- (1) Identify clearly the name of the waterway on the diagram – Boston Harbor
- (2) Show course of waterway (i.e. ebb/flood)
- (3) Identify wildlife and waterfowl refuges and any historical and archaeological sites, as applicable.

Plan sheet 2 – Overall Plan

- (1) Show water depth (spot soundings) at mean low water at various locations in the channel, under, upstream and downstream of the bridge.
- (2) Identify the bridge protective system.
- (3) Identify the horizontal clearance between face-to-face through the navigable channel.

Plan sheet 3 – Overall Elevation

- (1) Identify the horizontal clearance between face-to-face through the navigable channel.
- (2) Indicate the 100 Yr Flood elevation.
- (3) Please note the indicated minimum vertical clearance of 51 ft contradicts the same indication of plan sheet 4.

Plan sheet 4 – Truss Elevation

- (1) See comments on plan sheet 3 regarding minimum vertical clearance.
- (2) Indicate the horizontal clearance between face-to-face through the navigable channel.
- (3) Indicate the 100 Yr Flood elevation.

Plan sheet 5 – Cross Section

- (1) Indicate which dimensions denote travel lanes, shoulders, sidewalks and any topside or underdeck pipeline utilities, as applicable.

Plan Sheet 6 – Bridge Protective System

- (1) All dimensions shall be in decimal format vice feet/inches
- (2) Indicate 200 Yr Flood elevation on elevation view
- (3) If design available, indicate some detail of connection to pier and countersunk bolts.



## Bulger, Nikole A.K.

---

**From:** Rousseau, James L CIV <James.L.Rousseau2@uscg.mil>  
**Sent:** Thursday, January 9, 2020 7:07 AM  
**To:** Brandt, Jeff  
**Cc:** Sam Moffett; Para Jayasinghe; 'Benjamin Sun'; Ennis, John M.; Bulger, Nikole A.K.; erin.talevi@boston.gov  
**Subject:** RE: Plan Revisions for Long Island Bridge Re-construction Project from USACE and USCG comments

**\*\*This e-mail is from outside STV\*\***

Jeff,

The Plans need to be stamped and signed by a Professional Engineer.

Regards,

Jim

Jim Rousseau  
Senior Bridge Management Specialist  
United States Coast Guard District 1  
408 Atlantic Ave  
Boston, Ma. 02110-3350  
617-223-8619

---

**From:** Rousseau, James L CIV  
**Sent:** Tuesday, November 26, 2019 1:42 PM  
**To:** 'Brandt, Jeff' <JBrandt@trccompanies.com>; Sneeringer, Paul J CIV USARMY CENAE (USA) <Paul.J.Sneeringer@usace.army.mil>  
**Cc:** Moffett, Samuel <SMoffett@trccompanies.com>; Para Jayasinghe <para.jayasinghe@boston.gov>; 'Benjamin Sun' <benjamin.sun@boston.gov>; 'ennisjm@stvinc.com' <ennisjm@stvinc.com>; Bulger, Nikole A.K. <Nikole.Bulger@stvinc.com>; robert.boeri@state.ma.us; Christopher.J.Bisignano@uscg.mi; ssn@rose-law.net; Brona.Simon@sec.state.ma.us; erin.talevi@boston.gov  
**Subject:** RE: Plan Revisions for Long Island Bridge Re-construction Project from USACE and USCG comments

Jeff,

The plans look good for Coast Guard Bridge purposes.

Regards,

Jim

Jim Rousseau  
Senior Bridge Management Specialist  
United States Coast Guard District 1  
408 Atlantic Ave  
Boston, Ma. 02110-3350  
617-223-8619

---

**From:** Brandt, Jeff <[JBrandt@trccompanies.com](mailto:JBrandt@trccompanies.com)>  
**Sent:** Tuesday, November 26, 2019 12:09 PM  
**To:** Rousseau, James L CIV <[James.L.Rousseau2@uscg.mil](mailto:James.L.Rousseau2@uscg.mil)>; Sneeringer, Paul J CIV USARMY CENAE (USA) <[Paul.J.Sneeringer@usace.army.mil](mailto:Paul.J.Sneeringer@usace.army.mil)>  
**Cc:** Moffett, Samuel <[SMoffett@trccompanies.com](mailto:SMoffett@trccompanies.com)>; Para Jayasinghe <[para.jayasinghe@boston.gov](mailto:para.jayasinghe@boston.gov)>; 'Benjamin Sun' <[benjamin.sun@boston.gov](mailto:benjamin.sun@boston.gov)>; 'ennisjm@stvinc.com' <[ennisjm@stvinc.com](mailto:ennisjm@stvinc.com)>; Bulger, Nikole A.K. <[Nikole.Bulger@stvinc.com](mailto:Nikole.Bulger@stvinc.com)>; [robert.boeri@state.ma.us](mailto:robert.boeri@state.ma.us); [Christopher.J.Bisignano@uscg.mil](mailto:Christopher.J.Bisignano@uscg.mil); [ssn@rose-law.net](mailto:ssn@rose-law.net); [Brona.Simon@sec.state.ma.us](mailto:Brona.Simon@sec.state.ma.us); [erin.talevi@boston.gov](mailto:erin.talevi@boston.gov)  
**Subject:** [Non-DoD Source] Plan Revisions for Long Island Bridge Re-construction Project from USACE and USCG comments

Dear James and Paul,

Attached please find plan revisions for the Long Island Bridge Reconstruction Project that address USACE comments of October 23<sup>rd</sup>, (see also responses pasted below) and that address USCG comments (further below). Please let me know if you have any questions.

Thanks  
Jeff

**H. Jeffrey Brandt**  
Senior Project Manager



650 Suffolk Street, Lowell, MA 01854  
T 978-656-3662 | M 978-735-3823  
[LinkedIn](#) | [Twitter](#) | [Blog](#) | [TRCcompanies.com](http://TRCcompanies.com)

> From: Sneeringer, Paul J CIV USARMY CENAE (USA)  
> <[Paul.J.Sneeringer@usace.army.mil](mailto:Paul.J.Sneeringer@usace.army.mil)<mailto:Paul.J.Sneeringer@usace.army.mil>>  
> Sent: Wednesday, October 23, 2019 5:09 PM  
> To: Brandt, Jeff  
> <[JBrandt@trccompanies.com](mailto:JBrandt@trccompanies.com)<mailto:JBrandt@trccompanies.com>>  
> Cc: Moffett, Samuel  
> <[SMoffett@trccompanies.com](mailto:SMoffett@trccompanies.com)<mailto:SMoffett@trccompanies.com>>;  
> Bisignano, Christopher J CIV  
> <[Christopher.J.Bisignano@uscg.mil](mailto:Christopher.J.Bisignano@uscg.mil)<mailto:Christopher.J.Bisignano@uscg.mil>>; Rousseau, James L CIV  
> <[James.L.Rousseau2@uscg.mil](mailto:James.L.Rousseau2@uscg.mil)<mailto:James.L.Rousseau2@uscg.mil>>;  
> Cutter, Mark <[Mark.E.Cutter@uscg.mil](mailto:Mark.E.Cutter@uscg.mil)<mailto:Mark.E.Cutter@uscg.mil>>  
> Subject: [EXTERNAL] RE: Application for USCG Bridge Permit for Long  
> Island Bridge Re-construction Project  
> Importance: High  
>  
> This is an EXTERNAL email. Do not click links or open attachments unless you validate the sender and know the content is safe.  
>  
>  
> Jeff:  
>

> I took some time reviewing your October 21, 2019 supplemental information package to the U.S. Coast Guard Bridge Branch for the Long Island Bridge Reconstruction Project in Boston and Quincy, Massachusetts.

>

> Corps permits may be required if this project involves any Section 404 discharges of dredged and/or fill material in jurisdictional waterways and/or wetlands or for Section 10 work or structures (channelward of the mean high water (MHW) line), which the U.S. Coast Guard does not consider incidental to the construction of the bridge.

> **No dredging or fill is proposed in the waterways or wetlands channelward of MHW.**

>

>

> Reviewing the April 29, 2019 plan set, I did not have any concerns about the proposed bridge superstructure or the proposed fender system on piers #9 and #10. However, I do have questions about the through span bolster system (see Sheet 6 of 6). Please project more details on the through span bolster system. Will this be constructed out of steel sheeting or some type of solid fill? Will all of the remaining in-water piers need through span bolster systems?

> **The concrete bolsters will be at piers 9 and 10 and will replace the existing bolsters at those locations. They will be constructed of reinforced concrete, and will remain within the limits of the existing granite piers. These bolsters only occur at piers 9 and 10 and are provided to support the truss over the navigable opening.**

>

>

> If the installation of fill components of the through span bolster systems will be done completely within the granite walls of the in-water piers this work is potential eligible under a Section 404 exemption. However, if fill components of the through span bolster systems or other temporary construction access fills extend outside of the granite walls of the in-water piers, these will require Section 404 permits from the Corps.

> **The limits of the bolsters match the existing bolsters and fall within the limits of the existing granite walls.**

>

>

> Feel free to contact me if you have any questions about this e-mail. Thanks.

>

>

> Paul Sneeringer

> (978) 318-8491

---

**From:** Rousseau, James L CIV <[James.L.Rousseau2@uscg.mil](mailto:James.L.Rousseau2@uscg.mil)>

**Sent:** Monday, November 4, 2019 3:07 PM

**To:** Brandt, Jeff <[JBrandt@trccompanies.com](mailto:JBrandt@trccompanies.com)>

**Cc:** Moffett, Samuel <[SMoffett@trccompanies.com](mailto:SMoffett@trccompanies.com)>; Para Jayasinghe <[para.jayasinghe@boston.gov](mailto:para.jayasinghe@boston.gov)>; 'Benjamin Sun' <[benjamin.sun@boston.gov](mailto:benjamin.sun@boston.gov)>; 'ennisjm@stvinc.com' <[ennisjm@stvinc.com](mailto:ennisjm@stvinc.com)>; Bulger, Nikole A.K. <[Nikole.Bulger@stvinc.com](mailto:Nikole.Bulger@stvinc.com)>

**Subject:** [EXTERNAL] RE: Application for USCG Bridge Permit for Long Island Bridge Re-construction Project

**This is an EXTERNAL email. Do not click links or open attachments unless you validate the sender and know the content is safe.**

Jeff,

Sorry a couple more edits for the plan sheets.

1. Plan view width was missing on the plan sheet for the bridge and if no rip rap or fill needs to be noted as such.
2. Plan view is to have all four corner property owners labeled knowing it is the City of Boston for all four. Note stating which piers will remain and not utilized and if the USACE has no issues and a note stating superstructure has already been removed.
3. Plan view note referring to figure 6 for bridge protection system
4. Location Vicinity map The historical and archaeological sites need to be identified.
5. Elevation view MHW and MLW missing on page 3
6. Elevation view note if no fill below MHW
7. Elevation view page 3 missing proposed and existing contour of waterway bottom

Jim Rousseau  
Senior Bridge Management Specialist  
United States Coast Guard District 1  
408 Atlantic Ave  
Boston, Ma. 02110-3350  
617-223-8619

---

**From:** Rousseau, James L CIV  
**Sent:** Monday, November 4, 2019 2:54 PM  
**To:** 'Brandt, Jeff' <[JBrandt@trccompanies.com](mailto:JBrandt@trccompanies.com)>  
**Cc:** 'Moffett, Samuel' <[SMoffett@trcsolutions.com](mailto:SMoffett@trcsolutions.com)>; Para Jayasinghe <[para.jayasinghe@boston.gov](mailto:para.jayasinghe@boston.gov)>; 'Benjamin Sun' <[benjamin.sun@boston.gov](mailto:benjamin.sun@boston.gov)>; 'ennisjm@stvinc.com' <[ennisjm@stvinc.com](mailto:ennisjm@stvinc.com)>; Bulger, Nikole A.K. <[Nikole.Bulger@stvinc.com](mailto:Nikole.Bulger@stvinc.com)>  
**Subject:** RE: Application for USCG Bridge Permit for Long Island Bridge Re-construction Project

Jeff,

Nice talking with you today. Thanks for the update. On the plans:

1. Vicinity Map: Missing course of waterway through bridge.
2. Plan sheet: missing MLW. Depth on overall plan sheet should be MLW not MLLW.
3. STA. are not needed plan or elevation and can be deleted.
4. Cross section do not need top chord label, top chord and bracing label, 17'6 " as vertical clearance (confusing for navigation) road clearance not needed and is in inches not decimal.
5. Spot soundings thru the nav channel are missing on the plan sheet.
6. Much of the timber detail on the pier section fender attachment is too detailed with wood sizes. (not required)

The rest looks good.

Application still requiring information as indicated with your update:

7. Nepa not complete at this time. Scope is up in the air at this time due to lawsuit.
8. As lead we would need a draft environmental document and initiation consultations but since the scope may change it might be too soon to move forward.
9. No CZM at this time has been submitted.
10. No USACE determination at this time may require some type of Permit.
11. No USFWS coordination at this time.
12. No NMFS coordination at this time.
13. SHPO coordination has not been completely determined at this time.

Regards,

Jim

Jim Rousseau  
Senior Bridge Management Specialist  
United States Coast Guard District 1  
408 Atlantic Ave  
Boston, Ma. 02110-3350  
617-223-8619

---

**From:** Brandt, Jeff <[JBrandt@trccompanies.com](mailto:JBrandt@trccompanies.com)>  
**Sent:** Monday, October 21, 2019 3:20 PM  
**To:** Rousseau, James L CIV <[James.L.Rousseau2@uscg.mil](mailto:James.L.Rousseau2@uscg.mil)>  
**Cc:** Cutter, Mark <[Mark.E.Cutter@uscg.mil](mailto:Mark.E.Cutter@uscg.mil)>; Sneeringer, Paul J NAE <[paul.j.sneeringer@usace.army.mil](mailto:paul.j.sneeringer@usace.army.mil)>; [Brona.Simon@sec.state.ma.us](mailto:Brona.Simon@sec.state.ma.us); [Moffett, Samuel <SMoffett@trccompanies.com>](mailto:Moffett@trccompanies.com); [erin.talevi@boston.gov](mailto:erin.talevi@boston.gov); Martin, Cynthia <[CMartin@trccompanies.com](mailto:CMartin@trccompanies.com)>; [para.jayasinghe@boston.gov](mailto:para.jayasinghe@boston.gov); Benjamin Sun <[benjamin.sun@boston.gov](mailto:benjamin.sun@boston.gov)>; [ennisjm@stvinc.com](mailto:ennisjm@stvinc.com); [robert.boeri@state.ma.us](mailto:robert.boeri@state.ma.us); 'Nikole.Bulger@stvinc.com' <[Nikole.Bulger@stvinc.com](mailto:Nikole.Bulger@stvinc.com)>; Bisignano, Christopher J CIV <[Christopher.J.Bisignano@uscg.mil](mailto:Christopher.J.Bisignano@uscg.mil)>; Sammy S. Nabulsi <[ssn@rose-law.net](mailto:ssn@rose-law.net)>  
**Subject:** [Non-DoD Source] RE: Application for USCG Bridge Permit for Long Island Bridge Re-construction Project

Dear Jim,

Attached please find TRC's response to the USCG's request for information regarding the City of Boston's filing on the Long Island Bridge Reconstruction Project. Please let me know if you should have any questions.

