



November 4, 2024

Ms. Brona Simon  
State Historic Preservation Officer  
Massachusetts Historical Commission  
220 Morrissey Boulevard  
Boston, MA 02125  
(via certified mail)

RE: Northern Avenue Bridge Superstructure Removal Project  
City of Boston, Suffolk County  
Submittal of Project Notification Form

Dear Ms. Simon:

On behalf of the City of Boston, Public Works Department (PWD), attached please find a Project Notification Form (PNF) for the proposed Northern Avenue Bridge Superstructure Removal Project. The City of Boston PWD is concerned about the deteriorated condition of the Northern Avenue Bridge superstructure and requests MHC's review and comments on the proposed undertaking, as described in the attached PNF.

Thank you for reviewing the attached materials. If you have questions or concerns, please do not hesitate to contact Benjamin Sun, Chief Structural Engineer at 617-635-2502 or via e-mail at [benjamin.sun@boston.gov](mailto:benjamin.sun@boston.gov).

Sincerely,

Jascha Franklin-Hodge  
Chief of Streets

Enclosure:

cc: Ruthann Brien, USACE New England District



**PUBLIC WORKS DEPARTMENT**  
Boston City Hall • 1 City Hall Sq Rm 714 • Boston MA 02201-2024  
The Office of the Streets, Transportation, and Sanitation  
(617) 635-4900

# Project Notification Form

Northern Avenue Bridge Superstructure Removal Project

City of Boston, Public Works Department



October, 2024

**Prepared for:**

City of Boston  
Public Works Department

**Prepared by:**

Matt Hamel  
Senior Architectural Historian

AECOM  
One Federal Street  
Boston, MA 02110  
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# 1. Project Notification Form

950 CMR: OFFICE OF THE SECRETARY OF THE COMMONWEALTH

APPENDIX A  
MASSACHUSETTS HISTORICAL COMMISSION  
220 MORRISSEY BOULEVARD  
BOSTON, MASS. 02125  
617-727-8470, FAX: 617-727-5128

**PROJECT NOTIFICATION FORM**

Project Name: Northern Avenue Bridge Superstructure Removal Project

Location / Address: Northern Avenue / Fort Point Channel

City / Town: Boston, Massachusetts

Project Proponent

Name: City of Boston, Public Works Department

Address: One City Hall Plaza, Room 710

City/Town/Zip/Telephone: Boston, MA 02110 617-635-4900

Agency license or funding for the project (list all licenses, permits, approvals, grants or other entitlements being sought from state and federal agencies).

Agency Name

City of Boston, Public Works Department

Type of License or funding (specify)

Funding - to be determined

Permits - to be determined

**Project Description (narrative):**

See attached project description

**Does the project include demolition? If so, specify nature of demolition and describe the building(s) which are proposed for demolition.**

The superstructure of the Northern Avenue Bridge over Fort Point Channel will be removed.

**Does the project include rehabilitation of any existing buildings? If so, specify nature of rehabilitation and describe the building(s) which are proposed for rehabilitation.**

Repairs will be made to the bridge piers following removal of the superstructure.

**Does the project include new construction? If so, describe (attach plans and elevations if necessary).**

No.

950 CMR: OFFICE OF THE SECRETARY OF THE COMMONWEALTH

APPENDIX A (continued)

**To the best of your knowledge, are any historic or archaeological properties known to exist within the project's area of potential impact? If so, specify.** The Northern Avenue Bridge was determined to be eligible for the National Register of Historic Places (NRHP) on 11/30/1976. Six additional adjacent historic resources were identified (see attached Project Notification Form).

**What is the total acreage of the project area?**

Woodland	<u>N/A</u>	acres	Productive Resources:	
Wetland	<u>N/A</u>	acres	Agriculture	<u>N/A</u> acres
Floodplain	<u>N/A</u>	acres	Forestry	<u>N/A</u> acres
Open space	<u>N/A</u>	acres	Mining/Extraction	<u>N/A</u> acres
Developed	<u>~2</u>	acres	Total Project Acreage	<u>~2</u> acres

**What is the acreage of the proposed new construction?** N/A acres

**What is the present land use of the project area?**

The project area is currently a bridge (transportation use), however it is not currently in service. Surrounding area is an urban waterfront characterized by mixed urban commercial, industrial, and residential land uses.

**Please attach a copy of the section of the USGS quadrangle map which clearly marks the project location.**  
See attached Project Notification Form.

This Project Notification Form has been submitted to the MHC in compliance with 950 CMR 71.00.

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Signature of Person submitting this form:  Date: 11/1/2024

Name: Jascha Franklin-Hodge, Chief of Streets

Address: One City Hall Plaza

City/Town/Zip: Boston, MA 02110

Telephone: 617-635-4968

REGULATORY AUTHORITY

950 CMR 71.00: M.G.L. c. 9, §§ 26-27C as amended by St. 1988, c. 254.

## 2. Project Description

The City of Boston, Public Works Department (PWD) proposes to remove the superstructure of the Northern Avenue Bridge. This will ensure the safety of the public by preventing injury to waterway users resulting from the catastrophic failure of bridge components due to ongoing deterioration.

### 2.1 Historical Context

Constructed in 1908, the Northern Avenue Bridge, spanning the Fort Point Channel, is significant as the only pneumatically operated example of its type in Boston. The pin-connected triple-barreled Pratt-type through-truss rim bearing Swing Span is centered between two through-truss approach spans composed of four trusses each enclosing 2 outer travel lanes and an original double track freight railway (Spans 1 & 2); two cantilevered wood plank sidewalks extend outward. A short deck plate girder "jump" span (Span 3) connects the eastern approach to the South Boston abutment. The extant Tender's House is located to the north of the original wood-pile fender pier, which is no longer covered in wood planking; the nonfunctional compressed air operating mechanism remains inside the structure.

The bridge was closed to vehicular traffic in 1997 due to severe deterioration and was repurposed as a bike and pedestrian crossing as part of the Boston Harbor Walk, utilizing the north bay. The bridge was closed to pedestrian traffic in December 2014 for safety concerns and potential hazards to vessel traffic. The bridge was left in its current open position to facilitate navigation. In addition, the bridge underside is sometimes submerged in water during larger storm events.

Past coordination with the Massachusetts Historical Commission (MHC) related to earlier undertakings proposed for the bridge determined that the following bridge components and attributes are significant and should be considered character-defining:<sup>1</sup>

- The three barrel, four truss design and the design of the trusses themselves.
- The horizontal members between the trusses which create the "through truss" bridge.
- The riveted, lattice box-beam structural elements.
- The original rack and pinion compressed air drive system contained within the Tender's House.
- The granite piers, including the cylindrical swing pier and side span piers.
- The turning mechanism.
- The draw fender pier on which the swing span rests when open.<sup>2</sup>

Historic American Engineering Record (HAER) documentation for the Northern Avenue Bridge was completed in 1984, with addendums in 1989 and 1991. Light Detection and Radar (LiDAR) of the bridge was also completed as mitigation for a proposed earlier phase.

### 2.2 Project Description

Removal of the Northern Avenue Bridge superstructure is proposed due to conditions noted during a recent inspection. The proposed activities are as follows:

The existing bridge superstructure will be removed and loaded onto barges in sections for transport to a staging area at Dry Dock 4, located at 290R Northern Avenue, for disassembly and paint removal. It is anticipated that removal of the superstructure will be accomplished via barge mounted cranes. Access to in-water areas will be via Northern Avenue and/or from Atlantic Avenue. The use of barges, falsework, scaffolding, rigging, and other methods and procedures by the contractor will not interfere with navigation within the Fort Point Channel. Marine traffic will be monitored during the project.

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<sup>1</sup> The following list is reproduced from the March 7, 2016 Massachusetts Historical Commission (MHC) letter to the Army Corps of Engineers New England District.

<sup>2</sup> When open, the swing span is suspended over the fender pier, which protects the span from damage by vessels navigating the Fort Point Channel.



Preservation of the Tender's House and nonfunctional compressed air operating mechanism is not part of this undertaking.

### 2.2.1 Demolition Sequencing

- **Remove Deck Items** including lighting, junction boxes, utility cables and conduits, planter boxes, traffic gates, operator shack, shed and trailer office, timber walkway, chain link fencing, concrete barriers, and other items.
- **Remove Approach Spans 1 and 2**, following the installation of temporary bracing as needed; removal of access ladders, bridge railings, swing gate machinery, and any remaining appurtenances; removal of the bridge deck and sidewalks; removal of stringers, floor beams, floor system, and upper bracing.
- **Remove Swing Span and Span 3** using a similar method and sequencing as noted above.
- **Repair Piers** above mean low tide to ensure that masonry will not continue to deteriorate.

## 3. Historic Resources

The Northern Avenue Bridge (BOS.9000) was determined to be eligible for the National Register of Historic Places (NRHP) on November 30, 1976. Documentation of the bridge also includes the Massachusetts Historic Bridge Inventory (1984) and the Historic American Engineering Record (HAER) in 1984 and subsequent addendums in 1989 and 1991. Additional historic resources adjacent to the project area are summarized below and shown in Figure 2.

*Fort Point Channel Historic District* (BOS.WZ, BOS.ZG)- Listed in the NRHP on September 10, 2004 for its local, state, and national significance under Criteria A and C, in the areas of Architecture, Commerce, Community Planning, Engineering, Industry, Maritime History, and Transportation. The district was also designated a Local Landmark on December 9, 2008. The district encompasses the channel and approximately 100 inventoried buildings located southeast of the bridge. Both the Bridge and the Tender's House (BOS.15356) are considered contributing resources to the district.

*Custom House District* (BOS.AN, BOS.RF)- Listed in the NRHP on May 11, 1973, and expanded in 1996, under Criteria, A, C, and D for its significance in the areas of Architecture, Commerce, Urban Planning, and Historic Archaeology. The district contains approximately 70 inventoried buildings located northwest of the bridge.

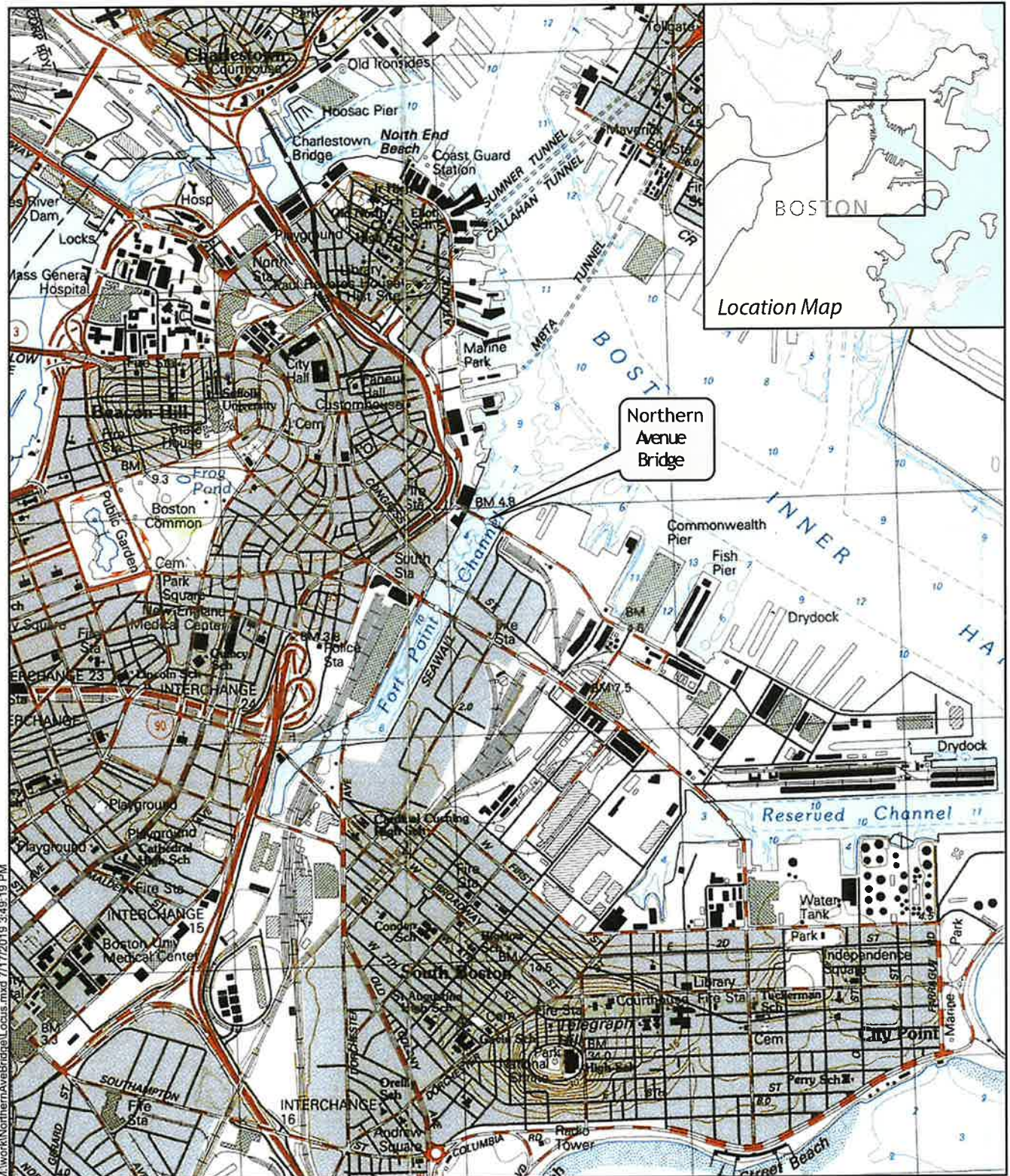
*Richardson Block* (BOS.AU)- Individually listed in the NRHP on August 9, 1986 and updated as an Historic District on December 3, 2014. Composed of 9 inventoried marble and brick commercial buildings constructed in 1873, the district is significant in the areas of Architecture, Commerce, and Community Planning. The district is located west of the bridge.

*Russia Wharf Buildings* (BOS.BD)- Listed in the NRHP on December 2, 1980 for its local significance in the areas of Architecture, Commerce, Community Planning, and Industry. The district consists of 3 inventoried buildings and abuts the western edge of the channel southwest of the bridge.

*Gridley Street Historic District* (BOS.ABS)- Listed in the NRHP on December 3, 2014 under Criteria A and C for its local significance in the areas of Architecture and Commerce. The district contains 3 inventoried buildings and the aforementioned Richardson Block. The district is located west of the bridge.

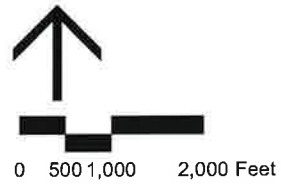
*Roseway (Schooner)* (BOS.9775)- Designated a National Historic Landmark and listed in the NRHP on September 25, 1997 for its national significance in the areas of Education, Maritime History, Military, Recreation, and Transportation. Docked at the Courthouse Pier near the opening of the Fort Point Channel at the date of its designation, the vessel has relocated to the Boston Fish Pier east of the bridge.

A review of current and historic aerials determined that there are no additional historic architectural resources over 50 years of age within the proposed project area.



Portion of Boston South USGS Quadrangle 1987  
 Source: MassGIS.  
 July 2019

Figure 1  
**Locus Map**  
 Northern Avenue Bridge  
 Superstructure Removal  
 Project Boston





Source: MassGIS, FEMA, MHC (June 2019)

- Nat'l Register of Historic Places
- ▲ NRHP and LHD
- Nat'l Register of Historic Places
- Local Historic District
- Historic Resources
- Northern Avenue Bridge

0 150 300 600 Feet

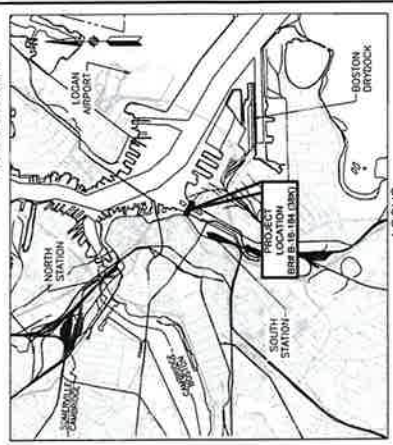
**AECOM**

## Appendix A – Preliminary Bridge Removal Plans

CITY OF BOSTON  
NORTHERN AVENUE BRIDGE

DATE	REV.	BY	APP.	PROJECT FILE NO.

KEY PLAN, LOCUS AND PROFILE



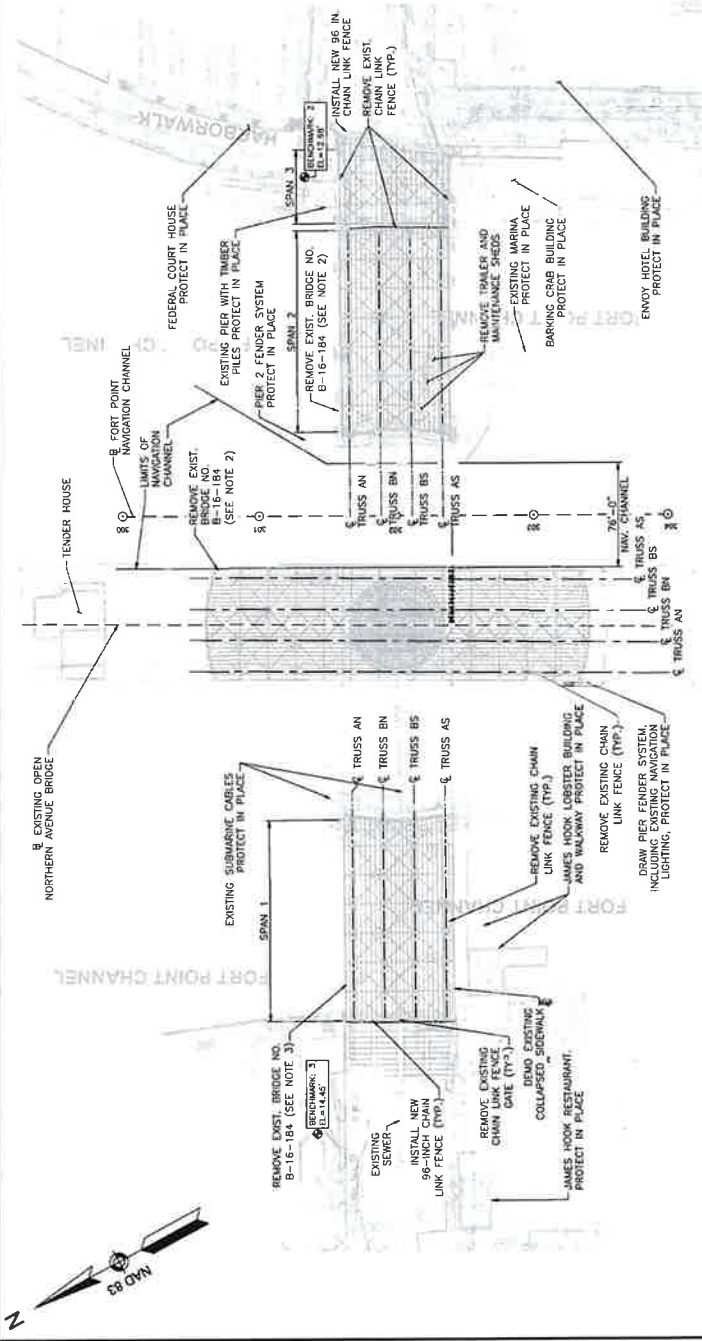
LOCUS  
SCALE: 1" = 1000'

25% PLANS 9-27-24

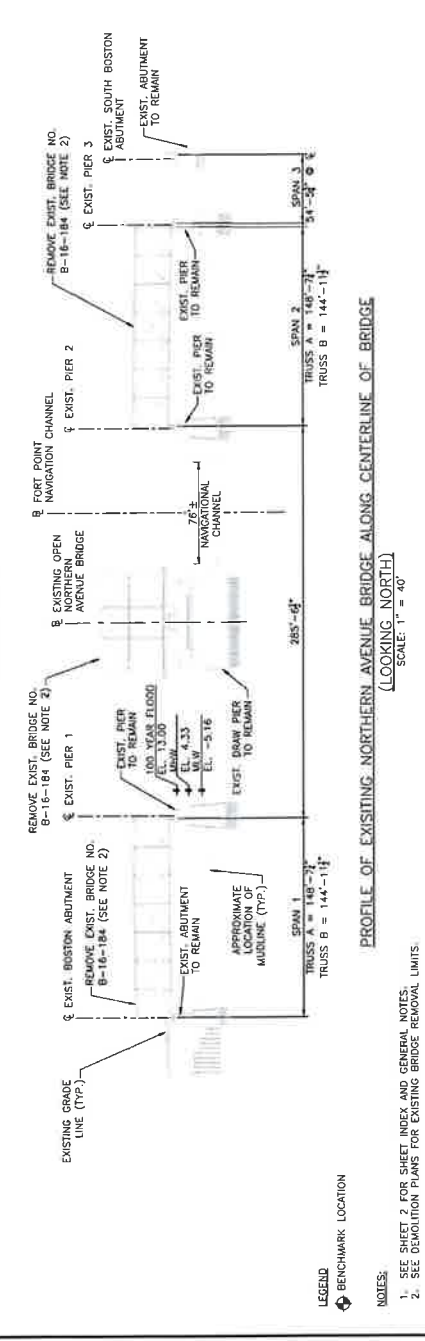
**AECOM**  
CORPORATE HEADQUARTERS  
100 WATER STREET  
BOSTON, MA 02110

**BRIDGE DEMOLITION  
BOSTON**  
NORTHERN AVENUE BRIDGE  
OVER FORT POINT CHANNEL  
PUBLIC WORKS DEPARTMENT ENGINEERING DIVISION  
1 CITY HALL SQUARE, ROOM 710  
BOSTON, MA 02201

TITLE: \_\_\_\_\_  
CHIEF ENGINEER \_\_\_\_\_



BRIDGE DEMOLITION KEY PLAN  
SCALE: 1" = 40'-0"



PROFILE OF EXISTING NORTHERN AVENUE BRIDGE ALONG CENTERLINE OF BRIDGE  
(LOOKING NORTH)  
SCALE: 1" = 40'

LEGEND  
BENCHMARK LOCATION

- NOTES:  
1. SEE SHEET 2 FOR SHEET INDEX AND GENERAL NOTES.  
2. SEE DEMOLITION PLANS FOR EXISTING BRIDGE REMOVAL LIMITS.

**GENERAL NOTES**

DESIGN SHALL BE GOVERNED BY:

- MASSDOT LFD BRIDGE DESIGN MANUAL HUNDRETH ANNIVERSARY EDITION PARTS 1, 2 AND 3
- ASHRO LFD BRIDGE DESIGN SPECIFICATIONS 9TH EDITION, 2020

**BENCHMARKS:**

BENCHMARK 1  
 BOLT TOP OF GRANITE  
 ON FIRST ANCHOR ON  
 NORTHERN AVE  
 N: 2954439.0724  
 E: 779239.1922  
 EL: 12.99

BENCHMARK 2  
 TOP RIGHT TRAFFIC BOLT  
 ON FIRST ANCHOR ON  
 NORTHERN AVE  
 N: 2954439.0724  
 E: 779239.1922  
 EL: 12.99

BENCHMARK 3  
 LOCUST CONCRETE STEP  
 AT 408 ATLANTIC AVE ON  
 THE NORTHERN AVE SIDE  
 N: 2954767.6900  
 E: 777645.7071  
 EL: 14.16

NORTH AMERICAN VERTICAL DATUM (MVD) OF 1988 IS USED THROUGHOUT.  
 TIDAL LEVELS SHOWN ARE BASED ON NOAA DATA FOR THE 1984 TO 2001 TIDAL EPOCH.  
 THEY MAY NOT REPRESENT ACTUAL TIDE LEVELS WHICH MAY OCCUR DURING CONSTRUCTION.  
 THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL TIDE GAUGES AND RECORD THE  
 COURSE OF THE WORK. ANY VARIATION OF ACTUAL TIDES FROM THOSE ESTIMATED BY THE  
 CONTRACTOR WILL NOT BE CONSIDERED AS A CLAIM FOR EXTRA WORK OR TIME EXTENSION.

**SURVEY BOOKS:**

COPIES OF ELECTRONIC SURVEY IN PDF FORMAT MAY BE OBTAINED FROM CITY OF BOSTON.

**SCALES:**

SCALES NOTED ON THE PLANS ARE NOT APPLICABLE TO REDUCED SIZE PRINTS. DIMED SCALES  
 BY 2 FOR 1/4"=1'-SEE PRINTS (A5).

**EXISTING CONDITIONS:**

- THE INFORMATION IS BASED OFF OF THE EXISTING BRIDGE PLANS AVAILABLE FROM THE CITY OF BOSTON.
- THE CONTRACTOR SHALL DETERMINE AND VERIFY ALL PERMANENT DIMENSIONS AND DETAILS NECESSARY FOR COMPLETION OF ALL WORK BY FIELD MEASUREMENT AND SURVEY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ADEQUACY AND ACCURACY THEREOF AND SHALL PROVIDE ANY MATERIAL OF CONVICTION AND ASSURANCE UNTIL THE REQUIRED MEASUREMENTS HAVE BEEN MADE, AND THE EVENT OF THE PROPOSED WORK HAS BEEN APPROVED BY THE ENGINEER.
- SEE DEMOLITION SHEETS FOR ADDITIONAL NOTES.

CITY OF BOSTON  
 NORTHERN AVENUE BRIDGE

DATE	REV. AND PERM. NO.	SHEET NO.	TOTAL SHEETS
09/27/24	02	2	14

PROJECT FILE NO.  
 GENERAL NOTES AND SHEET INDEX

SHEET NUMBER	SHEET INDEX	SHEET TITLE
1	KEY PLAN LOCUS AND PROFILE	
2	GENERAL NOTES AND SHEET INDEX	
3	DEMOLITION NOTES	
4	DEMOLITION SEQUENCING	
5	DEMOLITION PLAN	
6	DEMOLITION ELEVATION	
7	APPROACH TRUSS SPAN DEMOLITION	
8	SWING SPAN DEMOLITION	
9	SPAN 3 DEMOLITION	
10	PIER 1 STABILIZATION	
11	PIER 2 STABILIZATION	
12	PIER 3 STABILIZATION	
13	BYTODOCK 4 - EXISTING CONDITIONS	
14	BYTODOCK 4 - PROPOSED LAYOUT	

25% PLANS 9-27-24

DATE	DESCRIPTION
	FOR ONLY PRINTS OF LATEST DATE

SHEET 2 OF 14 SHEETS BRIDGE NO. B-16-184 (38K)

CITY OF BOSTON  
NORTHERN AVENUE BRIDGE

STATE	FED. AID PROJ. NO.	PROJECT FILE NO.
MA		

DEMOLITION NOTES

WATER WORK NOTES:

1. THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE FACT THAT THE BRIDGE IS TO BE DEMOLISHED IN ACCORDANCE WITH THE REGULATIONS AND REQUIREMENTS OF THE U.S. COAST GUARD (USCG), THE U.S. NAVY, AND THE MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION.
2. THE LIMITS OF THE NAVIGATION CHANNEL ARE BASED ON NOAA NAUTICAL NAVIGATION CHART AND ARE APPROXIMATE.
3. THE USE OF BARGES, FALSEWORK, FORMWORK, RIGGING, SCAFFOLDING AS WELL AS OTHER CONSTRUCTION METHODS AND PROCEDURES SHALL BE SCHEDULED TO AVOID CONFLICTS WITH NAVIGATION. THE EXTENT AND DURATION OF SUCH CAUSE UNAUTHORIZED INTERRUPTIONS TO NAVIGATION. THE EXTENT AND DURATION OF ENCROACHMENT, IF ANY, ON THE NAVIGATION CLEARANCES SHALL BE SUBMITTED TO THE USCG FOR REVIEW AND APPROVAL. ENCROACHMENT SHALL BE CANCELED UNTIL WRITTEN AUTHORIZATION IS RECEIVED FROM THE USCG.
4. THE CONTRACTOR SHALL CONDUCT CONSTRUCTION OPERATIONS IN ORDER TO MAINTAIN NAVIGATION CLEARANCES THROUGHOUT THE DEMOLITION PROCESS. ANY INTERRUPTION OF EXISTING AIDS, PROVIDE TEMPORARY AIDS OF POWER AS REQUIRED FOR THE DURATION OF THE INTERRUPTION IN ORDER TO MAINTAIN NAVIGATION CLEARANCES THROUGHOUT THE DEMOLITION PROCESS.
5. THE CONTRACTOR SHALL MONITOR MARINE TRAFFIC AT ALL TIMES WHEN WATER WORK IS BEING PERFORMED. THE CONTRACTOR SHALL MAINTAIN CONTINUOUS CONTACT WITH MARINERS AS REQUIRED BY THE SPECIFICATIONS.
6. ALL CONSTRUCTION EQUIPMENT MUST BE MARKED IN ACCORDANCE WITH U.S. COAST GUARD REGULATIONS WHEN NOT ENGAGED IN CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL SUBMIT A PLAN AND SCHEDULE TO SHOW THE LOCATION AND SCHEDULE OF ALL CONSTRUCTION VESSELS WHEN THEY ARE NOT ENGAGED IN CONSTRUCTION ACTIVITIES.
7. THE U.S. COAST GUARD, CITY OF BOSTON, MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION, ENVIRONMENTAL PROTECTION AGENCY AND THE MASSACHUSETTS STATE POLICE HAVE THE RIGHT TO CLEAR THE CHANNEL FOR EMERGENCIES.
8. THE CONTRACTOR SHALL NOT IMPACT THE NAVIGATION CHANNEL AND ANY RESTRICTIONS OR CLOSURES ASSOCIATED WITH THE REMOVAL OR DEMOLITION OPERATIONS SHALL BE COORDINATED AND APPROVED BY THE USCG.
9. MARINE SAFETY OFFICER AT THE ADDRESS BELOW AND PROVIDE THE OFFICER WITH A COPY OF HIS CONSTRUCTION ACTIVITIES WHICH WOULD IMPACT MARINE TRAFFIC.  
U.S. COAST GUARD  
408 ATLANTIC AVENUE  
BOSTON, MA 02110
10. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL THE PLAN AND SCHEDULE OF ALL CONSTRUCTION VESSELS TO BE USED IN THE DEMOLITION PROCESS TO MAINTAIN TRAFFIC. THE CONTRACTOR SHALL NOTIFY THE U.S. COAST GUARD (BOSTON) IN WRITING AS PER CONTRACT REQUIREMENTS. ALL REQUESTS ARE TO BE REVIEWED AND APPROVED BY THE ENGINEER PRIOR TO COAST GUARD APPROVAL. THE CONTRACTOR SHALL SUBMIT TO THE U.S. COAST GUARD REGULATIONS, WORK WITHIN THE NAVIGATION CHANNEL SHALL NOT BE PERMITTED UNTIL THE USCG HAS APPROVED OF THE WORK PLAN AND SCHEDULE.
11. THE CONTRACTOR SHALL COORDINATE WITH ALL MARINE OPERATORS AFFECTED BY THE DEMOLITION PROCESS. THE CONTRACTOR SHALL SUBMIT TO THE U.S. COAST GUARD CHANNEL CLOSURES THIS SCHEDULE WILL REQUIRE U.S. COAST GUARD APPROVAL. THE APPROVAL PERIOD SHALL BE A MINIMUM OF 14 DAYS PRIOR TO THE CLOSING OF THE CHANNEL. THE CONTRACTOR SHALL NOTIFY THE U.S. COAST GUARD OF THE CLOSING OPERATIONS THE DAY BEFORE AND AGAIN THE DAY BEFORE THE CLOSING OF HIS ATTEMPTS TO CLOSE THE CHANNEL. IF, IN THE EVENT THAT A SHIP IS DELAYED FROM ENTERING OR LEAVING THE CHANNEL, THE CONTRACTOR SHALL DELAY THE CHANNEL CLOSING UNTIL THE SHIP TRANSITS THE CHANNEL.
12. THE CONTRACTOR SHALL TAKE PRECAUTIONS AGAINST THE WAKE CURRENT CAUSED BY NEARBY VESSELS ON HIS EQUIPMENT AND SHALL NOT BE ENTITLED TO ANY TIME DELAYS OR EXTRA MONIES DUE TO ANY DAMAGE CAUSED BY SUCH PASSING MARINE TRAFFIC.
13. THE CONTRACTOR IS ADVISED THAT THERE IS VESSEL TRAFFIC IN CLOSE PROXIMITY OF THE BRIDGE SERVING THE ADJACENT FACILITIES, JAMES' WHARF, MARINA NEXT TO BARKING GRUB RESTAURANT, NOAA TIDE STATION, JAMES' WHARF, AND THE BRIDGE SERVING THE ADJACENT FACILITIES. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO MINIMIZE INTERFERENCE WITH NAVIGATION.
14. BURNING AND WELDING OPERATIONS ADJACENT TO THE NAVIGATION CHANNEL MUST BE TEMPORARILY HALTED WHEN TANKERS, BARGES, AND ALL OTHER MARINE TRAFFIC TRANSITS THE CHANNEL.

