RIDOT Bridge Inspection Report

020001
Washington Bridge South

Inspected By AECOM-COMMONWEALTH
Inspector: MATT BROOKS
Inspection Date 07/21/2023

Bridge Condition Fair

IDENTIFICATION

Bridge ID:	020001
NBI Number	Washington Bridge South
Structure Name:	Washington Bridge South
Location (9):	1.0 Mi E of JCT I-95&195
Carries (7):	I-195 EB
Type of Service (42A):	1 Highway
Feature Crossed (6):	SEEKONK RVR & STS
Type of Service (42B):	6 Highway-waterway
Placecode (4):	East Providence
County (3):	Providence
State (1):	44 Rhode Island
Station:	NBI
Region (2):	District 3
Latitude (16):	41.8190048
Longitude (17):	-71.3868191
Owner (22):	01 State Highway Agency
Custodian (21):	01 State Highway Agency

Year Built (27):	1930	Border State:	Not Applicable (P)
Year Recon (106):	2008	Border Number:	
Historical (37):	5 Not eligible for NRHP	% Responsibility:	

INSPECTION

Date of Routine Inspection (90): 7/21/2023
Frequency (91): 24
Next Inspection: 7/21/2025

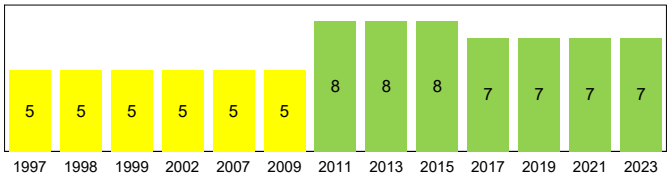
Inspection Type	Freq (92)	Last Insp (93)	Next Insp
Element	24	7/21/2023	7/21/2025
Fracture Critical (A)		1/1/1901	1/1/1901
Underwater (B)	48	7/23/2021	7/21/2025
Special Insp (C)		1/1/1901	1/1/1901

LOAD RATING AND POSTING

Posting Status (41)	A Open, no restriction
Posting % (70):	5 At/Above Legal Loads
Rating Date:	10/7/2019
Design Load (31):	9 MS22.5(HS25)or greater
Opr Method (63):	8 LRFR (HL93)
Opr Rating (64):	35.30 Tons
Inv Method (65):	8 LRFR (HL93)
Inv Rating (66):	27.00 Tons

DECK GEOMETRY

Deck Geometry (68):	4 Tolerable
Deck Area:	119,461.50
Deck Type (107):	1 Concrete-Cast-in-Place
Wearing Surface (108A):	1 Monolithic Concrete
Membrane (108B):	0 None
Deck Protection (108C):	1 Epoxy Coated Reinforci
O. to O. Width (52):	71.50
Curb / Sidewalk Width L (50A):	0.00
Curb / Sidewalk Width R (50B):	0.00
Median (33):	0 No median

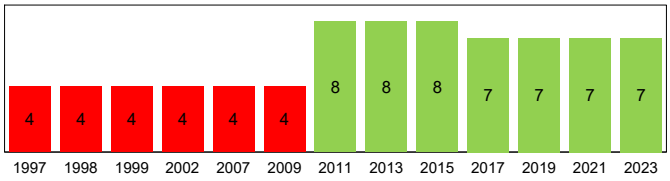


DECK CONDITION

Deck Rating (58):	7 Good
Bridge Rail (36A):	1 Meets Standards
Transition (36B):	1 Meets Standards
Approach Rail (36C):	1 Meets Standards
Approach Rail Ends (36D):	1 Meets Standards

SUPERSTRUCTURE GEOMETRY

# of Main Spans (45):	14
# of Approach Spans (46):	0
Main Material (43 A):	4 Steel Continuous
Main Design (43 B):	02 Stringer/Girder
Max Span Length (48):	160.37
Structure Length (49):	1,670.79
NBIS Length (112):	Long Enough
Temp Structure (103):	Not Applicable (P)
Skew (34):	0
Structure Flared (35):	1 Yes, flared
Parallel Structure (101):	Right of || bridge
Approach Alignment (72):	6 Equal Min Criteria



SUPERSTRUCTURE CONDITION

Superstructure Rating (59):	7 Good
Structure Evaluation (67):	6 Equal Min Criteria

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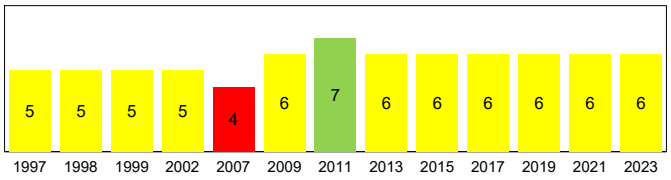
SUBSTRUCTURE GEOMETRY

Navigation Control (38):	Permit Required
Nav Vert Clearance (39):	134.52
Nav Horiz Clearance (40):	321.85
Pier Protection (111):	2 In-Place, Functioning
Lift Bridge Vertical Clearance (116):	
Scour Rating (113):	3 SC - Unstable
Waterway Adequacy (71):	9 Above Desirable



SUBSTRUCTURE CONDITION

Substructure Rating (60):	6 Satisfactory
Channel Rating (61):	6 Bank Slumping

1ST ROUTE UNDER: Gano Street

ROADWAY LOCATION

Pos Prefix (5A):	1st Route Under
Kind of Hwy (5B):	5 City Street
Route Num (5D):	0
LRS Route (13A/B):	
Milepost (11):	
Suffix (5E):	0 N/A (NBI)
Lanes Under (28B):	2
Detour Length (19):	0.00 mi (0.00 km)

ROADWAY CLASSIFICATION

Funct Class (26):	17 Urban Collector
Level Service (5C):	1 Mainline
NHS (104):	0 Not on NHS
Defense Hwy (100):	0 Not a STRAHNET hwy
Toll Facility (20):	3 On free road
ADT (29):	81,000 Cars/Day
Pct Trucks (109):	13.00%
ADT Year (30):	2021

CLEARANCES

Vertical (10):	26.50	
Min Vert Over (53):	17.00	20.75
Vert Ref (54A):	H Hwy beneath struct	
Horizontal (47):	89.00	
Min Lat Left (56):	0.00	
Min Lat Right (55B):	14.50	
Horiz Ref (55A):	H Hwy beneath struct	
Underclearance (69):	9 Above Desirable	

2ND ROUTE UNDER: Water Street

ROADWAY LOCATION

Pos Prefix (5A):	2nd Route Under
Kind of Hwy (5B):	5 City Street
Route Num (5D):	0
LRS Route (13A/B):	
Milepost (11):	
Suffix (5E):	0 N/A (NBI)
Lanes Under (28B):	2
Detour Length (19):	0.00 mi (0.00 km)

ROADWAY CLASSIFICATION

Funct Class (26):	19 Urban Local
Level Service (5C):	1 Mainline
NHS (104):	0 Not on NHS
Defense Hwy (100):	0 Not a STRAHNET hwy
Toll Facility (20):	3 On free road
ADT (29):	81,000 Cars/Day
Pct Trucks (109):	13.00%
ADT Year (30):	2021

CLEARANCES

Vertical (10):	27.17	
Min Vert Over (53):	17.00	20.75
Vert Ref (54A):	H Hwy beneath struct	
Horizontal (47):	27.50	
Min Lat Left (56):	0.00	
Min Lat Right (55B):	14.50	
Horiz Ref (55A):	H Hwy beneath struct	
Underclearance (69):	9 Above Desirable	

3RD ROUTE UNDER: Waterfront Drive

ROADWAY LOCATION

Pos Prefix (5A):	3rd Route Under
Kind of Hwy (5B):	5 City Street
Route Num (5D):	0
LRS Route (13A/B):	
Milepost (11):	
Suffix (5E):	0 N/A (NBI)
Lanes Under (28B):	2
Detour Length (19):	0.00 mi (0.00 km)

ROADWAY CLASSIFICATION

Funct Class (26):	19 Urban Local
Level Service (5C):	2 Alternate
NHS (104):	0 Not on NHS
Defense Hwy (100):	0 Not a STRAHNET hwy
Toll Facility (20):	3 On free road
ADT (29):	81,000 Cars/Day
Pct Trucks (109):	13.00%
ADT Year (30):	2021

