FY2019 Annual Inspection and Underwater Inspection, Trestle A'NB, ANB, & ASB

Chesapeake Bay Bridge and Tunnel District

FY2019 Facility Annual Inspection Report

2 | 2

2/15/2019

Task Orders 2 & 6

Document history and status

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1	01/04/2019	FINAL Report submitted to CBBT	JEG	VDOT	FINAL
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0	DRAFT	12/14/2018	CBBT	Comments discussed in review meeting held on 12/21/2018
1	FINAL	01/04/2019	CBBT	Comments provided by VDOT on 02/14/2019
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FY2019 Annual Inspection and Underwater Inspection, Trestle A'NB, ANB, & ASB

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Executive Summary

Enclosed is a combination of the GASB 34 with the Maintenance Rating Program (MRP) Condition Scale and ratings for the trestles along with repair recommendations, and recommended insurance coverages for the facilities that make up the Chesapeake Bay Bridge Tunnel District (the District). The ratings of the GASB 34 Cluster Item Ratings are summarized below in Table 1, and can be observed in detail in Section 2: Ratings for GASB 34 of the report.

Table 1: GASB34 Cluster Item Ratings

Cluster Item	Rating
A. Approach Roads	8
B. Fisherman Island Causeway	8
C. Tunnels	7
D. Portal Islands	7
E. Toll Plaza Infrastructure	8
F. Site-Wide Utilities	8

No critical findings were reported during the inspection. A few specific facility components were rated less than Good Condition (numeric rating of 7 or above) at the time of the inspection, with some of these items being typical components that are regularly monitored and repaired or replaced as needed. The components rated less than 7 make up a minority percentage of the overall cluster items, such that the overall ratings were all 7 or greater as shown in Table 1.

The trestle components were found to be in Good Condition or better (numeric rating of 7 or above). A detailed breakdown of the components can be observed in Section 4: Virginia Department of Transportation (VDOT Structure Inventory and Appraisal (SI&A) Records (B-6 and B-7 Forms) of the report.

A list of supplemental information used to develop the ratings provided in the report has been submitted to the District electronically. A list of these supplemental items is displayed in Section 12 Electronic Submittals.

Repair recommendations are separated into two categories: Priority Repairs and Routine Repairs and have been provided in Section 3: Repair Recommendations. It is understood by Jacobs that the District is in the process of performing or developing contract documents for the repair of several of these components such as:

- Repairs to spalled concrete areas on concrete columns, walls, roof beams, and ceiling of the supply fan room of all ventilation buildings.
- Masonry mortar and steel flashing repairs as needed to the exterior of all ventilation buildings.
- Repairs to the invert slab, walls, and tunnel lining in the Fresh Air Duct of the Thimble Shoal Tunnel (to be completed once the Parallel Thimble Shoal Tunnel is open to traffic) and Chesapeake Channel Tunnel (currently under construction and scheduled to be completed in early 2019).
- Bridge overlay replacement and deck and joint rehabilitation and retrofit from Portal Island No. 4 to Fishermans Island (scheduled to begin in early 2020).

1. Inspection Schedule

Portions of the CBBT facility covered during the FY2019 & FY2018 Inspection are noted in Table 2. An underwater inspection was performed on Trestles ANB (including ANB' Bents 3 and 4) and ASB this year as noted.

Table 2: CBBT Facility Completed Inspection Schedule

Facility Component	Portion Inspected
1 Trestle A - Northbound (ANB)	Completed in FY2019: Hands-on: Spans ANB129 to ANB176 Underwater Inspection of Trestle ANB (including ANB')
	Completed in FY2018: *Spans A'NB14 to ANB4 from Chic's Beach* *Hands-on: Spans ANB75 to ANB128* *Visual: Spans ANB11 to ANB225*
2 Trestle A - Southbound (ASB)	Completed in FY2019: Hands-on: Spans ASB81 to ASB122 Visual: Spans ASB18 to ASB204 Underwater Inspection of Trestle ASB
	Completed in FY2018: *Spans ASB1 to ASB12 from Chic's Beach* *Hands-on: Spans ASB123 to ASB171*
3 Trestle B - Northbound (BNB)	Completed in FY2019: Hands-on: Spans BNB105 to BNB158
	Completed in FY2018: *Spans BNB66 to BNB104* *Visual: Spans BNB3 to BNB264*
4 Trestle B - Southbound (BSB)	Completed in FY2019: Hands-on: Spans BSB101 to BSB142 Visual: Spans BSB1 to BSB202
	Completed in FY2018: Hands-on: Spans BSB143 to BSB178
5 Trestle C - Northbound (CNB)	Completed in FY2019: Hands-on: Spans CNB132 to CNB197
	Completed in FY2018: *Hands-on: Spans CNB78 to CNB131* *Visual: Spans CNB3 to CNB322*
6 Trestle C - Southbound (CSB)	Completed in FY2019: Hands-on: Spans CSB105 to CSB154 Visual: Spans CSB1 to CSB246
	Completed in FY2018: *Hands-on: Spans CSB155 to CSB190* *Underwater Inspection of Trestle CSB*

Facility Component		Portion Inspected
7	North Channel Bridge - Northbound (NCB-NB)	*Fracture Critical: Spans 1 thru 17 (Fracture Critical)* *Above Water: Piers 1 thru 18 (both completed in FY2018)*
8	North Channel Bridge - Southbound (NCB-SB)	Hands-on: Entire component
9	Trestle D - Northbound (DNB)	Hands-on: Entire component
10	Trestle D - Southbound (DSB)	Hands-on: Entire component
11	Trestle E - Northbound, Fisherman Inlet Bridge - Northbound, Trestle F - Northbound (ENB, FIB-NB, FNB)	Hands-on: Entire component
12	Trestle E - Southbound, Fisherman Inlet Bridge - Southbound, Trestle F - Southbound (ESB, FIB-SB, FSB)	Hands-on: Entire component
13	Thimble Shoals Channel Tunnel (TSCT)	*Initial inspection of the entire Tunnel, including Open Approaches on Islands 1 and 2 (completed in FY2018)*
14	Chesapeake Channel Tunnel (CCT)	Routine inspection of the entire Tunnel, including Open Approaches on Islands 3 and 4
15	Approach Roads	Main components, spot check minor components, and review of District maintenance records (support GASB 34)
16	Fisherman Island Causeway	Main components, spot check minor components, and review of District maintenance records (support GASB 34)
17	Portal Islands No. 1, 2, 3, and 4	Main components, spot check minor components, and review of District maintenance records (support GASB 34). Portal Islands No. 3 & 4 were inspected this year and Portal Islands No. 1 & 2 were omitted this year due to the Parallel Thimble Shoal Tunnel Project (PTST).
18	South Toll Plaza	*Main components, spot check minor components, and review of District maintenance records (completed in FY2018 to support GASB 34), minus Overhead Sign Structures*
19	North Toll Plaza	*Main components, spot check minor components, and review of District maintenance records (completed in FY2018 to support GASB 34), minus Overhead Sign Structures*
20	Toll Plaza Infrastructure	*Main components, spot check minor components, and review of District maintenance records (completed in FY2018 to support GASB 34)*
21	Site-Wide Utilities	*Main components, spot check minor components, and review of District maintenance records (completed in FY2018 to support GASB 34)*

The projected hands-on inspection schedule for Trestles ANB, ASB, BNB, BSB, CNB, and CSB is noted in Table 3. Southbound portions of the facility are approximated as the crew aims to hit the quota (approximately 1/5 of trestle) while looking to stop at or beyond the quota at light poles that will require the bridge inspection platform to be stowed and redeployed. Visual inspections will be performed on Trestles ANB, BNB, and CNB during even FYs (FY2020, FY2022, etc.) and Trestles ASB, BSB, and CSB during odd FYs (FY2021, 2023, etc.). The rest of the structures on the facility receive hands-on inspections at intervals not to exceed 24-months.

Table 3: CBBT Trestles ANB, ASB, BNB, BSB, CNB, and CSB Projected Hands-on Inspection Schedule

Facility Component	Project Spans to be Inspected			
	FY2020	FY2021	FY2022	FY2023
1 Trestle ANB (48 spans/year)	177 – 223	224 – 227 ANB'1 – ANB'10, ANB1 - 34	35 – 82	83 – 128
2 Trestle ASB (41 spans/year)	39 – 80	1 – 38 202 – 205	162 – 201	123 – 161
3 Trestle BNB (54 spans/year)	159 – 212	213 – 266	1 – 54	55 – 104
4 Trestle BSB (41 spans/year)	59 – 100	17 – 58	1 – 16 178 – 203	143 – 177
5 Trestle CNB (65 spans/year)	198 – 263	264 – 322 NCB-NB1	1 – 66	67 – 131
6 Trestle CSB (41 spans/year)	55 – 104	1 – 54	197 – 246	155 – 196

2. Ratings for GASB 34

The following tables represent condition ratings to support the requirements of Statement No. 34 of the Governmental Accounting Standards Board: Basic Financial Statements - and Management's Discussion and Analysis - for State and Local Governments (GASB 34). The overall Cluster Item Ratings were found to be in Good Condition or better (numeric rating of 7 or above). The following specific components have a condition rating below 7.

Table 4: GASB 34 Components with Condition Rating Below 7

Item	Component	Rating	Explanation of Rating
1	Tunnel Ventilation Buildings - Structural Framing	6	Spalls on columns and roof beams. Some repaired. However, new and existing patches deteriorating. Programmed for repair.
2	Tunnel Ventilation Building Standby Power Generation Equipment - Cooling and Combustion Air Dampers and Ducts	6	Roof Dampers allow rain water to drip on switchgear.
3	Tunnel Ventilation Building - Elevator	6	Elevator will not level out in Ventilation Building Nos. 1 or 2 when the doors open. Programmed for replacement.
4	Portal Island No. 1 - Splash Walls	6	Based on tipping panels at southeast corner, appears to have stabilized in recent years although continue to monitor. To be replaced as part of the Parallel Thimble Shoal Tunnel (PTST) Project.
5	Portal Islands – Approach Walls	6	Several locations of spalled/delaminated concrete with the potential to fall into th e roadway with one area at the location of an Overhead Signal Structure Anchorage on Portal Island No. 4, East Approach Wall.
6	Portal Islands - Guardrails	6	Minor damage and rusting. Damaged sections repaired/painted on several islands. Minor widespread surface rust, with isolated section loss on Portal Islands No. 3 and No. 4.
7	South Toll Plaza - Engine Generator	6	The generator has not been run for the minimum hours needed per manufacturer for several consecutive years. Potential for major maintenance.
8	South Toll Plaza Electrical Substation - Transformers	6	Transformer needs to be serviced due to its age. Transformers are due to be replaced during the Parallel Tunnel Project.

Table 5: GASB 34 Condition Ratings

Overall Ratings Summary	FY2019
A. Approach Roads	8
B. Fisherman Island Causeway	8
C. Tunnels	7
D. Portal Islands	7
E. Toll Plaza Infrastructure	8
F. Site-Wide Utilities	8

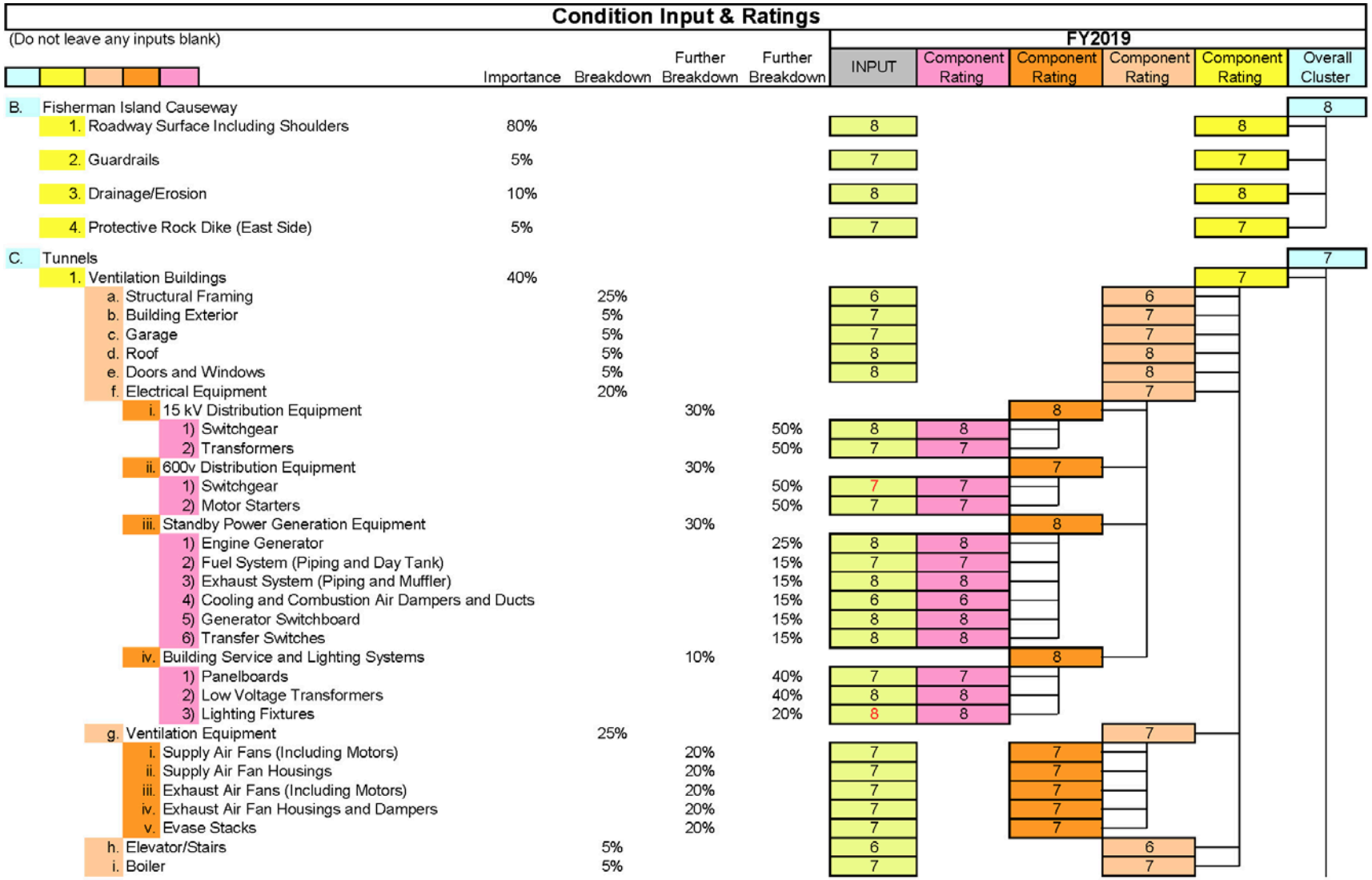
Numeric Code	Narrative Code	Definition
9	Excellent	Component/Element has been recently put in service or remains in new condition
8	Very Good	No problems noted, potential exists for minor preventative maintenance
7	Good	Potential exists for minor maintenance
6	Satisfactory	Potential exists for major maintenance
5	Fair	Potential exists for minor repair or rehabilitation
4	Poor	Potential exists for major repair or rehabilitation
3	Serious	Major repair or rehabilitation is required
2	Critical	The need for repair or rehabilitation is urgent, Component/Element should be taken out of service until indicated repair is complete
1	Imminent Failure	Component/Element is out of service; study feasibility for repair or rehabilitation
0	Failed	Component/Element is out of service and beyond repair, replacement required

Condition Input & Ratings

(Do not leave any inputs blank)

	Importance	Breakdown	Further Breakdown	Further Breakdown	FY2019 INPUT	Component Rating	Component Rating	Component Rating	Component Rating	Overall Cluster
A. Approach Roads										8
1. Eastern Shore (North)	70%								8	
a. Roadway Surface Including Shoulders - WP to NTP		35%			8			8		
b. Roadway Surface Including Shoulders - NTP to Rte 600		15%			7			7		
c. Overhead Sign Structures		15%			7			7		
d. Guardrails		5%			8			8		
e. Drainage/Erosion		10%			7			7		
f. Protective Rock Dike (West Side)		5%			8			8		
g. Scenic Overlook		5%			7			7		
h. Wise Point		5%			8			8		
i. Fencing		5%			8			8		
2. Chesapeake Beach (South)	30%								8	
a. Roadway Surface Including Shoulders		65%			8			8		
b. Overhead Sign Structures		15%			8			8		
c. Guardrails		5%			7			7		
d. Drainage/Erosion		10%			7			7		
e. Fencing		5%			7			7		

Table 5: GASB 34 Condition Ratings (continued)



Condition Input & Ratings (Do not leave any inputs blank)	Importance	Breakdown	Further Breakdown	Further Breakdown	FY2019 INPUT	Component Rating	Component Rating	Component Rating	Component Rating	Overall Cluster
B. Fisherman Island Causeway										8
1. Roadway Surface Including Shoulders	80%				8				8	
2. Guardrails	5%				7				7	
3. Drainage/Erosion	10%				8				8	
4. Protective Rock Dike (East Side)	5%				7				7	
C. Tunnels										7
1. Ventilation Buildings	40%								7	
a. Structural Framing		25%			6			6		
b. Building Exterior		5%			7			7		
c. Garage		5%			7			7		
d. Roof		5%			8			8		
e. Doors and Windows		5%			8			8		
f. Electrical Equipment		20%						7		
i. 15 kV Distribution Equipment			30%				8			
1) Switchgear				50%	8	8				
2) Transformers				50%	7	7				
ii. 600v Distribution Equipment			30%				7			
1) Switchgear				50%	7	7				
2) Motor Starters				50%	7	7				
iii. Standby Power Generation Equipment			30%				8			
1) Engine Generator				25%	8	8				
2) Fuel System (Piping and Day Tank)				15%	7	7				
3) Exhaust System (Piping and Muffler)				15%	8	8				
4) Cooling and Combustion Air Dampers and Ducts				15%	6	6				
5) Generator Switchboard				15%	8	8				
6) Transfer Switches				15%	8	8				
iv. Building Service and Lighting Systems			10%				8			
1) Panelboards				40%	7	7				
2) Low Voltage Transformers				40%	8	8				
3) Lighting Fixtures				20%	8	8				
g. Ventilation Equipment		25%						7		
i. Supply Air Fans (Including Motors)			20%		7		7			
ii. Supply Air Fan Housings			20%		7		7			
iii. Exhaust Air Fans (Including Motors)			20%		7		7			
iv. Exhaust Air Fan Housings and Dampers			20%		7		7			
v. Evase Stacks			20%		7		7			
h. Elevator/Stairs		5%			6			6		
i. Boiler		5%			7			7		

Table 5: GASB 34 Condition Ratings (continued)

Condition Input & Ratings

(Do not leave any inputs blank)

	Importance	Breakdown	Further Breakdown	Further Breakdown	FY2019 INPUT	Component Rating	Component Rating	Component Rating	Component Rating	Overall Cluster
C. Tunnels (continued)										
2. Tunnel Structure	60%								7	
a. Tunnel Roadway Slab		20%			7			7		
b. Tunnel Walls		15%			7			7		
c. Tunnel Ceiling		10%			7			7		
d. Lighting		10%						8		
i. Fixtures			20%		8		8			
ii. Panelboards			20%		8		8			
iii. Transformers			20%		8		8			
iv. Uninterruptible Power Supply (UPS)			20%		8		8			
v. Controls Panel			20%		7		7			
e. Supply Air Duct		10%			7			7		
f. Exhaust Air Duct		10%			7			7		
g. Emergency Crew Walkway (Sidewalk)		5%			7			7		
h. Portal Drains and Gutters		5%			7			7		
i. Mid-Channel Pump Room Equipment		5%						8		
i. Lighting Fixtures			20%		7		7			
ii. Motor Control Equipment			40%		8		8			
iii. Pumps and Valves			20%		8		8			
iv. Piping			20%		8		8			
j. Fire Emergency Equipment		5%			7			7		
k. Portal Pump Rooms		5%			7			8		
i. Lighting Fixtures			20%		8		8			
ii. Motor Control Equipment			40%		8		8			
iii. Pumps and Valves			20%		8		8			
iv. Piping			20%		8		8			

Table 5: GASB 34 Condition Ratings (continued)

Condition Input & Ratings

(Do not leave any inputs blank)

		Importance	Breakdown	Further Breakdown	Further Breakdown	FY2019 INPUT	Component Rating	Component Rating	Component Rating	Component Rating	Overall Cluster
D.	Portal Islands										7
1.	Island No. 1	25%								7	
a.	Splash Walls		20%			6			6		
b.	Open Approach Walls		25%			6			6		
c.	Open Approach Roadway		10%			8			8		
d.	Portal Island Surface		10%			7			7		
e.	Guardrails		5%			7			7		
f.	Armor Stone		20%			8			8		
g.	Perimeter Fencing	To be Replaced Post PTST	0%			0			0		
h.	Fishing Pier	Fishing Pier Not Inspected. Ratings carried forward from last inspection until completion of Rehabilitation.	5%						7		
i.	Deck/Railing			20%		7		7			
ii.	Superstructure			40%		7		7			
iii.	Substructure			40%		7		7			
2.	Other Islands	75%								7	
a.	Splash Walls		25%			7			7		
b.	Open Approach Walls		25%			7			7		
c.	Open Approach Roadway		15%			8			8		
d.	Portal Island Surface		5%			7			7		
e.	Guardrails		5%			6			6		
f.	Armor Stone		25%			8			8		

Table 5: GASB 34 Condition Ratings (continued)

Condition Input & Ratings

(Do not leave any inputs blank)

	Importance	Breakdown	Further Breakdown	Further Breakdown	FY2019 INPUT	Component Rating	Component Rating	Component Rating	Component Rating	Overall Cluster
E. Toll Plaza Infrastructure										8
1. South Toll Plaza	35%								7	
a. Toll Office Building		25%						8		
i. Building Interior			15%		7		7			
ii. Building Exterior			15%		8		8			
iii. Roof			25%		9		9			
iv. Doors and Windows			5%		8		8			
v. Electrical Equipment			20%				7			
1) Panelboards				25%	7	7				
2) Transformers				25%	8	8				
3) Engine Generator				25%	6	6				
4) Lighting				25%	8	8				
vi. Mechanical Equipment			20%				8			
1) Heating & AC Equipment				25%	8	8				
2) Engine Generator Fuel Piping system				25%	8	8				
3) Engine Generator Exhaust Piping system				25%	8	8				
4) Cooling and Combustion Air Duct and Dampers				25%	8	8				
b. Toll Booth and Canopy		10%			7			7		
c. Pavement/Treadles		10%			7			7		
d. Garage Building		5%						8		
i. Building Interior			20%		7		7			
ii. Building Exterior			25%		8		8			
iii. Roof			30%		8		8			
iv. Doors and Windows			10%		8		8			
v. Electrical Equipment			15%		8		8			
e. Parking Area		5%			8			8		
f. Drainage		5%			7			7		
g. Perimeter Fence		5%			7			7		
h. Overheight Detectors/Misc. Signage		5%			8			8		
i. Electrical Substation		30%						7		
i. Transformers			35%		6		6			
ii. Tap Changers			20%		7		7			
iii. Outdoor switchgear			20%		7		7			
iv. Switch and dead end structure			20%		8		8			
v. Lighting			5%		8		8			

Table 5: GASB 34 Condition Ratings (continued)

Condition Input & Ratings

(Do not leave any inputs blank)

	Importance	Breakdown	Further Breakdown	Further Breakdown	FY2019 INPUT	Component Rating	Component Rating	Component Rating	Component Rating	Overall Cluster
E. Toll Plaza Infrastructure (continued)										
2. North Toll Plaza	65%									8
a. Toll Office Building		15%							8	
i. Building Interior			15%		8		8			
ii. Building Exterior			15%		7		7			
iii. Roof			20%		9		9			
iv. Doors and Windows			10%		8		8			
v. Electrical Equipment			20%				8			
1) Panelboards				50%	8	8				
2) Transformers				25%	8	8				
3) Lighting				25%	8	8				
vi. Mechanical Equipment			20%				7			
1) Heating and AC Equipment				100%	7	7				
b. Toll Booth and Canopy		10%			8			8		
c. Pavement/Treadles		10%			7			7		
d. Administration Building		10%						8		
i. Building Interior			15%		8		8			
ii. Building Exterior			20%		7		7			
iii. Roof			25%		7		7			
iv. Doors and Windows			5%		8		8			
v. Electrical Equipment			20%		8		8			
vi. Mechanical Equipment			15%		8		8			
e. Maintenance Building		10%						8		
i. Building Interior			15%		7		7			
ii. Building Exterior			20%		8		8			
iii. Roof			25%		8		8			
iv. Doors and Windows			5%		8		8			
v. Electrical Equipment			20%		8		8			
vi. Mechanical Equipment			15%		8		8			
f. Garage and Generator Building		10%						8		
i. Building Interior			10%		7		7			
ii. Building Exterior			20%		7		7			
iii. Roof			25%		8		8			
iv. Doors and Windows			10%		7		7			
v. Electrical Equipment			35%				8			
1) 15kV Switchgear				15%	8	8				
2) Low voltage switchboards				10%	8	8				
3) Panelboards				10%	8	8				
4) Engine Generator				15%	8	8				
5) Fuel System (Piping & Day Tank)				10%	8	8				
6) Exhaust System (Piping and Muffler)				10%	8	8				
7) Cooling and Combustion Air Dampers				10%	8	8				
8) Transfer Switches				10%	8	8				
9) Lighting				10%	7	7				

Table 5: GASB 34 Condition Ratings (continued)

Condition Input & Ratings

(Do not leave any inputs blank)

	Importance	Breakdown	Further Breakdown	Further Breakdown	FY2019 INPUT	Component Rating	Component Rating	Component Rating	Component Rating	Overall Cluster
E. Toll Plaza Infrastructure (continued)										
2. North Toll Plaza (continued)										
g. Salt Storage Building		4%						8		
i. Building Interior			20%		8		8			
ii. Building Exterior			25%		7		7			
iii. Roof			30%		8		8			
iv. Doors			15%		7		7			
v. Electrical Equipment			10%		8		8			
h. Miscellaneous Small Buildings and Related		4%						8		
i. Fire Pump and Booster Building			40%				8			
1) Building				20%	8	8				
2) Electrical/Mechanical Equipment				80%	8	8				
ii. Water Tank and Water Valve/Chlorinator Building			30%				8			
1) Building				20%	8	8				
2) Water Tank				80%	8	8				
iii. Fire Pump Emergency Generator Building			30%				7			
1) Building				20%	8	8				
2) Electrical/Mechanical Equipment				80%	7	7				
i. Storage Yard and Parking Area		4%			9			9		
j. Electrical Storage Building		4%						9		
i. Building Interior			20%		9		9			
ii. Building Exterior			25%		9		9			
iii. Roof			30%		9		9			
iv. Doors			15%		9		9			
v. Electrical Equipment			10%		9		9			
k. Rest Area Building and Parking Area		4%						8		
i. Building Interior			15%		8		8			
ii. Building Exterior			20%		8		8			
iii. Roof			20%		8		8			
iv. Doors and Windows			5%		8		8			
v. Electrical Equipment			10%		8		8			
vi. Mechanical Equipment			15%		8		8			
vii. Parking Area			5%		9		9			
viii. Area Lighting System			5%		8		8			
ix. Drainage			5%		8		8			
l. Equipment Storage Building		3%						8		
i. Building Interior			20%		9		9			
ii. Building Exterior			25%		9		9			
iii. Roof			30%		9		9			
iv. Doors			15%		9		9			
v. Electrical Equipment			10%		9		9			
m. Drainage		4%			7			7		
n. Perimeter Fence		4%			8			8		
o. Overheight Detectors/Misc. Signage		4%			7			7		

Table 5: GASB 34 Condition Ratings (continued)

Condition Input & Ratings

(Do not leave any inputs blank)

		Importance	Breakdown	Further Breakdown	Further Breakdown	FY2019 INPUT	Component Rating	Component Rating	Component Rating	Component Rating	Overall Cluster
F.	Site-Wide Utilities										8
1.	Water supply from South Shore to Island #1		5%			7				7	
2.	Sewer From South Shore to Island #1		5%			7				7	
3.	Roadway Lighting System		15%							7	
	a. Fixtures			20%		8			8		
	b. Poles			20%		7			7		
	c. Substations			20%		7			7		
	d. Panelboards			20%		8			8		
	e. Cable and Cable Tray System			20%		7			7		
4.	Emergency Telephone system		15%							9	
	a. Telephones			50%		9			9		
	b. Cabling/wiring			50%		9			9		
5.	SCADA System		20%							8	
	a. CNC Cabinets and Equipment			25%		7			7		
	b. Standby Engine-Generators			25%		8			8		
	c. Panelboards			25%		7			7		
	d. Traffic Control signals			25%		8			8		
6.	15K Distribution System		30%							8	
	a. 15Kv Cable			70%		8			8		
	b. Cable Tray System			30%		7			7		
7.	Toll Collection Systems		10%			7				7	

3. Repair Recommendations

Repair recommendations are separated into two categories: Priority Repairs and Routine Repairs. For this facility, Priority Repairs should be completed within 24 months and Routine Repairs should be repaired within 60 months (subject to change at each annual report based on progression of degradation observed during each inspection cycle). All Critical Findings require “immediate” action and each Critical Finding is listed with the date it was reported to the District, and the recommended action or follow-up.

