



# Navigation Impact Report

## Fairhaven – New Bedford Bridge

over the Acushnet River

F-01-002/N-06-001 (3PF)

Project No. 612557

New Bedford, MA



Final Draft – September 2023

Prepared by:



Fairhaven – New Bedford  
Reconstruction Project  
Navigation Impact Report  
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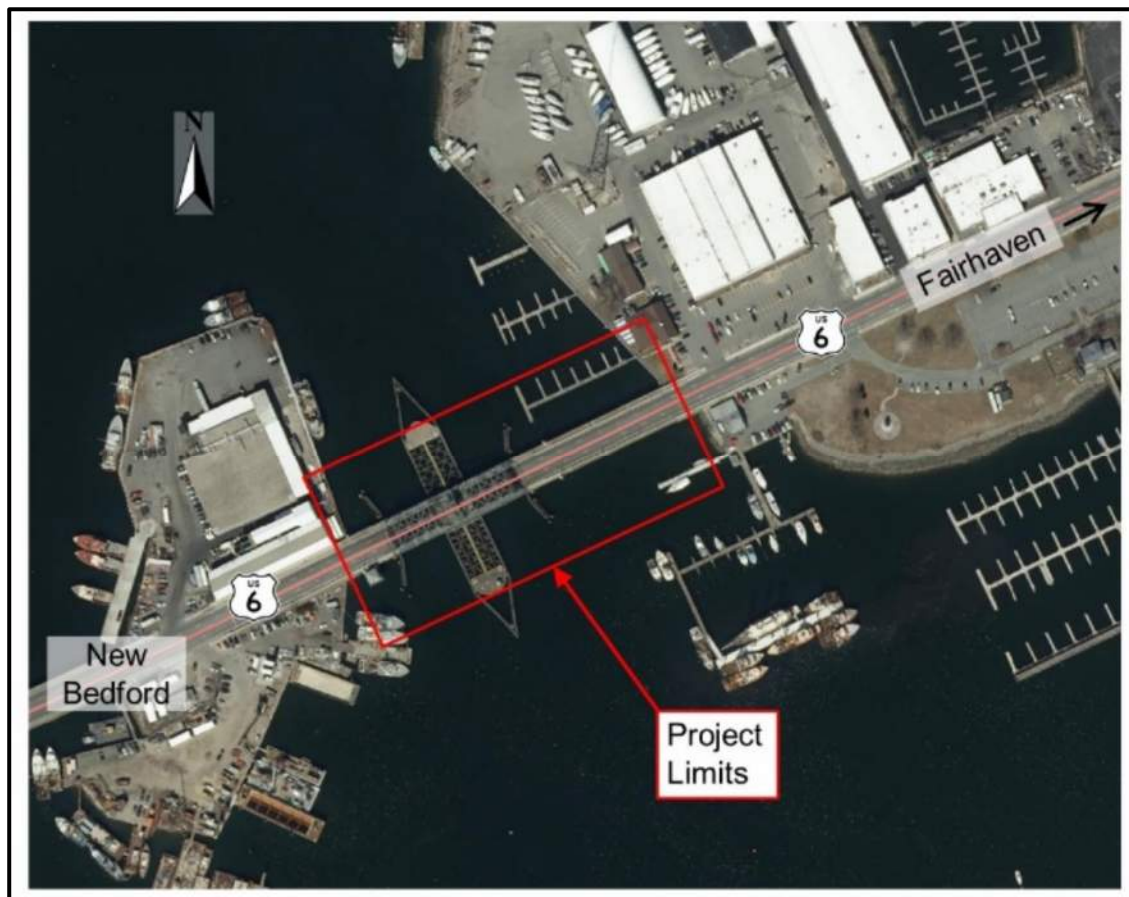
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## **1.0 Executive Summary**

This Navigation Impact Report is prepared for the U.S. Coast Guard for the purpose obtaining a Preliminary Navigation Clearance Determination which would set forth the minimum horizontal and vertical clearances of a replacement bridge in order for MassDOT to obtain a Coast Guard Bridge Permit. The project includes the movable span and approaches as shown below, (Figure 1).

The Fairhaven – New Bedford (FH-NB) Bridge is a four-lane movable span, swing bridge on US Route 6 (Grand Army of the Republic Highway), between County Street in the City of New Bedford and Adams Street in the Town of Fairhaven. The existing Fairhaven – New Bedford Bridge was completed in 1903 and is currently classified as functionally obsolete. The US Route 6 harbor crossing is actually a system of three bridges that connect the mainland across two mid-harbor islands (Fish Island and Pope’s Island). The center of the three bridges consists of a moveable swing-span with fixed approach spans (Figure 1) that allows boats to pass through into the northern harbor area while the east and west spans are entirely fixed. The swing span is supported by a central pivot pier and the end rest piers. The bridge divides the harbor into two areas, the lower harbor and the upper or northern harbor (Figure 2). Approximately 1 mile north of the New Bedford-Fairhaven Bridge is a pair of fixed bridges which carry I-195 over the Acushnet River. Approximately one mile to the south is the hurricane barrier with an opening of 150 feet.



*Figure 1 Project Limits*

The existing moveable bridge is a constraint for larger ships accessing the northern waterfront land within the Designated Port Area of New Bedford Harbor. Vessels are limited by the bridge's 95-foot swing span navigational width on either side of the central support pier. To navigate through the bridge, larger commercial vessels require pilotage and tug fees to deal with the navigational constraints caused by the bridge, shipping channel, and turning basin. MassDOT Yearly Drawbridge Reports for past five years recorded at least 32% and as much as 56% of the openings involved a tow boat (tug). Development potential in the North Harbor (i.e., the portion of New Bedford Harbor north of US Route 6), is limited by the need to continue dependable operations of established, scheduled and on-call openings of bridge and the size of vessels that can access this area of the port.

Several available properties for redevelopment have recently been purchased and plans to expand existing maritime uses within the Designated Port Area have been approved. Most notably is the Maritime North Terminal project which will create an additional 240,000 sq ft (5.5 acres) of terminal space, a -23 ft Mean Low Water berth and 660 linear feet of berthing space in the upper harbor. A contract to construct a filled bulkhead with 116,000 cu. yd. of beneficial reused dredged materials and 52,000 cu. yd. of imported material was awarded in March 2022. Final buildout will provide approximately 900 feet of bulkhead/berthing space. Also in March 2022, Cannon Street Holdings announced it will develop a 30-acre site around the former Sprague-Eversource site into a terminal and logistic base for offshore wind construction. The commercial vessels related to offshore wind are Service Operational Vessels (SOV) with length of 270-295 ft, a maximum beam of 57-63 ft and a draft ranging from 18 ft to 20 ft. and Crew Transfer Vehicles (CTV's) with length of 88.5 ft maximum beam of 29.5 ft and a draft ranging from 5 ft to 7 ft. There are also commercial barges that are unable to navigate the bridge due to the current width constraints.

The current bridge has a vertical under clearance of nine feet under west fixed span between New Bedford and Fish Island and a minimum clearance of six feet at movable span, both at high tide. Due to the limited vertical under clearance, the majority of vessels, including recreational vessels, require the bridge to open to pass through the channel.

The average time to open and close the bridge varies and is based on the marine traffic transit time, the number of transiting vessels and the time requirement to clear pedestrians and vehicles from the movable span before it can open to marine traffic. The average bridge operating cycle is between 12.5 and 22.5 minutes. This compares to 7.5 minutes if the bridge was just opened and closed without having to wait for vehicular, pedestrian, or marine traffic. In accordance with USCG Drawbridge Operations 33 CFR 117.585, the FH-NB bridge opens hourly from 6 am to 6:15 pm. The remainder of each day the bridge is open on demand. This schedule results in 4,745 planned openings per year.

