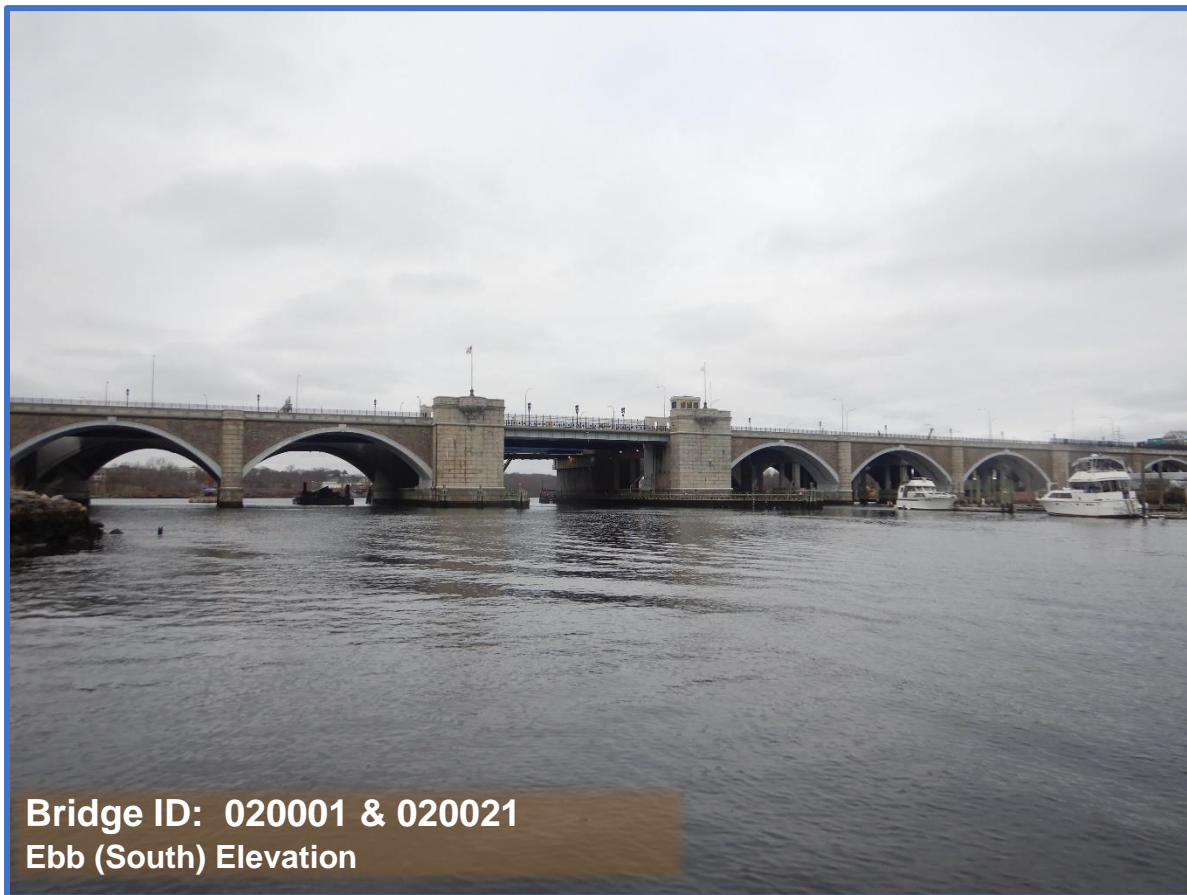


# Underwater Inspection Report



Washington Bridge South & Washington Bridge South  
Pedestrian  
Interstate 195 Eastbound & Bike/Pedestrian Bridge  
Over  
Seekonk River



Bridge ID: 020001 & 020021  
Ebb (South) Elevation



East Providence, Rhode Island  
Interstate 195 Eastbound &  
Bike/Pedestrian Bridge  
February 09, 2024

MPA No. 359 AWARD No. 3674875

Underwater Inspection Report

Bridge No.: 020001 & 020021 Inspection Date: 2/9/2024  
 Bridge Name: Washington Bridge South & Washington Bridge South Pedestrian  
 Facility Carried: Interstate 195 Eastbound & Bike Path/Pedestrian  
 Feature Intersected: Seekonk River  
 City/Town: East Providence

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## Underwater Inspection Report

Bridge No.:	020001 & 020021	Inspection Date:	2/9/2024
Bridge Name:	Washington Bridge South & Washington Bridge South Pedestrian		
Facility Carried:	Interstate 195 Eastbound & Bike Path/Pedestrian		
Feature Intersected:	Seekonk River		
City/Town:	East Providence		

## Summary of Findings

### Item 60 - Substructure

**Overall Rating: 6 - Satisfactory**

Piers 4 - 9, the steel encased reinforced concrete caisson pile at the north (upstream) end of the piers has minor corrosion below the fiberglass jackets. At Piers 4 through 7 and 9, the stone masonry facade has less than 5% deteriorated mortar with 3" to 6" of penetration between stones and isolated full-height cracked stones. Pier 8 has 15% deteriorated mortar with up to 12" of penetration between stones. The reinforced concrete collision wall below the stone masonry facade has abrasion 1/2" deep and poor consolidation / spalls / voids up to 16'-6" high x 2' wide x 3" deep. Piers 4, 7 and 9 masonry has cracks up to full height and open up to 1/2" wide. Piers 6 & 7 have missing stones up to 3'-6" long x 5' high. At Piers 4, 5 and 8, the footings are vertically exposed up to 4.5' high (no change), at south end of Pier 8, the footing is exposed full height (8') and the tremie seal is exposed up to with up to 1.5' high (previously exposed up to 15" high). Exposed footings have minor abrasion, vertical cracks up to 1/4" wide and areas of voids / poor consolidation up to 8" deep.

### Item 61 - Channel & Channel Protection

**Overall Rating: 6 - Bank Slumping**

The channel bottom consists of silt, sand, and shells with scattered construction debris throughout. The maximum penetration into the channel bottom is 12". There has been no apparent change to the channel orientation as compared to the 2021 Underwater Inspection Report. No erosion was observed along the channel embankments. There is construction debris consisting of concrete rubble and cut-off timber piles at the channel bottom adjacent to the piers. Channel off of the Southeast Corner of the East Fender System wall, there is a sunken boat ±48' long x up to 20' high off the channel bottom that is a navigational hazard to boat traffic outside of the main channel. Channel bottom elevations along the fascias have areas of aggradation up to 7.9' high and areas of scour up to 2.5' deep.

The timber fender System wall members has minor splits and checking. The navigational lighting was on and functioning at the time of the inspection. The two (2) timber dolphins on the south side of Pier 7 are in poor condition. Handrails have three (3) fractured / missing areas. East Fender System wall has two (2) broken PVC electrical conduits with exposed wires.

### Item 113 - Scour Critical

**Overall Rating: 3 - Scour Critical**

At Piers 4, 5 and 8, the footings are vertically exposed up to 4.5' high (no change), at south end of Pier 8, the footing is exposed full height (8') and the tremie seal is exposed up to with up to 1.5' high (previously exposed up to 15" high). A Scour Susceptibility Evaluation was performed on May 30 2018 to evaluate the scour potential at the bridge site. Based on this scour evaluation, the structure has been rated a "3" or "Unstable".

### General Condition Rating for Evaluating the Condition of Substructure & Channel Components

NOTE: Condition ratings are assigned in accordance with the National Bridge Inspection Standards (NBIS) coding information, as presented in the Federal Highway Administration Report No. FHWA-PD-96-001 "Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges," dated December 1995 (revised March 11, 2004).







































## Underwater Inspection Report

Bridge No.: 020001 & 020021 Inspection Date: 2/9/2024  
 Bridge Name: Washington Bridge South & Washington Bridge South Pedestrian  
 Facility Carried: Interstate 195 Eastbound & Bike Path/Pedestrian  
 Feature Intersected: Seekonk River  
 City/Town: East Providence

### Item 61 - Channel & Channel Protection (Continued)

**Overall Rating: 6 - Bank Slumping**

Component      Rating      Description

---

**Water Velocities**

Span No.	Max Depth at High Tide(ft)	20% (fps)	60% (fps)	80% (fps)
4	9	Tidal	Tidal	Tidal
5	32.9	Tidal	Tidal	Tidal
6	26.2	Tidal	Tidal	Tidal
7	30.8	Tidal	Tidal	Tidal
8	26	Tidal	Tidal	Tidal
9	12.5	Tidal	Tidal	Tidal

**General Condition Rating for Evaluating the Condition of Substructure Components**

**NOTE:** Condition ratings are assigned in accordance with the National Bridge Inspection Standards (NBIS) coding information, as presented in the Federal Highway Administration Report No. FHWA-PD-96-001 "Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges," dated December 1995 (revised March 11, 2004).



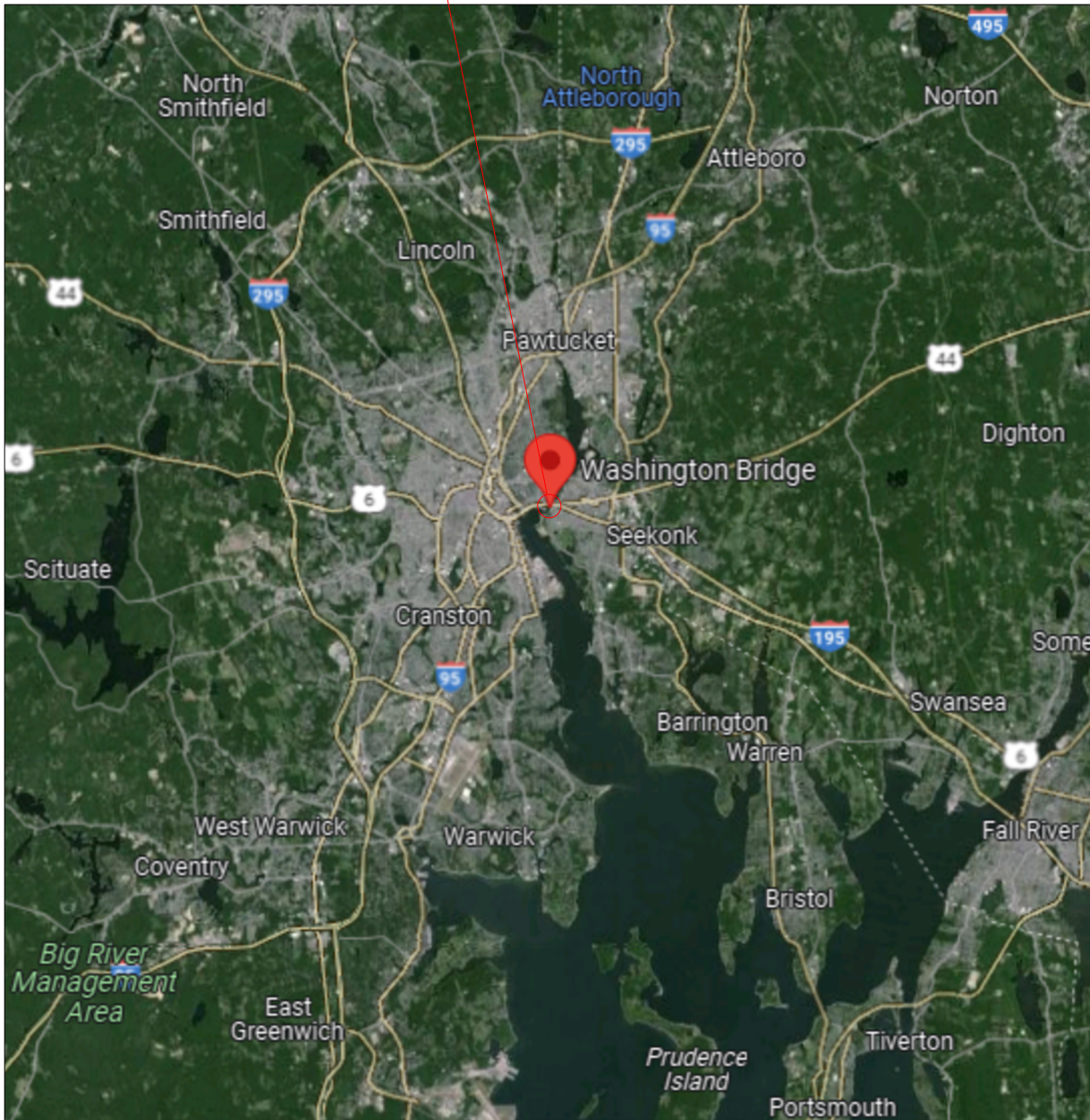
State of Rhode Island  
**Department of Transportation**

**Bridge No. 020001 & 020021**

**Washington Bridge South & Washington Bridge South  
Pedestrian**

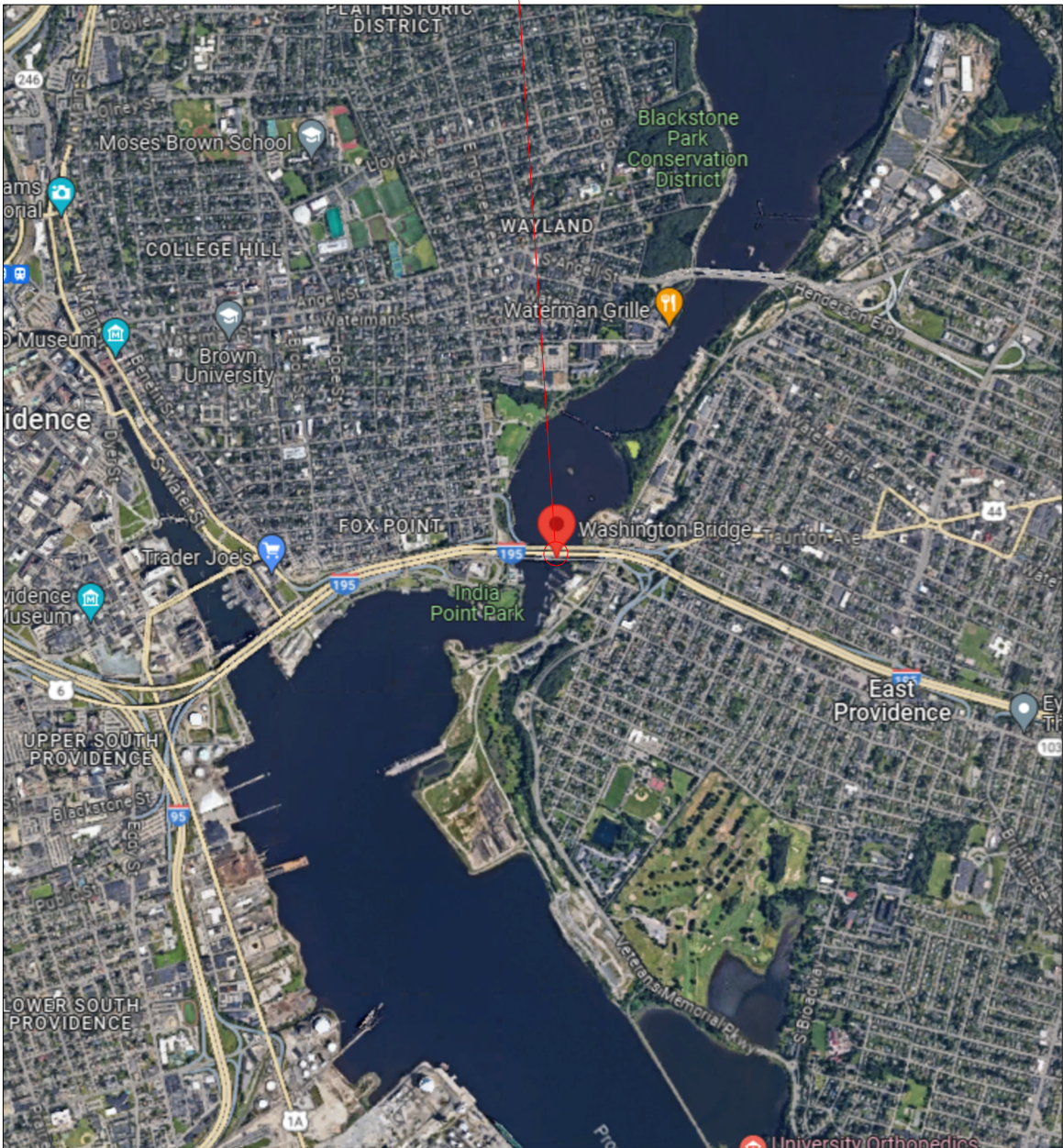
***Drawings / Sketches***

Bridge Nos. 020001 and 020021





VICINITY  
(Scale 1"=28000')

