

Washington Bridge South & Washington Bridge South Pedestrian Interstate 195 Eastbound & Bike/Pedestrian Bridge

Over Seekonk River





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



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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Appendix A - BrM Element Notes





Bridge No.:	020001 & 020021	Inspection Date:	2/9/2024
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Bridge Inventory Information

Bridge Type:	Steel multi-girder (Interstate 195 Eastbound) and reinforced concrete open spandrel arch (bike path / pedestrian bridge)
Year Built / Rebuilt:	1930 / 2008
Bridge Orientation:	Bridge is logged from west to east which is consistent with the previous NBIS inspection report and the structure plans.
Structure Length:	1670.79 feet
Width Out-to-Out:	71.5 feet
No. of Span(s):	14
No. of Pier(s):	13
No. of Abutment(s) in Water:	0
No. of Pier(s) in Water:	6
Abutment / Pier Type:	The pier walls are reinforced concrete columns with an outer collision wall made of both concrete and stone masonry
Foundation Type:	The pier columns are founded on reinforced concrete footings with timber piles.

Waterway Information

Type of Water:	Brackish (tidal)
Current Strength:	Approximately 1.5 feet / second
Underwater Visibility:	Approximately 4 feet
Max. Water Depth:	32.9 feet
Max. Depth at Substructure:	32.9 feet (south nose of Pier 5)
Bottom Composition:	The channel bottom consists of silt, sand, and shells with scattered construction debris throughout. The maximum penetration into the channel bottom is 12".
Marine Growth:	There is marine growth up to 1/2" thick on the piers, most notably beneath the tidal zone.

Inspection / Diving Operations

Team Leader:	James Karalekas, P.E.
Inspection Team Members / Divers:	Keith Griswold, Anthony Frost, Michael Balboni, Alexander TaBois
Inspection Date Started:	1/30/2024
Inspection Date Completed:	2/9/2024
Bridge Access:	Boat launched from Gano Park Boat Launch
Boat Size:	24'
Dive Mode:	Surface Supplied Air with hot water System wall
Equipment Comments:	Standard hand tools were used for this inspection.
General Remarks:	Inspection performed between 1/30/2024 and 2/9/2024.
	Soundings performed on 1/30/2024





Underwater Inspection Report

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

Summary of Findings

Item 60 - Substructure

Overall Rating: 6 - Satisfactory

Overall Rating: 6 - Bank Slumping

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

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 \pm 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".

<u>General Condition Rating for Evaluating the Condition of Substructure & Channel Components</u> <u>NOTE</u>: 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).







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City/Town:	East Providence	

Item 60 - Substructure

Abutment No.:	1 (West)	Overall Rating: N/A	
Component	Rating	Description		
STEM	Ν	The abutment is located out of Inspection.	f the water and was not included in this Underwater	
FOOTING	Ν			
EROSION	Ν			
SETTLEMENT	Ν			
SCOUR	Ν			
WINGWALLS	Ν			

General Condition Rating for Evaluating the Condition of Substructure Components





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Item 60 - Substructure

Abutment No.:	2 (East)	Overall Rating: N/A
Component	Rating Description	
STEM	N The abutment is located out of the Inspection.	water and was not included in this Underwater
FOOTING	Ν	
EROSION	Ν	
SETTLEMENT	Ν	
SCOUR	Ν	
WINGWALLS	Ν	

General Condition Rating for Evaluating the Condition of Substructure Components





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Item 60 - Substructure

Pier/Bent No.:	1 - 3 & 10 - 13	Overall Rating: N/A
Component	Rating Description	
PILES	Ν	
STEM	N The piers are located out of the w this Underwater Inspection.	ater and therefore were not inspected as part of
FOOTING	Ν	
SCOUR	Ν	
SETTLEMENT	Ν	