Over the past 50 years, the New Bedford-Fairhaven Bridge has been either repaired or rehabilitated approximately on a 12-year cycle. Based on similar bridges, this repair history is typical of movable bridges located over tidal waterways. The Corridor Study prepared in 2015 stated the bridge can be maintained in a reliable operating state over the next 50 years. However,

the costs will increase as more elements of the structure deteriorate. The most recent bridge inspections conducted in May 2021 identified needed repairs to south truss as well as other minor deficiencies in steel stringers, floor beams, truss members and rotational structures due to corrosion and impact damage. To maintain a state of reliable operation, the current level of maintenance currently performed needs to be maintained or increased to address on-going wear and tear on aging mechanical equipment and specific structural, mechanical, and electrical repairs will need to be implemented. The superstructure truss is a pin and eye-bar design (obsolete) that will continue to require close monitoring and repair of the pin/eye-bar connections. The 2021 NBIS inspection results indicated that the superstructure condition varies between seven (very good) and five (fair). The mechanical system was rehabilitated and is in good condition (rated as a seven), with the exception of the tread plate, and selected rollers within the drum girder system. The electrical system was also rehabilitated and is functioning well except for some limit switch failures. MassDOT is progressing the project design and permitting targeting an advertising date in 2027.

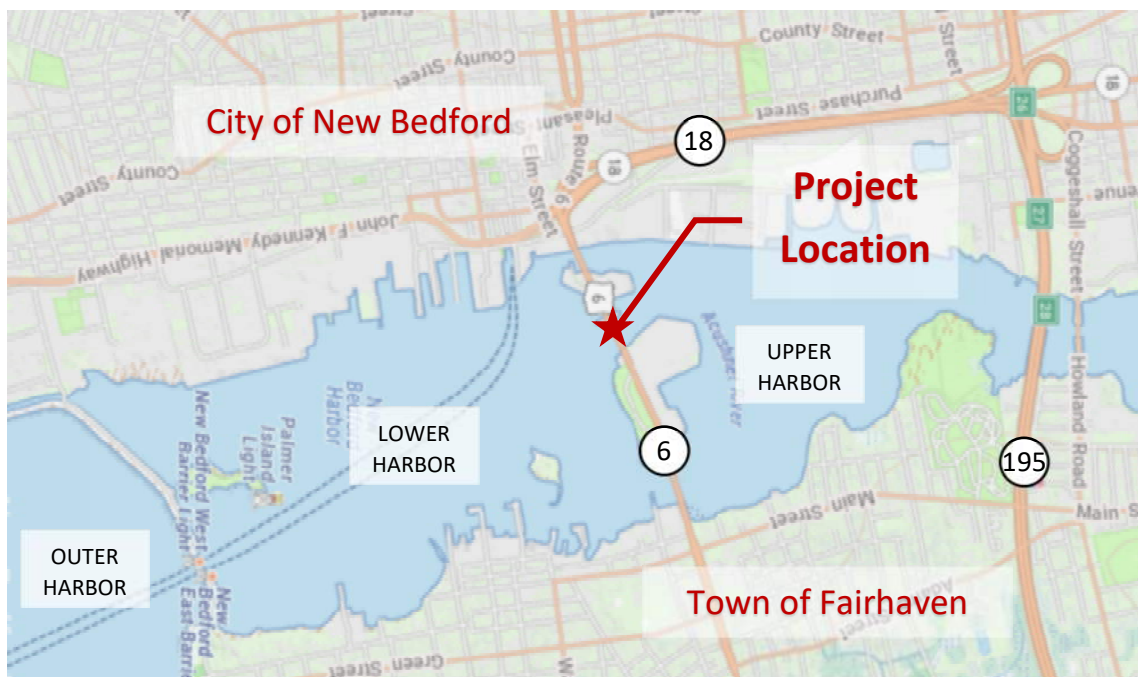


Figure 2 Project Location





*Figure 3 NB FH Bridge in Closed Position*

Modjeski and Masters has been tasked by MassDOT to perform a Navigation Impact Report of the Acushnet River at the existing FH-NB Bridge as part of the FH-NB reconstruction project. This study obtained and analyzed information related to present and future navigation uses and needs for the purposes of developing and evaluating alternatives for the new bridge. The data provided input into navigational considerations including vertical clearance over the water, horizontal clearance and bridge and channel alignment.

Data was collected from multiple sources including marinas, commercial users, contractors, federal agencies and local municipal employees.

General findings of the study include:

- Most frequent users are fishing vessels, tug boats transporting construction materials and equipment, towed vessels and pleasure crafts in said order.
- It was noted by multiple users that passage through the bridge can be difficult due to the limited horizontal clearance.
- Offshore wind suppliers are utilizing New Bedford harbor as staging areas to supply offshore construction platforms using standard Service Operations Vessels (SOV) based at locations in the South Harbor. The SOVs are too large to utilize the existing bridge navigational opening to access the North Harbor. They will use berths in the North Harbor for Crew Transfer Vessels (CTV) to transfer personnel and materials to offshore construction sites and future operations and maintenance activities. Previously cited need for extraordinary vertical clearance for offshore wind equipment is no longer a concern.

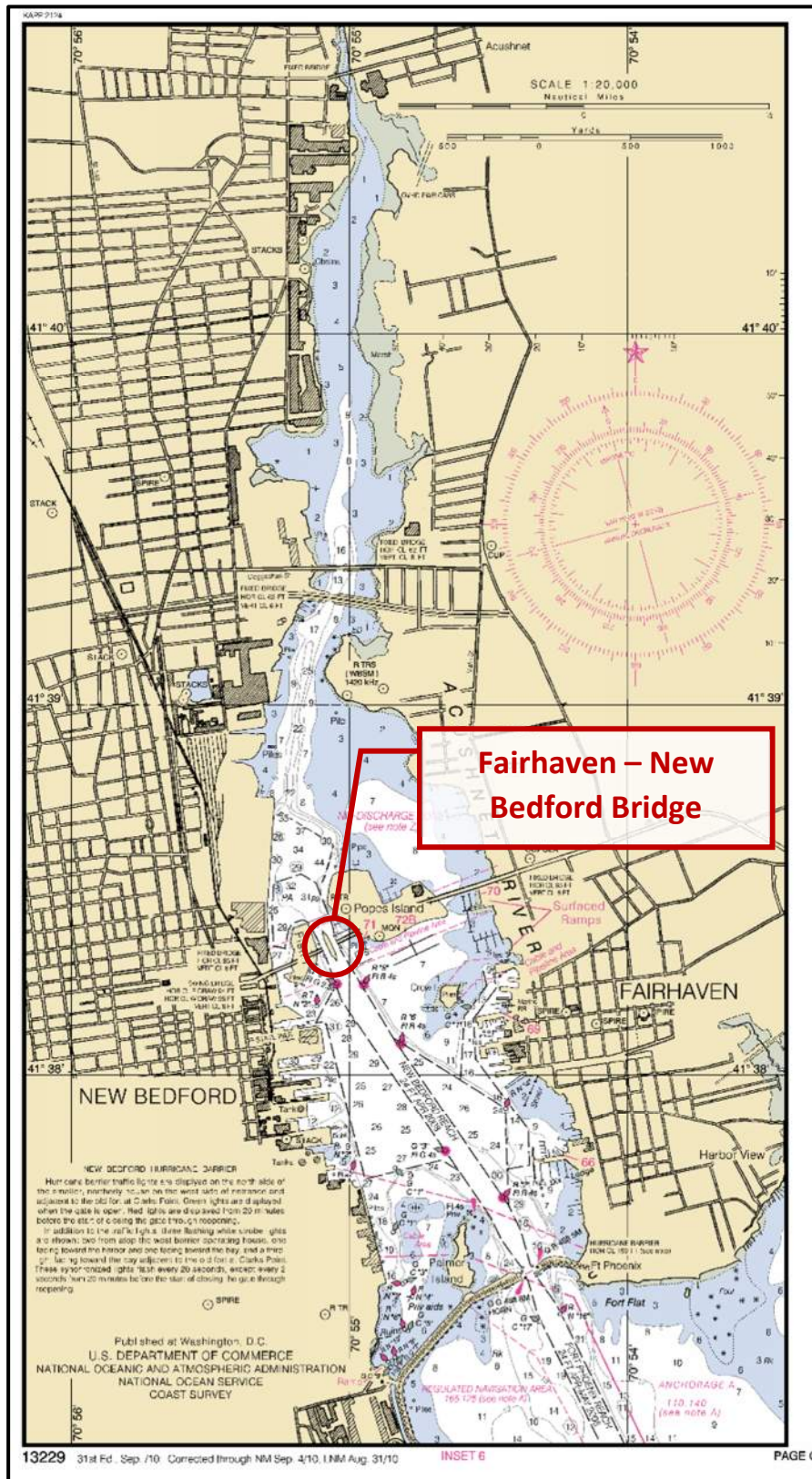
- Horizontal clearances cited in the Scoping Report remain important to New Bedford Port Authority for current and future uses.
- North Terminal Development Project will dredge the North harbor to elevation minus 23 feet alongside the newly constructed bulkhead.