Thanks

Jeff

**H. Jeffrey Brandt**  
Senior Project Manager



650 Suffolk Street, Lowell, MA 01854  
T 978-656-3662 | M 978-735-3823  
[LinkedIn](#) | [Twitter](#) | [Blog](#) | [TRCcompanies.com](http://TRCcompanies.com)

---

**From:** Rousseau, James L CIV <[James.L.Rousseau2@uscg.mil](mailto:James.L.Rousseau2@uscg.mil)>  
**Sent:** Tuesday, March 5, 2019 12:54 PM  
**To:** Brandt, Jeff <[JBrandt@trcsolutions.com](mailto:JBrandt@trcsolutions.com)>  
**Cc:** Cutter, Mark <[Mark.E.Cutter@uscg.mil](mailto:Mark.E.Cutter@uscg.mil)>; Sneeringer, Paul J NAE <[paul.j.sneeringer@usace.army.mil](mailto:paul.j.sneeringer@usace.army.mil)>; [Brona.Simon@sec.state.ma.us](mailto:Brona.Simon@sec.state.ma.us); [Moffett, Samuel <SMoffett@trcsolutions.com>](mailto:Moffett@trcsolutions.com); [erin.talevi@boston.gov](mailto:erin.talevi@boston.gov); Martin, Cynthia <[CMartin@trcsolutions.com](mailto:CMartin@trcsolutions.com)>; [para.jayasinghe@boston.gov](mailto:para.jayasinghe@boston.gov); Benjamin Sun <[benjamin.sun@boston.gov](mailto:benjamin.sun@boston.gov)>; [ennisjm@stvinc.com](mailto:ennisjm@stvinc.com); [robert.boeri@state.ma.us](mailto:robert.boeri@state.ma.us); 'Nikole.Bulger@stvinc.com' <[Nikole.Bulger@stvinc.com](mailto:Nikole.Bulger@stvinc.com)>; Bisignano, Christopher J CIV <[Christopher.J.Bisignano@uscg.mil](mailto:Christopher.J.Bisignano@uscg.mil)>  
**Subject:** RE: Application for USCG Bridge Permit for Long Island Bridge Re-construction Project

Jeff,

Attached is our review response to your request and indication of an incomplete CG Bridge Application. If you have any questions please let me know. I look forward to working together to get the information listed.

Regards,

Jim

Jim Rousseau  
Senior Bridge Management Specialist  
United States Coast Guard District 1  
408 Atlantic Ave  
Boston, Ma. 02110-3350  
617-223-8619

---

**From:** Brandt, Jeff <[JBrandt@trcsolutions.com](mailto:JBrandt@trcsolutions.com)>  
**Sent:** Monday, February 11, 2019 12:21 PM  
**To:** Rousseau, James L CIV <[James.L.Rousseau2@uscg.mil](mailto:James.L.Rousseau2@uscg.mil)>  
**Cc:** Cutter, Mark <[Mark.E.Cutter@uscg.mil](mailto:Mark.E.Cutter@uscg.mil)>; Sneeringer, Paul J NAE <[paul.j.sneeringer@usace.army.mil](mailto:paul.j.sneeringer@usace.army.mil)>; [Brona.Simon@sec.state.ma.us](mailto:Brona.Simon@sec.state.ma.us); [Moffett, Samuel <SMoffett@trcsolutions.com>](mailto:Moffett.Samuel@trcsolutions.com); [erin.talevi@boston.gov](mailto:erin.talevi@boston.gov); Martin, Cynthia <[CMartin@trcsolutions.com](mailto:CMartin@trcsolutions.com)>; [para.jayasinghe@boston.gov](mailto:para.jayasinghe@boston.gov); Benjamin Sun <[benjamin.sun@boston.gov](mailto:benjamin.sun@boston.gov)>; [ennisjm@stvinc.com](mailto:ennisjm@stvinc.com); [robert.boeri@state.ma.us](mailto:robert.boeri@state.ma.us); 'Nikole.Bulger@stvinc.com' <[Nikole.Bulger@stvinc.com](mailto:Nikole.Bulger@stvinc.com)>; Bisignano, Christopher J CIV <[Christopher.J.Bisignano@uscg.mil](mailto:Christopher.J.Bisignano@uscg.mil)>  
**Subject:** [Non-DoD Source] RE: Application for USCG Bridge Permit for Long Island Bridge Re-construction Project

Thanks very much Jim. Please let us know if you need anything else.

H. Jeffrey Brandt  
Senior Project Manager



650 Suffolk Street, Lowell, MA 01854  
T: 978.656.3662 | C: 978.735.3823 | F: 978.453.1995

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PREPARED AT THE REQUEST OF COUNSEL  
SUBJECT TO ATTORNEY-CLIENT AND/OR ATTORNEY WORK PRODUCT PRIVILEGES**

---

**From:** Rousseau, James L CIV [<mailto:James.L.Rousseau2@uscg.mil>]  
**Sent:** Monday, February 11, 2019 12:00 PM  
**To:** Brandt, Jeff <[JBrandt@trcsolutions.com](mailto:JBrandt@trcsolutions.com)>; Bisignano, Christopher J CIV <[Christopher.J.Bisignano@uscg.mil](mailto:Christopher.J.Bisignano@uscg.mil)>; [robert.boeri@state.ma.us](mailto:robert.boeri@state.ma.us)  
**Cc:** Cutter, Mark <[Mark.E.Cutter@uscg.mil](mailto:Mark.E.Cutter@uscg.mil)>; Sneeringer, Paul J NAE <[paul.j.sneeringer@usace.army.mil](mailto:paul.j.sneeringer@usace.army.mil)>; [Brona.Simon@sec.state.ma.us](mailto:Brona.Simon@sec.state.ma.us); [Moffett, Samuel <SMoffett@trcsolutions.com>](mailto:Moffett.Samuel@trcsolutions.com); [erin.talevi@boston.gov](mailto:erin.talevi@boston.gov); Martin, Cynthia <[CMartin@trcsolutions.com](mailto:CMartin@trcsolutions.com)>; [para.jayasinghe@boston.gov](mailto:para.jayasinghe@boston.gov); Benjamin Sun <[benjamin.sun@boston.gov](mailto:benjamin.sun@boston.gov)>; [ennisjm@stvinc.com](mailto:ennisjm@stvinc.com); 'Nikole.Bulger@stvinc.com' <[Nikole.Bulger@stvinc.com](mailto:Nikole.Bulger@stvinc.com)>  
**Subject:** RE: Application for USCG Bridge Permit for Long Island Bridge Re-construction Project

Jeff,



Chris is out of the office for several weeks. I have attached our initial response to your request. If you have any questions please let me know.

Regards,

Jim

Jim Rousseau  
Senior Bridge Management Specialist  
United States Coast Guard District 1  
408 Atlantic Ave  
Boston, Ma. 02110-3350  
617-223-8619

---

**From:** Brandt, Jeff <[JBrandt@trcsolutions.com](mailto:JBrandt@trcsolutions.com)>  
**Sent:** Friday, February 8, 2019 4:37 PM  
**To:** Bisignano, Christopher J CIV <[Christopher.J.Bisignano@uscg.mil](mailto:Christopher.J.Bisignano@uscg.mil)>; [robert.boeri@state.ma.us](mailto:robert.boeri@state.ma.us)  
**Cc:** Rousseau, James L CIV <[James.L.Rousseau2@uscg.mil](mailto:James.L.Rousseau2@uscg.mil)>; Cutter, Mark <[Mark.E.Cutter@uscg.mil](mailto:Mark.E.Cutter@uscg.mil)>; Sneeringer, Paul J NAE <[paul.j.sneeringer@usace.army.mil](mailto:paul.j.sneeringer@usace.army.mil)>; [Brona.Simon@sec.state.ma.us](mailto:Brona.Simon@sec.state.ma.us); Moffett, Samuel <[SMoffett@trcsolutions.com](mailto:SMoffett@trcsolutions.com)>; [erin.talevi@boston.gov](mailto:erin.talevi@boston.gov); Martin, Cynthia <[CMartin@trcsolutions.com](mailto:CMartin@trcsolutions.com)>; [para.jayasinghe@boston.gov](mailto:para.jayasinghe@boston.gov); Benjamin Sun <[benjamin.sun@boston.gov](mailto:benjamin.sun@boston.gov)>; [ennisjm@stvinc.com](mailto:ennisjm@stvinc.com); 'Nikole.Bulger@stvinc.com' <[Nikole.Bulger@stvinc.com](mailto:Nikole.Bulger@stvinc.com)>  
**Subject:** [Non-DoD Source] Application for USCG Bridge Permit for Long Island Bridge Re-construction Project

Dear Chris and Robert,

TRC is sending you a hard copy of the USCG application for the City of Boston's Long Island Bridge Reconstruction Project and we're providing an electronic copy. If you should have any questions and or if there are others who need hard copies, please let me know. Thanks for your review of this filing.

Best regards

Jeff

H. Jeffrey Brandt  
Senior Project Manager



650 Suffolk Street, Lowell, MA 01854  
T: 978.656.3662 | C: 978.735.3823 | F: 978.453.1995

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PREPARED AT THE REQUEST OF COUNSEL  
SUBJECT TO ATTORNEY-CLIENT AND/OR ATTORNEY WORK PRODUCT PRIVILEGES**

## **APPENDIX 7 – SURVEY FOR MARINE COMMUNITY**

---

**From:** Long Island Bridge Navigation Survey <bostonlongislandbridge@gmail.com>  
**Sent:** Wednesday, April 7, 2021 1:59 PM  
**To:** bostonlongislandbridge@gmail.com  
**Subject:** Navigation Survey -- Long Island Bridge  
**Attachments:** Survey\_for\_Facilities.pdf; Survey\_for\_Vessel\_Owners.pdf

**\*\*This e-mail is from outside STV\*\***

Dear Boston Area Mariner,

The City of Boston Public Works Department is conducting a survey among mariners in the Boston Harbor area to gather data regarding the use of the waterway through the Long Island Bridge. This information will be compiled and used in a report regarding navigation in the vicinity of the proposed superstructure replacement for the Long Island Bridge. You are receiving this email because you are a member of the Port Operators Group, participate in the Massachusetts Bay Harbor Safety Committee, or have been identified as a potentially interested party. This report will be shared with the US Coast Guard.

We ask that a representative from each marine facility (1) fill out the attached Survey for Facilities and (2) distribute the attached Survey for Vessels to all boat owners within your community to fill out. We ask that all survey responses be submitted to this email ([BostonLongIslandBridge@gmail.com](mailto:BostonLongIslandBridge@gmail.com)) no later than Wednesday, April 28, 2021. Any responses received after this date are not guaranteed to be included in the report.

Please send any questions to [BostonLongIslandBridge@gmail.com](mailto:BostonLongIslandBridge@gmail.com).

Thank you,  
Long Island Bridge Superstructure Replacement Project Team  
Public Works Department  
City of Boston

## City of Boston Navigation Evaluation for Long Island Bridge

### Vessel Survey

**For Recreational and Commercial Vessels over 46 ft tall**

*Owners of multiple vessels, please fill out separate surveys for each vessel with an air draft over 46 ft.*

- Owner/Company Name
- Primary Vessel Operator Name
- Address
- Phone Number
- E-mail Address
- Vessel mooring or docking location (Facility and/or Harbor)

*For commercial vessels only:*

- Nature/Type of Business
- Type of Cargo or type of passenger service

*All vessels:*

- Vessel Name
- Registration No./Documentation No.
- Vessel Type
- Length Overall, feet
- Beam (width), feet
- Draft (below the waterline fully laden), feet
- Air Draft (height of the highest fixed point of the vessel above the waterline, unladen), feet
- Air gap for vessel (desired clearance from the highest fixed point on the vessel to lowest part of bridge), feet
- Number of waterway transits per month through Long Island Bridge for the last 5 years (please fill in table with number of transits in each month). Please include total number of passages through the bridge (count 2 for a round trip if the bridge was used both directions).

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2016												
2017												
2018												
2019												
2020												
2021												

**Most Common Origin and Destination**

Can you lower your appurtenances/antennae or lower your boom (if applicable)? If so, what is your clearance afterwards?

Is tug assist required for your vessel in order to transit the bridge?

Do you anticipate selling or moving your boat?

Do you anticipate buying a new boat in the next 5 years?

Additional Comments

Survey Completed by:

Best Phone Number:

*Kindly return surveys by April 28, 2021 by email to [BostonLongIslandBridge@gmail.com](mailto:BostonLongIslandBridge@gmail.com) or mail to:*

*Boston Public Works Department  
Engineering Division  
c/o Benjamin Sun  
1 City Hall Square  
Room 710  
Boston, MA 02201*

*Any questions should be directed to the email address above.*

*Please be advised that survey results will be shared with USCG.*

City of Boston Navigation Evaluation for Long Island Bridge  
Facility Survey

**For Facilities/Marinas/Marine Terminals/Mooring Field Operators**

Company Name

Address

Contact Name

Phone Number

E-mail Address

What marine services do you provide?

Do you offer a unique product for your region?

Do you have dock or mooring at your facility?

How many berths do you have?

What size vessels are you capable of accommodating? This may include docking, mooring, storing, hauling out, etc.

Length Overall, feet

Beam (width), feet

Draft (below the waterline fully laden), feet

Air Draft (height of the highest fixed point of the vessel above the waterline, unladen), feet

Gross tonnage

Displacement

Clarification on any information above

How many vessels with an air draft above 46 ft do you typically provide seasonal dock space or mooring at your facility per year?

Please provide vessel name, official number or state registration number, and owner name and contact information for vessels with over 46 ft air draft. Owner name and official number or registration number is required for accurate survey results.

Additional Comments

Survey Completed by:

Best Phone Number

*Kindly return surveys by  
April 28, 2021 by email to  
[BostonLongIslandBridge@gmail.com](mailto:BostonLongIslandBridge@gmail.com)  
or mail to:*

*Boston Public Works Department  
Engineering Division  
c/o Benjamin Sun  
1 City Hall Square  
Room 710  
Boston, MA 02201*

*Any questions should be directed to  
the email address above.*

*Please be advised that survey results  
will be shared with USCG.*

---

**From:** Long Island Bridge Navigation Survey <bostonlongislandbridge@gmail.com>  
**Sent:** Thursday, May 13, 2021 12:49 PM  
**To:** Long Island Bridge Navigation Survey  
**Subject:** Extension of Response Period to June 18: Long Island Bridge Navigation Survey  
**Attachments:** Survey\_for\_Facilities\_June18.pdf; Survey\_for\_Vessels\_June18.pdf

**\*\*This e-mail is from outside STV\*\***

Dear Boston Area Mariner,

On April 7, 2021, the City of Boston distributed a navigation survey to 400 email addresses including the Port Operators Group, the Massachusetts Bay Harbor Safety Committee (MBHSC), and a variety of yacht clubs, marinas, and marine facilities. The survey was designed to obtain comment and data to support the Coast Guard's review of the proposed clearances for a replacement Long Island Bridge between Moon Island in Quincy and Long Island in Boston. Responses to the survey had been due on April 28, 2021. The City of Boston has submitted a permit application to the Coast Guard for the Long Island Bridge superstructure replacement project with proposed clearances of 51' vertical (mean high water) and 228' horizontal between the piers with 150' horizontal navigation opening.

