RIDOT Bridge Inspection Report

020001
Washington Bridge South

Inspected By JACOBS
Inspector: ANTHONY RICHARDSON
Inspection Date 07/23/2021

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): 7/23/2021
Frequency (91): 24
Next Inspection: 7/23/2023

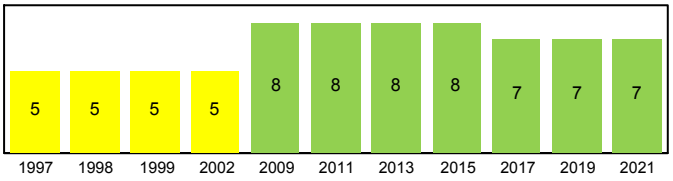
Inspection Type	Freq (92)	Last Insp (93)	Next Insp
Element	24	7/23/2021	7/23/2023
Fracture Critical (A)		1/1/1901	1/1/1901
Underwater (B)	48	7/23/2021	7/23/2025
Special Insp (C)		1/1/1901	1/1/1901

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:	119,461.48
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

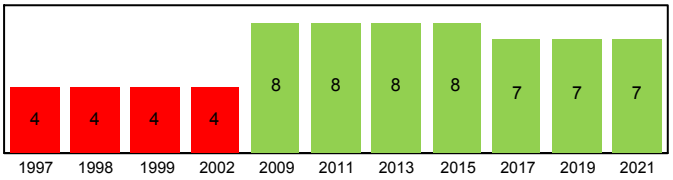


DECK CONDITION

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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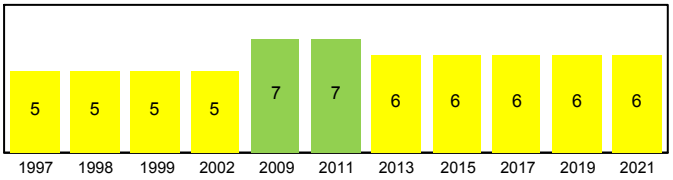
SUBSTRUCTURE GEOMETRY

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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020001
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Inspection Date 07/23/2021

Bridge Condition Fair

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 ON: 7/23/21 by Jacobs Engineering
CREW CHIEF: Anthony Richardson
WEATHER CONDITIONS: Varies

The scope of work was to perform a Routine Inspection of Bridge 020001. Due to the close proximity of Bridge 020001 to Bridge 070001 to the North and Bridge 020021 to the South, unobstructed photos of the North and South elevations of the Bridge could not be obtained and are omitted from this report.

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

Critical Findings – There are several broken and loose scupper grates in the Left Lane of I-195 Eastbound, some of which can be removed by hand. RIDOT was notified of the critical finding on 7/21/21 and a Bridge Critical Findings form (BI-006) was submitted with recommendations to replace the loose grates as soon as possible. Refer to Item 8060 and attachment "020001 Table 1 - Scupper Grate Defects.pdf" for a detailed description and locations of the critical findings.

Weld Defects: Numerous welded connections to the girders exhibit incomplete fusion and were reported to RIDOT on 6/29/21. NDT was performed on select welds on 7/23/21 to check for cracks. The dye penetrant tests performed revealed no cracks. Refer to Item 107 and attachment "020001 Table 2 - Weld Defects.pdf" for a detailed description and locations of weld defects.

Deflection and Vibration – Live load deflection vibration noted in Span 9.

Vertical Clearance - There is vertical clearance signage posted on the South Face of Girder J in Span 14 over Water street. The posted clearance is 27'-2" (Photo 6).

Utilities - In Span 2, Bay G, there are three drain pipes through the concrete deck that exhibit rust (Photo 16). On the exterior face of the South Railing at Pier 9, the electrical conduit flexible coupling at the joint is torn and detached. In Span 12, there is a cable secured along Interior Diaphragm 2 in Bays A through H (Photo 17). The conduit mounted to the underside of Girder G in Span 14 near Interior Diaphragm 3 exhibits moderate rust on the North end (Photo 18).

Underbridge 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. Of the four lights at Piers 6 and 7, three of the lights were on and one of the lights was off. For specific locations of lighting standard defects, refer to attachment "020001 Table 3 - Lighting Standard Defects.pdf" (Photos 19 and 20).