Comments received from New Bedford Port Authority, community leaders and vested harbor users that have been taken into consideration as part of the preliminary navigational clearance request include:

- If the bridge is to be replaced, it is recommended that the horizontal clearance of the navigable channel be increased to 260 feet which exceeds the combined width of the existing navigation spans of the existing bridge, approximately 190 ft and exceed the hurricane barrier opening of 150 ft. The increased channel width would make passage easier and faster for recreational and commercial users.
- Selecting a bridge type with shortest duration to open and close would greatly benefit commercial and recreational users.
- Removing the center pier will reduce risk for vessel impacts.
- Bridge is in the center of harbor and between two communities. Selecting a bridge type with shortest construction schedule will minimize impact to commercial fisheries, terminals, and marinas on islands connected by bridge.
- Length of construction schedule should be as short as possible. The bridge also carries vehicular traffic of US 6 highway and is primary route for emergency service vehicles.
- The MassDOT is seeking a new bridge with greater horizontal clearance, a minimum of 260 feet to meet or exceed the existing width of the combined spans and the majority of the navigable channel. The harbor navigation channel is approximately 150 ft from opening at the hurricane barrier and widens at the existing bridge to facilitate the two navigation channels. An increase in available channel width at the bridge would make passage easier and faster for recreational and commercial users. A required minimum vertical clearance in the open position of 138 ft is requested for the proposed lift span option. 138 ft provides for 135 ft of clearance plus 3 ft of additional clearance to account for predicted sea level rise. Alternatives with other moveable options would continue to provide the current unlimited open vertical clearance but are less desirable as detailed in the included MassDOT Bridge Type Selection Worksheet. An increase in the channel width to exceed 200 feet would significantly limit the available movable span types available for selection. A substantial increase in the minimum vertical clearance in closed position cannot be attained without great disruption to the developed islands on either end of the structure and is not part of this request. While an increase to the vertical clearance under the fixed approach spans has been noted as a desirable outcome, there is no request



to increase the vertical clearance on the fixed approaches on either side of the bridge as part of this project for the same reasons as closed vertical clearance of the movable span.



September 2023 Figure 4 Navigation Chart 13229

## **2.0 Introduction**

The Fairhaven – New Bedford (FH-NB) Bridge project is being progressed as a Preliminary Engineering/NEPA project. The Navigation Impact Report is an important task to identify potential impacts to mariners that utilize the Acushnet River and the New Bedford Harbor near the project location.

The purpose of this navigation impact report is to gather and review available information regarding marine use and future needs. The collected data will be considered in developing and comparing technical alternatives. The information will provide insight regarding proposed vertical and horizontal bridge clearances and the alignment of the new bridge with the navigation channel.

### **2.1 Existing Condition**

The bridge is located at Milepost 0.0. The US Route 6 harbor crossing is actually a system of three bridges that connect the mainland across two mid-harbor islands (Fish Island and Pope’s Island), (Figure 5). The moveable swing-span allows boats to pass through into the northern harbor area while the east and west spans are fixed (Figure 4). The swing span is supported by a central pier and the end abutments. The bridge divides the harbor into two areas, the lower harbor and the upper or northern harbor (Figure 4). Approximately 1 mile north of the Fairhaven – New Bedford Bridge is a pair of fixed bridges which carry I-195 over the Acushnet River, these bridges provide a fixed vertical clearance of 8 feet. Approximately one mile to the south is the hurricane barrier with an opening of 150 feet.



*Figure 5 New Bedford Fairhaven Bridge, looking west*

The FH-NB Bridge within the project limits are on US Route 6 and owned and maintained by MassDOT. The bridge spans the harbor between two communities, the City of New

Bedford and Town of Fairhaven, and provides access for emergency response and access to hospital in New Bedford.

The FH-NB Bridge is located along a navigable portion of the Acushnet River; the bridge superstructure is 103 years old. According to the MassDOT Division of Highways, the average number of bridge openings from 2012 to 2021 varied from 4,458 to 5,524, (Figure 6). The average number of bridge openings this period was 4,941 per year. The maximum number of openings during this ten-year period was 5524 in 2013. No data was provided for 2014-2016. The existing vertical clearance underneath the bridge, as listed in the United States Coast Guard (USCG) navigational charts, is 6 feet depending on the tide. The moveable swing span pivots open to allow approximately unlimited vertical clearance for maritime traffic. There are two channels when the bridge is in the open position. Each channel has a fender system and is used for navigation. When the bridge is in the open position, the east and west channels provide 95 feet horizontal clearance each.