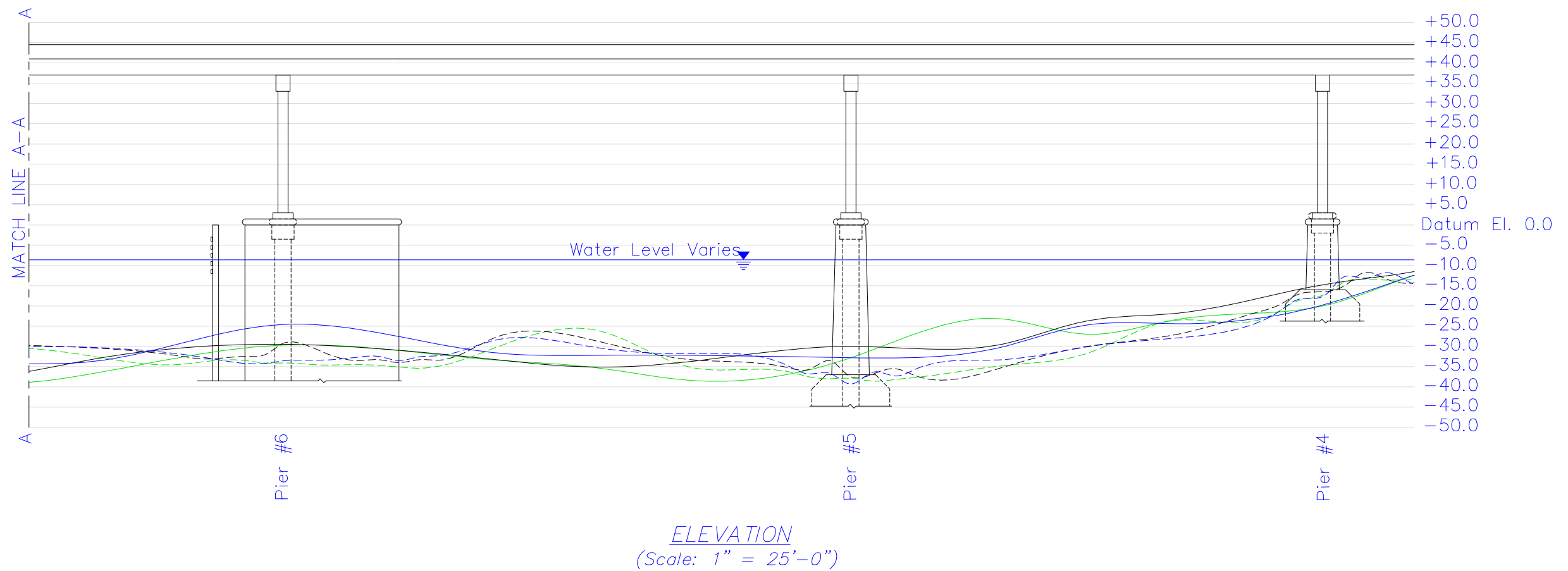
Bridge Nos. 020001 and 020021



LOCATION  
(Scale 1"=2000')

 <b>State of Rhode Island Department of Transportation</b>		
BRIDGE NOS. 020001 & 020021 (WASHINGTON BRIDGE SOUTH) INTERSTATE 195 EASTBOUND & BIKE PATH / PEDESTRIAN OVER SEEKONK RIVER EAST PROVIDENCE, RI LOCATION AND VICINITY MAPS		
Drawn By: FH Checked By: JK Project:190206RI.18	 50 INWOOD RD, ST. 101 ROCKY HILL, CT 06067 (860) 840-2505	Date: 02/09/2024 Scale: VARIES Figure No.: 1



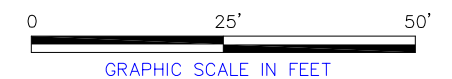


**GENERAL NOTES:**

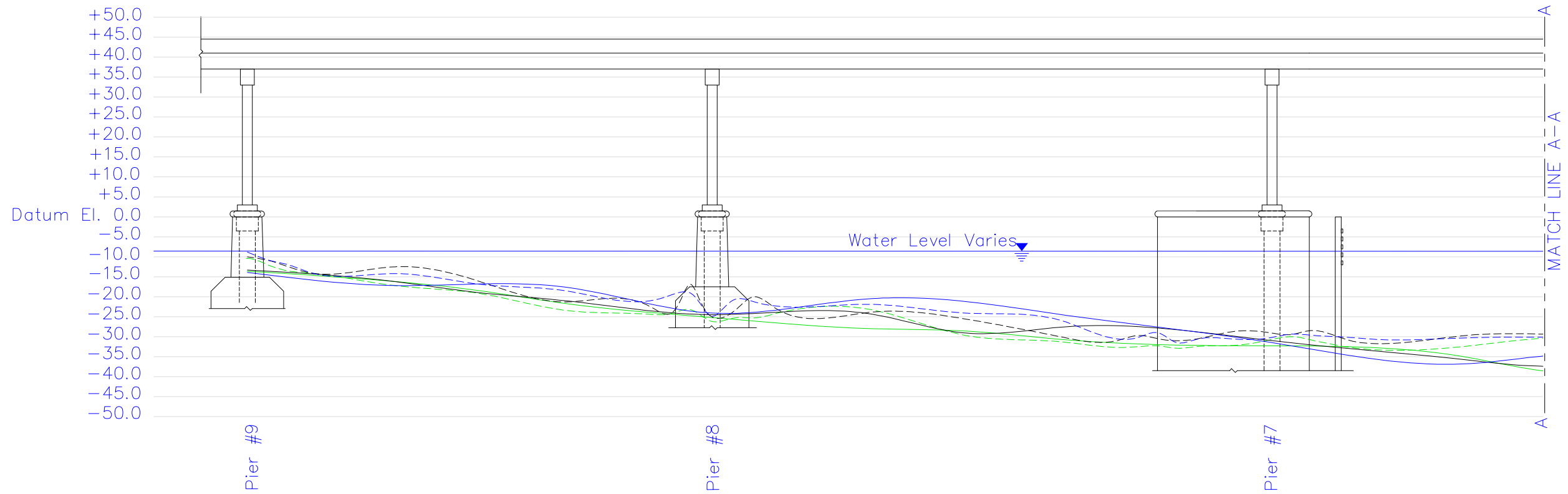
1. At the time of inspection on January 30, 2024 the waterline was located between 6.0 and 7.8 ft below the top of the stone facing at the upstream (north) nose of Piers #1-#10 (Datum Elevation 0.0).
2. At the time of inspection on June 22, 2021 the waterline was located between 5.5 and 9.0 ft below the top of the stone facing at the Upstream (North) Nose of Piers #1-#10 (Datum Elevation 0.0).
3. At the time of inspection on June 7, 2017 the waterline was located between 6.0 and 10.0 ft below the top of the stone facing at the Upstream (North) Nose of Piers #1-#10 (Datum Elevation 0.0).
4. Soundings across the channel were taken parallel to the bridge immediately adjacent to, 5 ft off and 10 ft off the the footing and tremie seal at the piers as well as at the quarter points and midpoint of each span at the bridge fascias, and are actual distances from the assigned datum in feet.
5. Soundings parallel to the substructure were taken at 5 ft intervals immediately adjacent to, 5 ft off and 10 ft off the footing and tremie seal at the piers as well as both pier noses, and are actual distances from the assigned datum in feet.
6. Variations between the 2024 and 2021 channel bottom profiles are likely due to the soft composition of the channel bottom at certain locations or variations in location.
7. This figure was developed from field notes, sketches and structure plans.

**LEGEND**

- 2024 Upstream Fascia Channel Bottom Profile
- - - - 2024 Downstream Fascia Channel Bottom Profile
- 2021 Upstream Fascia Channel Bottom Profile
- - - - 2021 Downstream Fascia Channel Bottom Profile
- 2017 Upstream Fascia Channel Bottom Profile
- - - - 2017 Downstream Fascia Channel Bottom Profile



BRIDGE NOS. 020001 & 020021 (WASHINGTON BRIDGE SOUTH) INTERSTATE 195 EASTBOUND & BIKE PATH / PEDESTRIAN OVER SEEKONK RIVER EAST PROVIDENCE, RI ELEVATION (PIER #4 TO PIER #6)		
Drawn By: FH Checked By: JK Project:190206RI.18	50 INWOOD RD, ST. 101 ROCKY HILL, CT 06067 (860) 840-2505	Date: 02/09/2024 Scale: N.T.S. Figure No.: 2



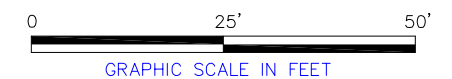
*ELEVATION*  
(Scale: 1" = 25'-0")

GENERAL NOTES:

1. At the time of inspection on January 30, 2024 the waterline was located between 6.0 and 7.8 ft below the top of the stone facing at the upstream (north) nose of Piers #1-#10 (Datum Elevation 0.0).
2. At the time of inspection on June 22, 2021 the waterline was located between 5.5 and 9.0 ft below the top of the stone facing at the Upstream (North) Nose of Piers #1-#10 (Datum Elevation 0.0).
3. At the time of inspection on June 7, 2017 the waterline was located between 6.0 and 10.0 ft below the top of the stone facing at the Upstream (North) Nose of Piers #1-#10 (Datum Elevation 0.0).
4. Soundings across the channel were taken parallel to the bridge immediately adjacent to, 5 ft off and 10 ft off the the footing and tremie seal at the piers as well as at the quarter points and midpoint of each span at the bridge fascias, and are actual distances from the assigned datum in feet.
5. Soundings parallel to the substructure were taken at 5 ft intervals immediately adjacent to, 5 ft off and 10 ft off the footing and tremie seal at the piers as well as both pier noses, and are actual distances from the assigned datum in feet.
6. Variations between the 2024 and 2021 channel bottom profiles are likely due to the soft composition of the channel bottom at certain locations or variations in location.
7. This figure was developed from field notes, sketches and structure plans.

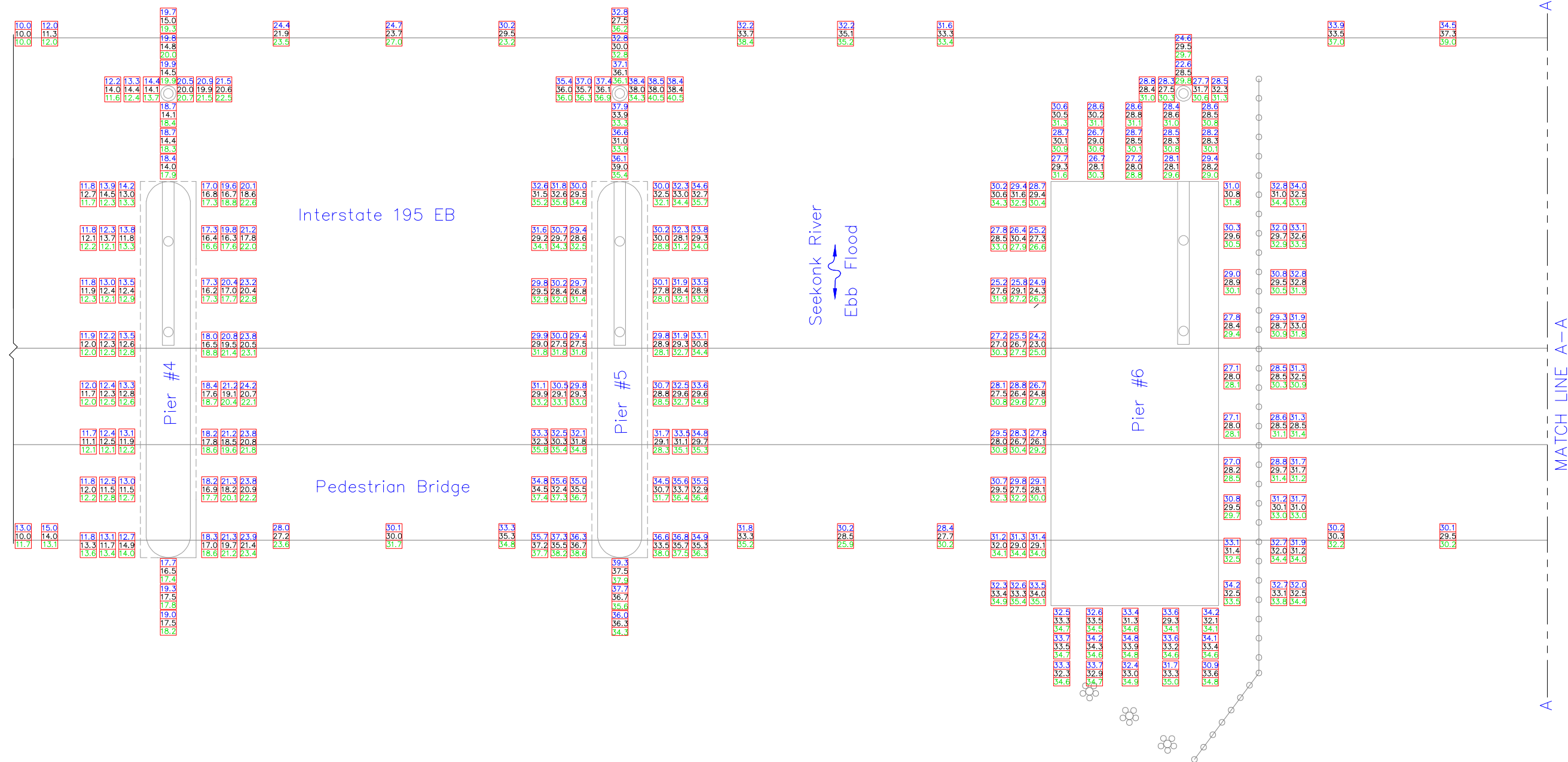
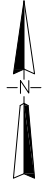
LEGEND

- 2024 Upstream Fascia Channel Bottom Profile
- 2024 Downstream Fascia Channel Bottom Profile
- 2021 Upstream Fascia Channel Bottom Profile
- 2021 Downstream Fascia Channel Bottom Profile
- 2017 Upstream Fascia Channel Bottom Profile
- 2017 Downstream Fascia Channel Bottom Profile



BRIDGE NOS. 020001 & 020021 (WASHINGTON BRIDGE SOUTH)  
 INTERSTATE 195 EASTBOUND & BIKE PATH / PEDESTRIAN  
 OVER SEEKONK RIVER  
 EAST PROVIDENCE, RI  
 ELEVATION (PIER #7 TO PIER #9)

Drawn By: FH	50 INWOOD RD, ST. 101 ROCKY HILL, CT 06067 (860) 840-2505	Date: 02/09/2024
Checked By: JK		Scale: N.T.S.
Project:190206RI.18		Figure No.: 3



SOUNDING PLAN

GENERAL NOTES:

1. At the time of inspection on January 30, 2024 the waterline was located between 6.0 and 7.8 ft below the top of the stone facing at the upstream (north) nose of Piers #1-#10 (Datum Elevation 0.0).
2. At the time of inspection on June 22, 2021 the waterline was located between 5.5 and 9.0 ft below the top of the stone facing at the Upstream (North) Nose of Piers #1-#10 (Datum Elevation 0.0).
3. At the time of inspection on June 7, 2017 the waterline was located between 6.0 and 10.0 ft below the top of the stone facing at the Upstream (North) Nose of Piers #1-#10 (Datum Elevation 0.0).
4. Soundings across the channel were taken parallel to the bridge immediately adjacent to, 5 ft off and 10 ft off the the footing and tremie seal at the piers as well as at the quarter points and midpoint of each span at the bridge fascias, and are actual distances from the assigned datum in feet.
5. Soundings parallel to the substructure were taken at 5 ft intervals immediately adjacent to, 5 ft off and 10 ft off the footing and tremie seal at the piers as well as both pier noses, and are actual distances from the assigned datum in feet.
6. Variations between the 2024 and 2021 channel bottom profiles are likely due to the soft composition of the channel bottom at certain locations of variations in location.
7. This figure was developed from field notes, sketches and structure plans.