The Coast Guard has now extended the date to return the survey to June 18, 2021, so that the Coast Guard has sufficient data to make an informed decision on the adequacy of the proposed clearances. Consequently, the Coast Guard has requested that the City redistribute the survey on behalf of the Coast Guard. Please forward this survey to all vessel owners who may be affected by the proposed change – the Coast Guard would like to hear from all vessels over 46 feet tall.

If your vessel or facility will be impacted by proposed clearances you are requested to submit the survey prior to June 18. If you have completed the attached vessel or facility survey previously there is no need to complete another one. If you responded previously by any other means, you are requested to complete the attached surveys as they are designed to provide the Coast Guard the information it needs.

All survey responses should be submitted to ([BostonLongIslandBridge@gmail.com](mailto:BostonLongIslandBridge@gmail.com)) no later than Friday, June 18, 2021. Responses received after this date are not guaranteed to be included in the review. Please send any questions to [BostonLongIslandBridge@gmail.com](mailto:BostonLongIslandBridge@gmail.com).

Thank you,  
City of Boston Public Works Department



City of Boston Navigation Evaluation for Long Island Bridge  
Facility Survey

**For Facilities/Marinas/Marine Terminals/Mooring Field Operators**

Company Name  
Address  
Contact Name  
Phone Number  
E-mail Address

What marine services do you provide?

Do you offer a unique product for your region?

Do you have dock or mooring at your facility?  
How many berths do you have?

What size vessels are you capable of accommodating? This may include  
docking, mooring, storing, hauling out, etc.

Length Overall, feet

Beam (width), feet

Draft (below the waterline fully laden), feet

Air Draft (height of the highest fixed point of the vessel above the waterline, unladen), feet

Gross tonnage

Displacement

Clarification on any information above

How many vessels with an air draft above 46 ft do you typically provide seasonal dock space or mooring at your facility per year?

Please provide vessel name, official number or state registration number, and owner name and contact information for vessels with over 46 ft air draft. Owner name and official number or registration number is required for accurate survey results.

Additional Comments

Survey Completed by:

Best Phone Number

Kindly return surveys by **June 18, 2021**  
~~April 28, 2021~~ by email to  
[BostonLongIslandBridge@gmail.com](mailto:BostonLongIslandBridge@gmail.com)  
or mail to:

*Boston Public Works Department  
Engineering Division  
c/o Benjamin Sun  
1 City Hall Square  
Room 710  
Boston, MA 02201*

*Any questions should be directed to  
the email address above.*

*Please be advised that survey results  
will be shared with USCG.*

**Per US Coast Guard request, deadline  
has been extended to June 18, 2021.  
Surveys submitted after this date will  
not be considered.**

## City of Boston Navigation Evaluation for Long Island Bridge

### Vessel Survey

**For Recreational and Commercial Vessels over 46 ft tall**

*Owners of multiple vessels, please fill out separate surveys for each vessel with an air draft over 46 ft.*

Owner/Company Name

Primary Vessel Operator Name

Address

Phone Number

E-mail Address

Vessel mooring or docking location (Facility and/or Harbor)

*For commercial vessels only:*

Nature/Type of Business

Type of Cargo or type of passenger service

*All vessels:*

Vessel Name

Registration No./Documentation No.

Vessel Type

Length Overall, feet

Beam (width), feet

Draft (below the waterline fully laden), feet

Air Draft (height of the highest fixed point of the vessel above the waterline, unladen), feet

Air gap for vessel (desired clearance from the highest fixed point on the vessel to lowest part of bridge), feet

Number of waterway transits per month through Long Island Bridge for the last 5 years (please fill in table with number of transits in each month). Please include total number of passages through the bridge (count 2 for a round trip if the bridge was used both directions).

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2016												
2017												
2018												
2019												
2020												
2021												

Most Common Origin and Destination

Can you lower your appurtenances/antennae or lower your boom (if applicable)? If so, what is your clearance afterwards?

Is tug assist required for your vessel in order to transit the bridge?

Do you anticipate selling or moving your boat?

Do you anticipate buying a new boat in the next 5 years?

Additional Comments

Survey Completed by:

Best Phone Number:

Kindly return surveys by **June 18, 2021**  
~~April 28, 2021~~ by email to  
[BostonLongIslandBridge@gmail.com](mailto:BostonLongIslandBridge@gmail.com)  
 or mail to:

Boston Public Works Department  
 Engineering Division  
 c/o Benjamin Sun  
 1 City Hall Square  
 Room 710  
 Boston, MA 02201

*Any questions should be directed to the email address above.*

*Please be advised that survey results will be shared with USCG.*

**Per US Coast Guard request, deadline has been extended to June 18, 2021. Surveys submitted after this date will not be considered.**

## **APPENDIX 8 – VESSEL DATA RECEIVED FOR REPORTING**

Median Annual transits	Air Draft	Vessel Name	R/C	Type Vessel	ON or State No.	MMSI	Owner	Length	Beam	Draft	Air gap requested	2020 Transits	2019 Transits	2018 Transits	2017 Transits	2016 Transits	Mooring Location	
149	55	Adirondack III	Commercial	Sail	1054458		Classic Harbor Line - Boston	80	18	8	5	135	149	149	149	149	Rowes Wharf	
72	41	American United	Safety	M/V		367507210	Massport Fire Rescue	79	22	7		76	62	62	72	76	Jeffreies Cove E. Boston	
54	56	Artemisia	Recreational	Sail	981010		John Plominski	40	12	6.5	4	54	54	54	54	54	south boston, Columbia Yacht Club	
0	50	Bella	Recreational	Sail	670656		Paul Martin	34	11	6.8		0	0	0	0	0	Cottage Park YC	
21	56	Café Mildew / Naiden	Recreational	Sail	917688		Alex Bohm & Celia Harrison	38	12	5.5	4	25	15	24	13	21	Savin Hill YC	
54	76	Catsanova	Recreational	Sail	1282437		Nicholas Mann	47	25	4	4	78	62	54	44	1		
5	54.5	Ceann Saile	Recreational	Sail	1245329		Geoffrey Roth	33	10.5	6.5	1.5	2	6	5	6	5	Hull YC	
84	52	Chit Chat	Recreational	Sail	1250563		Brian Wills	37	13	5	2.5	89	84	71	76	85	Savin Hill YC	
260	50	Columbia Point	Commercial	M/V	1172329	367099660	UMass Boston Div of Marine Operations	65	20	5	10	6	260	260	260	260	Fox Pt Docks, Dorchester Bay	
29	44	Cooee	Recreational	Sail	MS 9446 BL		Alan Bingham	24	16	3.2	4	31	29	29	28	28	Winthrop	
8	47.5	Drift	Recreational	Sail	MS 2702 BN		Eric Schwarm	29	11	6	3	8					South Boston/ Colombia Yacht Club	
112	60	Elby	Recreational	Sail	912489		Mike Gabour	38	12	6	5	112	112	112	112	112	SHYX	
34	65	Fire Sail	Recreational	Sail	671054		Sara T. Capaccioli	42	13	7.3	5	36	36	34	34	34	SHYC	
5	47	FootLoose	Recreational	Sail	668281		Georges Brun-Cottan	30	11.3	5.8	4	3	5	5	5	5	5	Cottage Park Yacht Club - Winthrop
6	52	Free Spirit	Recreational	Sail	1246547		Paul J. Metzger	33	12	5	5	3	6	20	8	2	Constitution Marina / Hawthorne Cove Marina	
22	60	Goblin / Alcyone	Recreational	Sail	966765		Grace Olsen	42	13	5	5	35	36		9	9	Constitution Marina	
0	55	Huntress	Recreational	Sail	1139278		Willard Fredette	35	13	6	10	0	0	0	0	0	Winthrop MA	
5	42	Indigo	Recreational	Sail			WILLIAM WINDER	32	11	4.5	4	6	7	5	4	3	COTTAGE PARK YACHT CLUB	
27	66	Iteration	Recreational	Sail	1070281	366753890	Ryan Meador	53	15	7	6	10	27	27	27	27	Beverly, MA (was Charlestown until fall 2020)	
28	50	Lafawnduh	Recreational	Sail	MS 4633 BF		Robert Darman	30	10	7	20	28	28	28	28	24	Winthrop town landing	
6	46.875	Magpie	Recreational	Sail	1209874		Margaret Curtis	33	9.25	5.85	5	6	6	6	6	6	6	Hingham Yacht Club
47	57	Monday Morning	Recreational	Sail	607213		Tom Murphy	40	12	4.25	3	47	47	47	47	47	47	South Boston/Columbia Yacht Club
26	60	Monomoit	Recreational	Sail	911810	367734750	Steven Novak	37	12	6	5	26	26	26	26	26	26	Charlestown, MA
0	60	Murmur	Recreational	Sail	1057910		Robert & Wendy Reifeiss	40	12	7	2	0	0	0	0	0	0	Plymouth MA
106	55	Northern Lights	Commercial	M/V	1138932		Classic Harbor Line - Boston	115	28.2	9.8	5	60	106	106	106	106	106	Rowes Wharf
10	54	Odyssey	Commercial	M/V	966647		Hornblower Cruises and Events, Inc.	175	38	12	4	0	12	9	10	12	12	Rowes Wharf
62.5	56	Pinchy	Recreational	Sail	1252090		Francis Shiman-Hackett	37	12	6.8	3	66	59					Savin Hill Yacht Club
73.5	58.5	Relaxing	Recreational	Sail	MS 4463 BG		John P. Hill	36	12	6	6.5	73	73	74	76			Wessagussett Yachy Club
44	57	RnR	Recreational	Sail			Richard Johnson	33	11	3.5	3	48	50	43	44	39		
90	64	Schatzi	Recreational	Sail	1238986		Eric James Robinson	40	13	7	6	90	90	90	90	98	Savin Hill YC	
10	65	Scylla	Recreational	Sail			BENJAMIN GELDHOFF	49	14	3.75	1	10	10	10	10	10	10	COTTAGE PARK YACHT CLUB WINTHROP MA
80	47	Serena	Recreational	Sail	1156455		Scott Von Rhee	29	11	4	6	80	80	80	0	0	0	Boston Harbor Shipyard & Marina
28	64	Serenity	Recreational	Sail	653975		Gregory T. Martin	42	13	6	3	18	36	30	28	28	28	Constitution Marina, Charlestown, MA
6	46	Sojourner	Recreational	Sail	602403		Blake Bedingfield	36	11.5	4.5	5	10	6	6	6	3	3	Cottage Park Yacht Club, Winthrop
53	55	Sparkle Pony	Recreational	Sail	902093		William Finn	37	12	6	3	52	55	52	53	54	54	Savin Hill Yacht Club
18	50	Spirit	Recreational	Sail	667189		Tim Shanahan	33	11	5	10	18	18	18	18	18	18	Savin Hill YC
13	54	Spirit of Boston	Commercial	M/V	954835		Hornblower Cruises and Events, Inc.	192	32	10.4	4	0	13	13	16	15	15	World Trade Center
64	75	Zara	Recreational	Sail	1293350		Marc Lefebvre	50	16	7	15	64	64	64	64	64	64	Boston Harbor Shipyard Marina

SOURCE: Massachusetts Bay Harbor Safety Committee, 18 March 2021

Vessel Name/Hull Id	Transit Date or Transit Frequency (daily, monthly)	Origin/Destination	Mast Height	Nature of voyage (rec, commercial, government, etc.)	Reason unable to transit prior to 2015 deck removal	Notes
Scout	Several Days per week	Boston Harbor / Day sails	51	Recreation	Mast Height	
LUNE	3 times per season	Various - Boston islands	52	Recreation	Mast Height	
Island Time/ HUN41125L79	Monthly	Winthrop YC	60	Recreation	Mast Height	
Veritas	Weekly	Boston / Quincy Bay	53	Recreation	Mast Height	
Zanzibar / BEY68173H001	Varies by season	Boston Harbor	59	Recreation	Mast Height	Plus instruments
Imagine/CERR3914H686	Weekly	Boston Harbor	59	Recreation	Mast Height	
Halcyon Doc 539970	Daily	Savin Hill YC	47	Recreation	Clearance w wakes	
Spirit	Weekly	Savin Hill YC	52	Recreation	Ferries and waves	
Halcyon Doc 539970	Daily	Savin Hill YC	47	Recreation	Clearance w wakes	
Artemisia J boats J/40	Weekly	S Boston-Higham	56	Recreation	Different boat in 2015	Bought boat in 2020 w taller mast
Pleiades/HUN3126A404	Daily	Savin Hill YC	52	Recreation		
J-35 Sailboat 'Extra Boat'	2-3 times per week	Savin Hill YC	55	Recreation	Different boat in 2015	
Memory Maker	2 times per week	Savin Hill YC	57	Recreation		
Fictitious	Weekly	Pelagic/North Shore	60	Recreation		
Winter River	Monthly	South Shore	64	Recreation		
Mystic	Monthly	Falmouth	63	Recreation		
Makanaqua Tartan 37	Monthly	S Dartmouth	54	Recreation		Plus wind Instruments
Nordic Yachts 44	Monthly	Falmouth ME	53	Recreation		
54' Catermaran MARACAT	Weekly	Charlestown	65	Recreation	New in 2020	
Cha Ching Bristol 41	Monthly	Buzzards Bay	61	Recreation		
Jason Calianos	Weekly	Winthrop YC	68	Recreation		
KYLEX Brent Jones	Weekly	Winthrop YC	60	Recreation		
Emeraud	Weekly	Winthrop YC	54	Recreation		
Andalusia	Weekly	Winthrop YC	55	Recreation		
Morning Star	Weekly	Winthrop YC	55	Recreation		Plus wind instruments
Wild Thing	Weekly	Winthrop YC	65	Recreation		
Finn	Weekly	Winthrop YC	64	Recreation		
Sea Angel	Daily	Winthrop YC	59	Recreation		
Odaat Catalina	Weekly	Winthrop YC	56	Recreation		Plus instruments
Fly By Night	Monthly	Winthrop YC	61	Recreation		
Selkie	Weekly	Winthrop YC	53	Recreation		
John Gallerelli	Monthly	Winthrop YC	54	Recreation		
Bonnie Lee	Weekly	Hull	52	Recreation		
Beneteau Oceanis 46	Monthly	York ME	61	Recreation		
Miramar Tartan	Weekly	Winthrop YC	53	Recreation		
Allorshas	Weekly	Winthrop YC	60	Recreation		
Southwind	Weekly	Winthrop YC	55	Recreation		
Southern Cross 39	Monthly	North Shore	59	Recreation		
Jon Galli	Monthly	Winthrop YC	65	Recreation		
Shamrock	Daily / Weekly	Tern Harbor	52	Recreational	Height	8' draft
Palawan	Daily / Weekly	SBYC	53	Recreational	Height	7' draft
ODYSSEY	Daily	BHC	54	Commercial	Height	
SPIRIT	Daily	BHC	54	Commercial	Height	
Grand Cru	Weekly	MB	50	Recreational	Height	
Live A Little	Weekly	MB	52	Recreational	Height	
Sea Urchin	Weekly	MB	53	Recreational	Height	
Were Diver	Weekly	MB	55	Recreational	Height	
Wind Drifter	Weekly	MB	54	Recreational	Height	
Fire Sail	Weekly	SHYC	65	Recreational	Height	
Scout	Weekly	SHYC	54	Recreational	Height	
Tonga	Weekly	SHYC	50	Recreational	Height	
Bonnie Lee	Weekly	SHYC	48	Recreational	Height	
Rogue	Weekly	SHYC	53	Recreational	Height	
CardeliaStargazer	Weekly	SHYC	51	Recreational	Height	
One Too Many	Weekly	SHYC	58	Recreational	Height	
Cardozo	Weekly	SHYC	55	Recreational	Height	
Rita	Weekly	SHYC	52	Recreational	Height	
Mildew Cafe	Weekly	SHYC	60	Recreational	Height	
Enya	Weekly	SHYC	55	Recreational	Height	
Big Bucks	Weekly	SHYC	57	Recreational	Height	
Snowflake	Weekly	SHYC	56	Recreational	Height	
Dunleavy	Weekly	SHYC	60	Recreational	Height	
Artemisia	Weekly	SHYC	54	Recreational	Height	
Monday Morning	Weekly	CYC	47	Recreational	Height	

SOURCE: Massachusetts Bay Harbor Safety Committee, 18 March 2021

Future Transit Date or Future Date Range and Frequency	Transit Date or Transit Frequency (daily, monthly)	Origin/Destination	Mast Height	Nature of voyage (rec, commercial, government, etc.)		Notes
Planned future boat	June - Oct	Quincy Bay	60	Recreational		
Planned future boat	May-Nov	At least weekly	58	Recreational		
Planned future boat	May-Nov	Weekly	55	Recreational		
Planned future boat	June - Oct	Monthly	65	Recreational		
SHYC 4 - 6 NEW SAILBOATS WITH 50+ FT MASTS EXPECTED IN THE NEXT YEAR						
SYC 4 NEW SAILBOATS WITH 50+ FT MASTS EXPECTED IN THE NEXT YEAR						
NOTE: MANY BOATERS HAVE NOT CHECKED INTO THEIR RESPECTIVE MARINAS DUE TO THE SEASON HAS NOT STARTED YET. STILL EARLY!!						
<b>KEY:</b>						
SBYC	SOUTH BOSTON YACHT CLUB					
BHC	BOSTON HARBOR CRUISES					
SYC	SQUANTUM YACHT CLUB					
MB	MARINA BAY					
CYC	CONSTITUTION YACHT CLUB					
TERN	TERN HARBOR MARINA					



Wessagussett Yacht Club:

All transits are seasonal - May through October. Monthly average.