BRIDGE DEMOLITION NOTES:

1. SOME OF THE EXISTING STRUCTURAL ELEMENTS ARE IN ADVANCED STAGES OF CORROSION AND ARE BEING REMOVED. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ASSESSING THE CONDITION OF THE STRUCTURE AND ENSURING THE SAFETY AND STABILITY OF THE EXISTING ELEMENTS DURING AND THROUGHOUT THE DEMOLITION PROCESS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF REMOVAL AND DISPOSAL OR REMOVAL AND RELOCATION AS APPLICABLE.
2. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ANALYZING AND ASSESSING THE STRUCTURE AND DETERMINING THE SEQUENCE AND MEANS AND METHOD OF BRIDGE REMOVAL. DUE CONSIDERATION SHALL BE GIVEN TO EQUIPMENT, MATERIAL AND PERSONNEL TO BE PLACED ON THE EXISTING STRUCTURE DURING THE DEMOLITION PROCESS.
3. AT LEAST 30 DAYS PRIOR TO THE START OF THE CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT DETAILED PLANS AND PROCEDURES WITH SUPPORTING WORKING DRAWINGS, INCLUDING BRIDGE SECTIONS, BRIDGE ELEVATIONS, AND PLAN OF THE FIXED SPANS AND SWING SPAN TO THE ENGINEER FOR REVIEW AND APPROVAL. IN ADDITION, TEMPORARY SUPPORTS, TEMPORARY SHEDDING, TEMPORARY WORKING DRAWINGS PREPARED AND SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL. AN ANALYSIS OF THE STAGING BARGE AT THE POINTS WHERE THE BRIDGE SPANS ARE SUPPORTED ON THE DECK SHALL ALSO BE REQUIRED FOR REVIEW AND APPROVAL. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND APPROVAL THE DEMOLITION PLANS AND PROCEDURES FOR THE BRIDGE AND SHALL BE RESPONSIBLE FOR THE SAFETY OF THE DEMOLITION PROCESS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF THE DEMOLITION PROCESS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF THE DEMOLITION PROCESS.
4. CONTRACTOR SHALL NOT UTILIZE HEAVY EQUIPMENT ON THE EXISTING BRIDGE UNLESS THE CONTRACTOR'S PROFESSIONAL ENGINEER PERFORMS AN ANALYSIS TO DETERMINE THE CAPACITY OF THE EXISTING BRIDGE TO SUPPORT THE WEIGHT OF THE EQUIPMENT. TEMPORARY STRENGTHENING DESIGNED BY THE CONTRACTOR'S PROFESSIONAL ENGINEER.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER DISPOSAL OF ALL EXISTING MATERIALS WHICH ARE TO BE REMOVED AND DISPOSED OF FROM THE STRUCTURE AS SHOWN ON THE PLANS. THE BID PRICE SHALL INCLUDE THE COMPLETE COST OF REMOVAL, TRANSPORTATION, AND DISPOSAL OF ALL MATERIALS AND/OR DEBRIS IS SUPPLEMENTAL TESTING OR CLASSIFICATION OF MATERIALS AND/OR DEBRIS IS CONSIDERED INCIDENTAL TO THE DISPOSAL. THE CHANNEL IS TO REMAIN CLEAR OF DEBRIS AND MATERIALS.
6. NO PART OF THE EXISTING BRIDGE DECK, SUPERSTRUCTURE, OR OTHER CONSTRUCTION MATERIALS SHALL BE ALLOWED TO FALL INTO THE WATER DURING THE PROCESS OF REMOVAL.
7. THE EXISTING BRIDGE IS COATED WITH A LEAD-BASED PAINT. LEAD IS A HAZARDOUS MATERIAL. PRIOR TO ANY MODIFICATION TO EXISTING STEEL (CUTTING, WELDING, ETC.) REMOVE LEAD PAINT IN ACCORDANCE WITH THE CURRENT REGULATIONS. REFER TO THE CONTRACT SPECIFICATIONS FOR THE CURRENT REGULATIONS. REFER TO CONTAMINANT AND DISPOSAL REQUIREMENTS AS WELL AS THE WORKER HEALTH AND SAFETY CONTROLS, AND REQUIRED REGULATORY AGENCY FEES AND APPROVALS.
8. IN ADDITION TO THE REQUIREMENTS FOR CONTAINMENT OF LEAD-CONTAMINATED DEBRIS DESCRIBED IN THE SPECIAL PROVISIONS, THE CONTRACTOR SHALL AT NO TIME REMOVE OR DISPOSE OF LEAD-CONTAMINATED DEBRIS FROM THE BRIDGE PLAYING NETS, SCREENS, OR OTHER PROTECTIVE DEVICES THAT BE USED TO CATCH ALL SUCH MATERIAL. IF THE ENGINEER DETERMINES THAT ADEQUATE PROTECTIVE DEVICES ARE NOT BEING EMPLOYED, THE WORK SHALL BE STOPPED UNTIL ADEQUATE PROTECTION IS PROVIDED WITHOUT ADDITIONAL COMPENSATION.

UTILITY DEMOLITION NOTES:

1. BEFORE COMMENCEMENT OF ANY WORK, THE CONTRACTOR SHALL LOCATE ANY UTILITIES IN THE WORK AREAS THAT ARE TO REMAIN AND PERFORM SITE SURVEYS TO THE LEVEL OF DETAIL NECESSARY TO IDENTIFY AND PROTECT THE UTILITIES.
2. EXISTING ELECTRIC SERVICE ON THE BRIDGE IS TO BE SHUT OFF, CUT AND CAPPED, PRIOR TO ANY BRIDGE REMOVAL ACTIVITIES. THESE ACTIVITIES SHALL BE COORDINATED WITH THE UTILITY SERVICE PROVIDER.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT NO DAMAGE OCCURS TO EXISTING UTILITIES WITHIN THE VICINITY OF THE PROJECT AS A RESULT OF THE WORK. THE CONTRACTOR SHALL CONTACT DISSAFE (B11) A MINIMUM OF 72 HOURS PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITIES.

GENERAL DEMOLITION NOTES:

1. THE BOSTON PUBLIC WORKS DEPARTMENT MAKES NO ASSURANCES REGARDING THE CONDITION OF THE EXISTING STRUCTURES. THE CONTRACTOR SHALL DETERMINE AND VERIFY EXISTING CONDITIONS AND CONSTRUCTION FEATURES OF THE STRUCTURES AS NECESSARY FOR PLANNING AND COMPLETION OF THE WORK.
2. DRY DOCK 4, WHICH INCLUDES PIERS 5 AND 6, IS AVAILABLE TO THE CONTRACTOR FOR LAUNDRY, STAGING, AND DEMOLITION ACTIVITIES. DRY DOCK 4 IS LOCATED AT THE END OF NORTHERN AVENUE, BOSTON, MA. TERMS AND CONDITIONS ARE INCLUDED IN THE SPECIAL PROVISIONS.
3. THE CONTRACTOR SHALL VISIT THE PROJECT SITES PRIOR TO BIDDING TO FAMILIARIZE HIMSELF WITH THE EXISTING CONDITIONS AND SURROUNDINGS. THE DEMOLITION WORK SHALL BE PERFORMED UNDER THIS CONTRACT. THE DRAW PIER SWING SPAN AND TENDER'S HOUSE CAN ONLY BE ACCESSIBLE BY BOAT IN COORDINATION WITH CITY PERSONNEL.
4. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS REQUIRED FOR THE PROPER PERFORMANCE OF THE WORK. FIELD CONDITIONS MAY EXIST WHICH DEVIATE FROM THE TYPICAL AND THEORETICAL DIMENSIONS SHOWN ON THE PLANS, IN CONDITION REPORTS, AND FIELD INSPECTION NOTES.
5. EXISTING BRIDGE PLANS, CONDITION REPORTS, FIELD INSPECTION NOTES AND CALCULATIONS ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY AND ARE NOT TO BE USED FOR CONSTRUCTION. THE CONTRACTOR SHALL DETERMINE AND ESTABLISH ALL THE AS-BUILT AND CURRENT CONDITION OF THE BRIDGE. ALL CALCULATIONS REQUIRED TO PERFORM CONTRACT WORK IN A SAFE AND EFFECTIVE MANNER SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF THE DEMOLITION PROCESS.
6. DIMENSIONS, ANGLES, AND ELEVATIONS SHOWN ON THE EXISTING DETAILS ARE TAKEN FROM THE ORIGINAL CONSTRUCTION PLANS AND DRAWINGS. THE CONTRACTOR SHALL NOT BE RESPONSIBLE FOR THE SAFETY OF THE DEMOLITION PROCESS. THE CONTRACTOR SHALL DETERMINE AND ESTABLISH ALL DIMENSIONS, ANGLES, ELEVATIONS, AND EXISTING DETAILS NECESSARY FOR THE DEMOLITION PROCESS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF THE DEMOLITION PROCESS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF THE DEMOLITION PROCESS.
7. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER AND MASSACHUSETTS DEP THE PROPOSED METHOD OF WORK, SCHEDULE AND IDENTIFICATION OF EQUIPMENT TO BE USED FOR ALL ITEMS OF WORK AT LEAST ONE WEEK PRIOR TO THE START OF CONSTRUCTION. THE FINAL STORAGE ARRANGEMENT OF MATERIALS AND BRIDGE EQUIPMENT SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL. AT DRY DOCK 4 SHALL BE ALSO SUBMITTED TO THE ENGINEER FOR APPROVAL.
8. WORKING DRAWINGS SHALL STATE THAT DIMENSIONS HAVE BEEN FIELD REVERSED BY THE CONTRACTOR. DIMENSIONS QUOTED FROM THIS STATEMENT SHALL NOT BE REVERSED OR APPROVED. DIMENSIONS SHALL NOT BE APPLICABLE TO REDUCED SIZED PRINTS. DIMENSIONS SHALL BE 2 FOR FULL-SIZE PRINTS.
9. THE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS AND LICENSES FOR THE DEMOLITION WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND LICENSES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND LICENSES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND LICENSES.
10. FOR THE PERMITS ACQUIRED BY THE CITY, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND LICENSES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND LICENSES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND LICENSES.
11. THE CONTRACTOR SHALL GIVE ALL NOTICES NECESSARY AND INCIDENTAL TO THE DUE COURSE OF THE WORK, AND SHALL COMPLY WITH ALL LAWS, ORDINANCES, RULES AND REGULATIONS OF THE FEDERAL GOVERNMENT, THE STATE, AND LOCAL GOVERNMENTS AND AGENCIES HAVING JURISDICTION OVER THE WORK AND ENCOMPASSED BY THE CONTRACT.
12. ALL DEMOLITION WORK SHALL BE PERFORMED IN COMPLIANCE WITH THE PERMITS ISSUED FOR THIS PROJECT.
13. THE CONTRACTOR SHALL PROTECT IN PLACE ALL ADJACENT EXISTING STRUCTURES THROUGHOUT THE DEMOLITION PROCESS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TRACKING ALL COORDINATION AND CORRESPONDENCE WITH ADJACENT PROPERTY OWNERS. PHOTOGRAPHS OF EXISTING CONDITIONS SHALL BE TAKEN PRIOR TO THE START OF WORK. BENCHMARK FOR POSSIBLE DAMAGE CAUSED BY DEMOLITION OR CONSTRUCTION. THE SURVEY INCLUDES BOTH THE EXTERIOR AND INTERIOR OF THE STRUCTURES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF THE DEMOLITION PROCESS. ANY DAMAGE CAUSED BY DEMOLITION IS TO BE REPAIRED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER AT NO COST TO THE CITY OF BOSTON.
14. MATERIALS REMOVED FROM THE BRIDGE ON THE EXISTING BRIDGE.
15. THE CONTRACTOR IS NOT PERMITTED TO STOCKPILE ANY MATERIALS REMOVED FROM THE BRIDGE OVERNIGHT IN CONTRACTOR STAGING AREAS ALONG NORTHERN AVENUE.

25% PLANS 9-27-24

DATE	DESCRIPTION
	USE ONLY - PRINTS TO LAST DATE



**SUGGESTED SEQUENCE OF DEMOLITION**

**GENERAL:**

THE FOLLOWING CONSTRUCTION PROCEDURE AND EQUIPMENT INFORMATION (IDENTIFIED IN THESE PLANS) IS INTENDED AS A SUGGESTION OF ONE FEASIBLE METHOD IN ORDER FOR THE CITY TO APPLY FOR AND ACQUIRE THE APPROPRIATE PERMITS. MANY OF THESE PERMITS WILL BE OBTAINED SIMULTANEOUSLY AND COULD BE COORDINATED TO OPTIMIZE THE SCHEDULE.

ANY CHANGES TO THE PERMITS DUE TO THE CONTRACTOR'S MEANS AND METHODS MUST BE SUBMITTED TO THE CITY ENGINEER FOR APPROVAL. CONSTRUCTION PROCEDURES SHALL BE SUBMITTED FOR ALL ITEMS OF WORK.

SUBMITTED SEQUENCES WHICH RESULT IN A LONGER DURATION OF WORK, RESULT IN ADDITIONAL RESOURCE AREA IMPACTS, OR ADVERSELY AFFECT NAVIGATION WILL NOT BE FAVORABLY CONSIDERED. SHORT-TERM PARTIAL CLOSURE OF THE NAVIGATION CHANNEL WILL BE PERMITTED ONLY IF THE CONTRACTOR CAN MAINTAIN THE CHANNEL OPEN AND STABLE FOR SWING OPERATIONS. CONSTRUCTION PROCEDURES SHALL BE SUBMITTED TO THE CITY ENGINEER FOR APPROVAL. CONSTRUCTION PROCEDURES SHALL BE SUBMITTED FOR ALL ITEMS OF WORK.

**NOTE WELL:**

THE CONTRACTOR IS CAUTIONED THAT STRUCTURAL INTEGRITY OF THE EXISTING BRIDGE SHALL BE MAINTAINED THROUGHOUT THE DEMOLITION. THE CONTRACTOR SHALL MAINTAIN THE STRUCTURAL INTEGRITY OF THE BRIDGE SPAN DURING DEMOLITION WITH REMOVAL OPERATIONS PROCEEDING IN A SYMMETRICAL SEQUENCE.

CAUTION - ALL STRUCTURAL STEEL IS SUSPECTED OF BEING COATED WITH LEAD BASED PAINT.

**PROHIBITION OF EXPLOSIVE REMOVAL METHODS:**

THE USE OF EXPLOSIVE REMOVAL METHODS IS STRICTLY PROHIBITED.

**GENERAL PRELIMINARY PREPARATION**

THE CONTRACTOR IS REQUIRED TO MAKE ALL NECESSARY FIELD MEASUREMENTS AND SUBMIT REQUIRED SHORT/WORKING/REMOVAL DRAWINGS FOR APPROVAL UPON APPROVAL. THE CONTRACTOR SHALL MAINTAIN THE STRUCTURAL INTEGRITY OF THE BRIDGE SPAN THROUGHOUT THE DEMOLITION. THE CONTRACTOR SHALL SUBMIT A SEQUENCE SO AS TO AVOID DELAYS IN THE WORK. THE CONTRACTOR SHALL SUBMIT A WORK SCHEDULE AND DETAILED CONSTRUCTION PROCEDURES FOR ALL REMOVAL STEPS, INCLUDING THE ORDER OF REMOVAL, THE ORDER OF STAGING, AND THE ORDER OF WORK SCHEDULE AND ANY REQUIRED DETAILED CONSTRUCTION PROCEDURES SHALL BE SUBMITTED FOR APPROVAL.

THE CONTRACTOR WILL NOT BE PERMITTED TO UTILIZE A CONSTRUCTION PROCEDURE THAT ALLOWS ANY PORTION OF THE STRUCTURE TO BE DROPPED INTO THE WATER AND LATER PICKED FOR REMOVAL.

CONTRACTOR STAGING AREAS PROVED BY THE CITY INCLUDE A PORTION OF THE ROADWAY AREA NEXT TO THE BOSTON ABUTMENT BETWEEN THE JAMES HOOK PROPERTY AND THE USCG BUILDING, SPAN 3 AND A PORTION OF THE ROADWAY ADJACENT TO THE BOSTON ABUTMENT BETWEEN THE JAMES HOOK PROPERTY AND THE USCG BUILDING, 290 R NORTHERN AVENUE, BOSTON.

**IMPORTANT FIRST ITEMS:**

1. CONTRACTOR TO PERFORM PRE-CONSTRUCTION SURVEY WITH PHOTOGRAPHS OF ALL STRUCTURES ADJACENT TO THE PROJECT AREA TO SET A BENCHMARK FOR POSSIBLE DAMAGE CAUSED BY DEMOLITION OR CONSTRUCTION. CONTRACTOR TO ENSURE THAT ALL ADJACENT STRUCTURES ARE PROTECTED DURING CONSTRUCTION.

2. THE CONTRACTOR SHALL PERFORM A SURVEY OF THE CHANNEL BOTTOM AT THE BOSTON ABUTMENT AND THE ROADWAY ADJACENT TO THE BOSTON ABUTMENT. THE CONTRACT DOCUMENTS SHALL BE USED TO VERIFY THAT THE PROPOSED MEANS AND METHODS DO NOT REQUIRE DREDGING OF THE PORT POINT CHANNEL AND DREDGING BEYOND THE LIMITS INDICATED IN THE PERMIT DOCUMENTS WILL BE ALLOWED.

3. CONTRACTOR TO COORDINATE WITH UTILITY SERVICE PROVIDERS TO DISCONNECT ALL POWER TO THE EXISTING BRIDGE AND TENDER HOUSE.

4. THE CONTRACTOR SHALL FIND, COLLECT, AND SECURE SALVAGE ITEMS / COMPONENTS OF HISTORICAL SIGNIFICANCE. THESE ITEMS SHALL BE RELOCATED TO THE CITY ENGINEER'S OFFICE AND TRANSFERRED TO THE CITY OF BOSTON.

**MOBILIZE STAGING AREAS ADJACENT TO EXISTING BRIDGE**

1. CONTRACTOR TO INSTALL CONCRETE BARRIERS AND CHAINLINK FENCING WITH APPROPRIATE GATES AND LOCKS ALONG THE PERIMETER OF THE DEMOLITION STAGING AREAS AS NECESSARY TO PREVENT UNAUTHORIZED ACCESS TO THE SITE.

2. CONTRACTOR TO PLACE CONSTRUCTION TRAILER OFFICE AND OTHER NECESSARY SITE FACILITIES.

**MOBILIZE DRY DOCK 4:**

1. CONTRACTOR TO DOCUMENT EXISTING CONDITIONS OF THE DRY DOCK WITH PHOTOGRAPHS OR VIDEO IMAGERY PRIOR TO PREPARING YARD FOR CONSTRUCTION ACTIVITIES.

2. PREPARE THE YARD BY CLEARING THE WORK AREA TO A FLAT SURFACE. TREES AND OTHER VEGETATION SHOULD BE PREVIOUSLY REMOVED. GRASS AND WEEDS SHOULD ONLY BE REMOVED FROM THE WORK AREA. ALL OBSTRUCTIONS, OR DEBRIS SHOULD BE REMOVED BY THE CONTRACTOR IN CONCORDANCE WITH THE CITY.

3. CONTRACTOR TO INSTALL SEDIMENT FILTERS AT ALL DRAINAGE CATCH BASINS IN THE FACILITY.

4. COORDINATE WITH THE SITE MANAGER TO PLACE CONCRETE BARRIERS ON PIER 6 (WEST OF GRAVING DOCK) IN ORDER TO BLOCK OFF AREAS OF DETRIORATION TO PREVENT STORAGE OF EQUIPMENT AND MATERIALS.

5. CONTRACTOR TO PLACE CONSTRUCTION TRAILER OFFICE DEDICATED FOR DRY DOCK 4 OPERATIONS AND ALL NECESSARY SITE FACILITIES.

6. ENSURE ADEQUATE PROTECTION OF THE LEASED COMMERCIAL SPACE AND SKAT WATER INTAKE PIPING AT THE SOUTHEAST CORNER OF PIER 5.

7. MAINTAIN THE FINAL LAYOUT AREAS THAT WILL BE TRANSPORTED AND RECEIVED. THIS SITE AND THE INTERIOR PORTION OF WORK AREAS AND EQUIPMENT ITEMS ARE TO BE RELOCATED TO DRY DOCK 4 FOR EITHER STORAGE OR DEMOLITION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND SUGGESTED SEQUENCING.

8. CONSTRUCT TEMPORARY ASBESTOS AND LEAD PAINT CONTAINMENT FACILITIES FOR DEMOLITION ACTIVITIES.

9. PLACE STEEL PLATES OR CRANE MATS ON TOP OF THE EXISTING GROUND SURFACE TO FACILITATE CONTRACTOR PROPOSED OPERATIONS AS NECESSARY.

**REMOVAL OF TOP OF DECK ITEMS:**

1. CONTRACTOR TO REMOVE AND DISPOSE OF EXISTING ITEMS ALONG THE TOPSIDE OF THE DECK INCLUDING: TRAFFIC LIGHTS, SIGNAL LIGHTS, JUNCTION BOXES, UTILITY CABLES AND CONDUITS, LED, GROUND AESTHETIC LIGHTS, PLANTER BOXES, TRAFFIC GATES, OPERATOR SHACK, TRUSS OFFSHOOTERS, TRUSS BRACING, TRUSS MEMBER, TRUSS BRACING, TRUSS BARRIERS, NOTIFIED THAT SOME MATERIALS MAY HAVE BEEN GROSS CONTAMINATED WITH LEAD PAINT CHIPS, DUST, DEBRIS, OR OTHER HAZARDOUS MATERIALS, CONTRACTOR TO PLACE AND DISPOSE OF THESE ITEMS IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

**REMOVAL OF APPROACH TRUSS SPANS 1 AND 2:**

1. PROVIDE CONTAINMENT AND DEBRIS NETTING BELOW ALL BAYS AND SIDEWALKS TO PREVENT DEBRIS AND LEAD PAINT FROM FALLING INTO WATER AND IN ACCORDANCE WITH THE CONTRACTOR'S APPROVED LEAD ABATEMENT PLAN AND SPECIAL PROVISIONS. THE CONTAINMENT SYSTEM SHALL BE APPROVED BY THE ENGINEER.

2. PREPARE STRUCTURE CUT LOCATIONS. PREPARATION REQUIRES SPECIAL CONSIDERATION DUE TO LEAD PAINT. MEMBERS MUST BE CLEANED TO SSPC SP3 CONTAINMENT SYSTEM.

3. INSTALL TEMPORARY STRENGTHENING AND BRACING FOR MEMBERS AS NECESSARY FOR LIFTING OPERATIONS. CONTRACTOR SHALL SUBMIT DETAILED CALCULATIONS AND PROCEDURES FOR REVIEW AND APPROVAL BY THE ENGINEER PRIOR TO REMOVAL. CONTRACTOR'S SUBMITTAL SHALL BE SEALED, STAMPED, AND SIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE COMMONWEALTH OF MASSACHUSETTS.

4. REMOVE THE ACCESS LADDERS AT THE PIER STAGING SUSPENDED FROM THE SWING STRUCTURE. CONTRACTOR SHALL SUBMIT DETAILED CALCULATIONS AND PROCEDURES FOR REVIEW AND APPROVAL BY THE ENGINEER PRIOR TO REMOVAL. PLACE REMOVED MATERIALS ON TRUCKS AND DISPOSE.

5. REMOVE THE DECK IN THE CENTER BAY USING LIGHTWEIGHT EQUIPMENT AND HAND TOOLS.

6. PREPARE STEEL BLOOR SYSTEM IN THE CENTER BAY THAT ARE TO BE CUT, CUT AND REMOVE STRINGERS, FLOOR BEAMS, AND FLOOR SYSTEM. REMOVE UPPER HORIZONTAL BRACING AT THE CENTER BAY PORTAL. PLACE REMOVED PORTIONS ON BARRIES AND RELOCATE TO DRY DOCK 4.

7. REMOVE THE DECK IN THE NORTH BAY AND NORTH SIDEWALK. PLACE REMOVED MATERIALS ON TRUCKS LOCATED AT THE BRIDGE APPROACH AND DISPOSE.

8. PLACE FLOAT-OUT BARRIES (WITH SPUDS REMOVED) DIRECTLY UNDERNEATH THE NORTH HALF OF THE APPROACH SPAN TRUSSES DURING LOW TIDE. UTILIZE FULL BALLAST TO MAINTAIN A LOW POSITION.

9. SECURE THE REMOVAL BARRIES AND FLOAT-OUT BARRIES BY MOVING TO THE EXISTING BOSTON ABUTMENT AND PIER 1 TO PREVENT LATERAL AND FLOAT-OUT HORIZONTAL LOADS ON THE TRUSS DURING BRIDGE LIFTING AND FLOAT-OUT OPERATIONS. CONTRACTOR SHALL SUBMIT DETAILED CALCULATIONS AND PROCEDURES FOR REVIEW AND APPROVAL BY THE ENGINEER PRIOR TO NIGHT IN ACCORDANCE WITH UNITED STATES COAST GUARD REGULATIONS.

10. PLACE A WORKING BARGE ADJACENT TO THE FLOAT-OUT BARRIES AS NEEDED UTILIZING SPUDS TO PREVENT LATERAL MOVEMENT.

11. PLACE SUPPORT POINTS AT EACH HALF OF THE SPAN. TRUSS ON LOWER CHORD TRUSS JOINTS AT MULTIPLE LOCATIONS AS DETERMINED BY THE CONTRACTOR.

12. PLACE GRILLAGE ON FLOAT-OUT BARRIES AT LOCATIONS AS DETERMINED BY THE CONTRACTOR. CONTRACTOR SHALL MAINTAIN THE GRILLAGE AT ALL LOCATIONS AS REQUIRED. SHIM AS REQUIRED ALLOWING APPROXIMATELY 6-INCH GAP BETWEEN THE TOP OF THE GRILLAGE AND THE UNDERSIDE OF THE TRUSS LOWER JOINT.

13. USING A COMBINATION OF DE-BALLASTING AND A RISING TIDE, EACH FLOAT-OUT BARGE (ONE AT A TIME) FULLY ENGAGE THE GRILLAGES. UPON LOAD TRANSFER TO EACH BARGE, CONTRACTOR SHALL TIGHTEN THE TENSION WIRE ROPE TIEDowns TO SINGLE-TIGHT CONDITION.

14. FLOAT-OUT EACH APPROACH TRUSS SPAN BAY INTO THE BOSTON HARBOR AND TO DRY DOCK 4.

15. SEE DRY DOCK CONSTRUCTION ACTIVITIES FOR ADDITIONAL DEMOLITION SEQUENCING AT THE DRY DOCK.

16. REPEAT SEQUENCE ITEMS 7 THROUGH 14 FOR SPAN 1 SOUTH BAY.

17. REPEAT SEQUENCE ITEMS 1 THROUGH 16 FOR SPAN 2.

**REMOVAL OF SWING SPAN:**

1. PROVIDE CONTAINMENT AND DEBRIS NETTING BELOW THE ENTIRETY OF THE SWING SPAN. CONTRACTOR SHALL MAINTAIN THE STRUCTURAL INTEGRITY OF THE BRIDGE SPAN DURING DEMOLITION WITH REMOVAL OPERATIONS PROCEEDING IN A SYMMETRICAL SEQUENCE. THE CONTRACTOR'S APPROVED LEAD ABATEMENT PLAN AND SPECIAL PROVISIONS SHALL BE APPROVED BY THE ENGINEER.