General Condition Rating for Evaluating the Condition of Substructure Components





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Item 60 - Substructure

Pier/Bent No.:	4	Overall Rating: 6 - Satisfactory
Component	Rating	Description
PILES	7	There is a steel encased reinforced concrete caisson pile at the north (upstream) end of the pier. The caisson pile has a fiberglass jacket in place that extends 8' - 10' down from the underside of the concrete cap section. The caisson pile has the following deficiency:
		 Exposed steel below the jacket has minor corrosion with light pitting up to 1/16" deep.
STEM	7	The pier consists of a reinforced concrete collision wall with a granite stone masonry facade that extends from the top of the wall (bottom of pier cope) down 16'-6". The wall has the following deficiencies:
		 Less than 5% deteriorated mortar with 3" to 6" of penetration between stones (See Photo No. 3). West Face, 2nd and 4th courses have vertical cracks up to 1/4" wide in the stones. East Face, fourth course has a cracked stone 1/4" wide that extends through the reinforced concrete collision wall to channel bottom.
FOOTING	7	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). The exposed footing has the following deficiency:

• Abrasion up to 1/2" deep.

General Condition Rating for Evaluating the Condition of Substructure Components





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Item 60 - Substructure

Pier/Bent No.:	5 Overall Rating:	6 - Satisfactory
Component	Rating Description	
PILES	6 There is a steel encased reinforced concrete caisson pile at the end of the pier. The caisson pile has a fiberglass jacket in place from the underside of the concrete cap section. The caisson pile deficiency:	north (upstream) that extends 9' down has the following
	 Exposed steel below the jacket has minor corrosion with light (See Photo No. 5). 	pitting up to 1/16" deep
STEM	6 The pier consists of a reinforced concrete collision wall with a grade that extends from the top of the wall (bottom of pier coper wall has the following deficiencies:	ranite stone masonry e) down 16'-6". The
	 Masonry has less than 5% deteriorated mortar with 3" to 6" of stones (See Photo No. 4). The reinforced concrete pier wall has abrasion up to 1/2" deep Reinforced concrete pier wall, South Nose near channel bottol consolidation full width x 3' high x up to 2" deep (See Photo No. 	penetration between). m has an area of poor 6).
FOOTING	7 The reinforced concrete footing steps out 2' from the East and V with the North and South Faces. South Face of the footing is ex 10" high (maximum at the South Nose; previously exposed up t long down the West Face). The exposed footing has the followi	West Face and is flush posed 15' long x up to o 6" high extending 4' ng deficiency:
	 Abrasion up to 1/2" deep (See Photo No. 7). 	

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6 Overall Rating: 6 - Satisfactory	
Rating Description	
7 There is a steel encased reinforced concrete caisson pile at the north (upstream) end of the pier. The caisson pile has a fiberglass jacket in place that extends 10' do from the underside of the concrete cap section. The caisson pile has the following deficiency:	own
 Exposed steel below the jacket has minor corrosion with light pitting up to 1/16" deep. 	
6 The pier consists of a reinforced concrete collision wall with a granite stone mason facade that extends from the top of the wall (bottom of pier cope) down 16'-6". The wall has the following deficiencies:	ry
 Masonry has less than 5% deteriorated mortar with 3" to 6" of penetration betwee stones (See Photo No. 8). Masonry facade, West Face near the north quarter point, 1st and 2nd courses have vertical cracks up to 1/4" wide. Masonry facade, West Face near centerline of the pedestrian bridge, 3rd course with one vertical crack up to 1/8" wide with edge chips, 4th course with two (2) verticaracks up to 3/8" wide (See Photo No. 9). Masonry facade, West Face near centerline, 1st, 3rd and 4th courses have verticaracks 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, 9th stone from the Northeast Corner, 2nd course is cracked 18" high x 3/16" wide. Masonry facade, East Face near midpoint of the pedestrian bridge, top four (4) cours have vertical cracks up to 1/4" wide. Masonry facade, East Face, 8th stone from the Southeast Corner, 1st course is cracked full height x 1/8" wide. 	n ve cal al o
	 6 Overall Rating: <u>6 - Satisfactory</u> Rating Description 7 There is a steel encased reinforced concrete caisson pile at the north (upstream) end of the pier. The caisson pile has a fiberglass jacket in place that extends 10' do from the underside of the concrete cap section. The caisson pile has the following deficiency: Exposed steel below the jacket has minor corrosion with light pitting up to 1/16" deep. 6 The pier consists of a reinforced concrete collision wall with a granite stone mason facade that extends from the top of the wall (bottom of pier cope) down 16'-6". The wall has the following deficiencies: Masonry has less than 5% deteriorated mortar with 3" to 6" of penetration betwee stones (See Photo No. 8). Masonry facade, West Face near centerline of the pedestrian bridge, 3rd course with one vertical crack up to 1/4" wide. Masonry facade, West Face near centerline of the pedestrian bridge, 3rd course with one vertical crack up to 18" wide with edge chips, 4th courses hav vertical cracks up to 1/4" wide. Masonry facade, West Face near centerline, 1st, 3rd and 4th courses have vertical cracks up to 1/4" wide. Masonry facade, East Face, 9th stone from the Northeast Corner, 2nd course is cracked 18" high x 3/16" wide. Masonry facade, East Face near melpoint of the pedestrian bridge, top four (4) cour have vertical cracks up to 1/4" wide. Masonry facade, East Face, 8th stone from the Southeast Corner, 1st course is cracked full height x 1/8" wide.