Each entity commenting is requested to complete the following table that seeks to identify vessels that have transited the channel since 2015 that were not able to do so because of available clearance prior to the bridge deck's removal:

Vessel Name/Hull Id	Transit Date or Transit Frequency (daily, monthly)	Origin/Destination	Mast Height	Nature of voyage (rec, commercial, government, etc.)	Reason unable to transit prior to 2015 deck removal	Notes Year joined
Tempo	3-4	Weymouth, MA	55	Rec	Mast	2015
Regards	4	Weymouth, MA	50	Rec	Mast	1986
Selene	3-4	Weymouth, MA	54	Rec	Mast	2019
Relaxing	4-5	Weymouth, MA	59	Rec	Mast	2016
Eagle 1	1-2	Weymouth, MA	61	Rec	Mast	2020
Aeolus	2-3	Weymouth, MA	64	Rec	Mast	2018
Vela	?	Weymouth, MA		Rec	Mast	2008
Flying Cloud	?	Weymouth, MA		Rec	Mast	2018
LaRosee	?	Weymouth, MA		Rec	Mast	2019
Justin	2-3	Weymouth, MA	53	Rec	Mast	2020
Yggdrsail	3-4	Weymouth, MA	60	Rec	Mast	2020

For the future needs question, please complete the following table:

Future Transit Date or Future Date Range and Frequency	Type of Vessel (rec, commercial, government, etc.)	Origin/Destination	Mast Height	Anticipated Bridge Clearance Req'd Based on Expected Conditions	Notes

We are also interested in (a) the likelihood of dredging of the approaches to the bridge and source of funding, and (b) the likelihood of additional of new port facilities and their locations. Respectfully request comments by March 19.

## **APPENDIX 9 – NOAA TIDAL CURRENTS PREDICTION 2021**



The NOAA Tidal Current Predictions application provides predictions in both graphical and tabular formats, with many user selectable options, for several thousand stations distributed by key geographical areas, including individual bays and estuaries in each state. The Annual Current Table format provides predicted timing of slack water and predicted timing and speed of maximum flood (positive) and maximum ebb (negative) current speed. A line of asterisks (\*\*\*) at the end of a calendar day indicate extra currents are included at the end of this product. Additional information can be found in the help page.

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Station Types: The NOAA Tidal Current Predictions application provides current predictions from two distinct categories of stations:

1. Harmonic - The predicted current speeds and directions for Harmonic stations are computed by combining the harmonic constituents into a single tide curve.
  2. Subordinate - The maximum speeds (flood and ebb) and slack current for Subordinate stations are computed by applying time differences and speed ratios to the times and speeds of a Reference station (a full Harmonic station).
- 

Disclaimer: The official Tidal Current Prediction Tables are published annually on October 1, for the following calendar year. Tidal current predictions generated prior to the publishing date of the official tables are subject to change. The predictions from the web-based NOAA Tidal Current Predictions are based upon the latest information available as of the date of the request; tidal current predictions generated from this application may differ from the official published predictions if information for the station requested has been updated since the publishing date of the official published tables.



Station ID: ACT1406 Depth: 10 feet  
 Source: NOAA/NOS/CO-OPS  
 Station Type: Subordinate  
 Time Zone: LST/LDT  
 Ref Station: BOS1111 Depth: 8 feet  
 Ref Station Name: Boston Harbor (Deer Island Light)  
 SBF:-00:18 MFC:-01:49 SBE:-00:30 MEC:-01:43  
 Flood Speed Ratio: \*0.3 Ebb Speed Ratio: \*0.3

NOAA Tidal Current Predictions

Moon Head, 0.4 n.mi. east of, 2021

Latitude: 42.3063° N Longitude: 70.9788° W

Mean Flood Dir. 259° (T) Mean Ebb Dir. 80° (T)

Times and speeds of maximum and minimum current, in knots

January				February				March											
Slack	Maximum		Slack	Maximum		Slack	Maximum		Slack	Maximum		Slack	Maximum						
	h	m	knots		h	m	knots		h	m	knots		h	m	knots				
<b>1</b> F	06:18AM	02:05AM	-0.3E	<b>16</b> Sa	12:24AM	03:23AM	-0.4E	<b>1</b> M	12:36AM	03:05AM	-0.4E	<b>16</b> M	01:24AM	02:11AM	-0.4E				
	07:00AM	07:05AM	0.4F		07:12AM	08:17AM	0.4F		08:12AM	08:53AM	0.5F		08:24AM	09:29AM	0.3F	06:18AM	07:05AM	0.5F	
	11:42AM	02:29PM	-0.4E		12:36PM	03:59PM	-0.4E		12:48PM	03:23PM	-0.4E		01:48PM	04:41PM	-0.3E	11:36AM	02:23PM	-0.4E	
	06:54PM	07:41PM	0.4F		07:48PM	08:59PM	0.4F		07:54PM	08:35PM	0.5F		08:36PM	09:35PM	0.3F	06:42PM	07:29PM	0.5F	
<b>2</b> Sa	12:24AM	02:47AM	-0.4E	<b>17</b> Su	01:12AM	04:11AM	-0.4E	<b>2</b> Tu	01:18AM	03:53AM	-0.4E	<b>17</b> W	02:12AM	05:11AM	-0.3E	<b>2</b> Tu	12:06AM	02:47AM	-0.4E
	07:00AM	07:47AM	0.4F		08:00AM	08:59AM	0.4F		08:12AM	08:53AM	0.5F		09:12AM	10:17AM	0.3F		07:06AM	07:53AM	0.5F
	12:24PM	03:11PM	-0.4E		01:24PM	04:47PM	-0.4E		01:36PM	04:11PM	-0.4E		02:30PM	05:05PM	-0.3E		12:24PM	02:59PM	-0.4E
	07:36PM	08:17PM	0.4F		08:30PM	09:41PM	0.4F		08:36PM	09:23PM	0.5F		09:18PM	10:11PM	0.3F		07:24PM	08:11PM	0.5F
<b>3</b> Su	01:06AM	03:29AM	-0.3E	<b>18</b> M	02:00AM	05:05AM	-0.3E	<b>3</b> W	02:06AM	04:53AM	-0.4E	<b>18</b> Th	02:54AM	05:53AM	-0.3E	<b>3</b> W	12:48AM	03:35AM	-0.4E
	07:48AM	08:29AM	0.4F		08:48AM	09:53AM	0.3F		09:06AM	09:47AM	0.4F		10:00AM	11:35AM	0.3F		07:54AM	08:35AM	0.5F
	01:06PM	03:47PM	-0.4E		12:12PM	05:29PM	-0.3E		02:30PM	05:11PM	-0.4E		03:18PM	05:41PM	-0.2E		01:18PM	03:47PM	-0.4E
	08:18PM	08:59PM	0.4F		09:12PM	10:41PM	0.3F		09:24PM	10:11PM	0.4F		10:00PM	11:11PM	0.3F		08:12PM	08:59PM	0.5F
<b>4</b> M	01:54AM	04:17AM	-0.3E	<b>19</b> Tu	02:48AM	05:53AM	-0.3E	<b>4</b> Th	02:54AM	05:53AM	-0.4E	<b>19</b> F	03:42AM	06:29AM	-0.3E	<b>4</b> Th	01:36AM	04:35AM	-0.4E
	08:36AM	09:17AM	0.4F		09:42AM	11:05AM	0.3F		10:06AM	10:47AM	0.4F		10:54AM	12:29PM	0.2F		08:48AM	09:29AM	0.5F
	02:00PM	04:47PM	-0.4E		03:30PM	06:05PM	-0.3E		03:30PM	06:05PM	-0.4E		04:12PM	06:11PM	-0.2E		02:12PM	04:47PM	-0.4E
	09:06PM	09:47PM	0.4F		10:00PM	11:41PM	0.3F		10:24PM	11:11PM	0.4F		10:48PM	11:47PM	0.2F		09:00PM	09:47PM	0.5F
<b>5</b> Tu	02:36AM	05:17AM	-0.3E	<b>20</b> W	03:36AM	06:35AM	-0.3E	<b>5</b> F	03:54AM	06:47AM	-0.4E	<b>20</b> Sa	04:36AM	07:05AM	-0.3E	<b>5</b> F	02:30AM	05:41AM	-0.4E
	09:30AM	10:11AM	0.4F		10:36AM	12:11PM	0.3F		11:12AM	11:53AM	0.4F		11:48AM	01:23PM	0.2F		09:48AM	10:29AM	0.4F
	02:54PM	05:41PM	-0.4E		03:54PM	06:29PM	-0.2E		04:30PM	06:59PM	-0.3E		05:12PM	06:53PM	-0.2E		03:06PM	05:47PM	-0.3E
	09:54PM	10:41PM	0.4F		10:48PM				11:24PM				11:42PM				09:54PM	10:47PM	0.4F
<b>6</b> W	03:30AM	06:11AM	-0.3E	<b>21</b> Th	04:24AM	07:17AM	-0.3E	<b>6</b> Sa	04:54AM	08:05AM	-0.4E	<b>21</b> Su	05:30AM	08:23AM	-0.3E	<b>6</b> Sa	03:24AM	06:41AM	-0.4E
	10:24AM	11:11AM	0.4F		11:30AM	01:11PM	0.3F		12:18PM	01:05PM	0.4F		12:42PM	02:29PM	0.2F		10:54AM	11:41AM	0.4F
	03:48PM	06:29PM	-0.3E		04:54PM	06:53PM	-0.2E		05:36PM	08:23PM	-0.3E		06:06PM	07:53PM	-0.2E		04:12PM	06:47PM	-0.3E
	10:54PM	11:41PM	0.4F		11:36PM										11:00PM		11:47PM	0.4F	
<b>7</b> Th	04:30AM	07:05AM	-0.3E	<b>22</b> F	05:18AM	01:23AM	0.3F	<b>7</b> Su	12:24AM	01:11AM	0.4F	<b>22</b> M	12:36AM	01:17AM	0.2F	<b>7</b> Su	04:30AM	07:59AM	-0.4E
	11:30AM	12:11PM	0.4F		12:24PM	02:05PM	0.3F		05:54AM	09:35AM	-0.4E		06:18AM	09:35AM	-0.3E		12:00PM	12:59PM	0.3F
	04:54PM	07:23PM	-0.3E		05:48PM	07:41PM	-0.2E		06:42PM	09:47PM	-0.3E		01:30PM	03:23PM	0.3F		05:24PM	08:11PM	-0.3E
	11:54PM												07:00PM	09:17PM	-0.2E		01:00PM	02:41PM	0.2F
<b>8</b> F	05:24AM	12:35AM	0.4F	<b>23</b> Sa	12:30AM	02:23AM	0.3F	<b>8</b> M	01:24AM	02:29AM	0.4F	<b>23</b> Tu	01:30AM	02:17AM	0.2F	<b>8</b> M	12:06AM	12:53AM	0.4F
	08:23AM	-0.4E	06:12AM		09:29AM	-0.3E	06:54AM		10:29AM	-0.4E	07:06AM		10:17AM	-0.3E	05:36AM		09:17AM	-0.4E	
	12:30PM	01:17PM	0.4F		01:18PM	03:05PM	0.3F		02:18PM	03:41PM	0.4F		02:18PM	03:59PM	0.3F		01:00PM	02:17PM	0.4F
	06:00PM	08:47PM	-0.3E		06:36PM	09:05PM	-0.2E		07:42PM	10:47PM	-0.3E		07:48PM	10:11PM	-0.3E		06:30PM	09:35PM	-0.3E
<b>9</b> Sa	12:48AM	01:35AM	0.4F	<b>24</b> Su	01:12AM	03:17AM	0.3F	<b>9</b> Tu	02:24AM	03:41AM	0.4F	<b>24</b> W	02:18AM	03:17AM	0.3F	<b>9</b> Tu	01:06AM	02:17AM	0.4F
	06:18AM	09:41AM	-0.4E		07:00AM	10:11AM	-0.3E		07:54AM	11:23AM	-0.5E		07:54AM	10:47AM	-0.3E		06:42AM	10:17AM	-0.4E
	01:36PM	02:35PM	0.4F		07:30PM	03:53PM	0.3F		08:18PM	04:35PM	0.4F		03:00PM	04:35PM	0.3F		02:00PM	03:29PM	0.4F
	07:00PM	09:59PM	-0.3E		07:30PM	09:53PM	-0.3E		08:48PM	11:41PM	-0.4E		08:42PM	10:53PM	-0.3E		07:30PM	10:35PM	-0.3E
<b>10</b> Su	01:42AM	02:41AM	0.4F	<b>25</b> M	02:00AM	03:53AM	0.3F	<b>10</b> W	03:24AM	04:35AM	0.4F	<b>25</b> Th	03:12AM	03:59AM	0.3F	<b>10</b> W	02:12AM	03:35AM	0.4F
	07:12AM	10:41AM	-0.4E		07:42AM	10:47AM	-0.3E		09:00AM	12:23PM	-0.5E		08:42AM	11:29AM	-0.4E		07:42AM	11:11AM	-0.4E
	02:36PM	03:47PM	0.4F		02:54PM	04:29PM	0.3F		04:12PM	05:29PM	0.4F		03:48PM	04:53PM	0.4F		03:00PM	04:23PM	0.4F
	08:00PM	10:53PM	-0.3E		08:18PM	10:35PM	-0.3E		09:48PM				09:30PM	11:41PM	-0.3E		08:36PM	11:29PM	-0.4E
<b>11</b> M	02:42AM	03:47AM	0.4F	<b>26</b> Tu	02:48AM	04:11AM	0.3F	<b>11</b> Th	04:18AM	12:41AM	-0.4E	<b>26</b> F	04:00AM	04:41AM	0.4F	<b>11</b> Th	03:12AM	04:29AM	0.4F
	08:12AM	11:41AM	-0.4E		08:30AM	11:23AM	-0.3E		09:54AM	01:17PM	-0.5E		09:30AM	12:11PM	-0.4E		08:42AM	11:59AM	-0.4E
	03:36PM	04:41PM	0.4F		09:12PM	05:05PM	0.3F		10:36PM	06:23PM	0.4F		10:12PM	05:23PM	0.4F		03:54PM	05:11PM	0.4F
	09:00PM	11:53PM	-0.4E		10:36PM										09:30PM				
<b>12</b> Tu	03:42AM	04:41AM	0.4F	<b>27</b> W	03:36AM	04:29AM	0.3F	<b>12</b> F	05:12AM	01:35AM	-0.4E	<b>27</b> Sa	04:42AM	05:29AM	-0.4E	<b>12</b> F	04:06AM	05:23AM	-0.4E
	09:12AM	12:41PM	-0.5E		09:18AM	12:05PM	-0.4E		10:42AM	02:05PM	-0.5E		10:12AM	01:05PM	-0.4E		09:36AM	12:53PM	-0.4E
	04:30PM	05:41PM	0.4F		09:54PM	05:41PM	0.3F		11:18PM	07:11PM	0.5F		10:48PM	06:05PM	0.4F		04:42PM	05:59PM	0.4F
	10:00PM														10:12PM				
<b>13</b> W	04:36AM	12:59AM	-0.4E	<b>28</b> Th	04:24AM	12:05AM	-0.3E	<b>13</b> Sa	06:06AM	02:23AM	-0.4E	<b>28</b> Su	05:30AM	01:23AM	-0.4E	<b>13</b> Sa	04:54AM	01:17AM	-0.4E
	10:06AM	05:41AM	0.4F		09:54AM	12:47PM	-0.4E		11:30AM	02:47PM	-0.4E		10:54AM	01:47PM	-0.4E		10:24AM	01:41PM	-0.4E
	05:42PM	06:41PM	0.4F		10:36PM	06:05PM	0.4F		06:36PM	07:59PM	0.4F		11:24PM	06:47PM	0.5F		05:24PM	06:47PM	0.4F
	10:48PM														10:54PM				
<b>14</b> Th	05:30AM	01:53AM	-0.4E	<b>29</b> F	05:06AM	12:59AM	-0.3E	<b>14</b> Su	12:00AM	03:05AM	-0.4E	<b>14</b> Su	06:42AM	08:11AM	0.4F	<b>14</b> Su	06:42AM	02:59AM	-0.4E
	11:00AM	02:23PM	-0.5E		10:36AM	01:35PM	-0.4E		12:12PM	03:23PM	-0.4E		12:06PM	03:23PM	-0.4E		12:06PM	08:11AM	0.4F
	06:12PM	07:29PM	0.5F		05:42PM	06:41PM	0.4F		07:18PM	08:35PM	0.4F		07:06PM	08:35PM	0.4F		07:06PM	08:35PM	0.4F
	11:36PM				11:18PM														
<b>15</b> F	06:18AM	02:35AM	-0.4E	<b>30</b> Sa	05:54AM	01:47AM	-0.4E	<b>15</b> M	12:42AM	03:41AM	-0.4E	<b>15</b> M	12:36AM	03:41AM	-0.4E	<b>15</b> M	12:36AM	03:41AM	-0.4E
	11:48AM	03:11PM	-0.5E		11:18AM	02:11PM	-0.4E		07:36AM	08:47AM	0.4F		07:30AM	08:53AM	0.4F		07:30AM	08:53AM	0.4F
	07:00PM	08:11PM	0.4F		06:24PM	07:17PM	0.4F		08:00PM	09:05PM	0.4F		12:48PM	03:53PM	-0.4E		12:48PM	03:53PM	-0.4E
					11:54PM										07:42PM		09:05PM	0.4F	
			<b>31</b> Su	06:36AM	02:29AM	-0.4E										<b>31</b> W	12:36AM	03:35AM	-0.4E
				12:00PM	02:47PM	-0.4E													