LEGEND

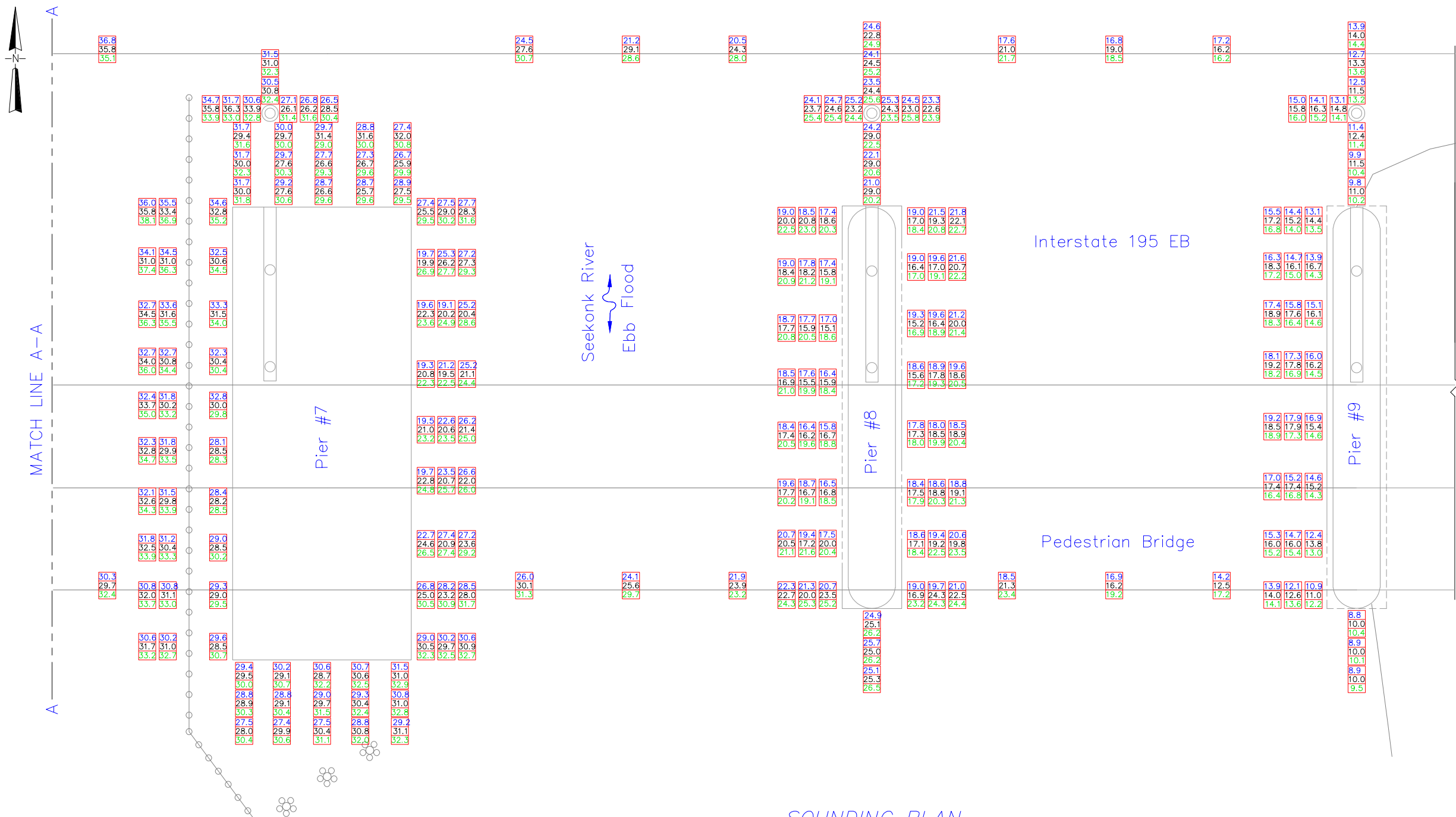
2024
2021
2017

Channel bottom depths from datum parallel to structure along the upstream and downstream fascias and along pier fascia



BRIDGE NOS. 020001 & 020021 (WASHINGTON BRIDGE SOUTH)  
 INTERSTATE 195 EASTBOUND & BIKE PATH / PEDESTRIAN  
 OVER SEEKONK RIVER  
 EAST PROVIDENCE, RI  
 SOUNDING PLAN (PIER #4 TO PIER #6)

Drawn By: FH	50 INWOOD RD, ST. 101 ROCKY HILL, CT 06067 (860) 840-2505	Date: 02/09/2024
Checked By: JK		Scale: N.T.S.
Project: 190206R1.18		Figure No.: 4



SOUNDING PLAN

GENERAL NOTES:

1. At the time of inspection on January 30, 2024 the waterline was located between 6.0 and 7.8 ft below the top of the stone facing at the upstream (north) nose of Piers #1–#10 (Datum Elevation 0.0).
2. At the time of inspection on June 22, 2021 the waterline was located between 5.5 and 9.0 ft below the top of the stone facing at the Upstream (North) Nose of Piers #1–#10 (Datum Elevation 0.0).
3. At the time of inspection on June 7, 2017 the waterline was located between 6.0 and 10.0 ft below the top of the stone facing at the Upstream (North) Nose of Piers #1–#10 (Datum Elevation 0.0).
4. Soundings across the channel were taken parallel to the bridge immediately adjacent to, 5 ft off and 10 ft off the the footing and tremie seal at the piers as well as at the quarter points and midpoint of each span at the bridge fascias, and are actual distances from the assigned datum in feet.
5. Soundings parallel to the substructure were taken at 5 ft intervals immediately adjacent to, 5 ft off and 10 ft off the footing and tremie seal at the piers as well as both pier noses, and are actual distances from the assigned datum in feet.
6. Variations between the 2024 and 2021 channel bottom profiles are likely due to the soft composition of the channel bottom at certain locations of variations in location.
7. This figure was developed from field notes, sketches and structure plans.

LEGEND

- 2024 Channel bottom depths from datum parallel to structure along the upstream and downstream fascias and along pier fascia
- 2021
- 2017

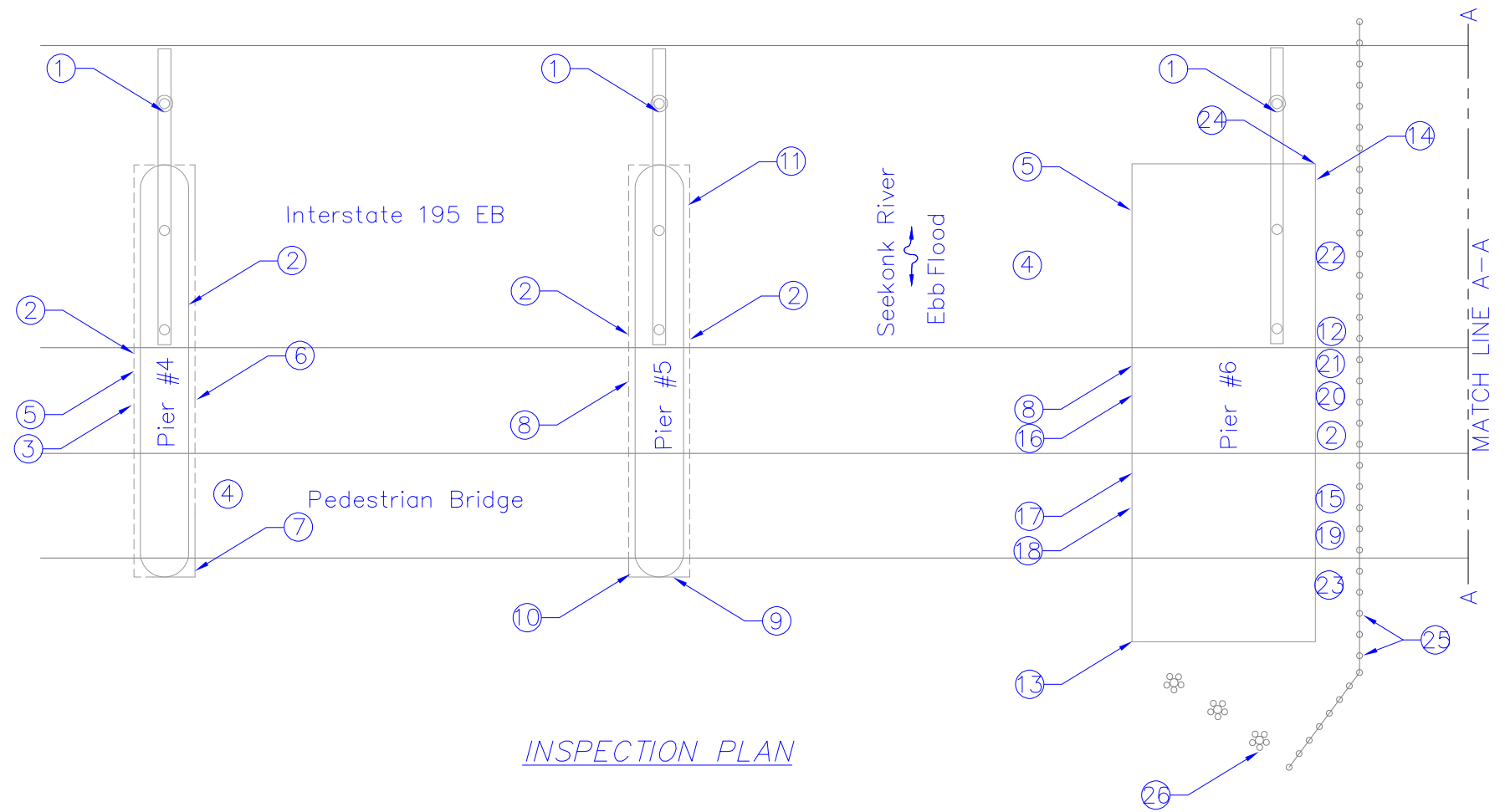
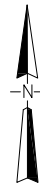


BRIDGE NOS. 020001 & 020021 (WASHINGTON BRIDGE SOUTH)  
 INTERSTATE 195 EASTBOUND & BIKE PATH / PEDESTRIAN  
 OVER SEEKONK RIVER  
 EAST PROVIDENCE, RI  
 SOUNDING PLAN (PIER #7 TO PIER #9)

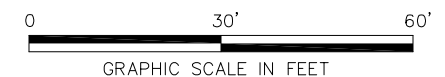
Drawn By: FH	<b>consor</b>	50 INWOOD RD, ST. 101	Date: 02/09/2024
Checked By: JK		ROCKY HILL, CT 06067	Scale: N.T.S.
Project: 190206RI.18		(860) 840-2505	Figure No.: 5

INSPECTION NOTES:

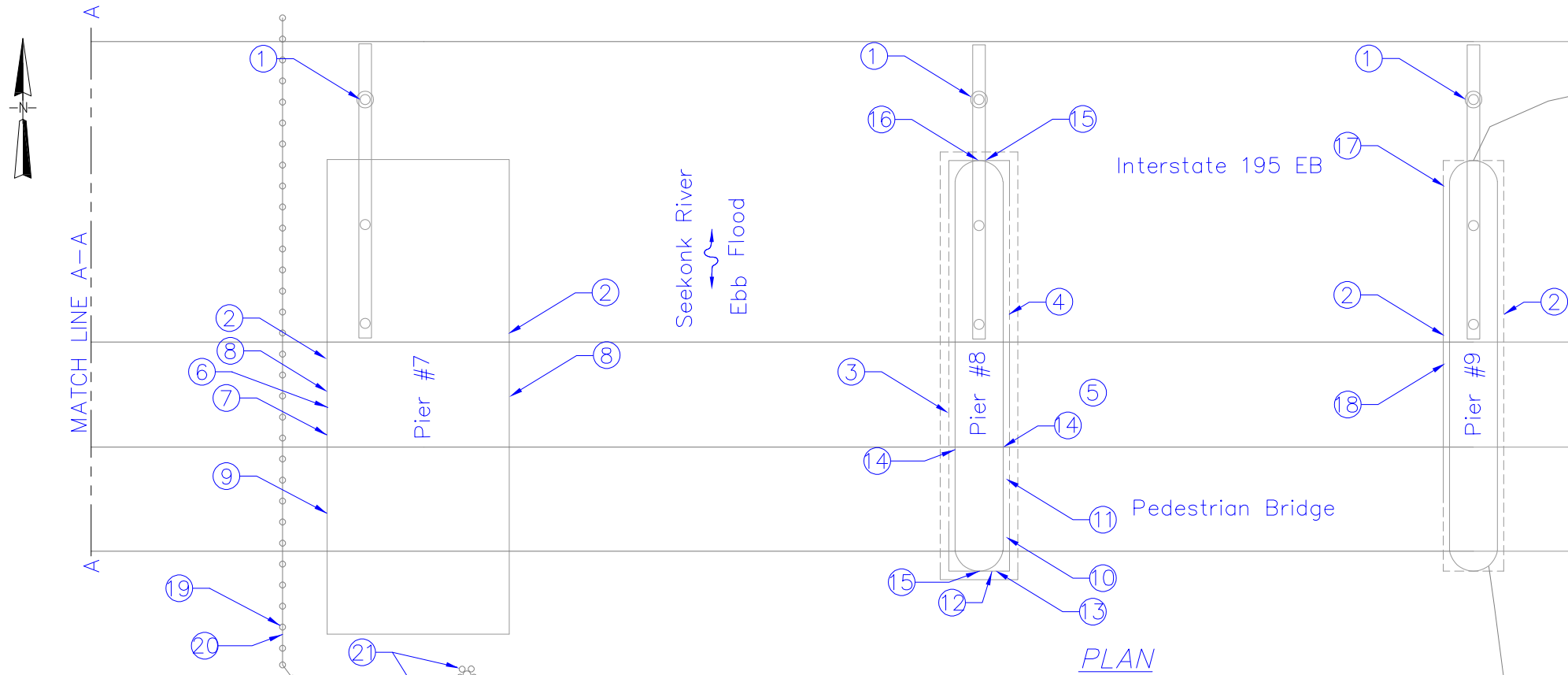
- ① At Piers 4, 5 and 6 the caisson pile at the North (Upstream) end of the pier has a fiberglass jacket in place that extends 8' – 10' down from the underside of the concrete cap section. The exposed steel below the jacket has minor corrosion with light pitting up to 1/16" deep.
- ② At Piers 4, 5 and 6 the stone masonry has less than 5% deteriorated mortar with 3" to 6" penetration between stones.
- ③ The exposed surfaces of the reinforced concrete footing have abrasion up to 1/2" deep.
- ④ The channel bottom consists of silt, sand, shells and scattered construction debris with up to 12" of probe rod penetration.
- ⑤ At Pier 4, West Face near the centerline, 2nd and 4th courses have a vertical crack 1/4" wide.
- ⑥ At Pier 4, East Face near the centerline, 4th masonry course there is a cracked stone below the water 1/4" wide x full height that extends through the concrete pier shaft to channel bottom.
- ⑦ At Pier 4, the sloped footing steps out 18" from the pier face then slopes off at the 45° angle towards the channel bottom. East Face of the footing is exposed 20' long at the north end, 15' long at the south end and up to 2' high (maximum at the southeast corner). South Face of the footing is exposed 10' long at the east end (previously exposed up to 2' vertically at the southeast shoulder and extends along the full-length of the east face of the pier and terminates at the northeast shoulder). Along midpoint there is an area of 8" diameter rip rap covering the footing 20' long extending 10' wide into the channel from the East Pier Face.
- ⑧ At Piers 5 & 6, on the reinforced concrete pier shaft below the stone masonry there is abrasion up to 1/2" deep.
- ⑨ At Pier 5 stem, on the South Nose, near channel bottom there is a band of poor consolidation that measures full width x 3' high x up to 2" deep.
- ⑩ At Pier 5, The reinforced concrete footing steps out 2' from the East and West Face and is flush with the North and South Faces. South Face of the footing is exposed 15' long x up to 10" high (maximum at the South Nose; previously exposed up to 6" high extending 4' long down the West Face).
- ⑪ At Pier 5, East Face there is intermittent concrete rubble up to 2' in diameter along the full length.
- ⑫ At Pier 6, East Face 10th stone from the Southeast Corner, there is a missing masonry stone 3' long x 2'-6" high, with an associated vertical crack below in the 5th course that extends to channel bottom (concrete: 1/2" wide)(stone: 1/4" wide) with a chipped stone at the bottom course 9" high x 2-1/2" wide.
- ⑬ At Pier 6 along all faces, there are voids at the concrete/masonry interface measuring up to 3' long x 6" high x 6" deep.
- ⑭ At Pier 6, at the Northeast Shoulder, there is a timber pile cut off at 10' above channel bottom and at the Southeast Shoulder there are four (4) timber piles lying on the channel bottom.
- ⑮ At Pier 6, East Face 20' North of the Southeast Corner, in the 6th masonry course there is a vertical crack up to 3/16" wide that extends to channel bottom.
- ⑯ At Pier 6, West Face at the centerline, the 1st, 3rd and 4th stone masonry courses have vertical cracks up to 1/4" wide extending into the concrete stem 1/2" wide at the channel bottom.
- ⑰ At Pier 6, West Face near the North Quarter Point, the 1st and 2nd masonry courses have vertical cracks 1/4" wide.
- ⑱ At Pier 6, West Face near the centerline of the pedestrian bridge, the 4th masonry course has two (2) vertical cracks full height x up to 3/8" wide, the 3rd course has a vertical crack 1/8" wide with chips.