Some elements such as the pile caps, piles, and portions of the pier walls are submerged and require an underwater inspection. A summary of the underwater inspection findings have been included below and in the relevant sections. For detailed descriptions of underwater deficiencies and related photos, see the 2021 Underwater Inspection Report.

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. 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	2.00	0%	0.00	100%	2.00	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
3220/3	*Crack (Wearing Surface)*	*170.00*	0%	0.00	100%	170.00	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
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	39%	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 Concretie 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 exhibits wheel line rutting, minor sand and debris accumulation, up to full width transverse hairline cracks spaced 2' to 3' apart, and areas of minor scaling and wear throughout (Photos 21 and 22). The underside of the deck is covered by stay-in-place forms except for in Bay G and at the overhangs. The exposed portions of the deck underside exhibit isolated areas of scaling and cracking with and without efflorescence, as well as anchor bolt holes with and without efflorescence and minor rust staining (Photos 23, 27, and 28). In Span 4 near Pier 4, a piece of foam from between the South deck overhang and the top flange of Girder J was hanging down and was removed during the inspection (Photo 24).

1080	Delaminattion/Spall/Pattiched A3	1.00	sq.f	0.00	1.00	0.00	0.00

Top of Deck:
At the West Abutment in the Right Center Lane, there is a 6" long x 2'-0" wide x 2" deep spall in the header adjacent to the pourable joint seal (Photo 25).

In Span 4 at Pier 4, there is a 3" long x 1'-3" wide x 1/2" deep spall in the Right Shoulder (P hoto 26).

In Spans 9 and 10, the right lane and shoulder exhibit scaling.

In Span 14, there are areas of minor scaling throughout the four main travel lanes.

Underside of Deck:
The exposed deck in Bay G exhibits evenly spaced anchor bolt holes near Girder G. Some of these holes have been filled while others have not (Photo 27). A few of the holes that have not been filled exhibit signs of leakage (Photo 28). Some locations exhibit exposed anchor bolts hanging from the holes (Photo 29).

In Span 4, Bay G, the exposed deck exhibits a 3" long x 6" wide x 1" deep spall over Pier 4 (Photo 30).

In Span 13, Bay G, the exposed deck exhibits an up to 3'-6" long x 2'-5" wide x 1/2” deep area of scaling near Interior Diaphragm 1.

In Span 14, Bay G, near midspan, the exposed deck exhibits minor chipping at the concrete joints.

1120	Eforescence/Rustti Sttiaining	3	1.00	sq.f	0.00	1.00	0.00	0.00

Underside of Deck:
The exposed deck underside in Bay G exhibits hairline transverse cracks with efflorescence at random locations (Photo 28).

The North and South deck overhangs exhibit up to full width transverse hairline cracks with and without efflorescence throughout (Photo 31).

At the West Abutment in Bay G, the deck exhibits minor leakage along the longitudinal deck joint (Photo 32).

In Span 9, Bay G at Pier 9, there is leakage along the longitudinal deck joint (Photo 33).

1130	Cracking (RC and Ottiher)	3	1.00	sq.f	1.00	0.00	0.00	0.00

Top of Deck:
The top of the deck exhibits full width hairline cracks spaced every 2’ to 3’ in all spans (Pho to 21).

Underside of Deck:
The exposed deck underside in Bay G exhibits hairline transverse cracks spaced 3’ to 6’ apart (Photo 34).

In Span 9 near the field splice, the South overhang exhibits a vertical hairline crack on the vertical face (Photo 35).

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

Top of Deck:
The exposed top of the deck exhibits moderate wear, minor chips in the concrete and isolated scrapes.

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

The stay-in-place forms exhibit scattered areas of rust mainly at the interfaces between adjacent form sections, especially in Bays A and I. Areas of rust cover up to approximately 5 % of the bay area in several spans (Photos 36-39).

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 (Photo 40).

In Span 11, Bay A, near Interior Diaphragm 2, the stay-in-place form exhibits a 1'-6" long x 4' -0" wide area of up to 100% section loss (Photo 41).