Station ID: ACT1406 Depth: 10 feet  
 Source: NOAA/NOS/CO-OPS  
 Station Type: Subordinate  
 Time Zone: LST/LDT  
 Ref Station: BOS1111 Depth: 8 feet  
 Ref Station Name: Boston Harbor (Deer Island Light)  
 SBF:-00:18 MFC:-01:49 SBE:-00:30 MEC:-01:43  
 Flood Speed Ratio: \*0.3 Ebb Speed Ratio: \*0.3

NOAA Tidal Current Predictions

**Moon Head, 0.4 n.mi. east of, 2021**

Latitude: 42.3063° N Longitude: 70.9788° W

Mean Flood Dir. 259° (T) Mean Ebb Dir. 80° (T)

Times and speeds of maximum and minimum current, in knots

April				May				June									
Slack	Maximum	Slack	Maximum	Slack	Maximum	Slack	Maximum	Slack	Maximum	Slack	Maximum	Slack	Maximum				
h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m				
	knots		knots		knots		knots		knots		knots		knots				
<b>1</b> Th	01:24AM 0.4E 09:36AM 0.5F 02:00PM 0.4E 08:48PM 0.5F	04:17AM 0.4E 10:23AM 0.5F 04:29PM 0.4E 09:35PM 0.5F	<b>16</b> F	02:00AM 0.3E 09:48AM 0.3F 02:30PM 0.3E 09:06PM 0.3F	04:41AM 0.3E 10:23AM 0.3F 04:29PM 0.3E 09:47PM 0.3F	<b>1</b> Sa	01:54AM 0.4E 09:18AM 0.4F 02:36PM 0.3E 09:24PM 0.5F	05:17AM 0.3E 10:53AM 0.4F 05:23PM 0.3E 10:05PM 0.5F	<b>16</b> Su	02:12AM 0.3E 09:18AM 0.3F 02:48PM 0.3E 09:18PM 0.3F	04:41AM 0.3E 10:53AM 0.3F 04:47PM 0.3E 09:53PM 0.3F	<b>1</b> Tu	03:30AM 0.4E 10:48AM 0.4F 04:18PM 0.3E 11:06PM	07:05AM 0.4E 12:05PM 0.4F 07:23PM 0.3E	<b>16</b> W	03:06AM 0.3E 11:00AM 0.4F 03:54PM 0.3E 10:30PM 0.3F	05:53AM 0.3E 11:47AM 0.4F 06:23PM 0.3E 11:11PM 0.3F
<b>2</b> F	02:12AM 0.4E 09:36AM 0.4F 02:54PM 0.3E 09:42PM 0.5F	05:23AM 0.4E 11:11AM 0.4F 05:29PM 0.3E 10:23PM 0.5F	<b>17</b> Sa	02:42AM 0.3E 09:48AM 0.3F 03:18PM 0.3E 09:48PM 0.3F	05:23AM 0.3E 10:23AM 0.3F 05:17PM 0.3E 10:23PM 0.3F	<b>2</b> Su	02:48AM 0.4E 10:12AM 0.4F 03:36PM 0.3E 10:18PM 0.4F	06:23AM 0.4E 11:05AM 0.4F 06:35PM 0.3E 11:05PM 0.4F	<b>17</b> M	02:54AM 0.3E 10:00AM 0.3F 03:36PM 0.3E 10:06PM 0.3F	05:35AM 0.3E 10:35AM 0.3F 05:53PM 0.3E 10:41PM 0.3F	<b>2</b> W	04:30AM 0.3E 11:48AM 0.3F 05:18PM 0.3E	12:11AM 0.3F 07:59AM 0.4E 01:17PM 0.3F 08:17PM 0.3E	<b>17</b> Th	03:54AM 0.3E 11:00AM 0.4F 04:42PM 0.3E 11:24PM	06:41AM 0.4E 11:47AM 0.4F 07:11PM 0.3E
<b>3</b> Sa	03:06AM 0.4E 10:30AM 0.4F 03:48PM 0.3E 10:36PM 0.4F	06:29AM 0.4E 11:11AM 0.4F 06:41PM 0.3E 11:23PM 0.4F	<b>18</b> Su	03:30AM 0.3E 10:36AM 0.3F 04:06PM 0.3E 10:36PM 0.3F	06:17AM 0.3E 11:11AM 0.3F 06:17PM 0.3E 11:11PM 0.3F	<b>3</b> Mo	03:48AM 0.4E 11:12AM 0.3F 04:42PM 0.3E 11:24PM	07:23AM 0.4E 12:23PM 0.3F 07:35PM 0.3E	<b>18</b> Tu	03:36AM 0.3E 10:48AM 0.3F 04:30PM 0.3E 11:00PM 0.3F	06:29AM 0.3E 11:29AM 0.3F 06:47PM 0.3E 11:35PM 0.3F	<b>3</b> Th	12:06AM 0.3F 05:36AM 0.3E 12:48PM 0.3F 06:24PM 0.3E	01:29AM 0.3F 08:59AM 0.3E 02:17PM 0.3F 09:29PM 0.3E	<b>18</b> F	04:48AM 0.3E 11:54AM 0.4F 05:36PM 0.3E	12:05AM 0.3F 07:29AM 0.4E 12:41PM 0.3E 07:59PM 0.3E
<b>4</b> Su	04:06AM 0.4E 11:36AM 0.4F 04:54PM 0.3E 11:36PM	07:35AM 0.4E 12:35PM 0.4F 07:41PM 0.3E	<b>19</b> Mo	04:12AM 0.3E 11:24AM 0.2F 05:06PM 0.3E 11:30PM	06:59AM 0.3E 12:11PM 0.2F 07:05PM 0.3E	<b>4</b> Tu	04:48AM 0.3F 12:18PM 0.3F 05:48PM 0.3E	12:23AM 0.3F 08:23AM 0.4E 01:35PM 0.3F 08:41PM 0.3E	<b>19</b> W	04:30AM 0.3E 11:42AM 0.3F 05:24PM 0.3E 11:54PM	07:11AM 0.3E 12:23PM 0.3F 07:35PM 0.3E	<b>4</b> F	01:12AM 0.3F 06:42AM 0.3E 01:42PM 0.3F 07:18PM 0.3E	02:35AM 0.3F 10:05AM 0.3E 03:11PM 0.3F 10:29PM 0.3E	<b>19</b> Sa	12:24AM 0.4F 05:54AM 0.3E 12:54PM 0.4F 06:30PM 0.3E	01:05AM 0.4F 08:17AM 0.3E 01:35PM 0.4F 08:59PM 0.3E
<b>5</b> M	05:12AM 0.4E 12:42PM 0.3F 06:06PM 0.3E	12:35AM 0.4F 08:41AM 0.4E 01:47PM 0.3F 08:59PM 0.3E	<b>20</b> Tu	05:06AM 0.3E 12:18PM 0.3F 06:00PM 0.3E	12:05AM 0.3F 07:47AM 0.3E 01:05PM 0.3E 07:59PM 0.3E	<b>5</b> W	12:30AM 0.3F 06:00AM 0.4E 01:18PM 0.3F 06:54PM 0.3E	01:41AM 0.3F 09:35AM 0.4E 02:41PM 0.3F 09:59PM 0.3E	<b>20</b> Th	05:24AM 0.3E 12:36PM 0.3F 06:18PM 0.3E	12:35AM 0.3F 07:59AM 0.3E 01:17PM 0.3E 08:29PM 0.3E	<b>5</b> Sa	02:12AM 0.3F 07:36AM 0.3E 02:30PM 0.3F 08:06PM 0.4E	03:41AM 0.3F 10:53AM 0.3E 04:11PM 0.3F 11:17PM 0.4E	<b>20</b> Su	01:24AM 0.4F 06:48AM 0.3E 01:48PM 0.4F 07:18PM 0.4E	02:05AM 0.4F 09:29AM 0.3E 02:29PM 0.4F 10:17PM 0.4E
<b>6</b> Tu	06:18AM 0.4E 01:42PM 0.3F 07:18PM 0.3E	01:47AM 0.3F 03:05PM 0.3F 10:23PM 0.3E	<b>21</b> W	12:30AM 0.3F 06:00AM 0.3E 01:12PM 0.3F 07:00PM 0.3E	12:59AM 0.3F 08:41AM 0.3E 01:53PM 0.3F 08:59PM 0.3E	<b>6</b> Th	01:36AM 0.3F 07:06AM 0.4E 02:12PM 0.4F 07:48PM 0.4E	02:59AM 0.3F 10:35AM 0.4E 03:47PM 0.4F 10:59PM 0.4E	<b>21</b> F	12:54AM 0.3F 06:24AM 0.3E 01:24PM 0.3F 07:06PM 0.3E	01:29AM 0.3F 08:59AM 0.3E 02:05PM 0.3F 09:41PM 0.3E	<b>6</b> Su	03:06AM 0.3F 08:24AM 0.3E 03:18PM 0.3F 08:48PM 0.4E	04:35AM 0.3F 11:41AM 0.3E 04:59PM 0.3F 11:59PM 0.4E	<b>21</b> M	02:24AM 0.4F 07:48AM 0.3E 02:36PM 0.4F 08:06PM 0.4E	03:05AM 0.4F 10:35AM 0.3E 03:29PM 0.4F 11:17PM 0.4E
<b>7</b> W	01:54AM 0.3F 07:24AM 0.4E 02:42PM 0.4F 08:12PM 0.4E	03:11AM 0.3F 10:59AM 0.4E 04:11PM 0.4F 11:17PM 0.4E	<b>22</b> Th	01:54AM 0.3F 06:54AM 0.3E 02:00PM 0.3F 07:48PM 0.3E	01:53AM 0.3F 09:47AM 0.3E 02:47PM 0.3F 10:17PM 0.3E	<b>7</b> F	02:36AM 0.3F 08:06AM 0.4E 03:06PM 0.4F 08:42PM 0.4E	04:05AM 0.3F 11:23AM 0.4E 04:35PM 0.4F 11:47PM 0.4E	<b>22</b> Sa	01:48AM 0.3F 07:18AM 0.3E 02:18PM 0.4F 07:54PM 0.3E	02:05AM 0.3F 10:29AM 0.3E 03:05PM 0.4F 10:47PM 0.3E	<b>7</b> M	03:54AM 0.3F 09:18AM 0.3E 04:00PM 0.3F 09:36PM	05:23AM 0.3F 12:11PM 0.3E 05:41PM 0.3F	<b>22</b> Tu	03:18AM 0.4F 08:42AM 0.3E 03:30PM 0.4F 09:00PM	04:17AM 0.4E 11:29AM 0.4E 04:29PM 0.4F
<b>8</b> Th	02:54AM 0.4E 08:24AM 0.4E 03:36PM 0.4F 09:12PM	04:23AM 0.4F 11:47AM 0.4E 04:59PM 0.4F	<b>23</b> F	02:18AM 0.3E 08:06AM 0.3E 02:54PM 0.3F 08:30PM 0.3E	02:59AM 0.3F 10:41AM 0.3E 03:53PM 0.3F 11:11PM 0.3E	<b>8</b> Sa	03:00AM 0.4E 09:30AM 0.4F 03:54PM 0.4E 09:30PM	04:59AM 0.4E 12:05PM 0.4E 05:23PM 0.4E	<b>23</b> Su	02:42AM 0.4E 08:12AM 0.4E 03:06PM 0.4F 08:42PM 0.4E	03:29AM 0.4F 10:59AM 0.4E 03:59PM 0.4F 11:35PM 0.4E	<b>8</b> Tu	04:42AM 0.3E 10:06AM 0.3E 04:48PM 0.3F 10:24PM	12:47AM 0.4E 06:05AM 0.3F 12:47PM 0.3E 06:23PM 0.3F	<b>23</b> W	04:18AM 0.4E 09:42AM 0.4E 04:30PM 0.5F 10:00PM	12:17AM 0.4E 05:17AM 0.4F 12:23PM 0.4E 05:23PM 0.5F