- ⑲ At Pier 6, East Face near the centerline of the pedestrian bridge, top four masonry courses have a vertical crack, hairline to 1/4" wide.
- ⑳ At Pier 6, East Face 6th stone from the Southeast Corner, top four masonry courses have a vertical crack that measures 1/16" wide in the 1st course, 1/8" wide in the 2nd course, 3/16" wide in the 3rd course and 1/4" wide in the 4th course.
- ㉑ At Pier 6, East Face 8th stone from the Southeast Corner, 1st masonry course has a cracked stone full height x 1/8" wide.
- ㉒ At Pier 6, East Face 9th stone from the Northeast Corner, 2nd masonry course has a cracked stone 18" high x 3/16" wide.
- ㉓ At Pier 6, all faces of the concrete pier shaft below the masonry have intermittent bands of poor concrete consolidation that measure up to 16" long x 6" to 12" high and 1/2" to 1" deep.
- ㉔ At Pier 6, Northeast Corner near channel bottom, there is an area of poor consolidation 3'-6" long (East Face) x 4' long (North Face) x 16" high x 2" deep.
- ㉕ The timber fender system members in the tidal zone have minor checks and splits in the tidal zone and there is a fractured handrail in two locations with one (1) broken post.
- ㉖ The South Dolphin near the South End of the Fender system has three (3) timber wales at channel bottom.



<b>State of Rhode Island Department of Transportation</b>		
BRIDGE NOS. 020001 & 020021 (WASHINGTON BRIDGE SOUTH) INTERSTATE 195 EASTBOUND & BIKE PATH / PEDESTRIAN OVER SEEKONK RIVER EAST PROVIDENCE, RI <b>PLAN (PIER #4 TO PIER #6)</b>		
Drawn By: FH Checked By: JK Project: 190206RI.18	50 INWOOD RD, ST. 101 ROCKY HILL, CT 06067 (860) 840-2505	Date: 02/09/2024 Scale: N.T.S. Figure No.: 6



PLAN

INSPECTION NOTES:

- ① At Piers 7, 8 and 9 the caisson pile at the North (Upstream) End the Pier, has a fiberglass jacket in place that extends 8' - 10' down from the underside of the concrete cap section. The exposed steel below the jacket has minor corrosion with light pitting up to 1/16" deep.
- ② At Piers 7 and 9, the stone masonry has less than 5% deteriorated mortar with 3" to 6" of penetration between stones.
- ③ At Pier 8, the stone masonry has less than 15% deteriorated mortar with up to 12" of penetration between stones.
- ④ At Pier 8, the exposed surfaces of the reinforced concrete footing have abrasion up to 2" deep.
- ⑤ The channel bottom consists of silt, sand, shells and scattered construction debris with up to 12" of probe rod penetration.
- ⑥ At Pier 7, West Face on the reinforced concrete pier shaft below the stone masonry, there is abrasion 2" deep.
- ⑦ At Pier 7 concrete stem, there are isolated areas of poor consolidation/spalls near the channel bottom:
  - A. West Face from the Northwest Corner to 25' South near channel bottom 10' long x 2' high x 3" deep.
  - B. North Face from the Northwest Corner to midpoint 2' long x 12" high x 3-1/2" deep.
  - C. Along the Northeast Corner 13' high x 5' wide x 2" deep.
  - D. East Face near the South Quarter-point 10' long x 2' high x 2-1/2" deep (2 areas).
  - E. East Face near the Southeast Corner 8' above channel bottom 3' long x 4" high x 3" deep.
  - F. Along the South Face near the Southeast Corner at channel bottom 8' long x 4' high x 2-1/2" deep.
  - G. Concrete stem along the Southwest and Northwest Corners 16'-6" high x 2' wide x up to 5" deep with rust stains.

- ⑧ At Pier 7, East and West Faces near centerline, there are vertical cracks full height of the masonry facade x up to 1/2" wide with chipped stones up to 8'-6" high x 5" wide x 3" deep. The crack in the East Face continues through the reinforced concrete stem below the masonry facade and has edge spalls up to 14" wide x 2' high x 2-1/2" deep with soft concrete.
- ⑨ At Pier 7, West Face of the stone masonry near the south quarter point the stones in the 1st and 2nd masonry courses, are broken with 3'-6" long x 5' high sections of stone.
- ⑩ At Pier 8, East Face of the footing near the Southeast Corner, there is a void in the concrete 3'-6" long x 12" high x 5" deep.
- ⑪ At Pier 8, the pier has a sloped concrete footing (steps out 18" from the pier face then slopes off at the 45° angle towards the channel bottom). North Face of the footing is exposed full length x up to 4.5' high (no change) extending down the West Face 12' long and the East Face 9' long (maximum at the Northeast Corner). The East Face of the footing is intermittently exposed full length x up to 3' high. South Face of the footing is exposed full length x up to full height (8') (no change) extending down the West Face 10' long and down the East Face 15' long. South Face of the tremie (steps out 2' from the footing) is exposed full length x up to 1.5' high (maximum at Southeast Corner; previously exposed up to 15" high) extending down the West Face 2' long and down the East Face 2' long.
- ⑫ At Pier 8, South Face at 10' and 15' from the Southeast Corner, two (2) timber piles protruding up through the concrete pile cap with 12" exposed. The timber piles are at 60% and 25% non-bearing and exhibit 15% and 20% section loss, respectively. (Not found during 2024 inspection).
- ⑬ At Pier 8, Southeast corner on the footing, there is an edge spall 2' long x 8" high x 5" deep.

- ⑭ At Pier 8, 23' North of the South Nose, stone masonry, top two stone courses below the cap, there is a vertical crack 1/2" wide. The crack also extends through the concrete footing on both faces up to 1/4" wide with edge spalls 6" long x 2" wide x 1" deep.
- ⑮ At Pier 8, in the North and South Noses, there is 50% mortar loss in the joint at masonry/concrete footing interface.
- ⑯ At Pier 8, North Nose at the masonry/concrete interface, there is a void 3'-6" long x 6" high x 8" deep.
- ⑰ At Pier 9, the pier has a sloped concrete footing that steps out 18" from the pier face then slopes off at the 45° angle towards the channel bottom. West Face of the footing is exposed from 6' south of the Northwest Corner to 18' north of the Southwest Corner up to 4.5' (maximum near centerline; no change).
- ⑱ At Pier 9, West Face of masonry at centerline 2nd and 3rd courses, there is a crack 1/2" wide. The crack also extends through the concrete footing to the channel bottom.
- ⑲ The fender system members in the tidal zone have minor checks and splits in the tidal zone and a missing section of handrail near the North End of the pedestrian bridge.
- ⑳ The Fender System at the Southwest Corner of Pier 7, has two (2) broken PVC electrical conduits with exposed wires.
- ㉑ South side of Pier 7, there are two older timber dolphins in poor condition with end rot up to 90% x 6' high.
- ㉒ Off of the Southeast Corner of the East Fender System, there is a sunken boat ±48' long x up to 20' high off the channel bottom that is a navigational hazard to boat traffic outside of the main channel.

BRIDGE NOS. 020001 & 020021 (WASHINGTON BRIDGE SOUTH) INTERSTATE 195 EASTBOUND & BIKE PATH / PEDESTRIAN OVER SEEKONK RIVER EAST PROVIDENCE, RI PLAN (PIER #7 TO PIER #9)		
Drawn By: FH Checked By: JK Project: 190206RI.18		50 INWOOD RD, ST. 101 ROCKY HILL, CT 06067 (860) 840-2505 Date: 02/09/2024 Scale: N.T.S. Figure No.: 7