One general recommendation that applies to all trestles with concrete girders is for the District to revisit the girder repair process such that the transverse and shrinkage cracking exhibited on recently repaired girders (see Photo 8.5-13) can be reduced if not eliminated for girders to be repaired in the future.

3.1 Trestles, North Channel Bridges, and Fisherman Inlet Bridges

3.1.1 Trestle A - Northbound (ANB)

Table 6: ANB Critical Findings

Element	Item Description	Date Reported	Recommended Action/Follow-Up
None	N/A	N/A	N/A

Table 7: ANB Priority Repairs

Element	Item Description	Quantity	Unit
Metal Bridge Railing	Reconnect loose railing to support post on Span ANB154 (NW) middle row	1	EA
Metal Bridge Railing	Repair bent or damaged railing on Spans ANB135 (SW), 161 (SW), 171 (W), and 174 (W)	2	EA
Asphalt Wearing Surface	Repair full depth pothole on Span ANB144 right lane	1	SF
Prestressed Concrete Girder	Repair delamination/spalling with exposed prestressing strands at: ANB133-G4, 159-G6, 160-G2, 164-G8, 165-G1, and 169-G1 (6 locations)	6	LF
Prestressed Concrete Girder	Repair failed repairs of delamination with rust staining or spalling with exposed prestressing strands at ANB137-G8	17	LF
Prestressed Concrete Piles	Determine effectiveness of Lifejacket system at ANB 57 Pile A where anode does not have a cable connecting it to the pile reinforcement and repair accordingly	1	EA
Prestressed Concrete Piles	Determine effectiveness of damaged Lifejacket system and repair accordingly at Bent-Pile: ANB81-C, 89-A, 133-A, 133-B, 135-C, 142-C, 152-C, and 173-A	8	EA
Prestressed Concrete Piles	Perform structural review (if historical data is not available) to determine the effect on strength or serviceability of the piles considered to be Scour Condition State 4 at Bent-Pile: ANB211-C, 213-A, B, and C, and 214-A, B, and C. Results of structural review should be used to develop a strategy to mitigate the hazard of scour at these locations and to revise the Scour Condition State Criteria if necessary	7	EA
Light Pole	Replace light poles that exhibit cracking at baseplate at: ANB129 and 141	2	EA

Table 8: ANB Routine Repairs

Element	Item Description	Quantity	Unit
Metal Bridge Railing	Repair spalled concrete curb with exposed reinforcement at ANB155 left lane	1	LF
Metal Bridge Railing	Repair delaminated failed concrete curb repair at ANB131 left lane and 165 left lane	2	LF
Metal Bridge Railing	Reattach ground wire at ANB134 right lane and 135 right lane (both neat Bent ANB135)	2	EA
Asphalt Wearing Surface	Repair surface spalls/potholes on Spans ANB129, 130, 143 (2), 147 (2), 148 (3), 150, 151, 152 (2), 154 (2), 155 (2), and 156 (4) (21 locations)	30	SF
Asphalt Wearing Surface	Mill and repave scaled, cracked, or split asphalt at Spans ANB132 (2), 133, 135, 136, 140, 142, 143, 146, and 147 (10 locations)	479	SF
Concrete Top Flange (Underside)	Repair spalling with exposed longitudinal and transverse reinforcement at Span ANB142	1	SF
Prestressed Concrete Girder	Repair spalling near bearings with exposed reinforcement at: ANB129-G8, 130-G6, 132-G2, 132-G3, 132-G4, 133-G3, 133-G8, 134-G4, 135-G1, 137-G2, 139-G8, 144-G2, 152-G5, 159-G6, 161-G10, 165-G8, 168-G3, 169-G8, and 173-G3 (19 locations)	31	LF
Prestressed Concrete Girder	Repair failed repairs of spalling near bearings with exposed reinforcement at ANB132-G6, 137-G1, 153-G5, 153-G6, 153-G7, 170-G6, 170-G7, 170-G8, 174-G1, and 175-G5 (8 locations)	15	LF
Prestressed Concrete Girder	Repair minor spalling with exposed reinforcement in the girder web at ANB131-G3	1	LF
Prestressed Concrete Piles	Repair coating systems at piles with failed protective concrete coatings at locations where cracks are present at Bent-Pile: ANB130-B, 130-C, 131-A, 131-B, 132-A, 132-B, 132-C, 135-B, 137- B, 137-C, 138-A, 139-B, 139-C, 140-A, 141-A, 141-B, 142-A, 142-B, 143-A, 143-C, 144-B, 148-A, 150-B, 151-C, 153-A, 153-B, 153-C, 155-C, 156-A, 157-A, 157-B, 157-C, 158-A, 158-B, 158-C, 159-B, 160-A, 160-B, 160-C, 161-B, 164-A, 165-B, 165-C, 166-C, 167-B, 168-A, 168-B, 168-C, 170-B, 171-A, 171-B, 171-C, 175-C, 176-A, 176-B, 176-C, 177-A, 177-B, and 177-C (59 locations)	421	SF
Prestressed Concrete Piles	Repair portion of pile near water exhibiting minor spalls with exposed reinforcement at ANB112-B	2	EA
Prestressed Concrete Piles	Replace anodes on piles with Life Jacket Systems where anode section loss was reported to be greater than 50%: Bent-Pile ANB18-C, 33-B, 39-B, 44-B, 45-B, 57-A, 62-A, 62-B, 62-C, and 210-C	10	EA

3.1.2 Trestle A - Southbound (ASB)

Table 9: ASB Critical Findings

Element	Item Description	Date Reported	Recommended Action/Follow-Up
None	N/A	N/A	N/A

Table 10: ASB Priority Repairs

Element	Item Description	Quantity	Unit
Metal Bridge Railing	Repair bent railing on Span ASB125 (NE) and ASB126 (E)	12	LF
Prestressed Concrete Piles	Perform structural review (if historical data is not available) to determine the effect on strength or serviceability of the piles considered to be Scour Condition State 4 at Bent-Pile: ASB193-A, C, D, E, and F, and 203-B, C, and D. Results of structural review should be used to develop a strategy to mitigate the hazard of scour at these locations and to revise the Scour Condition State Criteria if necessary	8	EA
Concrete Girder Intermediate Diaphragm	Repair spalled and cracked concrete at lower post tension duct at ASB82 Bay 1 Zone 2/3 and 93 Bay 5 Zone 1/2	9	LF
Light Pole	Replace light poles that exhibit cracking at baseplate at: ASB81, 86, 99, 105, 107, 109, 115, 119, and 121	9	EA
Cable/Electrical Trays	Replace damaged expansion joint plates in the cable trays at Bents ASB125 and 128	2	EA
Cable/Electrical Trays	Repair disconnected ground wires at Bents ASB123, 127, and 151	3	EA

Table 11: ASB Routine Repairs

Element	Item Description	Quantity	Unit
Open Expansion Joint	Repair deteriorated/delaminated elastomeric concrete (Delcrete) header material at Spans ASB83, 87, 90, 91, 99, and 106 (6 locations)	7	LF
Concrete Top Flange (Underside)	Repair spalling with exposed longitudinal and transverse reinforcement at ASB109 Bay 2 Z3	24	SF
Concrete Top Flange (Underside)	Repair area of delamination at Span ASB141 on West Overhang near mid-span	8	SF

Element	Item Description	Quantity	Unit
Prestressed Concrete Girder	Repair spalling with exposed reinforcing or exposed strands at girder ends or in the lower portion of the continuity closure pours at Spans ASB81-G3, 81-G5, 82-G4, 84-G4, 85-G3, 88-G4, 88-G4(2), 88-G5, 89-G3, 94-G4, 95-G4, 96-G4, 98-G6, 101-G4, 102-G4, 105-G5, 108-G2, 108-G4(2), 108-G5, 110-G5, 111-G2, 111-G5, 111-G6, 112-G2, 112-G3, 112-G5, 114-G5, 115-G1, 115-G2, 117-G5, 118-G5, 118-G6, 119-G4, and 119-G6 (35 locations)	78	LF
Prestressed Concrete Girder	Repair spalling with exposed reinforcing or cracking at girder end at ASB95-G5 South end	1	SF
Prestressed Concrete Girder	Repair minor spalling with exposed strands at ASB33 G1-Z3 11 locations observed during the visual inspection	1	LF
Prestressed Concrete Girder	Repair minor spalling with exposed reinforcing at ASB62 G6-Z2, 123 G6-Z3, and 150 G1-Z3 observed during the visual inspection	3	LF
Prestressed Concrete Girder	Repair failed repairs of delamination with rust staining or spalling with exposed prestressing strands at ASB142 G1-Z3, 149 G2-Z2, and 195 G1-Z4 observed during the visual inspection	4	LF
Concrete Pier Caps	Replace all corroded conduit support brackets mounted to the face of caps with corrosion resistant hardware at Bents ASB160-N, 160-S, 161-N, and 165-N	4	EA
Prestressed Concrete Piles	Repair top portion of piles exhibiting minor spalls with exposed reinforcement at Bent-Pile: ASB72-C and 194-C (observed during visual inspection)	2	EA
Prestressed Concrete Piles	Repair failed repairs of delamination with rust staining or spalling with exposed prestressing strands or reinforcement at Bent-Pile: ASB3-C, 4-C, 43-A, 44-B, 53-A, 60-C, 83-C, 111-C, 112-C, 143-A, 148-B, 169-B, 197-C, and 199-B	14	EA

3.1.3 Trestle B - Northbound (BNB)

Table 12: BNB Critical Findings

Element	Item Description	Date Reported	Recommended Action/Follow-Up
None	N/A	N/A	N/A

Table 13: BNB Priority Repairs

Element	Item Description	Quantity	Unit
Prestressed Concrete Girder	Repair delamination/spalling with exposed prestressing strands at 98 locations	240	LF
Prestressed Concrete Girder	Repair failed repairs of spalling with exposed prestressing strands at: BNB106-G4, 118-G8, 123-G1, 124-G1, 124-G2, 127-G2, 128-G1, 139-G4, 145-G1, and 145-G4 (10 locations)	37	LF
Prestressed Concrete Piles	Determine effectiveness of damaged Lifejacket system and repair accordingly at Bent-Pile: BNB116-A, 117-A, and 127-A	3	EA
Light Pole	Replace light poles that exhibit cracking at baseplate at: BNB108, 111, 120, 129, 132, 141, 144, and 156	8	EA

Table 14: BNB Routine Repairs

Element	Item Description	Quantity	Unit
Asphalt Wearing Surface	Seal cracked asphalt at Spans BNB117 (2 locations), 118, 123, 124, and 125	24	SF
Prestressed Concrete Girder	Repair spalling near bearings with exposed reinforcement at: BNB106-G6, 107-G3, 109-G3, 117-G8, 118-G2, 120-G4, 120-G8, 130-G7, 132-G4, 149-G5, and 152-G5 (11 locations)	20	LF
Prestressed Concrete Girder	Repair failed repairs of spalling near bearings with exposed reinforcement at BNB118-G4 and 145-G5	5	LF
Prestressed Concrete Girder	Repair failed repairs of spalling near bearings with exposed reinforcement at 16 locations observed during the visual inspection	20	LF
Prestressed Concrete Girder	Repair minor spalling with exposed reinforcement in the girder web at BNB109-G5, 113-G1, 126-G5, and 150-G4	6	LF
Prestressed Concrete Girder	Repair minor spalling with exposed reinforcement in the girder web at 5 locations observed during the visual inspection	5	LF
Prestressed Concrete Piles	Repair piles with wide cracks, exposed prestressing strand on top portion, or exhibit rust staining at Bent-Pile: BNB108-C, 109-C, 120-C, 121-A, 121-B, 125-C, 129-A, 130-A, 131-A, 134-C, 138-A, 148-C, 153-B, 155-B, 157-A	15	EA
Prestressed Concrete Piles	Repair top portion of piles exhibiting minor spalls with exposed reinforcement at Bent-Pile: 113-B, 114-B, 118-B, 129-A, 146-B, 152-A, 154-A, 157-B, and 157-C	9	EA

3.1.4 Trestle B - Southbound (BSB)

Table 15: BSB Critical Findings

Element	Item Description	Date Reported	Recommended Action/Follow-Up
None	N/A	N/A	N/A

Table 16: BSB Priority Repairs

Element	Item Description	Quantity	Unit
Light Pole	Replace light poles that exhibit cracking at baseplate at: BSB103, 105, 113, 127, 129, and 133	6	EA
Cable/Electrical Trays	Reposition displaced cable at Spans BSB47 (conduit), 116, and 163	3	EA
Cable/Electrical Trays	Repair disconnected ground wires at Bents BSB107, 111, and BSB163	*3*	*EA*

Table 17: BSB Routine Repairs

Element	Item Description	Quantity	Unit
Asphalt Wearing Surface	Mill and repave scaled, cracked, or split asphalt at Spans BSB106, 110, 114, 115, 116, 121, 123, 133, 135, 136, and 138	292	SF
Asphalt Wearing Surface	Seal cracked and split asphalt and areas with minor abrasion and shallow surface spalls on Spans BSB101 – 108, 111, 112, 117, 118, 120, 124, 127, 128, 134, 137, 139, 140, and 141	2,183	SF
Metal Bridge Railing	Repair delaminated concrete repair on Span BSB116	1	SF
Concrete Top Flange (Underside)	Repair failed repairs of delamination with rust staining or spalling with exposed reinforcement at: BSB33 Bay 2 observed during the visual inspection	4	SF
Prestressed Concrete Girder	Repair spalling with exposed reinforcing or exposed strands at girder ends or in the lower portion of the continuity closure pours at Spans BSB106 G1-S, 107 G2-S, 110 G3-S, 112 G2-S, 113 G2-S, 115 G4-N, 116 G4-S, 121 G4-N, 122 G4-N, 123 G6-S, 124 G2-N G3-N&S G4-1 G5-S , 125 G3-S G4-S, 126 G6-N, 127 G3-N G4-S G5-S, 128 G4-S, 129 G4-N, 130 G2-N G4-S, 131 G4-S, 133 G4-S, 139 G3-S G5-S, 140 G5-S G6-S, 141 G5-S, and 142 G6-S (33 locations)	50	LF
Prestressed Concrete Girder	Repair minor spalling with exposed reinforcing at 52 locations	60	LF
Prestressed Concrete Girder	Repair minor spalling with exposed strands at 11 locations observed during the visual inspection	13	LF

Element	Item Description	Quantity	Unit
Prestressed Concrete Girder	Repair minor spalling with exposed reinforcing at BSB67 G1-Z2, 81 G1-Z3, and 147 G1-Z3 observed during the visual inspection	3	LF
Prestressed Concrete Piles	Repair top portion of piles exhibiting minor spalls with exposed reinforcement at BSB20 Pile A (observed during the visual inspection) and BSB111-B	1	EA
Prestressed Concrete Piles	Repair failed repairs of delamination with rust staining or spalling with exposed prestressing strands or reinforcement at Bent-Pile: BSB128-B and 155-A (observed during the visual inspection)	2	EA

3.1.5 Trestle C - Northbound (CNB)

Table 18: CNB Critical Findings

Element	Item Description	Date Reported	Recommended Action/Follow-Up
None	N/A	N/A	N/A

Table 19: CNB Priority Repairs

Element	Item Description	Quantity	Unit
Metal Bridge Railing	Reconnect loose railing to support post on Span CNB193 (E) middle row and 194 (NE) top row	2	EA
Metal Bridge Railing	Repair bent or damaged railing on Spans CNB149 (SW), 181 (NW), 185 (SW), and 193 (SW)	4	EA
Prestressed Concrete Girder	Repair delamination/spalling with exposed prestressing strands at: CNB136-G3, 136-G6, 137-G4, 137-G5, 137-G6, 139-G6, and 174-G1 (7 locations)	14	LF
Prestressed Concrete Girder	Repair failed repairs of spalling with exposed prestressing strands at CNB136-G6, 140-G4, and 174-G6	9	LF
Prestressed Concrete Girder	Repair failed repairs with cracking in Zone 2 that will re-expose strands at CNB134-G5, 134-G7, 140-G1(2), 141-G1, 148-G7, 173-G5, 185-G1, and 189-G8	26	LF
Light Pole	Replace light pole at CNB153, 159, 162, 165, 186, 192, 195, and 198	8	EA

Table 20: CNB Routine Repairs

Element	Item Description	Quantity	Unit
Metal Bridge Railing	Repair spalled concrete curb with exposed reinforcement at CNB149 (NE) on underside of curb	4	LF
Metal Bridge Railing	Repair failed concrete curb repair at CNB158, 177, 187, and 188	8	LF
Metal Bridge Railing	Replace anchor bolts that have insufficient exposure above rail post base plate at CNB171, West Side, 1st Post from the South	1	EA
Concrete Top Flange (Underside)	Repair spalling with exposed longitudinal and transverse reinforcement at Span ANB150 and 186	3	SF
Prestressed Concrete Girder	Repair areas of failed girder repairs exhibiting cracking, rust staining, or delamination	147	LF
Prestressed Concrete Girder	Repair spalling near bearings with exposed reinforcement at CNB139-G7, 139-G8, 147-G3, 148-G6, 157-G5, 168-G1, 171-G6, and 196-G6	12	LF

Element	Item Description	Quantity	Unit
Prestressed Concrete Girder	Repair spalling near bearings with exposed reinforcement and failed repairs of spalling near bearings at 85 locations observed during the visual inspection	113	LF
Prestressed Concrete Girder	Repair spall with exposed reinforcement on CNB156-G8, 178-G8, and 186-G5	3	LF
Prestressed Concrete Piles	Repair top portion of piles exhibiting minor spalls with exposed reinforcement at Bent-Pile: CNB133-A, 134-A, 143-C, 172-C, 176-A, 178-C, 182-B, 184-A, 184-B, 186-B, 192-B, and 193-B	12	EA
Prestressed Concrete Piles	Replace junction box cover on Lifejacket System at Bent-Pile: 183-B and 191-C	2	EA

3.1.6 Trestle C - Southbound (CSB)

Table 21: CSB Critical Findings

Element	Item Description	Date Reported	Recommended Action/Follow-Up
None	N/A	N/A	N/A

Table 22: CSB Priority Repairs

Element	Item Description	Quantity	Unit
Light Pole	Replace light poles that exhibit cracking at baseplate at: CSB107, 115, 117, 119, 121, 123, 129, 131, 133, 137, 147, 149, 151, and 153	14	EA
Metal Bridge Railing	Secure top rail on Span CSB136 west side, 4th post from the north	1	EA
Cable/Electrical Trays	Reattach disconnected cables at CSB35, 41, 44, 102, 116, 117, 131, 149, and 235	9	EA
Cable/Electrical Trays	Reposition displaced cables at CSB25, 44, 49, 67, 99 (tied to cable tray), 107, 164,	7	EA

Table 23: CSB Routine Repairs

Element	Item Description	Quantity	Unit
Asphalt Wearing Surface*	Seal cracked and split asphalt and areas with minor abrasion and shallow surface spalls on Span CSB120, 124, 130, 136, 138, 141, 148, and 150	187	SF
Metal Bridge Railing (Curb)	Repair spalling with exposed reinforcement at Spans CSB105, 108, 116, 119, 121, 122, 130, 131, 134, 135, 138, 140, 141, 142, 145, 146(2), 150, and 151 (19 locations)	23	SF
Open Expansion Joint*	Repair deteriorated/delaminated elastomeric concrete (Delcrete) header material at Spans CSB109, 112(2), 114(2), 119, 125(3), 139(2), 140, 143, 144, 148(2), 149, 151, 152, and 154 (20 locations)	39	LF
Concrete Top Flange (Underside)	Repair spalling with exposed longitudinal and transverse reinforcement at CSB187 Bay 2 observed during the visual inspection	1	SF
Concrete Top Flange (Underside)	Repair failed repairs of delamination with rust staining or spalling with exposed reinforcement at: CSB23 West Edge, CSB32 East Edge, CSB54 West Edge (3 locations)	4	SF

Element	Item Description	Quantity	Unit
Prestressed Concrete Girder	Repair spalling with exposed reinforcing or exposed strands at girder ends or in the lower portion of the continuity closure pours at Spans CSB105 G6-S, 107 G3-N G6-S, 108 G4-S, 109 G2-N, 110 G6-N, 113 G2-S, 114 G1-N G3-S G6-S, 120 G3-N G6-N, 121 G3-S G6-S, 122 G3-N, 123 G3-S, 125 G2-N G4-N&S, 133 G3-S, 135 G4-S, 137 G4-N, 138 G4-S, 139 G2-S, 141 G3-N G4-S, 142 G6-S, 144 G3-S G4-S G6-S, 146 G3-N G6-N, 147 G4-S G5-S G6-S, 148 G6-S, 149 G4-N G5-N, 150 G4-S G6-S, 151 G6-S, and 153 G6-N, (42 locations)	100	SF
Prestressed Concrete Girder	Repair minor spalling with exposed reinforcing at 36 locations	42	LF
Prestressed Concrete Girder	Repair minor spalling with exposed strands at CSB31 G1-Z1, 178 G2-Z4, 191 G6-Z3, 218 G2-Z4, and 225 G1-Z3 observed during the visual inspection	4	LF
Prestressed Concrete Girder	Repair minor spalling with exposed reinforcing at 18 locations observed during the visual inspection	18	LF
Prestressed Concrete Girder	Repair failed repairs of delamination with rust staining or spalling with exposed prestressing strands at 12 locations observed during the visual inspection	18	LF
Concrete Pier Caps	Reconnect disconnected conduit on Bent CSB121 North Face	1	EA
Concrete Pier Caps	Reconnect conduit on Bents CSB45, 59, and 60	3	EA
Prestressed Concrete Piles	Repair top portion of piles exhibiting minor spalls with exposed reinforcement at Bent-Pile: CSB110-B(2), 111-B, 111-C, 128-B, and 231-D (observed during visual inspection)	6	EA
Prestressed Concrete Piles	Repair failed repairs of delamination with rust staining or spalling with exposed prestressing strands or reinforcement at CSB52-C, 115-A, and 159-A observed during the visual inspection	3	EA
Cable/Electrical Trays	Replace corroded conduit near light pole at CSB149	2	EA

*Asphalt wearing surface and elastomeric joint headers are programmed to be replaced entirely in Fall 2020.

3.1.7 North Channel Bridge - Northbound (NCB-NB)

This component was last inspected in FY2018 and will be inspected again in FY2020.