<b>9</b> F	03:54AM 0.4E 09:24AM 0.4F 04:24PM 0.4F 10:00PM	12:05AM 0.4E 05:17AM 0.4E 12:35PM 0.4F 05:47PM 0.4F	<b>24</b> Sa	03:12AM 0.3E 08:36AM 0.3E 03:42PM 0.3E 09:18PM 0.4E	03:59AM 0.3F 11:29AM 0.4E 04:35PM 0.4F 11:53PM 0.4E	<b>9</b> Su	04:24AM 0.4E 09:48AM 0.4F 04:36PM 0.4F 10:12PM	12:29AM 0.4E 05:47AM 0.4F 12:53PM 0.3E 06:05PM 0.4F	<b>24</b> Mo	03:42AM 0.4E 09:06AM 0.4E 04:00PM 0.4F 09:30PM	04:35AM 0.4E 11:47AM 0.4E 04:53PM 0.4F	<b>9</b> W	05:30AM 0.3E 10:48AM 0.3E 05:24PM 0.3F 11:06PM	01:35AM 0.4E 06:53AM 0.3F 01:23PM 0.3E 06:59PM 0.3F	<b>24</b> Th	05:18AM 0.4E 10:42AM 0.4F 05:24PM 0.5F 10:54PM	01:17AM 0.4E 06:11AM 0.4F 06:11PM 0.5F
<b>10</b> Sa	04:48AM 0.4E 10:18AM 0.4E 05:12PM 0.4F 10:48PM	12:59AM 0.4E 06:05AM 0.4F 01:29PM 0.4E 06:35PM 0.4F	<b>25</b> Su	04:06AM 0.4E 09:30AM 0.4E 04:30PM 0.4E 10:00PM	04:53AM 0.4F 12:11PM 0.4E 05:23PM 0.4F	<b>10</b> Mo	05:12AM 0.4E 10:36AM 0.4F 05:18PM 0.4F 10:54PM	01:17AM 0.4E 06:29AM 0.4F 01:35PM 0.3E 06:53PM 0.4F	<b>25</b> Tu	04:36AM 0.4E 10:00AM 0.4E 04:48PM 0.5F 10:18PM	12:23AM 0.4E 05:29AM 0.4F 12:35PM 0.4E 05:41PM 0.5F	<b>10</b> Th	06:06AM 0.3F 11:30AM 0.3E 06:06PM 0.3F 11:42PM	02:17AM 0.4E 07:41AM 0.3F 01:59PM 0.3E 07:35PM 0.3F	<b>25</b> F	06:12AM 0.5E 11:36AM 0.5F 06:12PM 0.5F 11:42PM	02:17AM 0.5E 07:11AM 0.5F 02:29PM 0.4E 07:11PM 0.5F
<b>11</b> Su	05:36AM 0.4E 11:00AM 0.4E 05:54PM 0.4E 11:24PM	01:47AM 0.4E 06:53AM 0.4F 02:11PM 0.4E 07:23PM 0.4F	<b>26</b> Mo	04:54AM 0.4E 10:24AM 0.4E 05:18PM 0.5F 10:48PM	12:41AM 0.4E 05:47AM 0.4F 12:59PM 0.4E 06:05PM 0.5F	<b>11</b> Tu	05:54AM 0.4E 11:18AM 0.3E 06:00PM 0.4F 11:36PM	02:05AM 0.4E 07:23AM 0.4F 02:11PM 0.3E 07:35PM 0.4F	<b>26</b> W	05:30AM 0.5F 10:54AM 0.4E 05:42PM 0.5F 11:12PM	01:29AM 0.4E 06:23AM 0.5F 01:41PM 0.4E 06:29PM 0.5F	<b>11</b> F	06:48AM 0.3E 12:12PM 0.3E 06:48PM 0.3F	02:47AM 0.4E 08:23AM 0.3F 02:35PM 0.3E 07:53PM 0.3F	<b>26</b> Sa	07:00AM 0.5E 12:24PM 0.4E 07:06PM 0.5F	03:11AM 0.5E 08:11AM 0.5F 03:23PM 0.4E 08:11PM 0.5F
<b>12</b> M	06:18AM 0.4E 11:42AM 0.4E 06:30PM 0.4F	02:35AM 0.4E 07:47AM 0.4F 02:53PM 0.4E 08:05PM 0.4F	<b>27</b> Tu	05:48AM 0.5F 11:12AM 0.4E 06:06PM 0.5F 11:30PM	06:35AM 0.5F 01:59PM 0.4E 06:53PM 0.5F	<b>12</b> W	06:36AM 0.4F 11:54AM 0.3E 06:36PM 0.4F	08:05AM 0.4F 02:41PM 0.3E 08:11PM 0.4F	<b>27</b> Th	06:24AM 0.5F 11:48AM 0.4E 06:30PM 0.5F	02:29AM 0.5E 07:17AM 0.5F 02:35PM 0.4E 07:29PM 0.5F	<b>12</b> Sa	12:24AM 0.4E 07:30AM 0.4F 12:54PM 0.3E 07:30PM 0.4F	03:17AM 0.4E 08:47AM 0.4F 03:11PM 0.3E 08:17PM 0.4F	<b>27</b> Su	12:30AM 0.5E 07:54AM 0.5F 01:18PM 0.4E 08:00PM 0.5F	03:59AM 0.5E 08:59AM 0.5F 04:11PM 0.4E 08:59PM 0.5F
<b>13</b> Tu	12:06AM 0.4E 07:06AM 0.4F 12:24PM 0.3E 07:12PM 0.4F	03:11AM 0.4E 08:29AM 0.4F 03:17PM 0.3E 08:41PM 0.4F	<b>28</b> W	06:36AM 0.5F 12:00PM 0.4E 06:48PM 0.5F	02:35AM 0.4E 07:29AM 0.5F 02:47PM 0.4E 07:47PM 0.5F	<b>13</b> Th	12:12AM 0.4E 07:18AM 0.4F 12:36PM 0.3E 07:12PM 0.4F	03:17AM 0.4E 08:47AM 0.4F 02:59PM 0.3E 08:29PM 0.4F	<b>28</b> F	12:00AM 0.5E 07:18AM 0.5F 12:36PM 0.4E 07:24PM 0.5F	03:17AM 0.5E 08:17AM 0.5F 03:29PM 0.4E 08:17PM 0.5F	<b>13</b> Su	01:00AM 0.4E 08:06AM 0.4F 01:36PM 0.3E 08:12PM 0.4F	03:41AM 0.4E 08:59AM 0.4F 03:47PM 0.3E 08:53PM 0.4F	<b>28</b> M	01:24AM 0.4E 08:42AM 0.4F 02:12PM 0.4E 08:54PM 0.4F	04:53AM 0.4E 09:41AM 0.4F 05:05PM 0.4E 09:47PM 0.4F
<b>14</b> W	12:42AM 0.4E 07:48AM 0.4F 01:00PM 0.3E 07:48PM 0.4F	03:41AM 0.4E 09:05AM 0.4F 03:35PM 0.3E 09:05PM 0.4F	<b>29</b> Th	12:18AM 0.5E 07:30AM 0.5F 12:48PM 0.4E 07:36PM 0.5F	03:23AM 0.5E 08:23AM 0.5F 03:29PM 0.4E 08:35PM 0.5F	<b>14</b> F	12:48AM 0.3E 08:00AM 0.3F 01:18PM 0.3E 07:54PM 0.4F	03:41AM 0.4E 09:11AM 0.3F 03:29PM 0.3E 08:47PM 0.4F	<b>29</b> Sa	12:48AM 0.5E 08:12AM 0.5F 01:30PM 0.4E 08:12PM 0.5F	04:11AM 0.5E 09:05AM 0.5F 04:17PM 0.4E 09:05PM 0.5F	<b>14</b> M	01:36AM 0.4E 08:48AM 0.4F 02:24PM 0.3E 08:54PM 0.4F	04:17AM 0.4E 09:29AM 0.4F 04:29PM 0.3E 09:29PM 0.4F	<b>29</b> Tu	02:18AM 0.4E 09:30AM 0.4F 03:06PM 0.3E 09:42PM 0.4F	05:47AM 0.4E 10:35AM 0.4F 06:05PM 0.4E 10:41PM 0.4F
<b>15</b> Th	01:18AM 0.4E 08:30AM 0.3E 01:48PM 0.3F 08:24PM 0.4F	04:11AM 0.4E 09:35AM 0.3E 03:53PM 0.3F 09:17PM 0.4F	<b>30</b> F	01:00AM 0.5E 08:24AM 0.5F 01:42PM 0.4E 08:30PM 0.5F	04:17AM 0.5E 09:11AM 0.5F 04:17PM 0.4E 09:17PM 0.5F	<b>15</b> Sa	01:30AM 0.3E 08:36AM 0.3F 02:04PM 0.3E 08:36PM 0.4F	04:11AM 0.3E 09:29AM 0.3F 04:05PM 0.3E 09:17PM 0.4F	<b>30</b> Su	01:36AM 0.4E 09:00AM 0.4E 02:24PM 0.3E 09:06PM 0.4F	05:05AM 0.4E 09:53AM 0.4F 05:17PM 0.3E 09:53PM 0.4F	<b>15</b> Tu	02:18AM 0.3E 09:30AM 0.4F 03:06PM 0.3E 09:42PM 0.4F	04:59AM 0.3E 10:05AM 0.4F 05:23PM 0.3E 10:17PM 0.4F	<b>30</b> W	03:12AM 0.4E 10:24AM 0.4F 03:54AM 0.3E 10:42PM 0.3F	06:41AM 0.4E 11:35AM 0.4F 06:59PM 0.3E 11:59PM 0.3F
						<b>15</b> M	02:36AM 0.4E 09:54AM 0.4F 03:24PM 0.3E 10:06PM 0.4F	06:11AM 0.4E 10:53AM 0.4F 06:23PM 0.3E 10:53PM 0.4F									

Disclaimer: These data are based upon the latest information available as of the date of your request, and may differ from the published tidal current tables.



Station ID: ACT1406 Depth: 10 feet  
 Source: NOAA/NOS/CO-OPS  
 Station Type: Subordinate  
 Time Zone: LST/LDT  
 Ref Station: BOS1111 Depth: 8 feet  
 Ref Station Name: Boston Harbor (Deer Island Light)  
 SBF:-00:18 MFC:-01:49 SBE:-00:30 MEC:-01:43  
 Flood Speed Ratio: \*0.3 Ebb Speed Ratio: \*0.3

NOAA Tidal Current Predictions

**Moon Head, 0.4 n.mi. east of, 2021**

Latitude: 42.3063° N Longitude: 70.9788° W

Mean Flood Dir. 259° (T) Mean Ebb Dir. 80° (T)