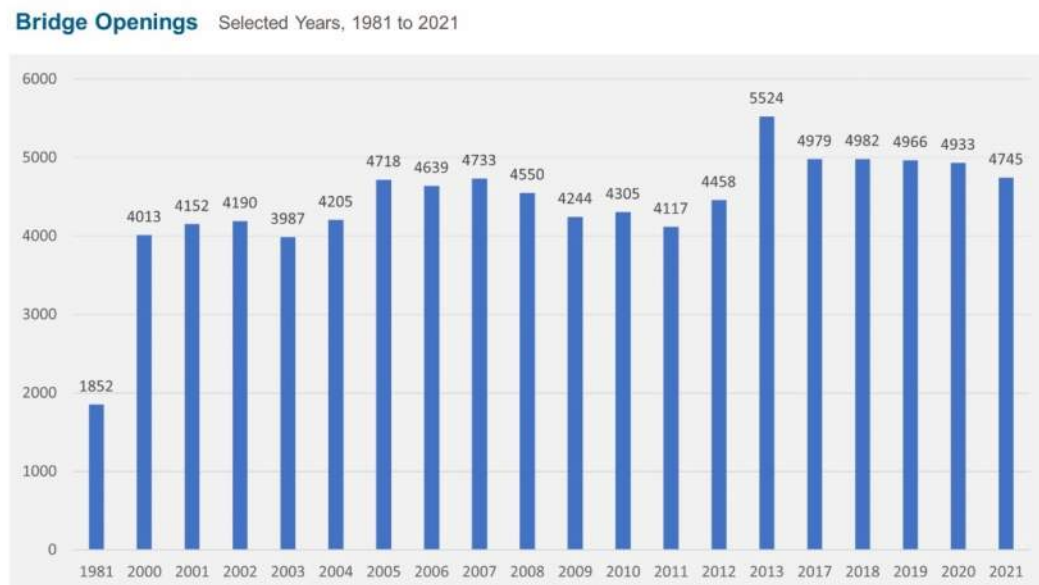


Figure 6 Bridge Opening 1981 to 2021; Source: Mass DOT Yearly Drawbridge Reports

The existing structure consists of seven spans over six piers, numbered from west to east. Span 1W and Spans 1E through 4E are simply supported fixed spans approximately 74 to 83 feet long, from centerline pier to centerline pier and all of the original steel girder construction. The swing span is 288 ft in length centered on the swing pier. The width of channel on either side of the swing pier is 95 ft. The swing pier rests on a central granite masonry pier. The remainder of the spans sit on granite piers supported by timber piles. When in the closed position (closed to marine traffic), the swing span is supported by the center pier and the end abutments. When the bridge is open, the bridge structure is

supported by the center pier alone and vessels are able to pass in two channels on either side of the pier.

The superstructure truss is a pin and eye-bar design (obsolete) that will continue to require close monitoring and repair of the pin/eye-bar connections. On the latest inspection conducted in 2021, the critical elements received the following rating factors: Superstructure (RF=5, Fair), Center Pier (RF=6, satisfactory), Rest Pier (RF=6, satisfactory), and Bridge Deck (RF=7, good). In 2012, the mechanical system was rehabilitated and is in good condition (rated as a seven), with the exception of the tread plate, and selected rollers within the drum girder system. The electrical system was also rehabilitated and is functioning well with the exception of limit switch failures.

Over the past 50 years, the FH-NB Bridge has been either repaired or rehabilitated approximately on a 12-year cycle. Based on similar bridges, this repair history is typical of movable bridges located over tidal waterways. Based upon the 2013 National Bridge Inspection Standards (NBIS) inspection report the bridge can be maintained in a reliable operating state over the next 50 years. However, the costs will increase as more elements of the structure deteriorate. To achieve this state of reliable operation, the current level of maintenance currently performed needs to be maintained and specific structural, mechanical, and electrical repairs will need to be implemented.

## **2.2 Background**

The US Route 6 harbor crossing is actually a system of three bridges that connect the mainland across two mid-harbor islands (Fish Island and Pope's Island). The moveable swing-span in the middle section is programmed for reconstruction. The bridge completed in 1903 is currently classified as functionally obsolete.

The bridge is scheduled to open hourly between 6:00 a.m. and 10:00 a.m. and hourly between 11:15 a.m. and 6:15 p.m. During the evening and overnight, the bridge is opened on-demand. Per federal regulations established in Title 33 (Navigation and Navigable Waters), Part 117 (Drawbridge Operation Regulations), Sections 117.1 to 117.59 (General Regulations and Specific Regulations) and 117.585 (New Bedford Harbor), marine traffic has priority over vehicular traffic, so the bridge stays open to accommodate all waiting marine vessels. This results in a varying, but often extensive delay period for vehicles, pedestrians, and bicyclists trying to cross the bridge.

The existing moveable bridge is also a barrier for larger ships accessing the northern waterfront land within the designated harbor areas of New Bedford Harbor. Vessels are limited by the bridge's 95-foot swing span navigational width. According to the 2010 New Bedford-Fairhaven Municipal Harbor Plan, the future development of harbor activities north of US Route 6 (including expansion of refrigerated cargo operations, short sea shipping operations, ferry, cruise ship and excursion/shuttle boat operations, etc.) is constrained by the horizontal clearances of the existing swing-span bridge.

A 350-wide federal shipping channel provides access from Buzzards Bay south of the hurricane barrier into the harbor. The USACE maintains the 30-ft deep channel, which extends three and one-half miles from Buzzards Bay to a turning basin just north of the Fairhaven – New Bedford Bridge. The shipping channel narrows from 350 feet to 150 feet at the hurricane barrier. The channel increases in width in the south harbor back to 350 feet and includes additional anchorage and maneuvering areas. At the Fairhaven – New Bedford Bridge, the channel narrows to 94 feet and 95 feet east and west, respectively, of the swing-span center pier. North of the bridge, the federal channel extends west around Fish Island. The City of New Bedford maintains the deep-water channel north of the federal channel.

The harbor is managed by a single authority, New Bedford Port Authority (NBPA). Prior to 2018, the authority was known as the New Bedford Harbor Development Commission (HDC). The NBPA is the designated governing agency for the Port of New Bedford. The NBPA is responsible for port planning and development, supporting tourism and economic development efforts, ensuring the safety and security of the port, environmental monitoring and management, and coordinating with other agencies and organizations. New Bedford Port Authority officials are responsible for the enforcement of harbor regulations. Additionally, the Port is a designated U.S. Customs Port of Entry and a Foreign Trade Zone (FTZ). The City of New Bedford is the grantee and holder of FTZ #28. Currently, the NBPA is applying for Alternative Site Framework for their FTZ license. Deep draft cargo ships will utilize south harbor facilities.

Since completion over 100 years ago, the bridge has undergone numerous closures and repairs. The 2<sup>nd</sup> major rehabilitation to prolong life of bridge was in 1984. Critical Electrical and Mechanical repairs were completed in 2012. In 2014, MassDOT initiated the US Route 6 Corridor Study to identify replacement alternatives and also completed a 3<sup>rd</sup> rehabilitation.

In 2022, MassDOT secured \$100 Million in state funding through the 2022 Transportation and Climate Bond Bill for design, permitting and other early efforts for the reconstruction of the Fairhaven – New Bedford Bridge. The reconstruction of this bridge is a priority for MassDOT to maintain the safe and reliable operation of the moveable bridge at this location.

### **2.3 Study Method**

Data and information were collected through the following means:

- Telephone interviews with local marinas
- Contacting commercial users that frequently utilize the Upper and Lower Harbor.
- Formal survey of commercial users that frequently utilize the Upper and Lower Harbor



- Contacting local, state, and federal agencies, such as New Bedford Port Authority, Fairhaven Port Authority, US Coast Guard and US Army Corps of Engineers.
- Review of Scoping Study and economic development report for Offshore Wind
- Review of available existing plans and drawings
- Review of current bridge operating practices

Since the existing FH-NB provides 6 feet of vertical clearance above mean high water when closed, this study impacts almost all vessels, including recreational vessels, due to the limited available vertical clearance.

### **3.0 Summary of Study Findings<sup>1</sup>**

The New Bedford Harbor supports numerous commercial wharfs, terminals, fisheries, commercial operations, local marinas and boat launches. As part of this report we attempted to reach over 35 owners for current and future vessel information, anticipated bridge use or comment on this project

#### **3.1 Local Marinas and Boat Launches**

##### Marina at Slocum Cove

The Marina at Slocum Cove is located at Northeast Maritime Institute – College of Maritime Science’s Fairhaven, Massachusetts waterfront location. It provides a family-oriented facility for boat owners and has 71 slips in total with minimum dock depth of 8 feet. First and foremost, the campus facility serves to host Northeast Maritime Institute’s fleet of training vessels and serves as a way to deliver maritime education and training. The location of the Marina at Slocum Cove is shown in Figure 7. The owner did not respond to requests for updated vessel information, anticipated bridge use or comment on this project.