CLEARANCES

Vertical (10):	20.75	
Min Vert Over (53):	17.00	20.75
Vert Ref (54A):	H Hwy beneath struct	
Horizontal (47):	35.50	
Min Lat Left (56):	0.00	
Min Lat Right (55B):	14.50	
Horiz Ref (55A):	H Hwy beneath struct	
Underclearance (69):	9 Above Desirable	

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ROUTE ON STRUCTURE: I-195 EASTBOUND

ROADWAY LOCATION		ROADWAY CLASSIFICATION		CLEARANCES		
Pos Prefix (5A):	Route On Structure	**Funct Class (26):**	11 Urban Interstate	**Vertical (10):**	99.99	
Kind of Hwy (5B):	1 Interstate Hwy	**Level Service (5C):**	1 Mainline	**Min Vert Over (53):**	17.00	20.75
Route Num (5D):	00195	**NHS (104):**	1 On the NHS	**Vert Ref (54A):**	H Hwy beneath struct	
LRS Route (13A/B):	6600/00	**Defense Hwy (100):**	1 On Interstate STRAHNET	**Horizontal (47):**	83.80	
Milepost (11):	1.43 mi (2.30 km)	**Toll Facility (20):**	3 On free road	**Min Lat Left (56):**	0.00	
Suffix (5E):	2 East	**ADT (29):**	81,000 Cars/Day	**Min Lat Right (55B):**	14.50	
Lanes On (28A):	5	**Pct Trucks (109):**	13.00%	**Horiz Ref (55A):**	H Hwy beneath struct	
Detour Length (19):	1.90 mi (3.06 km)	**ADT Year (30):**	2021	**Underclearance (69):**	9 Above Desirable	

BRIDGE NOTES

Orientation: The Bridge runs West to East, with the spans and piers numbered from West to East. The girders are labeled A through J from North to South in each span. In the Southeast corner of Span 14, there are two additional kicker beams, Kicker Beams K and L, supporting the Exit 4 ramp. The interior diaphragms are numbered from West to East, starting again from 1 in each span.

EQUIPMENT REQUIRED: 60' Manlift, Barge with 60' Manlift for spans over water, Local Police, Traffic Control, and Crash Truck.

TRAFFIC CONTROL INFORMATION: Need traffic control for work in Span 1 over Gano Street, Span 14 over Waterfront Drive and Water Street and for the topside inspection.

POLICE DETAIL NEEDED: Need police detail for work in Span 1 over Gano Street, Span 14 over Waterfront Drive, and for the topside inspection.

INSPECTION NOTES

Routine Inspection Completed by Commonwealth Engineers and Consultants, Inc.
Team Leaders: Matt Brooks, Niverio Carvalho, P.E.
Team Members: Fernando Faria, Devin Patton
Final Inspection Date: 7/21/23
Weather: Varied from Rainy/cloudy - 72 degrees Fahrenheit to sunny - 85 degrees Fahrenheit

The scope of work was to perform a routine inspection of the bridge.

No significant changes in the condition of the structure were observed during this inspection, and therefore the NBI condition ratings remain unchanged:

Deck (58) – 7 Good
Superstructure (59) – 7 Good
Substructure (60) – 6 Satisfactory

During the previous Routine Inspection that was completed on 7/23/2021 numerous cross frame welded connection plates to the girders were reported to have defects consisting of incomplete fusion. These “defects” were previously reported to RIDOT and dye penetrant testing was performed on select welds to check for cracks . The tests did not revealed any cracks.

RIDOT made archived fabrication reports and welding reports available for review , however none of these reports mentioned any type of defects to the diaphragm welds. In these reports the summaries to the diaphragm welds stated that the “welding was within approved procedure” or “Welding was within W 33 parameters”. Due to the fact that some of these “weld defects” are located at the painted over girder ends, this indicates that the welds were there during fabrication prior to painting of the girders.

During this routine inspection these previously noted weld area “defects” were visually inspected and observed not to have changed since the previous inspection. Comparison to previous inspections reports, indicates that the “defects” were perhaps undercut weld areas which required additional passes to achieve the minimum weld size required during fabrication.

These weld locations should, however, continue to be monitored for cracks or change in condition during future inspections. Refer to Item 107 and attachment "020001 Table 2 - Weld Defects.pdf" for a detailed description and locations of weld “defects”.

Utilities - In Span 2, Bay G, there are three drain pipes through the concrete deck that exhibit rust. On the exterior face of the South Railing at Pier 9, the electrical conduit flexible coupling at the joint is torn and detached (See photo 103). In Span 12, there is a cable secured along Interior Diaphragm 2 in Bays A through H. The conduit mounted to the underside of Girder G in Span 14 near Interior Diaphragm 3 exhibits moderate rust on the North end.

Under bridge Lights – There are four lights over Waterfront Drive which were on during the inspection and three lights over Water Street which were off during the inspection .

Light Standards – There are ten lights spaced evenly along the north and south side of the bridge . Most of the lights were not on at the time of the inspection and it is unknown if they function. Refer to attachment "020001 Table 3 - Lighting Standard Defects.pdf" (See photos 11, 15 and 17).

There are areas of construction debris/equipment that is for the ongoing construction work for adjacent Br. 070001 that is being stored under Br. 020001 (See photos 113, 114, 117, 118 and 121).

2021 Underwater Inspection Notes:

Fender System – There is a timber fender system in place along the East side of Pier 6 and the West side of Pier 7. The timber fender system members exhibit minor splits and checking along with damaged or missing handrails (See photo 81). The dolphin pile groups at the South (downstream) end of the fenders exhibit no significant

defects.

Navigational Lighting – The navigational lighting system in place exhibits no significant deficiencies . However, the lights were not on at the time of the inspection.

Channel Debris – There are no obstructions or debris accumulation which would affect the hydraulic opening at the bridge.