Table 24: NCB-NB Critical Findings

Element	Item Description	Date Reported	Recommended Action/Follow-Up
None	N/A	N/A	N/A

Table 25: NCB-NB Priority Repairs

Element	Item Description	Quantity	Unit
None	N/A	N/A	N/A

Table 26: NCB-NB Routine Repairs

Element	Item Description	Quantity	Unit
None	N/A	N/A	N/A

3.1.8 North Channel Bridge - Southbound (NCB-SB)

Table 27: NCB-SB Critical Findings

Element	Item Description	Date Reported	Recommended Action/Follow-Up
None	N/A	N/A	N/A

Table 28: NCB-SB Priority Repairs

Element	Item Description	Quantity	Unit
Reinforced Concrete Deck	Repair spall in deck surface of NCB-SB8 that was previously patched and fill small spalls on NCB-SB10 and NCB-SB12	6	SF
Steel Girder	Remove paint and rust on NCB-SB9 G2 and recoat	1	SF
Steel Girder	Recoat area of peeled off top coat with exposed zinc primer NCB-SB12 G2	1	SF
Light Pole Support	Clean exposed reinforcement at NCB-SB5 Light Pole Support Pedestal and apply cold galvanizing compound	1	EA
Light Pole	Replace light poles at NCB-SB6 SE & NW Locations and NCB-SB9 that exhibit cracking at baseplate	3	EA
Cable/Electrical Trays	Reattach lower cable tray to two clips adjacent to light pole on NCB-SB11	1	EA
Cable/Electrical Trays	Reposition displaced cable at NCB-SB12	1	EA

Table 29: NCB-SB Routine Repairs

Element	Item Description	Quantity	Unit
Reinforced Concrete Deck*	Seal cracks in concrete deck. Complete deck sealing should also be programmed.	33,116	SF
Steel Diaphragms and Bracing	Clean and repaint areas exhibiting coating system failure	1	LS
Light Pole	Replace light pole at NCB-SB2 that exhibits minor cracking at baseplate	1	EA
Light Pole Support	Repair spalled concrete and reinforcement at NCB-SB5 Light Pole Support Pedestal	<1	CF

*Concrete deck is programmed to be sealed with gravity fill polymer in Spring 2020.

3.1.9 Trestle D - Northbound (DNB)

Table 30: DNB Critical Findings

Element	Item Description	Date Reported	Recommended Action/Follow-Up
None	N/A	N/A	N/A

Table 31: DNB Priority Repairs

Element	Item Description	Quantity	Unit
Prestressed Concrete Girder	Repair delamination/ spalling with exposed prestressing strands at: DNB1-G3 (2 locations), 2-G1 (3 locations), 2-G3, 3-G1 (2 locations), 4-G1 (3 locations), 4-G4, 5-G7, 5-G8, 6-G5, 6-G6, 7-G1 (2 locations), 7-G2, 7-G4 (4 locations), 7-G8, 9-G1, 10-G1, 10-G2, and 11-G2 (28 locations)	64	LF
Prestressed Concrete Girder	Repair failed repairs of delamination with rust staining or spalling with exposed prestressing strands at DNB 1-G1, 2-G3, and (2 locations)	4	LF
Light Pole	Replace light pole at DNB5 and DNB8 that exhibits cracking at baseplate	2	EA

Table 32: DNB Routine Repairs

Element	Item Description	Quantity	Unit
Metal Bridge Railing	Repair spalling on concrete curbs on Span DNB3, 13, and 14	3	SF
Metal Bridge Railing	Repair delaminated concrete curb repair on curb on Span DNB14	1	SF
Concrete Top Flange (Underside)	Repair spalling with exposed longitudinal and transverse reinforcement at Span DNB1	1	SF
Prestressed Concrete Girder	Repair spalling near bearings with exposed reinforcement at: DNB12-G3	2	LF
Prestressed Concrete Girder	Repair failed repairs of spalling near bearings with exposed reinforcement or rust staining at DNB 5-G5	2	LF
Prestressed Concrete Girder	Repair minor spalling with exposed reinforcement in the girder web at DNB2-G5 and 9-G5 (2 total locations)	3	LF
Prestressed Concrete Piles	Repair piles exhibiting minor spalls with exposed reinforcement at Bent-Pile: 2-C, 4-C, and 8-C	3	EA

Element	Item Description	Quantity	Unit
Prestressed Concrete Piles	Repair piles with wide cracks or exhibit rust staining at Bent-Pile 3-A and 6-B	2	EA
Light Pole	Remove anchor covers on light poles at DNB2 to verify condition of anchors, including proper torque	1	EA

3.1.10 Trestle D - Southbound (DSB)

Table 33: DSB Critical Findings

Element	Item Description	Date Reported	Recommended Action/Follow-Up
None	N/A	N/A	N/A

Table 34: DSB Priority Repairs

Element	Item Description	Quantity	Unit
Light Pole	Replace light pole at DSB11 and DSB15 that exhibits cracking at baseplate	2	EA
Cable/Electrical Trays	Reattach the blue cable that is disconnected at DSB7	1	EA
Cable/Electrical Trays	Remove debris from the cable tray at DSB9	1	EA
Cable/Electrical Trays	Reposition displaced cable at DSB9 and DSB 12	2	EA

Table 35: DSB Routine Repairs

Element	Item Description	Quantity	Unit
Reinforced Concrete Deck*	Seal cracks in concrete deck. Complete deck sealing should also be programmed.	7,250	SF
Prestressed Concrete Girder	Repair spalling near closure diaphragm with exposed reinforcement and prestressing strand at: DSB11-G1	1	LF
General	Remove vegetation from Superstructure Bay 4, Pile Caps, and Piles at DSB18 and DSB19	1	LS

*Concrete deck is programmed to be sealed with gravity fill polymer in Spring 2020.

3.1.11 Trestle E, Fisherman Inlet Bridge, Trestle F - Northbound (ENB, FIB-NB, and FNB)

Table 36: ENB, FIB-NB, and FNB Critical Findings

Element	Item Description	Date Reported	Recommended Action/Follow-Up
None	N/A	N/A	N/A

Table 37: ENB, FIB-NB, and FNB Priority Repairs

Element	Item Description	Quantity	Unit
Asphalt Wearing Surface	Repair surface spalls on ENB1 right lane	3	SF
Sliding Plate Expansion Joint	Remove debris from sliding plate joint opening at FIB-NB Pier 1 & Pier 4	2	EA
Steel Girder	Recoat area of peeled off top coat with exposed zinc primer on FIB-NB1 & FIB-NB2 girders (13 locations)	13	SF
Light Pole	Replace light pole at ENB8 and ENB10 that exhibits cracking at baseplate	2	EA

Table 38: ENB, FIB-NB, and FNB Routine Repairs

Element	Item Description	Quantity	Unit
Asphalt Wearing Surface	Seal cracked asphalt throughout ENB spans 1 (5 locations), 2 (2 locations), 3, 4 (3 locations), 5, 6, 7 (2 locations), 8 (3 locations), 9 (4 locations), and 10 (2 locations); FSB spans 1, 2, 3 (3 locations), 4 (4 locations), 5 (6 locations), and 6 (3 locations) (42 locations)	452	SF
Reinforced Concrete Deck	Repair delamination on west side of deck on ENB6	1	SF
Reinforced Concrete Deck	Seal cracks in concrete deck. Complete deck sealing should also be programmed.	860	SF
Concrete Girder End Diaphragms	Repair delaminated or spalled areas with exposed reinforcement or exposed strands in the lower portion of the continuity closure pours over Bent-Girder ENB2-G1, 2-G2, 2-G5, 3-G5, 3-G6, 4-G1, 4-G2, 4-G3, 4-G4, 4-G5, 4-G6, 5-G5, 8-G4 (both ends), 8-G5 (both ends), 9-G2, 9-G3, 9-G4, 9-G6, and 11-G4 (21 locations)	32	SF
Steel Diaphragms and Bracing	Clean and repaint areas exhibiting coating system failure	1	LS

3.1.12 Trestle E, Fisherman Inlet Bridge, Trestle F - Southbound (ESB, FIB-SB, and FSB)

Table 39: ESB, FIB-SB, and FSB Critical Findings

Element	Item Description	Date Reported	Recommended Action/Follow-Up
None	N/A	N/A	N/A

Table 40: ESB, FIB-SB, and FSB Priority Repairs

Element	Item Description	Quantity	Unit
Metal Bridge Railing	Repair/replace top rail with impact damage at ESB13 4th Span from the North	1	EA
Asphalt Wearing Surface	Repair surface spalls and potholes on ESB5 right lane (previously patched area), ESB8 right lane, and FSB1 right lane (3 locations)	11	SF
Prestressed Concrete Girder	Repair delamination/spalling with exposed prestressing strands at: ESB1-G7, 2-G1 (6 locations), 2-G7, 2-G8, 3-G2 (3 locations), 3-G8 (2 locations), 4-G1, 4-G5, 4-G6, 4-G8 (2 locations), 5-G2, 5-G8, 6-G4, 6-G8, 7-G1, 7-G5, 8-G1, 8-G8 (3 locations), 10-G5, 13-G1, 13-G3, 14-G2, 14-G3; FSB1-G8, 2-G1, 2-G8 (3 locations), 4-G1, 4-G8 (4 locations), 5-G1, 5-G8, 6-G8, 7-G8 (3 locations), 8-G1 (3 locations), and 8-G8 (56 locations)	112	LF
Prestressed Concrete Girder	Repair failed repairs of delamination with rust staining or spalling with exposed prestressing strands at ESB1-G5 (3 locations), 1-G6, 1-G8 (4 locations), 2-G1, 2-G7, 2-G8, 3-G7, 3-G8, 4-G8, 7-G1, 10-G1, and 10-G8; FSB4-G1 and 6-G1 (20 locations)	65	LF
Cable/Electrical Trays	Remove vegetation and debris from the cable tray at ESB spans 1, 3, 4, 5, 6, 9	6	EA

Table 41: ESB, FIB-SB, and FSB Routine Repairs

Element	Item Description	Quantity	Unit
Metal Bridge Railing	Remove corrosion from top rail at post interface on ESB1	2	EA
Metal Bridge Railing	Reconnect ground wire to railing on west side of FIB-SB3 and FSB5	2	EA
Asphalt Wearing Surface	Seal cracked asphalt throughout ESB spans 1, 3, 4, 9, 10 (3 locations), 11, and 12; FSB spans 1, 2 (2 locations), 4 (2 locations), 5 (2 locations), and 6 (2 locations) (18 locations)	116	SF

Element	Item Description	Quantity	Unit
Asphalt Wearing Surface	Mill and repave scaled asphalt at ESB spans 5, 8 (2 locations), 9, and 10; FSB spans 1, 6, and 7 (8 locations)	291	SF
Reinforced Concrete Deck	Seal cracks in concrete deck. Complete deck sealing should also be programmed.	992	SF
Concrete Top Flange (Underside)	Repair spalling with exposed reinforcement at Span ESB8	2	SF
Prestressed Concrete Girder	Repair spalling near bearings with exposed reinforcement at: ESB6-G4, 7-G5, and 14-G2	3	LF
Prestressed Concrete Girder	Repair failed repairs of spalling near bearings with exposed reinforcement or rust staining at ESB3-G6 and 10-G6	4	LF
Prestressed Concrete Girder	Repair minor spalling with no exposed reinforcement at FSB7-G4	1	LF
Steel Diaphragms and Bracing	Replace buckled lower lateral bracing diagonal member (L4x4x3/8) located on Span 2, Bay 3, Cross Frame 4	12	LF
Steel Superstructure	Clean and repaint areas exhibiting coating system failure	1	LS
Prestressed Concrete Piles	Repair piles exhibiting minor spalls with exposed reinforcement at Bent-Pile: ESB8-B; FIB-SB1-B, D, and E; FIB-SB2-G, FIB-SB3-E, and FIB-SB4-B	7	EA
Light Pole	Reconnect disconnected cable at light pole on Bent ESB8	1	EA
Light Pole	Remove anchor bolt covers at ESB8, ESB11, and FSB1	3	EA
Cable/Electrical Trays	Repair broken cable tray expansion straps at FIB-SB1 and FIB-SB4	2	EA

3.2 Tunnels

It is understood by Jacobs that the District is in the process of performing or developing contract documents for the repair of the following:

- Repairs to spalled concrete areas on concrete columns, walls, roof beams, and ceiling of the supply fan room of all ventilation buildings.
- Masonry mortar and steel flashing repairs as needed to the exterior of all ventilation buildings.

3.2.1 Thimble Shoal Channel Tunnel (TSCT)

This component was last inspected in FY2018 and will be inspected again in FY2020.

Table 42: TSCT Critical Findings

Element	Item Description	Date Reported	Recommended Action/Follow-Up
None	N/A	N/A	N/A

Table 43: TSCT Priority Repairs

Element	Item Description	Quantity	Unit
None	N/A	N/A	N/A

Table 44: TSCT Routine Repairs

Element	Item Description	Quantity	Unit
None	N/A	N/A	N/A

3.2.2 Chesapeake Channel Tunnel (CCT)

Table 45: CCT Critical Findings

Element	Item Description	Date Reported	Recommended Action/Follow-Up
None	N/A	N/A	N/A

Table 46: CCT Priority Repairs

Element	Item Description	Quantity	Unit
Precast Concrete Tunnel Liner	Remove existing wall drain cover plates and flush debris buildup along the Roadway East Wall at STA 489+50. This should include removal of any debris on top of the east curb.	1	EA
Asphalt Wearing Surface	Repair depression in patch of Northbound Lane at STA 513+90.	1	SF
Concrete Traffic Barrier	Repair spalled concrete sidewalk at STA 511+30.	10	SF
Steel Pedestrian Railing	Replace missing anchor bolt at STA 486+18.	1	EA
Ventilation System	Investigate the cause of Portal Island #4 Exhaust Duct CO Monitor Device Error Reading "Sensor Flow - Fail" (believed to be caused by moisture).	1	EA
Emergency Generator System	Put an NEC acceptable drip pan under the louvers at locations of the Switchgear in which water is ponding in the Portal Island #3 & #4 Ventilation Buildings.	1	LS
Fire Protection System	Repair fire suppression water standpipes at STA 474+50, 500+79, 508+10, 512+23, 513+68, 515+15, 519+53, 521+10 & 522+40 where section loss was noted in the main piping just above the concrete in the niche.	9	EA
Fire Protection System	Recharge or replace fire extinguishers indicating low-pressure on Side Opposite Sidewalk Side at STA 477+33, 486+10, 520+94; and along Sidewalk Side at STA 478+79, 480+26, 481+72, 496+34, 518+01, and 519+47.	9	EA
Fire Protection System	Verify any fire extinguishers, without current inspection tags, are pressurized and meet certification standards. Consider recertification and tagging of all fire extinguishers both in the tunnel and ventilation buildings.	74	EA

Table 47: CCT Routine Repairs

Element	Item Description	Quantity	Unit
Precast Concrete Tunnel Liner	Repair locations of spalled and delaminated concrete in the Exhaust Duct (157 locations)	1,151	SF
Concrete Ceiling Slab	Repair locations of spalled and delaminated concrete in the Exhaust Duct, and at isolated locations along the haunch beam at STA 474+98, 475+20, 475+24, 489+20, 498+75, 499+40, & 521+90 (23 total locations) An in-depth inspection of the ceiling slab should be performed prior to repairs to better account for repair quantities	236	SF
Concrete Invert Slab	Repair locations of previous repairs that are delaminated or cracked in the Fresh Air Duct (77 locations).	7,116	SF
Concrete Invert Slab	Repair spalled concrete along roadway edge of Sidewalk Side at STA 473+20, 475+98, 496+30, 504+60, and 511+97.	11	SF
Steel Pedestrian Railing/Steel Corrosion Protective Coating	Remove rust and recoat at isolated locations along the Roadway	674	SF
Fans	Investigate source of grease/oil splatter on outside of the fans on the Fan Shaft Bearing Drive Side, and if indicated the Non-Drive Side for Fans BSB1 (both sides), BSB2, BSB3 (both sides), BSE2 (both sides), BSE3 (both sides), BNB1 (both sides), BNB2, & BNE2; and repair accordingly	8	EA
Drainage and Pumping System	Perform a vibration analysis on BSD-2 Pump located in Portal Island #3 Pump Room to investigate possible unintended bearing play, and repair accordingly.	1	EA
Drainage and Pumping System	Investigate source of leak around bearing packs of Pumps BND-1 & BND-3, and repair accordingly.	2	EA
Tunnel Lighting Fixture	Replace corroded lighting fixture at STA 502+25.	1	EA
Miscellaneous	Repair non-functional lights in the Exhaust Duct at STA 484+65.	1	EA

3.3 General Facility

Table 48: General Facility Critical Findings

Component	Item Description	Date Reported	Recommended Action/Follow-Up
None	N/A	N/A	N/A

Table 49: General Facility Priority Repairs

Component	Item Description	Quantity	Unit
Portal Island 4 – Approach Roadway	Replace missing delineator post near north end of approach.	1	EA
Portal Island 4 – Approach Roadway	Repair/replace base plates and connection hardware at Northwest Approach "Authorized Vehicles Only" Sign with corroded baseplate and hardware.	1	EA
Portal Island 3 & 4 – Approach Walls	Repair spalled and delaminated concrete along top of wall that has the potential to fall into the roadway and at Portal Island 4 East Approach Wall 2nd Overhead Signal Structure from Tunnel Portal	60	LF
Portal Island 4 – Approach Walls	Investigate spalling at location of grounding rod on East Approach Wall approximately 600' from North and repair accordingly	1	LS
Portal Island 3 – Utility Structure	Reattach disconnected ground cable.	1	EA
Light Pole	Repair/replace light poles that exhibits cracking at base and significant concrete spalling and delamination (3 at each island)	6	EA

Table 50: General Facility Routine Repairs

Component	Item Description	Quantity	Unit
Portal Island 4 – Approach Roadway	Repair cracked and spalled asphalt transverse to roadway at location of missing delineator post near north end of approach (apparent location of differential settlement of approach structure).	1	EA
Portal Island 3 & 4 – Approach Walls	Replace corroded anchor bolts on all overhead signal structures.	1	LS
Portal Island 3 & 4 – Approach Walls	Repair spalled and delaminated concrete along wall that does not have the potential to fall into the roadway	40	LF
Portal Island 3 – Approach Sidewalk	Repair spalled and delaminated concrete along sidewalk at 2 locations	4	SF
Portal Island 3 & 4 – Guardrail	Replace portions of guardrail and posts that exhibit impact damage and corrosion	1	LS

Component	Item Description	Quantity	Unit
Portal Island 3	Fill washouts and sinkholes near Splash Wall Panels 155/156, 169, 212/213, 238-240, 267, 295, 300	3	CY
Portal Island 4	Fill washouts and sinkholes near Splash Wall Panels 5, 30, 45, 76, 100, 132/133, 263/264, 282 and at Northeast corner of Ventilation Building	4	CY
Portal Island 3 & 4 – Splash Wall	Develop program to monitor movement of splash walls, particularly after large storm events. Potential program could involve comparison of periodic aerial photography images of the Portal Islands.	1	LS
Portal Island 3 & 4 – Splash Wall	Repair spalled and delaminated concrete along the splash walls	1	LS
Portal Island 3 – Utility Structure	Replace corroded enclosures on Air Handling Units	2	EA
Site-Wide Utilities - SCADA System	Replace broken conduit brackets and tighten loose brackets along the backside of the East Open Approach Walls on Portal Islands No. 3 and No. 4.	1	LS

4. VDOT Structure Inventory and Appraisal (SI&A) Records (B-6 and B-7 Forms)

4.1 Trestle A - Northbound

B-6 ANB **VDOT – BRIDGE INSPECTION REPORT** **Page: 1 of 2**

Structure-ID:	1002	**Type:**	Regular Inspection
County/City:	Northampton	**Date of Inspection:**	9/10/18 – 9/27/18
Structure:	_____(Co./Str.No)	**Feature/Intersection:**	Chesapeake Bay
Main Route:	13	**Facility/Carried:**	
Milepost:	46.62	**Location:**	Over Chesapeake Bay
Lead Inspector:	John Gaul	**Additional Inspector(s):**	Joseph DeJesus

WORK DONE: Girder repair project completed by Contractor on 10/15/17. Underwater Inspection performed 5/18 – 10/18

CONDITION OF STRUCTURE: Fair to Generally Good

1. Loose bridge railing on span 154, and bent or damaged railing on spans 135, 161, 171, and 174.
2. Some spalls on bottom flanges of some prestressed girders. Some locations with two or more strands exposed. Some locations with exposed rebar at bearings.
3. Some existing spall repairs on concrete girders are failing or have failed, with some exposing two strands near mid-span or exposing rebar at bearings. Hairline diagonal web cracks on approx. Approximately 63% of concrete girder ends inspected.
4. Minor to moderate defects on approximately 3% of elastomeric bearings.
5. One location requiring repair of expansion joint strap in the cable tray at ANB117.
6. Scattered minor damage to fiberglass jackets on some piles. Seven piles have a large spall of fiberglass jacket exposing sacrificial zinc mesh (81-C, 89-A, 133-A, 133-B, 135-C, 142-C, 152-C, 173-A). Anode is disconnected at bent 57 pile A.
7. Minor reflective cracking through coating at some piles and bent caps, with isolated rust staining and efflorescence at a few locations. Other areas of spalling coating noted.
8. Minor cracking and map cracking on many of the bent caps inspected.
9. Wearing surface is in good condition with minor unsealed cracks noted in scattered spans.
10. Existing repairs to piles with impact damage are typically sound.
11. Bay bottom is typically at or above the Allowable Scour Depth (ASD), with some previous scour remediation in place. Bent ANB214 has bay bottom slightly below ASD, but has scour remediation in place, and bay bottom appears to have stabilized with slight migration towards the north.
12. Roadway striping repainted in 2018 and remains in good condition.
13. Spalls recommended for repair noted in the underside of the deck in Spans ANB98,115, and 119

REVISED STRESS ANALYSIS:

1. Load rating completed in 12/2018 in accordance with VDOT Instructional and Informational Memorandum 86.2: Load Rating and Posting of Structures (Bridges and Culverts) dated 11/16/2018.
2. Structure load rating controlled by modular superstructure units with reduced capacity from having two- prestressing strands removed due to corrosion (worse case observed during inspection).
3. No posting of the structure is required.

RECOMMENDATIONS:

1. Continue periodic hydrographic surveys in interim between underwater inspections scheduled every 5 years
2. Perform structural review (if historical data is not available) to determine the effect on strength or serviceability of the piles considered to be Scour Condition State 4 at Bent-Pile: 211-C, 213-A, B, and C, and 214-A, B, and C. Results of structural review should be used to develop a strategy to mitigate the hazard of scour at these locations and to revise the Scour Condition State Criteria if necessary
3. Continue to patch spalls on prestressed concrete girders, giving priority to girders exhibiting two or more exposed strands per location

B-6 ANB **VDOT – BRIDGE INSPECTION REPORT** **Page: 2 of 2**

4. Reconnect loose bridge railing on span 154, and repair bent or damaged railing on spans 135, 161, 171, and 174.
5. Repair full depth pothole in asphalt overlay on span 144 in right lane
6. Retrofit any deteriorated cable tray expansion joint straps as required
7. Repair spalls in underside of deck with priority to those exposing multiple layers of steel
8. Determine effectiveness of damaged pile jackets with cathodic protection

SIGNATURE OF INSPECTOR

B-7 ANB **VDOT – BRIDGE INSPECTION REPORT** **Page: 1 of 3**

Structure-ID:	1002	**Type:**	Regular Inspection
County/City:	Northampton	**Date of Inspection:**	9/10/18 – 9/27/18
Structure:	_____(Co./Str.No)	**Feature/Intersection:**	Chesapeake Bay
Main Route:	13	**Facility/Carried:**	
Milepost:	46.62	**Location:**	Over Chesapeake Bay
Lead Inspector:	John Gaul	**Additional Inspector(s):**	Joseph DeJesus

SPECIAL CONDITIONS OR REQUIREMENTS

1. Fracture Critical	_	5. Segmental	_
2. Underwater	**X**	6. Pin & Hanger	_
3. Scour Critical	**X**	7. Fatigue Prone	_
4. Moveable	_		

36 TRAFFIC SAFETY FEATURES

1. Bridge Railing	**1**	3. Approach	**1**
2. Transition	**1**	4. Approach Guardrail	**1**

REMARKS:

58 DECK **GENERAL CONDITION RATING** **[7]**

1. Wearing Surface	**G**	6. Railing	**G**
2. Deck – Structural	**G**	7. Drains	**N**
3. Curbs	**G**	8. Lighting	**G**
4. Median	**N**	9. Utilities	**G**
5. Sidewalks	**N**	10. Expansion Joints or Devices	**G**

REMARKS:

a. The typical simple span open deck joints exhibit reflective cracking
b. Most cracks sealed, very few scattered cracks noted in wearing surface
c. Scattered minor cracking with some locations having efflorescence, and spalling on underside of deck
d. Roadway striping replaced in 2018 remains in good condition
e. Loose bridge railing on span 154, and bent or damaged railing on spans 135, 161, 171, and 174.
f. Remove anchor covers on light poles at ANB114 and ANB126 verify condition of anchors, including proper torque
g. Replace light poles that exhibit cracking at baseplate

B-7 ANB **VDOT – BRIDGE INSPECTION REPORT** **Page: 2 of 3**

59 SUPERSTRUCTURE **GENERAL CONDITION RATING** **[7]**

1. Bearing Devices **F**
2. Stringers **N**
3. Girders, Beams, or Slab Spans
   - A. General **F**
   - B. Diaphragms or Cross Frames **G**
   - C. Bracing **N**
4. Trusses
   - A. General **N**
   - B. Portals **N**
   - C. Bracing **N**
5. Paint **N**
   - Year Painted **N**
6. Machinery (Moveable Span) **N**

REMARKS:

a. Minor to moderate splitting of isolated bearings pads
b. Hairline diagonal web cracks on approx. 63% of concrete girders inspected
c. Some spalls on bottom flanges of some prestressed girders. Some with two or more strands exposed
d. Some older spall repairs are failing or have failed
e. Girder repair project completed by Contractor on 10/15/17.