2. PREPARE STRUCTURE CUT LOCATIONS. PREPARATION REQUIRES SPECIAL CONSIDERATION DUE TO LEAD PAINT. MEMBERS MUST BE CLEANED TO SSPC SP3 FOR A MINIMUM DISTANCE OF 1'-0" ON EITHER SIDE OF THE CUT WITHIN THE CONTAINMENT SYSTEM.

3. INSTALL TEMPORARY STRENGTHENING AND BRACING FOR MEMBERS AS REQUIRED. THE CONTRACTOR SHALL SUBMIT DETAILED CALCULATIONS AND PROCEDURES FOR REVIEW AND APPROVAL BY THE ENGINEER PRIOR TO REMOVAL. CONTRACTOR'S SUBMITTAL SHALL BE SEALED, STAMPED, AND SIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE COMMONWEALTH OF MASSACHUSETTS.

4. REMOVE ACCESS LADDERS, PLATFORMS, SWING GATE MACHINERY, AND ANY REMAINING APPURTENANCES.

5. DISCONNECT ANY UTILITY CONDUITS OR MACHINERY BETWEEN THE SWING SPAN AND THE TENDER HOUSE OR URN PIER.

6. REMOVE THE STEEL GRID DECK IN THE SECTION THAT IS TO BE REMOVED. THE GRID DECK MAY BE LEFT IN ADJACENT SECTIONS TO FACILITATE DEMOLITION ACTIVITIES.

7. FOR THE SECTION TO BE REMOVED, FLAME CUT STRINGERS AND FLOOR SYSTEM TO BE REMOVED. CONTRACTOR SHALL SUBMIT DETAILED CALCULATIONS AND PROCEDURES FOR REVIEW AND APPROVAL BY THE ENGINEER PRIOR TO REMOVAL. CONTRACTOR'S SUBMITTAL SHALL BE SEALED, STAMPED, AND SIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE COMMONWEALTH OF MASSACHUSETTS.

**REMOVAL OF SPAN 3:**

1. PROVIDE CONTAINMENT AND DEBRIS NETTING BELOW THE ENTIRETY OF THE SPAN TO PREVENT DEBRIS AND LEAD PAINT FROM FALLING INTO WATER AND IN ACCORDANCE WITH THE CONTRACTOR'S APPROVED LEAD ABATEMENT PLAN AND SPECIAL PROVISIONS. THE CONTAINMENT SYSTEM SHALL BE APPROVED BY THE ENGINEER.

2. REMOVE THE DECK AND FLOOR SYSTEM AND ALL APPURTENANCES.

**DRY DOCK CONSTRUCTION ACTIVITIES:**

1. CONTRACTOR TO PERFORM DEMOLITION OF THE BRIDGE SECTIONS ON BARGES ADJACENT TO THE EAST SIDE OF PIER 5. THESE INCLUDE THE NORTH BAY OF SPAN 1, SOUTH BAY OF SPAN 1, NORTH BAY OF SPAN 2, SOUTH BAY OF SPAN 2 AND MISCELLANEOUS STEEL FRAME ITEMS FROM THE SWING SPAN.

2. CONTRACTOR TO PERFORM SEQUENTIAL DEMOLITION OF THE TRUSSES.

**DEMOLITION DRY DOCK 4:**

1. CONTRACTOR TO REMOVE ALL CONSTRUCTION MATERIALS AND EQUIPMENT FOLLOWING THE COMPLETION OF THE PROJECT.

2. CONTRACTOR SHALL REMOVE SEDIMENT FILTERS FROM CATCH BASINS AND ENSURE DRAINAGE STILL FUNCTIONS PROPERLY.

3. CONTRACTOR SHALL RESTORE BARRIERS AND CHAINLINK FENCING TO PREVIOUS EXISTING LOCATIONS OR AS DIRECTED BY THE SITE MANAGER.

4. CONTRACTOR TO PERFORM WALKTHROUGH OF DRY DOCK 4 WITH THE SITE MANAGER. THE WALKTHROUGH WILL INCLUDE TAKING SITE PHOTOGRAPHS AND COMPARING WITH THE INITIAL DOCUMENTATION TO VERIFY ACCEPTABLE CONDITION. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING THE DRY DOCK IN TEMPORARY BETTER CONDITION FROM WHEN IT WAS RECEIVED AT THE START OF THE PROJECT.

CITY OF BOSTON  
NORTHERN AVENUE BRIDGE

DATE	REV.	BY	DATE	REV.	BY

PROJECT FILE NO. \_\_\_\_\_  
DEMOLITION SEQUENCING

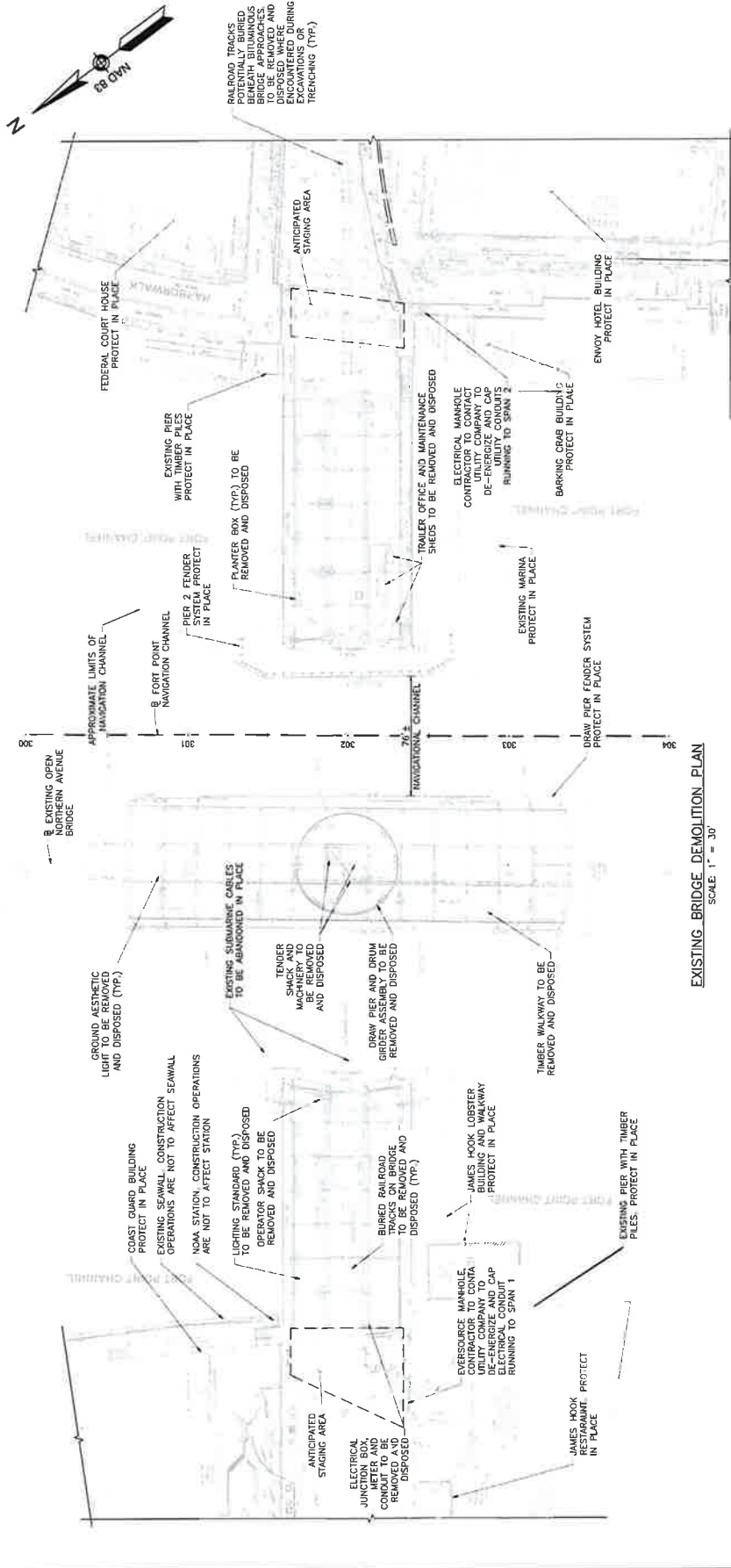
25% PLANS 9-27-24

DATE	USE ONLY PRINTS OF LATEST DATE	DESCRIPTION

CITY OF BOSTON  
NORTHERN AVENUE BRIDGE  
DEMOLITION PLAN

DATE	REV. AND PROJECT NO.	SHEET TOTAL
		3 OF 14

PROJECT FILE NO.



EXISTING BRIDGE DEMOLITION PLAN  
SCALE: 1" = 30'

NOTES:

1. THE CONTRACTOR SHALL DETERMINE AND VERIFY EXISTING CONDITIONS, BRIDGE FEATURES, UTILITIES, AND APPEARANCES TO BE DEMOLISHED. THE BOSTON PUBLIC WORKS DEPARTMENT MAKES NO ASSURANCES REGARDING THE PRESENTED INFORMATION. ADDITIONAL ITEMS TO BE REMOVED AND DISPOSED MAY BE PRESENT.

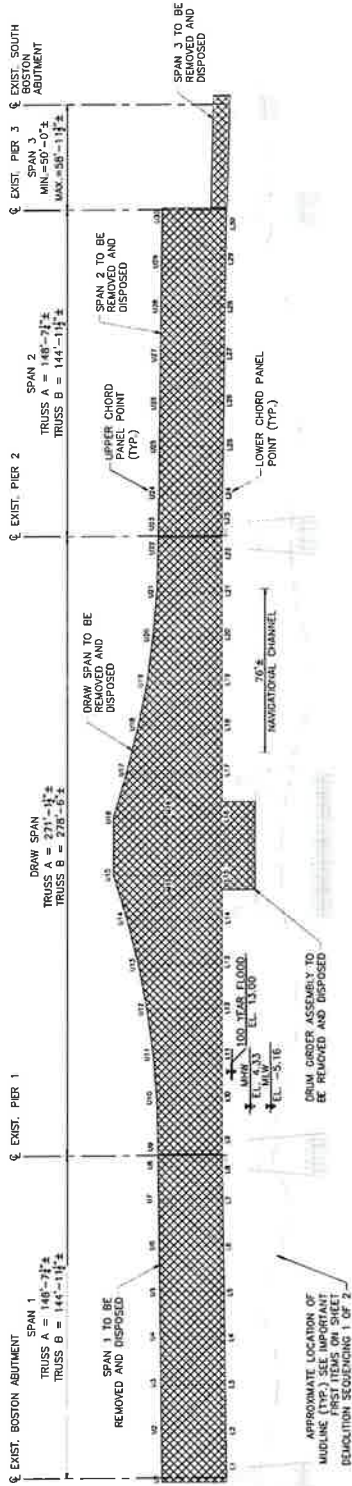
25% PLANS 9-27-24

DATE	USE ONLY PRINTS OF LATEST DATE	DESCRIPTION

CITY OF BOSTON  
 NORTHERN AVENUE BRIDGE

DATE	REV. AND PREP. AND	SHEET NO.	TOTAL SHEETS
12/12/2024	1.0	11	12

DEMOLITION ELEVATION



EXISTING BRIDGE ELEVATION (TRUSS B SHOWN, LOOKING NORTH)

SCALE: 1" = 25'

NOTE: DRAW SPAN SHOWN IN CLOSED (TO MARINE TRAFFIC) POSITION, HOWEVER, DRAW SPAN IS CURRENTLY IN THE OPEN (TO MARINE TRAFFIC) POSITION AND WILL BE REMOVED FROM THAT POSITION.

LEGEND:  
 TO BE REMOVED AND DISPOSED

- NOTES:
- SPAN DIMENSIONS SHOWN ABOVE INDICATE CENTERLINE TO CENTERLINE OF BEARINGS BASED ON THE ORIGINAL CONSTRUCTION DRAWINGS.

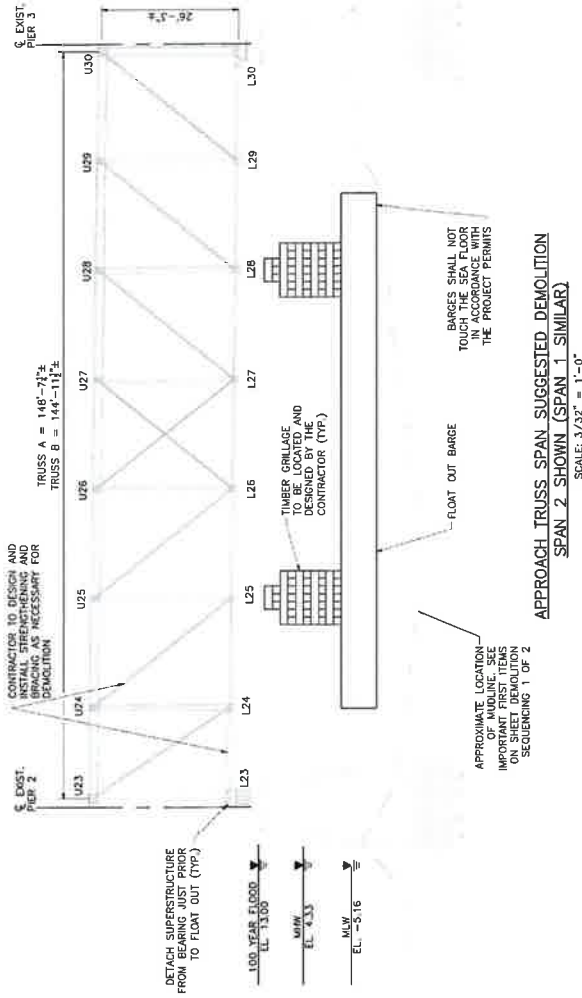
25% PLANS 9-27-24

DATE	DESCRIPTION
	USE ONLY PRIOR TO LATEST DATE

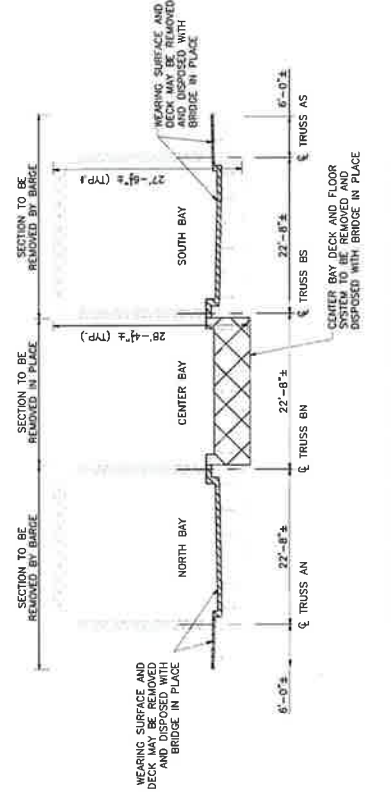
CITY OF BOSTON  
NORTHERN AVENUE BRIDGE  
APPROACH TRUSS SPAN DEMOLITION

DATE	REV. NO.	DESCRIPTION
06/03/24	1	ISSUE FOR PERMITS
06/03/24	2	REVISED PER COMMENTS

PROJECT FILE NO. 26-09-2024 238 PM



APPROACH TRUSS SPAN SUGGESTED DEMOLITION  
SPAN 2 SHOWN (SPAN 1 SIMILAR)  
SCALE: 3/32" = 1'-0"





APPROACH TRUSS SPAN CROSS SECTION (SPANS 1 AND 2)  
(VIEW LOOKING EAST)  
SCALE: 1/8" = 1'-0"

NOTES:

- SEE SUGGESTED DEMOLITION SEQUENCING SHEETS FOR SUGGESTED SEQUENCING.
- CONTRACTOR'S DETAILED PLANS AND PROCEDURES FOR DEMOLITION ARE TO BE PREPARED AND STAMPED BY A PROFESSIONAL ENGINEER REGISTERED IN THE COMMONWEALTH OF MASSACHUSETTS. THE CONTRACTOR SHALL NOT COMMENCE ANY DEMOLITION WORK UNTIL THE DETAILED PLANS AND PROCEDURES FOR DEMOLITION ARE APPROVED BY THE ENGINEER. THE CONTRACTOR SHALL PROVIDE THE WEIGHT OF TRUSS SECTIONS, TRUSS STRENGTHENING AND BRACING METHODS AND LOCATIONS, GRILLAGE SUPPORT PLACEMENT AND DESIGN, DESIGN OF CONTAINMENT AND SHIELDING, WEARING SURFACE AND DECK REMOVAL METHODS, AND ALL OTHER NECESSARY DEMOLITION PROCEDURES, AND ALL EQUIPMENT NECESSARY TO PERFORM THE WORK. ALTERNATIVE DEMOLITION METHODS MAY BE PROPOSED FOR REVIEW AND ACCEPTANCE BY THE ENGINEER.
- CHEMICAL ANALYSIS WAS PERFORMED AND CARBON EQUIVALENT VALUES FOUND THAT THE STEEL IS GENERALLY CONSIDERED WELDABLE. SPECIFIC WELD PROCEDURES AND TESTING PROCEDURES FOR THE STEEL ARE TO BE PROVIDED BY THE CONTRACTOR AND NOT BE CONSIDERED PRE-QUALIFIED WELDS BY CODES AND SPECIFICATIONS.
- IT IS BELIEVED THAT THE DECK IN SPANS 1 AND 2 CONSISTS OF TIMBER SAND, GRANITE BLOCKS, AND BITUMINOUS CONCRETE. THE DECK MAY BE REMOVED WITH LIGHT WEIGHT MACHINERY AND HAND TOOLS PRIOR TO FLOAT OUT.
- THE CONTRACTOR IS ADVISED THAT THE TRUSS MEMBERS AND FLOOR SYSTEM HAVE SEVERE DETERIORATION WHICH HAS SIGNIFICANTLY REDUCED THEIR LOAD CAPACITY. THE TRUSS MEMBERS AND FLOOR SYSTEM SHALL BE REINFORCED WITH STEEL CABLES, LOWER CHORD MEMBERS L1.2, L1.8, L2.3/2.4 AND L2.8/3.0 HAVE SEVERE SECTION LOSS. THE CONTRACTOR SHALL PROVIDE STRENGTHENING AND BRACING AS NECESSARY TO MAINTAIN THE CONFIGURATION AND INTEGRITY OF THE TRUSSES DURING THE REMOVAL PROCESS.
- THE CONTRACTOR SHALL NOT UTILIZE CONSTRUCTION EQUIPMENT SUPPORTED BY THE BRIDGE FOR DEMOLITION UNLESS CONTRACTOR'S REGISTERED ENGINEER HAS PERFORMED A DESIGN ANALYSIS OF THE BRIDGE AND HAS RECEIVED ACCEPTANCE BY THE ENGINEER.
- THE NORTH AND SOUTH BAYS FOR SPANS 1 AND 2 ARE ASSUMED TO BE REMOVED ONE AT A TIME STARTING WITH THE REMOVAL OF THE NORTH BAY. THE SOUTH BAY MAY THEN BE REMOVED TO THE NORTH.
- THE CONTRACTOR SHALL MAINTAIN THE BARGE LEVEL OR WITHIN LISTING LIMITS OF THE NECESSARY.
- BRIDGE SECTIONS MAY BE SECURED WITH WIRE ROPE TIE DOWNS TO THE BARGE AS NECESSARY.
- THE BRIDGE SECTIONS MAY BE FLOATED OUT TO DRY DOCK 4 FOR DEMOLITION. LEAD PAINT ABATEMENT, AND DISPOSAL, THE BARGES MAY BE MOORED ALONG THE EAST SIDE OF PER 5.

LEGEND:

-  TO BE REMOVED WITH BRIDGE IN PLACE
-  MAY BE REMOVED WITH BRIDGE IN PLACE

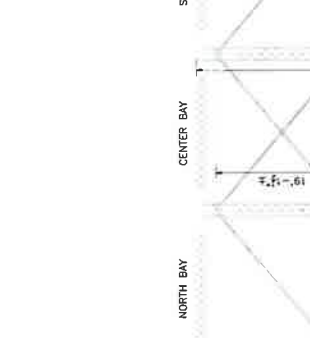
25% PLANS 9-27-24

DATE	DESCRIPTION
06/03/24	ISSUE FOR PERMITS

CITY OF BOSTON  
 NORTHERN AVENUE BRIDGE  
 SWING SPAN DEMOLITION

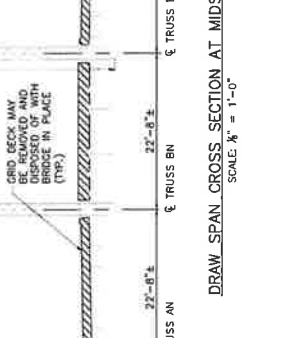
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PROJECT FILE NO. \_\_\_\_\_



DRAW SPAN CROSS SECTION AT MIDSPAN  
 SCALE: 1/4" = 1'-0"

LEGEND:  
 MAY BE REMOVED WITH BRIDGE IN PLACE  
 --- SUGGESTED CUT LINE



SUGGESTED DEMOLITION SEQUENCING  
 TRUSS B ELEVATION (LOOKING WEST)  
 SCALE: 1/4" = 1'-0"

LEGEND:  
 MAY BE REMOVED WITH BRIDGE IN PLACE  
 --- SUGGESTED CUT LINE



SUGGESTED DEMOLITION SEQUENCING  
 DRAW SPAN PLAN VIEW  
 SCALE: 1/4" = 1'-0"

LEGEND:  
 MAY BE REMOVED WITH BRIDGE IN PLACE  
 --- SUGGESTED CUT LINE

NOTES:  
 1. SEE SUGGESTED DEMOLITION SEQUENCING FOR SUGGESTED SEQUENCING. THE SUGGESTED DEMOLITION SEQUENCING IS INTENDED TO BE REPRESENTATIVE OF THE OVERALL METHOD. CONTRACTOR SHALL VERIFY SECTIONAL REMOVAL SEQUENCING, STRONG FLOOR, STRINGERS, SIDEWALK BRACKETS, OR OTHER BRIDGE COMPONENTS, BRIDGE DETENTION AND EQUIPMENT AVAILABILITY, AND CONTRACTORS MEANS AND METHODS.  
 2. CONTRACTOR'S DETAILED PLANS AND PROCEDURES FOR REMOVAL ARE TO BE PREPARED, STAMPED, AND SIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE COMMONWEALTH OF MASSACHUSETTS. THE CONTRACTOR SHALL NOT COMMENCE ANY WORK UNTIL THE APPLICABLE SUBMITTALS ARE APPROVED BY THE ENGINEER. THE DEMOLITION PLAN SHALL INCLUDE BRIDGE IDENTIFICATION, BRIDGE LOCATION, BRIDGE SUPPORT PLACEMENT AND DESIGN (IF NECESSARY), DESIGN OF CONTAINMENT AND SHIELDING, DECK REMOVAL PROCEDURES, AND ALL EQUIPMENT NECESSARY TO PERFORM THE WORK.  
 3. THE CONTRACTOR SHALL NOT OCCUPY THE NAVIGATION CHANNEL FOR DEMOLITION AND REMOVAL ACTIVITIES UNLESS APPROVED BY THE U.S. COAST GUARD. THE CONTRACTOR SHALL PERFORM AS MUCH WORK AS POSSIBLE BEHIND THE EXISTING FENDER SYSTEM TO MINIMIZE DISRUPTIONS TO THE NAVIGATION CHANNEL.  
 4. THE DRAW SPAN HAS A STEEL GRID DECK WITH A SECTION OF CONCRETE FILL ABOVE THE NAVIGATION CHANNEL.  
 5. THE CONTRACTOR IS ADVISED THAT THE TRUSS MEMBERS AND FLOOR SYSTEM HAVE SEVERE CORROSION WHICH MAY BE AMPLIFIED BY THE DEMOLITION WORK. CONTRACTOR SHALL PROVIDE TRUSS AND FLOOR SYSTEM STRENGTHENING AND BRACING AS NECESSARY TO MAINTAIN THE CONFIGURATION AND INTEGRITY OF THE TRUSSES.

6. CHEMICAL ANALYSIS WAS PERFORMED AND CARBON EQUIVALENT VALUES FOUND THAT THE STEEL IS GENERALLY CONSIDERED WELDABLE. SPECIFIC WELD PROCEDURES AND TESTING NEED TO BE DEVELOPED FOR ALL PROPOSED WELDS SINCE THE WELDS WOULD NOT BE CONSIDERED PRE-QUALIFIED WELDS BY CODES AND SPECIFICATIONS.  
 7. THE CONTRACTOR SHALL NOT UTILIZE CONSTRUCTION EQUIPMENT SUPPORTED BY THE BRIDGE FOR DEMOLITION UNLESS CONTRACTOR'S REGISTERED ENGINEER HAS PERFORMED A CAPACITY ANALYSIS AND PROVIDED WRITTEN NOTIFICATION INDICATING THAT IT IS SAFE TO DO SO AND HAS RECEIVED ACCEPTANCE BY THE ENGINEER.

25% PLANS 9-27-24

DATE	DESCRIPTION
	USE ONLY PORTIONS OF LATEST DATE

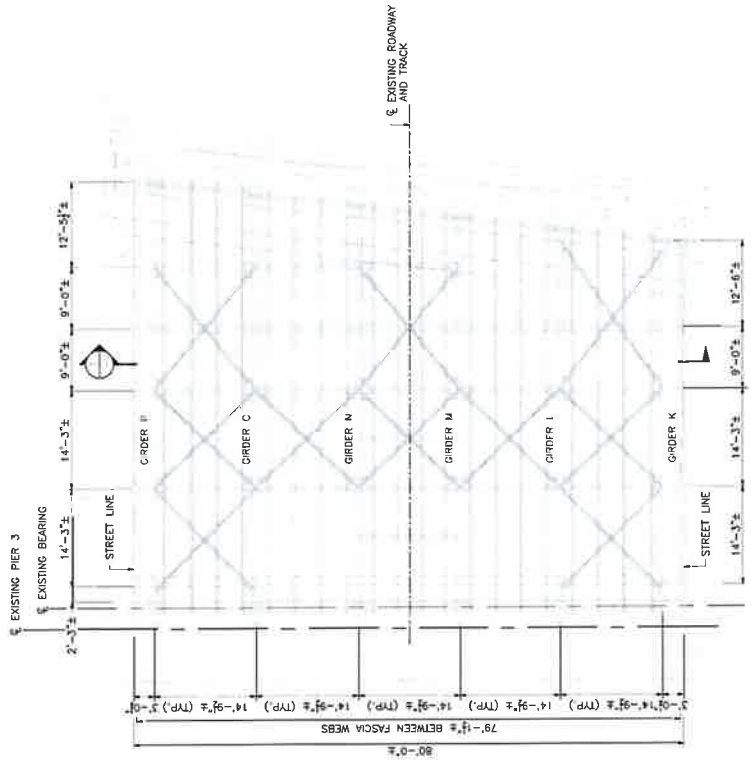
CITY OF BOSTON  
NORTHERN AVENUE BRIDGE

DATE	REV. NO.	BY	CHK.	DATE

SPAN 3 DEMOLITION

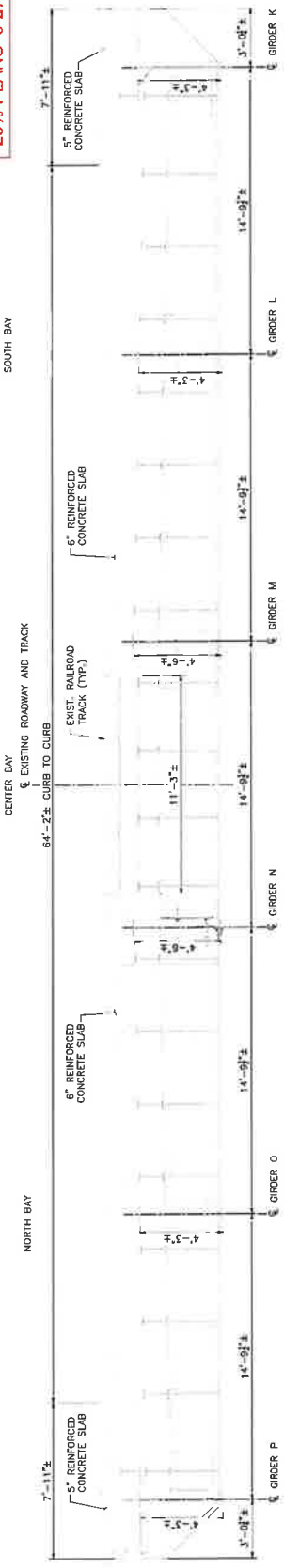
NOTES:

1. DETAILS PROVIDED HEREIN ARE FOR INFORMATION ONLY. DIMENSIONS AND NOMENCLATURE ARE BASED ON ORIGINAL CONSTRUCTION DRAWINGS.
2. CONTRACTOR'S DETAILED PLANS AND PROCEDURES FOR DEMOLITION ARE TO BE PREPARED, STAMPED, AND SIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE COMMONWEALTH OF MASSACHUSETTS. THE CONTRACTOR SHALL NOT BE RESPONSIBLE FOR THE WORK UNTIL THE APPLICABLE SUBMITTALS ARE APPROVED BY THE ENGINEER.
3. CONTRACTOR SHALL PROVIDE CONTAINMENT AND SHIELDING AS NECESSARY TO PROTECT ADJACENT STRUCTURES AND TRAFFIC. CONTAINMENT AND SHIELDING SHALL BE ISSUED PERMITS BY THE CONTRACTOR'S APPROVED LEAD ABATEMENT PLAN AND SPECIAL PROVISIONS.
4. THE EXISTING STRUCTURAL ELEMENTS ARE IN ADVANCED STAGES OF DETEIORATION. LOCAL FAILURES ARE POSSIBLE. NUMEROUS STRINGERS AT PIER 3 HAVE 140 TIMBER BLOCCING INSTALLED DUE TO SEVERE DETEIORATION OF CONCRETE AND CORROSION OF STEEL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THE SAFETY AND STABILITY OF THE EXISTING ELEMENTS DURING AND THROUGH ALL THE STAGES OF REMOVAL AND DISPOSAL.
5. CONTRACTOR SHALL NOTE THE PRESENCE OF EXISTING STRUCTURES ON EITHER SIDE OF THE SPAN. THE CONTRACTOR SHALL PROTECT IN PLACE THE ADJACENT STRUCTURES.