Elm/Env	Description	Total Qty	% in 1	Qty. St. 1	% in 2	Qty. St. 2	% in 3	Qty. St. 3	% in 4	Qty. St. 4
12/3	Re Concrete Deck	119,494.0	0%	1.00	100%	119,493.00	0%	0.00	0%	0.00
1080/3	Delamination/Spall/Patched Area	1.00	0%	0.00	100%	1.00	0%	0.00	0%	0.00
1120/3	Efflorescence/Rust Staining	1.00	0%	0.00	100%	1.00	0%	0.00	0%	0.00
1130/3	Cracking (RC and Other)	1.00	100%	1.00	0%	0.00	0%	0.00	0%	0.00
1190/3	Abrasion(PSC/RC)	119,491.00	0%	0.00	100%	119,491.00	0%	0.00	0%	0.00
8382/3	Stay-in-Place Form	97,500.00	96%	93,375.00	4%	4,125.00	0%	0.00	0%	0.00
107/3	Steel Opn Girder/Beam	16,364.00	100%	16,334.00	0%	24.00	0%	6.00	0%	0.00
515/3	Steel Protective Coating	247,490.00	98%	242,490.00	2%	5,000.00	0%	0.00	0%	0.00
1000/3	Corrosion	15.00	0%	0.00	100%	15.00	0%	0.00	0%	0.00
1020/3	Connection	12.00	0%	0.00	50%	6.00	50%	6.00	0%	0.00
7000/3	Damage	3.00	0%	0.00	100%	3.00	0%	0.00	0%	0.00
205/3	Re Conc Column	39.00	100%	39.00	0%	0.00	0%	0.00	0%	0.00
8368/3	Graffiti	1,190.00	100%	1,190.00	0%	0.00	0%	0.00	0%	0.00
210/3	Re Conc Pier Wall	587.00	50%	293.00	50%	292.00	0%	2.00	0%	0.00
1080/3	Delamination/Spall/Patched Area	3.00	0%	0.00	100%	3.00	0%	0.00	0%	0.00
1120/3	Efflorescence/Rust Staining	1.00	0%	0.00	100%	1.00	0%	0.00	0%	0.00
1130/3	Cracking (RC and Other)	472.00	62%	293.00	38%	179.00	0%	0.00	0%	0.00
1190/3	Abrasion(PSC/RC)	10.00	0%	0.00	80%	8.00	20%	2.00	0%	0.00
4000/3	Settlement	1.00	0%	0.00	100%	1.00	0%	0.00	0%	0.00
6000/3	Scour	100.00	0%	0.00	100%	100.00	0%	0.00	0%	0.00
8368/3	Graffiti	3,240.00	0%	0.00	100%	3,240.00	0%	0.00	0%	0.00
215/3	Re Conc Abutment	171.00	98%	168.00	2%	3.00	0%	0.00	0%	0.00
1080/3	Delamination/Spall/Patched Area	2.00	0%	0.00	100%	2.00	0%	0.00	0%	0.00
1120/3	Efflorescence/Rust Staining	1.00	0%	0.00	100%	1.00	0%	0.00	0%	0.00
1130/3	Cracking (RC and Other)	168.00	100%	168.00	0%	0.00	0%	0.00	0%	0.00
220/3	Re Conc Pile Cap/Ftg	218.00	99%	216.00	1%	2.00	0%	0.00	0%	0.00
1190/3	Abrasion(PSC/RC)	218.00	99%	216.00	1%	2.00	0%	0.00	0%	0.00
225/3	Steel Pile	6.00	100%	6.00	0%	0.00	0%	0.00	0%	0.00
1000/3	Corrosion	1.00	100%	1.00	0%	0.00	0%	0.00	0%	0.00
234/3	Re Conc Pier Cap	920.00	99%	909.00	1%	11.00	0%	0.00	0%	0.00
1080/3	Delamination/Spall/Patched Area	2.00	0%	0.00	100%	2.00	0%	0.00	0%	0.00
1120/3	Efflorescence/Rust Staining	1.00	0%	0.00	100%	1.00	0%	0.00	0%	0.00
1130/3	Cracking (RC and Other)	917.00	99%	909.00	1%	8.00	0%	0.00	0%	0.00
300/3	Strip Seal Exp Joint	68.00	0%	0.00	34%	23.00	66%	45.00	0%	0.00
2340/3	Seal Cracking	45.00	0%	0.00	0%	0.00	100%	45.00	0%	0.00
2350/3	Debris Impaction	23.00	0%	0.00	100%	23.00	0%	0.00	0%	0.00
301/3	Pourable Joint Seal	161.00	100%	161.00	0%	0.00	0%	0.00	0%	0.00
303/3	Assem Jnt With Seal	220.00	0%	0.00	81%	178.00	0%	0.00	19%	42.00
2340/3	Seal Cracking	42.00	0%	0.00	0%	0.00	0%	0.00	100%	42.00
2350/3	Debris Impaction	178.00	0%	0.00	100%	178.00	0%	0.00	0%	0.00
321/3	Re Conc Approach Slab	2,212.00	26%	582.00	74%	1,630.00	0%	0.00	0%	0.00
510/3	Wearing Surfaces	782.00	62%	482.00	38%	300.00	0%	0.00	0%	0.00

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Elm/Env	Description	Total Qty	% in 1	Qty. St. 1	% in 2	Qty. St. 2	% in 3	Qty. St. 3	% in 4	Qty. St. 4
3220/3	Crack (Wearing Surface)	170.00	0%	0.00	100%	170.00	0%	0.00	0%	0.00
1130/3	Cracking (RC and Other)	100.00	100%	100.00	0%	0.00	0%	0.00	0%	0.00
1190/3	Abrasion(PSC/RC)	1,160.00	0%	0.00	100%	1,160.00	0%	0.00	0%	0.00
331/3	Re Conc Bridge Railing	3,318.00	100%	3,317.00	0%	0.00	0%	1.00	0%	0.00
1130/3	Cracking (RC and Other)	3,309.00	100%	3,309.00	0%	0.00	0%	0.00	0%	0.00
7000/3	Damage	9.00	89%	8.00	0%	0.00	11%	1.00	0%	0.00
8060/3	Scupper	26.00	31%	8.00	4%	1.00	27%	7.00	38%	10.00
8107/3	Steel Opn Girder/Beam END	310.00	100%	310.00	0%	0.00	0%	0.00	0%	0.00
515/3	Steel Protective Coating	3,710.00	100%	3,710.00	0%	0.00	0%	0.00	0%	0.00
8213/3	R/C Return Wall	70.00	100%	70.00	0%	0.00	0%	0.00	0%	0.00
1130/3	Cracking (RC and Other)	70.00	100%	70.00	0%	0.00	0%	0.00	0%	0.00
8218/3	Backwall, All Types	171.00	98%	168.00	1%	1.00	1%	2.00	0%	0.00
1080/3	Delamination/Spall/Patched Area	2.00	0%	0.00	0%	0.00	100%	2.00	0%	0.00
1120/3	Efflorescence/Rust Staining	1.00	0%	0.00	100%	1.00	0%	0.00	0%	0.00
1130/3	Cracking (RC and Other)	168.00	100%	168.00	0%	0.00	0%	0.00	0%	0.00
8316/3	Isolation Bearing	172.00	18%	31.00	75%	129.00	7%	12.00	0%	0.00
1000/3	Corrosion	4.00	0%	0.00	100%	4.00	0%	0.00	0%	0.00
1020/3	Connection	57.00	0%	0.00	79%	45.00	21%	12.00	0%	0.00
2220/3	Alignment	38.00	0%	0.00	100%	38.00	0%	0.00	0%	0.00
2230/3	Bulging, Splitting or Tearing	2.00	0%	0.00	100%	2.00	0%	0.00	0%	0.00
2240/3	Loss of Bearing Area	40.00	0%	0.00	100%	40.00	0%	0.00	0%	0.00
8370/3	Steel Diaphragms	805.00	100%	804.00	0%	1.00	0%	0.00	0%	0.00
515/3	Steel Protective Coating	24,200.00	100%	24,200.00	0%	0.00	0%	0.00	0%	0.00
1020/3	Connection	1.00	0%	0.00	100%	1.00	0%	0.00	0%	0.00

ELEMENT NOTES

ELEM	ELEMENT NAME	ENV	QUANTITY	UNITS	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
12	Re Concrete Deck	3	119,494.00	sq.ft	1.00	119,493.00	0.00	0.00

The top of the grooved reinforced concrete deck is bare, with no wearing surface. The top of the deck was observed to have wheel line rutting, minor sand/debris accumulation, transverse and longitudinal cracks, minor wear, and spalling/minor scaling throughout (See photos 2, 3, 7, 8, 12, 14, 19, 21, 22 and 23). The underside of the deck is covered with stay-in-place forms except for in Bay G and both overhangs. The forms were observed to have areas of light to heavy rust and corrosion with isolated areas of section loss (See photos 46, 57, 69, 71, 79, 86, 98, 109, 110, 111, 112, 116, 120 and 130). The exposed portions of the deck underside were observed to have transverse cracks with and without efflorescence, isolated spalls/scaling and anchor bolt holes (See photos 39, 53, 96, 99 and 131).

1080	Delamination/Spall/Patched Are3		1.00	sq.ft	0.00	1.00	0.00	0.00

Top of Deck:

At the West Abutment in the header adjacent to the pourable joint seal there is a 6” long x 2’ wide x 2” deep spall and two (2) spalls measuring up to 6” wide x 1’ long x 1” deep (See photos 2 and 3).

In Span 5 adjacent to the pier #4 joint in the right lane there is a 1’-3” wide x 3” long x 1” deep spall (See photo 12).

In Span 11 there is a small concrete repair patch with light map cracking (See photo 19).

At the East Abutment in the header adjacent to the pourable joint there are two (2) bituminous patches and a spall up to 1” deep (See photos 22 and 23).

Underside of Deck:

The exposed deck underside throughout Bay G was observed to have evenly spaced anchor bolt holes near Girder G. Some of these holes have been filled while others have not. Some have exposed anchor bolts hanging out of the holes (See photo 39)

Span 4 – In Bay G at Pier #4 there is a 3” long x 8” wide x 1” deep spall along the cold joint (See photo 53).

Span 13- in Bay G near the 1st intermediate diaphragm there is a 3’-6” wide x 2’-5” wide x ½” deep area of spalling/scaling.