##### Dockside Repairs / Marine Hydraulics

Dockside Repairs / Marine Hydraulics provides general and hydraulic machinery repairs and maintenance both on and off-waterfront. It has operated on the waterfront of New Bedford for more than thirty years and located on the west bank of the Acushnet River. The vessels serviced by this facility have a 24-28 ft beam and 11-15 ft draft with masts reaching 80 ft above the waterline. Dockside Repairs / Marine Hydraulics anticipates an increase in business with the expansion throughout the harbor. The location of the Marine Hydraulics is shown in Figure 7.

##### Whaling City Marina

Whaling City Marina, located in New Bedford, MA, is a publicly accessible waterfront facility that offers access to the water and provides 65 slips to moor or dock boats and yachts. In addition to docking and storage, the Marina provides services such as fuel and marine supplies, maintenance service and boat repair, and bilge and sewage pumping.

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<sup>1</sup> Records of Communication can be found in Appendix B



The Marina also offers services such as boat rentals, boat operation and safety instruction classes, and additional amenities. The location of the Whaling City Marina is shown in Figure 7. The owner did not respond to requests for updated vessel information, anticipated bridge use or comment on this project.

#### Breakwaters Marina

Breakwater Marina is a marina located at 2 River Ave, Fairhaven. The business is listed under marina, boat builders, boat ramp, boat repair shop, boat storage facility category. The marina contains 41 slips, 2 moorings, 80 dry storages, and 15 winter storages. The slips and moorings are in use from May to October and are primarily occupied by small pleasure craft. The location of the Breakwater Marina is shown in Figure 7.

#### Gear Locker Marina

Gear Locker Marina located at 255 Pope's Island, New Bedford. It has 48 slips in total and provides transient and long-term storage services. The location of the Gear Locker Marina is shown in Figure 7. The owner did not respond to requests for updated vessel information, anticipated bridge use or comment on this project.

#### Fleet Marina

Fleet Marina, located on Pope's Island, is a service marina for other vessels berthed elsewhere in the harbor. Fleet Marina is expanding their services and anticipates a corresponding increase in vessel traffic through the bridge.

#### Fairhaven Shipyard

Fairhaven Shipyard, located at 50 Fort Street, Fairhaven, is a full-service shipyard. The shipyard provides 146 seasonal slips and 340 ft of transient dock space. The location of the Fairhaven Shipyard is shown in Figure 7.