In Span 14, Bay F, near Interior Diaphragm 3, the stay-in-place form exhibits a 1'-0" long x 3 '-0" wide area of rust (Photo 42).

ELEM	ELEMENT NAME	ENV	QUANTITY	UNITS	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
107	Stieel 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 supporting the flared section of deck along the South side of the bridge. At various locations along the girders, primarily at connection points between the diaphragms and girders, there are welds exhibiting incomplete fusion (Photos 43-49). Dye penetrant tests were preformed on several of the defective welds to determine if the welds had cracked, and all test results indicated that no cracks were present (Photos 50-53). For specific locations of weld defects, see attachment "020001 Table 2 - Weld Defects.pdf". There are several locations of concrete overpour on the girder webs and bottom flanges throughout the bridge (Photo 54). Additionally, the girders typically exhibit a gap between webs at the field splice locations (Photo 55). 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 (Photos 56-61). The following locations exhibit minor defects as follows: Span 2, Pier 1, Girder A - Two unused bolt holes through the web. Span 2, Girder J, North Face, near Interior Diaphragm 1 - Two unused bolt holes through the web (Photo 62). 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	Sttieel Prottiecttive Coatting	3	247,490.00	sq.f	242,490.00	5,000.00	0.00	0.00

The weathering steel girders exhibit a normal surface patina with some scattered areas of yellow to orange rust, most common along the top flanges (Photo 66).

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 (Photo 98).

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	f	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 2, the South Face of Girder A exhibits rust along the bottom flange (Photo 63).

In Span 3, Girder A at the field splice exhibits laminar rust at the base of the girder web (Ph oto 64). 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. Near Pier 4, Girder J exhibits corrosion and flaking to the underside of the bottom flange (Photo 65).

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. On the South Face of Girder H, the top flange exhibits moderate rust between Interior Diaphragms 1 and 2 (Photo 66).

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 (Photo 67). 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 (Photo 68).

In Span 11 between Interior Diaphragms 1 and 2, Girder A exhibits a 7'-0" long area of heavy rust on both flanges and the web (Photo 41). 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'-0" 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 exhibits a 4'-0" long x 3" high area of rust on the girder web (Photo 69). The North Face of Girder A at the East field splice exhibits 6'-0" long x 4” high x 1/16" deep section loss along the bottom of the web (Photo 70).

1020	Connecttion	3	12.00	f	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.

In Span 7, Girder G exhibits three missing bolts in the bottom flange splice plate of the West Field Splice (Photo 71) and one missing bolt in the bottom flange splice plate at the East Field Splice.

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.

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

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.

7000	Damage	3	2.00	f	0.00	2.00	0.00	0.00

Span 2, Girder I, near Interior Diaphragm 3 - Bottom flange is bent upward 3/4" high over a 2' length (Photo 56).

Span 14, Girder B, South face, between Interior Diaphragms 4 and 5 - 2" long x 1/4" high gouge in bottom edge of bottom flange.

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 reinforced concrete columns at each pier. Column A (North column) is supported on an independent drilled shaft. Columns B and C (center and South columns) are supported by a reinforced concrete pier wall with a stone masonry facade that was part of the original structure. At several locations, the columns exhibit hairline cracks around the base of the column (Photo 72).

8368	Graftti	3	1,190.00	each	1,190.00	0.00	0.00	0.00

The columns exhibit scattered areas of graffiti, particularly at the piers on land.

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 (Photos 9 and 12). The piers have a stone masonry facade 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. 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. 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	Delaminattion/Spall/Pattiched A3	3.00	f	0.00	3.00	0.00	0.00

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.

2021 Underwater Inspection:

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.

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

1120	Eforescence/Rustti Sttiaining	3	1.00	f	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 Ottiher)	3	472.00	f	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 9, south of Column C - Map cracking across the Top Face and down the West face.

Pier 9, Top Face, between Columns B and C - 12' long x 6' wide area of hairline map cracking.

Pier 10, south of Column C - Three full-width x up to 1/8” wide transverse cracks across the top of the pier wall extending down the vertical faces of the wall.