Span 14 – In Bay G along the longitudinal cold joint the deck was observed to have areas of chipping concrete (See photo 131).

1120	Efflorescence/Rust Staining	3	1.00	sq.ft	0.00	1.00	0.00	0.00

Underside of Deck:

The underside of the exposed deck in Bay G and both overhangs were observed to have scattered transverse hairline cracks with and without efflorescence (See photos 39, 99 and 131).

Throughout the underside of Bay G there are evenly spaced anchor bolt holes near Girder G, some of the holes show signs of leakage.

The following locations were observed to have minor leakage along the longitudinal deck joint in Bay G:

West Abutment #1
Span 4 at Pier #4 (See photo 53).
Span 9 at Pier #9 (See photo 96).

1130	Cracking (RC and Other)	3	1.00	sq.ft	1.00	0.00	0.00	0.00

The top of the exposed deck was observed to have full width hairline cracks spaced every 2’to 3’ in all spans. There are also areas of moderate to wide transverse and longitudinal cracks scattered throughout (See photos 7, 8 and 14).

Underside of Deck:

The exposed deck underside in Bay G was observed to have scattered transverse hairline cracks spaced 3’ to 6’ apart throughout the bridge (See photos 39 and 131).

The underside of both overhangs was observed to have scattered cracks with and without efflorescence, some of these cracks extend onto the vertical face of the barriers (See photo 99).

1190	Abrasion(PSC/RC)	3	119,491.00	sq.ft	0.00	119,491.00	0.00	0.00

The exposed top of deck was observed to have light to heavy wear scattered throughout, minor chips in the concrete and isolated scrapes (See photos 14 and 21).

8382	Stay-in-Place Form	3	97,500.00	sq.ft	93,375.00	4,125.00	0.00	0.00

Underside of Deck:

There are stay-in-place forms in all bays except for Bay G throughout the bridge. The forms were observed to have scattered areas of light to heavy rust/corrosion, mainly at the interfaces between the adjacent form sections, especially in Bays A and I. Areas of rust cover up approximately 5% of the bay area in several spans (See photos 46, 57, 69, 71, 79, 86, 98, 109, 110, 111, 112, 116, 120 and 130).

In Span 5, Bay I near Pier 4, the drain connection to the deck exhibits moderate rust and the stay-in-place form around the connection exhibits corrosion.

In Span 6, Bay A near Pier 5, the drain connection to the deck exhibits moderate rust and the stay-in-place form around the connection exhibits corrosion (See photo 69).

In Span 11, Bay A, near Interior Diaphragm 2, the stay-in-place form exhibits a 1'-6" long x 4' wide area of up to 100% section loss (See photo 110).

In Span 11, Bay I at Pier 12, the drain connection to the deck exhibits moderate to heavy rust and the stay-in -place form around the connection exhibits light corrosion/rust (See photo 111).

In Span 14, Bay F, near Interior Diaphragm 3, the stay-in-place form exhibits a 1' long x 3' wide area of rust.

ELEM	ELEMENT NAME	ENV	QUANTITY	UNITS	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
107	Steel Opn Girder/Beam	3	16,364.00	ft	16,334.00	24.00	6.00	0.00

The superstructure consists of ten weathering steel plate girders, continuous over all piers except Piers 4 and 9. Span 14 is splayed at the East Abutment, with two rolled section kicker beams that support the flared section of deck along the South side of the bridge (See photo 130). At various locations along the girders, primarily at connection points between the diaphragms and girders, there are weld areas that were previously reported as weld defects (See photos 138 through 142). These defects were listed as incomplete fusion. These weld defects have not changed since the previous routine inspection, which was completed on 7/23/21. During the previous routine inspection dye penetrant tests were performed on several of the defective welds to determine if the welds had cracked, and all test results indicated that no cracks were present. For specific locations of weld defects, see attachment "020001 Table 2 - Weld Defects.pdf". These locations should be continued to be monitored in future inspections. There are several locations of concrete overpour on the girder webs and bottom flanges throughout the bridge (See photos 45, 94 and 119). Additionally, the girders typically exhibit a gap between webs at the field splice locations. At random locations throughout the Bridge, the girders exhibit 1/8" high bends in the bottom flanges and a few locations with up to 3/4" high bends (See photos 44 and 94). The following locations exhibit minor defects as follows: There are scattered locations of mis-drilled/unused holes throughout the girders. Spans 4 and 5, Girders A and J - Girders do not exhibit the positive camber exhibited by adjacent girders and same girders in other spans. Span 11, Girders A, B and C - Girders do not exhibit the positive camber exhibited by adjacent girders and same girders in other spans, as previously noted in the 2015 Routine Inspection.

515	Steel Protective Coating	3	247,490.00	sq.ft	242,490.00	5,000.00	0.00	0.00

Bridge Condition Fair

The weathering steel girders exhibit a normal surface patina with some scattered areas of yellow to orange rust, most common along the top flanges, with isolated locations of patina not forming (See photo 95).

The end 8' to 11' of the girders are painted below the deck joints at the abutments and at Piers #4 and #9. The painted girder ends have isolated locations of chipped, peeling and bubbling paint.

Specific coating deficiencies are as follows:

Span 1, West Abutment, Girder A - Bottom flange exhibits a 1'-6" long x 9" wide area of peeling/bubbling paint (top and underside of flange) extending 4” high on the North Face of the web.

Span 5, Pier 5, Girder A, North Face - Girder exhibits inconsistent coating.

Span 10, Pier 9, Girder G and Girder H - Backside of bearing stiffeners not painted.

Span 12 - Several girders exhibit scattered areas of orange rust.

Span 14, Girder G, near Intermediate Diaphragm 1 - Splice plate exhibits loss of oxidized coating.

1000	Corrosion	3	15.00	ft	0.00	15.00	0.00	0.00

In all spans, Girder A exhibits scattered light areas of laminar rust on the North side and underside of the bottom flange.

In Span 1, the underside of the bottom flange of Girder B has minor laminar rust (See photo 32).

In Span 2, both faces of Girder A at the splice exhibits rust along the bottom flange (See photo 36).

In Span 3, Girder A at the field splice exhibits laminar rust at the base of the girder web (See photo 43). Between Interior Diaphragms 4 and 5, Girder H exhibits 4' long x full width area of laminar rust on the underside of the bottom flange that continues 14' long x 3" high onto the North Face of the web. Girder I at the field splice exhibits rust along the bottom flange splice plate.

In Span 4 at the West field splice, Girder A exhibits 3" high x 1/16" thick laminated rust to the bottom of the web (See photo 51). Near Pier 4, Girder J exhibits corrosion and flaking to the underside of the bottom flange.

In Span 5 at the field splice, Girder A exhibits laminated rust up to 1/16" thick at base of the web and bottom flange around the splice plates and laminated rust to the underside of the splice plate and bolts (See photo 62). On the South Face of Girder H, the top flange exhibits moderate rust between Interior Diaphragms 1 and 2.

In Span 6 , the underside of Girder A near Pier #5 was observed to have laminar rust that extends from the pier to the field splice (See photo 70).

In Span 7, the North Face of Girder A exhibits areas of laminar rust at the base of the web up to 3" high near the West and East Field Splices. The South Face of Girder A also exhibits minor laminar rust on the splice plates at the West Field Splice.

In Span 8 from Pier 8 to the East Field Splice, Girder A exhibits laminated rust along the underside of the bottom flange (See photo 84).

In Span 11 between Interior Diaphragms 1 and 2, Girder A exhibits a 7'-0" long x full height area of moderate to heavy rust/corrosion on both flanges and the web (See photos 108 and 110). Between Interior Diaphragms 2 and 4, Girders A and B exhibit minor to moderate rust.

In Span 13, the North Face of Girder A at the field splice exhibits 3” high x 4’ long x up to 1/8" deep section loss along the bottom of the web.

In Span 14, Girder A at the West field splice was observed to have a 4' long x 3" high area of rust on the girder web (See photo 125). The North Face of Girder A at the East field splice has a 6' long x 4” high x 1/16" deep area of section loss along the bottom of the web (See photo 126).