**Bridge No. 020001 & 020021**

**Washington Bridge South & Washington Bridge South  
Pedestrian**

*Photos*



**BRIDGE NO. 070001**

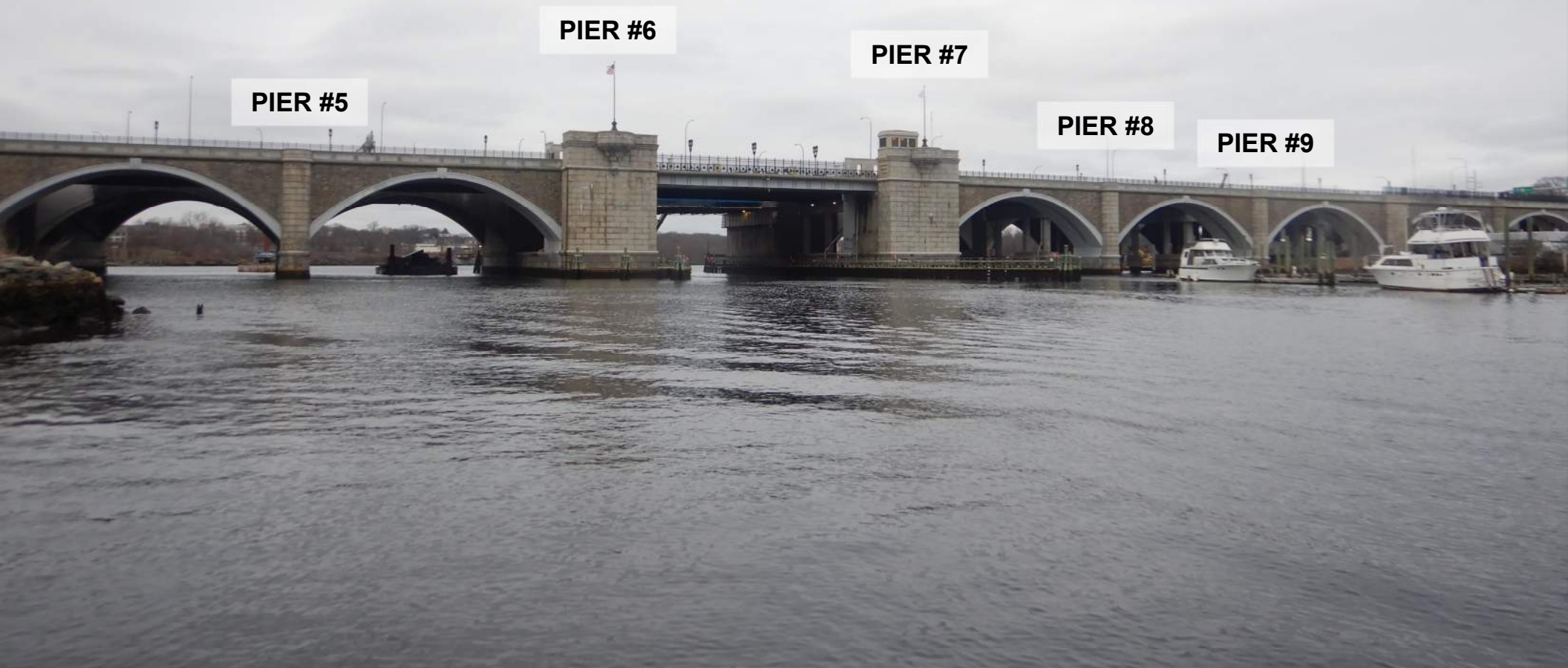


**BRIDGE NO. 020001  
& 020021**

**FLOOD (NORTH) BRIDGE ELEVATION,  
LOOKING SOUTH**

**02/09/2024**





PIER #5

PIER #6

PIER #7

PIER #8

PIER #9

**PHOTO NO. 3**

**SHEET NO. 32 OF 60**



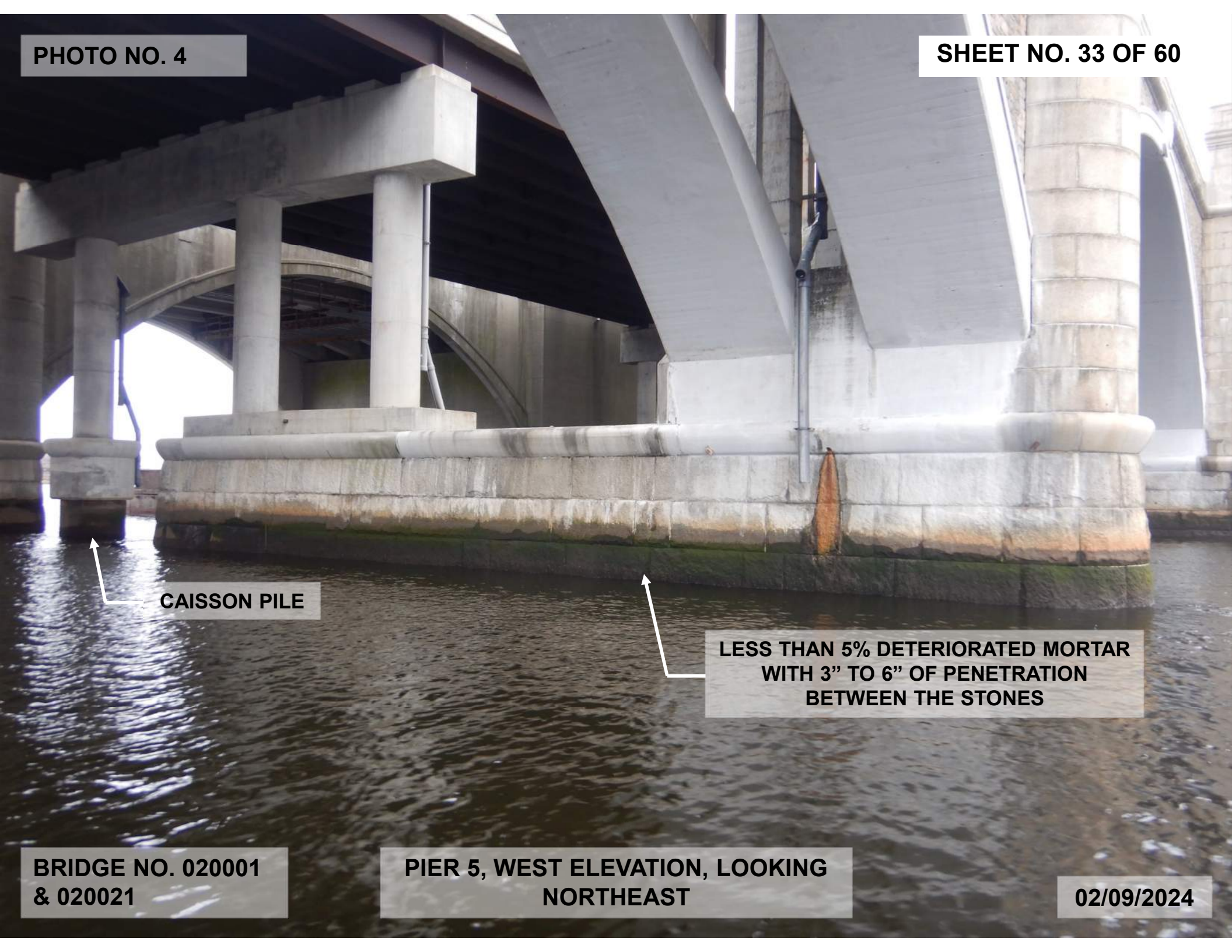
**CAISSON PILE**

**LESS THAN 5% DETERIORATED  
MORTAR WITH 3" TO 6" OF  
PENETRATION BETWEEN THE STONES**

**BRIDGE NO. 020001  
& 020021**

**PIER 4, EAST ELEVATION, LOOKING  
NORTHWEST**

**02/09/2024**

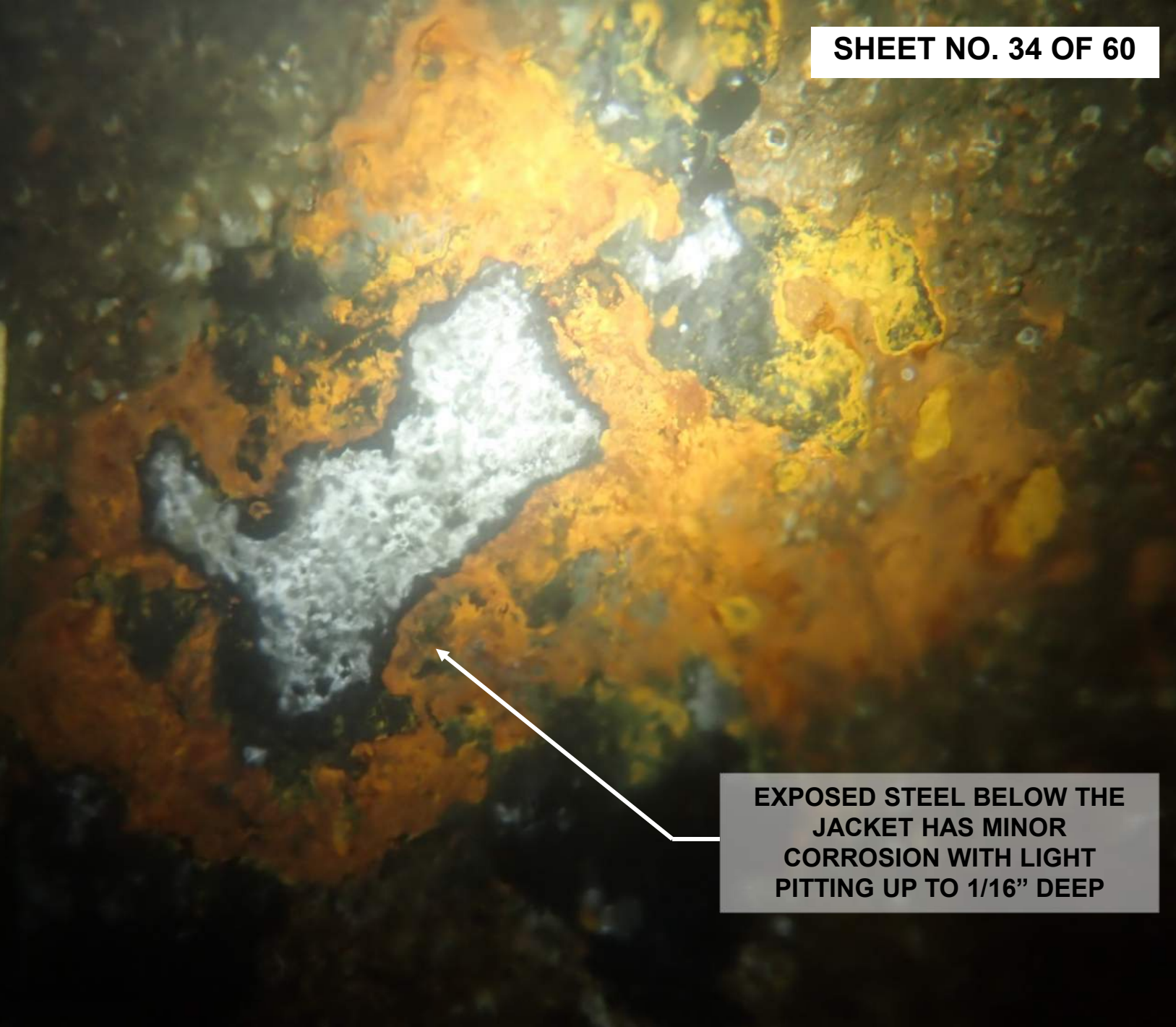


CAISSON PILE

LESS THAN 5% DETERIORATED MORTAR  
WITH 3" TO 6" OF PENETRATION  
BETWEEN THE STONES

PHOTO NO. 5

SHEET NO. 34 OF 60



EXPOSED STEEL BELOW THE  
JACKET HAS MINOR  
CORROSION WITH LIGHT  
PITTING UP TO 1/16" DEEP

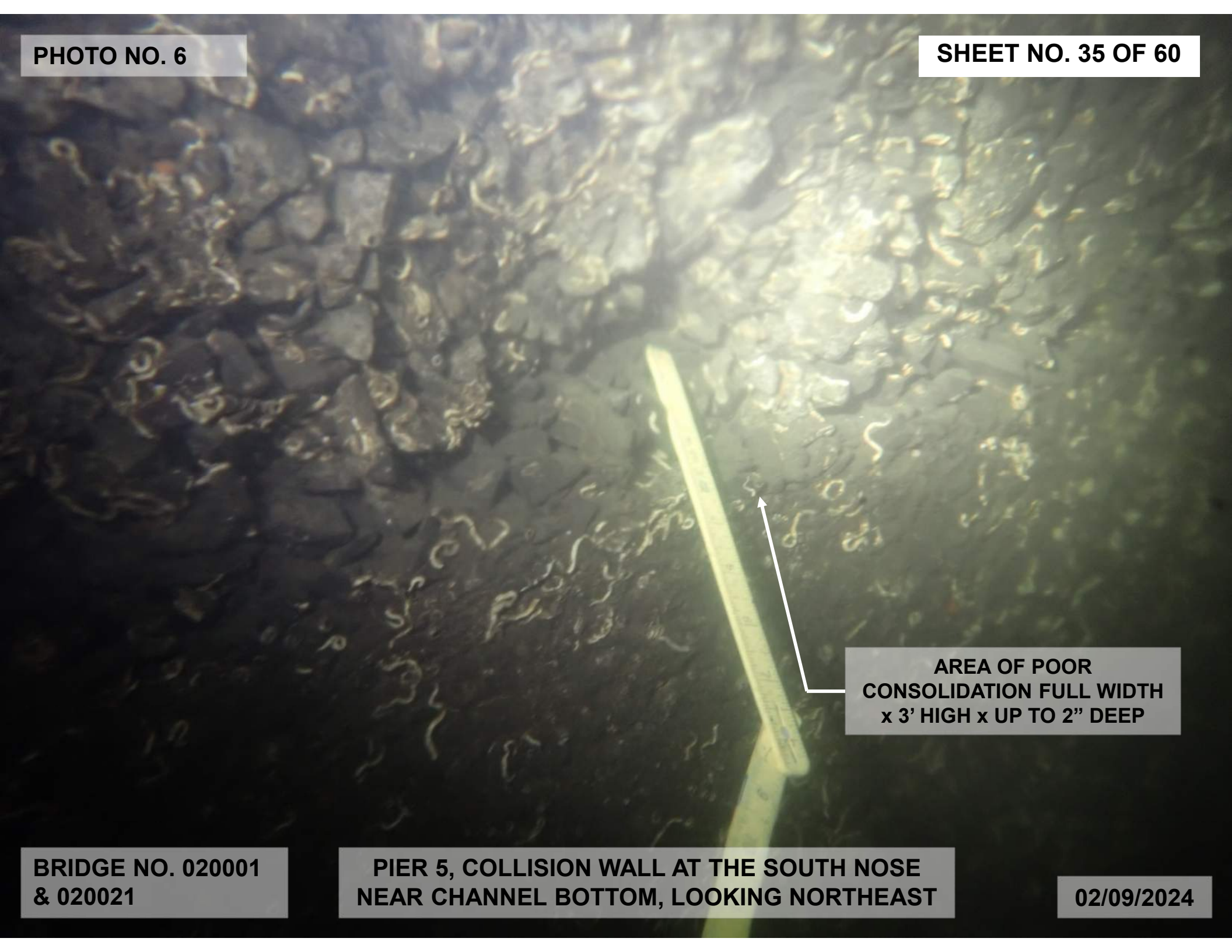
BRIDGE NO. 020001  
& 020021

PIER 5, STEEL ENCASED REINFORCED  
CONCRETE CAISSON PILE, LOOKING NORTHEAST

02/09/2024

PHOTO NO. 6

SHEET NO. 35 OF 60



AREA OF POOR  
CONSOLIDATION FULL WIDTH  
x 3' HIGH x UP TO 2" DEEP

BRIDGE NO. 020001  
& 020021

PIER 5, COLLISION WALL AT THE SOUTH NOSE  
NEAR CHANNEL BOTTOM, LOOKING NORTHEAST

02/09/2024

PHOTO NO. 7

SHEET NO. 36 OF 60



ABRASION UP TO 1/2" DEEP

SOUTH FACE IS FLUSH WITH THE  
COLLISION WALL AND EXPOSED  
15' LONG x UP TO 10" HIGH

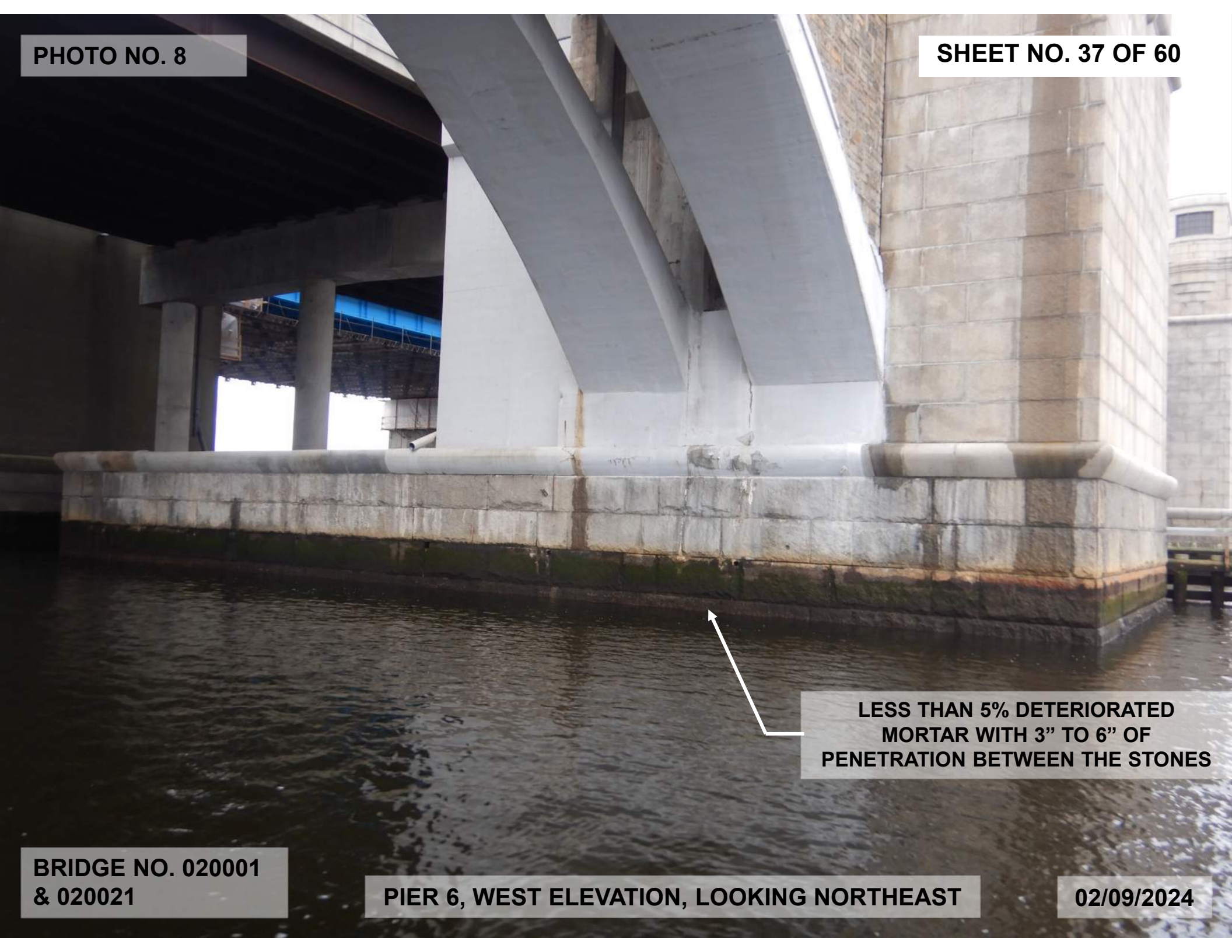
BRIDGE NO. 020001  
& 020021

PIER 5, FOOTING AT THE SOUTHWEST CORNER,  
LOOKING NORTHEAST

02/09/2024

PHOTO NO. 8

SHEET NO. 37 OF 60

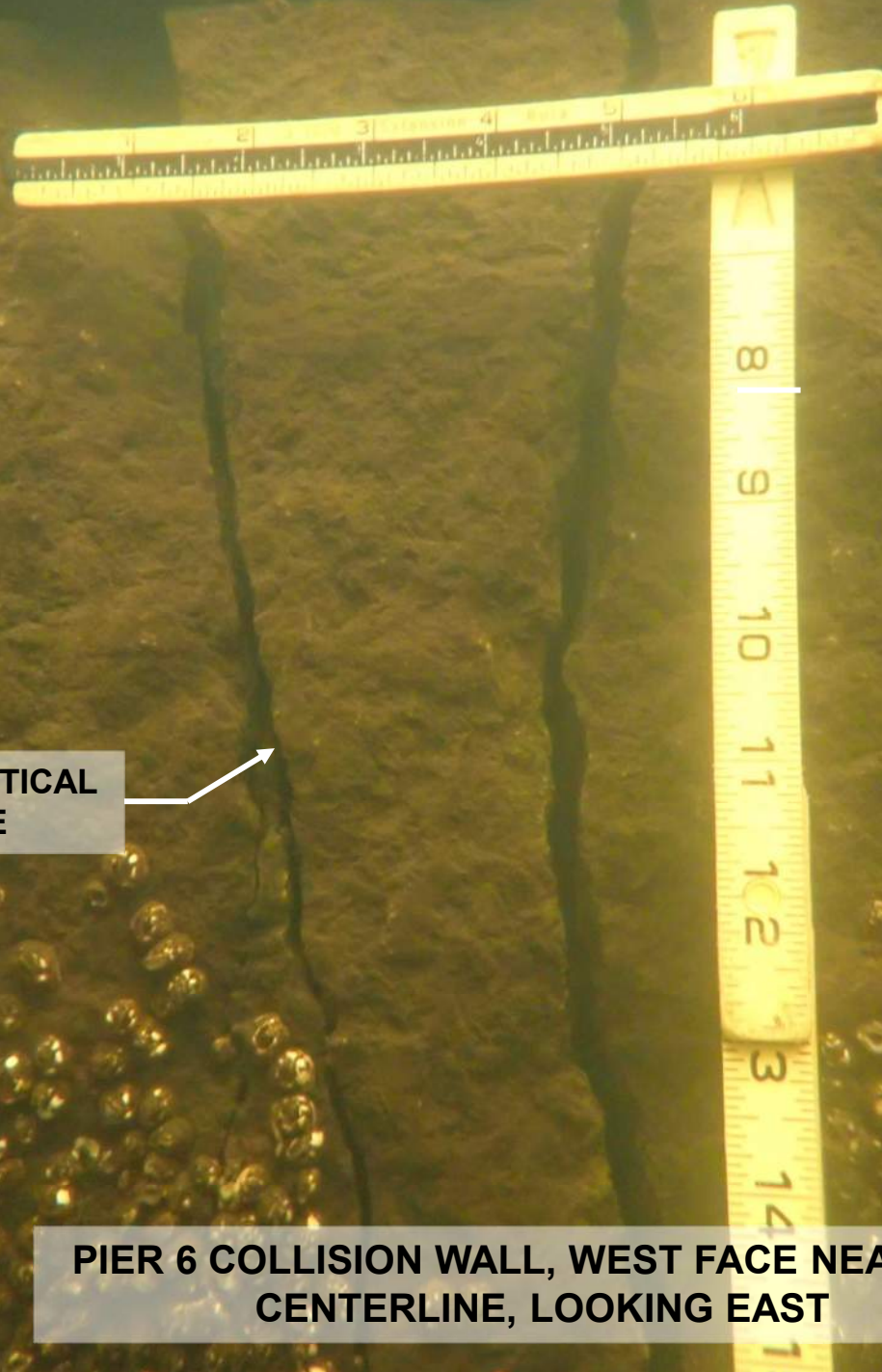


LESS THAN 5% DETERIORATED  
MORTAR WITH 3" TO 6"  
PENETRATION BETWEEN THE STONES

BRIDGE NO. 020001  
& 020021