EXISTING FRAMING PLAN - EXISTING SPAN 3  
SCALE: 1/8" = 1'-0"

25% PLANS 9-27-24



TYPICAL SECTION 1 (EXISTING SPAN 3 - LOOKING EAST)  
SCALE: 1/8" = 1'-0"

DATE	DESCRIPTION
	USE ONLY PRINTS OF LATEST DATE

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NORTHERN AVENUE BRIDGE

DATE	REV.	BY	CHK.	APP.
10/15/24	1	MM	MM	MM

PROJECT FILE NO. \_\_\_\_\_

PIER 1 STABILIZATION

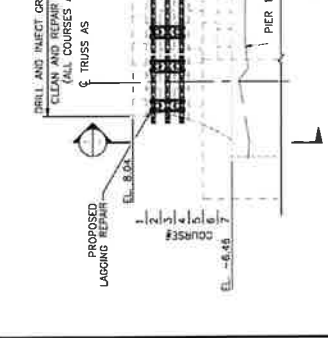
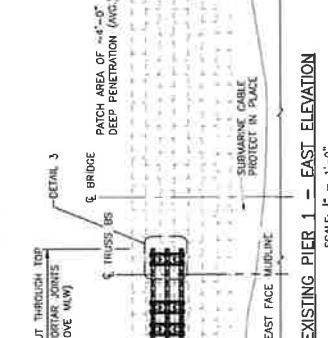
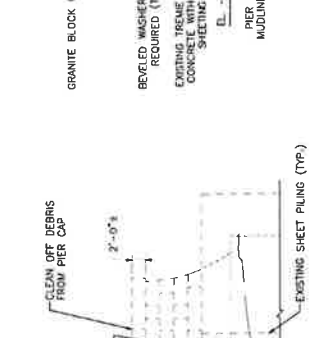
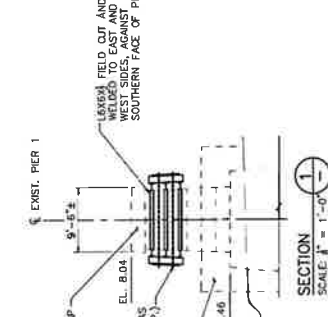
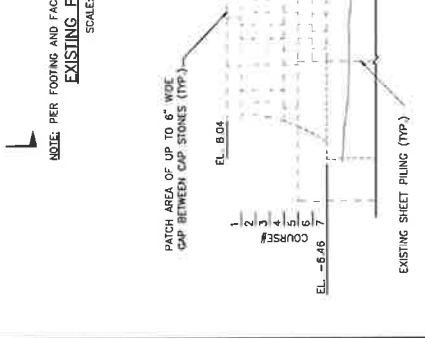
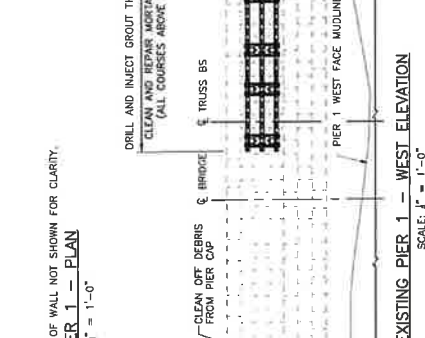
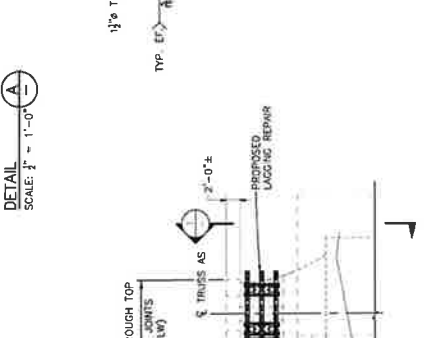
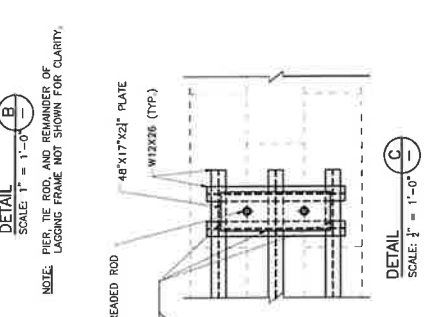
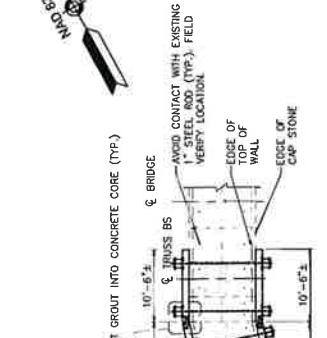
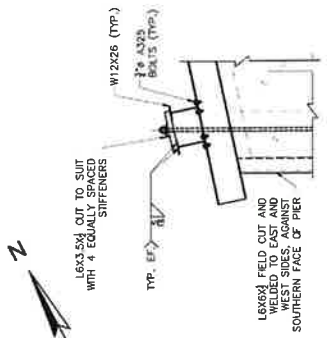
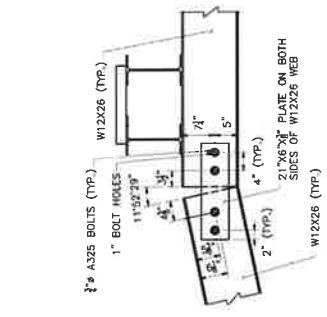
- NOTES:**
- CONTRACTOR SHALL NOTE THE PRESENCE OF STEEL SHEETING AND TREMIE CONCRETE AT EACH END OF THE PIERS. THE CONTRACTOR SHALL REMOVE THE STEEL SHEETING AND TREMIE CONCRETE IN ANY WAY.
  - CONTRACTOR SHALL REMOVE THE PILING LAGGING REPAIR AT THE SOUTH END OF THE CONTRACTOR SHALL THEN FOLLOW THE LAGGING REPAIR SUGGESTED SEQUENCE AS DESCRIBED BELOW.
  - THE ESTIMATED LOCATIONS OF DEFECTS IN THE PIER ARE TAKEN FROM AN AECOM 2022 INSPECTION AND ARE APPROXIMATE ACTUAL DEFICIENCIES ARE TO BE FIELD VERIFIED.
  - AS PER SPECIAL PROVISIONS, MORTARED JOINTS AND GAPS SHALL ONLY BE REPAIRED IF AREAS HAVE PENETRATIONS OF A MINIMUM OF 1"-8" OR GAPS OF A MINIMUM OF 2" WIDE, WHICHEVER GOVERNS.
  - THE LAGGING REPAIR STEEL SHALL BE AS SPECIFIED. PRIMARY STEEL MEMBERS SHOWN SHALL BE W12X26 (ASTM A709 GRADE 35), EXCLUDING FILLER MEMBERS. END ANGLES SHALL BE L6X6X4.
  - PRIMARY STEEL MEMBERS, ANGLES, AND FILLER PLATES SHALL BE GALVANIZED AS PER ASTM A123.
  - THE ROSS SHALL CONFORM TO ASTM A572, HEAVY MET. WFT. SHALL BE 48" X 17" X 2" PLATE. ALL HARDWARE SHALL BE HOT DIPPED GALVANIZED IN CONFORMANCE WITH ASTM A153 AS APPLICABLE.
  - AFTER ALL STABILIZATION OPERATIONS HAVE BEEN COMPLETED FOR PIER 1, THE PIER CAP SHALL THEN BE CLEANED OF ANY DEBRIS.

**PIER 1 LAGGING REPAIR SUGGESTED SEQUENCE:**

- CONTRACTOR SHALL REMOVE THE FAILED EXISTING LAGGING REPAIR AT THE SOUTHERN END OF THE PIER. IT IS PERMITTED TO CUT THE ROSS FLUSH WITH THE FACE OF PIER.
- FIELD VERIFY ALL DIMENSIONS AND LOCATIONS OF EXISTING SINGLE-STEEL RODS PRIOR TO CORING HOLES AND STEEL FABRICATION.
- CORE NEW HOLES BETWEEN GRANITE BLOCKS TO INSTALL THE ROSS.
- SECURE STEEL FRAMING WITH THE ROSS.
- TIGHTEN STEEL FRAMING TO PIERS TO MAXIMUM EXTENT POSSIBLE. INJECT CEMENTITIOUS GROUT INTO NEW HOLES WITH TIGHTENED ROSS.
- CLEAN AND GROUT GAPS AND JOINTS IN GRANITE BLOCKS.
- FIELD CUT AND FIT L6X6X4 ANGLES ON THE SOUTH FACE OF PIER. ANGLES SHALL BE SLAGG BETWEEN THE EAST AND WEST PORTIONS OF THE PIER. ANGLES TO INSIDES OF EAST AND WEST PORTIONS OF LAGGING AS SHOWN.
- SEAL VERTICAL AND HORIZONTAL JOINTS WITH PROPOSED LAGGING AREA. DRILL INTO TOP OF JOINTS BETWEEN CAPSTONES AND INJECT GROUT TO COMPRESS THE JOINTS. THE GROUT SHALL PENETRATE INTO COURSE #5 AT A MINIMUM.
- CLEAN AND REPAIR ALL MORTAR JOINTS IN THE LAGGING AREA THAT ARE ABOVE MEAN LOW WATER LINE, AS SPECIFIED HEREIN.

25% PLANS 9-27-24

DATE	USE ONLY PRINTS OF LATEST DATE	REVISION	DATE



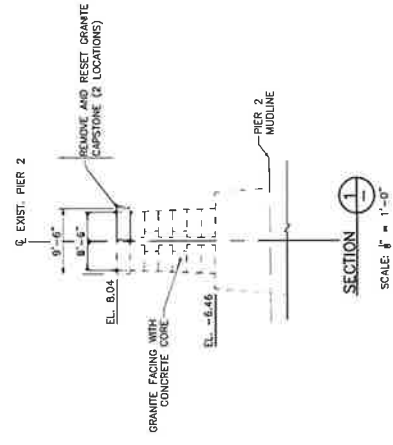
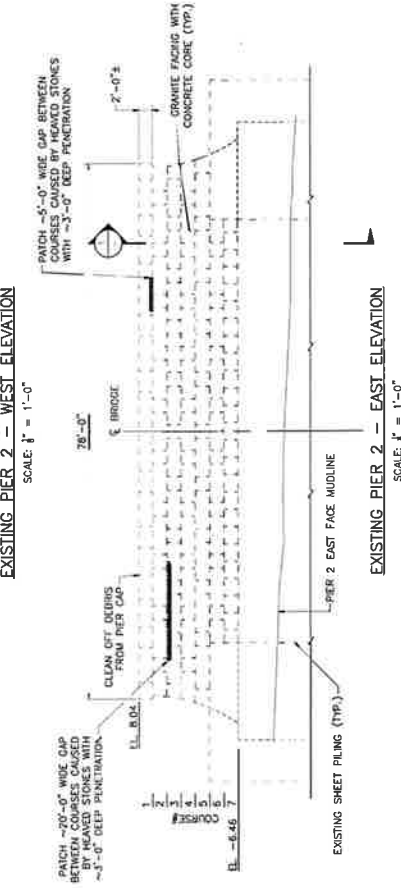
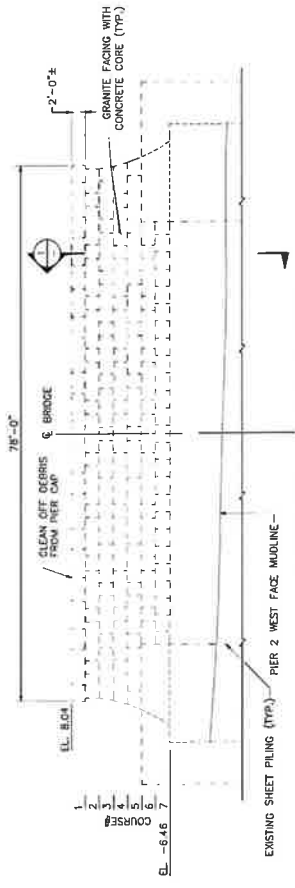
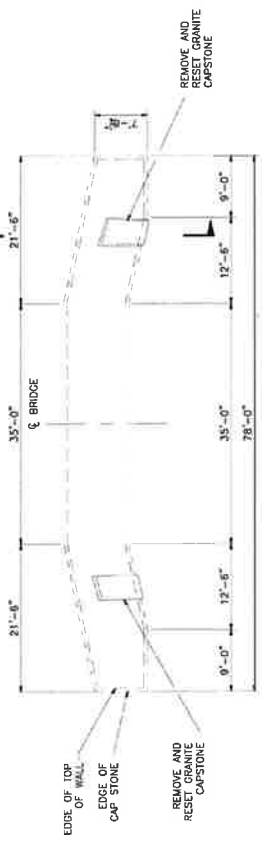
CITY OF BOSTON  
 NORTHERN AVENUE BRIDGE

DATE	REV. NO.	PROJECT NO.	SHEET NO.	TOTAL SHEETS
11/11/08	1	25-49-2224	11	14

PIER 2 STABILIZATION



- NOTES:**
- CONTRACTOR SHALL NOTE THE PRESENCE OF REBAR SHEETING AND TREMIE CONCRETE AT EACH END OF THE PIERS. THE CONTRACTOR SHALL ENSURE STABILIZATION OF THE PIER DOES NOT IMPACT THE STEEL SHEETING AND TREMIE CONCRETE IN ANY WAY.
  - THE ESTIMATED LOCATIONS OF DEFECTS IN THE PIER ARE TAKEN FROM AN AECOM 2022 INSPECTION AND ARE APPROXIMATE. ACTUAL DEFICIENCIES ARE TO BE FIELD VERIFIED.
  - PIER 2 WALL (WEST ELEVATION) IS KNOWN TO HAVE AN AVERAGE PENETRATION OF 3'-0". PIER 2 WALL (EAST ELEVATION) IS KNOWN TO HAVE AN AVERAGE PENETRATION OF 3'-0". ADDITIONAL DEFECTS NOTED HEREIN.
  - AS PER SPECIAL PROVISIONS, MORTARED JOINTS AND GAPS SHALL ONLY BE REPAIRED IF AREAS HAVE PENETRATIONS OF A MINIMUM OF 1'-6" OR GAPS OF A MINIMUM OF 2" WIDE, WHICHEVER GOVERNS.
  - TWO (2) GRANITE CAP STONES ARE LOOSE AND SHIFTED. THESE SHALL BE REMOVED AND RESET AS PER SPECIAL PROVISION. ADDITIONAL LOCATIONS ARE TO BE FIELD VERIFIED.
  - AFTER ALL STABILIZATION OPERATIONS HAVE BEEN COMPLETED FOR PIER 2, THE PIER CAP SHALL THEN BE CLEANED OF ANY DEBRIS.



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DATE	DESCRIPTION
	USE ONLY PRINTS OF LATEST SET



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NORTHERN AVENUE BRIDGE

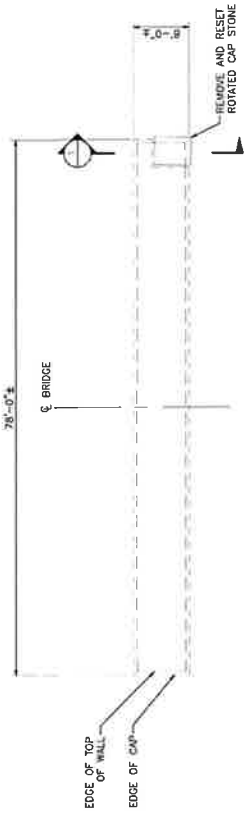
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MA	4471	12
PROJECT FILE NO.		14

PIER 3 STABILIZATION



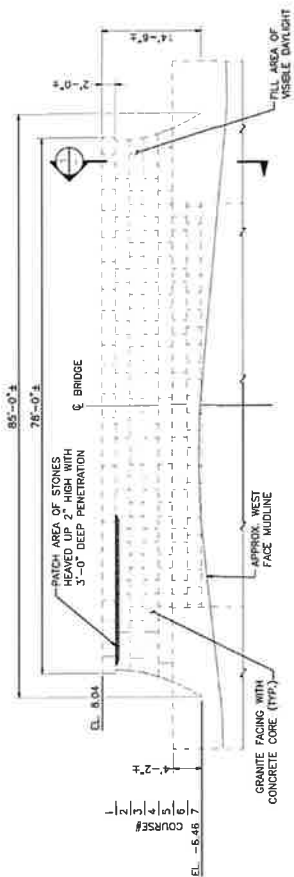
NOTES:

- CONTRACTOR SHALL NOTE THE PRESENCE OF STEEL SHEETING AND TREMIE CONCRETE AT EACH END OF THE PIERS. THE CONTRACTOR SHALL ENSURE THAT THE SHEETING DOES NOT IMPACT THE STEEL SHEETING AND TREMIE CONCRETE IN ANY WAY.
- THE STABILIZATION OPERATIONS SHALL BE COMPLETED FOR PIER 3. THE CONTRACTOR SHALL VERIFY THE PRESENCE OF ANY DEFECTS AND REPORT THEM TO THE ENGINEER FOR VERIFICATION.
- PIER 3 WALL (WEST ELEVATION) IS KNOWN TO HAVE AN AVERAGE PENETRATION OF 3'-0". PIER 3 WALL (EAST ELEVATION) IS KNOWN TO HAVE AN AVERAGE PENETRATION OF 2'-4". ADDITIONAL DEFECTS NOTED HEREIN.
- AS PER SPECIAL PROVISIONS, MORTARED JOINTS AND GAPS SHALL ONLY BE REPAIRED IF THE JOINTS ARE A MINIMUM OF 1'-6" OR GAPS OF A MINIMUM OF 2" WIDE, WHICHEVER GOVERNS.
- ONE (1) GRANITE CAP STONE IS LOOSE AND ROTATED. THIS SHALL BE REMOVED AND RESET AS PER SPECIAL PROVISION. ADDITIONAL LOCATIONS ARE TO BE FIELD VERIFIED.
- THERE IS LARGE METAL DEBRIS IN THE CHANNEL ON THE EAST SIDE OF PIER 3 THAT SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR.
- AFTER ALL STABILIZATION OPERATIONS HAVE BEEN COMPLETED FOR PIER 3, THE PIER CAP SHALL THEN BE CLEANED OF ANY DEBRIS.

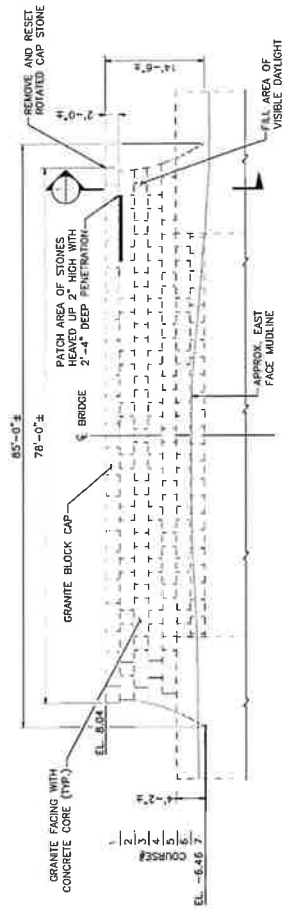


NOTE: PIER FOOTING AND FACE OF WALL NOT SHOWN FOR CLARITY.

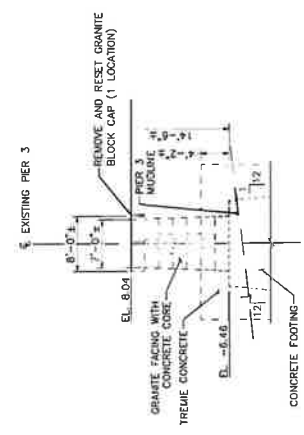
EXISTING PIER 3 - PLAN  
SCALE: 1/8" = 1'-0"



EXISTING PIER 3 - WEST ELEVATION  
SCALE: 1/8" = 1'-0"



EXISTING PIER 3 - EAST ELEVATION  
SCALE: 1/8" = 1'-0"



SECTION  
SCALE: 1/8" = 1'-0"

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DATE	DESCRIPTION
	USE ONLY PRIOR TO LATEST DATE

CITY OF BOSTON  
NORTHERN AVENUE BRIDGE

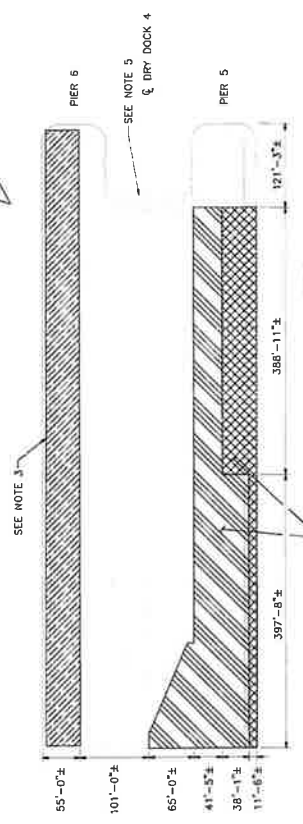
PIER NO.	PIER AND PILES NO.	PIER TYPE
1	1-10	CAISSON
2	2-10	CAISSON
3	3-10	CAISSON
4	4-10	CAISSON
5	5-10	CAISSON
6	6-10	CAISSON

PROJECT FILE NO. 10/13/2014

DRY DOCK 4 - EXISTING CONDITIONS

NOTES:

- DRY DOCK 4 IS AVAILABLE TO THE CONTRACTOR FOR LAYDOWN, STAGING, AND DEMOLITION ACTIVITIES. CONTRACTOR SHALL INSPECT FACILITIES TO CONFIRM EXISTING CONDITIONS PRIOR TO THE BID.
- THE CONTRACTOR IS CAUTIONED THAT PIER 5 HAS SURFACE LOAD CAPACITY LIMITED TO 100 PSF ALLOWABLE SURFACE LOAD. PIER 6 HAS SURFACE LOAD CAPACITY LIMITED TO 1000 PSF ALLOWABLE SURFACE LOAD. NO COST TO THE CONTRACTOR FOR A LOAD CAPACITY STUDY REPORT BY CHILDS ENGINEERING CORPORATION.
- NO LOAD CAPACITY EVALUATION WAS PERFORMED FOR PIER 6. CONTRACTOR IS TO DETERMINE WHETHER CONDITION IS ADEQUATE FOR USE. THE USE OF PIER 6 IS OPTIONAL. IF CONTRACTOR OPTS TO USE PIER 6, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS TO THE CITY, THE WESTERN PORTION OF PIER 6 HAS SEVERE DETERIORATION. CONTRACTOR SHALL NOT MOOR VESSELS ALONG PIER 6.
- CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR THE COTTERHAM OR OTHER COMPONENTS AT NO COST TO THE CITY IF CONSTRUCTION ACTIVITIES OVERLOAD THE STRUCTURE AND CAUSE PARTIAL OR FULL COLLAPSE OF THE STRUCTURE. CONTRACTOR SHALL BE RESPONSIBLE TO THE SITE, SITE FEATURES, OR UTILITIES CAUSED BY CONSTRUCTION ACTIVITIES.
- THE CAISSON GATE IS INOPERABLE AND THERE IS LEAKAGE INTO THE DRAWING DOCK. THE DRAWING DOCK IS UNABLE TO BE KEPT EMPTY DURING CONSTRUCTION.
- PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES AND MOBILIZATION, CONTRACTOR SHALL DOCUMENT EXISTING CONDITIONS OF THE DRY DOCK WITH PHOTOGRAPHIC AND/OR VIDEO IMAGERY.
- THE CONTRACTOR SHALL PREPARE THE WORK AREA BY REMOVING DEBRIS AND VEGETATION AS NECESSARY.
- WATER COSTS DURING CONSTRUCTION.
- DRY DOCK ACTIVITIES SHALL BE COORDINATED WITH THE CITY OF BOSTON SITE MANAGER.
- THERE ARE DRAINAGE GRATES THROUGHOUT THE DRY DOCK THAT ARE NOT SHOWN IN THIS DRAWING. THE CONTRACTOR SHALL PROTECT IN PLACE AND INSTALL FABRIC SEDIMENT FILTERS AT EACH DRAINAGE GRATE TO PREVENT DEBRIS FROM ENTERING THE CATCH BASINS.



LEGEND:

1000 PSF ALLOWABLE SURFACE LOAD

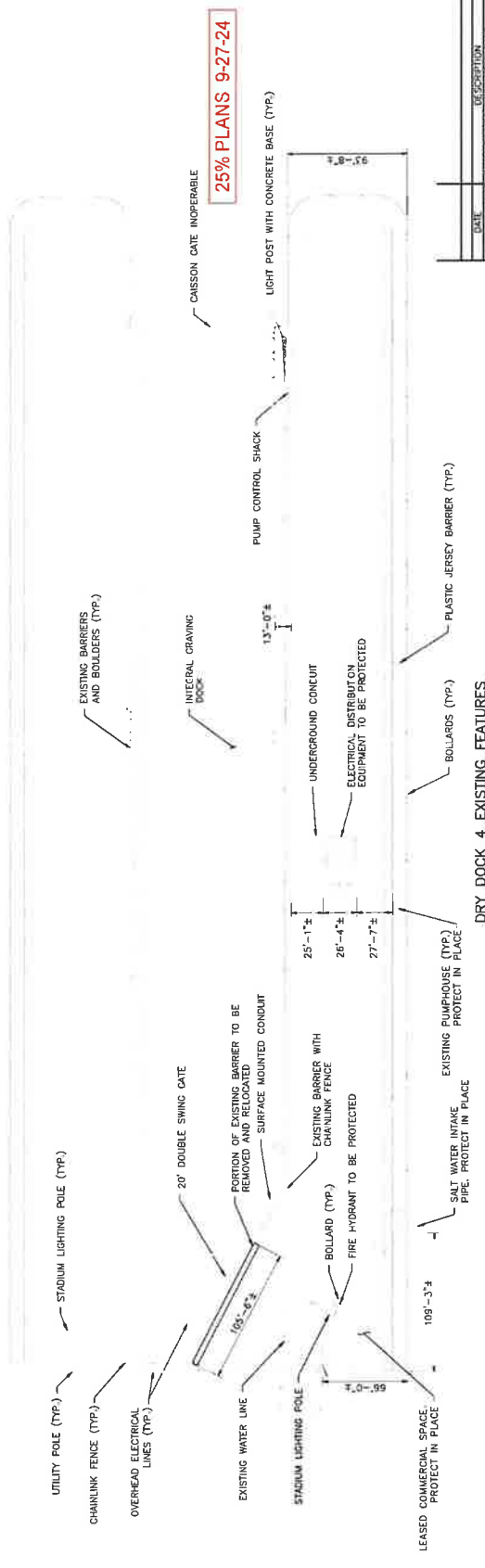
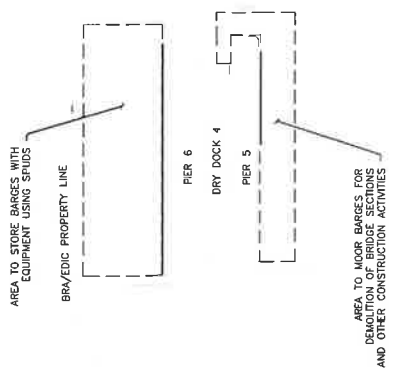
100 PSF ALLOWABLE SURFACE LOAD

SEVERE DETERIORATION. AREA IS UNUSABLE

DRY DOCK ALLOWABLE SURFACE LOADS

SCALE: 1" = 80'

BOSTON FISH PIER



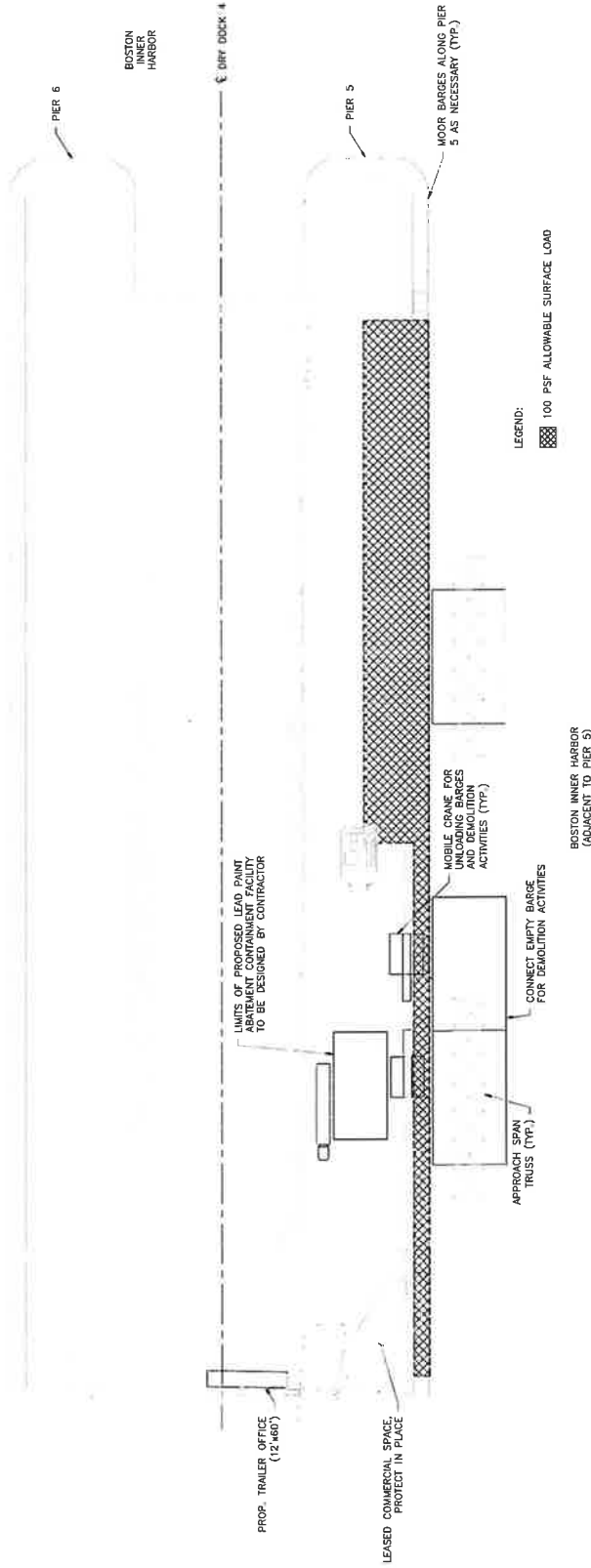
25% PLANS 9-27-24

DRY DOCK 4 EXISTING FEATURES

SCALE: 1" = 40'

DATE	DATE SHEET PRINTED BY	DESCRIPTION

CITY OF BOSTON  
 NORTHERN AVENUE BRIDGE  
 PROJECT FILE NO.  
 DRYDOCK 4 - PROPOSED LAYOUT



LEGEND:  
 100 PSF ALLOWABLE SURFACE LOAD

SUGGESTED DRY DOCK 4 LAYOUT  
 SCALE: 1" = 40'

NOTES:

1. CONTRACTOR SHALL ENSURE PROPOSED LAYOUTS FOR DRY DOCK 4 DO NOT EXCEED SURFACE LOAD CAPACITIES PER DRY DOCK 4-EXISTING CONDITION SHEET. CRANE MATS SHALL BE UTILIZED AS NECESSARY.
2. THE CONTRACTORS ARE RECOMMENDED TO VISIT THE DRY DOCK PRIOR TO SUBMITTING BIDS.
3. THE LAYOUT OF EQUIPMENT AND MATERIALS SHOWN HEREIN IS SUGGESTED AND FOR REFERENCE ONLY.
4. PROPOSED OPERATIONS SHALL NOT INTERFERE WITH OPERATIONS WITHIN THE LEASED COMMERCIAL SPACE.
5. CONTRACTOR SHALL NOT MAKE ANY PERMANENT MODIFICATIONS TO THE SITE WITHOUT EXPRESSED PERMISSION OF THE CITY OF BOSTON.
6. CONTAINMENT FACILITIES FOR LEAD PAINT ABATEMENT SHALL BE DESIGNED BY THE CONTRACTOR IN COMPLIANCE WITH OSHA AND MASSACHUSETTS DEP REGULATIONS AND REQUIREMENTS.