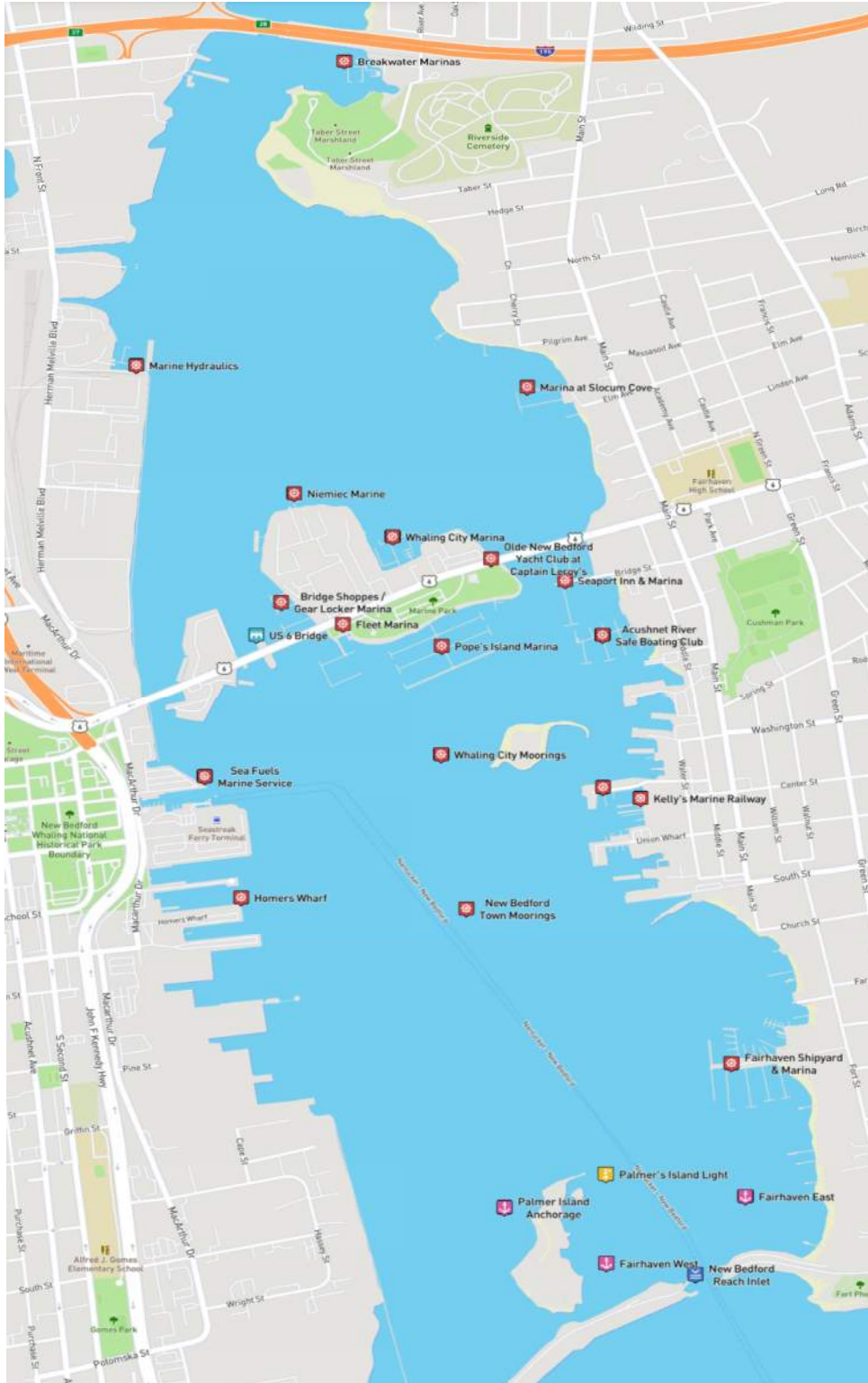


Figure 7 : Location Map of Recreational and Commercial Users

### 3.2 Commercial Users

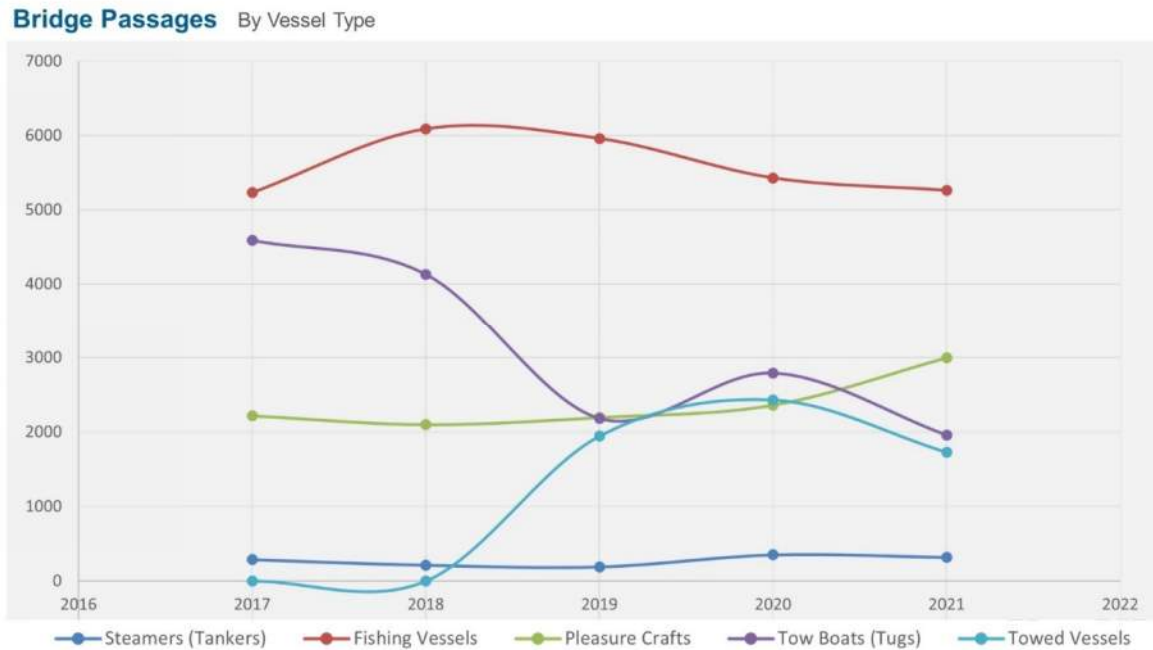


Figure 8 Bridge Passages; Source: Mass DOT Highway Division 2022

#### Maritime Terminal

The Maritime Terminal wharf is 600 feet long with 31 feet of berth depth and a 30-foot-wide cargo-handling apron. Direct ship to warehouse transfer is most efficient for their cargo handling activities. Ship's gear, if available, or a crane is used for ship to wharf transfer. The landing weights on the pier are sufficient to handle a crane and cargo. The facility on the New Bedford mainland has 3 million cubic feet of refrigerated storage. The facility handles frozen fish, food products and chilled agricultural products as well as break-bulk (general) cargo. The facility is owned by Maritime Terminal, Inc. The owner did not respond to requests for updated vessel information, anticipated bridge use or comment on this project.

#### Bridge Terminal

This wharf is 450 feet long with 28 feet of berth depth. The facility has 500,000 cubic feet of reefer (refrigerated) storage space. The facility handles frozen and chilled agricultural food products. Located on the northeast side of Fish Island, the facility is owned by Maritime Terminal, Inc. The owner did not respond to requests for updated vessel information, anticipated bridge use or comment on this project.

#### Frionor Wharf (name possibly in transition)

This wharf is 580 feet long, and averages 25 to 28 feet of berth depth. Operated as a processing and distribution center, the facility has 120,900 square feet of reefer and

freeze space and 34,700 square feet of warehouse space. The facility handles frozen fish and is owned by Highliner, Inc. The owner did not respond to requests for updated vessel information, anticipated bridge use or comment on this project.

#### North Terminal

This facility is located 400 yards northwest of Fish Island. The North Terminal project will create an additional 240,000 sq. ft. (5.5 acres) of terminal space, a -23 ft Mean Low Water berth and 660 linear feet of berthing space in the upper harbor. A contract to construct the filled bulkhead with 116,000 cu. yd. of beneficial reused dredged materials and 52,000 cu. yd. of imported material was awarded in March 2022. Final buildout will provide approximately 12-18 additional berths. This project is developed and administered by the Port Authority.

#### Packer Marine Facility

This two-acre facility is located adjacent to the New Bedford Rail Yard. The facility has a Roll-on/Roll-off (Ro-Ro) ramp and 200 feet of berthing space with 23 feet alongside. The facility is owned by R.M. Packer Co. The owner did not respond to requests for updated vessel information, anticipated bridge use or comment on this project.

#### Marlees Seafood Facility

This is a 2.9-acre facility with open storage and loading/unloading area. It also has a rail spur and 263 feet of bulkhead with an alongside draft of 20 feet. The facility is owned by Marlees Seafood, Inc. of New Bedford. The owner did not respond to requests for updated vessel information, anticipated bridge use or comment on this project.

#### Eastern Fisheries

This is an existing fishing operation based in the north harbor. They were one of the first to move north of the bridge and requires year-round access. Their fleet of vessels are in the 80 to 100 ft range. They do not anticipate using larger boats in the future.

#### Former Revere Copper Facility

This 12.5-acre facility has 3.6 acres of open storage and an 8.9-acre building. The facility is located at the north end of the basin and has a 520-foot bulkhead with 20 feet of water alongside. The site was recently purchased by Shoreline Resources, Inc. Details of the planned development were included earlier in this report. The owner did not respond to requests for updated vessel information, anticipated bridge use or comment on this project.

#### Kilburn Street Site

This parcel consists of 4.8 acres of open storage and is currently northernmost of the facilities. The site has the potential capability to have a 550-foot bulkhead installed with

an alongside draft of 30 feet. The reputed owner is Revere Copper Products, Inc. but confirmation is being sought due to the sale of the Revere Copper Facility property. The owner did not respond to requests for updated vessel information, anticipated bridge use or comment on this project.

#### Niemiec Marine

Niemiec Marine is a full-service boatyard and New England's Diesel Marine Specialist. They are a certified dealer, with factory-trained service technicians for dozens of manufacturers for service, installations and parts. Their on-site hauling capability hauls boats up to 70' in length and 50 tons in weight. The minimum approach depth is 10 feet on their site. Niemiec Marine anticipates a substantial increase in demand, their clientele have sailing vessels with masts up to 65 feet.

#### Sea Fuels Marine Service

Sea Fuels Marine Service, located at 101 Co-Op Wharf, provides fuels and other products to the harbor and is supplied by push boat and barge. The increase in activity in the north harbor will likely increase business for Sea Fuels Marine.

#### Island Freight Line / 41 North Offshore / AGM Marine Contractors

The listed companies are located at 1 and 7 Fish Island, directly south of the bridge. Their vessels range in size from 14 to 80 ft in beam and 4 to 16 ft in draft with masts reaching 100 ft above the waterline. No changes to their operations are anticipated but do access the north harbor with their vessels listed above.

### **3.3 Agency Contacts**

#### New Bedford Port Authority

Once the center of the world's whaling industry, the New Bedford Harbor is today the busiest port between Boston and Providence, RI and remains one of the country's leading commercial fishing ports. The long history and vitality of the port are demonstrated by the maritime and commercial areas adjacent to the harbor and the proximity and strong ties with the New Bedford Historic District and the historic town center in Fairhaven.

The New Bedford enabling legislation gives the New Bedford Port Authority the authorities of the harbormaster and the responsibility to manage commercial and recreational vessel activities over all the waters within the New Bedford city limits. New Bedford Port Authority staff are generally responsible for the maintenance of facilities and equipment, safety, security and emergency response, and management of parking on NBPA piers and wharves.