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60 SUBSTRUCTURE **GENERAL CONDITION RATING** **[7]**

1. Abutments
   - A. Wings **G**
   - B. Backwall **G**
   - C. Bearing Seats **G**
   - D. Breastwall **N**
   - E. Weepholes **N**
   - F. Footing **G**
   - G. Piles *
   - H. Erosion/Scour **G**
   - I. Settlement **G**

***Not Visible**

2. Pier/Bent
   - A. Caps _
   - B. Piles _
   - C. Column, Stem, Wall _
   - D. Piles _
   - E. Bracing _
   - F. Erosion/Scour _
   - G. Settlement _
3. Pile Bent
   - A. Caps **F**
   - B. Bearing Seats **G**
   - C. Piles **G**
   - D. Bracing **N**

REMARKS:

a. Underwater Inspection performed 5/2018 – 10/2018. See FY2019 Underwater Inspection Forms for location of underwater defects and Element Level Inspection Forms for condition ratings of substructure units.
b. Minor to moderate map cracking at ends of some of the bent cap beams inspected
c. Most all repairs completed as part of Substructure Repair Project generally appear in good condition. Minor spalls of fiberglass jackets of the cathodic protection jackets noted. Seven piles have a large spall of fiberglass jacket exposing sacrificial zinc mesh (81-C, 89-A, 133-A, 133-B, 135-C, 142-C, 152-C, 173-A). Anode is disconnected at bent 57 pile A.
d. Minor cracking visible through coating on scattered bent cap faces and at some piles with scattered delamination of pile coatings noted, as well as isolated rust staining and efflorescence at a few pile locations
e. Most of the underwater portions of the piles are rated CS1 or CS2 (86%) with a majority of the CS2 ratings attributed to good repairs.

B-7 ANB **VDOT – BRIDGE INSPECTION REPORT** **Page: 3 of 3**

61 CHANNEL: CHANNEL/SLOPE PROTECTION **GENERAL CONDITION RATING** **[8]**

1. Channel Scour	**G**	5. Fender System	_
2. Embankment Erosion	_	6. Spur Dikes/Jetties	_
3. Drift	_	7. Rip Rap/Slope Protection	**G**
4. Vegetation	_	8. Adequacy of Opening	**F**

REMARKS:

a. Bay bottom is typically at or above ASD, with some previous scour remediation in place. Bent ANB214 has bay bottom slightly below ASD, but has scour remediation in place, and bay bottom appears to have stabilized with slight migration towards the north.
b. Scour ratings govern over the condition ratings at only a small percentage of the bents

66 POSTED LOADING

1. Posted Loading -		2. Legibility	**N**
(R12 -1)	**N**	3. Visibility	**N**
(R12 – 5) – Single	**N**		
(R12 – 5) – Semi	**N**		

REMARKS:

a. Load rating completed in 12/2018 in accordance with VDOT Instructional and Informational Memorandum 86.2: Load Rating and Posting of Structures (Bridges and Culverts) dated 11/16/2018.
b. Structure load rating controlled by modular superstructure units with reduced capacity from having two-prestressing strands removed due to corrosion (worse case observed during inspection).
c. No posting of the structure is required.

4.2 Trestle A - Southbound

B-6 ASB **VDOT – BRIDGE INSPECTION REPORT** **Page: 1 of 2**

Structure-ID:	1010	**Type:**	Regular Inspection
County/City:	Northampton	**Date of Inspection:**	9/10/18 – 9/27/18
Structure:	_____(Co./Str.No)	**Feature/Intersection:**	Chesapeake Bay
Main Route:	13	**Facility/Carried:**	
Milepost:	46.72	**Location:**	Over Chesapeake Bay
Lead Inspector:	John Gaul	**Additional Inspector(s):**	Joseph DeJesus

WORK DONE: Routine Maintenance. Underwater Inspection performed 5/18 – 10/18

CONDITION OF STRUCTURE: Good

1. Light poles at ASB81, 86, 99, 105, 107, 109, 115, 119, 121, 129, 131, and 133 exhibited cracking at the baseplate.
2. Minor hairline cracking and minor spalls on some of the piles above waterline.
3. Bent bridge railing on Spans ASB125 and 126 and loose shim plate or anchor plate at Span ASB151 and 167.
4. Spall with exposed reinforcement at Span ASB109 and 164, and minor cracking and efflorescence at scattered locations in underside of deck.
5. Spalled and cracked concrete at lower post tension duct at ASB82 and 93.
6. Girder spall with exposed reinforcement at bearing on Span ASB132.
7. Scattered minor spalls along bottom flange to web interface where insufficient cover is provided to shear reinforcement.
8. Minor spalling with exposed reinforcing or exposed strands in the girder ends or in the lower portion of the continuity closure pours at 74 locations.
9. Roadway striping replaced in 2018 remains in good condition.
10. Two locations requiring repair of expansion joint straps in the cable tray at ASB125 and 128
11. Bay bottom is typically at or above the Allowable Scour Depth (ASD), accretion occurring where scour remediation was placed near Bents ASB202 and 203.with some previous scour remediation in place. Bent ASB193 has bay bottom slightly below ASD, but has scour remediation in place, and bay bottom appears to have stabilized at adjacent bents with slight migration towards the south.
12. Most of the underwater portions of the bents are in very good condition. Minor spalling, a few hairline cracks and one narrow crack at a few bents at or below the waterline.
13. Erosion on east side of the South Abutment ASB1 around water and sewer lines and under slope protection and on the west side of the abutment.

REVISED STRESS ANALYSIS:

a. Load rating completed in 12/2018 in accordance with VDOT Instructional and Informational Memorandum 86.2: Load Rating and Posting of Structures (Bridges and Culverts) dated 11/16/2018.
b. Structure load rating controlled by the simple span steel structure at Span ASB204.
c. No posting of the structure is required.

RECOMMENDATIONS:

1. Replace light poles at ASB81, 86, 99, 105, 107, 109, 115, 119, 121, 129, 131, and 133.
2. Continue periodic hydrographic surveys in interim between underwater inspections scheduled every 5 years.
3. Perform structural review (if historical data is not available) to determine the effect on strength or serviceability of the piles considered to be Scour Condition State 4 at Bent-Pile: 193-A, C, D, E, and F, and 203-B, C, and D. Results of structural review should be used to develop a strategy to mitigate the hazard of scour at these locations and to revise the Scour Condition State Criteria if necessary

B-6 ASB **VDOT – BRIDGE INSPECTION REPORT** **Page: 2 of 2**

4. Clean exposed reinforcing and repair spalling in girder bottom flanges noted this year and in previous reports.
5. Clean exposed reinforcing and patch spalls/voids previously noted in piles above water.
6. Place fill at locations of erosion on east side of the South Abutment ASB1 around water and sewer lines and under slope protection and on the west side.
7. Retrofit any deteriorated cable tray expansion joint straps as required

SIGNATURE OF INSPECTOR

B-7 ASB **VDOT – BRIDGE INSPECTION REPORT** **Page: 1 of 3**

Structure-ID:	1010	**Type:**	Regular Inspection
County/City:	Northampton	**Date of Inspection:**	9/10/18 – 9/27/18
Structure:	_____(Co./Str.No)	**Feature/Intersection:**	Chesapeake Bay
Main Route:	13	**Facility/Carried:**	
Milepost:	46.72	**Location:**	Over Chesapeake Bay
Lead Inspector:	John Gaul	**Additional Inspector(s):**	Joseph DeJesus

SPECIAL CONDITIONS OR REQUIREMENTS

1. Fracture Critical	_	5. Segmental	_
2. Underwater	**X**	6. Pin & Hanger	_
3. Scour Critical	**X**	7. Fatigue Prone	_
4. Moveable	_		

36 TRAFFIC SAFETY FEATURES

1. Bridge Railing	**1**	3. Approach	**1**
2. Transition	**1**	4. Approach Guardrail	**1**

REMARKS:

58 DECK **GENERAL CONDITION RATING** **[8]**

1. Wearing Surface	**G**	6. Railing	**G**
2. Deck – Structural	**G**	7. Drains	**N**
3. Curbs	**G**	8. Lighting	**G**
4. Median	**N**	9. Utilities	**G**
5. Sidewalks	**N**	10. Expansion Joints or Devices	**G**

REMARKS:

a. Light poles at ASB81, 86, 99, 105, 107, 109, 115, 119, 121, 129, 131, and 133 exhibited cracking at the baseplate.
b. Spall with exposed reinforcement at Span ASB109 and 164, and minor cracking and efflorescence at scattered locations in underside of deck
c. Bent bridge railing on Spans ASB125 and 126 and loose shim plate or anchor plate at Span ASB151 and 167
d. Roadway striping replaced in 2018 remains in good condition

B-7 ASB **VDOT – BRIDGE INSPECTION REPORT** **Page: 2 of 3**

59 SUPERSTRUCTURE **GENERAL CONDITION RATING [8]**

1. Bearing Devices **G**
2. Stringers **N**
3. Girders, Beams, or Slab Spans
   - A. General **G**
   - B. Diaphragms or Cross Frames **G**
   - C. Bracing **N**
4. Trusses
   - A. General **N**
   - B. Portals **N**
   - C. Bracing **N**
5. Paint **G**
   - Year Painted **2013**
6. Machinery (Moveable Span) **N**

REMARKS:

a. Minor spalling with exposed reinforcing or exposed strands in the girder ends or in the lower portion of the continuity closure pours at 74 locations.
b. Girder spall with exposed reinforcement at bearing on Span ASB132
c. Damaged expansion joint plates in the cable trays at Bents ASB 125 and 128, and disconnected ground wires at ASB 123, 127, and 151.

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60 SUBSTRUCTURE **GENERAL CONDITION RATING [8]**

1. Abutments
   - A. Wings **N**
   - B. Backwall **N**
   - C. Bearing Seats **N**
   - D. Breastwall **N**
   - E. Weepholes **N**
   - F. Footing **N**
   - G. Piles **N**
   - H. Erosion/Scour **N**
   - I. Settlement **N**

***Not Visible**

2. Pier/Bent
   - A. Caps _
   - B. Piles _
   - C. Column, Stem, Wall _
   - D. Piles _
   - E. Bracing _
   - F. Erosion/Scour _
   - G. Settlement _
3. Pile Bent
   - A. Caps **G**
   - B. Bearing Seats **G**
   - C. Piles **G**
   - D. Bracing **N**

REMARKS:

a. Underwater Inspection performed 5/2018 – 10/2018. See FY2019 Underwater Inspection Forms for location of underwater defects and Element Level Inspection Forms for condition ratings of substructure units
b. Minor spalling, a few hairline cracks and one narrow crack at a few bents at or below the waterline
c. Minor hairline cracking and minor spalling on some of the piles
d. Minor hairline cracking or map cracking on scattered bent caps
e. Erosion on east side of the South Abutment ASB1 around water and sewer lines and under slope protection and on the west side of the abutment

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B-7 ASB **VDOT – BRIDGE INSPECTION REPORT** **Page: 3 of 3**

61 CHANNEL: CHANNEL/SLOPE PROTECTION **GENERAL CONDITION RATING** **[8]**

1. Channel Scour	**G**	5. Fender System	_
2. Embankment Erosion	_	6. Spur Dikes/Jetties	_
3. Drift	_	7. Rip Rap/Slope Protection	**G**
4. Vegetation	_	8. Adequacy of Opening	**F**

REMARKS:

a. Bay bottom is typically at or above the Allowable Scour Depth (ASD), accretion occurring where scour remediation was placed near Bents ASB202 and 203.with some previous scour remediation in place. Bent ASB193 has bay bottom slightly below ASD, but has scour remediation in place, and bay bottom appears to have stabilized at adjacent betns with slight migration towards the south.

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66 POSTED LOADING

1. Posted Loading -		2. Legibility	**N**
(R12 -1)	**N**	3. Visibility	**N**
(R12 – 5) – Single	**N**		
(R12 – 5) – Semi	**N**		

REMARKS:

a. Load rating completed in 12/2018 in accordance with VDOT Instructional and Informational Memorandum 86.2: Load Rating and Posting of Structures (Bridges and Culverts) dated 11/16/2018.
b. Structure load rating controlled by the simple span steel structure at Span ASB204.
c. No posting of the structure is required.

4.3 Trestle B - Northbound

B-6 BNB **VDOT – BRIDGE INSPECTION REPORT** **Page: 1 of 1**

Structure-ID:	1004	**Type:**	Regular Inspection
County/City:	Northampton	**Date of Inspection:**	9/10/18 – 9/27/18
Structure:	_____(Co./Str.No)	**Feature/Intersection:**	Chesapeake Bay
Main Route:	13	**Facility/Carried:**	
Milepost:	41.31	**Location:**	Over Chesapeake Bay
Lead Inspector:	John Gaul	**Additional Inspector(s):**	Joseph DeJesus

WORK DONE: Girder repair project completed by Contractor on 10/15/17.

CONDITION OF STRUCTURE: Generally Good

1. Light poles at BNB108, 111, 120, 129, 132, 141, 144, and 156 exhibited cracking at the baseplate.
2. Exposed sacrificial mesh of LifeJacket System on Bent BNB102 Piles A and C, 116-A, 117-A, and 127-A.
3. Scattered cracks and spalls on bottom flanges of prestressed girders, some locations with two exposed strands.
4. Some existing spall repairs on concrete girders are failing or have failed, with some exposing two strands near mid-span or exposing rebar at bearings.
5. Minor cracking on many of the piles and some spalling also noted on a few piles and a few longitudinal wide cracks noted with exposed prestressing strands in the top portion of the pile.
6. Hairline diagonal web cracking on approximately 48% of concrete girder ends inspected.
7. Minor to moderate splitting on approximately 10% of elastomeric bearings.
8. Minor map cracking on a few of the bent cap ends inspected.
9. Roadway striping replaced in 2018 remains in good condition.
10. Several deteriorating patches recommended for repair in the roadway surface.
11. Several locations where main cable tray grounding straps are disconnected.
12. For complete details on condition of the underwater portion of piles, see the 2014 Underwater Inspection Report.

REVISED STRESS ANALYSIS:

a. Load rating completed in 12/2018 in accordance with VDOT Instructional and Informational Memorandum 86.2: Load Rating and Posting of Structures (Bridges and Culverts) dated 11/16/2018.
b. Structure load rating controlled by modular superstructure units with reduced capacity from having two-prestressing strands removed due to corrosion (worse case observed during inspection).
c. No posting of the structure is required.

RECOMMENDATIONS:

1. Repair all cracks narrow or greater and repair spalls with exposed reinforcing in the piles
2. Determine effectiveness of damaged LifeJacket System on Bent BNB102 Piles A and C, 116-A, 117-A, and 127-A; repair accordingly
3. Continue periodic hydrographic surveys in interim between underwater inspections scheduled every 5 years.
4. Continue to patch any new spalls on prestressed concrete girders, giving priority to girders exhibiting two or more exposed strands per location
5. Continue to monitor paint condition of steel beam span (BNB1/BNB2)
6. Repair bent cable tray retainer plate at BNB71

SIGNATURE OF INSPECTOR

B-7 BNB **VDOT – BRIDGE INSPECTION REPORT** **Page: 1 of 3**

Structure-ID:	1004	**Type:**	Regular Inspection
County/City:	Northampton	**Date of Inspection:**	9/10/18 – 9/27/18
Structure:	_____(Co./Str.No)	**Feature/Intersection:**	Chesapeake Bay
Main Route:	13	**Facility/Carried:**	
Milepost:	41.31	**Location:**	Over Chesapeake Bay
Lead Inspector:	John Gaul	**Additional Inspector(s):**	Joseph DeJesus

SPECIAL CONDITIONS OR REQUIREMENTS

1. Fracture Critical	_	5. Segmental	_
2. Underwater	**X**	6. Pin & Hanger	_
3. Scour Critical	**X**	7. Fatigue Prone	_
4. Moveable	_		

36 TRAFFIC SAFETY FEATURES

1. Bridge Railing	**1**	3. Approach	**1**
2. Transition	**1**	4. Approach Guardrail	**1**

REMARKS:

58 DECK **GENERAL CONDITION RATING** **[7]**

1. Wearing Surface	**G**	6. Railing	**G**
2. Deck – Structural	**G**	7. Drains	**N**
3. Curbs	**G**	8. Lighting	**G**
4. Median	**N**	9. Utilities	**G**
5. Sidewalks	**N**	10. Expansion Joints or Devices	**G**

REMARKS:

a. The typical simple span open deck joints exhibit reflective cracking
b. Roadway striping repainted in 2018 remains in good condition
c. Most cracks sealed, but a few scattered cracks noted in wearing surface
d. Scattered minor cracking and spalling on underside of deck
e. Scattered minor transverse cracking in curbs

B-7 BNB **VDOT – BRIDGE INSPECTION REPORT** **Page: 2 of 3**

59 SUPERSTRUCTURE **GENERAL CONDITION RATING [7]**

1. Bearing Devices **F**
2. Stringers **N**
3. Girders, Beams, or Slab Spans
   - A. General **F**
   - B. Diaphragms or Cross Frames **G**
   - C. Bracing **N**
4. Trusses
   - A. General **N**
   - B. Portals **N**
   - C. Bracing **N**
5. Paint **F**
   - Year Painted **2013**
6. Machinery (Moveable Span) **N**

REMARKS:

a. Minor splitting of 10% of the bearings pads inspected
b. Some spalls on bottom flanges of some prestressed girders
c. Some existing spall repairs on girders are failing or have failed
d. Girder repairs performed by Contractor are ongoing
e. Spans B1 & B2 were replaced with one multiple steel girder simple span
f. Hairline diagonal web cracking on 48% of girders inspected

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60 SUBSTRUCTURE **GENERAL CONDITION RATING [7]**

1. Abutments
   - A. Wings **N**
   - B. Backwall **G**
   - C. Bearing Seats **G**
   - D. Breastwall **N**
   - E. Weepholes **N**
   - F. Footing **G**
   - G. Piles *
   - H. Erosion/Scour **G**
   - I. Settlement **G**

***Not Visible**

2. Pier/Bent
   - A. Caps _
   - B. Piles _
   - C. Column, Stem, Wall _
   - D. Piles _
   - E. Bracing _
   - F. Erosion/Scour _
   - G. Settlement _
3. Pile Bent
   - A. Caps **F**
   - B. Bearing Seats **G**
   - C. Piles **F**
   - D. Bracing **N**

REMARKS:

a. One location of delamination on pile cap at BNB85.
b. One spall with exposed reinforcement on pile cap at BNB100.
c. Minor cracking on many of the piles. A few longitudinal wide cracks noted with exposed prestressing strands in the top portion of the pile.
d. Spall of LifeJacket fiberglass jacket with exposed sacrificial mesh on Bent BNB102 Piles A and C, 116-A, 117-A, and 127-A are recommended for evaluation to determine effectiveness of the cathodic protection system and to be repaired accordingly
e. Some spalling with exposed reinforcing steel noted near top of a few piles, recommended for repair
f. Defects noted during 2014 Underwater Inspection include wide, narrow and hairline cracks, large spalls and moderate scaling. See report for additional details.

B-7 BNB **VDOT – BRIDGE INSPECTION REPORT** **Page: 3 of 3**

61 CHANNEL: CHANNEL/SLOPE PROTECTION **GENERAL CONDITION RATING** **[7]**

1. Channel Scour	**F**	5. Fender System	_
2. Embankment Erosion	_	6. Spur Dikes/Jetties	_
3. Drift	_	7. Rip Rap/Slope Protection	**G**
4. Vegetation	_	8. Adequacy of Opening	**F**

REMARKS:

a. Scour ratings vary from 4 to 8 and govern over the condition rating at a majority of bents (2014 UWI Report)
b. Scour remediation present at some locations and recommended at other locations (2014 UWI Report)

66 POSTED LOADING

1. Posted Loading -		2. Legibility	**N**
(R12 -1)	**N**	3. Visibility	**N**
(R12 – 5) – Single	**N**		
(R12 – 5) – Semi	**N**		

REMARKS:

a. Load rating completed in 12/2018 in accordance with VDOT Instructional and Informational Memorandum 86.2: Load Rating and Posting of Structures (Bridges and Culverts) dated 11/16/2018.
b. Structure load rating controlled by modular superstructure units with reduced capacity from having two-prestressing strands removed due to corrosion (worse case observed during inspection).
c. No posting of the structure is required.

4.4 Trestle B - Southbound

B-6 BSB **VDOT – BRIDGE INSPECTION REPORT** **Page: 1 of 1**

Structure-ID:	1012	**Type:**	Regular Inspection
County/City:	Northampton	**Date of Inspection:**	9/10/18 – 9/27/18
Structure:	_____(Co./Str.No)	**Feature/Intersection:**	Chesapeake Bay
Main Route:	13	**Facility/Carried:**	
Milepost:	41.38	**Location:**	Over Chesapeake Bay
Lead Inspector:	John Gaul	**Additional Inspector(s):**	Joseph DeJesus

WORK DONE: Routine Maintenance.

CONDITION OF STRUCTURE: Good

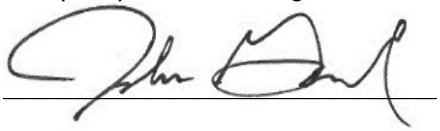
1. Light poles at BSB103, 115, 113, 127, 129, and 133 exhibit cracking at the base plate, light pole at BSB175 has a spall at the base plate with exposed reinforcement, and light poles at BSB151 and 161 exhibit minor spalling.
2. Asphalt wearing surface exhibits cracks, splits, surface spalls, and scaling at isolated locations throughout.
3. Minor hairline cracking and minor spalling on some piles and bent caps.
4. Minor cracking and spalling with exposed reinforcing near the bearings in a few concrete girders.
5. Minor hairline cracking scattered on the underside of the deck.
6. Steel beam span BSB202 repainted in 2013, structurally in good condition with scattered minor rusting of girders and diaphragms in areas over armor stones.
7. Minor spalling with exposed reinforcing or exposed strands in the girder ends or in the lower portion of the continuity closure pours at 48 locations.
8. Minor horizontal cracking, some with efflorescence, in intermediate concrete girder diaphragms.
9. Active scour, with bay bottom at or above Acceptable Scour Depth, was noted at many bents in 2016 UWI Report. 8% of bents were rated 6 or lower for scour.
10. The underwater portion of the piles are in generally good condition as noted during the 2016 Underwater Inspection. Large repairs previously completed at Bent BSB90 Pile C and at Bent BSB199 Pile C remain in good condition. Minor cracks and spalls were noted on some underwater portions of piles, with 21% of bents rated 6 or lower.
11. Roadway striping replaced in 2018 remains in good condition.

REVISED STRESS ANALYSIS:

1. Load rating completed in 12/2018 in accordance with VDOT Instructional and Informational Memorandum 86.2: Load Rating and Posting of Structures (Bridges and Culverts) dated 11/16/2018.
2. Structure load rating controlled by the simple span steel structures at Span BSB1 and BSB202.
3. No posting of the structure is required.

RECOMMENDATIONS:

1. Replace light poles at BSB103, 115, 113, 127, 129, 133, and 175.
2. Seal cracks and splits, and mill and repave scaling in wearing surface.
3. Continue periodic hydrographic surveys in interim between underwater inspections.
4. Repair spalls noted this year along with those previously noted on girder bottom flanges.
5. Retrofit deteriorated expansion joint plates on the cable trays at BSB 144 and 168 (including cable tray plate) and reattach ground wires at BSB 145, 149, 153, 157 and 173.



SIGNATURE OF INSPECTOR

B-7 BSB **VDOT – BRIDGE INSPECTION REPORT** **Page: 1 of 3**

Structure-ID:	1012	**Type:**	Regular Inspection
County/City:	Northampton	**Date of Inspection:**	9/10/18 – 9/27/18
Structure:	_____(Co./Str.No)	**Feature/Intersection:**	Chesapeake Bay
Main Route:	13	**Facility/Carried:**	
Milepost:	41.38	**Location:**	Over Chesapeake Bay
Lead Inspector:	John Gaul	**Additional Inspector(s):**	Joseph DeJesus

SPECIAL CONDITIONS OR REQUIREMENTS

1. Fracture Critical	_	5. Segmental	_
2. Underwater	**X**	6. Pin & Hanger	_
3. Scour Critical	**X**	7. Fatigue Prone	_
4. Moveable	_		

36 TRAFFIC SAFETY FEATURES

1. Bridge Railing	**1**	3. Approach	**1**
2. Transition	**1**	4. Approach Guardrail	**1**

REMARKS:

58 DECK **GENERAL CONDITION RATING** **[7]**

1. Wearing Surface	**G**	6. Railing	**G**
2. Deck – Structural	**G**	7. Drains	**N**
3. Curbs	**G**	8. Lighting	**G**
4. Median	**N**	9. Utilities	**G**
5. Sidewalks	**N**	10. Expansion Joints or Devices	**G**

REMARKS:

a. Light poles at BSB103, 115, 113, 127, 129, and 133 exhibit cracking at the base plate, light pole at BSB175 has a spall at the base plate with exposed reinforcement, and light poles at BSB151 and 161 exhibit minor spalling.
b. Asphalt wearing surface exhibits cracks, splits, and scaling on spans BSB143, 145, 147, 150, 151, 163, 165, 166, and 169
c. Minor hairline and map cracking scattered on the underside of the deck
d. Isolated minor shallow spalls on underside of deck at one location
e. Longitudinal reflective cracks in the overlay sealed, but a few scattered unsealed cracks were noted
f. Transverse cracks in bare concrete deck need sealing
g. Roadway striping replaced in 2018 remains in good condition
h. Elastomeric concrete end dams at open joints in good condition

B-7 BSB **VDOT – BRIDGE INSPECTION REPORT** **Page: 2 of 3**

59 SUPERSTRUCTURE **GENERAL CONDITION RATING [8]**

1. Bearing Devices **G**
2. Stringers **N**
3. Girders, Beams, or Slab Spans
   - A. General **G**
   - B. Diaphragms or Cross Frames **G**
   - C. Bracing **N**
4. Trusses
   - A. General **N**
   - B. Portals **N**
   - C. Bracing **N**
5. Paint **F**
   - Year Painted **2013**
6. Machinery (Moveable Span) **N**

REMARKS:

a. Spans BSB1 and BSB202 are painted steel girder spans and exhibit scattered minor widespread rust on portions over armor stones, but are structurally sound
b. Minor spalling with exposed reinforcing or exposed strands in the girder ends or in the lower portion of the continuity closure pours at 48 locations.
c. Damaged expansion joint plates in the cable trays at bents BSB 144 and 168 (including cable tray plate), and loose ground wires at BSB 145, 149, 153, 157 and 173.
d. Minor cracking and spalls with exposed reinforcing at isolated locations on a few girders

60 SUBSTRUCTURE **GENERAL CONDITION RATING [8]**

1. Abutments
   - A. Wings **G**
   - B. Backwall **G**
   - C. Bearing Seats **G**
   - D. Breastwall **N**
   - E. Weepholes **N**
   - F. Footing **G**
   - G. Piles *
   - H. Erosion/Scour **G**
   - I. Settlement **G**

***Not Visible**

2. Pier/Bent
   - A. Caps _
   - B. Piles _
   - C. Column, Stem, Wall _
   - D. Piles _
   - E. Bracing _
   - F. Erosion/Scour _
   - G. Settlement _
3. Pile Bent
   - A. Caps **G**
   - B. Bearing Seats **G**
   - C. Piles **G**
   - D. Bracing **N**

REMARKS:

a. Repairs to large spalls with exposed spiral reinforcing on underwater portions of BSB90 Pile C and BSB199 Pile C remain in good condition (2016 UWI Report)
b. Minor cracks and spalls underwater at 21% of Bents (2016 UWI Report)
c. Minor vertical hairline cracks, map cracks and spalls in scattered bent caps
d. Minor hairline cracking and minor spalling on some of the above water portions of the piles

B-7 BSB **VDOT – BRIDGE INSPECTION REPORT** **Page: 3 of 3**

61 CHANNEL: CHANNEL/SLOPE PROTECTION **GENERAL CONDITION RATING** **[8]**

1. Channel Scour	**G**	5. Fender System	_
2. Embankment Erosion	_	6. Spur Dikes/Jetties	_
3. Drift	_	7. Rip Rap/Slope Protection	**G**
4. Vegetation	_	8. Adequacy of Opening	**F**

REMARKS:

a. Active scour, with bay bottom at or above Acceptable Scour Depth, was noted at many bents in 2016 UWI Report. 8% of bents were rated 6 or lower for scour as noted in the 2016 UWI Report.