PIER 6, WEST ELEVATION, LOOKING NORTHEAST

02/09/2024



4<sup>th</sup> COURSE WITH TWO (2) VERTICAL  
CRACKS UP TO 3/8" WIDE

BRIDGE NO. 020001  
& 020021

PIER 6 COLLISION WALL, WEST FACE NEAR THE  
CENTERLINE, LOOKING EAST

02/09/2024



**PHOTO NO. 10**

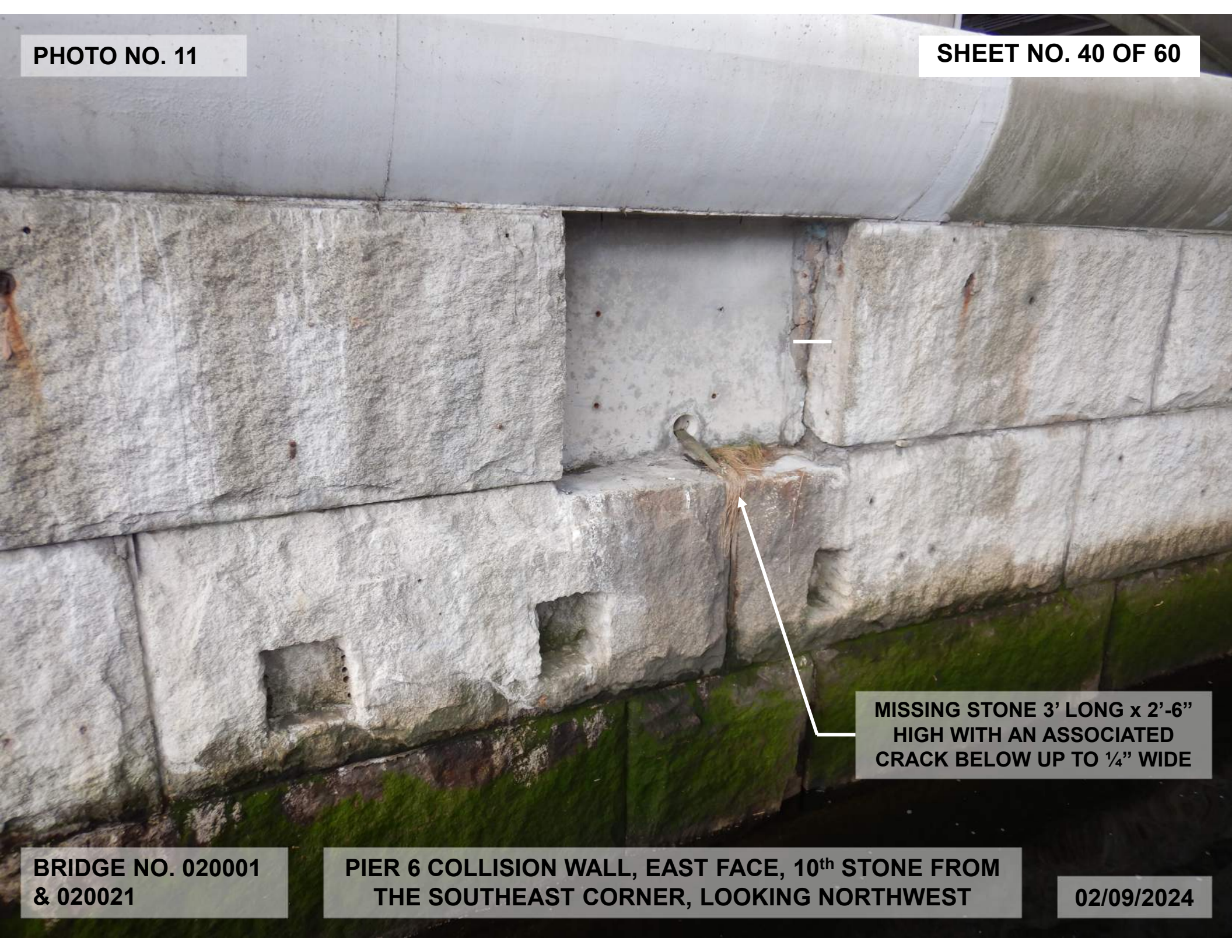
**SHEET NO. 39 OF 60**



**BRIDGE NO. 020001  
& 020021**

**PIER 6 EAST FACE, LOOKING NORTHWEST**

**02/09/2024**

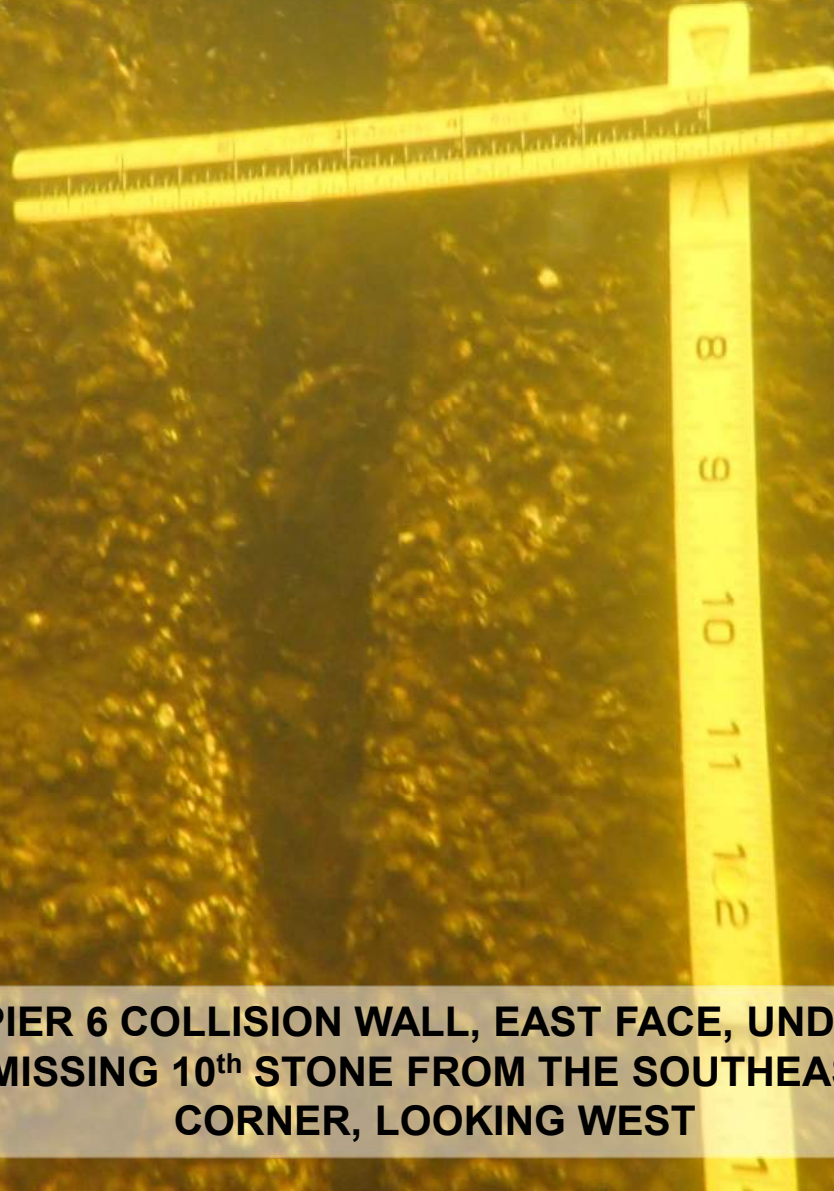


MISSING STONE 3' LONG x 2'-6"  
HIGH WITH AN ASSOCIATED  
CRACK BELOW UP TO 1/4" WIDE

PHOTO NO. 12

SHEET NO. 41 OF 60

BOTTOM COURSE CRACKED UP  
TO 1/4" WIDE WITH CHIPPED  
STONE 9" HIGH x 2-1/2"W



BRIDGE NO. 020001  
& 020021

PIER 6 COLLISION WALL, EAST FACE, UNDER  
MISSING 10<sup>th</sup> STONE FROM THE SOUTHEAST  
CORNER, LOOKING WEST

02/09/2024

PHOTO NO. 13

SHEET NO. 42 OF 60

POOR CONSOLIDATION 3'-6"  
LONG DOWN THE EAST FACE x  
4' LONG DOWN THE NORTH  
FACE x 16" HIGH x 2" DEEP



BRIDGE NO. 020001  
& 020021

PIER 6 COLLISION WALL, NORTHEAST CORNER  
AT CHANNEL BOTTOM, LOOKING SOUTHWEST

02/09/2024

PHOTO NO. 14

SHEET NO. 43 OF 60



BRIDGE NO. 020001  
& 020021

PIER 7, WEST ELEVATION, LOOKING NORTHEAST

02/09/2024

PHOTO NO. 15

SHEET NO. 44 OF 60

BROKEN / MISSING STONES UP TO  
3'-6" LONG x 5' HIGH



BRIDGE NO. 020001  
& 020021

PIER 7 COLLISION WALL, WEST FACE NEAR THE  
SOUTH QUARTERPOINT, LOOKING EAST

02/09/2024

PHOTO NO. 16

SHEET NO. 45 OF 60

AREA OF POOR CONSOLIDATION  
16'-6" HIGH x 2' WIDE x UP TO 5"  
DEEP WITH RUST STAINS



BRIDGE NO. 020001  
& 020021

PIER 7 COLLISION WALL, SOUTHWEST CORNER,  
LOOKING NORTHEAST

02/09/2024

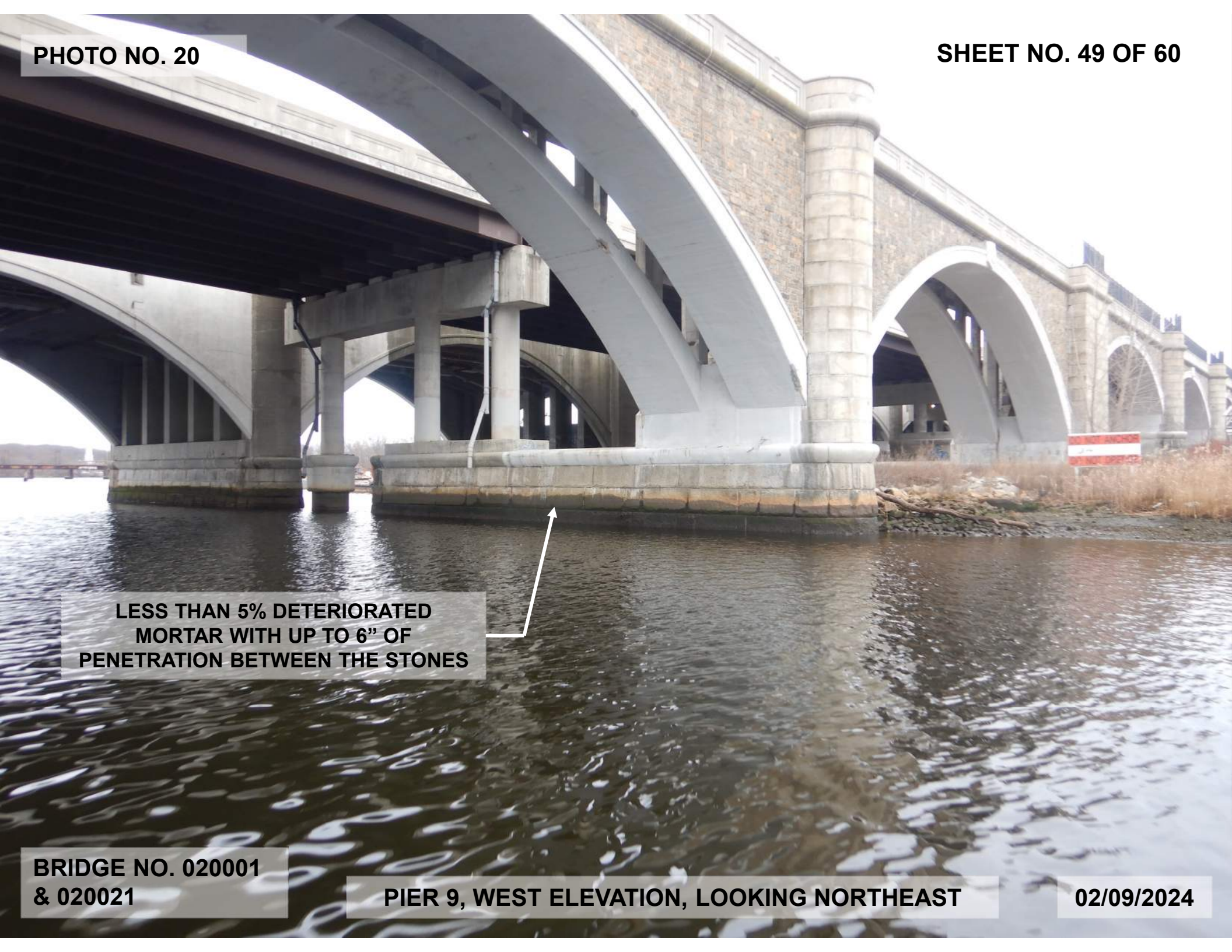
LESS THAN 5% DETERIORATED MORTAR  
WITH 3" TO 6" OF PENETRATION  
BETWEEN THE STONES