There was a transition in leadership during this study. Both the departing and current managing directors concurred that the widths of existing openings limits the type of vessels that can access upper harbor, and they agreed with conclusions from 2015

Corridor Study that opening should be equal to the hurricane barrier. Vertical clearance while the structure is open is no longer critical for all currently planned wind farm operations. Discussions with the NBPA regarding current and future offshore wind projects will utilize the South Harbor facilities at the State Pier, Marine Commerce Terminal, New Bedford Foss Marine Terminal and future development at the Eversource site. The terminals in north harbor will only serve as staging area for operations and parts will be moved on smaller vessels through the NB-FH Bridge.

#### New Bedford and Fairhaven Fire and Emergency Services

Both New Bedford and Fairhaven provide fire and emergency services to their respective municipalities. In case of bridge closure, Pope's Island could receive service from Fairhaven via the east bridge. St. Luke's Hospital in New Bedford is the only facility in the two municipalities that provides emergency services. Bridge closures could affect Emergency Medical Services (EMS) access to the hospital from Fairhaven.

In case of emergency in the north harbor area, the New Bedford-Fairhaven Bridge impedes emergency boat access. The bridge must open to allow municipal police, fire and rescue, harbormaster, or other emergency response vessels to transit the bridge.

### **3.4 Existing Fixed Upstream Structures**

There are five bridges north of this bridge, (Figure 9). All are fixed structures. A dam at the northern end of the Acushnet River terminates the navigable channel.

- I-195 Twin Freeway Structures
- Coggeshall Street (New Bedford)/ Howland Road (Fairhaven)
- Slocum Street
- Main Street
- Hamlin Street
- Dam

According to the 2010 USDOC Survey Navigation Chart 13229, the horizontal and vertical clearances on the I-195 structures and the Coggeshall Street Structure 62 feet and 8 feet respectively, (Figure 4).



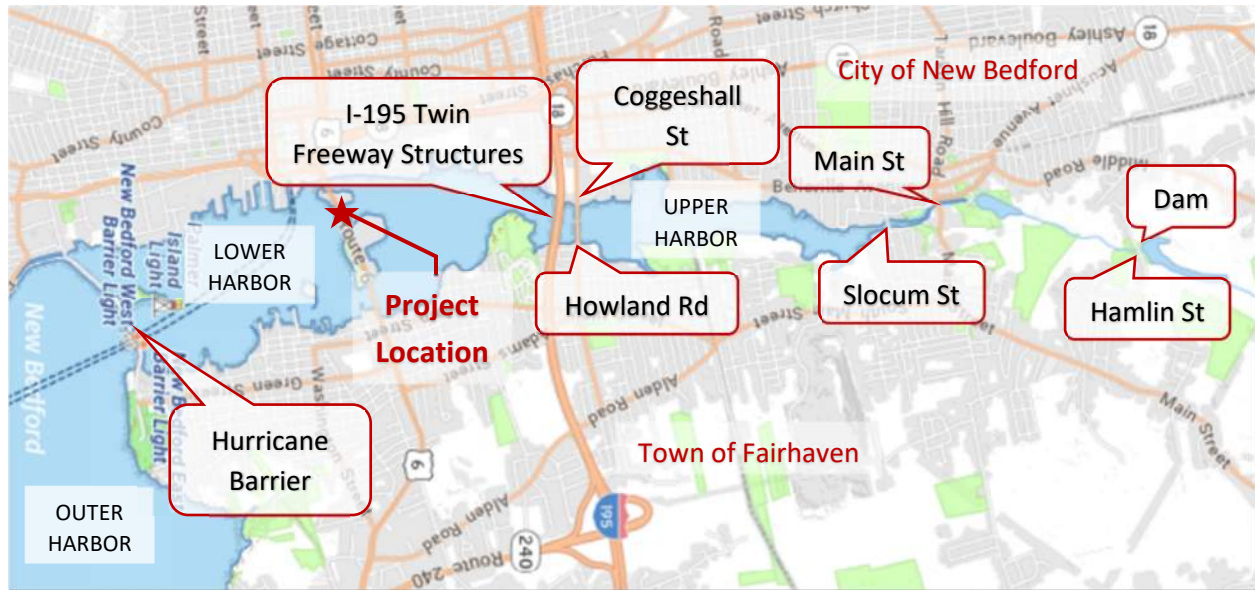


Figure 9: Upstream and Downstream Structure Map

### 3.5 Existing Downstream Structures

There are no structures in the lower harbor. The only restraining structure is the Hurricane Barrier with a 150 ft horizontal opening, Figure 9.

### 3.6 Considerations for Needed Horizontal Clearance

The overall size of vessels that could transit the bridge is generally limited to channel and berthing limitations within the North harbor. A vessel with a 600-foot length overall (LOA) is considered the largest vessel that would come to the North Harbor. A vessel of this length would average less than 70 feet in beam (width).

The general standard for channel width is approximately three times the width of the largest anticipated vessel. New Bedford Harbor is already considered to have a constrained channel area due to the width of the hurricane barrier and therefore that general standard does not apply. Overall, the harbor pilots have stated their preference is for a bridge opening width set at the same width as the hurricane barrier.

In addition to the pilots' considerations, increasing the horizontal clearance to a minimum of 260 feet is recommended for several reasons. A larger channel width at the bridge would reduce constraints to the North Harbor as compared to the rest of the harbor. Safety would be improved by allowing tugs to position themselves alongside larger vessels as they transit the bridge and by permitting the installation of an advanced fendering system that does not encroach on the channel width.

Continuing to provide enough horizontal clearance for ships to pass in opposing directions allowing more vessels to pass through the bridge in a shorter time period. This will reduce waiting times.

### **3.7 Considerations for Needed Vertical Clearance**

As noted in Section 3.6, the limitations of the harbor and navigation channel are the controlling features for the needed clearances. Previous corridor studies have established projected vessel passages in 2035 and studied the impacts that an increase in closed vertical clearance (Table 3.1). The information gathered can be used to determine that a 50 foot minimum open clearance is not acceptable. There are no current plans for an increase in draft to the federal channel in the north harbor or other needs for extraordinary vertical clearance for any planned projects or future improvements.

In keeping with minimum vertical clearances of surrounding harbor and channels, a minimum open vertical clearance of 138 feet is recommended to maintain equity with the surrounding area. Both the Veterans Memorial (Braga) bridge in Fall River and the Cape Cod Canal bridges (the RR Lift Bridge, Bourne and Sagamore Bridges) have a vertical clearance of 135 ft. An additional 3 ft of vertical clearance has been added to account for the predicted sea level rise of the New Bedford Harbor area during the life span of the proposed bridge.

### **3.8 Considerations for Needed Clearance in the Closed Position**

Numerous studies on bridge replacement options determined that the benefits of a higher bridge did not offset the impacts of the lengthened roadway approaches and therefore identified that a vertical profile similar to the existing bridge was preferred. The preferred alternative in the 1985 EA had a 10-foot vertical underclearance. This minimal increase over the existing 6-foot clearance allowed the bridge structure to be above the wash from wind driven waves during flood condition.

Based on the profile of existing and future projected vessels transiting the bridge, there does not appear to be any benefit to significantly increasing the vertical underclearance.