66 POSTED LOADING

1. Posted Loading -		2. Legibility	**N**
(R12 -1)	**N**	3. Visibility	**N**
(R12 – 5) – Single	**N**		
(R12 – 5) – Semi	**N**		

REMARKS:

a. Load rating completed in 12/2018 in accordance with VDOT Instructional and Informational Memorandum 86.2: Load Rating and Posting of Structures (Bridges and Culverts) dated 11/16/2018.
b. Structure load rating controlled by the simple span steel structures at Span BSB1 and BSB202.
c. No posting of the structure is required.

4.5 Trestle C - Northbound

B-6 CNB **VDOT – BRIDGE INSPECTION REPORT** **Page: 1 of 2**

Structure-ID:	1009	**Type:**	Regular Inspection
County/City:	Northampton	**Date of Inspection:**	9/10/18 – 9/27/18
Structure:	_____(Co./Str.No)	**Feature/Intersection:**	Chesapeake Bay
Main Route:	13	**Facility/Carried:**	
Milepost:	35.23	**Location:**	Over Chesapeake Bay
Lead Inspector:	John Gaul	**Additional Inspector(s):**	Joseph DeJesus

WORK DONE: Girder repair project completed by Contractor on 10/15/17.

CONDITION OF STRUCTURE: Generally Fair to Good

1. Loose bridge railing on spans 193 and 194, and bent or damaged railing on spans 149, 181, 185, and 193.
2. Light poles at CNB108, 111, 120, 129, 153, 159, 162, 165, 186, 192, 195, and 198 exhibited cracking or spalling at the baseplate, and the light pole at CNB131 has a loose anchor nut.
3. Damaged expansion joint plates in cable tray and misaligned cable tray plate at Bent CNB124.
4. New spall repairs on bottom flange of girders in good condition with minor shrinkage cracks noted.
5. A few failed patches at older repair locations, including exposed strands near mid-span and exposed rebar at some bearings.
6. Minor to moderate splitting on appr. 16% of the elastomeric bearings.
7. Hairline diagonal web cracking on approximately 46% of concrete girder ends inspected.
8. Roadway striping repainted in 2015 remains in good condition.
9. Most cracks sealed, but a few scattered cracks noted in wearing surface.
10. Map cracking at the ends of many of the bent caps.
11. Scattered minor to moderate cracking and spalling on a few of the piles, some of which are recommended for repair.
12. Scour ratings govern over the condition ratings at approximately 12% the bents (2015 UWI).
13. Bay bottom elevation below Allowable Scour Depth (ASD) at 8 locations, but of these, only CNB154 and CNB155 have no scour protection.
14. Underwater pile repairs previously completed at large spalls exposing spirals and post tensioning strands were at Pile C of Bent CNB59 and Pile A of Bent CNB154 remain in good condition (2015 UWI Report).
15. Underwater spalls or wide cracks noted at Bents CNB70, 90, 96, 97, 98, 144, 155, 270 and 271 (2015 UWI Report).
16. Asphalt wearing surface and elastomeric joint headers are programmed to be replaced entirely in Spring 2020.

REVISED STRESS ANALYSIS:

1. Load rating completed in 12/2018 in accordance with VDOT Instructional and Informational Memorandum 86.2: Load Rating and Posting of Structures (Bridges and Culverts) dated 11/16/2018.
2. Structure load rating controlled by modular superstructure units with reduced capacity from having two-prestressing strands removed due to corrosion (worse case observed during inspection).
3. No posting of the structure is required.

RECOMMENDATIONS:

1. Continue to patch spalls on prestressed concrete girders, giving priority to girders exhibiting two or more exposed strands per location.
2. Reconnect loose bridge railing on spans 193 and 194, and repair bent or damaged railing on spans 149, 181, 185, and 193.
3. Replace light poles at CNB108, 111, 120, 129, 153, 159, 162, 165, 186, 192, 195, and 198.
4. Replace damaged expansion joint plates in the cable tray at Bent CNB124 and realign cable tray plate.

B-6 CNB **VDOT – BRIDGE INSPECTION REPORT** **Page: 2 of 2**

5. Repair piles that exhibit significant cracking or spalling.
6. Continue periodic hydrographic surveys in interim between underwater inspections.
7. Continue to seal any cracks in wearing surface. Mill and repave areas of widespread cracking and scaling.
8. Monitor conditions of bay bottom where elevations are below ASD.

SIGNATURE OF INSPECTOR

B-7 CNB **VDOT – BRIDGE INSPECTION REPORT** **Page: 1 of 3**

Structure-ID:	1009	**Type:**	Regular Inspection
County/City:	Northampton	**Date of Inspection:**	9/10/18 – 9/27/18
Structure:	_____(Co./Str.No)	**Feature/Intersection:**	Chesapeake Bay
Main Route:	13	**Facility/Carried:**	
Milepost:	35.23	**Location:**	Over Chesapeake Bay
Lead Inspector:	John Gaul	**Additional Inspector(s):**	Joseph DeJesus

SPECIAL CONDITIONS OR REQUIREMENTS

1. Fracture Critical	_	5. Segmental	_
2. Underwater	**X**	6. Pin & Hanger	_
3. Scour Critical	**X**	7. Fatigue Prone	_
4. Moveable	_		

36 TRAFFIC SAFETY FEATURES

1. Bridge Railing	**1**	3. Approach	**1**
2. Transition	**1**	4. Approach Guardrail	**1**

REMARKS:

58 DECK **GENERAL CONDITION RATING** **[7]**

1. Wearing Surface	**G**	6. Railing	**G**
2. Deck – Structural	**G**	7. Drains	**N**
3. Curbs	**G**	8. Lighting	**G**
4. Median	**N**	9. Utilities	**G**
5. Sidewalks	**N**	10. Expansion Joints or Devices	**G**

REMARKS:

a. Light poles at CNB108, 111, 120, 129, 153, 159, 162, 165, 186, 192, 195, and 198 exhibited cracking or spalling at the baseplate, and the light pole at CNB131 has a loose anchor nut
b. Damaged expansion joint plates in cable tray and misaligned cable tray plate at Bent CNB124
c. Scattered minor transverse cracking and spalling in curbs, with exposed reinforcement at spans CNB82, 98, and 118
d. The typical simple span open deck joints exhibit reflective cracking
e. Roadway striping replaced in 2018 remains in good condition
f. Most cracks sealed, but a few scattered cracks noted in wearing surface and some spans noted with large areas of scaling/alligator cracking
g. Minor cracking, some exhibiting efflorescence on the underside of the deck in scattered spans

B-7 CNB **VDOT – BRIDGE INSPECTION REPORT** **Page: 2 of 3**

59 SUPERSTRUCTURE **GENERAL CONDITION RATING [7]**

1. Bearing Devices **F**
2. Stringers **N**
3. Girders, Beams, or Slab Spans
   - A. General **F**
   - B. Diaphragms or Cross Frames **G**
   - C. Bracing **N**
4. Trusses
   - A. General **N**
   - B. Portals **N**
   - C. Bracing **N**
5. Paint **F**
   - Year Painted **N**
6. Machinery (Moveable Span) **N**

REMARKS:

a. Minor to moderate splitting of 25% of bearings pads inspected
b. Some cracks and spalls on bottom flanges of some prestressed girders
c. Deterioration or failure of some existing patches on concrete girders
d. Girder repairs performed by Contractor are complete with new patches in Good condition and only exhibiting minor shrinkage cracks
e. Hairline diagonal web cracking on 44% of concrete girders inspected

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60 SUBSTRUCTURE **GENERAL CONDITION RATING [7]**

1. Abutments
   - A. Wings **N**
   - B. Backwall **G**
   - C. Bearing Seats **G**
   - D. Breastwall **N**
   - E. Weepholes **N**
   - F. Footing **G**
   - G. Piles *
   - H. Erosion/Scour **G**
   - I. Settlement **G**

***Not Visible**

2. Pier/Bent
   - A. Caps _
   - B. Piles _
   - C. Column, Stem, Wall _
   - D. Piles _
   - E. Bracing _
   - F. Erosion/Scour _
   - G. Settlement _
3. Pile Bent
   - A. Caps **F**
   - B. Bearing Seats **G**
   - C. Piles **F**
   - D. Bracing **N**

REMARKS:

a. Some minor cracking and spalling on many of the piles above water
b. Minor to moderate map cracking at ends of some bent cap beams
c. Large underwater spalls exposing spirals and post tensioning strands at Pile C of Bent CNB59 and Pile A of Bent CNB154, repaired in 2012 remain in Good condition (2015 UWI)
d. Bent CNB20 Pile B and Bent CNB46 Pile C retrofitted with Cathodic Protection jackets and remain in good condition
e. Underwater spalls or wide cracks noted at Bents CNB70 Pile C, CNB90 Pile C, CNB96 Piles A and C, CNB97 Piles A and C, CNB98 Piles A and C, CNB144 Pile A, CNB155 Piles A, B and C, CNB270 Pile C, CNB271 Pile D (2015 UWI)

B-7 CNB **VDOT – BRIDGE INSPECTION REPORT** **Page: 3 of 3**

61 CHANNEL: CHANNEL/SLOPE PROTECTION **GENERAL CONDITION RATING** **[8]**

1. Channel Scour	**F**	5. Fender System	_
2. Embankment Erosion	_	6. Spur Dikes/Jetties	_
3. Drift	_	7. Rip Rap/Slope Protection	**G**
4. Vegetation	_	8. Adequacy of Opening	**F**

REMARKS:

a. Scour ratings govern over the condition ratings at approximately 12% of the bents based on the 2015 UWI Report
b. Bents CNB 5, 11, 12, 45, 154, 155, 300, 301 have bay bottom elevations below the currently published acceptable scour depth based noted in the 2015 UWI Report. Scour Remediation in place at these bents except for Bents CNB154 and CNB155, where bay bottom is only a few feet below ASD.

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66 POSTED LOADING

1. Posted Loading -		2. Legibility	**N**
(R12 -1)	**N**	3. Visibility	**N**
(R12 – 5) – Single	**N**		
(R12 – 5) – Semi	**N**		

REMARKS:

a. Load rating completed in 12/2018 in accordance with VDOT Instructional and Informational Memorandum 86.2: Load Rating and Posting of Structures (Bridges and Culverts) dated 11/16/2018.
b. Structure load rating controlled by modular superstructure units with reduced capacity from having two-prestressing strands removed due to corrosion (worse case observed during inspection).
c. No posting of the structure is required.

4.6 Trestle C - Southbound

B-6 CSB **VDOT – BRIDGE INSPECTION REPORT** **Page: 1 of 2**

Structure-ID:	1014	**Type:**	Regular Inspection
County/City:	Northampton	**Date of Inspection:**	9/10/18 – 9/27/18
Structure:	_____(Co./Str.No)	**Feature/Intersection:**	Chesapeake Bay
Main Route:	13	**Facility/Carried:**	
Milepost:	35.28	**Location:**	Over Chesapeake Bay
Lead Inspector:	John Gaul	**Additional Inspector(s):**	Joseph DeJesus

WORK DONE: Routine Maintenance. Underwater Inspection performed 6/17 – 10/17

REVISED DIMENSIONS: None

MISCELLANEOUS: No Encroachment Violations

CONDITION OF STRUCTURE: Good

1. Light poles at CSB107, 115, 117, 119, 121, 123, 129, 131, 133, 137, 147, 149, 151, 153, 155, 159, 163, 169, and 171 exhibited cracking or spalling at the baseplate.
2. Top railing of guardrail on Span 136 west side, 4th post from the north, is loose.
3. Asphalt wearing surface exhibits cracks, splits, surface spalls, and scaling at isolated locations throughout.
4. Minor hairline cracking and minor map cracking on some of the above-water portions of piles and bent caps. Some minor spalls on a few piles.
5. Minor spalling with no exposed reinforcement, and minor cracking and efflorescence at scattered locations in underside of deck.
6. Minor girder spalling with exposed reinforcement at 38 locations.
7. Minor spalling with exposed reinforcing or exposed strands in the girder ends or in the lower portion of the continuity closure pours at 60 locations.
8. Minor horizontal cracking, some with efflorescence, in intermediate concrete girder diaphragms.
9. Scour generally stable indicated by bay bottom elevations, but several bents noted at or below acceptable scour depth (FY2018 UWI Report and 2015 Hydrographic Survey).
10. Elastomeric concrete end dams at open joints in good condition, except for delamination, or spalling over Bents 109, 112(2), 114(2), 119, 125(3), 139(2), 140, 143, 144, 148(2), 149, 151, 152, 154, 167, 169, and 191.
11. Roadway striping replaced in 2018 remains in good condition.
12. Damaged lower cable tray expansion plates in Span CSB124.
13. Asphalt wearing surface and elastomeric joint headers are programmed to be replaced entirely in Fall 2020.

REVISED STRESS ANALYSIS:

a. Load rating completed in 12/2018 in accordance with VDOT Instructional and Informational Memorandum 86.2: Load Rating and Posting of Structures (Bridges and Culverts) dated 11/16/2018.
b. Structure load rating controlled by the simple span steel structures at Span CSB1.
c. No posting of the structure is required.

RECOMMENDATIONS:

1. Continue periodic hydrographic surveys in interim between underwater inspections.
2. Secure top rail on Span 136 west side, 4th post from the north.
3. Repair elastomeric concrete end dams at open joints as needed, including CSB167 and 169.
4. Monitor paint condition of steel beam span.
5. Replace light poles exhibiting cracking or spalling at baseplate.

B-6 CSB **VDOT – BRIDGE INSPECTION REPORT** **Page: 2 of 2**

6. Replace corroded and missing conduit brackets on bent cap faces with stainless steel.
7. Replace damaged lower cable tray expansion plates in Span CSB124.

SIGNATURE OF INSPECTOR

B-7 CSB **VDOT – BRIDGE INSPECTION REPORT** **Page: 1 of 3**

Structure-ID:	1014	**Type:**	Regular Inspection
County/City:	Northampton	**Date of Inspection:**	9/10/18 – 9/27/18
Structure:	_____(Co./Str.No)	**Feature/Intersection:**	Chesapeake Bay
Main Route:	13	**Facility/Carried:**	
Milepost:	35.28	**Location:**	Over Chesapeake Bay
Lead Inspector:	John Gaul	**Additional Inspector(s):**	Joseph DeJesus

SPECIAL CONDITIONS OR REQUIREMENTS

1. Fracture Critical	_	5. Segmental	_
2. Underwater	**X**	6. Pin & Hanger	_
3. Scour Critical	**X**	7. Fatigue Prone	_
4. Moveable	_		

36 TRAFFIC SAFETY FEATURES

1. Bridge Railing	**1**	3. Approach	**1**
2. Transition	**1**	4. Approach Guardrail	**1**

REMARKS:

58 DECK **GENERAL CONDITION RATING** **[8]**

1. Wearing Surface	**G**	6. Railing	**G**
2. Deck – Structural	**G**	7. Drains	**N**
3. Curbs	**G**	8. Lighting	**G**
4. Median	**N**	9. Utilities	**G**
5. Sidewalks	**N**	10. Expansion Joints or Devices	**F**

REMARKS:

a. Longitudinal reflective cracks through the overlay sealed in most spans, but a few scattered unsealed cracks were noted
b. Roadway striping replaced in 2018 remains in good condition
c. Elastomeric concrete end dams at open joints in good condition, except for delamination, or spalling over Bents 109, 112(2), 114(2), 119, 125(3), 139(2), 140, 143, 144, 148(2), 149, 151, 152, 154, 167, 169, and 191
d. Minor spalling with no exposed reinforcement, and minor cracking and efflorescence at scattered locations in underside of deck
e. Scattered minor transverse cracking and spalling in curbs, with exposed reinforcement at spans 105, 108, 116, 119, 121, 122, 130, 131, 134, 135, 138, 140, 141, 142, 145, 146(2), 150, 151, 156, 169, and 170
f. Adjust baseplate on underside of deck on Span CSB 170 near midspan on the West side such that both bolts are connected instead of only one as is the current condition

B-7 CSB **VDOT – BRIDGE INSPECTION REPORT** **Page: 2 of 3**

59 SUPERSTRUCTURE **GENERAL CONDITION RATING [7]**

1. Bearing Devices **G**
2. Stringers **N**
3. Girders, Beams, or Slab Spans
   - A. General **G**
   - B. Diaphragms or Cross Frames **G**
   - C. Bracing **N**
4. Trusses
   - A. General **N**
   - B. Portals **N**
   - C. Bracing **N**
5. Paint **N**
   - Year Painted **N**
6. Machinery (Moveable Span) **N**

REMARKS:

a. Minor girder spalling with exposed reinforcement at 38 locations.
b. Minor spalling with exposed reinforcing or exposed strands in the girder ends or in the lower portion of the continuity closure pours at 60 locations.
c. Minor cracking and spalling in concrete girder diaphragms.
d. Damaged lower cable tray expansion plates in Span CSB124

60 SUBSTRUCTURE **GENERAL CONDITION RATING [7]**

1. Abutments
   - A. Wings **N**
   - B. Backwall **G**
   - C. Bearing Seats **G**
   - D. Breastwall **N**
   - E. Weepholes **N**
   - F. Footing **G**
   - G. Piles *
   - H. Erosion/Scour **G**
   - I. Settlement **G**

***Not Visible**

2. Pier/Bent
   - A. Caps _
   - B. Piles _
   - C. Column, Stem, Wall _
   - D. Piles _
   - E. Bracing _
   - F. Erosion/Scour _
   - G. Settlement _
3. Pile Bent
   - A. Caps **G**
   - B. Bearing Seats **G**
   - C. Piles **G**
   - D. Bracing **N**

REMARKS:

a. Underwater Inspection performed 6/2017 – 10/2017. See FY2018 Underwater Inspection Forms for location of underwater defects and Element Level Inspection Forms for condition ratings of substructure units
b. Minor hairline cracking and minor map cracking on some of the above-water portions of piles and bent caps, a few piles with minor efflorescence
c. Minor shallow spalls noted on a few piles, some with exposed reinforcing

B-7 CSB **VDOT – BRIDGE INSPECTION REPORT** **Page: 3 of 3**

61 CHANNEL: CHANNEL/SLOPE PROTECTION **GENERAL CONDITION RATING** **[8]**

1. Channel Scour	**F**	5. Fender System	_
2. Embankment Erosion	_	6. Spur Dikes/Jetties	_
3. Drift	_	7. Rip Rap/Slope Protection	**G**
4. Vegetation	_	8. Adequacy of Opening	**F**

REMARKS:

a. Some bents have scour below the acceptable scour depth, but are relatively stable and only require monitoring. See FY2018 Bay Bottom Profiles and 2015 Hydrographic Survey for further information

66 POSTED LOADING

1. Posted Loading -		2. Legibility	**N**
(R12 -1)	**N**	3. Visibility	**N**
(R12 – 5) – Single	**N**		
(R12 – 5) – Semi	**N**		

REMARKS

a. Load rating completed in 12/2018 in accordance with VDOT Instructional and Informational Memorandum 86.2: Load Rating and Posting of Structures (Bridges and Culverts) dated 11/16/2018.
b. Structure load rating controlled by the simple span steel structures at Span CSB1.
c. No posting of the structure is required.

4.7 North Channel Bridge - Northbound

B-6 NCB-NB **VDOT – BRIDGE INSPECTION REPORT** **Page: 1 of 2**

Structure-ID:	1006	**Type:**	Regular & Fracture Critical Inspection
County/City:	Northampton	**Date of Inspection:**	9/18/17 – 9/22/17
Structure:	_____(Co./Str.No)	**Feature/Intersection:**	Chesapeake Bay
Main Route:	13	**Facility/Carried:**	
Milepost:	34.51	**Location:**	Over Chesapeake Bay
Lead Inspector:	John Gaul	**Additional Inspector(s):**	Joseph DeJesus

WORK DONE: Routine Maintenance.

CONDITION OF STRUCTURE: Generally Good

1. Steel bridge components received overcoat painting in 2012/2013.
2. Concrete deck has scattered transverse hairline cracks.
3. Isolated scattered areas of peeling overcoat paint system.
4. Existing cracks in steel floorbeam webs over the girders.
5. Section loss at some floorbeam web stiffeners over the longitudinal girders.
6. Scattered areas of minor rust.
7. Deteriorated bolts and rivets replaced.
8. Pack rust and crevice corrosion mostly sealed between multiple cover plates at isolated areas along top and bottom girder flanges and at corners of lower chord in Span 9.
9. Minor isolated rust in scattered upper and lower truss joints.
10. Miscellaneous minor spalls and cracks in the piers.
11. Minor cracking and light to moderate scaling in splash zone on some piers.
12. For the underwater portion of the piers, see the 2016 UWI Report.
13. Scouring of the bay bottom appears stable based on the latest hydrographic survey information provided by the District (August 2011, more recent surveys from 2016 and 2017 are currently being processed) and 2016 UWI Report.
14. Bay bottom at each pier is typically protected by a riprap blanket.
15. Fender system at Piers 9 and 10 replaced in 2013 and noted in good condition.

REVISED STRESS ANALYSIS:

1. Load rating IN PROGRESS in accordance with VDOT Instructional and Informational Memorandum 86.2: Load Rating and Posting of Structures (Bridges and Culverts) dated 11/16/2018.

RECOMMENDATIONS:

1. Annually clean debris from interior of lower chords at panel points.
2. Seal transverse cracks in the concrete deck.
3. Monitor coating placed on interior of lower chords at Panel Points L0 and L0'.
4. Monitor rusting welds at some hanger connections for lateral bracing.
5. Monitor floorbeam web cracks.
6. Repair floorbeam web stiffeners with section loss.
7. Monitor scattered minor to moderate corrosion of bolted girder splice connections.
8. Monitor section loss on stringer and floorbeam details at L3 and L3' in Span 9.
9. Monitor any pack rust and crevice corrosion between top and bottom flange cover plates and at corners of lower chord truss members.
10. Monitor minor rust inside scattered upper and lower chord truss joints.
11. Seal minor cracks in all pier tops extending from bearing grout pads.

B-6 NCB-NB **VDOT – BRIDGE INSPECTION REPORT** **Page: 1 of 2**

12. Rout and pack cracks in splash zone at Piers 1, 2, 3, 7, 8, 11, 12, 13 and 14.
13. Repair paint system at scattered location where overcoat is peeling.