**LESS THAN 15% DETERIORATED  
MORTAR WITH UP TO 12" OF  
PENETRATION BETWEEN THE STONES**

VERTICAL CRACKS UP TO 1/4" WIDE  
WITH EDGE SPALLS UP TO 6" LONG x  
2" WIDE x 1" DEEP





**LESS THAN 5% DETERIORATED  
MORTAR WITH UP TO 6" OF  
PENETRATION BETWEEN THE STONES**



STONE BLOCK SLOPE PROTECTION



PHOTO NO. 23

SHEET NO. 52 OF 60



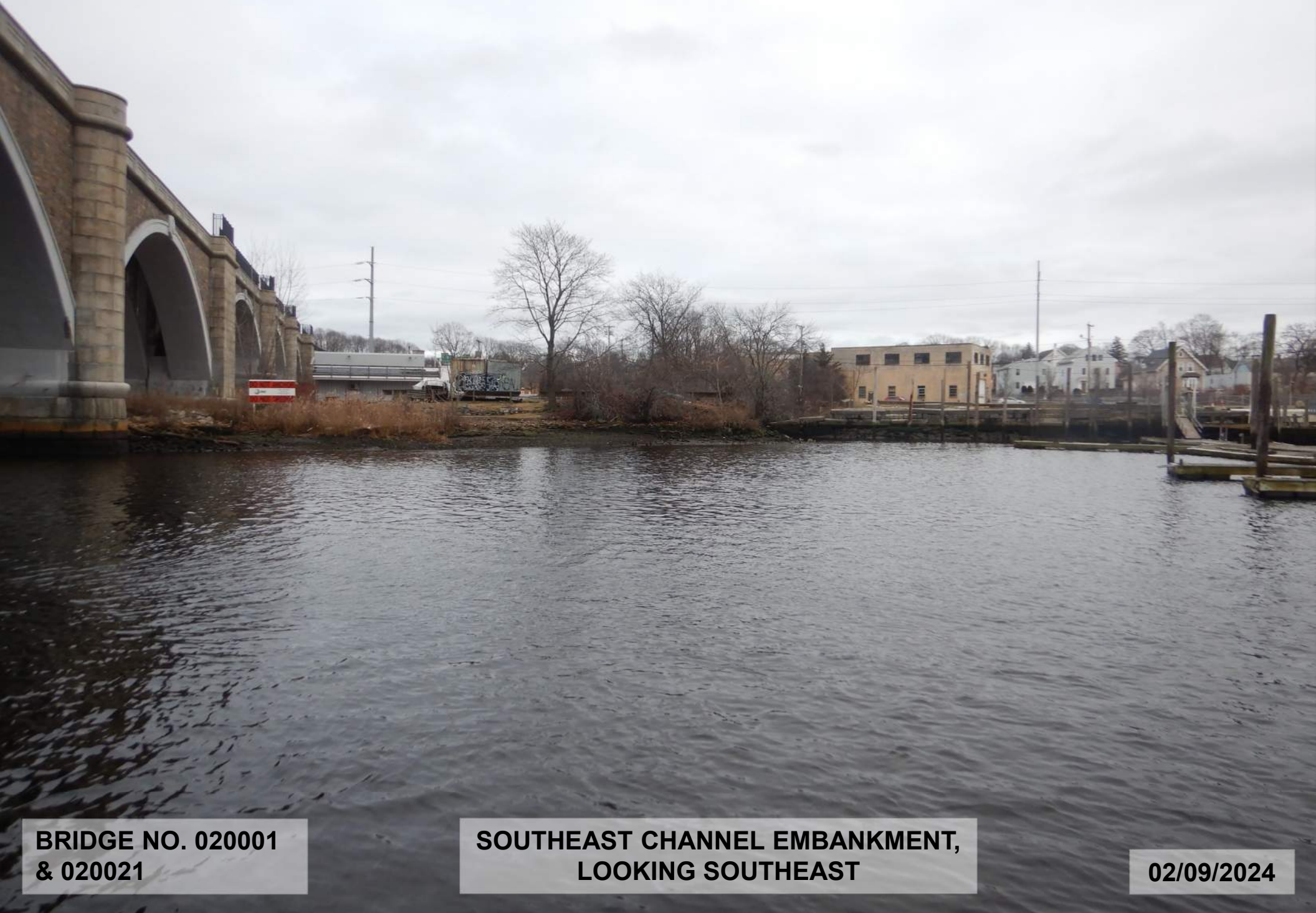
BRIDGE NO. 020001  
& 020021

NORTHEAST CHANNEL EMBANKMENT,  
LOOKING SOUTH

02/09/2024

**PHOTO NO. 24**

**SHEET NO. 53 OF 60**



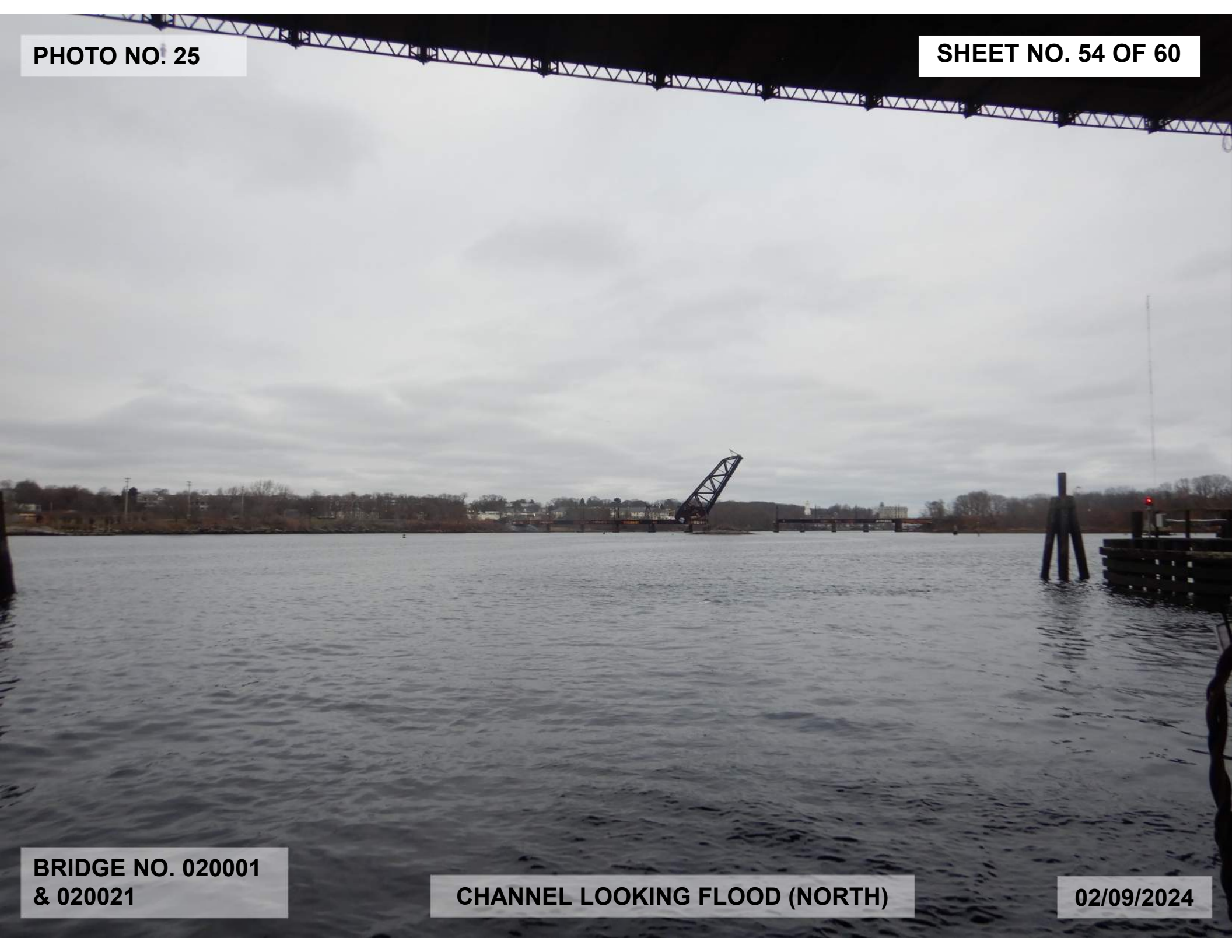
**BRIDGE NO. 020001  
& 020021**

**SOUTHEAST CHANNEL EMBANKMENT,  
LOOKING SOUTHEAST**

**02/09/2024**

PHOTO NO. 25

SHEET NO. 54 OF 60



BRIDGE NO. 020001  
& 020021

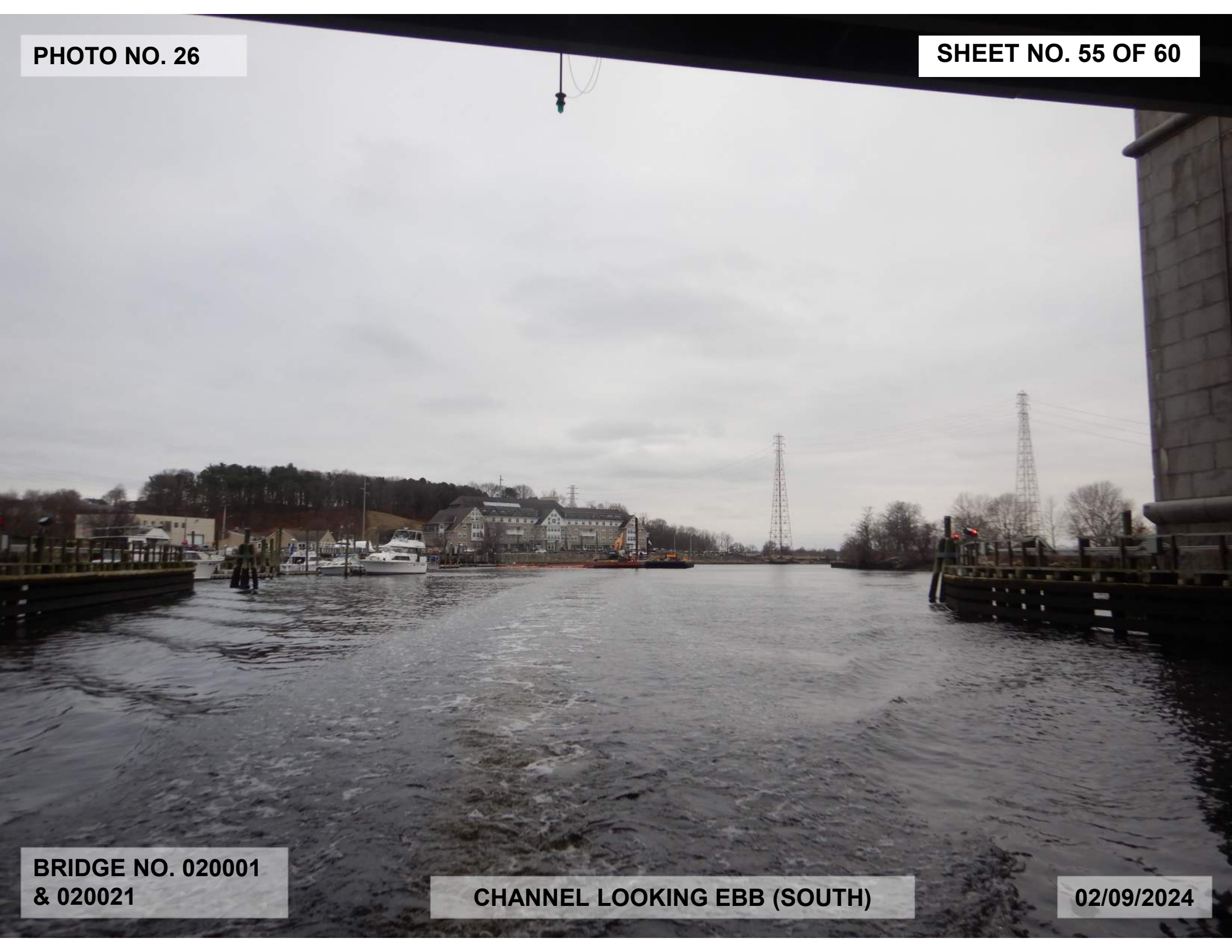
CHANNEL LOOKING FLOOD (NORTH)

02/09/2024



PHOTO NO. 26

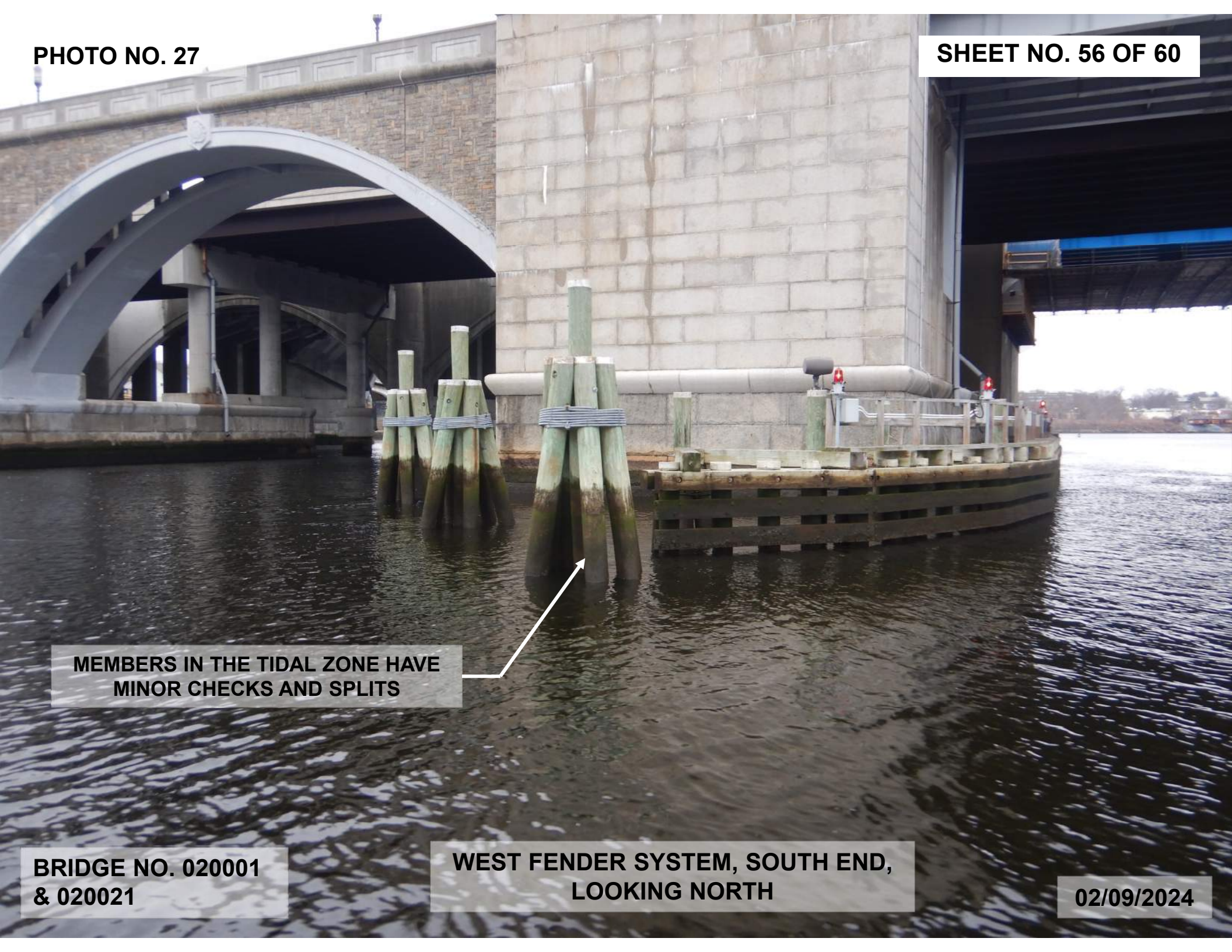
SHEET NO. 55 OF 60



BRIDGE NO. 020001  
& 020021

CHANNEL LOOKING EBB (SOUTH)