General Condition Rating for Evaluating the Condition of Substructure Components





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Pier/Bent No.:	6 (Con	tinued)	Overall Rating: 6 - Satisfactory
Component	Rating	Description	
STEM	6	 Masonry facade, East Face, 10 x 2'-6" high with an associated v 1/2" wide at channel bottom. Bot 1/2" wide (See Photo Nos. 11 & Masonry facade, East Face, 20 vertical crack up to 3/16" wide th bottom. The reinforced concrete pier wall Reinforced concrete pier wall b consolidation up to 16" long x 12 Concrete / masonry interface h Reinforced concrete pier wall b bottom has an area of poor cons 	th stone from the Southeast Corner is missing 3' long ertical crack below 1/4" wide in stone and open up to tom stone course in this area is chipped 9" high x 2- 12). ' from the Southeast Corner, 6th course has a at extends into the concrete collision wall to channel all has abrasion up to 1/2" deep. elow the masonry has random areas of poor " high x 1" deep. as voids up to 3' long x 6" high x 6" deep. elow the masonry, Northeast Corner near channel olidation 3'-6" long down the East Face x 4' long
FOOTING	Ν	down the North Face x 16" high There is no observed exposure of	x 2" deep (See Photo No. 13). of the pier footing.
SCOUR	6	Channel bottom elevations aroun greater than 1.0' as compared to	nd the pier and pile have the following variations the 2021 Underwater Inspection:
		 Around the caisson pile has ag West Face at the north end has North Face. West Face near centerline has West Face near the south end South Face has an area of sco South Face has an area of agg East Face near centerline and 	gradation up to 5.9' high. s aggradation up to 4.0' high that extends around the scour up to 2.4' deep. has scour up to 2.3' deep. ur up to 4.3' deep that extends around the East Face. radation 2.7' high. the north end has areas of scour up to 2.8' deep.
		Refer to 'Footing' item for footing	exposure details.
SETTLEMENT	6	Rating reduced from '8' to '6' due stones.	e to vertical cracks up to 1/2" wide and missing
General Condition	on Kating	TOR EVALUATING THE CONDITION OF S	UDSTRUCTURE COMPONENTS ridge Inspection Standards (NBIS) coding information as





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Item 60 - Substructure

Pier/Bent No.:	7	Overall Rating: 6 - Satisfactory
Component	Rating	Description
PILES	7	There is a steel encased reinforced concrete caisson pile at the north (upstream) end of the pier. The caisson pile has a fiberglass jacket in place that extends 10' down from the underside of the concrete cap section. The caisson pile has the following deficiency:
		• Exposed steel below the jacket has minor corrosion with light pitting up to 1/16" deep.
STEM	6	The pier consists of a reinforced concrete collision wall with a granite stone masonry facade that extends from the top of the wall (bottom of pier cope) down 16'-6". The wall has the following deficiencies:
		 Masonry has less than 5% deteriorated mortar with 3" to 6" of penetration between stones (See Photo No. 17). Concrete / masonry interface has voids up to 3' long x 6" high x 6" deep and areas of abrasion up to 2" deep. 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. Masonry facade, West Face near the south quarter point, first and second masonry courses are broken / missing up to 3'-6" long x 5' high (See Photo No. 15). Reinforced concrete pier wall has abrasion up to 2" deep. Reinforced concrete pier 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).
FOOTING	Ν	There is no observed exposure of the pier footing.