SIGNATURE OF INSPECTOR

B-7 NCB-NB **VDOT – BRIDGE INSPECTION REPORT** **Page: 1 of 3**

Structure-ID:	1006	**Type:**	Regular Inspection
County/City:	Northampton	**Date of Inspection:**	9/18/17 – 9/22/17
Structure:	_____(Co./Str.No)	**Feature/Intersection:**	Chesapeake Bay
Main Route:	13	**Facility/Carried:**	
Milepost:	34.51	**Location:**	Over Chesapeake Bay
Lead Inspector:	John Gaul	**Additional Inspector(s):**	Joseph DeJesus

SPECIAL CONDITIONS OR REQUIREMENTS

1. Fracture Critical	**X**	5. Segmental	_
2. Underwater	_	6. Pin & Hanger	_
3. Scour Critical	**X**	7. Fatigue Prone	_
4. Moveable	_		

36 TRAFFIC SAFETY FEATURES

1. Bridge Railing	**1**	3. Approach	**1**
2. Transition	**N**	4. Approach Guardrail	**N**

REMARKS:

58 DECK **GENERAL CONDITION RATING** **[8]**

1. Wearing Surface	**N**	6. Railing	**G**
2. Deck – Structural	**G**	7. Drains	**N**
3. Curbs	**G**	8. Lighting	**G**
4. Median	**N**	9. Utilities	**G**
5. Sidewalks	**N**	10. Expansion Joints or Devices	**G**

REMARKS:

a. Deck replaced in 1998 as part of the Parallel Crossing Project
b. Scattered transverse hairline cracks, which require sealing
c. 2005 repair adjacent to joint at Panel Point 3 in Span 9 remains sound
d. Replace loose guardrail nut at Span 3 Floorbeam 10 east side

B-7 NCB-NB **VDOT – BRIDGE INSPECTION REPORT** **Page: 2 of 3**

59 SUPERSTRUCTURE **GENERAL CONDITION RATING [7]**

1. Bearing Devices **G**
2. Stringers **G**
3. Girders, Beams, or Slab Spans
   - A. General **F**
   - B. Diaphragms or Cross Frames **G**
   - C. Bracing **F**
4. Trusses
   - A. General **F**
   - B. Portals **G**
   - C. Bracing **G**
5. Paint **G**
   - Year Painted **2013**
6. Machinery (Moveable Span) **N**

REMARKS:

a. Steel bridge components received overcoat painting in 2012/2013
b. Newer repaired lateral bracing hanger connections in good condition, a few others with scattered rust
c. Pack rust and crevice corrosion mostly sealed between multiple cover plates at isolated areas along top and bottom girder flanges and at corners of lower chord in Span 9, but some bleed-thru emerging
d. Deteriorated bolts and rivets replaced, some scattered rust on those not replaced
e. Existing web cracks in floorbeams over girders
f. Minor isolated rust in scattered upper and lower truss joints
g. Isolated areas of scattered minor rust on various members
h. Section loss at some floorbeam stiffeners over the longitudinal girders
i. Scattered section loss on floorbeam, stringer seats and associated details at L3 and L3' in truss span. Previous repairs in good condition

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60 SUBSTRUCTURE **GENERAL CONDITION RATING [7]**

1. Abutments
   - A. Wings **N**
   - B. Backwall **N**
   - C. Bearing Seats **N**
   - D. Breastwall **N**
   - E. Weepholes **N**
   - F. Footing **N**
   - G. Piles **N**
   - H. Erosion/Scour **N**
   - I. Settlement **N**

***Not Visible**

2. Pier/Bent
   - A. Caps **G**
   - B. Piles _
   - C. Column, Stem, Wall **G**
   - D. Piles *****
   - E. Bracing **G**
   - F. Erosion/Scour **F**
   - G. Settlement **G**
3. Pile Bent
   - A. Caps **N**
   - B. Bearing Seats **N**
   - C. Piles **N**
   - D. Bracing **N**

REMARKS:

a. Miscellaneous minor spalls and cracks in the piers
b. Rout and pack cracks in splash zone at Piers 1, 2, 3, 7, 8, 11, 12, 13 and 14.
c. Repair cracks in tops of pier columns
d. For the underwater portions of the piers, see the 2016 Underwater Inspection Report

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B-7 NCB-NB **VDOT – BRIDGE INSPECTION REPORT** **Page: 3 of 3**

61 CHANNEL: CHANNEL/SLOPE PROTECTION **GENERAL CONDITION RATING** **[8]**

1. Channel Scour	**G**	5. Fender System	**F**
2. Embankment Erosion	_	6. Spur Dikes/Jetties	_
3. Drift	_	7. Rip Rap/Slope Protection	**G**
4. Vegetation	_	8. Adequacy of Opening	**F**

REMARKS:

a. Scouring of the bay bottom appears stable based on the latest hydrographic survey information provided by the District (Aug.2011, and recent surveys from 2016 and 2017 are currently being processed) and 2016 Underwater Inspection
b. Bay bottom at each pier is typically protected by a riprap blanket
c. Fender systems at Piers 9 and 10 replaced in 2013 and in good condition

66 POSTED LOADING

1. Posted Loading -		2. Legibility	**N**
(R12 -1)	**N**	3. Visibility	**N**
(R12 – 5) – Single	**N**		
(R12 – 5) – Semi	**N**		

REMARKS

a. Load rating IN PROGRESS in accordance with VDOT Instructional and Informational Memorandum 86.2: Load Rating and Posting of Structures (Bridges and Culverts) dated 11/16/2018.

4.8 North Channel Bridge - Southbound

B-6 NCB-SB **VDOT – BRIDGE INSPECTION REPORT** **Page: 1 of 1**

Structure-ID:	1015	**Type:**	Regular Inspection
County/City:	Northampton	**Date of Inspection:**	9/10/18 – 9/27/18
Structure:	_____(Co./Str.No)	**Feature/Intersection:**	Chesapeake Bay
Main Route:	13	**Facility/Carried:**	
Milepost:	34.69	**Location:**	Over Chesapeake Bay
Lead Inspector:	John Gaul	**Additional Inspector(s):**	Joseph DeJesus

WORK DONE: Routine Maintenance.

REVISED DIMENSIONS: None

MISCELLANEOUS: No Encroachment Violations

CONDITION OF STRUCTURE: Generally Good

1. Rust around perimeter of some bearing base plates.
2. Isolated minor rust spots on crossframes, diaphragms, and lower lateral bracing members .
3. Minor rust on scattered nuts and bolts of longitudinal girder splices and also of crossframe, diaphragm and lower lateral bracing connections.
4. Scattered minor rust on ladder systems at Piers NCB-SB9 and NCB-SB10. Minor rusting of bolts anchoring ladder systems to piers.
5. Repairs to fender system completed in fall 2015 at NCB-SB9 resulting from boat impact noted in good condition.
6. Repairs to pile cap (footing) completed in fall of 2015 to NCB-SB9 appear satisfactory with minor cracking of the repair material.
7. Minor cracking on some of the pier caps.
8. Minor transverse cracks scattered in concrete deck, mostly hairline, but some noted as narrow.
9. Failing patch in bridge deck surface in Span NCB-SB8.
10. 2015 Hydrographic Survey indicates bay bottom was slightly above ASD at Pier NCB-SB13. Bay bottom is stable due to scour blanket in place as indicated in the 2014 Underwater Inspection Report.
11. No significant defects noted on the underwater portions of the piles in the 2014 Underwater Inspection Report.

REVISED STRESS ANALYSIS:

1. Load rating completed in 12/2018 in accordance with VDOT Instructional and Informational Memorandum 86.2: Load Rating and Posting of Structures (Bridges and Culverts) dated 11/16/2018.
2. No posting of the structure is required.

RECOMMENDATIONS:

1. Continue periodic hydrographic surveys in interim between underwater inspections.
2. Seal cracks in bridge deck
3. Repair failing patch in bridge deck surface in Span NCB-SB8
4. Replace top protective coating on steel girders at locations where zinc primer is exposed or coating has bubbled and exhibits freckled rust (Span:Girder, 9:2, 11:3, 12:2, and 12:3)

SIGNATURE OF INSPECTOR

B-7 NCB-SB **VDOT – BRIDGE INSPECTION REPORT** **Page: 1 of 3**

Structure-ID:	1015	**Type:**	Regular Inspection
County/City:	Northampton	**Date of Inspection:**	9/10/18 – 9/27/18
Structure:	_____(Co./Str.No)	**Feature/Intersection:**	Chesapeake Bay
Main Route:	13	**Facility/Carried:**	
Milepost:	34.69	**Location:**	Over Chesapeake Bay
Lead Inspector:	John Gaul	**Additional Inspector(s):**	Joseph DeJesus

SPECIAL CONDITIONS OR REQUIREMENTS

1. Fracture Critical	_	5. Segmental	_
2. Underwater	**X**	6. Pin & Hanger	_
3. Scour Critical	**X**	7. Fatigue Prone	_
4. Moveable	_		

36 TRAFFIC SAFETY FEATURES

1. Bridge Railing	**1**	3. Approach	**1**
2. Transition	**N**	4. Approach Guardrail	**N**

REMARKS:

58 DECK **GENERAL CONDITION RATING** **[8]**

1. Wearing Surface	**N**	6. Railing	**G**
2. Deck – Structural	**G**	7. Drains	**N**
3. Curbs	**G**	8. Lighting	**G**
4. Median	**N**	9. Utilities	**G**
5. Sidewalks	**N**	10. Expansion Joints or Devices	**G**

REMARKS:

a. Minor transverse hairline cracks in deck surface, with a few cracks up to 1/8”
b. Curb and railing are generally in good condition
c. Minor failing patch in deck surface of NCB-SB8

B-7 NCB-SB **VDOT – BRIDGE INSPECTION REPORT** **Page: 2 of 3**

59 SUPERSTRUCTURE **GENERAL CONDITION RATING [7]**

1. Bearing Devices **G**
2. Stringers _
3. Girders, Beams, or Slab Spans
   - A. General **G**
   - B. Diaphragms or Cross Frames **G**
   - C. Bracing **G**
4. Trusses
   - A. General _
   - B. Portals _
   - C. Bracing _
5. Paint **G**
   - Year Painted **2014**
6. Machinery (Moveable Span) _

REMARKS:

a. No significant structural defects noted and minor section loss at areas exhibiting corrosion
b. Minor rust on scattered nuts and bolts of longitudinal girder splices and also of crossframe, diaphragm and lower lateral bracing connections
c. Minor rusting areas at bottom of bearings base plates and surface rust on bearing web plates
d. Lubricate bearings as required
e. Replace top protective coating on steel girders at locations where zinc primer is exposed or coating has bubbled and exhibits freckled rust (Span:Girder, 9:2, 11:3, 12:2, and 12:3)

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60 SUBSTRUCTURE **GENERAL CONDITION RATING [7]**

1. Abutments
   - A. Wings **N**
   - B. Backwall **N**
   - C. Bearing Seats **N**
   - D. Breastwall **N**
   - E. Weepholes **N**
   - F. Footing **N**
   - G. Piles **N**
   - H. Erosion/Scour **N**
   - I. Settlement **N**

***Not Visible**

2. Pier/Bent
   - A. Caps **G**
   - B. Piles _
   - C. Column, Stem, Wall **G**
   - D. Piles _
   - E. Bracing _
   - F. Erosion/Scour _
   - G. Settlement _
3. Pile Bent
   - A. Caps _
   - B. Bearing Seats _
   - C. Piles _
   - D. Bracing _

REMARKS:

a. Minor cracks in some columns and pier caps
b. Minor cracks in the backwall of pier caps at NCB-SB8 and NCB-SB11
c. 2014 Underwater Inspection revealed no structural defects
d. Scattered minor rust on ladder systems at Piers NCB-SB9 and NCB-SB10. Minor rusting of bolts anchoring ladder systems to piers.

B-7 NCB-SB **VDOT – BRIDGE INSPECTION REPORT** **Page: 3 of 3**

61 CHANNEL: CHANNEL/SLOPE PROTECTION **GENERAL CONDITION RATING** **[8]**

1. Channel Scour	**G**	5. Fender System	**G**
2. Embankment Erosion	_	6. Spur Dikes/Jetties	_
3. Drift	_	7. Rip Rap/Slope Protection	_
4. Vegetation	_	8. Adequacy of Opening	**F**

REMARKS:

a. 2015 Hydrographic Survey indicates bay bottom was slightly above ASD at Pier NCB-SB13. Bay bottom is stable due to scour blanket in place as indicated in the 2014 Underwater Inspection Report
b. Repairs to fender system completed in fall 2015 at NCB-SB9 resulting from boat impact noted in good condition
c. Repairs to pile cap (footing) completed in fall of 2015 to NCB-SB9 appear satisfactory with minor cracking of the repair material

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66 POSTED LOADING

1. Posted Loading -		2. Legibility	**N**
(R12 -1)	**N**	3. Visibility	**N**
(R12 – 5) – Single	**N**		
(R12 – 5) – Semi	**N**		

REMARKS

a. Load rating completed in 12/2018 in accordance with VDOT Instructional and Informational Memorandum 86.2: Load Rating and Posting of Structures (Bridges and Culverts) dated 11/16/2018.
b. No posting of the structure is required.

4.9 Trestle D - Northbound

B-6 DNB **VDOT – BRIDGE INSPECTION REPORT** **Page: 1 of 1**

Structure-ID:	1008	**Type:**	Regular Inspection
County/City:	Northampton	**Date of Inspection:**	9/10/18 – 9/27/18
Structure:	_____(Co./Str.No)	**Feature/Intersection:**	Chesapeake Bay
Main Route:	13	**Facility/Carried:**	
Milepost:	34.25	**Location:**	Over Chesapeake Bay
Lead Inspector:	John Gaul	**Additional Inspector(s):**	Joseph DeJesus

WORK DONE: Routine Maintenance.

REVISED DIMENSIONS: None

MISCELLANEOUS: No Encroachment Violations

CONDITION OF STRUCTURE: Generally Good

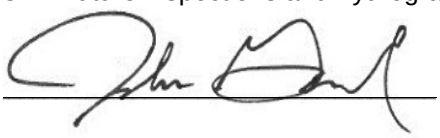
1. The 2016 Underwater Inspection Report revealed only light to moderate scaling and no other apparent defects.
2. Minor cracking on many of the piles and a few of the bent caps.
3. Spalls with exposed reinforcing noted near the tops of a few piles.
4. Some spalls on bottom flanges of some prestressed girders and some deteriorating patches.
5. Girder spall repairs with new method are in good condition.
6. Hairline diagonal web cracking on the concrete girders noted at scattered locations.
7. Minor to moderate defects on several of the elastomeric bearings.
8. Roadway striping replaced in 2018.
9. Open expansion joints paved over with raveling of asphaltic wearing surface.
10. Typical reflective cracking of wearing surface with sealed and some unsealed locations.
11. Bay bottom depths noted in the 2016 Underwater Inspection Report are well above the acceptable scour depth.

REVISED STRESS ANALYSIS:

1. Load rating completed in 12/2018 in accordance with VDOT Instructional and Informational Memorandum 86.2: Load Rating and Posting of Structures (Bridges and Culverts) dated 11/16/2018.
2. Structure load rating controlled by modular superstructure units with reduced capacity from having two-prestressing strands removed due to corrosion (worse case observed during inspection).
3. No posting of the structure is required.

RECOMMENDATIONS:

1. Patch any spalls that occur on prestressed concrete girders.
2. Patch spalls on cylinder piles.
3. Future inspections and hydrographic surveys should monitor for active scouring.



SIGNATURE OF INSPECTOR

B-7 DNB **VDOT – BRIDGE INSPECTION REPORT** **Page: 1 of 3**

Structure-ID:	1008	**Type:**	Regular Inspection
County/City:	Northampton	**Date of Inspection:**	9/10/18 – 9/27/18
Structure:	_____(Co./Str.No)	**Feature/Intersection:**	Chesapeake Bay
Main Route:	13	**Facility/Carried:**	
Milepost:	34.25	**Location:**	Over Chesapeake Bay
Lead Inspector:	John Gaul	**Additional Inspector(s):**	Joseph DeJesus

SPECIAL CONDITIONS OR REQUIREMENTS

1. Fracture Critical	_	5. Segmental	_
2. Underwater	**X**	6. Pin & Hanger	_
3. Scour Critical	**X**	7. Fatigue Prone	_
4. Moveable	_		

36 TRAFFIC SAFETY FEATURES

1. Bridge Railing	**1**	3. Approach	**1**
2. Transition	**1**	4. Approach Guardrail	**1**

REMARKS:

58 DECK **GENERAL CONDITION RATING** **[7]**

1. Wearing Surface	**G**	6. Railing	**G**
2. Deck – Structural	**G**	7. Drains	**N**
3. Curbs	**G**	8. Lighting	**G**
4. Median	**N**	9. Utilities	**G**
5. Sidewalks	**N**	10. Expansion Joints or Devices	**G**

REMARKS:

a. The typical simple span fixed and expansion open deck joints were paved over during the 1999 overlay and exhibit reflective cracking
b. Minor longitudinal reflective cracks through the overlay were noted, some were sealed. Overlay is programmed to be replaced in Spring 2020.
c. Top of roadway deck and components in good condition with limited minor impact damage to railings noted
d. No significant defects noted in underside of deck in spans 1 thru 18
e. Roadway striping replaced in 2018
f. Minor deterioration of patch in wearing surface in Span DNB18

B-7 DNB **VDOT – BRIDGE INSPECTION REPORT** **Page: 2 of 3**

59 SUPERSTRUCTURE **GENERAL CONDITION RATING [7]**

1. Bearing Devices **F**
2. Stringers **N**
3. Girders, Beams, or Slab Spans
   - A. General **F**
   - B. Diaphragms or Cross Frames **G**
   - C. Bracing **N**
4. Trusses
   - A. General **N**
   - B. Portals **N**
   - C. Bracing **N**
5. Paint **N**
   - Year Painted **N**
6. Machinery (Moveable Span) **N**

REMARKS:

a. Minor splitting of isolated bearing pads, and bulging of bearing pad at DNB1 G1 greater than 15% of the bearing thickness
b. Some cracks and spalls on bottom flanges of some prestressed girders and some deteriorating patches
c. Hairline diagonal web cracking on the concrete girders noted at scattered locations

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60 SUBSTRUCTURE **GENERAL CONDITION RATING [7]**

1. Abutments
   - A. Wings _
   - B. Backwall _
   - C. Bearing Seats _
   - D. Breastwall _
   - E. Weepholes _
   - F. Footing _
   - G. Piles _
   - H. Erosion/Scour _
   - I. Settlement _

***Not Visible**

2. Pier/Bent
   - A. Caps _
   - B. Piles _
   - C. Column, Stem, Wall _
   - D. Piles _
   - E. Bracing _
   - F. Erosion/Scour _
   - G. Settlement _
3. Pile Bent
   - A. Caps **G**
   - B. Bearing Seats **G**
   - C. Piles **F**
   - D. Bracing **N**

REMARKS:

a. The 2016 Underwater Inspection revealed only some light to moderate scaling and a shallow failed repair and spall
b. Minor cracking on many of the piles and a few bent caps above water
c. Spalls with exposed reinforcing noted near the tops of a few piles

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B-7 DNB **VDOT – BRIDGE INSPECTION REPORT** **Page: 3 of 3**

61 CHANNEL: CHANNEL/SLOPE PROTECTION **GENERAL CONDITION RATING** **[8]**

1. Channel Scour	**G**	5. Fender System	_
2. Embankment Erosion	_	6. Spur Dikes/Jetties	_
3. Drift	_	7. Rip Rap/Slope Protection	**G**
4. Vegetation	_	8. Adequacy of Opening	**F**

REMARKS:

a. Bay bottom depths noted in the 2016 Underwater Inspection Report are well above the acceptable scour depth

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66 POSTED LOADING

1. Posted Loading -		2. Legibility	**N**
(R12 -1)	**N**	3. Visibility	**N**
(R12 – 5) – Single	**N**		
(R12 – 5) – Semi	**N**		

REMARKS

a. Load rating completed in 12/2018 in accordance with VDOT Instructional and Informational Memorandum 86.2: Load Rating and Posting of Structures (Bridges and Culverts) dated 11/16/2018.
b. Structure load rating controlled by modular superstructure units with reduced capacity from having two-prestressing strands removed due to corrosion (worse case observed during inspection).
c. No posting of the structure is required.

4.10 Trestle D - Southbound

B-6 DSB **VDOT – BRIDGE INSPECTION REPORT** **Page: 1 of 1**

Structure-ID:	1016	**Type:**	Regular Inspection
County/City:	Northampton	**Date of Inspection:**	9/10/18 – 9/27/18
Structure:	_____(Co./Str.No)	**Feature/Intersection:**	Chesapeake Bay
Main Route:	13	**Facility/Carried:**	
Milepost:	34.29	**Location:**	Over Chesapeake Bay
Lead Inspector:	John Gaul	**Additional Inspector(s):**	Joseph DeJesus

WORK DONE: Routine Maintenance.

REVISED DIMENSIONS: None

MISCELLANEOUS: No Encroachment Violations

CONDITION OF STRUCTURE: Generally Good

1. Scour remediation was performed at Bent DSB1 in 2002.
2. Minor hairline cracks in many piles above water/land and some bent caps.
3. Hairline cracks with efflorescence in deck overhangs of several spans.
4. Widespread map cracking (hairline to narrow) of concrete deck surface in Spans DSB13, DSB14, DSB17 and DSB18.
5. Roadway striping replaced in 2018.
6. The 2014 Underwater Inspection revealed only a few hairline cracks and a few minor shallow spalls on some of the piles.
7. For scour condition and ratings of DSB see the 2014 Underwater Inspection Report.

REVISED STRESS ANALYSIS:

1. Load rating completed in 12/2018 in accordance with VDOT Instructional and Informational Memorandum 86.2: Load Rating and Posting of Structures (Bridges and Culverts) dated 11/16/2018.
2. No posting of the structure is required.

RECOMMENDATIONS:

1. Continue periodic hydrographic surveys in interim between underwater inspections scheduled every 5 years.
2. Seal cracks in deck surface of Spans DSB13, 14, 17, and 18.

SIGNATURE OF INSPECTOR

B-7 DSB **VDOT – BRIDGE INSPECTION REPORT** **Page: 1 of 3**

Structure-ID:	1016	**Type:**	Regular Inspection
County/City:	Northampton	**Date of Inspection:**	9/10/18 – 9/27/18
Structure:	_____(Co./Str.No)	**Feature/Intersection:**	Chesapeake Bay
Main Route:	13	**Facility/Carried:**	
Milepost:	34.29	**Location:**	Over Chesapeake Bay
Lead Inspector:	John Gaul	**Additional Inspector(s):**	Joseph DeJesus

SPECIAL CONDITIONS OR REQUIREMENTS

1. Fracture Critical	_	5. Segmental	_
2. Underwater	**X**	6. Pin & Hanger	_
3. Scour Critical	**X**	7. Fatigue Prone	_
4. Moveable	_		

36 TRAFFIC SAFETY FEATURES

1. Bridge Railing	**1**	3. Approach	**1**
2. Transition	**1**	4. Approach Guardrail	**1**

REMARKS:

58 DECK **GENERAL CONDITION RATING** **[7]**

1. Wearing Surface	_	6. Railing	**G**
2. Deck – Structural	**F**	7. Drains	**N**
3. Curbs	**G**	8. Lighting	_
4. Median	**N**	9. Utilities	**G**
5. Sidewalks	**N**	10. Expansion Joints or Devices	**G**

REMARKS:

a. Hairline cracks with efflorescence in the deck overhangs of several spans inspected
b. No other significant defects noted in underside of deck
c. Widespread map cracking (hairline to narrow) of concrete deck surface in Spans DSB13, DSB14, DSB17 and DSB18
d. Remove vegetation from underside of deck

B-7 DSB **VDOT – BRIDGE INSPECTION REPORT** **Page: 2 of 3**

59 SUPERSTRUCTURE **GENERAL CONDITION RATING** **[8]**

1. Bearing Devices **G**
2. Stringers **N**
3. Girders, Beams, or Slab Spans
   - A. General **G**
   - B. Diaphragms or Cross Frames **G**
   - C. Bracing **N**
4. Trusses
   - A. General **N**
   - B. Portals **N**
   - C. Bracing **N**
5. Paint **N**
   - Year Painted _
6. Machinery (Moveable Span) **N**

REMARKS:

a. Minor cracking and spalling at scattered closure pour diaphragms
b. Spans 1 thru 19 inspected from Snooper vehicle
c. Remove vegetation from girders

60 SUBSTRUCTURE **GENERAL CONDITION RATING** **[8]**

1. Abutments
   - A. Wings _
   - B. Backwall _
   - C. Bearing Seats _
   - D. Breastwall **N**
   - E. Weepholes **N**
   - F. Footing _
   - G. Piles *****
   - H. Erosion/Scour _
   - I. Settlement _

***Not Visible**

2. Pier/Bent
   - A. Caps _
   - B. Piles _
   - C. Column, Stem, Wall _
   - D. Piles _
   - E. Bracing _
   - F. Erosion/Scour _
   - G. Settlement _
3. Pile Bent
   - A. Caps **G**
   - B. Bearing Seats **G**
   - C. Piles **G**
   - D. Bracing **N**

REMARKS:

a. Spans 20 and 21 not inspected due to overgrowth limiting Snooper access
b. The 2014 Underwater Inspection revealed only a few hairline cracks and a few minor shallow spalls on some of the piles
c. Minor hairline cracks in most piles above water or above ground line adjacent to pile section joints
d. Minor hairline cracks in a few bent caps
e. Remove vegetation from pile caps and piles

B-7 DSB **VDOT – BRIDGE INSPECTION REPORT** **Page: 3 of 3**

61 CHANNEL: CHANNEL/SLOPE PROTECTION **GENERAL CONDITION RATING** **[8]**

1. Channel Scour	**G**	5. Fender System	_
2. Embankment Erosion	_	6. Spur Dikes/Jetties	_
3. Drift	_	7. Rip Rap/Slope Protection	**G**
4. Vegetation	_	8. Adequacy of Opening	**F**

REMARKS:

a. Scour remediation was performed at Bent DSB1 in 2002
b. Active scour at Bents DSB1-4 and at DSB12 as reported in the 2014 Underwater Inspection Report
c. Scour ratings govern over condition ratings at a majority of the bents in the water

66 POSTED LOADING

1. Posted Loading -		2. Legibility	**N**
(R12 -1)	**N**	3. Visibility	**N**
(R12 – 5) – Single	**N**		
(R12 – 5) – Semi	**N**		

REMARKS

a. Load rating completed in 12/2018 in accordance with VDOT Instructional and Informational Memorandum 86.2: Load Rating and Posting of Structures (Bridges and Culverts) dated 11/16/2018.
b. No posting of the structure is required.

4.11 Trestle E, Fisherman Inlet Bridge, Trestle F - Northbound

B-6 ENB, FIB-NB, & FNB VDOT – BRIDGE INSPECTION REPORT Page: 1 of 2

Structure-ID:	1017	**Type:**	Regular Inspection
County/City:	Northampton	**Date of Inspection:**	9/10/18 – 9/27/18
Structure:	_____(Co./Str.No)	**Feature/Intersection:**	Chesapeake Bay
Main Route:	13	**Facility/Carried:**	
Milepost:	34.32	**Location:**	Over Chesapeake Bay
Lead Inspector:	John Gaul	**Additional Inspector(s):**	Joseph DeJesus

WORK DONE: Routine Maintenance.

REVISED DIMENSIONS: None

MISCELLANEOUS: No Encroachment Violations

CONDITION OF STRUCTURE: Good

1. Minor hairline cracking on many of the piles above water or land.
2. No apparent change in spiral cracking on piles at Bents ENB7 and ENB9 (caused during construction).
3. Rip rap encompassing Bent FNB4 remains well placed and stable.
4. Minor spalls noted in the girders and at the diaphragm closure pours at scattered locations in the trestle spans.
5. Many of the larger cracks in the wearing surface sealed, several large areas of alligator cracking recommended for milling and repaving.
6. Isolated surface spalls in Span ENB1.
7. Scattered minor transverse cracks in concrete portions of FIB bridge deck.
8. Roadway striping replaced in 2018.
9. Isolated minor rust spots and peeled off top coat with exposed zinc primer on FIB girders, crossframes and bracing.
10. Minor rust continues to develop on nuts and bolts of FIB girder splices and at crossframe and lower lateral bracing connections.
11. Moderate rust around perimeter of FIB rocker bearing base plates and isolated rust spots on some pins and anchor bolts.
12. For condition of underwater portion of piles as well as scour conditions, see 2014 UWI Report. North Fender system was under repair at the time of inspection for damage that was caused around May 27, 2018.
13. Repairs performed to FIB-NB sliding plate expansion joints over Pier Nos. 1 and 4 maintaining integrity with only an occasional loose/broken hold-down bolt.