25% PLANS 9-27-24

DATE	DESCRIPTION
	USE ONLY PRINTS OF LATEST DATE

## Appendix B – Photographs



**Photograph 1:** Open swing span with unsupported ends and span 2 (easterly fixed, approach span at right) from Seaport Blvd. bridge over Ft. Point Channel. View north (August, 2024).



**Photograph 2:** North portal of open swing span, looking south. Note the unsupported ends of the swing span (August, 2024).



**Photograph 3:** View of open swing span from sidewalk on span 2, looking northwest. Note unsupported end of swing span (August, 2024).



**Photograph 4:** Underside of swing span looking north. Note section loss in floor beam and detached flange from stringer (August, 2024).





**Photograph 5:** Section loss at stringers and floor beams of swing span, looking southwest. (August, 2024).



**Photograph 6:** Detail of stringer deterioration at span 2 (easterly fixed, approach span), and missing mortar from pier 3 looking northeast (August 2024).



**Photograph 7:** Pier 1, looking west toward span 1 (westerly fixed, approach span). View of failed lagging repair and rotated bearing at pier (November, 2022).



**Photograph 8:** Detail of typical deterioration of web on vertical member at deck level (November, 2022).



**Photograph 9:** Typical deterioration, section loss, and pack rust at pin connection (November, 2022).

## Appendix C – Next Steps Evaluation Report

# INSPECTION AND EVALUATION REPORT

Prepared For:

City of Boston  
Public Works Department



Northern Avenue Bridge  
Over  
Fort Point Channel

Bridge No: B-16-184 (38K)

Prepared by:

# AECOM

AECOM  
One Federal Street, 8th Floor  
Boston, MA 02110

October 31, 2024

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**Appendices**

- Appendix A: Inspection Comparison Photos
- Appendix B: Critical Truss Members
- Appendix C: Lower Truss Inspection Findings

**Additional reference documents not included within this report**

- Existing Bridge Plans
- 2022 Field Inspection Findings
- 2018 Existing Conditions Report (2017 Inspection)



## 1. Executive Summary

The Northern Avenue Bridge is a four span structure that carries Northern Avenue over the Fort Point Channel in the City of Boston. This structure consists of a movable steel through-truss with a rim-bearing swing span, a fixed steel through Pratt truss approach span to the west and both a steel through Pratt truss and a steel multi-girder span as approach spans to the east. The bridge is no longer operational and is fixed in the open position. The structure has been closed to traffic and pedestrians since December 2014. AECOM was retained by the City of Boston to perform the following tasks:

**Task 1:** Perform a limited field inspection of critical elements (as determined in the 2017 & 2022 inspections).

- Compile a table of the elements identified as critical condition in the previous inspections completed in December 2017 and 2022.
- Compile a photo log of the elements identified in the table to compare condition changes between the 2017 and 2024 inspections. See Appendix A for the comparative photo log and Appendix B and C for the tables. Elements labeled as critical condition can lead to progressive failure of the bridge if demolition of the bridge is delayed.

**Task 2:** Provide a general summary of the elements that are already so severely deteriorated that they are clearly lacking structural integrity. These elements are mostly portions of the floor system and include the swing span stringers, purlins, deck; the approach spans 1 and 2 stringers and floor system bracing; Span 3 end floor beams, stringers, and floor bracing system.

These tasks were informed via inspection from a skiff on August 14<sup>th</sup> and 15<sup>th</sup>, 2024. All observations recorded from the skiff were made within arm's reach and resulted in the following conclusions. AECOM inspected the following elements:

- The truss system below the deck of each span, along with all secondary and bracing members and associated connections
- Truss bearings / live load shoes
- The floorbeam and stringer system in approach spans 1 and 2
- The floorbeam, stringer, purlin, deck system in the swing span.
- The girder, floorbeam, stringer, and floor bracing system in span 3

Continued deterioration of the major structural elements may lead to a progressive collapse of the structure, either whole or in part. Findings from the above 2 tasks show that the truss and floorbeam members that were found critical in 2017 and 2022 are presently further degraded and nearer to failure. In addition, the deck, purlins, and stringers portions have also significantly continued to deteriorate and components are falling into the Fort Point Channel.

**AECOM recommends that the bridge superstructure be demolished, as it is at risk of collapsing and because any temporary repairs or shoring will come at a high cost/risk with little benefit, and with no guarantee of success.**

## 2. Recommendations

This structure has shown progressive deterioration when compared to the previous inspections. If these elements are left to continue to deteriorate, there is potential for localized and progressive failure of critical elements. **Demolition of the superstructure (trusses, floorbeams, deck, stringers, purlins) and stabilization of selected substructure elements (loose pier masonry units) should be implemented as soon as practicable.**

### Task 1 Recommendations

**The most critical members are beyond repair, and only demolition is appropriate.** In comparing the present findings to the past, in both the form of notes and photos, it was found that, of the seven truss members in the most critical condition, three had significantly further deteriorated. All truss members were observed at the level of the deck and below, and no other members had deteriorated to the degree of these seven most critical. Most of the lower chord end struts, which are the members adjacent to the bearings at both ends of each lower chord, are severely deteriorated and nearing failure, but it has been previously determined that these members are not load carrying members as the load path from the bottom chord is carried by the adjacent diagonal, transferring load to the top of the vertical end post. However, if multiple adjacent end struts were to fail, the stability of the end post and the out-of-plane stability of the trusses would be greatly reduced and could lead to failure. Here are more details of these findings:

#### Critical Truss Members

The following are the truss members considered to be critical and in turn were observed hands-on with a detailed and photographic comparison between the past and present conditions, and were either found to have **further deterioration** or are **approximately as deteriorated (no change)** when last observed, as follows:

#### **FURTHER DETERIORATED (refer to Appendix B):**

Span 1	North Truss	Lower Chord	L2-L3: (refer to Photo 1)
Span 1	North Truss	Lower Chord	L2-L3: (refer to Photo 2)
Span 2	Center North Truss	Diagonal	L26-U27(refer to Photo 7)

#### **NO CHANGE (refer to Appendix B):**

Span 1	Center North Truss	Diagonal	L6-U7(refer to Photo 3)
Swing Span	Center North Truss	Lower Chord	L9-L10 (refer to Photo 4)
Span 2	North Truss	Diagonal	L26-U27(refer to Photo 5)
Span 2	North Truss	Diagonal	L27-U28(refer to Photo 6)

**Note that this member is failed.**

**Refer to Sketches 2 and 3** for general orientation. Many more members are also severely deteriorated; refer to Section 6 for these conditions.

The following members are end struts that are severely deteriorated. These members are not part of the live or dead load path but do provide structural stability. If more than 2 adjacent zero force members fail, this can lead to loss of stability of the structure. Some of these have already fallen into the channel and the remaining members are a potential hazard in addition to the stability concerns:

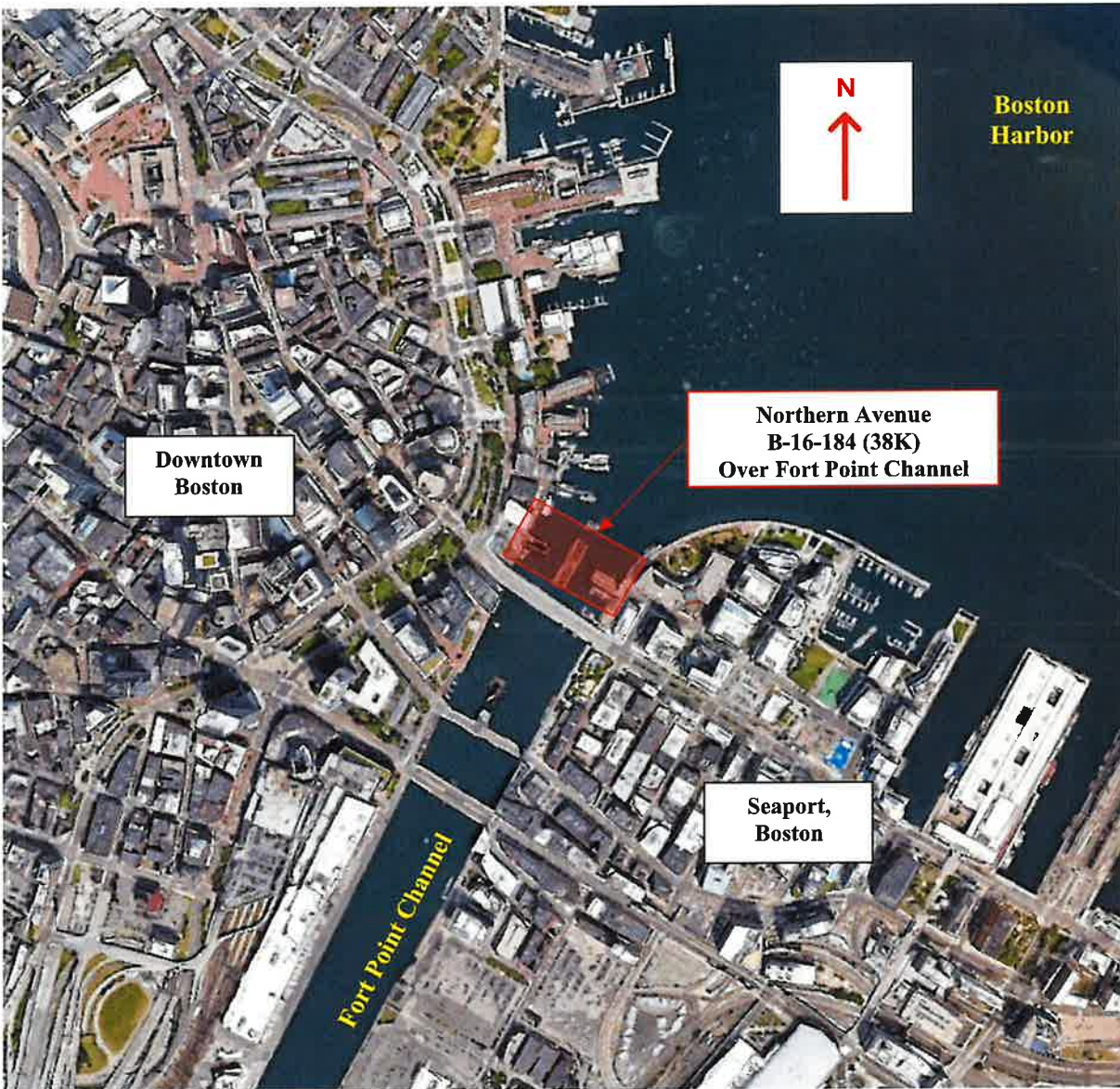
- Span 1 North Truss Lower Chord L7-L8 (refer to Appendix C)
- Span 1 North Center Truss Lower Chord L1-L2 (refer to Appendix C)
- Span 1 North Center Truss Lower Chord L7-L8 (refer to Appendix C)
- Span 1 South Truss Lower Chord L1-L2 (refer to Appendix C)
- Span 1 South Truss Lower Chord L7-L8 (refer to Appendix C)
- Span 1 South Center Truss Lower Chord L1-L2 (refer to Appendix C)
- Span 1 South Center Truss Lower Chord L7-L8 (refer to Appendix C)
- Span 2 North Truss Lower Chord L23-L24 (refer to Appendix C)
- Span 2 North Truss Lower Chord L29-L30 (refer to Appendix C)
- Span 2 North Center Truss Lower Chord L23-L24 (refer to Appendix C)
- Span 2 North Center Truss Lower Chord L29-L30 (refer to Appendix C)
- Span 2 South Truss Lower Chord L23-L24 (refer to Appendix C)
- Span 2 South Truss Lower Chord L29-L30 (refer to Appendix C)
- Span 2 South Center Truss Lower Chord L23-L24 (refer to Appendix C)
- Span 2 South Center Truss Lower Chord L29-L30 (refer to Appendix C)

### Task 2 Recommendations

**While most of these members (deck/stringers/purlins/floorbeams) are severely deteriorated, and in the case of the purlins and stringers, many are failed, all of these are supported by the trusses, to be demolished in the course of the remainder of the project. It should be expected parts will continue to fail and drop into the channel, furthering the need to proceed with demolition.**

### 3. Project Location

Image 1: Location Map



#### 4. Description of Existing Structure

##### 4.1 Description of Bridge and Inspection & Rating Nomenclature

Bridge B-16-184 (38K) is a four span structure that carries Northern Avenue over the Fort Point Channel in the City of Boston. The bridge is no longer operational and is fixed in the open position.

This structure consists of a movable steel through-truss with a rim-bearing swing span, a fixed steel through Pratt truss approach span to the west and both a steel through Pratt truss and a steel multi-girder span as approach spans to the east. The swing span through-truss is comprised of riveted built-up steel upper chords, lower chords, end posts, verticals and diagonals, and steel eyebar diagonals with pinned connections. Riveted built-up steel floorbeams support rolled steel stringers and purlins which support an open steel grid deck, concrete filled over the machinery areas. The swing span is supported by riveted built-up steel distribution girders on a riveted built-up steel drum girder in the center, with the portions of the truss beyond the drum forming a balanced cantilever in each direction (north and south). This swing span in the open position is only supported at this drum girder with no further supports at the cantilevered ends. There are stabilizing cables to prevent rotation of the swing span.

The through Pratt truss approach spans are comprised of riveted built-up steel upper chords, lower chords, end posts, verticals, and steel eyebar lower chords and diagonals with pinned connections. Riveted built-up steel floorbeams support rolled steel stringers which support a timber deck. The multi-girder approach span consists of riveted built-up steel girders and floorbeams with rolled steel stringers which support a reinforced concrete deck.

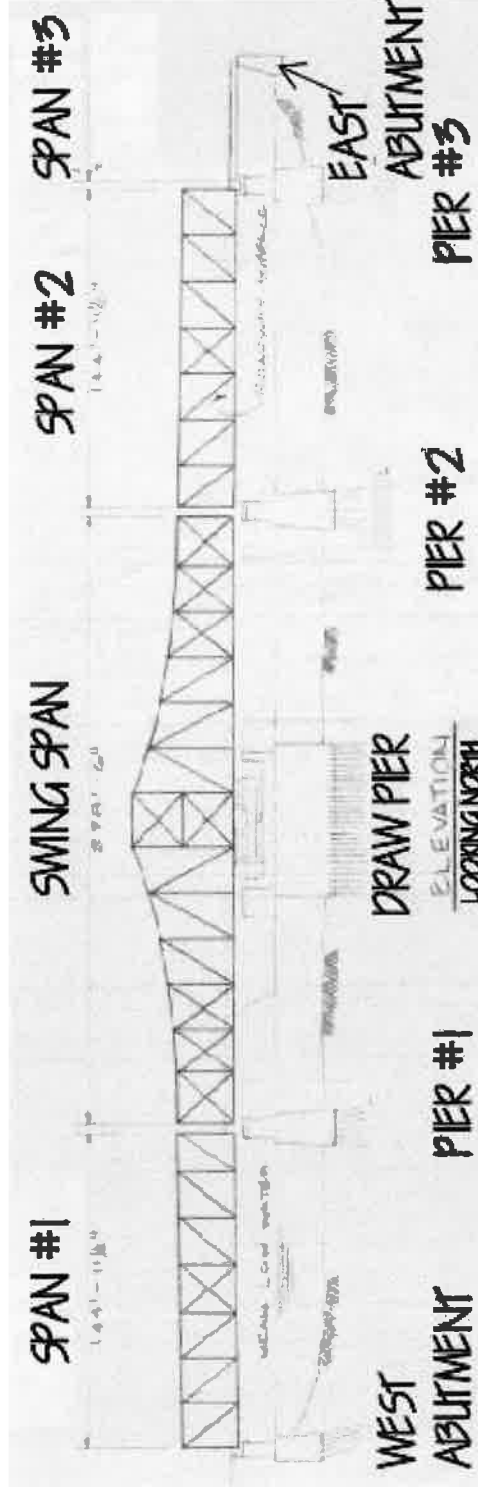
The approach spans are labeled from west to east with the west (Boston) approach span labeled span 1 and the east approach (South Boston) spans labeled spans 2 and 3. The swing span between spans 1 and 2 is referred to as "the swing span". The swing span is center-supported over a swing pier, when open and on additional rest piers when closed (to marine traffic).

Each truss span has four trusses which divide the spans longitudinally into three bays and two sidewalks designated as the south sidewalk, south bay, center bay, north bay, and north sidewalk. The trusses in the swing span are designated A1S, B1S, B1N, and A1N from south to north. The four trusses in each truss approach span (spans 1 and 2) are designated A2S, B2S, B2N and A2N from south to north. The truss joints and floorbeams are labeled 1 through 30 starting with 1 at the west abutment in span 1, continuing sequentially through the swing span, and ending with 30 at pier 3 in span 2. Stringers are labeled from south to north within each bay and are designated by bay or sidewalk.

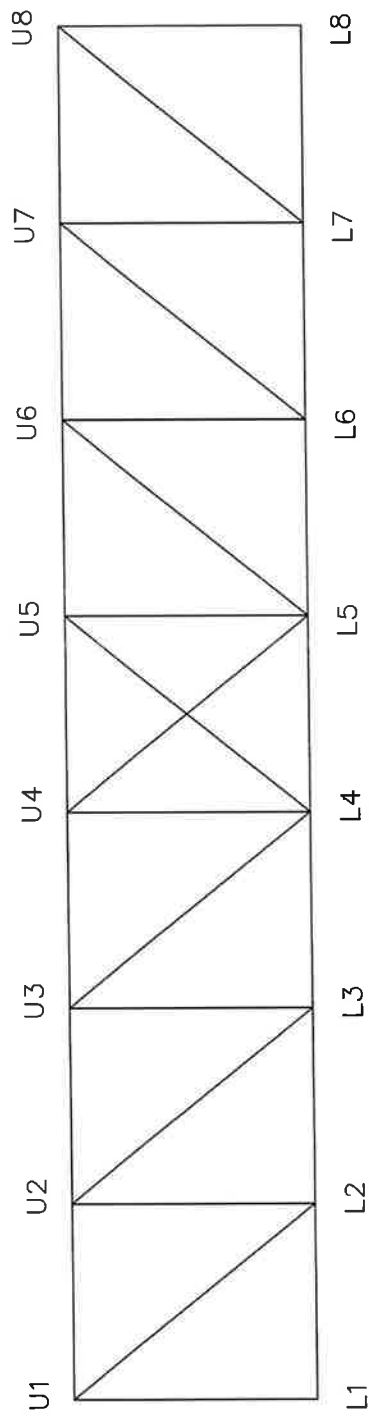
The girder span (span 3) has six girders which divide the span longitudinally into five bays and two sidewalks designated as the south sidewalk, bays 1 through 5 and the north sidewalk. The girders are labeled K through P from south to north. Floorbeams are labeled FB1 through FB6 from west to east. Stringers are labeled from south to north within each bay and are designated by bay or sidewalk.

The substructure consists of two granite masonry abutments (east and west abutments), three granite masonry piers and a circular granite masonry swing pier. The substructure is designated from west to east as west abutment, pier 1, swing pier, pier 2, pier 3 and east abutment. For general orientation, refer to Sketches 1 through 5.

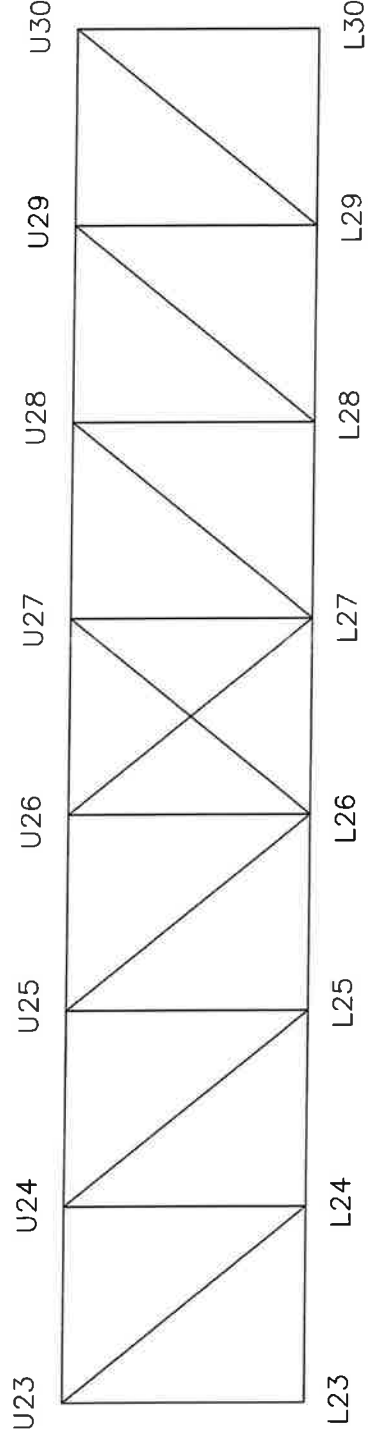
Sketch 1: Northern Avenue Bridge South Elevation



Sketch 2: Approach Span Truss Elevations

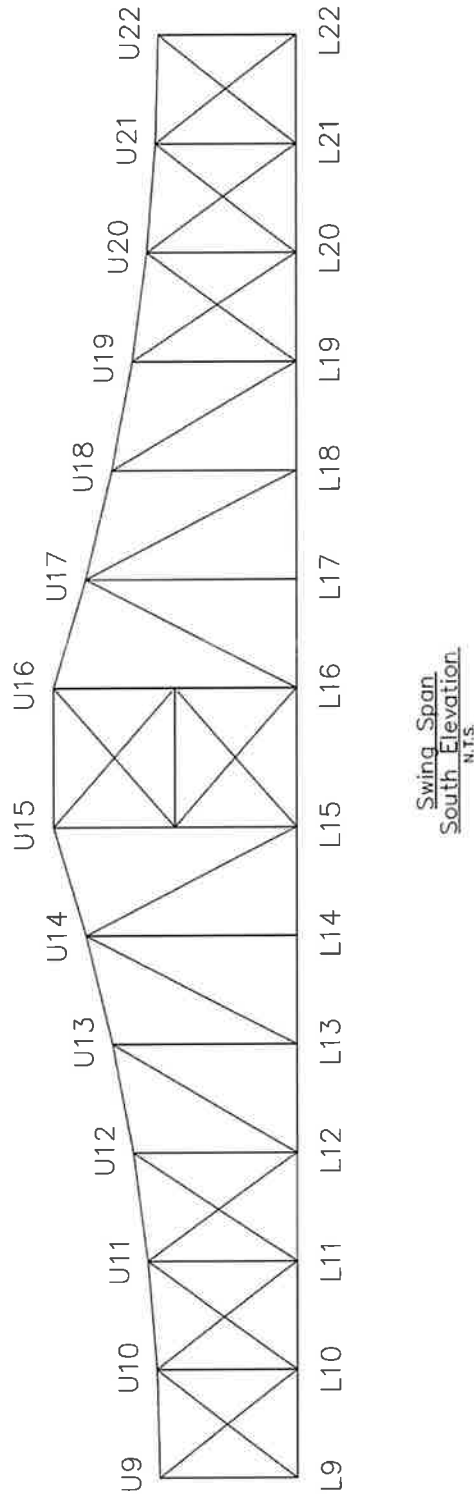


Span 1  
South Elevation  
N.T.S.



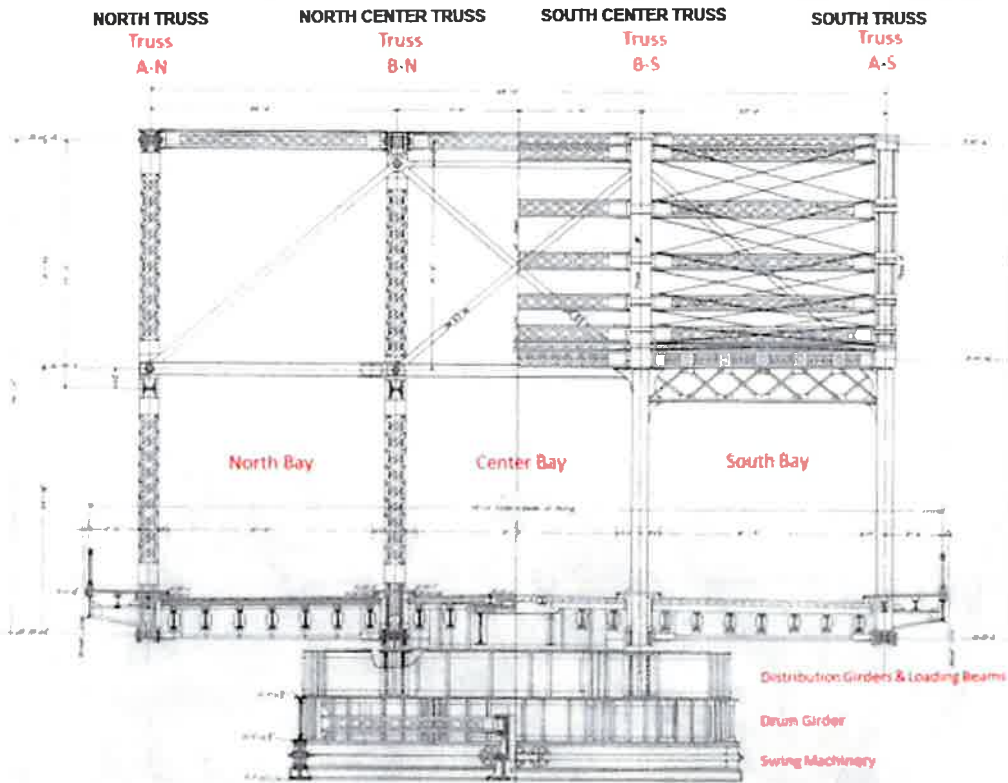
Span 2  
South Elevation  
N.T.S.

Sketch 3: Swing Span Truss Elevation

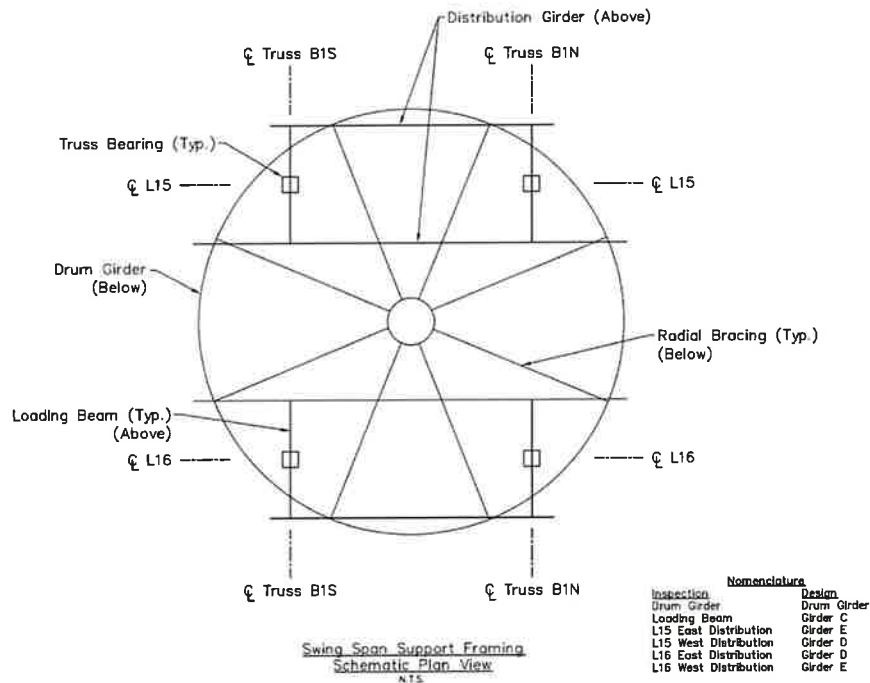




Sketch 4: Swing Span Cross Section (Looking East at Swing Pier Shown)



Sketch 5: Swing Span Support Framing Schematic Plan View  
 (NOTE: Span 1 and Span 2 trusses are similarly named)



#### 4.2 Design Plan versus Inspection Nomenclature Differences

This inspection followed the nomenclature used within the 2013 Routine and Special Member Inspection. This nomenclature differs from the design plans as follows:

<b>Inspection Nomenclature</b>	<b>Design Plan Nomenclature</b>
Truss panel points are numbered 1 through 30 from west to east through all spans	Swing span panel points are identified by letter; truss approach spans are identified by number
Stringers are numbered from south to north within each bay and designated by bay or sidewalk	Stringers are identified by size/type
Floorbeams are identified by truss panel point (1 through 30 from west to east through all spans)	Floorbeams are identified by size, type, and bay
Distribution Girders	Turntable Girders D & E
Loading Beam	Turntable Girder C
West Abutment	Boston Abutment
Swing Pier	Draw Pier
East Abutment	South Boston Abutment

## **5. Inspection Approach and Methodology**

### **5.1 Structural Inspection**

AECOM performed a limited scope structural inspection of the Northern Avenue Bridge (Bridge No. B-16-184, BIN 38K) in August 2024. The intent of the inspection was to assess the condition of elements that were identified as “serious condition” and to compare the existing condition vs previous inspections in December 2017 and November 2022. AECOM’s methodological approach included inspecting the bridge via a skiff in the Fort Point Channel. AECOM inspected the bridge truss and got within arms reach of the bottom chord, the bottom portions of the truss verticals and diagonals, and floor beams. AECOM utilized the same form from the 2017 and 2022 inspection findings and compared the conditions with the 2024 inspection in the form of both a table and comparative photos, see Appendix A, Appendix B and Appendix C. In addition, the stringers, purlins, and deck were also observed and comparative conditions documented in a more general way in section 6 of this report.