1020	Connection	3	12.00	ft	0.00	6.00	6.00	0.00

In Span 4 at the Girder F field splice, a bolt head on the bottom flange is not flush with the splice plate (See photo 52).

In Span 7, Girder G exhibits three (3) missing bolts in the bottom flange splice plate of the West Field Splice (See photo 77) and one missing bolt in the bottom flange splice plate at the East Field Splice (See photo 78).

In Span 8, on the North Face of Girder G at the East field splice, the splice plate on top of the bottom flange is bent up to 1/8” high (See photo 85).

In Span 9, at the Girder A field splice, there is one loose and undersized bolt in the bottom flange (See photo 93).

In Span 14, on the North Face of Girder B at the field splice - One nut is backed off at the top flange splice plate (See photo 127).

7000	Damage	3	3.00	ft	0.00	3.00	0.00	0.00

Span 2, Girder I, near Interior Diaphragm 3 - Bottom flange is bent upward 3/4" high over a 2' length (See photo 38).

Span 2, Girder J near Interior diaphragm 3 – the bottom flange is bent slightly upwards (See photo 37).

Span 14, Girder B, South face, between Interior Diaphragms 3 and 4 - 2" long x 1/4" high gouge in bottom edge of bottom flange (See photo 128).

ELEM	ELEMENT NAME	ENV	QUANTITY	UNITS	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
205	Re Conc Column	3	39.00	each	39.00	0.00	0.00	0.00

There are three (3) reinforced concrete columns at each pier. Column A (north column) is supported on an independent drilled shaft while columns B and C (center and south columns) are supported by a reinforced concrete pier wall with a stone masonry façade that was part of the original structure (See photos 40, 47, 50, 58, 60, 64, 67, 72, 74, 80, 82, 83, 87, 88, 100, 104, 106, 107, 113, 114, 117, 118, 121 and 123).

8368	Graffiti	3	1,190.00	each	1,190.00	0.00	0.00	0.00

The columns were observed to have areas of graffiti, especially at the piers on land (See photos 50, 80, 82, 83, 87, 106, 107, 113, 114, 117, 118, 121 and 123).

ELEM	ELEMENT NAME	ENV	QUANTITY	UNITS	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
210	Re Conc Pier Wall	3	587.00	ft	293.00	292.00	2.00	0.00

The reinforced concrete pier walls are part of the original structure and support columns B and C. The piers were observed to have a stone masonry façade from below the water surface to the top of the pier wall. There are scattered areas of missing mortar between masonry stones and random cracked stones (See photos 47, 50, 58, 60, 64, 67, 72, 74, 80, 82, 83, 87, 88, 100, 104, 106, 107, 113, 114, 117, 118, 121 and 123). Note that there is vagrant debris at the base of Pier #6 and #7 (See photo 83). Since much of the pier walls are below the water line, information from the 2021 Underwater Inspection has been included below. For detailed descriptions of underwater deficiencies and related photos, see the 2021 Underwater Inspection Report. Notes from the 2021 Underwater Inspection: The reinforced concrete pier walls are part of the original I-195 Eastbound structure and support Columns B and C and support the arches (Arches E and F) along with the Pedestrian / Bike Path Bridge (Br. No. 020021). For the Underwater Inspection, the pier wall for Bridge No. 020001 and Bridge No. 020021 was 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 3" to 6" deep between the stones, cracked stones and missing stones. The piers also exhibit intermittent areas of footing/pile cap exposure with minor abrasion of the concrete.

1080	Delamination/Spall/Patched Are	3	3.00	ft	0.00	3.00	0.00	0.00

At Pier 6 there are intermittent voids up to 3'-0" long x 6" high x 6" deep along the interface of the stone facade and the concrete pier wall. There is a missing stone 2'-0" long x 2-1/2" high on the East Face (See photo 75).

At Pier 7 on the West Face, there is a missing stone 3'-6" long x 5'-0" high (See photo 81).

At Pier 10, there is a spall 1'-0" high x 1'-0" wide x 2" deep on top of the southwest corner of the pier wall.

1120	Efflorescence/Rust Staining	3	1.00	ft	0.00	1.00	0.00	0.00

At Pier 13 there are two full height x up to 1/16" wide cracks with moderate efflorescence, one on the West Face and one on the East Face.

1130	Cracking (RC and Other)	3	472.00	ft	293.00	179.00	0.00	0.00

The pier walls typically exhibit scattered vertical hairline cracks. Wider and more extensive cracking is present as follows:

Pier #6 - On the west face of the pier near the north end there is a full-height crack in the stone (See photos 72 and 73).

Pier #9 – The top face and west face between columns B and C were observed to have widespread areas of map cracking throughout (See photo 101).

Pier #10 – South of column C there are three (3) full-width x 1/8” wide transverse cracks across the top of the pier wall that extends down the vertical faces of the wall. There is also a 3’ high x 1/8” wide vertical crack on the northwest corner.

Pier #12 – On the west face below Girder I there is a full height hairline crack. On the east face there is a full height x 1/16” wide crack between columns B and C.

1190	Abrasion(PSC/RC)	3	10.00	ft	0.00	8.00	2.00	0.00

Notes from the 2021 Underwater Inspection have been retained below:

The piers typically exhibit abrasion up to 1/2" deep throughout the exposed reinforced concrete below the stone facade and isolated areas of poor consolidation/section loss up to 1" deep. Specific locations of abrasion on the exposed reinforced concrete are as follows:

At Pier 5 there is a band of scaling full width x 3'-0” high x up to 3/4” deep across the North nose.

At Pier 7 there are various locations of scaling/section loss typically between 2-1/2" to 3-1/2 " deep on all four faces of the pier near the channel bottom, and up to 5" deep along the Southwest corner.

4000	Settlement	3	1.00	ft	0.00	1.00	0.00	0.00

On Piers 9, 10 and 12 there are some medium to wide vertical cracks in the pier walls, however no signs of settlement were observed (See photo 101).

Notes from the 2021 Underwater Inspection have been retained below:

At Pier 7, on both the West and East Faces of the pier, there are up to 1/4" wide vertical cracks extending from the top of the stone masonry facade down to the channel bottom near the midpoint of the pier wall, which may indicate slight settlement of the pier, as previously noted in the 2017 Underwater Inspection Report.

6000	Scour	3	100.00	ft	0.00	100.00	0.00	0.00

Notes from the 2021 Underwater Inspection have been retained below:

Since the 2017 Underwater Inspection, the exposure of the pile caps has remained relatively unchanged, with the exception of Pier 8. The pile cap exposure at Pier 8 has increased 1'-6" vertically and there is seal exposure up to 1-3" high. The previously noted exposure of the steps/pile caps at Piers 4 and 5 has remained relatively unchanged, there is no pile cap exposure observed at Piers 6 and 7, and the pile cap at Pier 9 has become exposed along the West side of the pier.

8368	Graffiti	3	3,240.00	ft	0.00	3,240.00	0.00	0.00

The pier walls that are on land were observed to have areas of graffiti (See photos 50, 80, 82, 83, 101, 104, 106, 107, 113, 114, 117, 118, 121 and 123).

ELEM	ELEMENT NAME	ENV	QUANTITY	UNITS	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
215	Re Conc Abutment	3	171.00	ft	168.00	3.00	0.00	0.00

West Abutment #1 is shared between Bridge 020001 and Bridge 070001 to the north, and East Abutment #2 is shared between Bridge 020001 and adjacent Bridge 020021 to the south. Both Abutments were observed to have random hollow areas, minor spalls, hairline cracks with and without efflorescence (See photos 29, 132 and 133). There are locations of bird debris and construction debris on the West Abutment #1 beam seat (See photos 30 and 31) and the East Abutment #2 beam seat (See photo 136).

1080	Delamination/Spall/Patched Are	3	2.00	ft	0.00	2.00	0.00	0.00

On the north face of East Abutment #2 there is an 11” wide x 30” high x 7” deep spall with an adjacent full-height x 12” wide hollow area (See photo 133).