REVISED STRESS ANALYSIS:

1. Load rating completed in 12/2018 in accordance with VDOT Instructional and Informational Memorandum 86.2: Load Rating and Posting of Structures (Bridges and Culverts) dated 11/16/2018.
2. Structure load rating controlled by the interior girders of FIB-NB.
3. No posting of the structure is required.

RECOMMENDATIONS:

1. Clean exposed reinforcing and patch girder spalls on trestle spans.
2. Remove loose debris from FIB-NB sliding plate expansion joint openings over Pier Nos. 1 and 4.
3. Perform milling and repaving of large areas of alligator cracking in roadway wearing surface.
4. Repair roadway defects in spans ENB1.

B-6 ENB, FIB-NB, & FNB VDOT – BRIDGE INSPECTION REPORT Page: 2 of 2

5. Recoat area of peeled off top coat with exposed zinc primer on FIB-NB1 and FIB-NB2 girders.
6. Replace light poles at ENB8 and ENB10 that exhibit cracking at baseplate.

SIGNATURE OF INSPECTOR

B-7 ENB, FIB-NB, & FNB **VDOT – BRIDGE INSPECTION REPORT** **Page: 1 of 3**

Structure-ID:	1017	**Type:**	Regular Inspection
County/City:	Northampton	**Date of Inspection:**	9/10/18 – 9/27/18
Structure:	_____(Co./Str.No)	**Feature/Intersection:**	Chesapeake Bay
Main Route:	13	**Facility/Carried:**	
Milepost:	34.32	**Location:**	Over Chesapeake Bay
Lead Inspector:	John Gaul	**Additional Inspector(s):**	Joseph DeJesus

SPECIAL CONDITIONS OR REQUIREMENTS

1. Fracture Critical	_	5. Segmental	_
2. Underwater	**X**	6. Pin & Hanger	_
3. Scour Critical	**X**	7. Fatigue Prone	_
4. Moveable	_		

36 TRAFFIC SAFETY FEATURES

1. Bridge Railing	**1**	3. Approach	**1**
2. Transition	**1**	4. Approach Guardrail	**1**

REMARKS:

58 DECK **GENERAL CONDITION RATING** **[8]**

1. Wearing Surface	**F**	6. Railing	**G**
2. Deck – Structural	**G**	7. Drains	**N**
3. Curbs	**G**	8. Lighting	**G**
4. Median	**N**	9. Utilities	**G**
5. Sidewalks	**N**	10. Expansion Joints or Devices	**G**

REMARKS:

a. Repairs made to FIB sliding plate expansion joints in 2010 are maintaining integrity with only occasional loose/broken hold-down bolt. Loose debris is present in joint opening.
b. Many of the larger cracks in the wearing surface sealed
c. Minor transverse hairline cracks scattered in concrete FIB deck surface
d. Isolated potholes in Span ENB1
e. Roadway striping replaced in 2018

B-7 ENB, FIB-NB, & FNB **VDOT – BRIDGE INSPECTION REPORT**

59 SUPERSTRUCTURE **GENERAL CONDITION RATING [8]**

1. Bearing Devices **G**
2. Stringers **N**
3. Girders, Beams, or Slab Spans
   - A. General **G**
   - B. Diaphragms or Cross Frames **G**
   - C. Bracing **N**
4. Trusses
   - A. General **N**
   - B. Portals **N**
   - C. Bracing **N**
5. Paint **G**
   - Year Painted **2013**
6. Machinery (Moveable Span) **N**

REMARKS:

a. Minor spalls noted in the girders and at the diaphragm closure pours at scattered locations in the trestle spans
b. Isolated minor rust spots and peeled off top coat with exposed zinc primer on FIB girders, crossframes and bracing
c. Minor rust continues to develop on nuts and bolts of FIB girder splices and at crossframe and lower lateral bracing connections
d. Rust around perimeter of FIB rocker bearing base plates and isolated rust spots on some pins and anchor bolts

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60 SUBSTRUCTURE **GENERAL CONDITION RATING [8]**

1. Abutments
   - A. Wings **G**
   - B. Backwall **G**
   - C. Bearing Seats **G**
   - D. Breastwall **N**
   - E. Weepholes **N**
   - F. Footing **G**
   - G. Piles *
   - H. Erosion/Scour **G**
   - I. Settlement **G**

***Not Visible**

2. Pier/Bent
   - A. Caps _
   - B. Piles _
   - C. Column, Stem, Wall _
   - D. Piles _
   - E. Bracing _
   - F. Erosion/Scour _
   - G. Settlement _
3. Pile Bent
   - A. Caps **G**
   - B. Bearing Seats **G**
   - C. Piles **G**
   - D. Bracing **N**

REMARKS:

a. Minor hairline cracking on many of the piles above water or land
b. Some spalls with exposed reinforcing noted at pile joints of a few piles
c. No apparent change in spiral cracking on piles at Bents ENB7 and ENB9 (caused during construction)
d. No significant defects were noted on the portions of piles underwater during the 2014 UWI. For complete condition of underwater portion of piles as well as scour conditions, see 2014 UWI Report
e. Rip rap encompassing Bent FNB4 remains well placed and stable

---

B-7 ENB, FIB-NB, & FNB VDOT – BRIDGE INSPECTION REPORT Page: 3 of 3

61 CHANNEL: CHANNEL/SLOPE PROTECTION GENERAL CONDITION RATING [7]

1. Channel Scour	**G**	5. Fender System	**F**
2. Embankment Erosion	_	6. Spur Dikes/Jetties	_
3. Drift	_	7. Rip Rap/Slope Protection	**G**
4. Vegetation	_	8. Adequacy of Opening	**F**

REMARKS:

a. Active scouring at the fender system in front of Pier FIB-NB3 has the bay bottom approaching the tips of 40% of the pile group locations as noted in the 2014 UWI Report
b. For condition of underwater portion of piles as well as scour conditions, see 2014 UWI Report. North Fender system was under repair at the time of inspection for damage that was caused around May 27, 2018.

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66 POSTED LOADING

1. Posted Loading -		2. Legibility	**N**
(R12 -1)	**N**	3. Visibility	**N**
(R12 – 5) – Single	**N**		
(R12 – 5) – Semi	**N**		

REMARKS

a. Load rating completed in 12/2018 in accordance with VDOT Instructional and Informational Memorandum 86.2: Load Rating and Posting of Structures (Bridges and Culverts) dated 11/16/2018.
b. Structure load rating controlled by the interior girders of FIB-NB.
c. No posting of the structure is required.

4.12 Trestle E, Fisherman Inlet Bridge, Trestle F - Southbound

B-6 ESB, FIB-SB, & FSB **VDOT – BRIDGE INSPECTION REPORT** **Page: 1 of 2**

Structure-ID:	1007	**Type:**	Regular Inspection
County/City:	Northampton	**Date of Inspection:**	9/10/18 – 9/27/18
Structure:	_____(Co./Str.No)	**Feature/Intersection:**	Chesapeake Bay
Main Route:	13	**Facility/Carried:**	
Milepost:	32.32	**Location:**	Over Chesapeake Bay
Lead Inspector:	John Gaul	**Additional Inspector(s):**	Joseph DeJesus

WORK DONE: Routine Maintenance. Underwater Inspection performed 6/16 – 10/16

REVISED DIMENSIONS: None

MISCELLANEOUS: No Encroachment Violations

CONDITION OF STRUCTURE: Generally Fair to Good

1. Some spalls on bottom flanges of prestressed girders, with some previous patches failed or failing.
2. Isolated minor rust spots on FIB girders, crossframes & bracing members.
3. Distortion on one FIB girder bottom flange for approximately 3 feet that does not require mitigation; and buckling of one lower lateral bracing diagonal.
4. Minor rust on some nuts and bolts of FIB girder splices and other field connections.
5. Cracks in the asphalt wearing surface sealed, but a few scattered unsealed cracks were noted and recommended for sealing.
6. Minor transverse cracks scattered in the FIB concrete deck surface.
7. Roadway striping replaced in 2018.
8. Minor hairline cracking on many of the piles above water or land.
9. Isolated spalling on some of the piles.
10. Repairs involving installation of cathodic protection jackets on FIB-SB2 and FIB-SB3 were completed in 2014. Several piles noted to have large sections of spalled fiberglass jackets at Pier FIB-SB3.
11. Previously noted cracks above the jackets on FIB-SB2 and FIB-SB3 were noted to be routed and packed with minor periphery cracking.
12. Fender System at Bent FIB-SB3 was replaced in 2006. Bottom whaler exhibiting 70% section loss at the waterline, but the rest exhibit minimal deterioration. North Fender system was under repair at the time of inspection for damage that was caused around May 27, 2018.
13. Three pile cluster dolphins and portions of each whaler replaced at west end of fender system in front of Pier FIB-SB2 in 2016 and in good condition.
14. Isolated minor cracks and spalls on a few piles underwater. For a detailed condition of piles underwater and bay bottom scour conditions, see the 2016 Underwater Inspection Report.

REVISED STRESS ANALYSIS:

1. Load rating completed in 12/2018 in accordance with VDOT Instructional and Informational Memorandum 86.2: Load Rating and Posting of Structures (Bridges and Culverts) dated 11/16/2018.
2. No posting of the structure is required.

RECOMMENDATIONS:

1. Patch spalls on prestressed concrete girders and piles.
2. Perform periodic hydrographic surveys in interim between underwater inspections.
3. Monitor and repair any exposed zinc mesh under the spalled fiberglass jackets on Pier FIB-SB3.
4. Clean out and seal transverse cracks in concrete deck spans of FIB-SB.

B-6 ESB, FIB-SB, & FSB VDOT – BRIDGE INSPECTION REPORT Page: 2 of 2

5. Clean and lubricate rocker bearings on FIB-SB.
6. Replace buckled lower lateral bracing diagonal.

SIGNATURE OF INSPECTOR

B-7 ESB, FIB-SB, & FSB **VDOT – BRIDGE INSPECTION REPORT** **Page: 1 of 3**

Structure-ID:	1007	**Type:**	Regular Inspection
County/City:	Northampton	**Date of Inspection:**	9/10/18 – 9/27/18
Structure:	_____(Co./Str.No)	**Feature/Intersection:**	Chesapeake Bay
Main Route:	13	**Facility/Carried:**	
Milepost:	32.32	**Location:**	Over Chesapeake Bay
Lead Inspector:	John Gaul	**Additional Inspector(s):**	Joseph DeJesus

SPECIAL CONDITIONS OR REQUIREMENTS

1. Fracture Critical	_	5. Segmental	_
2. Underwater	**X**	6. Pin & Hanger	_
3. Scour Critical	**X**	7. Fatigue Prone	_
4. Moveable	_		

36 TRAFFIC SAFETY FEATURES

1. Bridge Railing	**1**	3. Approach	**1**
2. Transition	**1**	4. Approach Guardrail	**1**

REMARKS:

58 DECK **GENERAL CONDITION RATING** **[8]**

1. Wearing Surface	**G**	6. Railing	**G**
2. Deck – Structural	**G**	7. Drains	**N**
3. Curbs	**G**	8. Lighting	**G**
4. Median	**N**	9. Utilities	**G**
5. Sidewalks	**N**	10. Expansion Joints or Devices	**G**

REMARKS:

a. The typical simple span fixed and expansion open deck joints of the trestle spans were paved over during the 1999 overlay
b. Minor transverse cracks scattered in the FIB concrete deck surface recommended for sealing

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59 SUPERSTRUCTURE **GENERAL CONDITION RATING [7]**

1. Bearing Devices **G**
2. Stringers **N**
3. Girders, Beams, or Slab Spans
   - A. General **F**
   - B. Diaphragms or Cross Frames **G**
   - C. Bracing **N**
4. Trusses
   - A. General **N**
   - B. Portals **N**
   - C. Bracing **N**
5. Paint **G**
   - Year Painted **2013**
6. Machinery (Moveable Span) **N**

REMARKS:

a. Some spalls on bottom flanges of some prestressed girders of trestle spans, with some previous patches failed or failing
b. Minor rust spots on FIB girders, crossframes & bracing members
c. Minor rust on some nuts and bolts of FIB girder splices and other field connections
d. Distortion on one FIB girder bottom flange for approximately 3 feet that does not require mitigation, and buckling of one lower lateral bracing diagonal

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60 SUBSTRUCTURE **GENERAL CONDITION RATING [7]**

1. Abutments
   - A. Wings **G**
   - B. Backwall **G**
   - C. Bearing Seats **G**
   - D. Breastwall **N**
   - E. Weepholes **N**
   - F. Footing **G**
   - G. Piles *****
   - H. Erosion/Scour **G**
   - I. Settlement **G**

***Not Visible**

2. Pier/Bent
   - A. Caps _
   - B. Piles _
   - C. Column, Stem, Wall _
   - D. Piles _
   - E. Bracing _
   - F. Erosion/Scour _
   - G. Settlement _
3. Pile Bent
   - A. Caps **G**
   - B. Bearing Seats **G**
   - C. Piles **F**
   - D. Bracing **N**

REMARKS:

a. Some minor cracking and isolated spalls on the piles
b. Repairs involving installation of cathodic protection jackets on Piers FIB-SB2 and FIB-SB3 were completed in 2014. Several piles noted to have large sections of spalled fiberglass jackets at Pier FIB-SB3
c. Previously noted cracks above the jackets on FIB-SB2 and FIB-SB3 were noted to be routed and packed with minor periphery cracking
d. Minor to moderate map cracking at ends of some trestle bent caps
e. Isolated minor cracks and spalls on a few piles underwater. For a detailed condition of piles underwater and bay bottom scour conditions, see the 2016 Underwater Inspection Report.

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61 CHANNEL: CHANNEL/SLOPE PROTECTION **GENERAL CONDITION RATING** **[8]**

1. Channel Scour	**G**	5. Fender System	**F**
2. Embankment Erosion	_	6. Spur Dikes/Jetties	_
3. Drift	_	7. Rip Rap/Slope Protection	**G**
4. Vegetation	_	8. Adequacy of Opening	**F**

REMARKS:

a. Fender system at Pier FIB-SB3 was replaced in 2006. Bottom whaler exhibits 70% section loss at the waterline, but the rest exhibit minimal deterioration.
b. Three pile cluster dolphins and portions of each whaler replaced at west end of fender system in front of Pier FIB-SB2 in 2016 and in good condition
c. North Fender system was under repair at the time of inspection for damage that was caused around May 27, 2018.

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66 POSTED LOADING

1. Posted Loading -		2. Legibility	**N**
(R12 -1)	**N**	3. Visibility	**N**
(R12 – 5) – Single	**N**		
(R12 – 5) – Semi	**N**		

REMARKS

c. Load rating completed in 12/2018 in accordance with VDOT Instructional and Informational Memorandum 86.2: Load Rating and Posting of Structures (Bridges and Culverts) dated 11/16/2018.
d. No posting of the structure is required.

5. Bridge Element Level Data

The tables provided in this section display the element level bridge condition data and condition states coded per the AASHTO Manual for Bridge Element Inspection, First Edition and the VDOT Supplement to the AASHTO Manual for Bridge Element Inspection (2016) at the time of this inspection.

For Defect 6000 Scour, the Condition State (CS) for each element was determined utilizing the following system:

Condition State	Description	
1 Good	No Scour	The bay bottom profile at the substructure unit is greater than 10-feet above the Allowable Scour Depth (ASD)
2 Fair	Within Tolerable Limits	The bay bottom at the substructure unit is greater than 5-feet above the ASD, or scour remediation has been placed at the substructure unit, but not below ASD
3 Poor	Within Critical Limits	The bay bottom at the substructure unit is above the ASD, or scour remediation has been placed at the substructure unit at or above the ASD
4 Severe	Warrants a Structural Review	The bay bottom at the pile is below its ASD and scour remediation has not been placed at the substructure unit

5.1 Trestle A - Northbound

Trestle ANB consists of Spans A'NB1-10 and Spans ANB 1-227. Spans 129-176 received a hands-on inspection this year (approximately 20% of the entire trestle). Inspections performed in FY2018 included a hands-on inspection of Spans 75-128 (approximately 20% of the entire trestle), and Spans A'NB14 to ANB4 were inspected from Chic's Beach. Element level data is presented in this section for those portions of the trestle. An underwater inspection was performed on the entire trestle, and element level data has been provided for all piles that were inspected along the trestle.

Table 51: ANB Element Level Data

ANB (1002) Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
DECKS AND SLABS							
16	Reinforced Concrete Top Flange	SF	239,909	251	15	0	240,175
1080	*Delamination/Spall/ Patched Area*	*SF*		*15*	*3*		*18*
1090	*Exposed Rebar*	*SF*			*12*		*12*
1120	*Efflorescence/Rust Staining*	*SF*		*159*			*159*
1130	*Cracking (RC and Other)*	*SF*		*77*			*77*
RAILINGS							
330	Metal Bridge Railing	LF	14,926	391	9	0	15,326
1020	*Connection*	*LF*		*3*			*3*
1080	*Delamination/Spall/ Patched Area*	*LF*		*51*	*8*		*59*
1090	*Exposed Rebar*	*LF*			*1*		*1*
1130	*Cracking (RC and Other)*	*LF*		*333*			*333*
7000	*Damage*	*LF*		*4*			*4*

ANB (1002) Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
SUPERSTRUCTURE							
109	Prestressed Concrete Open Girder/Beam	LF	65,211	2,530	209	0	67,950
1080	*Delamination/Spall/ Patched Area*	*LF*		*204*	*30*		*234*
1090	*Exposed Rebar*	*LF*			*75*		*75*
1100	*Exposed Prestressing*	*LF*			*64*		*64*
1110	*Cracking (PSC)*	*LF*		*2,319*	*3*		*2,322*
1120	*Efflorescence/Rust Staining*	*LF*		*7*	*37*		*44*
811	Beam/Girder End	EA	630	1,117	65	0	1,812
1080	*Delamination/Spall/ Patched Area*	*EA*		*9*	*12*		*21*
1090	*Exposed Rebar*	*EA*			*34*		*34*
1100	*Exposed Prestressing*	*EA*			*1*		*1*
1110	*Cracking (PSC)*	*EA*		*1,105*	*1*		*1,106*
1120	*Efflorescence/Rust Staining*	*EA*		*3*	*17*		*20*
BEARINGS							
310	Elastomeric Bearing	EA	1,769	0	43	0	1,812
2230	*Bulging, Splitting, or Tearing*	*EA*		*0*	*43*		*43*
SUBSTRUCTURE							
226	Prestressed Concrete Pile	EA	213	396	97	8	714
1080	*Delamination/Spall/ Patched Area*	*EA*		*168*	*25*		*193*
1090	*Exposed Rebar*	*EA*			*37*		*37*
1110	*Cracking (PSC)*	*EA*		*10*	*3*		*13*
1120	*Efflorescence/Rust Staining*	*EA*		*55*	*23*		*78*
1190	*Abrasion/Wear (PSC/RC)*	*EA*		*91*			*91*
6000	*Scour*	*EA*		*72*	*9*	*8*	*89*

ANB (1002) Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
234	Reinforced Concrete Pier Cap	LF	3,318	364	5	0	3,687
1080	*Delamination/Spall/ Patched Area*	*LF*		*1*	*5*		*6*
1120	*Efflorescence/Rust Staining*	*LF*		*151*			*151*
1130	*Cracking (RC and Other)*	*LF*		*212*			*212*
JOINTS							
304	Open Expansion Joint	LF	3,964	0	1	0	3,965
2360	*Adjacent Deck of Header*	*LF*			*1*		*1*
845	Joint Effectiveness	EA	111	0	0	0	111
WEARING SURFACES, PROTECTIVE COATINGS, AND CONCRETE REINFORCING STEEL PROTECTIVE SYSTEMS							
510	Wearing Surfaces	SF	234,656	2,065	859	0	237,580
3210	*Delamination/Spall/ Patched Area/Pothole (Wearing Surface)*	*SF*		*179*	*62*		*241*
3220	*Crack (Wearing Surface)*	*SF*		*192*	*159*		*351*
3230	*Effectiveness (Wearing Surface)*	*SF*		*1,694*	*638*		*2,332*
520	Concrete Reinforcing Steel Protective System	SF	59,053	2,568	1,484	551	63,656
3600	*Effectiveness - Protective System (e.g. cathodic)*	*SF*		*2,568*	*1,484*	*371*	*4,423*
7000	*Damage*	*SF*				*180*	*180*
521	Concrete Protective Coating	SF	98,175	257	170	1,460	100,062
3540	*Effectiveness (Concrete Protective Coatings)*	*SF*		*257*	*170*	*1,460*	*1,887*
SLOPE AND CHANNEL ELEMENTS							
854	Channel	EA	0	1	0	0	1
6000	*Scour*	*EA*		*1*			*1*

5.2 Trestle A - Southbound

Trestle ASB consists of Spans ASB 1-205. Spans 81-122 received a hands-on inspection this year (approximately 20% of the entire trestle). Inspections performed in FY2018 included a hands-on inspection of Spans 123-171 (approximately 24% of the entire trestle), and Spans ASB1 to ASB12 were inspected from Chic's Beach. Element level data is presented in this section for those portions of the trestle. An underwater inspection was performed on the entire trestle, and element level data has been provided for all piles that were inspected along the trestle.

Table 52: ASB Element Level Data

ASB (1010) Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
DECKS AND SLABS							
12	Reinforced Concrete Deck	SF	29,733	0	0	0	29,733
16	Reinforced Concrete Top Flange	SF	340,256	717	75	0	341,048
1080	*Delamination/Spall/ Patched Area*	*SF*		*15*	*46*		*61*
1090	*Exposed Rebar*	*SF*			*27*		*27*
1130	*Cracking (RC and Other)*	*SF*		*702*	*2*		*704*
RAILINGS							
330	Metal Bridge Railing	LF	16,593	110	29	0	16,732
1020	*Connection*	*LF*		*2*			*2*
1080	*Delamination/Spall/ Patched Area*	*LF*		*24*	*2*		*26*
1090	*Exposed Rebar*	*LF*			*6*		*6*
1120	*Efflorescence/Rust Staining*	*LF*			*21*		*21*
1130	*Cracking (RC and Other)*	*LF*		*72*			*72*
1900	*Distortion*	*LF*		*12*			*12*

ASB (1010) Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
SUPERSTRUCTURE							
109	Prestressed Concrete Open Girder/Beam	LF	55,070	61	51	0	55,182
1080	*Delamination/Spall/ Patched Area*	*LF*		*14*	*5*		*19*
1090	*Exposed Rebar*	*LF*		*10*	*46*		*56*
1100	*Exposed Prestressing*	*LF*		*7*			*7*
1110	*Cracking (PSC)*	*LF*		*26*			*26*
1120	*Efflorescence/Rust Staining*	*LF*		*4*			*4*
811	Beam/Girder End	EA	1,171	19	38	0	1,228
1080	*Delamination/Spall/ Patched Area*	*EA*		*3*	*2*		*5*
1090	*Exposed Rebar*	*EA*		*9*	*35*		*44*
1100	*Exposed Prestressing*	*EA*		*3*			*3*
1110	*Cracking (PSC)*	*EA*		*4*	*1*		*5*
BEARINGS							
310	Elastomeric Bearing	EA	1,228	0	0	0	1,228
SUBSTRUCTURE							
226	Prestressed Concrete Pile	EA	313	270	41	8	632
1080	*Delamination/Spall/ Patched Area*	*EA*		*107*	*20*		*127*
1090	*Exposed Rebar*	*EA*			*2*		*2*
1110	*Cracking (PSC)*	*EA*		*59*	*1*		*60*
1120	*Efflorescence/Rust Staining*	*EA*		*2*	*3*		*5*
1190	*Abrasion/Wear (PSC/RC)*	*EA*		*36*	*1*		*37*
6000	*Scour*	*EA*		*66*	*14*	*8*	*88*

ASB (1010) Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
234	Reinforced Concrete Pier Cap	LF	3,846	177	11	0	4,034
1080	*Delamination/Spall/ Patched Area*	*LF*		*12*	*10*		*22*
1090	*Exposed Rebar*	*LF*			*1*		*1*
1120	*Efflorescence/Rust Staining*	*LF*		*1*			*1*
1130	*Cracking (RC and Other)*	*LF*		*164*			*164*
JOINTS							
304	Open Expansion Joint	LF	1,181	0	18	0	1,199
2360	*Adjacent Deck or Header*	*LF*			*18*		*18*
845	Joint Effectiveness	EA	32	0	0	0	32
WEARING SURFACES, PROTECTIVE COATINGS, AND CONCRETE REINFORCING STEEL PROTECTIVE SYSTEMS							
510	Wearing Surfaces	SF	300,345	1,389	1,603	0	303,337
3210	*Delamination/Spall/ Patched Area/Pothole (Wearing Surface)*	*SF*			*1*		*1*
3220	*Crack (Wearing Surface)*	*SF*		*1,209*			*1,209*
3230	*Effectiveness (Wearing Surface)*	*SF*		*180*	*1,602*		*1,782*
SLOPE AND CHANNEL ELEMENTS							
854	Channel	EA	0	1	0	0	1
6000	*Scour*	*EA*		*1*			*1*

5.3 Trestle B - Northbound

Trestle BNB consists of Spans BNB 1/2-266. Spans 105-158 received a hands-on inspection this year (approximately 20% of the entire trestle). Inspections performed in FY2018 included a hands-on inspection of Spans 66-104 (approximately 15% of the entire trestle). Element level data is presented in this section for those portions of the trestle.