The elements not inspected as part of this inspection were determined based off of the understanding that their deterioration would not pose harm to the public and are listed below. The condition of these elements are summarized in previous inspection reports:

- Deck elements including the wearing surface, stay-in-place forms, curbs, median, sidewalks, guardrails, pedestrian railing, lighting standards, utilities and deck joints.
- Superstructure elements associated as above the deck, mainly the upper truss system
- Fender system
- Substructure elements (piers, abutments, and other associated items) aside from the south end of Pier 1.

**Inspection Terminology and Deficiency Rating**

This report is consistent with AECOM’s bridge inspection report terminology and rating language. The following image has been provided to help translate the deficiency coding of conditions and provide information on the standard reporting guide.

	CODE	CONDITION	DEFECTS
	N	NOT APPLICABLE	
G	9	EXCELLENT	Excellent condition.
G	8	VERY GOOD	No problem noted.
G	7	GOOD	Some minor problems.
F	6	SATISFACTORY	Structural elements show some minor deterioration.
F	5	FAIR	All primary structural elements are sound but may have minor section loss, cracking, spalling or scour.
P	4	POOR	Advanced section loss, deterioration, spalling or scour.
P	3	SERIOUS	Loss of section, deterioration, spalling or scour have seriously affected primary structural components. Local failures are possible. Fatigue cracks in steel or shear cracks in concrete may be present.
C	2	CRITICAL	Advanced deterioration of primary structural elements. Fatigue cracks in steel or shear cracks in concrete may be present or scour may have removed substructure support. Unless closely monitored it may be necessary to close the bridge until corrective action is taken.
C	1	"IMMINENT" FAILURE	Major deterioration or section loss present in critical structural components or obvious vertical or horizontal movement affecting structure stability. Bridge is closed to traffic but corrective action may put it back in light service.
	0	FAILED	Out of service - beyond corrective action.

DEFICIENCY REPORTING GUIDE	
<b>DEFICIENCY:</b>	A defect in a structure that requires corrective action.
<b>CATEGORIES OF DEFICIENCIES:</b>	
<b>M= Minor</b>	Deficiencies which are minor in nature, generally do not impact the structural integrity of the bridge and could easily be repaired. Examples include but are not limited to: Spalled concrete, Minor pot holes, Minor corrosion of steel, Minor scouring, Clogged drainage, etc.
<b>S= Severe/Major</b>	Deficiencies which are more extensive in nature and need more planning and effort to repair. Examples include but are not limited to: Moderate to major deterioration in concrete, Exposed and corroded rebars, Considerable settlement, Considerable scouring or undermining, Moderate to extensive corrosion to structural steel with measurable loss of section, etc.
<b>C-S= Critical Structural Deficiency</b>	A deficiency in a structural element of a bridge that poses an extreme unsafe condition due to the failure or imminent failure of the element which will affect the structural integrity of the bridge.
<b>C-H= Critical Hazard Deficiency</b>	A deficiency in a component or element of a bridge that poses an extreme hazard or unsafe condition to the public, but does not impair the structural integrity of the bridge. Examples include but are not limited to: Loose concrete hanging down over traffic or pedestrians, A hole in a sidewalk that may cause injuries to pedestrians, Missing section of bridge railing, etc.
<b>URGENCY OF REPAIR:</b>	
<b>I = Immediate-</b>	[Inspector(s) immediately contact District Bridge Inspection Engineer (DBIE) to report the Deficiency and to receive further instruction from him/her]
<b>A = ASAP-</b>	[Action/Repair should be initiated by District Maintenance Engineer or the Responsible Party (if not a State owned bridge) upon receipt of the Inspection Report].
<b>P = Prioritize-</b>	[Shall be prioritized by District Maintenance Engineer or the Responsible Party (if not a State owned bridge) and repairs made when funds and/or manpower is available].

**5.1.1 Mechanical & Electrical Inspection**

The inspection of the mechanical and electrical components and their functionality was not performed as part of this 2024 inspection. The swing pier machinery pit was not a priority for this inspection. However, in the 2022 inspection, the swing pier machinery pit was flooded at the time of inspection preventing access to the mechanical and electrical machinery. Since there is no intention of utilizing this machinery, it was not inspected at this time.

**5.1.2 Underwater Inspection**

An underwater dive inspection was not performed as part of this 2024 inspection.

**5.1.3 Inspection Access Methods**

This inspection was performed using a skiff with scaffolding.

**5.1.4 Inspection Team and Dates**

This structural inspection was performed by C. Yee, P.E., J. Velino, P.E., and B. Colleoni-Pimenta. The structural inspection was performed on 8/14/2024 and 8/15/2024.

## 6. Summary of Severe/Critical Conditions of Structural Elements

This section summarizes the severe and critical condition of the lower truss and bearing elements. Generally, these elements have shown progressive severe deterioration when compared to the previous inspections. Given the inspection findings from this recent inspection, the lower truss elements and bearings can be expected to continue to deteriorate until failure unless addressed as soon as possible. **Any superstructure deficiencies that AECOM identifies as significantly critical are to be considered reasons to expedite demolition, as the entire superstructure has questionable structural integrity under its own dead load. Substructure removal is not a necessity at this time, but if the substructure is to remain without the superstructure, the loose masonry units on Piers 1 and 2 need to be stabilized.** The conditions are summarized based upon the 2024 AECOM inspection.

### 6.1 Trusses and Associated Bearings/Live Load Shoes

Generally, truss members below the deck are rated as "critical" condition (Condition Rating = 2). The truss members located above the roadway are generally in satisfactory condition, with only a few areas of advanced deterioration.

The truss members below the roadway generally have moderate to heavy deterioration, with several areas of advanced deterioration. The deterioration below the deck is typically located at the lower chord truss pins. Isolated lower chord truss pins have retrofit repairs in place however these repairs are equally in critical condition. The critical truss elements below the deck are summarized below:

#### **Lower Chords:**

The lower chords in the approach spans consist of riveted built-up box shaped end struts at the end posts and multiple eyebars throughout the interior panels. The riveted built-up end struts have severe losses with one instance of the member having failed and fallen into Fort Point Channel. These end struts were originally designed as zero force members and were meant not to carry live load.

The approach truss spans' (Spans 1 & 2) lower chord eyebars have extensive areas of advanced deterioration, several beyond repair, typically limited to the end 1'-0" of the eyebars at the truss pins. Several lower chord members have reduced structural capacity due to severe deterioration. There are a few locations with previous repairs; however, the repairs also have advanced deterioration beyond repair. In several cases, there are members with severe deterioration beyond repair.

The lower chords in the swing span consist of riveted built-up members. The lower chords have areas of moderate deterioration with isolated locations of advanced deterioration, typically limited to the end 2'-0" of the members at the truss pins. Several lower chord members have rusted through/failed batten plates and lacing bars.

#### **Vertical Members:**

The truss verticals are riveted built-up members in all spans. Just above the top of the deck, the vertical members have moderate deterioration with isolated locations of advanced deterioration. Just below the deck level, the vertical members generally have moderate to severe deterioration including rust holes. The portion of the verticals which extends below the truss pins are typically severely deteriorated and deformed due to pack rust.

**Diagonal Members:**

The truss diagonals consist of eyebar members with the exception of the diagonals over the swing pier, which are riveted built-up members. The built-up swing pier diagonals have minor to moderate section loss below the deck level. Above the deck, the built-up swing pier diagonals are in good condition.

The eyebar members generally have advanced deterioration in the vicinity of the lower truss pins such as rust holes and section loss up to paper thin remaining. The diagonal eyebar members have isolated areas of repairs, which consist of steel cables, looped wire rope with welded rods, or welded plates. The diagonal eyebar members have welded abrasion plates at the deck penetrations; one isolated location has a cracked weld. There are a few isolated welded attachments, with one isolated location with cracked welds which do not extend into the base metal. In Span 2, along the A2N lower chord line, the diagonal at L27-U28 is completely fractured from the lower truss pin connection. This is the most advanced deterioration of the diagonal members.

**Lower Lateral Bracing / Truss Span Floor System Bracing:**

The center bay of the approach truss spans and swing span have angle or structural T bracing with riveted/bolted connections. The north and south bays of the swing span have a mix of round and square bar bracing with pin and clevis connections. The north and south bays of the approach truss spans have floor system bracing in lieu of lower lateral bracing which consists of a mix of round and square bar bracing with pin and clevis connections. The lower lateral bracing has areas of advanced deterioration with numerous connections that have rusted through completely.

**Truss Pins:**

The lower chord truss pins have isolated areas of moderate deterioration to the pin, a few areas of moderate to heavy deterioration to pin nuts, several areas with gaps between the pin nuts and lower chords, and isolated pin nuts with negative threads up to 5/8".

For specific truss members to be addressed as soon as possible, refer to **Appendix B: Critical Truss Members**

For the full list of lower truss members that were inspected, refer to **Appendix C: Lower Truss Inspection Findings**

**Truss Bearings & Live Load Shoes**

At Pier 1, the Truss A2S bearing is misaligned and leaning due to the settlement of the pier. The south 10'-0" of the pier has full mortar loss, cracking of numerous masonry units and extensive movement of several units, resulting in movement of the bearing. The south side of the bearing is 1 1/4" higher than the north side of the bearing. A concrete pad has been poured to provide full and even bearing of the leaning steel pedestal (**refer to Photo 8**). Additionally, the load was transferred off this bearing by installing timber cribbing under the adjacent end floorbeam FB8. While the cribbing adequately allow the load to transfer, the cribbing is narrow and not covering the full width of the floorbeam.

Generally, the approach span bearings have advanced deterioration with severe losses, rust holes, pack rust, and minor collision damage. Although there are other approach bearings with severe losses, no other bearings were found to be requiring immediate attention (**refer to Photos 9 through 12**).

The truss roller bearings (at the West Abutment and Pier 3) have heavy rust with losses ranging from 1/8" to 1/4" to all surfaces with rust holes to the pin plate stiffeners. The rollers have heavy rust bloom. The fixed truss bearings (at Piers 1 and 2) have heavy rust with losses typically 1/8" deep to all surfaces with isolated locations up to 1/4" deep. Some of the bearing pin plates have rust holes.

The live load shoes and some of the associated mechanical components for the swing span have been removed. Many of the end lift base castings are abandoned on the top of the piers; however, some of the bearing components been removed or are missing. A full inventory of the components was not performed.

The following are the truss members considered to be critical and in turn were observed hands-on with a detailed and photographic comparison between the past and present conditions, and were either found to have further deterioration or are approximately as deteriorated when last observed, and therefore lend to the full structure being demolished:

Span 1	North Truss	Lower Chord	L2-L3(refer to Photo 1 and Appendix B)
Span 1	North Truss	Lower Chord	L2-L3(refer to Photo 2 and Appendix B)
Span 1	Center North Truss	Diagonal	L6-U7(refer to Photo 3 and Appendix B)
Swing Span	Center North Truss	Lower Chord	L9-L10 (refer to Photo 4 and Appendix B)
Span 2	North Truss	Diagonal	L26-U27(refer to Photo 5 and AppendixB)
Span 2	North Truss	Diagonal	L27-U28(refer to Photo 6 and AppendixB)
Span 2	Center North Truss	Diagonal	L26-U27(refer to Photo 7 and AppendixB)

**Refer to Sketches 2 and 3** for general orientation. Many more members are also severely deteriorated; refer to Section 6 for these conditions.

The following members are end struts that are severely deteriorated. These members are not part of the live or dead load path but do provide structural stability. If more than 2 adjacent zero force members fail, this can lead to loss of stability of the structure. Some of these have already fallen into the channel and the remaining members are a potential hazard in addition to the stability concerns (**refer to Appendix C**):

- Span 1 North Truss Lower Chord L7-L8
- Span 1 North Center Truss Lower Chord L1-L2
- Span 1 North Center Truss Lower Chord L7-L8
- Span 1 South Truss Lower Chord L1-L2
- Span 1 South Truss Lower Chord L7-L8
- Span 1 South Center Truss Lower Chord L1-L2
- Span 1 South Center Truss Lower Chord L7-L8
- Span 2 North Truss Lower Chord L23-L24
- Span 2 North Truss Lower Chord L29-L30
- Span 2 North Center Truss Lower Chord L23-L24
- Span 2 North Center Truss Lower Chord L29-L30
- Span 2 South Truss Lower Chord L23-L24
- Span 2 South Truss Lower Chord L29-L30
- Span 2 South Center Truss Lower Chord L23-L24
- Span 2 South Center Truss Lower Chord L29-L30

## 6.2 Floor System

This section summarizes the condition of the floor system of the approach spans and swing span. These comments are intended to describe the general conditions of the elements. Generally, these elements have shown progressive advanced deterioration when compared to the previous inspections. Several elements have already failed, fallen, and have limited or no structural integrity. Given the inspection findings from this recent inspection, these elements can be expected to continue to deteriorate until failure, unless addressed as soon as possible.

### Deck and Associated Deck Elements

Although the approach span deck and associated deck elements were not inspected, it should be noted that the sidewalk is rated as "imminent" failure (1) due to a section of sidewalk caving in due to severely deteriorated sidewalk stringers, sidewalk cantilever brackets, and sidewalk planks in Span 1 (refer to Photo 15).

The underside of the swing span deck was included as part of this inspection. The swing span deck consists of an open steel grid deck. The open steel grid deck has areas of severe deterioration with disconnected and missing bars. The open steel grid deck has areas where timber decking has been applied. The timber decking in these areas is severely rotted.

### Approach Truss Spans 1 and 2 Stringers

The approach truss spans floor systems (stringers and floorbeams) were included as part of the 2024 inspection scope. Generally, the approach span floor systems are rated as "critical" condition (Condition Rating = 2). The floor system in each span has advanced deterioration with several members with reduced and limited structural capacity due to failed web members, large rust holes, and detached top and bottom flanges.

Numerous stringers are in critical condition (Condition Rating = 2). The stringers in the approach spans have extensive areas of advanced deterioration including full height rust holes in the web and completely detached top and bottom flanges. There are an extensive number of stringers that are beyond repair with limited structural capacity (refer to Photo 16 and 18).

### Swing Span Stringers, Purlins, and Bracing

The swing span truss span floor system (stringers, purlins, and bracing) were included as part of the 2024 inspection scope. Generally, the Swing Span floor systems are considered to be in "critical" condition (Condition Rating = 2). The purlins are considered to be in "poor" condition (Condition Rating = 4).

Nearly all of the stringers have extensive areas of advanced deterioration including full height rust holes in the web and areas of full loss of the flanges. Some stringers have fully detached bottom flanges due to corrosion holes in the webs. There is an isolated stringer that is hanging from the superstructure over the girder drum (refer to Photo 21). Several bracings have severe losses and localized failures (refer to Photo 22).

The purlins are only located within the swing span. The purlins are in poor condition (Condition Rating = 4) to severe condition (Condition Rating = 3). There are localized purlins with advanced deterioration with full height rust holes to the web. In areas of failed/missing stringers, sections of purlins have failed/fallen into the water with the stringers.



### **Sidewalk Cantilever Brackets and Sidewalk Stringers**

As mentioned in the deck section, there is an area of imminent failure due to a section of sidewalk caving in due to severely deteriorated sidewalk stringers, sidewalk cantilever brackets, and sidewalk planks in Span 1 (refer to **Photo 15**).

The sidewalk cantilever brackets and sidewalk stringers were included as part of the 2024 inspection scope. The sidewalk cantilever brackets and stringers are generally considered to be in "critical" condition (Condition Rating = 2).

The sidewalk cantilever brackets have small rust holes to the webs, areas of full loss of the flanges, and severely deteriorated top flange tie plates. The sidewalk stringers have areas of moderate to severe loss including detached webs from the top flanges and rust holes up to full height. Along the north sidewalk of the swing span, there is a sidewalk stringer with a detached bottom flange hanging from the superstructure (refer to **Photo 19**).

### **6.3 Floor Beams, Stringers and Bracing**

#### **Approach Span 1 and 2 Floorbeams**

The floorbeams vary in condition from poor (Condition Rating = 4) to critical (Condition Rating = 2). The floorbeam webs have losses up to paper-thin remaining while a few isolated floorbeams have nearly full height rust holes. The floorbeam top and bottom flanges have losses ranging from minor to severe with areas with rust holes (refer to **Photo 13 and 14**).

#### **Swing Span Floorbeams**

Nearly all of the floorbeams have extensive areas of advanced deterioration including full height rust holes in the web and areas of full loss of the flanges and flange cover plates. Several floorbeams are paper-thin with questionable structural capacity (refer to **Photo 20**).

#### **Approach Fixed Span 3 Stringers and Bracing**

Span 3 was included as part of the 2024 inspection scope. The floor system in Span 3 is in "critical" condition (Condition Rating = 2) with scattered failed members.

The stringers, floorbeams, and girders within Span 3 have areas of moderate to severe deterioration. The stringers have severe deterioration with rust holes up to the full height of the web near Pier 3. The end floorbeams have limited to no structural capacity, the stringers at the end floorbeams are supported by timber cribbing. The timber cribbing is in good condition with typical minor checks. The girders have up to 1/8" loss to the bottom flange cover plates, pack rust between bottom flange cover plates, and advanced deterioration to the lower portion of the web towards the east end of the span. The floor system bracing has several failed members, some half hanging in the channel, detached ends, rust holes, and section loss up to paper-thin remaining (refer to **Photos 23 and 24**).

#### **Substructure**

At both the resting piers (Pier 1 and Pier 2), masonry units at the south end have settled, with the masonry units at the south end of Pier 1 having settled severely (refer to **Photos 8 and 9**). **RECOMMENDATION: STABILIZE THE TOPS OF THESE PIERS, AS THE SUBSTRUCTURE IS NOT BEING DEMOLISHED AS PART OF THIS PROJECT.**

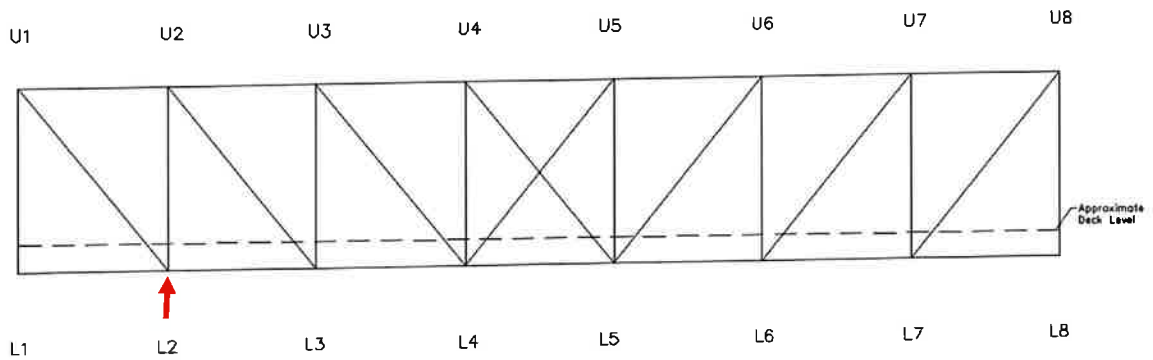
### 7. Photos of Critical Elements

The following photos capture and illustrate the critical deficiencies noted above.



**Photo 1.** Span 1, North Truss, Lower Chord, L2-L3 (Looking West)

The original chords at the eybar connection have 50% section loss by full height. The losses are typical throughout the entire member length. The lower chords have U-shaped repair bars around the pin. These bars also have section loss down to 45% square remaining.

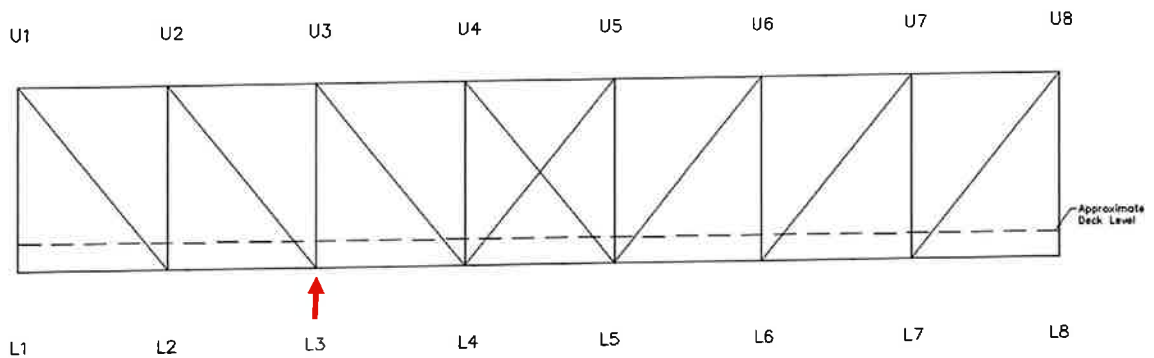


Span 1, North Truss  
South Elevation  
N.T.S

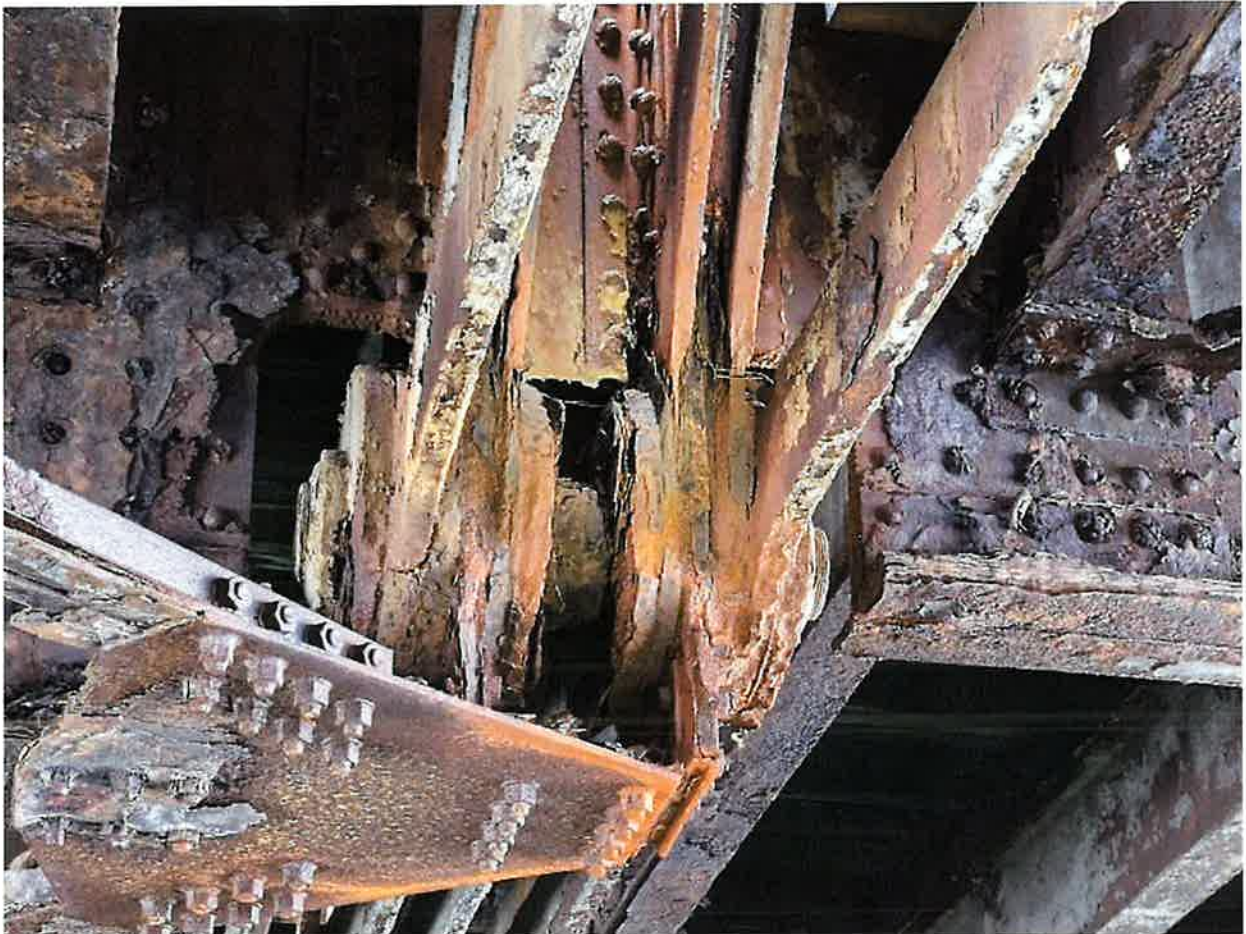


**Photo 2.** Span 1, North Truss, Lower Chord, L2-L3 (Looking East)

The original lower chords have loss down to 50% average remaining by full height. The lower chords have U-shaped repair bars around the pin. The south U-shaped bar bottom leg has failed/broken. The remaining north U-shaped bar bottom leg has losses down to 14% square remaining and requires immediate attention. If this lower chord and repair fail, the entire L2-L3 chord will fail since both ends are in critical condition.

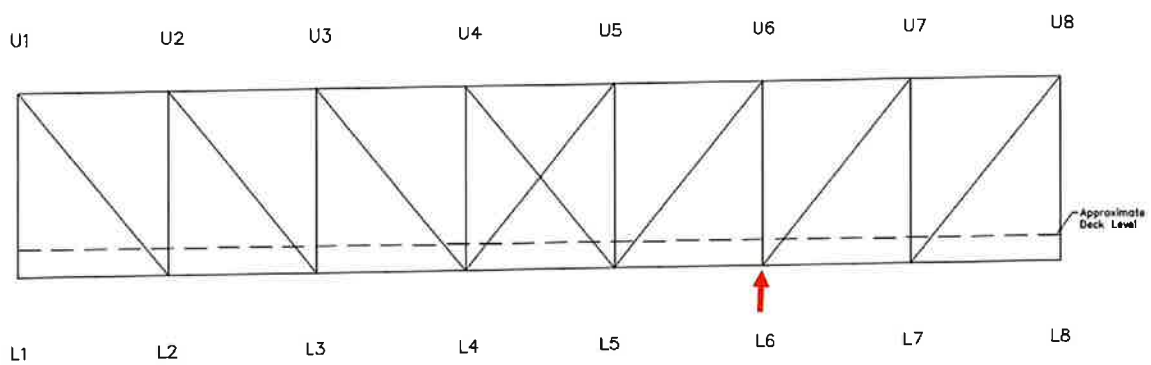


Span 1, North Truss  
South Elevation  
 N.T.S



**Photo 3.** Span 1, Center North Truss, Diagonal, L6-U7 (Looking West)

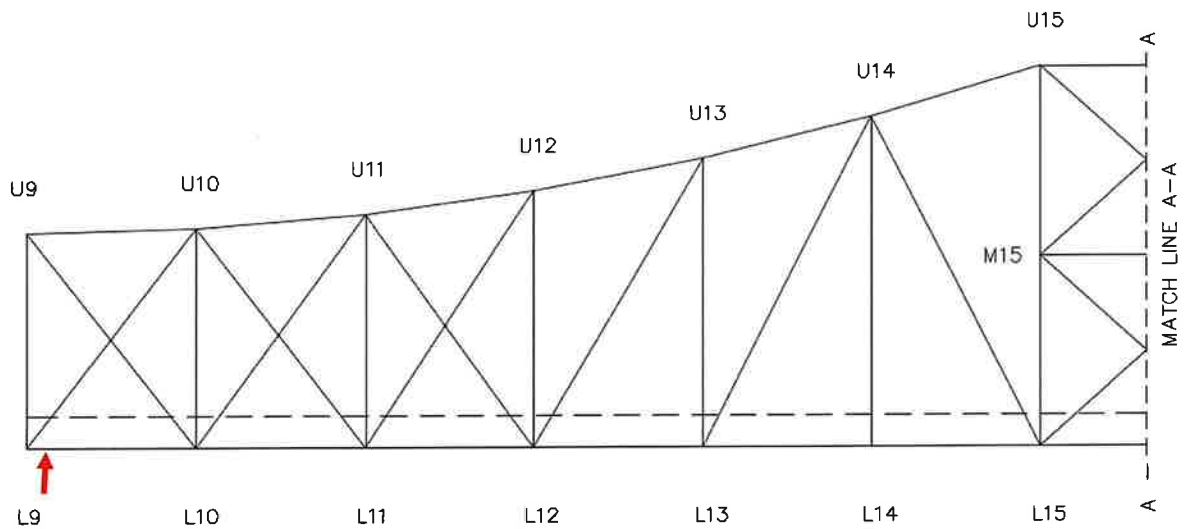
All four diagonals have losses ranging from 15% remaining to 70% remaining. The south center diagonal has a rust hole by 1/2" H along the bottom edge.