Pier 10, Northwest corner - 3’ high x 1/8” wide vertical crack.

Pier 12, West Face, below Girder I - Full height hairline crack.

Pier 12, East Face - Full height x 1/16" wide crack between Columns B and C.

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

2021 Underwater Inspection:

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	Settilementti	3	1.00	f	0.00	1.00	0.00	0.00

There are some medium to wide vertical cracks in the pier walls of Piers 9, 10 and 12, however no signs of settlement were observed.

2021 Underwater Inspection Notes:
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	f	0.00	100.00	0.00	0.00

2021 Underwater Inspection:
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	Graftti	3	3,240.00	f	0.00	3,240.00	0.00	0.00

The pier walls on land exhibit areas of graffiti.

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

The West Abutment is shared between Bridge 020001 and adjacent Bridge 070001 to the North, and the East Abutment is shared between Brdige 020001 and adjacent Bridge 020021 to the South. Both abutments exhibit random hollow areas, minor spalls, and hairline cracks with and without efflorescence. At the West Abutment, the previously noted areas of graffiti have been painted over. There is minor construction debris on the beam seat in Bay G at the West Abutment (Photo 73).

1080	Delaminattion/Spall/Pattiched A3		2.00	f	0.00	2.00	0.00	0.00

At the East Abutment, on the North Face, there is an up to 11" long x 8'-10" high hollow area /loose section of concrete with an adjacent 11" long x 2'-7" high x 7" deep spall located near the top of the abutment (Photo 74).

1120	Eforescence/Rustti Sttiaining	3	1.00	f	0.00	1.00	0.00	0.00

At the West Abutment, there is a hairline crack 20' long with efflorescence located near the base of the abutment under Bays H and I.

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 (Photo 75). 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 (Photo 76).

1130	Cracking (RC and Ottiher)	3	168.00	f	168.00	0.00	0.00	0.00

At the West Abutment, there are scattered vertical and diagonal hairline cracks, most of which have been sealed. Random areas of hairline map cracking are present along the top 10' of the abutment face.

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

At Pier 10, there is some erosion at the Northwest corner of wall, exposing a 22' long portion of the pile cap. 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	f	216.00	2.00	0.00	0.00

2021 Underwater Inspection:
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	Stieel Pile	3	6.00	(EA)	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	(EA)	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. The pier caps exhibit minor spalls and randomly spaced hairline cracks. There are also isolated areas of minor debris accumulation on the tops of the pier caps and the steel template plates for bearings are left on top of the pier caps from construction (Photo 77). In Spans 6 and 8, a cable from Bridge 070001 crosses over to Bridge 020001 and is draped over the pedestal for the Girder A bearing (P hoto 78).

1080	Delaminattion/Spall/Pattiched A3		2.00	f	0.00	2.00	0.00	0.00

At Pier 1, the West Face exhibits a 6" long x 3" high x 1/2" deep spall at the bottom edge between Columns A and B.

At Pier 13, the East Face exhibits a 6” diameter x 3/4” deep spall along the bottom edge between Columns A and B.

1120	Eforescence/Rustti Sttiaining	3	1.00	f	0.00	1.00	0.00	0.00

The pier caps exhibit some scattered vertical and diagonal hairline cracks with light efflorescence.

The East Face of Pier 10 exhibits a 5'-8" high vertical hairline crack with efflorescence that extends down onto the column below Girder B (Photo 79).

The East Face of Pier 11 exhibits an approximately 5'-0" high vertical hairline crack with efflorescence behind the scupper below Bay A (Photo 80).

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

1130	Cracking (RC and Ottiher)	3	917.00	f	909.00	8.00	0.00	0.00

The pier caps exhibit scattered hairline vertical and diagonal cracks, up to full-height. Pier 6 and Pier 8 exhibit a few crescent shaped cracks.

At the North end of Pier 2, the pedestal for the Girder A bearing exhibits a hairline crack on the top face extending down onto to the North Face (Photo 81).

The West Face of Pier 3 exhibits two vertical hairline cracks beneath Girders E and F that extend onto the underside of the cap (Photo 82). 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 East Face of Pier 10 exhibits a full height hairline crack below Girder C and a 2'-11" high hairline crack below Girder I.