Times and speeds of maximum and minimum current, in knots

July				August				September															
Slack	Maximum	Slack	Maximum	Slack	Maximum	Slack	Maximum	Slack	Maximum	Slack	Maximum	Slack	Maximum										
h m	h m	knots	h m	h m	knots	h m	h m	knots	h m	h m	knots	h m	h m	knots									
<b>1</b> Th ●	04:06AM 07:29AM 11:12AM 04:48PM 11:42PM	07:29AM 12:47PM 07:47PM	-0.3E -0.3F -0.3E	<b>16</b> F	03:30AM 10:30AM 04:00PM 11:00PM	06:11AM 11:11AM 06:41PM 11:41PM	-0.4E 0.4F -0.3E 0.4F	<b>1</b> Su	12:12AM 06:30AM 12:18PM 05:54PM	01:41AM 07:53AM 01:59PM 09:11PM	0.3F -0.2E 0.3F -0.3E	<b>16</b> M	05:00AM 11:48AM 05:18PM	12:17AM 07:29AM 12:35PM 08:17PM	0.4F -0.3E 0.4F -0.4E	<b>1</b> W	01:24AM 06:48AM 01:24PM 07:06PM	03:11AM 08:35AM 03:17PM 10:29PM	0.2F -0.2E 0.2F -0.3E	<b>16</b> Th	01:30AM 06:54AM 01:36PM 07:06PM	02:29AM 09:59AM 02:23PM 10:47PM	0.3F -0.3E 0.4F -0.4E
<b>2</b> F	05:06AM 12:06PM 05:42PM	01:11AM 01:41PM 08:47PM	0.3F 0.3F -0.3E	<b>17</b> Sa ●	04:24AM 11:18AM 04:54PM	06:59AM 12:05PM 07:35PM	-0.3E 0.4F -0.3E	<b>2</b> M	01:12AM 06:30AM 01:12PM 06:48PM	02:41AM 08:35AM 02:59PM 10:17PM	0.3F -0.2E 0.3F -0.3E	<b>17</b> Tu	12:42AM 06:06AM 12:48PM 06:18PM	01:23AM 08:29AM 01:35PM 09:47PM	0.4F -0.3E 0.4F -0.4E	<b>2</b> Th	02:18AM 07:42AM 02:12PM 07:54PM	04:05AM 10:05AM 04:11PM 11:05PM	0.3F -0.2E 0.2F -0.3E	<b>17</b> F	02:30AM 08:00AM 02:36PM 08:06PM	03:53AM 11:05AM 03:53PM 11:41PM	0.4F 0.4F 0.3F -0.4E
<b>3</b> Sa	12:42AM 06:06AM 01:00PM 06:36PM	02:11AM 09:17AM 02:41PM 09:59PM	0.3F -0.3E 0.3F -0.3E	<b>18</b> Su	12:00AM 05:24AM 12:18PM 05:48PM	12:41AM 07:47AM 01:05PM 08:35PM	0.4F -0.3E 0.4F -0.3E	<b>3</b> Tu	02:00AM 07:24AM 02:00PM 07:42PM	03:41AM 10:11AM 03:59PM 11:05PM	0.3F -0.2E 0.3F -0.3E	<b>18</b> W	01:48AM 07:12AM 01:54PM 07:24PM	02:35AM 10:05AM 02:41PM 10:59PM	0.4F -0.3E 0.4F -0.4E	<b>3</b> F	03:00AM 08:36AM 03:06PM 08:42PM	04:53AM 10:59AM 04:47PM 11:41PM	0.3F -0.3E 0.3F -0.3E	<b>18</b> Sa	03:30AM 09:00AM 03:36PM 09:12PM	04:53AM 11:59AM 04:59PM 10:12PM	0.4F -0.4E 0.4F -0.4E
<b>4</b> Su	01:42AM 07:06AM 01:54PM 07:30PM	03:17AM 10:17AM 03:35PM 10:53PM	0.3F -0.3E 0.3F -0.3E	<b>19</b> M	01:00AM 06:24AM 01:18PM 06:48PM	01:41AM 08:47AM 01:59PM 10:05PM	0.4F -0.3E 0.4F -0.4E	<b>4</b> W	02:54AM 08:12AM 02:48PM 08:30PM	04:35AM 10:53AM 04:47PM 11:41PM	0.3F -0.2E 0.3F -0.3E	<b>19</b> Th	02:48AM 08:12AM 02:54PM 08:24PM	03:59AM 11:11AM 03:59PM 11:53PM	0.4F -0.3E 0.4F -0.4E	<b>4</b> Sa	03:48AM 09:24AM 03:54PM 09:30PM	05:29AM 11:41AM 04:59PM	0.3F -0.3E 0.3F	<b>19</b> Su	04:24AM 10:00AM 04:36PM 10:12PM	12:29AM 05:41AM 12:53PM 05:53PM	-0.4E 0.4F -0.4E 0.4F
<b>5</b> M	02:36AM 07:54AM 02:36PM 08:12PM	04:11AM 11:05AM 04:29PM 11:35PM	0.3F 0.3F -0.3E -0.3E	<b>20</b> Tu	02:00AM 07:24AM 02:12PM 07:42PM	02:47AM 10:17AM 02:59PM 11:11PM	0.4F -0.3E 0.4F -0.4E	<b>5</b> Th	03:36AM 09:00AM 03:36PM 09:18PM	05:17AM 11:23AM 05:23PM	0.3F -0.3E 0.3F	<b>20</b> F	03:48AM 09:18AM 03:54PM 09:24PM	05:05AM 12:11PM 05:05PM	0.4F -0.4E 0.4F	<b>5</b> Su	04:30AM 10:12AM 04:42PM 10:12PM	12:11AM 05:53AM 12:23PM 05:29PM	-0.3E 0.3F -0.3E 0.3F	<b>20</b> M O	05:12AM 10:48AM 05:30PM 11:00PM	06:29AM 01:47PM 06:47PM	0.4F 0.4F -0.4E 0.4F
<b>6</b> Tu	03:24AM 08:42AM 03:24PM 09:00PM	04:59AM 11:35AM 05:11PM	0.3F -0.3E 0.3F	<b>21</b> W	03:00AM 08:24AM 03:12PM 08:42PM	04:05AM 11:17AM 04:11PM	0.4F -0.3E 0.4F	<b>6</b> F	04:24AM 09:54AM 04:24PM 10:00PM	05:59AM 12:05PM 05:41PM	0.3F -0.3E 0.3F	<b>21</b> Sa	04:42AM 10:18AM 04:54PM 10:24PM	12:53AM 07:47AM 01:11PM 05:59PM	-0.5E 0.4F -0.4E 0.4F	<b>6</b> M	05:12AM 10:54AM 05:30PM 10:54PM	06:11AM 01:11PM 06:11PM	0.4F -0.3E 0.4F	<b>21</b> Tu	06:00AM 11:36AM 06:24PM 11:48PM	02:17AM 07:23AM 02:41PM 07:41PM	-0.4E 0.4F -0.4E 0.4F
<b>7</b> W	04:12AM 09:30AM 04:12PM 09:48PM	12:17AM 05:41AM 11:59AM 05:47PM	-0.3E 0.3F -0.3E 0.3F	<b>22</b> Th	04:00AM 09:30AM 04:06PM 09:36PM	12:05AM 05:11AM 12:17PM 05:05PM	-0.4E 0.4F -0.3E 0.4F	<b>7</b> Sa	05:06AM 10:42AM 05:12PM 10:42PM	06:35AM 12:47PM 06:05PM	0.3F -0.3E 0.3F	<b>22</b> Su O	05:36AM 11:12AM 05:48PM 11:18PM	01:47AM 02:11PM 06:59PM	-0.5E 0.4F -0.4E 0.4F	<b>7</b> Tu ●	05:54AM 11:30AM 06:12PM 11:36PM	01:41AM 06:47AM 02:05PM 06:59PM	-0.4E 0.4F -0.4E 0.4F	<b>22</b> W	06:42AM 12:12PM 07:06PM	03:05AM 03:23PM 08:29PM	0.4F -0.4E 0.4F
<b>8</b> Th	05:00AM 10:24AM 04:54PM 10:36PM	12:53AM 06:29AM 12:35PM 06:17PM	-0.3E 0.3F -0.3E 0.3F	<b>23</b> F	05:00AM 10:30AM 05:06PM 10:36PM	01:05AM 07:05AM 06:05PM	-0.5E 0.4F -0.4E 0.4F	<b>8</b> Su ●	05:48AM 11:24AM 05:54PM 11:24PM	07:11AM 01:47PM 06:41PM	0.4F -0.3E 0.3F	<b>23</b> M	06:24AM 11:54AM 06:42PM	02:41AM 02:59PM 07:59PM	-0.5E 0.5F -0.4E 0.4F	<b>8</b> W	06:36AM 12:06PM 06:54PM	02:23AM 02:47PM 07:47PM	-0.4E 0.4F -0.4E 0.4F	<b>23</b> Th	07:20AM 12:54PM 07:54PM	03:41AM 03:59PM 09:11PM	-0.4E 0.4F -0.4E 0.4F
<b>9</b> F	05:36AM 11:06AM 05:36PM 11:18PM	01:35AM 07:11AM 01:17PM 06:41PM	-0.3E 0.3F -0.3E 0.3F	<b>24</b> Sa O	05:54AM 11:24AM 06:00PM 11:30PM	02:05AM 07:05AM 02:23PM 07:05PM	-0.5E 0.4F -0.4E 0.5F	<b>9</b> M	06:24AM 12:00PM 06:36PM	02:17AM 07:29AM 02:29PM 07:23PM	-0.4E 0.4F -0.4E 0.4F	<b>24</b> Tu	12:06AM 12:42PM 07:30PM	03:23AM 03:41PM 08:47PM	-0.5E 0.5F -0.4E 0.4F	<b>9</b> Th	12:18AM 07:18AM 12:48PM 07:42PM	02:59AM 08:11AM 03:23PM 08:29PM	-0.4E 0.5F -0.4E 0.5F	<b>24</b> F	01:12AM 08:06AM 01:36PM 08:42PM	04:11AM 09:23AM 04:11PM 09:47PM	-0.3E 0.4F -0.4E 0.4F
<b>10</b> Sa ●	06:18AM 11:48AM 06:18PM 11:54PM	02:17AM 07:53AM 02:11PM 07:11PM	-0.4E 0.3F -0.3E 0.3F	<b>25</b> Su	06:42AM 12:12PM 06:54PM	02:59AM 07:59AM 08:05PM	-0.5E 0.5F 0.5F	<b>10</b> Tu	12:00AM 07:06AM 12:42PM 07:18PM	02:53AM 08:05AM 03:11PM 08:05PM	-0.4E 0.4F -0.4E 0.4F	<b>25</b> W	12:54AM 07:54AM 01:24PM 08:18PM	04:05AM 09:11AM 02:39PM 09:29PM	-0.4E 0.4F -0.4E 0.4F	<b>10</b> F	01:00AM 08:00AM 01:24PM 08:30PM	03:35AM 08:47AM 04:05PM 09:17PM	-0.4E 0.5F -0.4E 0.5F	<b>25</b> Sa	02:00AM 08:48AM 02:18PM 09:24PM	04:29AM 09:41AM 05:17PM 10:23PM	-0.3E 0.4F -0.3E 0.3F
<b>11</b> Su	06:54AM 12:30PM 07:00PM	02:47AM 08:17AM 02:53PM 07:53PM	-0.4E 0.4F -0.3E 0.4F	<b>26</b> M	12:18AM 07:36AM 01:00PM 07:48PM	03:47AM 08:47AM 03:59PM 08:53PM	-0.5E 0.5F -0.4E 0.4F	<b>11</b> W	12:42AM 07:48AM 01:18PM 08:06PM	03:29AM 08:35AM 03:47PM 08:53PM	-0.4E 0.5F -0.4E 0.5F	<b>26</b> Th	01:42AM 08:36AM 02:06PM	04:47AM 09:47AM 10:05PM	-0.4E 0.4F -0.4E 0.4F	<b>11</b> Sa	01:48AM 08:48AM 02:12PM 09:24PM	04:17AM 09:35AM 04:53PM 10:05PM	-0.4E 0.5F -0.4E 0.5F	<b>26</b> Su	02:42AM 09:24AM 10:12PM	04:53AM 10:11AM 11:17PM	-0.3E 0.3F -0.3E 0.3F
<b>12</b> M	07:36AM 01:12PM 07:48PM	03:17AM 08:35AM 03:29PM 08:29PM	-0.4E 0.4F -0.4E 0.4F	<b>27</b> Tu	01:12AM 08:24AM 01:48PM 08:36PM	04:29AM 09:29AM 04:47PM 09:41PM	-0.4E 0.5F -0.4E 0.4F	<b>12</b> Th	01:24AM 08:30AM 02:00PM 08:54PM	03:59AM 09:17AM 04:29PM 09:35PM	-0.4E 0.5F -0.4E 0.5F	<b>27</b> F	02:24AM 09:18AM 02:48PM 09:54PM	05:29AM 10:23AM 05:59PM 10:59PM	-0.3E 0.4F -0.3E 0.3F	<b>12</b> Su	02:42AM 09:30AM 03:00PM 10:18PM	05:11AM 10:17AM 05:59PM 10:59PM	-0.4E 0.5F -0.4E 0.4F	<b>27</b> M	03:30AM 10:06AM 03:48PM 11:00PM	05:35AM 10:47AM 06:47PM	-0.2E 0.3F -0.3E
<b>13</b> Tu	01:12AM 08:18AM 01:54PM 08:30PM	03:47AM 09:05AM 04:11PM 09:11PM	-0.4E 0.4F -0.4E 0.4F	<b>28</b> W	02:00AM 09:06AM 02:36PM 09:30PM	05:23AM 10:11AM 05:41PM 10:23PM	-0.4E 0.4F -0.4E 0.4F	<b>13</b> F	02:12AM 09:12AM 02:42PM 09:42PM	04:41AM 09:59AM 05:23PM 10:23PM	-0.4E 0.5F -0.4E 0.4F	<b>28</b> Sa	03:12AM 03:36PM 10:42PM	06:05AM 06:47PM	-0.3E 0.3F -0.3E	<b>13</b> M ●	03:36AM 10:24AM 03:54PM 11:18PM	06:11AM 11:11AM 07:05PM	-0.3E 0.4F -0.4E	<b>28</b> Tu	04:18AM 10:54AM 04:36PM 11:48PM	12:41AM 11:35AM 07:23PM	0.2F 0.2F -0.3E
<b>14</b> W	01:54AM 08:54AM 02:36PM 09:18PM	04:29AM 09:41AM 04:53PM 09:53PM	-0.4E 0.4F -0.3E 0.4F	<b>29</b> Th	02:54AM 09:54AM 03:24PM 10:18PM	06:11AM 10:59AM 06:35PM 11:29PM	-0.3E 0.4F -0.3E 0.3F	<b>14</b> Sa	03:06AM 10:00AM 03:30PM 10:36PM	05:35AM 10:41AM 06:17PM 11:17PM	-0.4E 0.4F -0.4E 0.4F	<b>29</b> Su	04:00AM 10:42AM 04:24PM 11:36PM	12:11AM 06:35AM 11:59AM 07:29PM	0.3F -0.2E 0.3F -0.3E	<b>14</b> Tu ●	04:36AM 11:24AM 04:54PM	12:05AM 07:11AM 08:11PM	0.4F -0.3E -0.4E	<b>29</b> W O	05:18AM 11:48AM 05:30PM	01:35AM 07:11AM 08:05PM	0.2F 0.2E -0.3E
<b>15</b> Th	02:36AM 09:42AM 03:18PM 10:06PM	05:17AM 10:23AM 05:53PM 10:41PM	-0.4E 0.4F -0.3E 0.4F	<b>30</b> F	03:42AM 10:36AM 04:12PM 11:12PM	06:53AM 12:05PM 07:17PM	-0.3E 0.3F -0.3E	<b>15</b> Su ●	04:00AM 10:48AM 04:18PM 11:36PM	06:35AM 11:41AM 07:11PM	-0.3E 0.4F -0.4E	<b>30</b> M O	04:54AM 11:30AM 05:18PM	01:11AM 07:05AM 08:05PM	0.3F -0.2E -0.3E	<b>15</b> W	12:24AM 05:48AM 12:30PM 06:00PM	01:11AM 08:17AM 01:17PM 09:35PM	0.4F -0.3E 0.4F -0.4E	<b>30</b> Th	12:48AM 06:18AM 12:48PM 06:24PM	02:29AM 08:05AM 01:17PM 09:11PM	0.2F 0.2E -0.2E -0.3E
<b>31</b> Sa ●	04:36AM 11:24AM 05:00PM	12:47AM 07:29AM 01:05PM 08:05PM	0.3F -0.3E 0.3F -0.3E					<b>31</b> Tu	12:30AM 05:54AM 12:30PM 06:12PM	02:11AM 07:41AM 01:41PM 09:23PM	0.2F -0.2E 0.2F -0.3E												

Disclaimer: These data are based upon the latest information available as of the date of your request, and may differ from the published tidal current tables.