**Table 3.1. 2035 Projected Vessels and Openings by Vertical Underclearance Options**

Vessel Type	Air Draft (feet)	2035 Projected Vessels Requiring Opening	2035 Projected Number of Openings	6-Foot Clearance % of Vessels Requiring Opening	6-Foot Clearance Number of Openings	20-Foot Clearance % of Vessels Requiring Opening	20-Foot Clearance Number of Openings	50-Foot Clearance % of Vessels Requiring Opening	50-Foot Clearance Number of Openings
Cargo Ships (tankers) / Large Fishing Vessels	--	465	172	100%	172	100%	172	100%	172
Fishing Vessels (commercial )	-	5,001	1,850	-	-	-	-	-	-
Scallop (55%)	60	2,751	1,018	100%	1,018	100%	1,018	100%	1,018
Troller (30%)	70	1,500	555	100%	555	100%	555	100%	555
Seiner (15%)	70	750	278	100%	278	100%	278	100%	278
Pleasure Craft	-	3,602	1,333	-	-	-	-	-	-
Recreational motor boats (60%)	5	2,161	800	100%	800	0%	-	0%	-
Sailboat (40%)	100	1,441	533	100%	533	100%	533	100%	533
Tow Boat (tugs)	12	3,511	1,299	100%	1,299	100%	1,299	60%	779
Towed Craft (barges)	40	3,004	1,112	100%	1,112	100%	1,112	35%	389
TOTAL	-	15,583	5,766	-	5,766	-	4,966	-	3,724
Reduction in Openings	-	-	-	-	-	-	(800)	-	(2,042)
% Reduction in Openings	-	-	-	-	0%	-	-14%	-	-35%

## 4.0 Summary

### 4.1 Conclusions

The following conclusions were reached based on survey information and study findings:

- Vessel traffic in the study area of the Acushnet River is predominantly fishing vessels but also consists of both commercial and private recreational usage.
- The existing bridge opens approximately 4,941 times a year accommodating multiple vessels with each opening, over 10,000 vessel passages.
- Due to low vertical clearance, bridge openings of the existing swing span are required for almost all boat traffic, limiting closed passages to small pleasure craft..

- Private commercial users both expressed a desire to increase the horizontal clearance of the existing structure.
- As wind energy development has progressed, ships with tall loads passing through the structure as identified in earlier study is no longer anticipated. The harbor will use Crew Transfer Vessels (CTV) and Service Operating Vessels (SOV) with a length 350 ft to transport materials out to the offshore installation platforms.

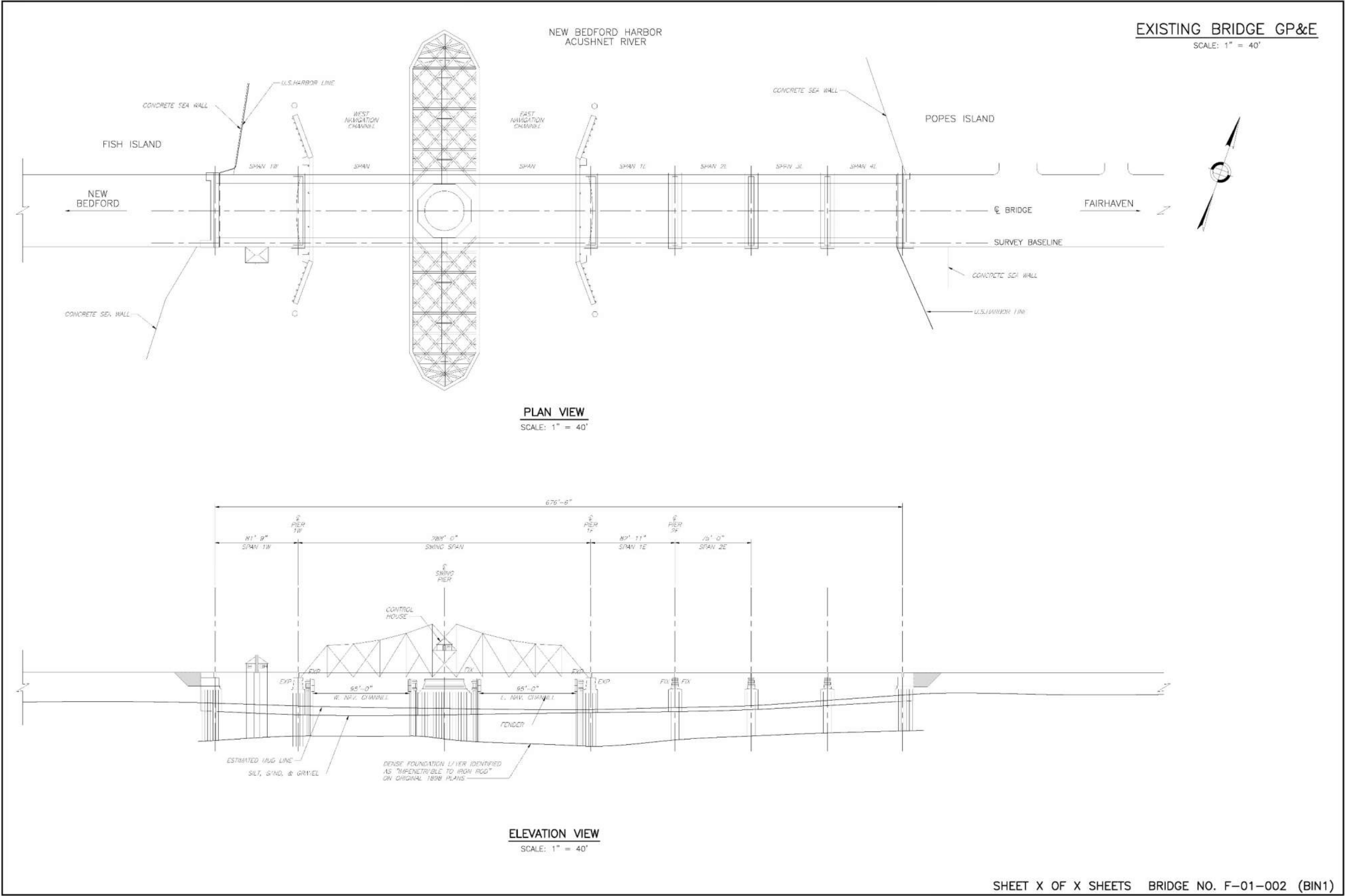
#### **4.2 Requested Preliminary Clearances**

The following recommendations are made for further consideration in developing alternatives as part of Conceptual Design:

- Based on this study, the new bridge should increase the horizontal clearance of the navigable channel to 260 feet to meet or exceed the existing horizontal clearance restrictions posed by the Hurricane Barrier and match the majority of the navigable channel. A vertical clearance of 138 feet is requested for the open bridge over the navigable channel. An increase in the channel width at the bridge would make passage easier and faster for recreational and commercial users.

**Appendix A – Existing Bridge**

General Plan and Elevation.....A.1





## **Appendix B – Record of Communication**

<b>Organization</b>	<b>Contact</b>
Atlantic Red Crab	John Williams
Seatrade Seafood Group	Bonnie
Eastern Fisheries	Peter Anthony
Blue Harvest	Lynn Perry
Raw Seafood	Scott & Mike Hutchins
Maritime Terminal	Maritime Terminal, Inc.
Bridge Terminal	Maritime Terminal, Inc.
Former Revere Copper Facility	Shoreline Resources, LLC
Marina at Slocum Cove	Pam Tchorz   Valerie (recep)
Marine Hydraulics	
Dockside Repairs	Peter Anthony
Whaling City Marina	
Fairhaven Shipyard Companies North Yard	
NB Ocean Cluster	Jen Downing
Town of Fairhaven	Angela Ellison
City of New Bedford	Neil Mello & Derek Santos
New Bedford Port Authority	Gordon Carr

**Appendix C – Site Photos**



*Photo C.1: FH-NB North Elevation Bridge Opened*



*Photo C.2: FH-NB Operator House*



*Photo C.3: FH-NB North Elevation Looking South*



*Photo C.4: FH-NB Bridge Opening*