The West Face of Pier 13 exhibits vertical hairline cracks in several locations. There are seven up to full height hairline cracks between Girders A and B, a 4'-6" high hairline crack below Girder H, and a full height hairline crack below Bay I behind the scupper downspout.

ELEM	ELEMENT NAME	ENV	QUANTITY	UNITS	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
300	Stirip Seal Exp Jointi	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.

2340	Seal Cracking	3	45.00	f	0.00	0.00	45.00	0.00

At the West Abutment joint, there is a transverse crack 45' long x up to 1" wide.

2350	Debris Impacttion	3	23.00	f	0.00	23.00	0.00	0.00

There is light to moderate dirt and debris in the joint.

ELEM	ELEMENT NAME	ENV	QUANTITY	UNITS	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
301	Pourable Jointi 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 (Photo 25). At the East Abutment, there is cracking throughout the pourable joint.

ELEM	ELEMENT NAME	ENV	QUANTITY	UNITS	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
303	Assem Jnti Witih 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 (Photos 26, 84, 86, and 87). In Span 4 at Pier 4, there is plow damage to the joint angle in the Right Shoulder (Photo 26). At the North End of Pier 4, some of the joint elements on the underside of the joint exhibit corrosion (Photo 83).

2340	Seal Cracking	3	42.00	f	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 (Photos 26 and 84).

At the Pier 9 joint, the joint exhibits impact damage in the right lane (Photo 85).

At the East Abutment, there are several locations of ripped, missing, and depressed neoprene seal throughout (Photo 86).

2350	Debris Impacttion	3	178.00	f	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 (Photos 86 and 87).

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 either end of the bridge. The West Approach slab is paved over with a bituminous wearing surface and is therefore not visible. The East Approach slab is bare, with no wearing surface, and exhibits minor defects (Photo 4).

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

The West Approach slab is paved over with a bituminous wearing surface that exhibits cracking and minor wheel line rutting. There is an area approximately 25' long of deterioration and potholes up to 3" deep along the pavement seam in the right lane (Photo s 1 and 88).

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 of the West Approach exhibits a separation crack with potholes up to 3" deep in the Right Lane (Photo 88). There are also hairline transverse cracks throughout.

1130	Cracking (RC and Ottiher)	3	100.00	sq.f	100.00	0.00	0.00	0.00

The top surface of the East Approach slab exhibits scattered longitudinal cracks in the off ramp lane.

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

The East Approach slab exhibits areas of minor to moderate wear, as well as a few minor scrapes and gouges.

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 exhibit scattered vertical cracks, a few isolated scrapes, and minor gouges (Photo 19). 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 Ottiher)	3	3,309.00	f	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 (Photo 89).

The exterior face of the bridge railing along both sides of the bridge exhibit up to full height vertical hairline cracks throughout (Photo 90).

7000	Damage	3	9.00	f	8.00	0.00	1.00	0.00

The Northwest Approach rail exhibits impact damage approximately 9' long x 3' high.

Both railings exhibit scattered impact damage/scrapes and minor gouges throughout (Pho to 19).

In Span 6, near Pier 5, at the North rail, the pull box cover on the South face of the railing has one missing bolt and two loose bolts.

At Pier 12 on the South rail, a sign mounted on the rail exhibits impact damage to the top left corner.

ELEM	ELEMENT NAME	ENV	QUANTITY	UNITS	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
8060	**Scupper**	**3**	**26.00**	**(EA)**	**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 (Photos 91-95). The scupper grates in the Left Lane at Piers 3 and 5 makes 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". 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 (Photo 96). 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 (Photo 97). 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.

ELEM	ELEMENT NAME	ENV	QUANTITY	UNITS	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
8107	**Stieel 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 paint and light surface rust (Photos 98 and 99). In Span 1 at the West Abutment, Girder J has two unused bolt holes through the web (Photo 100). In Span 5 at Pier 4, Girders A and J each have two unused bolt holes through the web. In Span 9 at Pier 9, Girder A has four unused bolt holes through the web (Photo 101).

515	Sttieel Prottiecttive Coatting	3	3,710.00	sq.f	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 with light rust (Photos 98 and 99).