Generated on: Mon Mar 29 17:48:45 UTC 2021





Station ID: ACT1406 Depth: 10 feet  
 Source: NOAA/NOS/CO-OPS  
 Station Type: Subordinate  
 Time Zone: LST/LDT  
 Ref Station: BOS1111 Depth: 8 feet  
 Ref Station Name: Boston Harbor (Deer Island Light)  
 SBF:-00:18 MFC:-01:49 SBE:-00:30 MEC:-01:43  
 Flood Speed Ratio: \*0.3 Ebb Speed Ratio: \*0.3

NOAA Tidal Current Predictions

Moon Head, 0.4 n.mi. east of, 2021

Latitude: 42.3063° N Longitude: 70.9788° W

Mean Flood Dir. 259° (T) Mean Ebb Dir. 80° (T)

Times and speeds of maximum and minimum current, in knots

October				November				December					
Slack	Maximum	Slack	Maximum	Slack	Maximum	Slack	Maximum	Slack	Maximum	Slack	Maximum	Slack	Maximum
h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
	knots		knots		knots		knots		knots		knots		knots
<b>1</b> F	01:36AM 0.3F 07:12AM -0.2E 01:42PM 0.2F 07:18PM -0.3E	<b>16</b> Sa	02:06AM 0.4F 08:36AM -0.4E 02:24PM 0.4F 07:54PM -0.4E	<b>1</b> M	02:30AM 0.3F 08:12AM -0.3E 02:48PM 0.3F 08:18PM -0.3E	<b>16</b> Tu	02:30AM 0.4F 08:00AM -0.4E 03:00PM 0.4F 08:24PM -0.4E	<b>1</b> W	01:42AM 0.4F 07:18AM -0.4E 02:12PM 0.4F 07:42PM -0.4E	<b>16</b> Th	02:42AM 0.4F 08:18AM -0.4E 03:24PM 0.4F 08:48PM -0.3E		
<b>2</b> Sa	02:24AM 0.3F 08:06AM -0.3E 02:30PM 0.2F 08:06PM -0.3E	<b>17</b> Su	03:06AM 0.4F 08:36AM -0.4E 03:24PM 0.4F 08:54PM -0.4E	<b>2</b> Tu	03:18AM 0.4F 08:54AM -0.4E 03:42PM 0.4F 09:06PM -0.4E	<b>17</b> W	03:18AM 0.4F 08:48AM -0.4E 03:48PM 0.4F 09:18PM -0.4E	<b>2</b> Th	02:30AM 0.4F 08:06AM -0.4E 03:12PM 0.4F 08:36PM -0.4E	<b>17</b> F	03:30AM 0.3F 09:06AM -0.4E 04:12PM 0.4F 09:36PM -0.4E		
<b>3</b> Su	03:06AM 0.3F 08:24AM -0.3E 03:24PM 0.3F 08:54PM -0.3E	<b>18</b> M	03:54AM 12:11AM -0.4E 09:36AM 05:23AM 0.4F 04:18PM 12:35PM -0.4E 09:54PM 05:41PM 0.4F	<b>3</b> W	04:06AM 0.4F 09:42AM 12:17PM -0.4E 04:36PM 05:23PM 0.4F 10:00PM -0.4E	<b>18</b> Th	04:00AM 12:17AM -0.3E 09:36AM 05:29AM 0.4F 04:36PM 12:47PM -0.4E 10:00PM 05:59PM 0.4F	<b>3</b> F	03:24AM 0.4F 08:54AM -0.4E 04:06PM 04:53PM 0.4F 09:30PM 11:59PM -0.4E	<b>18</b> Sa	04:12AM 12:23AM -0.3E 09:48AM 05:47AM 0.3F 04:54PM 10:18PM -0.4E 06:23PM 0.4F		
<b>4</b> M	03:54AM 0.3F 09:36AM -0.3E 04:12PM 0.3F 09:42PM -0.3E	<b>19</b> Tu	04:48AM 12:59AM -0.4E 10:24AM 06:05AM 0.4F 05:12PM 12:35PM -0.4E 10:42PM 06:29PM 0.4F	<b>4</b> Th	04:54AM 12:29AM -0.4E 10:24AM 05:41AM 0.4F 05:24PM 11:11PM -0.4E 10:48PM 06:11PM 0.4F	<b>19</b> F	04:42AM 01:05AM -0.3E 10:18AM 06:17AM 0.4F 05:24PM 12:35PM -0.4E 10:42PM 06:53PM 0.4F	<b>4</b> Sa	04:12AM 0.5F 09:42AM 12:53PM -0.4E 04:54PM 05:47PM 0.5F 10:18PM -0.4E	<b>19</b> Su	04:54AM 01:05AM -0.3E 10:30AM 06:29AM 0.3F 05:36PM 11:00PM -0.4E 07:11PM 0.4F		
<b>5</b> Tu	04:36AM 12:17AM -0.4E 10:18AM 05:35AM 0.4F 05:00PM 12:41PM -0.4E 10:30PM 05:41PM 0.4F	<b>20</b> W	05:30AM 01:53AM -0.4E 11:06AM 06:53AM 0.4F 06:00PM 02:17PM -0.4E 11:24PM 07:23PM 0.4F	<b>5</b> F	05:36AM 01:23AM -0.4E 11:06AM 06:29AM 0.5F 06:12PM 02:05PM -0.4E 11:36PM 07:05PM 0.5F	<b>20</b> Sa	05:24AM 01:41AM -0.3E 11:54AM 06:59AM 0.4F 06:06PM 02:11PM -0.4E 11:24PM 07:35PM 0.4F	<b>5</b> Su	05:06AM 01:05AM -0.4E 11:06AM 05:53AM 0.5F 05:30PM 01:53PM -0.5E 11:12PM 06:47PM 0.5F	<b>20</b> M	05:36AM 01:29AM -0.3E 11:06AM 07:05AM 0.3F 06:18PM 02:17PM -0.4E 11:42PM 07:47PM 0.4F		
<b>6</b> W	05:24AM 12:59AM -0.4E 11:00AM 06:11AM 0.4F 05:48PM 01:35PM -0.4E 11:12PM 06:29PM 0.4F	<b>21</b> Th	06:12AM 02:35AM -0.4E 11:48AM 07:47AM 0.4F 06:48PM 02:59PM -0.4E 08:11PM 08:11PM 0.4F	<b>6</b> Sa	06:24AM 02:17AM -0.4E 11:48AM 07:17AM 0.5F 07:06PM 02:59PM -0.4E 07:59PM 05:5F	<b>21</b> Su	06:00AM 02:05AM -0.3E 11:36AM 07:29AM 0.4F 06:48PM 02:47PM -0.4E 08:05PM 0.4F	<b>6</b> M	05:54AM 01:59AM -0.4E 11:18AM 06:47AM 0.5F 06:42PM 02:41PM -0.5E 07:35PM 0.5F	<b>21</b> Tu	06:18AM 02:05AM -0.3E 11:48AM 07:23AM 0.3F 06:54PM 02:41PM -0.4E 08:11PM 0.4F		
<b>7</b> Th	06:06AM 01:53AM -0.4E 11:36AM 06:53AM 0.5F 06:30PM 02:23PM -0.4E 11:54PM 07:23PM 0.5F	<b>22</b> F	12:06AM 03:11AM -0.3E 06:54AM 08:23AM 0.4F 12:24PM 03:41PM -0.4E 07:30PM 08:53PM 0.4F	<b>7</b> Su	12:24AM 02:05AM -0.4E 06:12AM 07:05AM 0.5F 11:36AM 02:47PM -0.5E 06:54PM 07:47PM 0.5F	<b>22</b> M	12:06AM 02:29AM -0.3E 06:42AM 07:47AM 0.4F 12:18PM 03:05PM -0.3E 07:24PM 08:35PM 0.3F	<b>7</b> Tu	12:00AM 02:47AM -0.4E 06:48AM 07:41AM 0.5F 12:12PM 03:29PM -0.5E 07:36PM 08:23PM 0.5F	<b>22</b> W	12:24AM 02:35AM -0.3E 07:00AM 07:47AM 0.4F 12:24PM 03:05PM -0.4E 07:36PM 08:23PM 0.4F		
<b>8</b> F	06:48AM 02:41AM -0.4E 12:18PM 07:41AM 0.5F 07:24PM 03:11PM -0.4E 08:11PM 05:5F	<b>23</b> Sa	12:48AM 03:35AM -0.3E 07:36AM 08:59AM 0.4F 01:06PM 04:11PM -0.4E 08:12PM 09:29PM 0.4F	<b>8</b> M	12:12AM 02:47AM -0.4E 07:00AM 07:53AM 0.5F 12:24PM 03:35PM -0.4E 07:48PM 08:35PM 0.5F	<b>23</b> Tu	12:48AM 02:53AM -0.3E 07:24AM 08:11AM 0.3F 01:00PM 03:35PM -0.3E 08:06PM 08:53PM 0.3F	<b>8</b> W	12:54AM 03:41AM -0.4E 07:42AM 08:29AM 0.5F 01:06PM 04:29PM -0.4E 08:24PM 09:17PM 0.4F	<b>23</b> Th	01:06AM 03:17AM -0.3E 07:42AM 08:17AM 0.4F 01:06PM 03:41PM -0.3E 08:12PM 08:53PM 0.4F		
<b>9</b> Sa	12:42AM 03:17AM -0.4E 07:36AM 08:29AM 0.5F 01:00PM 03:47PM -0.4E 08:12PM 08:59PM 0.5F	<b>24</b> Su	01:30AM 03:53AM -0.3E 08:12AM 09:17AM 0.4F 01:48PM 04:41PM -0.3E 08:54PM 09:59PM 0.3F	<b>9</b> Tu	01:06AM 03:41AM -0.3E 07:54AM 08:41AM 0.5F 01:18PM 04:41PM -0.4E 08:42PM 09:23PM 0.4F	<b>24</b> W	01:36AM 03:35AM -0.3E 08:06AM 08:41AM 0.3F 01:42PM 04:17PM -0.3E 08:48PM 09:23PM 0.3F	<b>9</b> Th	01:54AM 04:47AM -0.3E 08:36AM 09:17AM 0.4F 02:00PM 05:35PM -0.4E 09:18PM 10:17PM 0.4F	<b>24</b> F	01:54AM 03:59AM -0.3E 08:24AM 08:59AM 0.3F 01:54PM 04:29PM -0.3E 08:54PM 09:29PM 0.4F		
<b>10</b> Su	01:30AM 03:59AM -0.4E 08:24AM 09:11AM 0.5F 01:42PM 04:41PM -0.4E 09:06PM 09:47PM 0.5F	<b>25</b> M	02:12AM 04:17AM -0.3E 08:54AM 09:35AM 0.3F 02:30PM 05:17PM -0.3E 09:36PM 10:23PM 0.3F	<b>10</b> W	02:06AM 04:53AM -0.3E 08:48AM 09:35AM 0.4F 02:18PM 05:47PM -0.4E 09:42PM 10:35PM 0.4F	<b>25</b> Th	02:24AM 04:29AM -0.3E 08:48AM 09:23AM 0.3F 02:24PM 05:11PM -0.3E 09:30PM 10:05PM 0.3F	<b>10</b> F	02:48AM 05:53AM -0.3E 09:36AM 10:23AM 0.4F 03:00PM 06:29PM -0.4E 10:12PM 11:35PM 0.4F	<b>25</b> Sa	02:36AM 04:59AM -0.3E 09:12AM 09:47AM 0.3F 02:36PM 05:17PM -0.3E 09:36PM 10:17PM 0.3F		
<b>11</b> M	02:24AM 04:53AM -0.4E 09:12AM 09:59AM 0.5F 02:36PM 05:53PM -0.4E 10:00PM 10:41PM 0.4F	<b>26</b> Tu	03:00AM 04:59AM -0.3E 09:36AM 10:11AM 0.3F 03:12PM 05:59PM -0.3E 10:18PM 11:05PM 0.3F	<b>11</b> Th	03:06AM 05:59AM -0.3E 09:48AM 10:41AM 0.4F 03:18PM 06:47PM -0.4E 10:42PM 11:53PM 0.4F	<b>26</b> F	03:12AM 05:23AM -0.3E 09:42AM 10:11AM 0.3F 03:12PM 05:53PM -0.3E 10:18PM 11:05PM 0.3F	<b>11</b> Sa	03:48AM 06:47AM -0.3E 10:36AM 11:53AM 0.3F 04:06PM 07:23PM -0.3E 11:12PM -0.3E	<b>26</b> Su	03:24AM 05:47AM -0.3E 10:00AM 10:41AM 0.3F 03:30PM 06:05PM -0.3E 10:30PM 11:11PM 0.3F		
<b>12</b> Tu	03:18AM 05:59AM -0.3E 10:06AM 10:47AM 0.4F 03:30PM 06:59PM -0.4E 11:00PM 11:47PM 0.4F	<b>27</b> W	03:48AM 05:59AM -0.3E 10:18AM 10:53AM 0.3F 04:00PM 06:47PM -0.3E 11:06PM -0.3E	<b>12</b> F	04:12AM 07:05AM -0.3E 10:54AM 11:59AM 0.3F 04:24PM 07:53PM -0.4E 11:42PM -0.4E	<b>27</b> Sa	04:06AM 06:17AM -0.3E 10:36AM 11:11AM 0.3F 04:06PM 06:35PM -0.3E 11:12PM 11:53PM 0.3F	<b>12</b> Su	04:48AM 12:41AM 0.3F 11:42AM 07:53AM -0.3E 05:12PM 12:59PM 0.3F 08:29PM -0.3E	<b>27</b> Mo	04:12AM 06:35AM -0.3E 11:00AM 11:35AM 0.3F 04:24PM 06:47PM -0.3E 11:24PM -0.3E		
<b>13</b> W	04:24AM 07:05AM -0.3E 11:06AM 11:53AM 0.4F 04:30PM 07:59PM -0.4E	<b>28</b> Th	04:42AM 12:35AM 0.2F 11:12AM 11:47AM 0.2F 04:48PM 07:29PM -0.3E	<b>13</b> Sa	05:18AM 01:05AM 0.4F 12:00PM 08:17AM -0.3E 05:36PM 01:17PM 0.3F 09:05PM -0.4E	<b>28</b> Su	04:54AM 06:59AM -0.3E 11:30AM 12:05PM 0.3F 05:00PM 07:29PM -0.3E	<b>13</b> M	12:12AM 01:41AM 0.3F 05:48AM 09:05AM -0.3E 12:42PM 02:11PM 0.3F 06:12PM 09:29PM -0.3E	<b>28</b> Tu	05:00AM 12:05AM -0.3E 12:00PM 12:35PM 0.3F 05:24PM 07:47PM -0.3E		
<b>14</b> Th	12:06AM 01:05AM 0.4F 05:30AM 08:17AM -0.3E 12:12PM 01:05PM 0.4F 05:42PM 09:17PM -0.4E	<b>29</b> F	12:00AM 01:05AM 0.2F 05:42AM 07:41AM -0.3E 12:12PM 12:47PM 0.2F 05:48PM 08:11PM -0.3E	<b>14</b> Su	12:42AM 02:11AM 0.4F 06:18AM 09:29AM -0.4E 01:06PM 02:29PM 0.3F 06:36PM 09:59PM -0.4E	<b>29</b> M	12:00AM 12:41AM 0.3F 05:48AM 08:05AM -0.3E 12:30PM 12:59PM 0.3F 05:54PM 08:29PM -0.3E	<b>14</b> Tu	01:06AM 02:41AM 0.3F 06:42AM 09:59AM -0.4E 01:42PM 03:11PM 0.3F 07:06PM 10:17PM -0.3E	<b>29</b> W	12:18AM 12:59AM 0.4F 05:54AM 08:41AM -0.3E 12:54PM 01:35PM 0.4F 06:18PM 08:59PM -0.3E		
<b>15</b> F	01:06AM 02:17AM 0.3F 06:42AM 09:41AM -0.3E 01:18PM 02:23PM 0.3F 06:48PM 10:29PM -0.4E	<b>30</b> Sa	12:54AM 01:47AM 0.3F 06:36AM 08:35AM -0.3E 01:06PM 01:35PM 0.3F 06:42PM 09:17PM -0.3E	<b>15</b> M	01:36AM 03:11AM 0.4F 07:12AM 10:23AM -0.4E 02:06PM 03:29PM 0.4F 07:30PM 10:47PM -0.4E	<b>30</b> Tu	12:54AM 01:35AM 0.3F 06:30AM 09:17AM -0.3E 01:24PM 01:59PM 0.3F 06:48PM 09:29PM -0.3E	<b>15</b> W	01:54AM 03:35AM 0.3F 07:30AM 10:47AM -0.4E 02:36PM 04:05PM 0.3F 07:54PM 10:59PM -0.3E	<b>30</b> Th	01:12AM 01:53AM 0.4F 06:42AM 09:47AM -0.4E 01:54PM 02:41PM 0.4F 07:18PM 09:59PM -0.3E		
		<b>31</b> Su	01:42AM 02:35AM 0.3F 07:30AM 09:53AM -0.3E 02:00PM 02:35PM 0.3F 07:30PM 10:23PM -0.3E							<b>31</b> F	02:00AM 02:53AM 0.4F 07:30AM 10:41AM -0.4E 02:48PM 03:47PM 0.4F 08:12PM 10:11PM -0.3E		

Disclaimer: These data are based upon the latest information available as of the date of your request, and may differ from the published tidal current tables.