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Item 60 - Substructure

Pier/Bent No.:	8	Overall Rating: 6 - Satisfactory
Component	Rating	Description
PILES	7	There is a steel encased reinforced concrete caisson pile at the north (upstream) end of the pier. The caisson pile has a fiberglass jacket in place that extends 9' down from the underside of the concrete cap section. The caisson pile has the following deficiency:
		• Exposed steel below the jacket has minor corrosion with light pitting up to 1/16" deep.
STEM	6	The pier consists of a reinforced concrete collision wall with a granite stone masonry facade that extends from the top of the wall (bottom of pier cope) down to the top of footing. The wall has the following deficiencies:
		 Masonry facade has less than 15% deteriorated mortar with up to 12" of penetration between stones (See Photo No. 18). Masonry facade / reinforced concrete interface at the noses has 50% missing mortar. Masonry facade, West and East Faces, 23' from the South Nose, top two (2) stone
FOOTING	6	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. The exposed footing has the following deficiencies:
General Condition	on Rating	(Footing notes continued on the next sheet) <u>for Evaluating the Condition of Substructure Components</u>





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Item 60 - Substructure

Pier/Bent No.:	9	Overall Rating: 6 - Satisfactory
Component	Rating	Description
PILES	7	There is a steel encased reinforced concrete caisson pile at the north (upstream) end of the pier. The caisson pile has a fiberglass jacket in place that extends 8' down from the underside of the concrete cap section. The caisson pile has the following deficiency:
		• Exposed steel below the jacket has minor corrosion with light pitting up to 1/16" deep.
STEM	6	The pier consists of a reinforced concrete collision wall with a granite stone masonry facade that extends from the top of the wall (bottom of pier cope) down to the top of footing. The wall has the following deficiencies:
		 Masonry facade has less than 5% deteriorated mortar with up to 6" of penetration between stones (See Photo No. 20). Masonry facade, West Face near centerline, 2nd and 3rd courses have vertical cracks up to 1/2" wide that extend into the footing.
FOOTING	6	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). The exposed footing has the following deficiencies:
		 Areas of poor consolidation up to 2" deep. West Face near centerline, there is a vertical crack full height that extends from the masonry facade.

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Pier/Bent No.:	9 (Continued) Overall Rating: 6 - Satisfactory
Component	Rating Description
SCOUR	6 Channel bottom elevations around the pier and pile have the following variations greater than 1.0' as compared to the 2021 Underwater Inspection:
	 Around the caisson pile has aggradation up to 2.2' high. West Face and South Nose has aggradation up to 2.8' high. West Face has an isolated area of scour 1.5' deep.
	Refer to 'Footing' item for footing exposure details.
SETTLEMENT	6 Vertical cracks up to 1/2" wide may indicate settlement.
	Rating reduced from '8' to '6'.