**Span 1, Center North Truss**  
**South Elevation**  
N.T.S



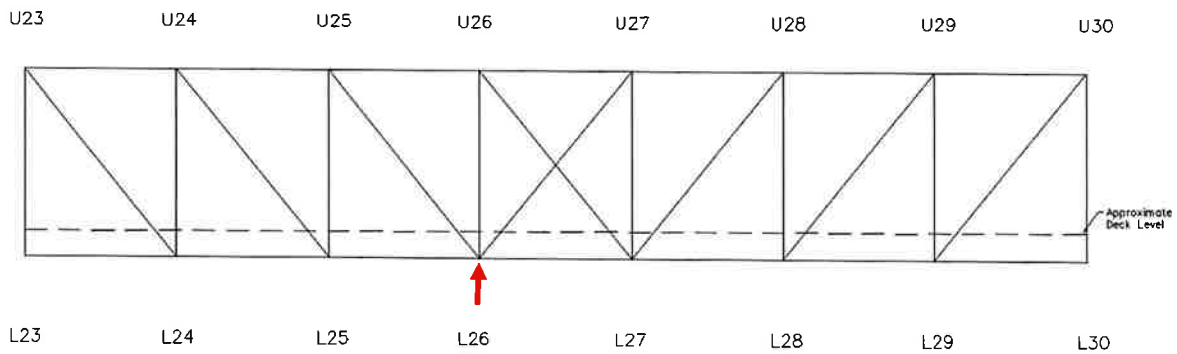
**Photo 4.** Span Swing, Center North Truss, Lower Chord, L9-L10 (Looking True North)  
The south channel web and top flange are buckled. Channel webs have up to 1/4" loss. The top and bottom flanges have rust holes



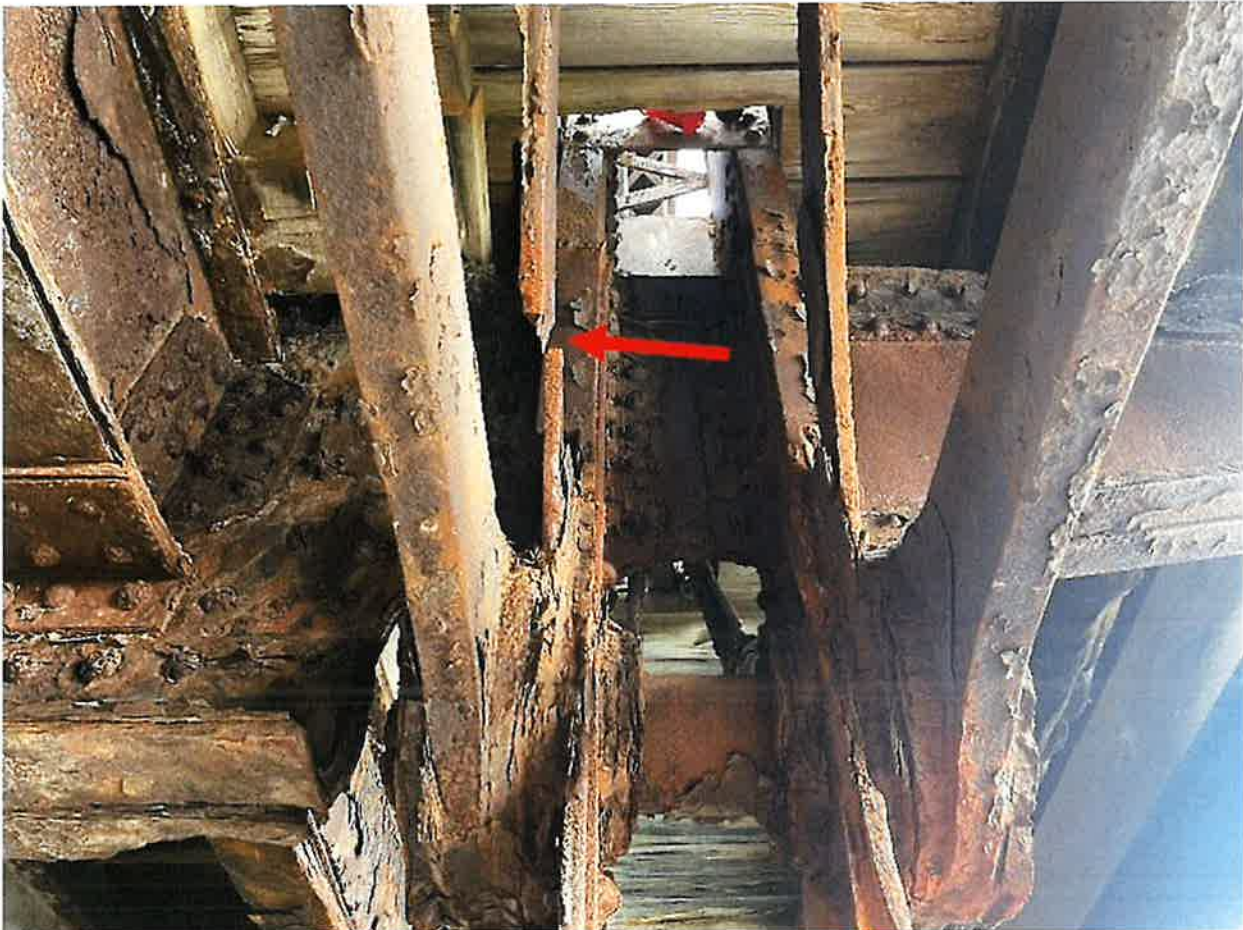
**Swing Span, Center North Truss**  
**South Elevation**  
N.T.S



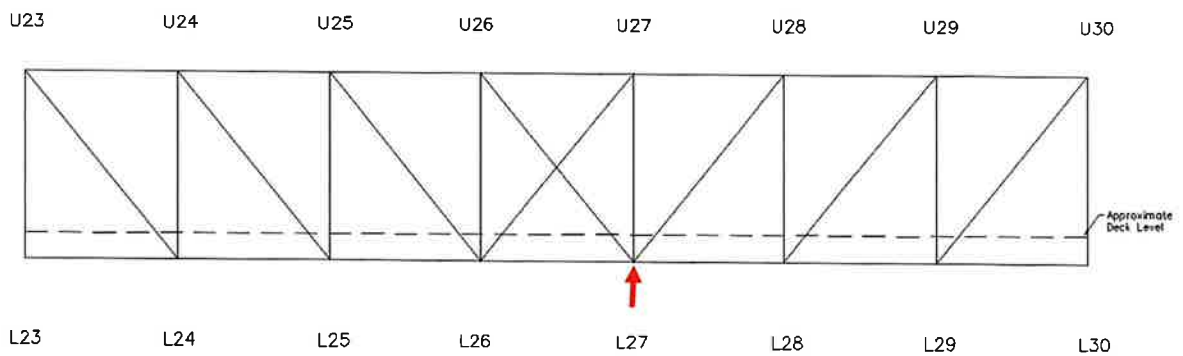
**Photo 5.** Span 2, North Truss, Diagonal, L26-U27 (Looking Northwest)  
The north diagonal bar has a 3" W x 3" H rust hole at the bottom with 1-1/2" for the remaining width. The south diagonal bar has 1/4" average remaining by full width. If the north diagonal bar fails, the south diagonal bar will have torsional forces.



**Span 2, North Truss**  
**South Elevation**  
N.T.S



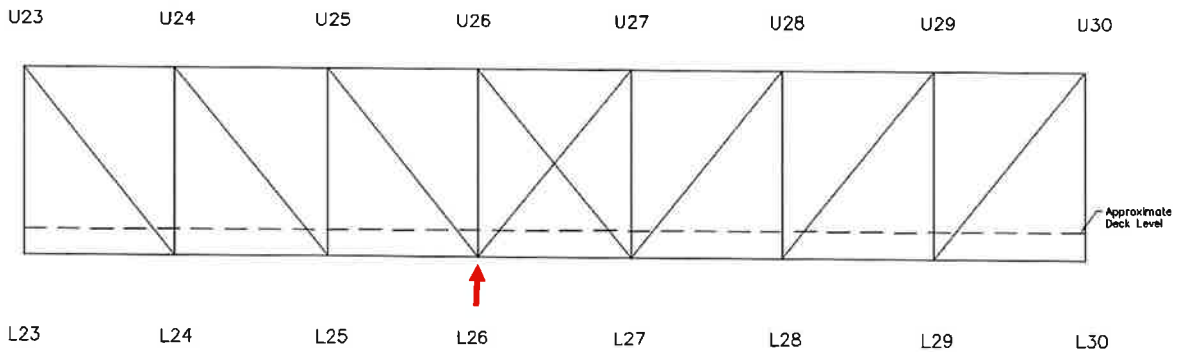
**Photo 6.** Span 2, North Truss, Diagonal, L27-U28 (Looking West)  
The north diagonal has 5/8" remaining average by FW. The south diagonal has completely fractured just above the eyebar connection. The north diagonal has torsional forces applied.



**Span 2, North Truss**  
**South Elevation**  
N.T.S



**Photo 7.** Span 2, Center North Truss, Diagonal, L26-U27 (Looking Northwest)  
 The north diagonal bar has between 90% to 75% remaining by FW. The south diagonal bar has two rust holes up to 4" W with less than 50% to knife edge remaining for the remaining width. If the south diagonal bar fails, the north diagonal bar will have torsional forces.



Span 2, Center North Truss  
South Elevation  
 N.T.S

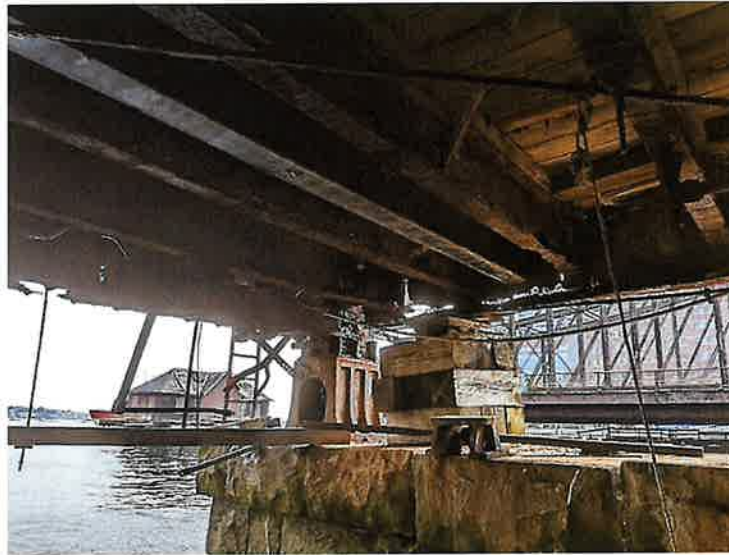


### 8. General Photos of Inspected Elements

The following photos are provided to help capture the general condition of other critical elements including the bearings, approach truss spans floor system, swing span floor system, and the approach fixed span floor system:



**Photo 8.** Approach Span 1, Pier 1, South Bearing L8 (Looking East)  
Settlement of the pier has caused the rotation of the bearing at A2S.



**Photo 9:** Approach Span 1, Pier 1, North Bearing L8 (Looking Northeast)  
The pier bearings typically have adjacent timber cribbing.



**Photo 10:** Approach Span 2, Pier 2, Center North Bearing L23 (Looking East)  
The pier bearings typically advanced deterioration with rust holes and pack rust.



**Photo 11:** Approach Span 3, Pier 3, Timber Cribbing Bearings (Looking West)  
Approach Span 3 stringers and deck bear directly on the timber cribbing due to the failed pier floorbeam.



**Photo 12:** Approach Span 3, East Abutment, Timber Cribbing Bearings (Looking East)  
Approach Span 3 stringers and deck bear directly on the timber cribbing due to the failed abutment floorbeam.



**Photo 13:** Approach Span 1, Pier 1, Floorbeam FB8 (Looking East)

Between the A2N bearing and the timber cribbing, the end floorbeam has a rust hole with adjacent paper-thin remaining section. The bottom of the web south of the timber cribbing has several rust holes. Adjacent to bearing B2N, the floorbeam has missing sections of the bottom flange.



**Photo 14:** Approach Span 2, Pier 2, Floorbeam FB23 (Looking East)

South of the A2N bearing, the end floorbeam has a rust hole with adjacent paper-thin remaining section. The bottom flange has knife edge section for the full length of the floorbeam.



**Photo 15:** Approach Span 1, South Bay, Between Floorbeams FB1 and FB2, Deck and Sidewalk Stringers (Looking West)

An area of sidewalk caving in due to severely deteriorated sidewalk stringers, sidewalk cantilever brackets, and sidewalk planks. This area is considered to be in “imminent failure”.



**Photo 16:** Approach Span 1, Center Bay, Between Floorbeams FB2 and FB3, Stringer 6 (Looking North)

The stringers typically have large rust holes on the flanges and web with paper-thin remaining section of the remaining width of the bay.



**Photo 17:** Approach Span 1, North Bay, Between Floorbeams FB7 and FB8, Stringer 5 (Looking East)

The stringers at the end floorbeam FB8 have large rust holes along the webs.



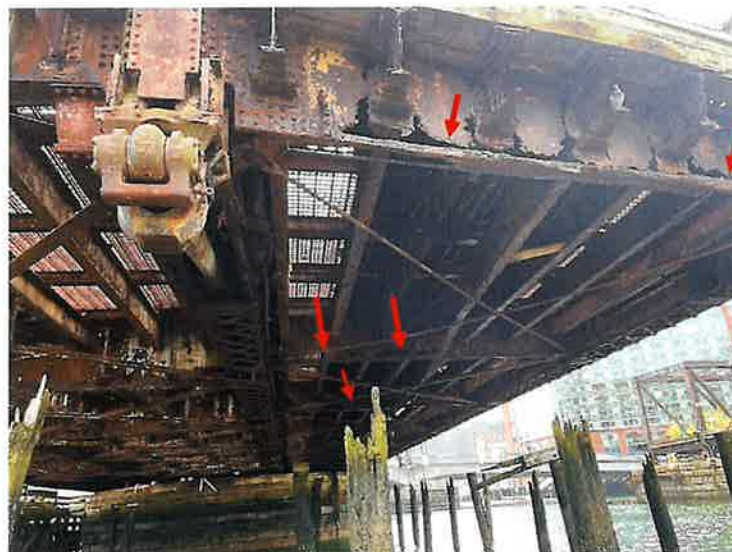
**Photo 18:** Approach Span 2, South Bay, Between Floorbeams FB23 and FB24, Stringer 2 (Looking East)

Isolated stringers have detached webs or in this severe case, detached bottom flanges.



**Photo 19:** Swing Span, North Sidewalk Bay, East of Floorbeam FB14, Stringer 2 (Looking True Northeast)

Isolated stringers have detached webs and bottom flanges in the swing span.



**Photo 20:** Swing Span, North Bay, Between Floorbeams FB21 and FB22 (Looking True South)  
Swing Span floorbeams typically have large web rust holes with paper-thin remaining for the remaining web.



**Photo 21:** Swing Span, North Bay, Between Floorbeams FB10 and FB11 (Looking True North)  
Swing Span stringers typically have large rust holes however, these two stringers have failed webs and flanges, with hanging sections from the superstructure.



**Photo 22:** Swing Span, Center Bay, Between Floorbeams FB16 and FB17, Floor System Bracing (Looking True South)

The swing span has several floor system bracings in “critical” or failed” condition.





**Photo 23:** Approach Span 3. Girder P, Between Floorbeams FB5 and FB6 (Looking North)  
The approach fixed span girders typically have rust holes at the bottom of the webs and severely deteriorated bottom flanges.



**Photo 24:** Approach Span 3. Floorbeam FB5, Between Girders GO and GP (Looking East)  
The approach fixed span interior floorbeams typically have small rust holes and section loss along the bottom of the web

## **Appendix A:**

### **Inspection Comparison Photos**

The following photos compare the previous 2017 and 2022 inspections photos to the most recent 2024 inspection

General Photos



Approach Span 1 (North Elevation)



Swing Span (North Elevation)



Approach Spans 2 and 3 (North Elevation)



Swing Span Cross Section (L22 Shown)

Span 1 – Lower Truss Elements



North Truss at L2-L3 (2022)



North Truss at L2-L3 (2024)  
\*Continuous deterioration of remaining U-Bar will cause failure of lower Chord L2-L3



North Truss- L4U5 at L4 (2017)



North Truss at L4-U5 (2024)

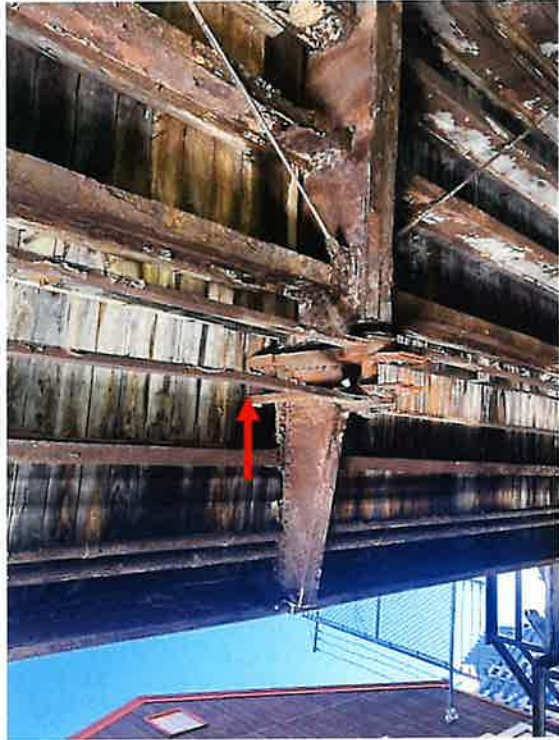
Span 1 – Lower Truss Elements



Center South Truss at L1-L2 (2022)



Center South Truss at L1-L2 (2024)  
\*Continuous deterioration of end strut will cause a falling hazard. This end strut is not part of the load path.



South Truss at L3-L4 (2022)



South Truss at L3-L4 (2024)

Span 2— Lower Truss Elements



Center North Truss at L26U27 at L26 (2017)



Center North Truss L24L25 at L24 (2017)

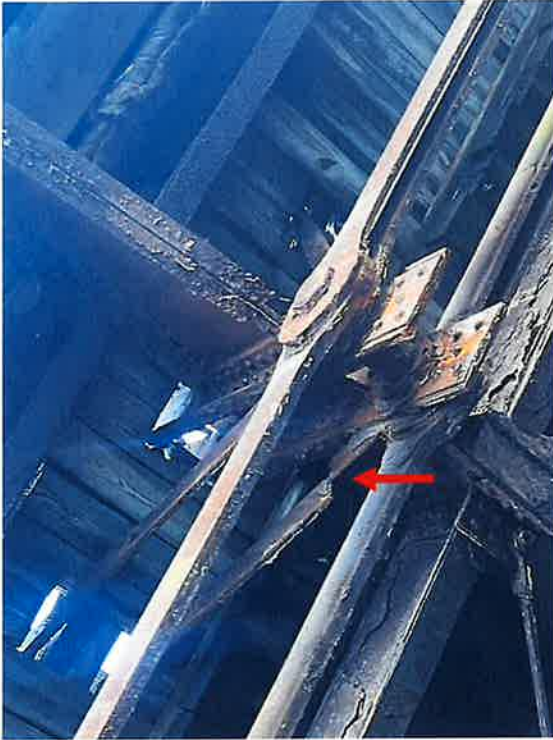


Center North Truss at L26U27 at L26 (2024)  
\*Continuous deterioration of diagonal member will lead to failed/fractured member



Center North Truss at L24L25 at L24 (2024)

Span 2- Lower Truss Elements



North Truss at L27U28 at L27 (2022)



North Truss at L27U28 at L27 (2024)



North Truss at L23L24 (2022)



North Truss at L23L24 (2024)

Swing Span – Lower Chords



North Truss at L17L18 & L18L19 (2017)



North Truss at L17L18 & L18L19 (2024)



North Truss at L16L17



North Truss at L16L17 (2024)



Swing Span – Lower Chords



Center Trusses at L18L19 & L20L21 (2022)



Center Trusses at L18L19 & L20L21 (2024)



North Truss at L9L10 at L9 (2017)



North Truss at L9L10 at L9 (2024)  
\*Advanced deterioration of existing rust hole since the 2017 inspection.

Pier Bearings



Pier 2, Center South Truss L23 Bearing (2017)



Pier 2, Center South Truss L23 Bearing (2024)



Pier 1, South Truss L8 Bearing (2017)



Pier 1, South Truss L8 Bearing (2024)

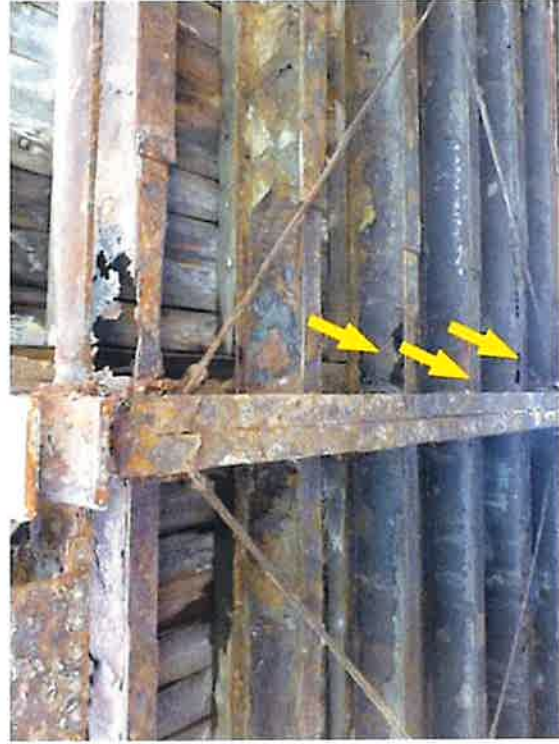
Span 1 - Stringers



North Bay, Btw FB2 & FB3 – Stringer S4 (2017)



North Bay, Btw FB2 & FB3 – Stringer S4 (2024)  
\*Progressive deterioration of existing rust hole since the 2017 inspection.



North Bay, Btw FB6 & FB7 - Stringers S2 to S6 (2017)



North Bay, Btw FB6 & FB7 - Stringers S2 to S6 (2024)

Span 2 - Stringers



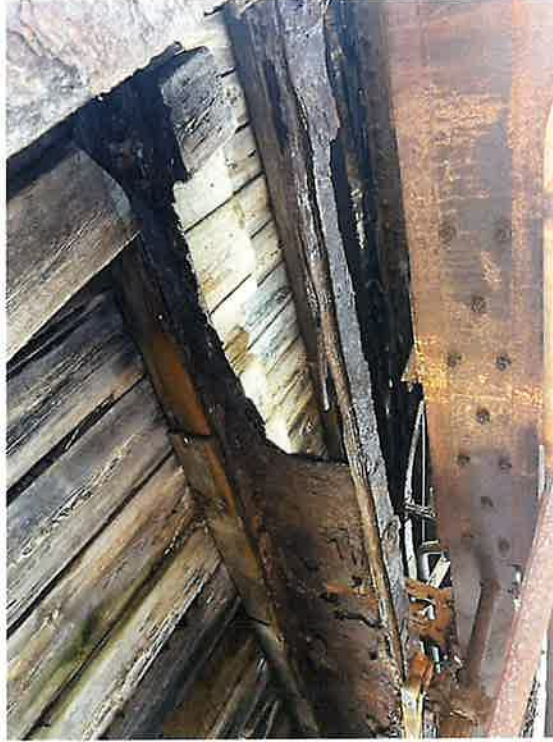
South Bay, Btw FB24 & FB25 – Stringer S2 (2017)



South Bay, Btw FB24 & FB25 – Stringer S2 (2024)



South Bay, Btw FB23 & FB24 – Stringer S1 (2017)



South Bay, Btw FB23 & FB24 – Stringer S1 (2024)  
\*Advanced deterioration of existing rust hole since the 2017 inspection.

Swing Span Floor System



Swing Span, North Bay, Btw FB10 & FB11 –  
Stringer S2 (2022)



Swing Span, North Bay, Btw FB10 & FB11 –  
Stringer S3 (2024)



Swing Span, North Bay - Floorbeam FB10 (2017)

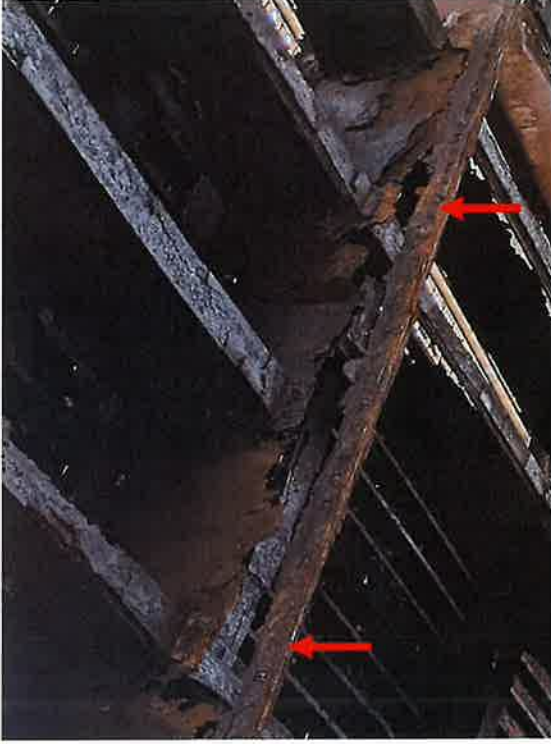


Swing Span, North Bay - Floorbeam FB10 (2024)  
\*Advanced deterioration of existing rust hole since the 2017 inspection.

Swing Span Floor System



Swing Span , North Bay - Floorbeam FB17 (2017)



Swing Span , North Bay - Floorbeam FB17 (2024)  
\*Advanced deterioration of existing rust hole since the 2017 inspection.



Swing Span , North Bay - Floorbeam FB22 (2017)



Swing Span , North Bay - Floorbeam FB22 (2024)  
\*Advanced deterioration of existing rust hole since the 2017 inspection.

## **Appendix B:**

### **Critical Truss Members**

The following table includes lower truss members that should be addressed as soon as possible. These members have been identified as potential failing/falling hazards with continuing deterioration

August 14-15, 2024

Lower Truss Element Inspection

The lower truss is considered to be in "Severe" to "Critical" condition. If demolition is delayed, measures should be taken to stabilize members

Span	Truss	Comment Code	Element	Member	Comment	Req. Addressing
1	A2-N	1A2N-38	Lower Chord	L2-L3	Lower chord has a repair in place. The original chords have loss down to 13/16" remaining by full height. The losses are typical throughout the entire member length. The repair has U-shaped bars around the pin. These bars all have losses down to 3/4" square remaining. This member is considered a failing/falling potential and should be addressed as soon as possible.	X
1	A2-N	1A2N-40	Lower Chord	L2-L3	Lower chord has repair in place. The repair has U-shaped bars around the pin. The original chords have loss down to 7/8" average remaining by FH. The south U-shaped bar bottom leg is rusted through/broken. The north U-shaped bar bottom leg has 1/4" square remaining. This member is considered a failing/falling hazard and should be addressed as soon as possible.	X
1	B2N	1B2N-26	Diagonal	L6-U7	All four diagonals have losses ranging from 1/4" remaining to 1 1/4" remaining. The south center diagonal has a rust hole by 1/2" H along the bottom edge	X
Swing	B1-N	B1N-1	Lower Chord	L9-L10	South channel web and top flange are buckled. Channel webs have up to 1/4" loss. Flanges have rust holes. Batten plates have severe losses or rusted through	X
2	A2N	2A2N-40	Diagonal	L26-U27	North bar has a 3" W x 3" H rust hole at the bottom with 1-1/2" for the remaining width. South bar has 1/4" average remaining by FW	X
2	A2N	2A2N-45	Diagonal	L27-U28	North diagonal has 5/8" remaining average by FW. South diagonal has completely fractured just above the eyebar connection	X
2	B2N	2B2N-14	Diagonal	L26-U27	North bar has 3/4" to 7/8" remaining by FW. South bar has a rust hole by 4" W with 7/16" to knife edge remaining for remaining width	X



## **Appendix C:**

### **Lower Truss Inspection Findings**

The following table includes the full inspection of the lower truss elements.