02/09/2024



MEMBERS IN THE TIDAL ZONE HAVE  
MINOR CHECKS AND SPLITS

BRIDGE NO. 020001  
& 020021

WEST FENDER SYSTEM, SOUTH END,  
LOOKING NORTH

02/09/2024

**PHOTO NO. 28**

**SHEET NO. 57 OF 60**

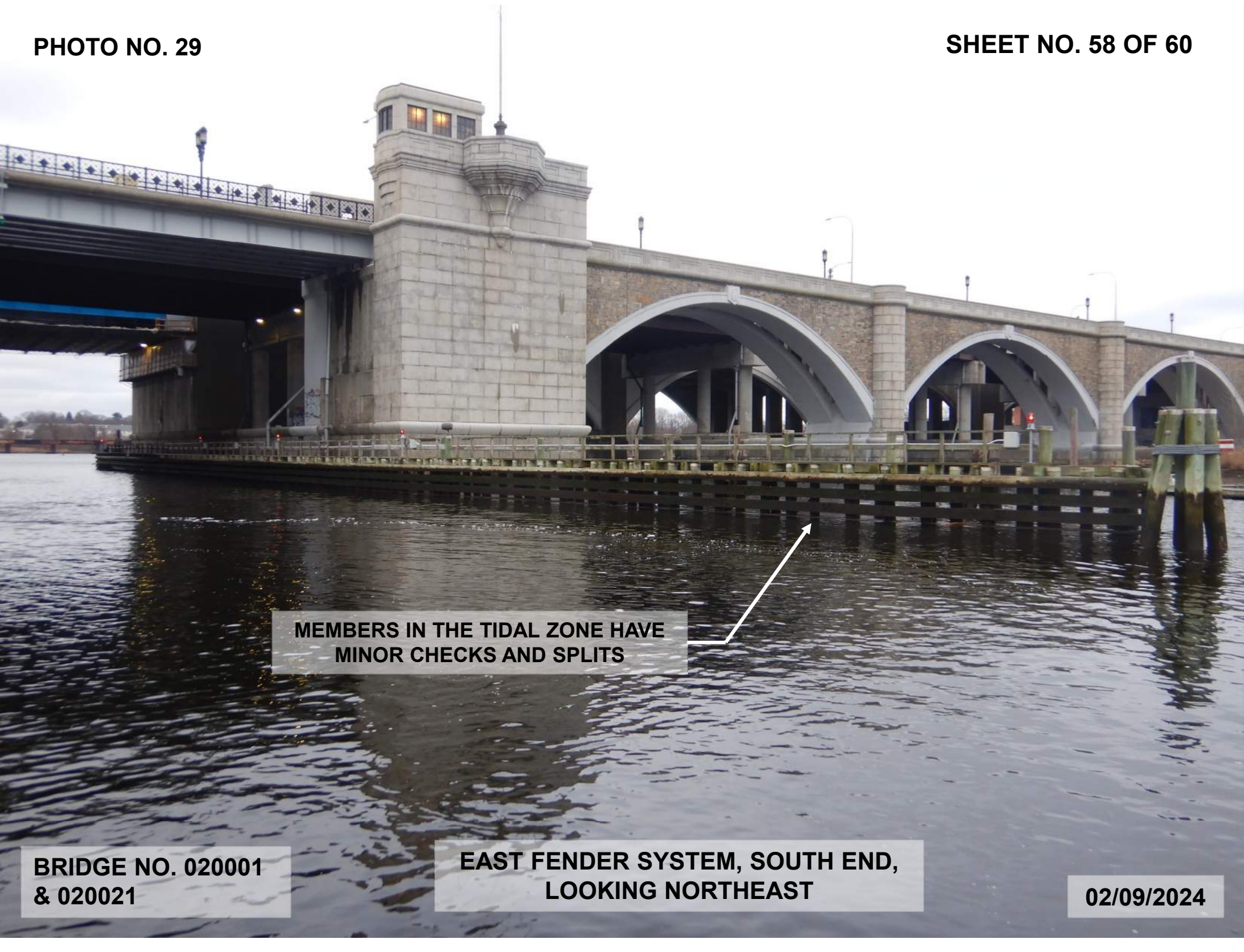
**FRACTURED HANDRAIL**

**BRIDGE NO. 020001  
& 020021**

**WEST FENDER SYSTEM AT PIER 6,  
SOUTHEAST CORNER, LOOKING NORTHWEST**

**02/09/2024**



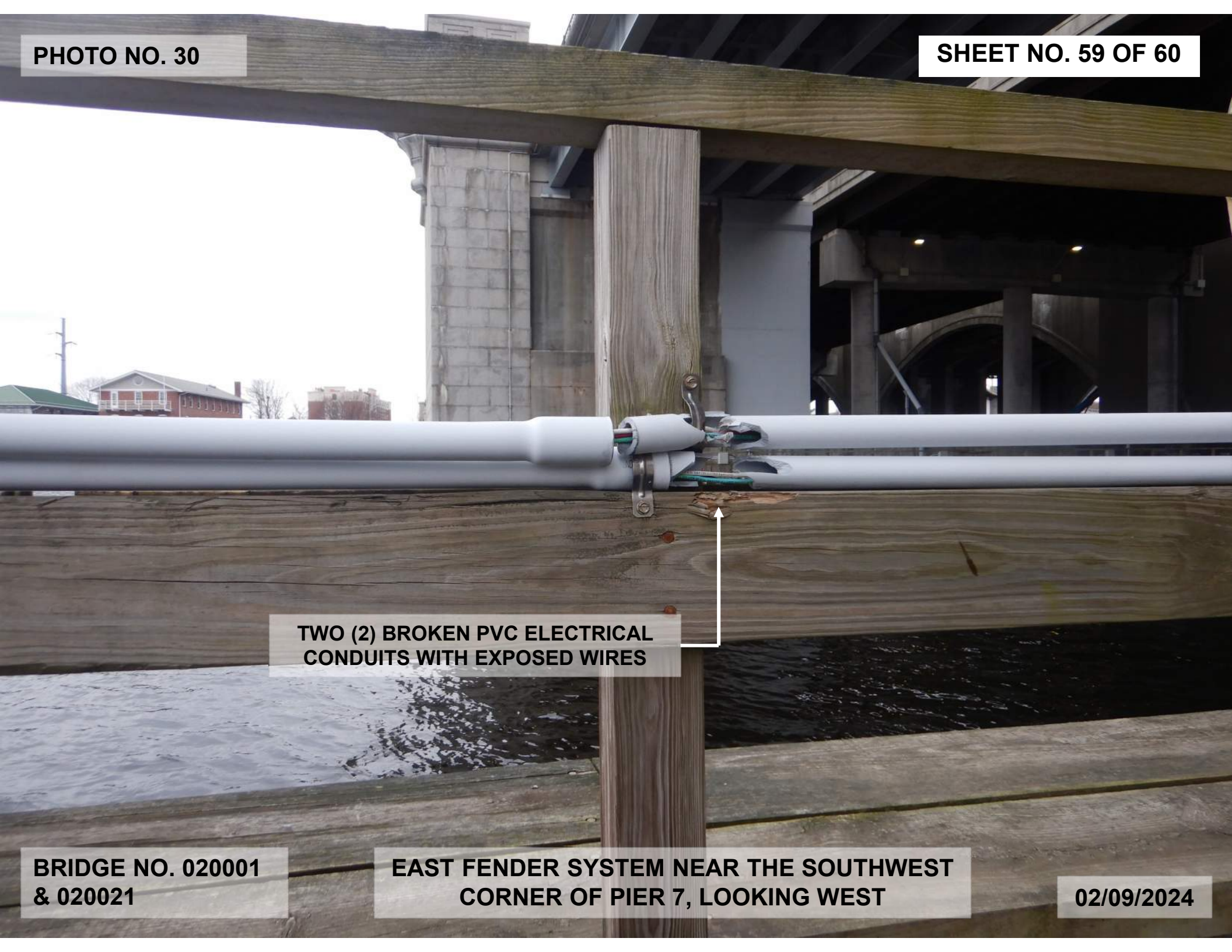


**MEMBERS IN THE TIDAL ZONE HAVE  
MINOR CHECKS AND SPLITS**

**BRIDGE NO. 020001  
& 020021**

**EAST FENDER SYSTEM, SOUTH END,  
LOOKING NORTHEAST**

**02/09/2024**



**TWO (2) BROKEN PVC ELECTRICAL  
CONDUITS WITH EXPOSED WIRES**

PILES ARE IN POOR CONDITION WITH  
END ROT UP TO 90% x 6' HIGH





State of Rhode Island  
**Department of Transportation**

**Bridge No. 020001 & 020021**

**Washington Bridge South & Washington Bridge South  
Pedestrian**

***Appendix A)  
BrM Element Notes***

## **BrM Element Notes for Bridge No. 020001 & 020021**

### **Element 210 – Reinforced Concrete Pier Wall**

2024 Underwater Inspection Notes:

For the Underwater Inspection, the Collision Wall for Bridge No. 020001 and Bridge No. 020021 were inspected and reported as a single structure. Piers #4 through #9 were included in the underwater inspection from the top of the stone masonry facade (bottom of the pier cope) to the channel bottom. The stone masonry has scattered areas of missing mortar, up to 15% with penetrations up to 12” deep between the stones, cracked stones and missing stones. The reinforced concrete pier wall below the stone masonry at Piers 4 – 7 have abrasion, areas of poor consolidation / voids / spalls, and cracking.

### **Element 1080 – Delamination / Spall / Patched Area (Refers to Element 210)**

2024 Underwater Inspection Notes:

Pier 5:

- Reinforced concrete collision wall, South Nose near channel bottom has an area of poor consolidation full width x 3' high x up to 2" deep (See Photo No. 6).

Pier 6:

- Reinforced concrete collision wall below the masonry has random areas of poor consolidation up to 16" long x 12" high x 1" deep.
- Concrete / masonry interface has voids up to 3' long x 6" high x 6" deep.
- Reinforced concrete collision wall below the masonry, Northeast Corner near channel bottom has an area of poor consolidation 3'-6" long down the East Face x 4' long down the North Face x 16" high x 2" deep (See Photo No. 13).



Pier 7:

- Reinforced concrete collision wall has multiple areas of poor consolidation / spalls up to 16'-6" high x 2' wide x 5" deep with rust stains (See Photo No. 16).

### **Element 1130 – Cracking (Refers to Element 210)**

2024 Underwater Inspection Notes:

Pier 4:

- East Face, fourth course has a cracked stone 1/4" wide that extends through the reinforced concrete collision wall to channel bottom.

Pier 5:

- Masonry facade, West Face near centerline, 1st, 3rd and 4th courses have vertical cracks up to 1/4" wide that extends into the concrete collision wall and is open up to 1/2" wide at channel bottom.
- Masonry facade, East Face, 20' from the Southeast Corner, 6th course has a vertical crack up to 3/16" wide that extends into the concrete collision wall to channel bottom.

Pier 7:

- Masonry facade, East and West Faces at centerline have a vertical cracks full height of the masonry facade x up to 1/2" wide with chipped stones up to 8'-6" high x 5" wide x 3" deep. The crack in the East Face continues through the reinforced concrete collision wall below the masonry facade and has edge spalls up to 14" wide x 2' high x 2-1/2" deep with soft concrete.

### **Element 1190 – Abrasion / Wear (Refers to Element 210)**

2024 Underwater Inspection Notes:

Piers 6 & 7:

- Reinforced concrete collision wall has abrasion up to 2" deep.

## **Element 4000 – Settlement (Refers to Element 210)**

2024 Underwater Inspection Notes:

Piers 6 & 7:

Both the west and east faces of the pier, there are vertical cracks open to 1/2" wide that extend from the top of the stone masonry facade down to the channel bottom and missing stones that may indicate slight settlement of the pier.

## **Element 6000 – Scour (Refers to Element 210)**

2024 Underwater Inspection Notes:

Piers 6:

- West Face near centerline has scour up to 2.4' deep.
- South Face has an area of scour up to 4.3' deep that extends around the East Face.
- East Face near centerline and the north end has areas of scour up to 2.8' deep.

Pier 7:

- North Face has scour up to 3.0' deep however soundings in this area show aggradation up to 0.9' high as compared to the 2017 soundings.
- West Face has scour up to 3.5' deep however soundings in this area show aggradation up to 1.8' high as compared to the 2017 soundings.
- East Face at 5' - 10' off the pier has scour up to 5.0' deep however soundings in this area show aggradation up to 2.7' high as compared to the 2017 soundings.

## **Element 220 – Reinforced Concrete Pile Cap/Footing**

2024 Underwater Inspection Notes:

The pier walls are founded on reinforced concrete footings with timber piles. The sloped concrete footings steps out 18" to 2' from the pier face then slopes downward at a 45° angle. Piers 4, 5, 8 & 9 have exposed footings up to 8' high with abrasion, poor consolidation / voids / spalls, cracking.

Pier 4:

East Face of the footing is exposed 20' long at the north end, 15' long at the south end and up to 2' high (maximum at the southeast corner). South Face of the footing is exposed 10' long at the east end (previously exposed up to 2' vertically at the southeast shoulder and extends along the full-length of the east face of the pier and terminates at the northeast shoulder).

Pier 5:

South Face of the footing is exposed 15' long x up to 10" high (maximum at the South Nose; previously exposed up to 6" high extending 4' long down the West Face).

Pier 8:

North Face of the footing is exposed full length x up to 4.5' high (no change) extending down the West Face 12' long and the East Face 9' long (maximum at the Northeast Corner). The East Face of the footing is intermittently exposed full-length x up to 3' high.

Pier 9:

West Face of the footing is exposed from 6' south of the Northwest Corner to 18' north of the Southwest Corner up to 4.5' (maximum near centerline; no change).

**Element 1080 – Delamination / Spall / Patched Area (Refers to Element 220)**

2024 Underwater Inspection Notes:

Pier 8:

- North Face of the footing at the masonry facade interface has a void 3'-6" long x 6" high x 8" deep.
- East Face of the footing near the Southeast Corner has a void 3'-6" long x 12" high x 5" deep.
- Southeast Corner has an edge spall 2' long x 8" high x 5" deep.

Pier 9:

- Areas of poor consolidation up to 2" deep.

**Element 1130 – Cracking (Refers to Element 220)**

2024 Underwater Inspection Notes:

Pier 8:

- West and East Faces, 23' from the South Nose, footing has vertical cracks up to 1/4" wide with edge spalls up to 6" high x 2" wide x 1" deep (See Photo No. 19).

Pier 9:

- West Face near centerline, there is a vertical crack full height that extends from the masonry facade.

**Element 1190 – Abrasion (Refers to Element 220)**

2024 Underwater Inspection Notes:

Piers 4 & 5:

- Abrasion up to 1/2" deep on all exposed surfaces.

## **Element 6000 – Scour (Refers to Element 220)**

### 2024 Underwater Inspection Notes:

#### Pier 4:

East Face of the footing is exposed 20' long at the north end, 15' long at the south end and up to 2' high (maximum at the southeast corner). South Face of the footing is exposed 10' long at the east end (previously exposed up to 2' vertically at the southeast shoulder and extends along the full-length of the east face of the pier and terminates at the northeast shoulder).

#### Pier 5:

South Face of the footing is exposed 15' long x up to 10" high (maximum at the South Nose; previously exposed up to 6" high extending 4' long down the West Face).

#### Pier 8:

North Face of the footing is exposed full length x up to 4.5' high (no change) extending down the West Face 12' long and the East Face 9' long (maximum at the Northeast Corner). The East Face of the footing is intermittently exposed full-length x up to 3' high.

#### Pier 9:

West Face of the footing is exposed from 6' south of the Northwest Corner to 18' north of the Southwest Corner up to 4.5' (maximum near centerline; no change).

## **Element 225 – Steel Pile**

2024 Underwater Inspection Notes:

There is a steel encased reinforced concrete caisson pile at the north (upstream) ends of the pier. The caisson piles have fiberglass jackets in place that extends up to 10' down from the underside of the concrete cap section. The caisson piles, steel below the jacket has minor corrosion with light pitting up to 1/16" deep (See Photo No. 5).

## **Element 1000 – Corrosion (Refers to Element 225)**

2024 Underwater Inspection Notes:

- The caisson piles, steel below the jacket has minor corrosion with light pitting up to 1/16" deep (See Photo No. 5).

## **Inspection Notes:**

Inspection Date: 01/30/2024 – 2/9/2024 (Underwater – Consor)

Team Leader: James Karalekas, P.E. (Consor)

Dive Supervisor / Underwater Inspector: Michael Balboni, Anthony Frost, Keith Griswold (Consor)

Weather: 30°F, Clear, Cloudy, Rain

Substructure (Rating = 6) – Satisfactory

Piers 4 - 9, the steel encased reinforced concrete caisson pile at the north (upstream) end of the piers has minor corrosion below the fiberglass jackets. At Piers 4 through 7 and 9, the stone masonry facade has less than 5% deteriorated mortar with 3" to 6" of penetration between stones and isolated full-height cracked stones. Pier 8 has 15% deteriorated mortar with up to 12" of penetration between stones. The reinforced concrete collision wall below the stone masonry facade has abrasion 1/2" deep and poor consolidation / spalls / voids up to 16'-6" high x 2' wide x 3" deep. Piers 4, 7 and 9 masonry has cracks up to full height and open up to 1/2" wide. Piers 6 & 7 have missing stones up to 3'-6" long x 5' high. At Piers 4, 5 and 8, the footings are vertically exposed up to 4.5' high (no change), at south end of Pier 8, the footing is exposed full height (8') and the tremie seal is exposed up to with up to 1.5' high (previously exposed up to 15" high). Exposed footings have minor abrasion, vertical cracks up to 1/4" wide and areas of voids / poor consolidation up to 8" deep.

Channel & Channel Protection (Rating = 6) – Bank Slumping

The channel bottom consists of silt, sand, and shells with scattered construction debris throughout. The maximum penetration into the

channel bottom is 12". There has been no apparent change to the channel orientation as compared to the 2021 Underwater Inspection Report. No erosion was observed along the channel embankments. There is construction debris consisting of concrete rubble and cut-off timber piles at the channel bottom adjacent to the piers. There is no significant obstructions or debris accumulation which would affect the hydraulic opening at the bridge. Channel off of the Southeast Corner of the East Fender System wall, there is a sunken boat ±48' long x up to 20' high off the channel bottom that is a navigational hazard to boat traffic outside of the main channel. Channel bottom elevations along the fascias have areas of aggradation up to 7.9' high and areas of scour up to 2.5' deep.

The timber fender system members have minor splits and checking. The navigational lighting was on and functioning at the time of the inspection. The two (2) timber dolphins on the south side of Pier 7 are in poor condition. Handrails have three (3) fractured / missing areas. East Fender System wall has two (2) broken PVC electrical conduits with exposed wires.