General Condition Rating for Evaluating the Condition of Substructure Components





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<u>Item 61 - Cha</u>	nnel 8	& Channel Protection	
		Overall Rating: 6 - Bank Slumping	
Component	Rating	Description	
CHANNEL SCOUR	6	Channel bottom elevations along the fascia's have the following variations greater than 1.0' as compared to the 2021 Inspection:	
		 Span 4, South Fascia at midspan has an area of scour 3.0' deep. Span 5, North Fascia at quarter-span has an area of scour 2.5' deep. Span 5, South Fascia at three-quarter-span has an area of aggradation 2.0' high. Span 6, North Fascia has aggradation up to 2.9' high. Span 6, South Fascia at quarter-span has an area of aggradation 1.5' high. Span 6, South Fascia at midspan has an area of scour 1.7' high. Span 7, North Fascia at midspan has an area of aggradation 2.8' high. Span 8, North Fascia has aggradation up to 7.9' high. Span 8, South Fascia at quarter and midspan has aggradation up to 3.4' high. Span 9, South Fascia at quarter-span has aggradation 2.8' high. 	
		Refer to Piers 4 - 9, 'Footing' items for footing exposure details and 'Scour' items	
EMBANKMENT EROSION	8	There is no significant erosion along the channel embankments (See Photo Nos. 21 - 24).	
CHANNEL CHANGE	7	Flow is well aligned with the substructure units. There has been no apparent change to the channel orientation since the 2021 Underwater Inspection.	
ADEQUACY OF OPENING	7	There are no restrictions or debris accumulation that affect the hydraulic opening at the bridge.	
DEBRIS	6	There is construction debris consisting of concrete rubble and cut-off timber piles at the channel bottom adjacent to the piers. There is no debris accumulation which would affect the hydraulic opening at the bridge. South Channel off of the Southeast Corner of the East Fender System wall, there is a sunken boat $\pm 48'$ long x up to 20' high off the channel bottom that is a navigational hazard to boat traffic outside of the main channel.	

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Item 61 - Channel & Channel Protection (Continued)

Overall Rating: 6 - Bank Slumping

Component	Rating	Description
VEGETATION	8	Channel embankments beyond the areas of rip rap and granite block slope protection are well vegetated.
RIP RAP	7	There is evidence of scattered rip-rap / concrete rubble up to 2' diameter along the east side of Pier 5. The previously noted stone revetment along the east side of Pier 7 from the northeast corner to the midpoint of the pier was not found during this inspection. The Southwest Channel Embankment has stone block slope protection (See Photo No. 22). Rating revised from 'N' to '7'.
FENDER SYSTEM	6	This item shall be used to rate the condition of the fender system and navigational lighting in place along the east side of Pier 6 and the west side of Pier 7 has the following deficiencies:
		 Members in the tidal zone have minor checks and splits (See Photo No. 27 & 29). West Fender System, handrail has two (2) areas that are fractured and one (1) broken post (See Photo No. 28). East Fender System near the north end of the pedestrian bridge has a missing section of handrail
		 East Fender System near the Southwest Corner of Pier 7 has two (2) broken PVC electrical conduits with exposed wires (See Photo No. 30). The two (2) timber dolphins on the south side of Pier 7 are in poor condition with end rot up to 90% x 6' high (See Photo No. 31).
		The navigational lighting was on and functioning at the time of the inspection.
SPUR DIKES & JETTIES	Ν	

General Condition Rating for Evaluating the Condition of Substructure Components





Bridge No.:020001 & 020021Inspection Date: 2/9/2024Bridge Name:Washington Bridge South & Washington Bridge South PedestrianFacility Carried:Interstate 195 Eastbound & Bike Path/PedestrianFeature Intersected:Seekonk RiverCity/Town:East Providence

Item 61 - Channel & Channel Protection (Continued)

Overall Rating: 6 - Bank Slumping

Component

Description

Rating

Water Velocitie	es			
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).



MPA No. 359 AWARD No. 3674875



Bridge No. 020001 & 020021

Washington Bridge South & Washington Bridge South Pedestrian

Drawings / Sketches



MPA No. 359 AWARD No. 3674875





VICINITY (Scale 1"=28000')

Bridge Nos. 020001 and 020021-



LOCA TION (Scale 1"=2000')





Sheet 23 of 60

BRIDGE NOS. 020001 & 020021 (WASHINGTON BRIDGE SOUTH) INTERSTATE 195 EASTBOUND & BIKE PATH / PEDESTRIAN OVER SEEKONK RIVER EAST PROVIDENCE, RI LOCATION AND VICINITY MAPS

awn By: FH	_	50 INWOOD RD, ST. 101	Date: 02/09/2024
ecked By: JK	CONSOR	ROCKY HILL, CT 06067	Scale: VARIES
oject:190206RI.18		(860) 840-2505	Figure No.: 1



GENERAL NOTES:

- 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.