1120	Efflorescence/Rust Staining	3	1.00	ft	0.00	1.00	0.00	0.00

At the west abutment there are scattered vertical and diagonal cracks, most of which have been sealed. There are random areas of hairline map cracking along the top 10’ of the abutment face. There is a 20’ long horizontal hairline crack with efflorescence (See photo 29)

At the East Abutment, below Bay D there is a 3'-0" long horizontal crack with efflorescence at mid-height and two 5'-0" long diagonal cracks with efflorescence near the base. Below Bays D and F, there are repaired diagonal cracks with efflorescence near the base. Below Girder J in Bay I, there is a 2'-6" long diagonal crack with efflorescence and rust staining at the base. From below Bay J to the South end, there is efflorescence along the horizontal construction joint at the base (See photo 132).

1130	Cracking (RC and Other)	3	168.00	ft	168.00	0.00	0.00	0.00

At the west abutment there are scattered vertical and diagonal cracks, most of which have been sealed. There are random areas of hairline map cracking along the top 10’ of the abutment face. There is a 20’ long horizontal hairline crack with efflorescence (See photo 29)

East Abutment has several areas of repaired diagonal hairline cracks with and without efflorescence and scattered hairline cracks with and without efflorescence (See photo 132).

ELEM	ELEMENT NAME	ENV	QUANTITY	UNITS	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
220	Re Conc Pile Cap/Ftg	3	218.00	ft	216.00	2.00	0.00	0.00

At Pier #10 there is an area of erosion at the northwest corner of the wall that exposes an approximately 22’ long portion of the pile cap (See photo 106). For the piers in the water, information from the 2021 Underwater Inspection has been included below. For detailed descriptions of underwater deficiencies and related photos, see the 2021 Underwater Inspection Report. 2021 Underwater Inspection: The pier walls are founded on reinforced concrete pile caps with unknown type piles. The sloped concrete step/pile cap steps out 1'-6" to 2’-0" from the pier face then slopes downward at a 45° angle. At the Southeast corner of Pier 8, there are two timber piles protruding up through the pile cap.

1190	Abrasion(PSC/RC)	3	218.00	ft	216.00	2.00	0.00	0.00

Notes for the 2021 Underwater Inspection have been retained below:

The pile caps exhibit abrasion up to 1/2" deep on the exposed surfaces.

At Pier 8, the sloped concrete step/pile cap exhibits an area of section loss 2'-0" long x 8" high x 5” deep on the East Face of the pier, located 5’ from the southeast corner.

ELEM	ELEMENT NAME	ENV	QUANTITY	UNITS	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
225	Steel Pile	3	6.00	each	6.00	0.00	0.00	0.00

This element can only be evaluated from underwater, therefore information from the 2021 Underwater Inspection has been included below. For detailed descriptions of underwater deficiencies and related photos, see the 2021 Underwater Inspection Report. 2021 Underwater Inspection: This element shall be used to rate the condition of the steel encased reinforced concrete caisson piles at the North (upstream) end of the piers. Over the steel casing at the caisson piles, there is a fiberglass jacket in place that extends 13'-6" down from the underside of the concrete cap section, which has no significant deficiencies.

1000	Corrosion	3	1.00	each	1.00	0.00	0.00	0.00

2021 Underwater Inspection Notes:

At Piers 4 through 9, the steel casing at the caisson piles exhibits minor corrosion with pitting up to 1/16" deep below the fiberglass jackets.

ELEM	ELEMENT NAME	ENV	QUANTITY	UNITS	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
234	Re Conc Pier Cap	3	920.00	ft	909.00	11.00	0.00	0.00

There are reinforced concrete pier caps at each pier that were observed to have minor spalls and randomly spaced cracks (See photos 34, 40, 41, 47, 48, 58, 60, 64, 65, 67, 72, 74, 80, 82, 87, 88, 89, 91, 100, 104, 106, 107, 113, 114, 117, 118, 121, 123 and 124). Some of the piers were observed to have pigeon debris on the beam seats and some areas of construction debris/steel plates. In spans 6 and 8 there are cables hanging down from adjacent Bridge 070001 that crosses over to Bridge 020001. There is pooling water on the pier cap in Bay J at Pier #9 (See photo 97).

1080	Delamination/Spall/Patched Are	3	2.00	ft	0.00	2.00	0.00	0.00

Pier #1 – On the west face there is a 6" long x 3" high x ½" deep spall on the bottom edge between columns A and B (See photo 34).

Pier #13 – On the east face there is a 6" diameter x ¾" deep spall along the bottom edge between columns A and C.

1120	Efflorescence/Rust Staining	3	1.00	ft	0.00	1.00	0.00	0.00

The pier caps were observed to have scattered vertical and diagonal hairline cracks with light efflorescence (See photos 40 and 88).

The east face of Pier #2 was observed to have two (2) vertical hairline cracks under Girders B and D measuring up to full height with efflorescence (See photo 41).

The east face of Pier #10 was observed to have a 5'-8" high vertical hairline crack with efflorescence that extends down onto the column below Girder B.

The East Face of Pier 11 was observed to have an approximately 5'-0" high vertical hairline crack with efflorescence behind the scupper below Bay A.

The East Face of Pier 13 below Bay I exhibits a full height vertical hairline crack with efflorescence.

1130	Cracking (RC and Other)	3	917.00	ft	909.00	8.00	0.00	0.00

The pier caps were observed to have scattered vertical and diagonal hairline cracks with light efflorescence, Piers #6 and 8 have scattered crescent shaped cracks (See photos 34, 40, 64, 88, 89, 113, 114, 117, 118, 121, 123 and 124).

The east face of Pier #2 was observed to have two (2) vertical hairline cracks under Girders B and D measuring up to full height with efflorescence (See photo 41).

The West Face of Pier #3 was observed to have two vertical hairline cracks beneath Girders E and F that extend onto the underside of the cap See photos 47 and 48). Below Girder E, the vertical crack measures 6'-0" high and continues across the full width of the cap underside. Below Girder F, the vertical crack measures 6'-0" high and continues 1'-0" onto the underside of the cap.

The west face of Pier #5 was observed to have two (2) full-height vertical hairline cracks below Girders B and C (See photo 65).

The south end of Pier #8 was observed to have a hairline crack that extends on top of the pier cap and under the masonry plate (See photo 91).

The East Face of Pier #10 was observed to have a full height hairline crack below Girder C and a 2'-11" high hairline crack below Girder I.

ELEM	ELEMENT NAME	ENV	QUANTITY	UNITS	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
300	Strip Seal Exp Joint	3	68.00	ft	0.00	23.00	45.00	0.00

There is a strip seal expansion joint at the West Abutment. The seal exhibits several locations of ripped, missing, and depressed neoprene, debris impaction, and cracking of the seal (See photos 2 and 3).

2340	Seal Cracking	3	45.00	ft	0.00	0.00	45.00	0.00

There is transverse cracking in the adjacent header measuring approximately 45' wide x up to 1" wide (See photos 2 and 3).

2350	Debris Impaction	3	23.00	ft	0.00	23.00	0.00	0.00

There is light to moderate dirt and debris in the joint (See photos 2 and 3).

ELEM	ELEMENT NAME	ENV	QUANTITY	UNITS	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
301	Pourable Joint Seal	3	161.00	ft	161.00	0.00	0.00	0.00

There is pourable joint sealant at the approach slab joints at both ends of the bridge. At the West Abutment, there are 1'-0" long sections of missing sealant in the Right Lane, Left Center Lane, and Left Lane, and a 2'-0" long section of missing sealant in the Right Center Lane (See photos 2 and 3). At the East Abutment, there is transverse and map cracking throughout the pourable joint with cracks open up to ½" wide (See photos 22 and 23).

ELEM	ELEMENT NAME	ENV	QUANTITY	UNITS	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
303	Assem Jnt With Seal	3	220.00	ft	0.00	178.00	0.00	42.00

There are modular expansion joints at Piers #4 and #9 and at the East Abutment that have several locations of ripped, missing, and depressed neoprene as well as debris impaction (See photos 12, 13, 18, 22 and 23). In Span 4 at Pier 4, there is plow damage to the joint angle in the Right Shoulder (See photos 12 and 13). At the North End of Pier 4, some of the joint elements on the underside of the joint exhibit corrosion.

2340	Seal Cracking	3	42.00	ft	0.00	0.00	0.00	42.00

At the Pier 4 joint, there are several areas where the neoprene seal is damaged or missing in the Right Lane and Right Shoulder (See photos 12 and 13).