In Span 5 at Pier 4, the North Face of Girder A exhibits 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 (Photo 102).

At Pier 9, the South Face of Girder J exhibits moderate surface rust on the bottom flange and up to 1'-0" high onto the bearing stiffener (Photo 103).

ELEM	ELEMENT NAME	ENV	QUANTITY	UNITS	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
8213	**R/C Retiurn Wall**	**3**	**70.00**	**(LF)**	**70.00**	**0.00**	**0.00**	**0.00**

There is a reinforced concrete return wall at the Northeast corner of the bridge. The Northeast Return Wall has an architectural finish and exhibits hairline cracks with light to moderate vegetation growth in front of the wall. There is also moderate vegetation growth at the top of the wall.

1130	Cracking (RC and Ottiher)	3	70.00	(LF)	70.00	0.00	0.00	0.00

The Northeast Return Wall exhibits vertical hairline cracks extending from the weep holes up to 10' high.

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**	**(LF)**	**168.00**	**1.00**	**2.00**	**0.00**

There are reinforced concrete backwalls at both abutments. The backwalls exhibit spalls and cracks with and without efflorescence.

1080	Delaminattion/Spall/Pattiched A3		2.00	(LF)	0.00	0.00	2.00	0.00

At the East Abutment behind Girder A, the backwall exhibits a 2'-0" wide x 7" high x up to 1'-0" deep spall at the top (Photo 104).

1120	Eforescence/Rustti Sttiaining	3	1.00	(LF)	0.00	1.00	0.00	0.00

The backwalls exhibit random hairline vertical cracks up to full height with moderate to heavy efflorescence (Photos 105 and 106).

1130	Cracking (RC and Ottiher)	3	168.00	(LF)	168.00	0.00	0.00	0.00

The backwalls exhibit random hairline cracks up to full height.

ELEM	ELEMENT NAME	ENV	QUANTITY	UNITS	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4
8316	Isolation Bearing	3	172.00	(EA)	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.

1000	Corrosion	3	4.00	(EA)	0.00	4.00	0.00	0.00

At Pier 3, Girders C, D, E, F, G, and J bearings exhibit areas of light to moderate rust (Photo 107).

At Pier 4 in Span 4, the Girder A bearing exhibits corrosion to the masonry plate (Photo 108). The Girder C bearing and the Girder H bearing exhibit light rust (Photo 109). Additionally, the Girder J bearing exhibits moderate rust on the masonry plate.

At Pier 5, the Girder H bearing exhibits scattered areas of moderate rust.

At the East Abutment, the Girder A bearing exhibits moderate rust. Additionally, the Kicker Beam L bearing exhibits moderate to heavy surface rust on the masonry plate.

1020	Connecttion	3	57.00	(EA)	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" (Photos 107, 110, and 111).

2220	Alignmentti	3	38.00	(EA)	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" (Photo 112).

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 (Photo 113).

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	(EA)	0.00	2.00	0.00	0.00

Several bearings throughout the structure exhibit compressed bearing material. For specific deficiency locations and details, see attachment "020001 Table 4 - Bearing Defects.pdf" (Photo 114).

2240	Loss of Bearing Area	3	40.00	(EA)	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 (Photos 110 and 115). 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	**Stieel Diaphragms**	**3**	**805.00**	**(EA)**	**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 exhibit scattered areas of yellow to orange rust with scattered locations of concrete debris/over-pour from construction and isolated locations of connection deficiencies.

515	Sttieel Prottiecttive Coatting	3	24,200.00	sq.f	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.

In Span 4 at Pier 4, the end diaphragm in Bay G exhibits corrosion at the top flange (Photo 30).

In Span 14, Bay H, Interior Diaphragm 7 exhibits minor peeling paint.

1020	Connecttion	3	1.00	(EA)	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 exhibits a 7-3/4" high x up to 1/8" bend to the West (Photo 116).

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

RIDOT Bridge Inspection Report

020001
Washington Bridge South

Inspected By JACOBS
Inspector: ANTHONY RICHARDSON
Inspection Date 07/23/2021

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
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	☐