August 14-15, 2024

Lower Truss Element Inspection

The lower truss is considered to be in "Severe" to "Critical" condition. If demolition is delayed, measures should be taken to stabilize members

Span	Truss	Comment Code	Element	Member	Comment	Req. Addressing
1	A2-N	1A2N-35	Lower Chord	L1-L2	Deteriorated beyond repair (zero force member)	
1	A2-N	1A2N-36	Diagonal	L2-U1	Diagonals have up to 1/4" loss by FW	
1	A2-N	1A2N-37	Vertical	L2-U2	Interior faces of both webs have 1/4" loss (south) and 1/8" loss (north). South flanges have rust holes up to 1 1/4" W at the edges. Losses measured 33" above pin and extending upward 9"	
1	A2-N	1A2N-38	Lower Chord	L2-L3	Lower chord has a repair in place. The original chords have loss down to 13/16" remaining by full height. The losses are typical throughout the entire member length. The repair has U-shaped bars around the pin. These bars all have losses down to 3/4" square remaining. This member is considered a failing/falling potential and should be addressed as soon as possible.	X
1	A2-N	1A2N-39	Lower Chord	L2-L3	Near midspan, the top of the south bar has rust holes up to 1" high	
1	A2-N	1A2N-40	Lower Chord	L2-L3	Lower chord has repair in place. The repair has U-shaped bars around the pin. The original chords have loss down to 7/8" average remaining by FH. The south U-shaped bar bottom leg is rusted through/broken. The north U-shaped bar bottom leg has 1/4" square remaining. This member is considered a failing/falling hazard and should be addressed as soon as possible.	X
1	A2-N	1A2N-41	Diagonal	L3-U2	North diagonal has 15/16" remaining by FW. South diagonal has 1 1/8" remaining by 4" W along the top edge	
1	A2-N	1A2N-42	Vertical	L3-U3	The north and south web legs have rust holes and full loss by FW by up to 5"H. Losses taken 4'-0" above pin center line	
1	A2-N	1A2N-43	Lower Chord	L3-L4	North bar has 1 13/16" remaining by FH. South bar has 1 5/8" remaining by FH	
1	A2-N	1A2N-44	Lower Chord	L3-L4	Both bars have losses up to 3/16"	
1	A2-N	1A2N-45	Diagonal	L4-U3	Both diagonals have losses down to knife edge remaining with pitting down to 1/4" on average. The top edge of both diagonals has rust holes up to 1/2" W.	
1	A2-N	1A2N-47	Diagonal	L4-U5	Both diagonals are broken. There is a poor quality repair in place. Two 3/4" diameter rods are welded to the diagonal and bent around the pin. There is also a 7/8" diameter wire rope looped from pin to pin	

August 14-15, 2024

Lower Truss Element Inspection

The lower truss is considered to be in "Severe" to "Critical" condition. If demolition is delayed, measures should be taken to stabilize members

Span	Truss	Comment Code	Element	Member	Comment	Req. Addressing
1	A2-N	1A2N-48	Lower Chord	L4-L5	Lower chord has repair in place. The repair has U-shaped bars around the pin. There are 4 original bars. The two southern bars have rust holes up to 1 1/2" H along the top and bottom edges. These losses are typical throughout. Two of the four bars have 1" remaining by FH. Two of four bars have losses down to 1/2" remaining. The U-shaped bars have 1/8" loss on all side for all bars.	
1	A2-N	1A2N-49	Lower Chord	L4-L5	Southernmost bar has extensive losses near midspan. Not salvageable	
1	A2-N	1A2N-50	Lower Chord	L4-L5	Lower chord has repair in place. The repair has U-shaped bars around the pin. There are 4 original bars. The two southern bars have rust holes up to 1 1/2" H along the top and bottom edges. These losses are typical throughout. Two of the four bars have 1" remaining by FH. Two of four bars have losses down to 1/2" remaining. The U-shaped bars have 1/8" loss on all side for all bars.	
1	A2-N	1A2N-51	Diagonal	L5-U4	Both diagonals have rust holes up to 1 1/8" H at the top and bottom edges. The remaining width has 1/2" remaining thickness	
1	A2-N	1A2N-53	Diagonal	L5-U6	Both diagonals have losses down to 1/4" remaining. Steel repair cable is in place	
1	A2-N	1A2N-54	Lower Chord	L5-L6	North bar has 1 5/8" remaining by FH. South bar has rust holes up to 3/4" along top and bottom edges. The bottom of the south bar has 1 1/2" remaining by 1 1/2" H above hole	
1	A2-N	1A2N-56	Vertical	L6-U6	Just below deck level, the north face of north channel has 1/4" loss by FW by 8" H. Just above the diagonals and lower chord, the north face of the north web has 1/8" loss by FW	
1	A2-N	1A2N-57	Diagonal	L6-U7	North bar has loss down to 7/8" remaining by 2" H at the bottom edge. The remaining height has 1 1/8" remaining. The south bar has 1 3/16" remaining for FH	
1	A2-N	1A2N-58	Lower Chord	L6-L7	Both bars have 1 1/16" remaining by FH	
1	A2-N	1A2N-61	Vertical	L7-U7	Just below deck level, the north face of the north channel has 1/4" loss by 6" W by 8" H. Along the diagonals and lower chords, the north face of the north channel has 1/8" loss by FW	
1	A2-N	1A2N-63	Lower Chord	L7-L8	Deteriorated beyond repair (zero force member)	
1	B2N	1B2N-2	Pin	L1 Pin	North pin nut has 1 1/4" gap and the nut has 5/8" negative thread	
1	B2N	1B2N-3	Lower Chord	L1-L2	Deteriorated beyond repair (zero force member)	
1	B2N	1B2N-4	Pin	L2 Pin	Pin and pin plates have heavy rust with losses. North pin nut has slight negative threads	

August 14-15, 2024

Lower Truss Element Inspection

The lower truss is considered to be in "Severe" to "Critical" condition. If demolition is delayed, measures should be taken to stabilize members

Span	Truss	Comment Code	Element	Member	Comment	Req. Addressing
1	B2N	1B2N-7	Lower Chord	L2-L3	Lower chord has repair in place. The repair has U-shaped bars around the pin. There are 4 original bars. All four original bars have losses ranging from 15/16" remaining to 1 13/16" remaining. The south U-shaped bar bottom leg is fractured at the eyebar due to full section loss.	
1	B2N	1B2N-8	Lower Chord	L2-L3	At midspan, the southmost bar has 15/16" remaining by FH	
1	B2N	1B2N-9	Lower Chord	L2-L3	Lower chord has repair in place. The repair has U-shaped bars around the pin. There are 4 original bars. All four original bars have losses ranging from 15/16" remaining to 1 13/16" remaining. The north center bar is bowed upward 2" over the east half. The pin bolt at the south end has negative thread	
1	B2N	1B2N-11	Diagonal	L3-U2	All four diagonals have losses ranging from 1/2" remaining to 15/16" remaining	
1	B2N	1B2N-12	Vertical	L3-U3	At the deck level, the north web has a rust hole 1 1/2" W. Both webs have 1/8" loss Just above the pin, both webs have 1/8" loss by FW	
1	B2N	1B2N-17	Diagonal	L4-U5	Both diagonals have losses down to 3/4" remaining by FW	
1	B2N	1B2N-20	Diagonal	L5-U4	North diagonal has 3/4" remaining by FH. South diagonal has 7/8" remaining by FH	
1	B2N	1B2N-24	Lower Chord	L5-L6	All four bars have losses ranging from 1" remaining to 1 1/2" remaining	
1	B2N	1B2N-25	Vertical	L6-U6	At the deck level, the interior face of the north web has 1/8" loss by FW . Between the pin and the deck, the northwest flange has 100% loss by FW. Near the deck level, the northwest flange has a welded flange plate with 10" long cracked welded	
1	B2N	1B2N-26	Diagonal	L6-U7	All four diagonals have losses ranging from 1/4" remaining to 1 1/4" remaining. The south center diagonal has a rust hole by 1/2" H along the bottom edge	X
1	B2N	1B2N-27	Lower Chord	L6-L7	Both bars have losses down to 1" remaining at the top edge for up to 6" H	
1	B2N	1B2N-29	Pin	L7 Pin	Pin and pin plates have heavy rust with losses	
1	B2N	1B2N-32	Lower Chord	L7-L8	Deteriorated beyond repair (zero force member)	
1	B2N	1B2N-33	Pin	L8 Pin	North end of pin visible outside of the north lower chord has pitting 1/4" all around	
1	B2N	1B2N-33a	Vertical	L8-U8	At the pin, the vertical web plates have severe losses with rust holes	
1	B2N	1B2N-36	Vertical	L1-U1	Northeast flange outstanding leg bent 1/2" west over 1'-6"H causing 3" long crack at the root of the angle	
1	B2N	1B2N-41	Vertical	L3-U3	At the deck level, the north web has a 1 1/2" wide rust hole with 1/8" loss for the remaining width. The south web has 1/8" loss by FW	
1	B2N	1B2N-55	Vertical	L7-U7	At the deck opening, the southwest flange has a welded repair plate with a fractured weld at the top	
1	A2S	1A2S-1	Pin	L1 Pin	South pin nut has approximately 80% section loss	

August 14-15, 2024

Lower Truss Element Inspection

The lower truss is considered to be in "Severe" to "Critical" condition. If demolition is delayed, measures should be taken to stabilize members

Span	Truss	Comment Code	Element	Member	Comment	Req. Addressing
1	A2S	1A2S-2	Vertical	L1-U1	The bottom 4'-0" of the vertical typically has 1/8" to 3/16" loss throughout and rust holes at the end 10". At the bearing, there is extensive losses	
1	A2S	1A2S-3	Lower Chord	L1-L2	Member has failed and dropped into the channel (zero force member)	
1	A2S	1A2S-6	Vertical	L2-U2	Just above the floorbeam, the interior face of both webs has 1/4" loss by 6"W at the middle	
1	A2S	1A2S-7	Lower Chord	L2-L3	Both bars have losses ranging from 1/2" remaining to 9/16" remaining. Losses are typical along west half of member	
1	A2S	1A2S-8	Lower Chord	L2-L3	Both bars have losses ranging from 1/2" remaining to 9/16" remaining	
1	A2S	1A2S-9	Diagonal	L3-U2	North diagonal has 1 1/8" remaining by FW. South diagonal has 1" remaining by FW	
1	A2S	1A2S-10	Vertical	L3-U3	At the deck level, the south web has a 1 1/2" wide rust hole. The northeast and northwest flanges have welded plates where the weld has cracked along the vertical and bottom edges	
1	A2S	1A2S-11	Lower Chord	L3-L4	Both bars have 1 3/4" remaining by FH	
1	A2S	1A2S-12	Lower Chord	L3-L4	4'-0" from L3, the south bar is kinked 1" to the north	
1	A2S	1A2S-13	Lower Chord	L3-L4	Both bars have 1 3/4" remaining by FH	
1	A2S	1A2S-14	Diagonal	L4-U3	North diagonal has 1/2" average remaining by FH. South diagonal has 7/16" remaining thickness. Losses are typical for 1'-0" length	
1	A2S	1A2S-17	Lower Chord	L4-L5	Three of four diagonals have losses ranging from 3/4" remaining to 1 1/8" remaining	
1	A2S	1A2S-18	Lower Chord	L4-L5	Three of four diagonals have losses ranging from 3/4" remaining to 1 1/8" remaining	
1	A2S	1A2S-19	Diagonal	L5-U4	The north diagonal has 5/8" remaining by FW. The south diagonal has 1/2" remaining by 1 1/2" W at bottom	
1	A2S	1A2S-20	Vertical	L5-U5	The south web has a 5" W rust hole with 3/16" to 1/4" loss for the remaining width	
1	A2S	1A2S-21	Diagonal	L5-U6	North diagonal has 11/16" remaining by FW. South diagonal has 5/8" remaining by FW	
1	A2S	1A2S-22	Lower Chord	L5-L6	North bar has 1/16" loss by FH. South bar has 1/8" loss by FH	
1	A2S	1A2S-23	Lower Chord	L5-L6	North bar has 1/16" loss by FH. South bar has 1/8" loss by FH	
1	A2S	1A2S-25	Diagonal	L6-U7	North diagonal has 1 1/8" remaining by FW. South diagonal has 1" remaining by FW	
1	A2S	1A2S-26	Lower Chord	L6-L7	North bar has 1" remaining by FH. South bar has 1 1/16" remaining by FH	
1	A2S	1A2S-27	Lower Chord	L6-L7	North bar has 1" remaining by FH. South bar has 1 1/16" remaining by FH with 3/16" loss by FH throughout the exterior face of the south bar	
1	A2S	1A2S-28	Diagonal	L7-U8	North diagonal has 1/8" loss by FW. South diagonal has 3/16" loss by FW	
1	A2S	1A2S-29	Lower Chord	L7-L8	Deteriorated beyond repair (zero force member). Chord is bent and twisted due to movement of bearing	

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Lower Truss Element Inspection

The lower truss is considered to be in "Severe" to "Critical" condition. If demolition is delayed, measures should be taken to stabilize members

Span	Truss	Comment Code	Element	Member	Comment	Req. Addressing
1	A2S	1A2S-30	Vertical	L8-U8	Settlement of pier has caused rotation of bearing L8. Vertical member has caused the bearing north retaining plate to bend 1/2" out of plane	
1	B2S	1B2S-16	Vertical	L4-U4	South web has 1/8" remaining or paper thin by FW. North web has 1/16" loss by FW	
1	B2S	1B2S-32	Lower Chord	L1-L2	Deteriorated beyond repair (zero force member)	
1	B2S	1B2S-33	Pin	L2 Pin	Pin casing has 100% loss by full length	
1	B2S	1B2S-34	Diagonal	L2-U1	Near the transition, three of four bars have 1/8" loss by FW and the remaining bar has 3/16" loss by FW. Behind the pin, the bottom of the forged loop for all four bars has 1/2" H rust holes	
1	B2S	1B2S-38	Diagonal	L3-U2	All four diagonals have losses ranging from 1/2" remaining to 1" remaining	
1	B2S	1B2S-41	Diagonal	L4-U3	South diagonal has 1 5/16" remaining by FW. North diagonal has 1 1/8" remaining by FW	
1	B2S	1B2S-43	Diagonal	L4-U5	North diagonal has up to 1/4" loss. South diagonal has up to 1/4" loss with up to 1/2" H rust holes at the top and bottom edges	
1	B2S	1B2S-46	Diagonal	L5-U4	North diagonal has 3/4" remaining by FW. South diagonal has 9/16" remaining by FW with a 1/4" rust hole at the bottom edge	
1	B2S	1B2S-49	Lower Chord	L5-L6	All four bars have losses ranging from 1 5/16" remaining to 1/4" remaining	
1	B2S	1B2S-51	Vertical	L6-U6	Just above the pin, the interior face of both webs has 3/16" loss by FW. The exterior face of both webs has 1/8" loss by FW	
1	B2S	1B2S-52	Diagonal	L6-U7	All four diagonals have losses ranging from 1/2" remaining to 1" remaining	
1	B2S	1B2S-56	Pin	L7 Pin	Pin has heavy rust with minor losses	
1	B2S	1B2S-59	Lower Chord	L7-L8	Deteriorated beyond repair (zero force member)	
1	B2S	1B2S-60	Lower Chord	L8-U8	At the pin, the vertical web plates have severe losses with rust holes	
Swing	A1-N	A1N-26	Lower Chord	L9-L10	South web has a 4 1/4" high rust hole and 1/8" loss for the remaining height. North web has 1/8" loss at the bottom. Both batten plates severely rusted through	
Swing	A1-N	A1N-50	Lower Chord	L17-L18	Channel webs have up to 3/16" loss by full height. Flanges have losses down to 1/16" remaining at edge. Batten plates rusted through. Numerous lacing bars are rusted through	
Swing	A1-N	A1N-51	Lower Chord	L17-L18	Channel webs have up to 3/16" loss by full height. Batten plates are paper thin or rusted through. Some bottom lacing bars have severe loss.	
Swing	A1-N	A1N-52	Lower Chord	L18-L19	Channel webs have up to 1/4" loss by full height. Top batten plate rusted through. One lacing bar rusted through and adjacent lacing bars have severe losses	
Swing	A1-N	A1N-53	Lower Chord	L18-L19	Channel webs have up to 1/4" loss by full height. One flange has a rust hole at the edge. Top batten plate rusted through. One lacing bar rusted through and adjacent lacing bars have severe losses	

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Lower Truss Element Inspection

The lower truss is considered to be in "Severe" to "Critical" condition. If demolition is delayed, measures should be taken to stabilize members

Span	Truss	Comment Code	Element	Member	Comment	Req. Addressing
Swing	B1-N	B1N-1	Lower Chord	L9-L10	South channel web and top flange are buckled. Channel webs have up to 1/4" loss. Flanges have rust holes. Batten plates have severe losses or rusted through	X
Swing	B1-N	B1N-16	Diagonal	L15-M16	In front of the pin, the forged loop of both diagonals has 100% loss <b>Inaccessible</b>	
Swing	B1-N	B1N-19	Diagonal	L16-M15	In front of the pin, the north bar forged loop has 100% loss. The south bar forged loop has loss down to 3/16" diameter remaining. <b>Inaccessible</b>	
Swing	B1-N	B1N-41	Lower Chord	L21-L22	North web is paper thin with holes for 6" high throughout batten plate area. Batten plates have rusted through or have severe losses	
Swing	B1-N	B1N-42	Lower Chord	L21-L22	North web has 1/4" loss by 3" high above bottom flange angle. South web is paper thin with pin holes by 3" high above bottom flange angle. All flanges have severe losses. Losses begin 26" from pin and extend for a 4'-0" length	
Swing	A1-S	A1S-62	Pin	L17 Pin	Pin has 1/4" to 1" loss around the full circumference of the pin	
Swing	A1-S	A1S-66	Vertical	L18-U18	The interior faces of both webs 1/8" loss by FW. The west flanges have 1/4" remaining by FW. The stiffener/FB web continuity plate has a rust hole 4"H x 2"W	
Swing	A1-S	A1S-69	Diagonal	L19-U18	Both diagonals have 13/16" remaining by 2" W at top	
Swing	A1-S	A1S-73	Pin	L20 Pin	Pin has 3/4" loss around 75% of the pin circumference	
Swing	B1-S	B1S-55	Lower Chord	L9-L10	South channel web is paper thin with holes for 4" H. South web stiffeners have rust holes at the bottom. South bottom flange angle has a rust hole at the edge. North bottom flange angle has 5/16" remaining by FW	
Swing	B1-S	B1S-56	Lower Chord	L9-L10	North web has rust holes up to 2 3/4" H. North top flange has rust holes up to 2" W. These losses are throughout the western 8'-0" of the chord	
Swing	B1-S	B1S-60	Pin	L11 Pin	Pin has 3/16" loss around the perimeter	
Swing	B1-S	B1S-63	Lower Chord	L11-L12	South web has 1/8" loss by 3"H. South bottom flange outstanding leg has 100% loss by FW by 14"L. South bottom flange vertical leg has 1/8" loss by 3"H. Losses (excluding hole) are typical for a 7'-0" length	
Swing	B1-S	B1S-73	Lower Chord	L14-L15	Both webs have loss up to 3/16". All flanges have losses down to 3/16" remaining by FW with one flange having a rust hole along the edge. Beyond the limits of previous repair, north top flange has 100% loss by FW and north bottom flange is paper thin by FW <b>Inaccessible</b>	
Swing	B1-S	B1S-74	Pin	L15 Pin	North pin nut has 10% section loss <b>Inaccessible</b>	
Swing	B1-S	B1S-76	Diagonal	L15-M16	At the pin, the forged loops have section loss down to 3/16" square remaining <b>Inaccessible</b>	

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Lower Truss Element Inspection

The lower truss is considered to be in "Severe" to "Critical" condition. If demolition is delayed, measures should be taken to stabilize members

Span	Truss	Comment Code	Element	Member	Comment	Req. Addressing
Swing	B1-S	B1S-77	Lower Chord	L15-L16	At the distribution girder, the north bottom flange outstanding leg has 100% loss by FW and the south bottom flange outstanding leg has 5/16" remaining by FW <b>Inaccessible</b>	
Swing	B1-S	B1S-78	Lower Chord	L15-L16	Web plates have losses up to 3/16". North top flange is paper thin with holes by FW. North bottom flange has 100% loss by FW <b>Inaccessible</b>	
Swing	B1-S	B1S-79	Diagonal	L16-M15	North diagonal forged loop end has loss down to 1/4" square remaining <b>Inaccessible</b>	
Swing	B1-S	B1S-82	Lower Chord	L16-L17	Web plates have losses up to 3/16". North top flange is paper thin with holes by FW. North bottom flange has 100% loss by FW <b>Inaccessible</b>	
2	A2N	2A2N-4a	Vertical	L25-U25	Above the deck opening, south channel has up to 5/16" loss to web	
2	A2N	2A2N-8	Diagonal	L26-U27	North diagonal has 1/2" remaining for most of the width with a 1/2" H rust hole at the bottom edge. These losses continue around the eye and extend 1'-0" from the pin	
2	A2N	2A2N-9	Diagonal	L27-U26	North diagonal has 7/16" to 5/8" remaining for the full width. The losses extend approximately 1'-0"	
2	A2N	2A2N-12a	Vertical	L27-U27	Above the deck opening, south channel has up to 5/16" loss <b>(Photo 3546)</b>	
2	A2N	2A2N-23	Vertical	L23-U23	At the pin, the south web is in hard contact with the south bearing plate. Below the pin the south web is bent inward 1 5/8". There is a 2 1/8" gap between the north bearing plate and north vertical web	
2	A2N	2A2N-25	Lower Chord	L23-L24	Deteriorated beyond repair (zero force member)	
2	A2N	2A2N-27	Diagonal	L24-U23	South diagonal has 3/16" to 1/4" loss. North diagonal has 1/16" to 1/8" loss with a 1/4" rust hole at the top edge	
2	A2N	2A2N-29	Lower Chord	L24-L25	North bar has 11/16" to 1" remaining by FH. South bar has 7/8" remaining by FH	
2	A2N	2A2N-30	Lower Chord	L24-L25	At 4'-0" from L25, the south bar interior face has 1 1/4" remaining by FH by 2'-6" L	
2	A2N	2A2N-31	Lower Chord	L24-L25	North bar has 11/16" to 1" remaining by FH. South bar has 7/8" remaining by FH	
2	A2N	2A2N-32	Diagonal	L25-U24	South bar has 1 1/16" remaining by FH. North bar has 1 1/4" remaining for the top 3"	
2	A2N	2A2N-34	Pin	L25 Pin	Pin has up to 1/4" loss by the full pin perimeter	
2	A2N	2A2N-35	Lower Chord	L25-L26	At 28" east of L25, the north bar has 1/16" loss by FH. The south bar has 1 5/8" to 1 3/4" remaining with up to 1/2" H rust holes at the top and bottom edges. These losses extend approx. 3'-0" long	
2	A2N	2A2N-36	Lower Chord	L25-L26	The north bar has 1/16" loss by FH. The south bar has 1 5/8" to 1 3/4" remaining with up to 1/2" H rust holes at the top and bottom edges	
2	A2N	2A2N-37	Pin	L26 Pin	Pin has 1/8" loss by the full pin perimeter	
2	A2N	2A2N-38	Diagonal	L26-U25	North diagonal has 3/4" remaining by FW. South bar has 5/16" to 7/16" remaining with knife edge along bottom 3"	
2	A2N	2A2N-40	Diagonal	L26-U27	North bar has a 3" W x 3" H rust hole at the bottom with 1-1/2" for the remaining width. South bar has 1/4" average remaining by FW	X
2	A2N	2A2N-41	Lower Chord	L26-L27	All four bars have 1/8" to 1/2" loss by FH	



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Lower Truss Element Inspection

The lower truss is considered to be in "Severe" to "Critical" condition. If demolition is delayed, measures should be taken to stabilize members

Span	Truss	Comment Code	Element	Member	Comment	Req. Addressing
2	A2N	2A2N-42	Lower Chord	L26-L27	All four bars have 1/8" to 1/2" loss by FH	
2	A2N	2A2N-43	Diagonal	L27-U26	North diagonal has 1/4" remaining to knife edge for up to 5" long with up to 1-1/8" H rust holes at the edges. South bar has 5/8" remaining with 3/4" H rust hole at top. Severe deterioration around the pin	
2	A2N	2A2N-45	Diagonal	L27-U28	North diagonal has 5/8" remaining average by FW. South diagonal has completely fractured just above the eyebar connection	X
2	A2N	2A2N-46	Lower Chord	L27-L28	North bar has 1/8" loss by FH. South bar has 1/8" to 3/16" loss by FH	
2	A2N	2A2N-47	Lower Chord	L27-L28	North bar has 1/8" loss by FH. South bar has 1/8" to 3/16" loss by FH	
2	A2N	2A2N-48	Vertical	L28-U28	Interior face of both webs has 1/4" loss by FW. Loss is typical from top of floorbeam extending upward 1'-0"	
2	A2N	2A2N-49	Diagonal	L28-U29	South bar has 1 5/16" remaining by FW. North bar has 7/8" remaining to 1 1/8" remaining	
2	A2N	2A2N-50	Lower Chord	L28-L29	North bar has 3/4" to 7/8" remaining by FH. South bar has 13/16" to 7/8" remaining by FH	
2	A2N	2A2N-51	Lower Chord	L28-L29	North bar has 3/4" to 7/8" remaining by FH. South bar has 13/16" to 7/8" remaining by FH	
2	A2N	2A2N-52	Vertical	L29-U29	North channel web has 1/4" loss. South channel web has 3/8" loss. Losses typical from top of floorbeam extending upward 3'-0"	
2	A2N	2A2N-54	Lower Chord	L29-L30	Deteriorated beyond repair (zero force member)	
2	B2N	2B2N-2	Lower Chord	L23-L24	Deteriorated beyond repair (zero force member)	
2	B2N	2B2N-5	Lower Chord	L24-L25	North bar has 7/8" remaining by FH with 3/4" rust hole at the bottom edge. South bar has 1 1/8" remaining by FH	
2	B2N	2B2N-6	Lower Chord	L24-L25	Both bars have 3/8" to 5/16" loss by FH	
2	B2N	2B2N-6a	Pin	L25 Pin	Pin casing has 100% loss along the full length of the casing	
2	B2N	2B2N-11	Pin	L26 Pin	Pin casing has 100% loss along the full length of the casing	
2	B2N	2B2N-12	Diagonal	L26-U25	North bar has 3/4" to 1 5/16" remaining by FH. South bar has 1" remaining by FH with a 1/8" H rust hole at the base	
2	B2N	2B2N-14	Diagonal	L26-U27	North bar has 3/4" to 7/8" remaining by FW. South bar has a rust hole by 4" W with 7/16" to knife edge remaining for remaining width	X
2	B2N	2B2N-22	Pin	L28 Pin	Pin casing has 100% loss along the full length of the casing	
2	B2N	2B2N-24	Diagonal	L28-U29	All four bars have losses ranging from 1/2" to 1" remaining by FW	
2	B2N	2B2N-29	Lower Chord	L29-L30	Deteriorated beyond repair (zero force member)	
2	B2N	2B2N-45	Vertical	L27-U27	At the deck opening, the south channel web has a 1'-0"W rust hole. The north channel has 1/8" loss by FW	

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Lower Truss Element Inspection

The lower truss is considered to be in "Severe" to "Critical" condition. If demolition is delayed, measures should be taken to stabilize members

Span	Truss	Comment Code	Element	Member	Comment	Req. Addressing
2	A2S	2A2S-1	Vertical	L23-U23	At the pin, there is up to 1 5/8" pack rust between the vertical webs and the bearing vertical plates. Below the pin, both vertical web plates are bent inward up to 1 1/4"	
2	A2S	2A2S-3	Lower Chord	L23-L24	Deteriorated beyond repair (zero force member)	
2	A2S	2A2S-4	Diagonal	L24-U23	North bar has 1/8" loss. South bar has 1 1/2" remaining	
2	A2S	2A2S-6	Lower Chord	L24-L25	North bar has 3/4" remaining by FH. South bar has 15/16" remaining by FH	
2	A2S	2A2S-7	Lower Chord	L24-L25	North bar has 3/4" remaining by FH. South bar has 15/16" remaining by FH	
2	A2S	2A2S-8	Diagonal	L25-U24	Both bars have loss down to 1 1/16" remaining. Below the pin, the south bar has a 2"L by FW by 1/2" D rust hole	
2	A2S	2A2S-10	Lower Chord	L25-L26	North bar has 1 11/16" remaining by FH. South bar has 1 9/16" remaining by FH	
2	A2S	2A2S-11	Lower Chord	L25-L26	North bar has 1 11/16" remaining by FH. South bar has 1 9/16" remaining by FH	
2	A2S	2A2S-13	Diagonal	L26-U25	Both bars have 1/2" remaining for the bottom 2" and 1/4" loss for the remaining height	
2	A2S	2A2S-16	Lower Chord	L26-L27	Northmost bar has 5/8" remaining by 4" H. North center bar has 1 1/16" remaining by FH. South center bar has 3/4" remaining by FH	
2	A2S	2A2S-17	Lower Chord	L26-L27	At 4'-0" from L26, the northernmost bar has 3/8" remaining by 3" high at the bottom and tapes to 1" remaining at the top	
2	A2S	2A2S-18	Lower Chord	L26-L27	Northmost bar has 5/8" remaining by 4" H. North center bar has 1 1/16" remaining by FH. South center bar has 1 1/8" remaining by FH	
2	A2S	2A2S-22	Diagonal	L27-U28	North diagonal has 1/2" to 3/4" remaining. South diagonal has 11/16" to 7/8" remaining	
2	A2S	2A2S-23	Vertical	L28-U28	The interior face of both webs has 3/16" to 1/4" loss by FW. The south flange outstanding legs have 1/8" remaining or paper thin with holes. The east flange welded plates have severe pack rust with cracked welds	
2	A2S	2A2S-24	Diagonal	L28-U29	North bar has 7/8" to 13/16" remaining. South bar has 1" to 1 3/16" remaining	
2	A2S	2A2S-25	Lower Chord	L28-L29	North bar has 7/8" to 1 1/16" remaining. South bar has 1 1/16" remaining	
2	A2S	2A2S-30	Diagonal	L29-U30	North bar has up to 1/4" loss. South bar has up to 5/8" loss	
2	A2S	2A2S-31	Lower Chord	L29-L30	Deteriorated beyond repair (zero force member)	
2	A2S	2A2S-49	Diagonal	L27-U26	North diagonal is severely bent 3" to the south over a 4'-0" height at the sidewalk opening. South bar is more taut than north bar and may be the only functioning bar	
2	B2S	2B2S-5	Diagonal	L24-U23	Welded plate at deck opening has a 1 1/2" long crack in the weld	
2	B2S	2B2S-6	Diagonal	L24-U23	Welded attachment at gate has two broken welds and 1 partially broken weld	
2	B2S	2B2S-23	Vertical	L28-U28	North web has a rust hole 1/2" W by 3/4" H with up to 3/8" loss by remaining width. South web has 3/16" loss by FW	
2	B2S	2B2S-32	Lower Chord	L23-L24	Deteriorated beyond repair (zero force member)	

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Lower Truss Element Inspection

The lower truss is considered to be in "Severe" to "Critical" condition. If demolition is delayed, measures should be taken to stabilize members

Span	Truss	Comment Code	Element	Member	Comment	Req. Addressing
2	B2S	2B2S-33	Pin	L24 Pin	Pin casing has 100% loss by full length of casing	
2	B2S	2B2S-36	Lower Chord	L24-L25	Both bars have 1/2" to 7/16" loss by FH	
2	B2S	2B2S-38	Diagonal	L25-U24	All four bars have losses down to 7/16" remaining	
2	B2S	2B2S-43	Diagonal	L26-U25	Both bars have 1 5/16" remaining by FW	
2	B2S	2B2S-50	Diagonal	L27-U28	South bar has 1" remaining by FW. North bar has 1 3/16" remaining by FW	
2	B2S	2B2S-53	Diagonal	L28-U29	All four bars have losses down to 1/2" to 5/8" remaining	
2	B2S	2B2S-56	Pin	L29 Pin	Pin has 1/2" loss for the full circumference and full pin length	
2	B2S	2B2S-59	Lower Chord	L29-L30	Deteriorated beyond repair (zero force member)	
3	Timber Columns		"Cross" Girders		Inspect the timber columns for severe deficiencies, the girder loads are transferred to the timber columns	