At the Pier 9 joint, the joint exhibits impact damage in the right lane (See photo 18).

At the East Abutment, there are several locations of ripped, missing, and depressed neoprene seal throughout (See photos 22 and 23).

2350	Debris Impaction	3	178.00	ft	0.00	178.00	0.00	0.00

The modular joints typically exhibit light to moderate debris impaction throughout, with heavier impaction in the Right Shoulder (See photos 12, 13, 22 and 23).

ELEM	ELEMENT NAME	ENV	QUANTITY	UNITS	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
321	Re Conc Approach Slab	3	2,212.00	sq.ft	582.00	1,630.00	0.00	0.00

There are reinforced concrete approach slabs at each end of the bridge. The west approach slab is paved over with a bituminous wearing surface and is not visible (See photo 1). The east approach slab is bare, with no wearing surface and has minor defects (See photos 24 and 25).

510	Wearing Surfaces	3	782.00	sq.ft	482.00	300.00	0.00	0.00

The west approach slab is paved over with a bituminous wearing surface that was observed to have minor to moderate wheel line rutting, cracking, and bituminous patches (See photo 1).

ELEM	ELEMENT NAME	ENV	QUANTITY	UNITS	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
3220	*Crack (Wearing Surfac*	*3*	*170.00*	*sq.ft*	*0.00*	*170.00*	*0.00*	*0.00*

The bituminous wearing surface over the west approach slab was observed to have a long bituminous patch over the previously mentioned seam crack and potholes in the second travel lane from the south railing (See photo 1).

1130	Cracking (RC and Other)	3	100.00	sq.ft	100.00	0.00	0.00	0.00

The top of the east approach slab was observed to have scattered longitudinal cracks in the off-ramp lane and in the high-speed lane (See photos 24 and 25).

1190	Abrasion(PSC/RC)	3	1,160.00	sq.ft	0.00	1,160.00	0.00	0.00

The east approach slab was observed to have areas of minor to moderate wear as well as a few minor gouges and scrapes (See photo 24).

ELEM	ELEMENT NAME	ENV	QUANTITY	UNITS	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
331	Re Conc Bridge Railing	3	3,318.00	ft	3,317.00	0.00	1.00	0.00

There are reinforced concrete bridge railings along both sides of the bridge. The bridge railings/safety barriers extend beyond the approaches. The railings were observed to have scattered vertical cracks, a few isolated scrapes, and minor gouges (Photo 4, 7, 10 and 11). At the Southwest Approach rail, the safety barriers are misaligned and not secured to each other, leaving a gap between barriers.

1130	Cracking (RC and Other)	3	3,309.00	ft	3,309.00	0.00	0.00	0.00

The concrete railings exhibit scattered full height hairline cracks spaced 2’ to 3’ apart on the bridge (See photo 10).

In Span 9 at the 6th light standard from the west end there is an 8” long crack in the barrier that extends underneath the light (See photo 17).

The exterior face of the bridge railing along both sides of the bridge exhibit up to full height vertical hairline cracks throughout.

7000	Damage	3	9.00	ft	8.00	0.00	1.00	0.00

Both bridge railings were observed to have scattered impact scrapes along the barriers (See photo 4, 7 and 11).

ELEM	ELEMENT NAME	ENV	QUANTITY	UNITS	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
8060	Scupper	3	26.00	each	8.00	1.00	7.00	10.00

Scupper Grates: The scupper grates consist of a combination of original grates with bolted connections and replacement grates with welded connections (attachment "020001 Table 1 - Scupper Grate Defects.pdf"). Several scupper grates exhibit cracked and broken original grates and replacement grates with broken welds. As a result, portions of some grates, particularly those in the Left Lane, are loose and can be removed by hand. The scupper grates in the Left Lane at Piers 3 and 5 make a loud banging noise when vehicles pass over it. For locations of broken and loose grates, see attachment "020001 Table 1 - Scupper Grate Defects.pdf". Additionally, a majority of the grates are partially to 100% clogged with mud and debris. At some locations, standing water was observed at the time of inspection. For specific locations of significant clogging and standing water, see attachment "020001 Table 1 - Scupper Grate Defects.pdf". See photos 4 thru 7, 9, 14, 16 and 20). Scupper Downspouts: The downspouts are clogged in the following locations: West Abutment South side, Pier 1 North side, Pier 2 South side, Pier 5 South side, Pier 6 South side, and Pier 7 South side. There is also a clogged catch basin at the base of the East Abutment that has caused standing water around the drain pipe at the time of the inspection. Mud along the base of the East Abutment indicates standing water previously extended up to full length of the abutment. The downspout in Span 1, Bay I exhibits moderate rust (See photo 33).

ELEM	ELEMENT NAME	ENV	QUANTITY	UNITS	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
8107	Steel Opn Girder/Beam ENDS	3	310.00	ft	310.00	0.00	0.00	0.00

The girder ends are painted below the deck joints at the abutments and at Piers 4 and 9. The girder ends were observed to be in good condition with isolated locations of chipped/peeling paint and light surface rust (See photos 33, 54, 56, 63 and 97). There were also isolated locations of concrete overpour (See photo 92). There are several locations at girder ends throughout the bridge where there are unused/mis drilled bolt holes (See photo 33 and 63).

515	Steel Protective Coating	3	3,710.00	sq.ft	3,710.00	0.00	0.00	0.00

The painted girder ends were observed to be in overall good condition with isolated areas of chipped paint/peeling paint with light rust (See photos 33, 54, 56, 63, 92 and 97).

In Span 4 at Pier #4, the north face of Girder H was observed to have peeling paint with light rust on the bottom flange and bottom of the web (See photo 54).

In Span 5 at Pier #4, the north face of Girder A was observed to have corrosion to the bottom flange at the bearing and a 1'-1" long x 3" high area of corrosion to the web east of the bearing stiffener.

In Span 5 at Pier #4, the south face of Girder J was observed to have an area of light to moderate rust on the bottom flange (See photo 63).

At Pier #9, the South Face of Girder J in Span 9 and 10 was observed to have moderate surface rust on the bottom flange and up to 1' high on the bearing stiffener (See photo 97).

ELEM	ELEMENT NAME	ENV	QUANTITY	UNITS	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
8213	R/C Return Wall	3	70.00	ft	70.00	0.00	0.00	0.00

There is a reinforced concrete return wall at the northeast corner of the bridge that has an architectural finish with vertical hairline cracks (See photo 133). There is minor vegetation growth along the base of the wall.

1130	Cracking (RC and Other)	3	70.00	ft	70.00	0.00	0.00	0.00

The northeast return wall was observed to have vertical hairline cracks that extend from the weep holes up to 10' high in the architectural finish (See photo 133).

ELEM	ELEMENT NAME	ENV	QUANTITY	UNITS	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
8218	Backwall, All Types	3	171.00	ft	168.00	1.00	2.00	0.00

There are reinforced concrete backwalls at both abutments. The backwalls were observed to have an isolated spall and scattered vertical cracks with and without efflorescence (See photos 30, 31, 134, 136).

1080	Delamination/Spall/Patched Are	3	2.00	ft	0.00	0.00	2.00	0.00

At the north end of East Abutment #2 there is a 2' wide x 7" high x 1' deep spall behind Girder A at the top of the backwall (See photo 134).

1120	Efflorescence/Rust Staining	3	1.00	ft	0.00	1.00	0.00	0.00

Both backwalls were observed to have scattered full-height vertical hairline cracks with efflorescence (See photos 30, 31 and 136).

1130	Cracking (RC and Other)	3	168.00	ft	168.00	0.00	0.00	0.00

Both backwalls were observed to have scattered full-height vertical hairline cracks with and without efflorescence (See photos 30 and 136).

ELEM	ELEMENT NAME	ENV	QUANTITY	UNITS	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
8316	Isolation Bearing	3	172.00	each	31.00	129.00	12.00	0.00

There are isolation bearings at the piers and both abutments. Several of the bearings exhibit light to moderate rust and concrete debris/over-pour from construction. There are widespread locations of misalignment and approximately 50% of all connections exhibit deficiencies (See photos 35, 42, 49, 55, 56, 61, 66, 68, 76, 90, 97, 102, 105, 115, 122, 135 and 137).