<u>LEGEND</u>

- 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



0 25' 50' GRAPHIC SCALE IN FEET



Project:190206RI.18

(860) 840-2505

Figure No.: 3



GENERAL NOTES:

-Ń-

- 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.







INSPECTION NOTES:

- (1) At Piers 4, 5 and 6 the caisson pile at the North (Upstream) end of the pier has a fiberalass 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.
- 🔞 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).
- (1) 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.
- 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.
- (4) 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.
- (5) 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.
- (1) 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.
- (→) At Pier 6, West Face near the North Quarter Point, the 1st and 2nd masonry courses have vertical cracks 1/4" wide.
- 13 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.



- vertical crack, hairline to 1/4" wide.
- course and 1/4" wide in the 4th course.
- height x 1/8" wide.
- 18" high x 3/16" wide.
- bands of poor concrete consolidation that measure up to 16" long x 6" to 12" high and 1/2" to 1" deep.
- consolidation 3'-6'' long (East Face) x 4' long (North Face) x 16'' high x 2'' deep.
- the tidal zone and there is a fractured handrail in two locations with one (1) broken post.
- wales at channel bottom.



- (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.
- $(\bar{3})$ 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.
 - x up to 5" deep with rust stains.

- 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.
- \bigodot 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.
- (1) 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.
- () 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).
- G. Concrete stem along the Southwest and Northwest Corners 16'-6" high x 2' wide 🔞 At Pier 8, Southeast corner on the footing, there is an edge spall 2' long x 8" high x 5" deep.

(4) 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.

|Sheet 29 of 60

(5) At Pier 8, in the North and South Noses, there is 50% mortar loss in the joint at masonry/concrete footing interface.

(6) At Pier 8, North Nose at the masonry/concrete interface, there is a void 3'-6" long x 6" high x 8" deep.

(7) 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).

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.

(9) The fender system members in the tidal zone have have minor checks and splits in the tidal zone and a missing section of handrail near the North End of the pedestrian bridge.

(2) The Fender System at the Southwest Corner of Pier 7, has two (2) broken PVC electrical conduits with exposed wires.

 (\mathcal{I}) South side of Pier 7, there are two older timber dolphins in poor condition with end rot up to $90\% \times 6'$ high.

(5) Off of the Southeast Corner of the East Fender System, there is a sunken boat $\pm 48'$ long x up to 20' high off the channel bottom that is a navigational hazard to boat traffic outside of the main channel.



State of Rhode Island **Department of Transportation**

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 Date: 02/09/2024 ROCKY HILL, CT 06067 Scale: N.T.S. (860) 840-2505

Figure No.: 7



Bridge No. 020001 & 020021

Washington Bridge South & Washington Bridge South Pedestrian

Photos





SHEET NO. 30 OF 60

BRIDGE NO. 070001

BRIDGE NO. 020001 & 020021 FLOOD (NORTH) BRIDGE ELEVATION, LOOKING SOUTH





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

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02/09/2024

CAISSON PILE

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

BRIDGE NO. 020001 & 020021 PIER 5, WEST ELEVATION, LOOKING NORTHEAST

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02/09/2024

SHEET NO. 33 OF 60

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

02/09/2024

BRIDGE NO. 020001 & 020021 PIER 5, STEEL ENCASED REINFORCED CONCRETE CAISSON PILE, LOOKING NORTHEAST
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

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



SHEET NO. 37 OF 60

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

BRIDGE NO. 020001 & 020021

PIER 6, WEST ELEVATION, LOOKING NORTHEAST



SHEET NO. 38 OF 60

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4th 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

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SHEET NO. 40 OF 60

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

BRIDGE NO. 020001 & 020021 PIER 6 COLLISION WALL, EAST FACE, 10th STONE FROM THE SOUTHEAST CORNER, LOOKING NORTHWEST

SHEET NO. 41 OF 60

BOTTOM COURSE CRACKED UP TO ¼" WIDE WITH CHIPPED STONE 9" HIGH x 2-1/2"W

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BRIDGE NO. 020001 & 020021 PIER 6 COLLISION WALL, EAST FACE, UNDER MISSING 10th STONE FROM THE SOUTHEAST CORNER, LOOKING WEST

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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

9 10 11 1 2 3 14 15 16 17 1 6

BRIDGE NO. 020001 & 020021 PIER 6 COLLISION WALL, NORTHEAST CORNER AT CHANNEL BOTTOM, LOOKING SOUTHWEST



SHEET NO. 44 OF 60

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

PHOTO NO. 15

BRIDGE NO. 020001 & 020021 PIER 7 COLLISION WALL, WEST FACE NEAR THE SOUTH QUARTERPOINT, LOOKING EAST



SHEET NO. 45 OF 60

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

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BRIDGE NO. 020001 & 020021 PIER 7 COLLISION WALL, SOUTHWEST CORNER, LOOKING NORTHEAST





SHEET NO. 47 OF 60

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

BRIDGE NO. 020001 & 020021

PIER 8, EAST ELEVATION, LOOKING NORTHWEST

VERTICAL CRACKS UP TO ¼" WIDE WITH EDGE SPALLS UP TO 6" LONG x 2" WIDE x 1" DEEP

BRIDGE NO. 020001 & 020021 PIER 8 FOOTING, EAST FACE, 23' FROM THE SOUTH NOSE, LOOKING SOUTHWEST

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

BRIDGE NO. 020001 & 020021

PIER 9, WEST ELEVATION, LOOKING NORTHEAST



SHEET NO. 50 OF 60

BRIDGE NO. 020001 & 020021

NORTHWEST CHANNEL EMBANKMENT, LOOKING NORTHWEST

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SHEET NO. 51 OF 60

AL B

BRIDGE NO. 020001 & 020021 SOUTHWEST CHANNEL EMBANKMENT, LOOKING SOUTHWEST

STONE BLOCK SLOPE PROTECTION

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SHEET NO. 52 OF 60

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BRIDGE NO. 020001 & 020021 DEAD

NORTHEAST CHANNEL EMBANKMENT, LOOKING SOUTH

02/09/2024

BRIDGE NO. 020001 & 020021 SOUTHEAST CHANNEL EMBANKMENT, LOOKING SOUTHEAST



D. 25

BRIDGE NO. 020001 & 020021

CHANNEL LOOKING FLOOD (NORTH)

SHEET NO. 55 OF 60

BRIDGE NO. 020001 & 020021

CHANNEL LOOKING EBB (SOUTH)

SHEET NO. 56 OF 60

02/09/2024

Marin

MEMBERS IN THE TIDAL ZONE HAVE MINOR CHECKS AND SPLITS

BRIDGE NO. 020001 & 020021 WEST FENDER SYSTEM, SOUTH END, LOOKING NORTH

SHEET NO. 57 OF 60

FRACTURED HANDRAIL

BRIDGE NO. 020001 & 020021 WEST FENDER SYSTEM AT PIER 6, SOUTHEAST CORNER, LOOKING NORTHWEST



BRIDGE NO. 020001 & 020021 EAST FENDER SYSTEM, SOUTH END, LOOKING NORTHEAST

SHEET NO. 59 OF 60

TWO (2) BROKEN PVC ELECTRICAL CONDUITS WITH EXPOSED WIRES

BRIDGE NO. 020001 & 020021 EAST FENDER SYSTEM NEAR THE SOUTHWEST CORNER OF PIER 7, LOOKING WEST

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

CONTRACTOR OF THE

BRIDGE NO. 020001 & 020021 TIMBER DOLPHIN ON THE SOUTH SIDE OF PIER 7, LOOKING NORTHWEST

02/09/2024

SHEET NO. 60 OF 60



Bridge No. 020001 & 020021

Washington Bridge South & Washington Bridge South Pedestrian

Appendix A) BrM Element Notes



MPA No. 359 AWARD No. 3674875

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 $\pm 48'$ 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.