1000	Corrosion	3	4.00	each	0.00	4.00	0.00	0.00

There are widespread areas of light surface rust on the bearing assembly throughout the bridge (See photo 35, 55, 56, 63, 90, 97, 115 and 122).

At Pier 4 in Span 4, Girder A bearing exhibits corrosion to the masonry plate. The Girder C bearing and the Girder H bearing exhibit light rust (See photo 55). Additionally, Girder J bearing exhibits moderate rust on the masonry plate (See photo 56).

At Pier 5, the Girder H bearing exhibits scattered areas of moderate rust (See photo 61).

At the East Abutment, Girder A bearing exhibits moderate rust (See photo 135). Additionally, the Kicker Beam L bearing exhibits moderate to heavy surface rust on the masonry plate (See photo 137).

1020	Connection	3	57.00	each	0.00	45.00	12.00	0.00

The bearing connection hardware consists of anchor rods, nuts, bolts and washers. Approximately 50% of all connections are either loose, tilted, backed off, or missing. The anchor bolts nuts are typically backed off from 1/16" up to 1-1/2", but in some isolated locations they are backed off up to 1-5/8". For specific locations of anchor bolt deficiencies, see attachment "020001 Table 4 - Bearing Defects.pdf" (See photos 35, 42, 49, 76, 90, 105, 115, 122, 135, 137,).

2220	Alignment	3	38.00	each	0.00	38.00	0.00	0.00

Several bearings throughout the structure exhibit misalignment. For specific misalignment locations and measurements, see attachment "020001 Table 4 - Bearing Defects.pdf".

In addition, some girder bottom flanges are not seated flush with the sole plates. Specific deficiencies are as follows:

At Pier 2 in Span 2, the Girder J bearing exhibits a 1/4” gap between the bottom flange and sole plate at the Southwest corner and tapers flush at the Northwest corner of the bearing.

At Pier 5 in Span 6, the Girder H bearing exhibits a 1/16” gap between the bottom flange and sole plate on the East Face of the bearing (See photo 68).

At Pier 9 in Span 10, the Girder A bearing exhibits a 1/16” gap between the bottom flange and the sole plate.

At Pier 12 in Span 13, the Girder J bearing exhibits a 1/16” gap between the bottom flange and the sole plate at the Southeast corner and tapers flush at the Northeast corner of the bearing.

2230	Bulging, Splitting or Tearing	3	2.00	each	0.00	2.00	0.00	0.00

Several bearings throughout the structure exhibit compressed bearing material (See photo 66). For specific deficiency locations and details, see attachment "020001 Table 4 - Bearing Defects.pdf".

2240	Loss of Bearing Area	3	40.00	each	0.00	40.00	0.00	0.00

Several of the bearings exhibit gaps between the masonry plate and the top surface of the concrete pedestal along the edges of the plate. The gaps between the masonry plate and the concrete bearing pedestal are up to 1/4” high at several locations and up to 3/4” high in a few locations (See photo 68). The gaps are the result of the top surface of the concrete pedestal having an uneven finish at these locations. See attachment "020001 Table 4 - Bearing Defects.pdf" for specific locations of bearing area loss.

ELEM	ELEMENT NAME	ENV	QUANTITY	UNITS	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
8370	Steel Diaphragms	3	805.00	each	804.00	1.00	0.00	0.00

The interior diaphragms are numbered from West to East, starting again from 1 in each span. The interior diaphragms and end diaphragms were observed to have scattered areas of yellow to orange rust with scattered locations of concrete debris/over-pour from construction and isolated locations of connection deficiencies. The end diaphragms below the deck joints at the abutments and at Piers #4 and #9 are painted. However, the end diaphragm at Pier 9 in Span 10 is not painted on the West Face (See photos 31, 53, 54 and 96).

515	Steel Protective Coating	3	24,200.00	sq.ft	24,200.00	0.00	0.00	0.00

The interior diaphragms and end diaphragms are protected by a weathering steel patina. The weathering steel diaphragms exhibit a normal surface patina with some scattered areas of yellow to orange rust. The end diaphragms below the deck joints at the abutments and at Piers #4 and #9 are painted. However, the end diaphragm at Pier 9 in Span 10 is not painted on the West Face (See photos 31, 53, 54 and 96)..

In Span 1, at West Abutment #1 in Bay G there is light rust on the end diaphragm bottom flange (See photo 31).

In Span 4 at Pier #4, the end diaphragm in Bay G exhibits corrosion at the top flange and light rust on the bottom of the connection plate to girder H (See photos 53 and 54).

In Span 9 at Pier #9, the top flange of the end diaphragm in Bay G was observed to have peeling paint and light rust/corrosion due to leakage from the cold joint in the deck (See photo 96).

In Span 14, Bay H, Interior Diaphragm 7 exhibits minor peeling paint (See photo 129).

1020	Connection	3	1.00	each	0.00	1.00	0.00	0.00

In several spans, the interior diaphragms in Bay G exhibit plate washers overlapping adjacent washers and slightly bent washers.

At Pier 9 in Span 10, the bolts at the end diaphragm connections to Girder G and H in Bay G are loose or not fully engaged. There is also a 1/2" gap between the bearing stiffener plate and the end diaphragm at both connections.

In Bay G of Span 11, the connection plate from Interior Diaphragm 4 to the North Face of Girder H was observed to have a 7-3/4" high x up to 1/8" bend to the West.

In Span 14, several interior diaphragms were observed to have random filler plates installed at the connections to the girders.

Work Candidates

Assigned to To be assigned

Status	Priority	Action	Date Proposed	Notes
Assigned_Agency	1	Clean&Flush Deck Drainage	07/21/2023	[CE&C]: Most of the scupper grates and downspouts are either partially or fully clogged. We recommend that these areas be cleaned/flushed to help with the deck drainage.

RIDOT Bridge Inspection Report

020001
Washington Bridge South

Inspected By AECOM-COMMONWEALTH
Inspector: MATT BROOKS
Inspection Date 07/21/2023

Bridge Condition Fair

Equipment

Aerial Lift	☑
Boat	☑
Underbridgeinspvel	☐
Scaffolding	☐
BoesemansChair	☐
Waders	☐
Rail Mount Elliot	☐
Crash Truck	☑
Air Monitor	☐
Ladder	☐
Bucket Truck	☐
Rigging	☐
Floats	☐
Climbing	☐
Rail Mount Bucket Truck	☐
Light Tower	☐

Poison Ivy	☐
Heavy Vegetation	☐
Hurricane Evac Route ?	☐

Cones	Yes
Traffic Setup Req	Yes
Police Req	Yes
Night Insp Req	No
Signs	Yes

Speed Limit	50.00
Prep Time	
Crew Slize	2
Under Insp Vehicle Time	
Traffic Control Time	2
Mile Post	
Crew Days	9
Time Report Time	
Bucket Truck Time	

Site Access Notes

Avg Curb Reveal North/East	
Avg Curb Reveal South/West	
Posted Weight Limit	
Posting Sign ?	☐
Post Signs Legible	-1
Post Sign Rec	-1
Adv Min Vert Clear Sign	02
Min Ver tClear Signs Leg	01
Min Vert Clear Post Vales	
Min Vert Clear Sign Rec	01
Old Rating and Postings	
RR Mile Post	
US DOT/AAR No.	

Telephone	☐
Sewer	☐
Cable	☐
Oil	☐
Fire Alarm	☐
OH Lines Present	☐
Water	☐
Gas	☐
Electric	☐
Fiber Optic	☐

8/22/2023

Bat and Bird Observations

Bats:

BATS_OBSERVED	BATS_VISUAL	BAT_DROPPINGS	BAT_STAINING	BAT_SOUNDS	BAT_PHOTOS
No	☐	☐	☐	☐	☐

BATS_NOTES

Birds

BIRDS_OBSERVED	BIRD_PHOTOS	BIRDS_SPECIES_IDENTIFIED
Yes	☒	☒

BIRD_NOTES

Pigeons and pigeon debris was observed throughout the bridge and on beam seats (See photos 30 and 33).