Table 53: BNB Element Level Data

BNB (1004) Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
DECKS AND SLABS							
16	Reinforced Concrete Top Flange	SF	230,609	801	15	0	231,425
1080	*Delamination/Spall/ Patched Area*	*SF*			*3*		*3*
1090	*Exposed Rebar*	*SF*			*12*		*12*
1120	*Efflorescence/Rust Staining*	*SF*		*440*			*440*
1130	*Cracking (RC and Other)*	*SF*		*361*			*361*
RAILINGS							
330	Metal Bridge Railing	LF	13,477	491	8	0	13,976
1020	*Connection*	*LF*		*18*	*2*		*20*
1080	*Delamination/Spall/ Patched Area*	*LF*		*1*	*6*		*7*
1130	*Cracking (RC and Other)*	*LF*		*472*			*472*
SUPERSTRUCTURE							
109	Prestressed Concrete Open Girder/Beam	LF	53,697	2,176	505	22	56,400
1080	*Delamination/Spall/ Patched Area*	*LF*		*134*	*80*		*214*
1090	*Exposed Rebar*	*LF*			*22*		*22*
1100	*Exposed Prestressing*	*LF*			*356*	*22*	*378*
1110	*Cracking (PSC)*	*LF*		*2,042*			*2,042*
1120	*Efflorescence/Rust Staining*	*LF*			*47*		*47*

BNB (1004) Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
811	Beam/Girder End	EA	590	867	47	0	1,504
1080	*Delamination/Spall/ Patched Area*	*EA*		*4*	*7*		*11*
1090	*Exposed Rebar*	*EA*			*20*		*20*
1110	*Cracking (PSC)*	*EA*		*863*			*863*
1120	*Efflorescence/Rust Staining*	*EA*			*20*		*20*
BEARINGS							
310	Elastomeric Bearing	EA	1,342	0	162	0	1,504
2230	*Bulging, Splitting, or Tearing*	*EA*			*162*		*162*
SUBSTRUCTURE							
226	Prestressed Concrete Pile	EA	0	220	62	0	282
1080	*Delamination/Spall/ Patched Area*	*EA*		*6*	*13*		*19*
1090	*Exposed Rebar*	*EA*			*17*		*17*
1100	*Exposed Prestressing*	*EA*			*14*		*14*
1110	*Cracking (PSC)*	*EA*		*182*	*9*		*191*
1120	*Efflorescence/Rust Staining*	*EA*		*32*	*9*		*41*
234	Reinforced Concrete Pier Cap	LF	2,316	769	4	0	3,089
1080	*Delamination/Spall/ Patched Area*	*LF*		*8*	*1*		*9*
1090	*Exposed Rebar*	*LF*			*1*		*1*
1120	*Efflorescence/Rust Staining*	*LF*		*1*			*1*
1130	*Cracking (RC and Other)*	*LF*		*760*	*2*		*762*
JOINTS							
304	Open Expansion Joint	LF	3,371	0	0	0	3,371
845	Joint Effectiveness	EA	98	0	0	0	98

BNB (1004) Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
WEARING SURFACES, PROTECTIVE COATINGS, AND CONCRETE REINFORCING STEEL PROTECTIVE SYSTEMS							
510	Wearing Surfaces	SF	195,200	2,424	176	0	197,800
3210	*Delamination/Spall/ Patched Area/Pothole (Wearing Surface)*	*SF*		*2*	*140*		*142*
3220	*Crack (Wearing Surface)*	*SF*		*129*	*36*		*165*
3230	*Effectiveness (Wearing Surface)*	*SF*		*2,293*			*2,293*
520	Concrete Reinforcing Steel Protective System	SF	2,632	507	196	0	3,335
3600	*Effectiveness - Protective System (e.g. cathodic)*	*SF*		*507*	*196*		*703*
SLOPE AND CHANNEL ELEMENTS							
854	Channel	EA	0	1	0	0	1
6000	*Scour*	*EA*		*1*			*1*

5.4 Trestle B - Southbound

Trestle BSB consists of Spans BSB 1-203. Spans 101-142 received a hands-on inspection this year (approximately 21% of the entire trestle). Inspections performed in FY2018 included a hands-on inspection of Spans 143-178 (approximately 18% of the entire trestle). Element level data is presented in this section for those portions of the trestle.

Table 54: BSB Element Level Data

BSB (1012) Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
DECKS AND SLABS							
16	Reinforced Concrete Top Flange	SF	311,345	579	51	0	311,975
1080	*Delamination/Spall/ Patched Area*	*SF*		*31*	*26*		*57*
1090	*Exposed Rebar*	*SF*			*7*		*7*
1120	*Efflorescence/Rust Staining*	*SF*		*87*	*18*		*105*
1130	*Cracking (RC and Other)*	*SF*		*461*			*461*
RAILINGS							
330	Metal Bridge Railing	LF	15,493	68	2	0	15,563
1080	*Delamination/Spall/ Patched Area*	*SF*		*8*	*2*		*10*
1130	*Cracking (RC and Other)*	*SF*		*60*			*60*
SUPERSTRUCTURE							
109	Prestressed Concrete Open Girder/Beam	LF	46,588	130	82	0	46,800
1080	*Delamination/Spall/ Patched Area*	*LF*		*64*	*17*		*81*
1090	*Exposed Rebar*	*LF*			*65*		*65*
1110	*Cracking (PSC)*	*LF*		*65*			*65*
1120	*Efflorescence/Rust Staining*	*LF*		*1*			*1*
811	Beam/Girder End	EA	829	61	50	0	940
1080	*Delamination/Spall/ Patched Area*	*EA*		*19*	*12*		*31*
1090	*Exposed Rebar*	*EA*			*38*		*38*
1110	*Cracking (PSC)*	*EA*		*42*			*42*

BSB (1012) Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
BEARINGS							
310	Elastomeric Bearing	EA	939	0	1	0	940
2230	*Bulging, Splitting, or Tearing*	*EA*			*1*		*1*
SUBSTRUCTURE							
226	Prestressed Concrete Pile	EA	53	174	12	0	239
1080	*Delamination/Spall/ Patched Area*	*EA*		*1*			*1*
1090	*Exposed Rebar*	*EA*			*3*		*3*
1110	*Cracking (PSC)*	*EA*		*169*	*2*		*171*
1120	*Efflorescence/Rust Staining*	*EA*		*3*	*7*		*10*
1190	*Abrasion/Wear (PSC/RC)*	*EA*		*1*			*1*
234	Reinforced Concrete Pier Cap	LF	2,800	253	7	0	3,060
1080	*Delamination/Spall/ Patched Area*	*LF*		*2*	*1*		*3*
1090	*Exposed Rebar*	*LF*			*6*		*6*
1130	*Cracking (RC and Other)*	*LF*		*251*			*251*
JOINTS							
304	Open Expansion Joint	LF	1,039	1	0	0	1,040
2360	*Adjacent Deck or Header*	*LF*		*1*			*1*
845	Joint Effectiveness	EA	26	0	0	0	26
WEARING SURFACES, PROTECTIVE COATINGS, AND CONCRETE REINFORCING STEEL PROTECTIVE SYSTEMS							
510	Wearing Surfaces	SF	277,633	1,716	1,027	0	280,376
3220	*Crack (Wearing Surface)*	*SF*			*683*		*683*
3230	*Effectiveness (Wearing Surface)*	*SF*		*1,716*	*344*		*2,060*
SLOPE AND CHANNEL ELEMENTS							
854	Channel	EA	0	1	0	0	1
6000	*Scour*	*EA*		*1*			*1*

5.5 Trestle C - Northbound

Trestle CNB consists of Spans CNB 1-322. Spans 132-197 received a hands-on inspection this year (approximately 20% of the entire trestle). Inspections performed in FY2018 included a hands-on inspection of Spans 78-131 (approximately 17% of the entire trestle). Element level data is presented in this section for those portions of the trestle.

Table 55: CNB Element Level Data

CNB (1009) Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
DECKS AND SLABS							
16	Reinforced Concrete Top Flange	SF	283,400	2,803	397	0	286,600
1080	*Delamination/Spall/ Patched Area*	*SF*			*4*		*4*
1090	*Exposed Rebar*	*SF*			*3*		*3*
1120	*Efflorescence/Rust Staining*	*SF*		*381*	*390*		*771*
1130	*Cracking (RC and Other)*	*SF*		*2,422*			*2,422*
RAILINGS							
330	Metal Bridge Railing	LF	17,540	461	25	0	18,026
1020	*Connection*	*LF*		*19*			*19*
1080	*Delamination/Spall/ Patched Area*	*LF*		*24*	*12*		*36*
1090	*Exposed Rebar*	*LF*			*4*		*4*
1130	*Cracking (RC and Other)*	*LF*		*415*			*415*
7000	*Damage*	*LF*		*3*	*9*		*12*
SUPERSTRUCTURE							
109	Prestressed Concrete Open Girder/Beam	LF	69,332	2,955	313	0	72,600
1080	*Delamination/Spall/ Patched Area*	*LF*		*1,369*	*163*		*1,532*
1090	*Exposed Rebar*	*LF*			*38*		*38*
1100	*Exposed Prestressing*	*LF*			*21*		*21*
1110	*Cracking (PSC)*	*LF*		*1,568*	*11*		*1,579*
1120	*Efflorescence/Rust Staining*	*LF*		*18*	*80*		*98*

CNB (1009) Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
811	Beam/Girder End	EA	1,078	747	111	0	1,936
1080	*Delamination/Spall/ Patched Area*	*EA*		*13*	*50*		*63*
1090	*Exposed Rebar*	*EA*			*24*		*24*
1100	*Exposed Prestressing*	*EA*			*1*		*1*
1110	*Cracking (PSC)*	*EA*		*726*	*4*		*730*
1120	*Efflorescence/Rust Staining*	*EA*		*8*	*32*		*40*
BEARINGS							
310	Elastomeric Bearing	EA	1,550	0	386	0	1,936
2230	*Bulging, Splitting, or Tearing*	*EA*			*386*		*386*
SUBSTRUCTURE							
226	Prestressed Concrete Pile	EA	71	199	98	0	368
1080	*Delamination/Spall/ Patched Area*	*EA*		*17*	*11*		*28*
1090	*Exposed Rebar*	*EA*			*24*		*24*
1100	*Exposed Prestressing*	*EA*			*2*		*2*
1110	*Cracking (PSC)*	*EA*		*86*	*5*		*91*
1120	*Efflorescence/Rust Staining*	*EA*		*75*	*56*		*131*
1190	*Abrasion/Wear (PSC/RC)*	*EA*		*21*			*21*
234	Reinforced Concrete Pier Cap	LF	2,786	1,270	16	0	4,072
1080	*Delamination/Spall/ Patched Area*	*LF*			*13*		*13*
1120	*Efflorescence/Rust Staining*	*LF*		*4*	*3*		*7*
1130	*Cracking (RC and Other)*	*LF*		*1,266*			*1,266*
JOINTS							
304	Open Expansion Joint	LF	4,253	0	0	0	4,253
845	Joint Effectiveness	EA	125	0	0	0	125

CNB (1009) Element Level Data							
Element Number	**Element Name**	**Unit**	**Condition State 1**	**Condition State 2**	**Condition State 3**	**Condition State 4**	**Total**
WEARING SURFACES, PROTECTIVE COATINGS, AND CONCRETE REINFORCING STEEL PROTECTIVE SYSTEMS							
510	Wearing Surfaces	SF	250,725	3,681	32	0	254,438
3210	*Delamination/Spall/ Patched Area/Pothole (Wearing Surface)*	*SF*		*322*	*6*		*328*
3220	*Crack (Wearing Surface)*	*SF*		*900*	*26*		*926*
3230	*Effectiveness (Wearing Surface)*	*SF*		*2,459*			*2,459*
520	Concrete Reinforcing Steel Protective System	SF	1,979	0	0	0	1,979
SLOPE AND CHANNEL ELEMENTS							
854	Channel	EA	0	1	0	0	1
6000	*Scour*	*EA*		*1*			*1*

5.6 Trestle C - Southbound

Trestle CSB consists of Spans CSB 1-246. Spans 105-154 received a hands-on inspection this year (approximately 20% of the entire trestle). Inspections performed in FY2018 included a hands-on inspection of Spans 155-190 (approximately 15% of the entire trestle). Element level data is presented in this section for those portions of the trestle.

Table 56: CSB Element Level Data

CSB (1014) Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
DECKS AND SLABS							
16	Reinforced Concrete Top Flange	SF	343,863	28	9	0	343,900
1080	*Delamination/Spall/ Patched Area*	*SF*		*9*	*9*	*0*	*18*
1120	*Efflorescence/Rust Staining*	*SF*		*2*			*2*
1130	*Cracking (RC and Other)*	*SF*		*17*			*17*
RAILINGS							
330	Metal Bridge Railing	LF	16,883	110	33	0	17,026
1020	*Connection*	*LF*		*8*	*1*		*9*
1080	*Delamination/Spall/ Patched Area*	*LF*		*22*	*2*		*24*
1090	*Exposed Rebar*	*LF*		*1*	*30*		*31*
1130	*Cracking (RC and Other)*	*LF*		*79*			*79*
SUPERSTRUCTURE							
109	Prestressed Concrete Open Girder/Beam	LF	51,084	389	127	0	51,600
1080	*Delamination/Spall/ Patched Area*	*LF*		*143*	*26*		*169*
1090	*Exposed Rebar*	*LF*			*88*		*88*
1110	*Cracking (PSC)*	*LF*		*149*			*149*
1120	*Efflorescence/Rust Staining*	*LF*		*97*	*13*		*110*

CSB (1014) Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
811	Beam/Girder End	EA	871	113	48	0	1,032
1080	*Delamination/Spall/ Patched Area*	*EA*		*93*	*8*		*101*
1090	*Exposed Rebar*	*EA*			*40*		*40*
1110	*Cracking (PSC)*	*EA*		*20*			*20*
BEARINGS							
310	Elastomeric Bearing	EA	1,031	0	1	0	1,032
2230	*Bulging, Splitting, or Tearing*	*EA*			*1*		*1*
SUBSTRUCTURE							
226	Prestressed Concrete Pile	EA	361	278	69	44	752
1080	*Delamination/Spall/ Patched Area*	*EA*		*51*	*19*		*70*
1090	*Exposed Rebar*	*EA*			*2*		*2*
1110	*Cracking (PSC)*	*EA*		*102*	*1*		*103*
1120	*Efflorescence/Rust Staining*	*EA*		*8*			*8*
1190	*Abrasion/Wear (PSC/RC)*	*EA*		*47*			*47*
6000	*Scour*	*EA*		*70*	*47*	*44*	*161*
234	Reinforced Concrete Pier Cap	LF	2,981	377	5	0	3,363
1080	*Delamination/Spall/ Patched Area*	*LF*		*8*	*4*		*12*
1090	*Exposed Rebar*	*LF*			*1*		*1*
1120	*Efflorescence/Rust Staining*	*LF*		*20*			*20*
1130	*Cracking (RC and Other)*	*LF*		*349*			*349*
JOINTS							
304	Open Expansion Joint	LF	1,116	26	18	0	1,160
2360	*Adjacent Deck or Header*	*LF*		*26*	*18*		*44*
845	Joint Effectiveness	EA	29	0	0	0	29

CSB (1014) Element Level Data							
Element Number	**Element Name**	**Unit**	**Condition State 1**	**Condition State 2**	**Condition State 3**	**Condition State 4**	**Total**
WEARING SURFACES, PROTECTIVE COATINGS, AND CONCRETE REINFORCING STEEL PROTECTIVE SYSTEMS							
510	Wearing Surfaces	SF	305,824	1,282	1,802	0	308,908
3210	*Delamination/Spall/ Patched Area/Pothole (Wearing Surface)*	*SF*		*1,279*	*45*		*1,324*
3220	*Crack (Wearing Surface)*	*SF*		*3*	*1,570*		*1,573*
3230	*Effectiveness (Wearing Surface)*	*SF*			*187*		*187*
SLOPE AND CHANNEL ELEMENTS							
854	Channel	EA	0	1	0	0	1
6000	*Scour*	*EA*		*1*			*1*

5.7 North Channel Bridge - Northbound

A fracture critical inspection and routine inspection was performed in FY2018, and element level data is presented in this section.

Table 57: NCB-NB Element Level Data

NCB-NB (1006) Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
DECKS AND SLABS							
12	Reinforced Concrete Deck	SF	113,012	3,313	2	0	116,327
1080	*Delamination/Spall/ Patched Area*	*SF*			*2*		*2*
1130	*Cracking (RC and Other)*	*SF*		*3,311*			*3,311*
1190	*Abrasion/Wear (PSC/RC)*	*SF*		*2*			*2*
RAILINGS							
330	Metal Bridge Railing	LF	7,584	1	1	0	7,586
1020	*Connection*	*LF*		*1*			*1*
1080	*Delamination/Spall/ Patched Area*	*LF*			*1*		*1*
SUPERSTRUCTURE							
107	Steel Open Girder/Beam	LF	1,773	5,005	153	0	6,931
1000	*Corrosion*	*LF*		*5,005*	*153*		*5,158*
113	Steel Stringer	LF	14,050	4,362	493	0	18,905
1000	*Corrosion*	*LF*		4,362	493		4,855
120	Steel Truss	LF	128	527	0	0	655
1000	*Corrosion*	*LF*		527			527
152	Steel Floor Beam	LF	2,906	1,488	522	0	4,916
1000	*Corrosion*	*LF*		*1,108*	*517*		*1,625*
1010	*Cracking*	*LF*		*353*			*353*
1020	*Connection*	*LF*		*27*	*5*		*32*
162	Gusset Plate	EA	30	10	0	0	40
1000	*Corrosion*	*EA*		10			10

NCB-NB (1006) Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
811	Beam/Girder End	EA	7	48	11	0	66
1000	*Corrosion*	*EA*		*48*	*11*		*59*
BEARINGS							
311	Movable Bearing	EA	0	34	0	0	34
1000	*Corrosion*	*EA*		*34*			*34*
313	Fixed Bearing	EA	0	10	0	0	10
1000	*Corrosion*	*EA*		*10*			*10*
SUBSTRUCTURE							
205	Reinforced Concrete Column	EA	16	19	1	0	36
1080	*Delamination/Spall/ Patched Area*	*EA*			*1*		*1*
1120	*Effloresence/Rust Staining*	*EA*		*6*			*6*
1130	*Cracking (RC and Other)*	*EA*		*13*			*13*
234	Reinforced Concrete Pier Cap	LF	48	8	0	0	56
1130	*Cracking (RC and Other)*	*LF*		*8*			*8*
JOINTS							
305	Assembly Joint without Seal	LF	144	24	0	0	168
2370	*Metal Deterioration or Damage*	*LF*		*24*			*24*
845	Joint Effectiveness	EA	6	0	0	0	6
WEARING SURFACES, PROTECTIVE COATINGS, AND CONCRETE REINFORCING STEEL PROTECTIVE SYSTEMS							
515	Steel Protective Coating	SF	377,199	269	0	19,867	397,335
3420	*Peeling/Bubbling/ Cracking (Steel Protective Coatings)*	*SF*		*269*			*269*
3440	*Effectiveness (Steel Protective Coatings)*	*SF*				*19,867*	*19,867*

NCB-NB (1006) Element Level Data							
Element Number	**Element Name**	**Unit**	**Condition State 1**	**Condition State 2**	**Condition State 3**	**Condition State 4**	**Total**
886	Beam/Girder End Protective Coating - Steel	EA	7	48	11	0	66
3440	*Effectiveness (Steel Protective Coatings)*	*EA*		*48*	*11*		*59*
SLOPE AND CHANNEL ELEMENTS							
854	Channel	EA	0	1	0	0	1
6000	*Scour*	*EA*		*1*			*1*

5.8 North Channel Bridge - Southbound

A hands-on inspection was performed this year, and element level data is presented in this section.

Table 58: NCB-SB Element Level Data

NCB-SB (1015) Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
DECKS AND SLABS							
12	Reinforced Concrete Deck	SF	90,878	33,122	0	0	124,000
1080	*Delamination/Spall/ Patched Area*	*SF*		*33,116*			*33,116*
1130	*Cracking (RC and Other)*	*SF*		*6*			*6*
RAILINGS							
330	Metal Bridge Railing	LF	6,193	7	0	0	6,200
1010	*Cracking*	*LF*		*5*			*5*
1080	*Delamination/Spall/ Patched Area*	*LF*		*2*			*2*
SUPERSTRUCTURE							
107	Steel Open Girder/Beam	LF	12,397	1	2	0	12,400
1000	*Corrosion*	*EA*		*1*	*2*		*3*
811	Beam/Girder End	EA	32	0	0	0	32
BEARINGS							
311	Movable Bearing	EA	0	32	0	0	32
1000	*Corrosion*	*EA*		*32*			*32*
313	Fixed Bearing	EA	10	30	0	0	40
1000	*Corrosion*	*EA*		*30*			*30*
SUBSTRUCTURE							
205	Reinforced Concrete Column	EA	11	17	2	0	30
1080	*Delamination/Spall/ Patched Area*	*EA*		*3*	*2*		*5*
1130	*Cracking (RC and Other)*	*EA*		*14*			*14*

NCB-SB (1015) Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
220	Reinforced Concrete Pile Cap/Footing	LF	865	3	16	0	884
1120	*Efflorescence/Rust Staining*	*LF*			*16*		*16*
1130	*Cracking (RC and Other)*	*LF*		*3*			*3*
234	Reinforced Concrete Pier Cap	LF	458	82	0	0	540
1120	*Efflorescence/Rust Staining*	*LF*		*16*			*16*
1130	*Cracking (RC and Other)*	*LF*		*66*			*66*
JOINTS							
305	Assembly Joint without Seal	LF	200	0	0	0	200
845	Joint Effectiveness	EA	5	5	0	0	5
WEARING SURFACES, PROTECTIVE COATINGS, AND CONCRETE REINFORCING STEEL PROTECTIVE SYSTEMS							
515	Steel Protective Coating	SF	299,664	6	0	0	299,670
3420	*Peeling/Bubbling/ Cracking (Steel Protective Coatings)*	*SF*		*5*			*5*
3440	*Effectiveness (Steel Protective Coatings)*	*SF*		*1*			*1*
886	Beam/Girder End Protective Coating - Steel	EA	32	0	0	0	32
SLOPE AND CHANNEL ELEMENTS							
854	Channel	EA	0	1	0	0	1
6000	*Scour*	*EA*		*1*			*1*

5.9 Trestle D - Northbound

A hands-on inspection was performed this year, and element level data is presented in this section.

Table 59: DNB Element Level Data

DNB (1008) Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
DECKS AND SLABS							
16	Reinforced Concrete Top Flange	SF	41,523	147	2	0	41,672
1080	*Delamination/Spall/ Patched Area*	*SF*			*2*		*2*
1130	*Cracking (RC and Other)*	*SF*		*147*			*147*
RAILINGS							
330	Metal Bridge Railing	LF	2,508	38	5	0	2,551
1080	*Delamination/Spall/ Patched Area*	*LF*		*1*	*5*		*6*
1130	*Cracking (RC and Other)*	*LF*		*37*			*37*
SUPERSTRUCTURE							
109	Prestressed Concrete Open Girder/Beam	LF	9,688	438	78	0	10,204
1080	*Delamination/Spall/ Patched Area*	*LF*		*19*	*6*		*25*
1090	*Exposed Rebar*	*LF*			*5*		*5*
1100	*Exposed Prestressing*	*LF*			*51*		*51*
1110	*Cracking (PSC)*	*LF*		*345*			*345*
1120	*Efflorescence/Rust Staining*	*LF*		*74*	*16*		*90*
811	Beam/Girder End	EA	176	105	7	0	288
1080	*Delamination/Spall/ Patched Area*	*EA*			*1*		*1*
1090	*Exposed Rebar*	*EA*			*2*		*2*
1110	*Cracking (PSC)*	*EA*		*100*			*100*
1120	*Efflorescence/Rust Staining*	*EA*		*5*	*4*		*9*

DNB (1008) Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
BEARINGS							
310	Elastomeric Bearing	EA	276	3	1		280
2230	*Bulging, Splitting, or Tearing*	*EA*		*3*	*1*		*4*
311	Movable Bearing	EA		8			8
1000	*Corrosion*	*EA*		*8*			*8*
SUBSTRUCTURE							
215	Reinforced Concrete Abutment	LF	31	2	0	0	33
1130	*Cracking (RC and Other)*	*LF*		2			2
226	Prestressed Concrete Pile	EA	5	35	11	0	51
1080	*Delamination/Spall/ Patched Area*	*EA*			*9*		*9*
1110	*Cracking (PSC)*	*EA*		*33*			*33*
1120	*Efflorescence/Rust Staining*	*EA*		*2*	*2*		*4*
234	Reinforced Concrete Pier Cap	LF	570	27	0	0	597
1130	*Cracking (RC and Other)*	*LF*		*27*			*27*
824	Reinforced Concrete Wingwall	EA	2	0	0	0	2
JOINTS							
304	Open Expansion Joint	LF	588	0	0	0	588
2360	*Adjacent Deck or Header*	*LF*	*588*				*588*
845	Joint Effectiveness	EA	18				18
APPROACH SLABS							
321	Reinforced Concrete Approach Slab	SF	672	0	0	0	672

DNB (1008) Element Level Data							
Element Number	**Element Name**	**Unit**	**Condition State 1**	**Condition State 2**	**Condition State 3**	**Condition State 4**	**Total**
WEARING SURFACES, PROTECTIVE COATINGS, AND CONCRETE REINFORCING STEEL PROTECTIVE SYSTEMS							
510	Wearing Surfaces	SF	34,894	821	0	0	35,715
3220	*Crack (Wearing Surface)*	*SF*		*142*			*142*
3230	*Effectiveness (Wearing Surface)*	*SF*		*679*			*679*
SLOPE AND CHANNEL ELEMENTS							
853	Protected Slope Riprap	EA	1				1
6000	*Scour*	*EA*	*1*				*1*
854	Channel	EA		1			1
6000	*Scour*	*EA*		*1*			*1*

5.10 Trestle D - Southbound

A hands-on inspection was performed this year, and element level data is presented in this section.

Table 60: DSB Element Level Data

DSB (1016) Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
DECKS AND SLABS							
12	Reinforced Concrete Deck	SF	76,275	7,256	0	0	83,531
1080	*Delamination/Spall/ Patched Area*	*SF*		*6*			*6*
1130	*Cracking (RC and Other)*	*SF*		*7,250*			*7,250*
RAILINGS							
330	Metal Bridge Railing	LF	4,172	5	0	0	4,177
1010	*Cracking*	*LF*		*5*			*5*
SUPERSTRUCTURE							
109	Prestressed Concrete Open Girder/Beam	LF	10,367	50	24	0	10,441
1080	*Delamination/Spall/ Patched Area*	*LF*		*19*			*19*
1090	*Exposed Rebar*	*LF*			*20*		*20*
1100	*Exposed Prestressing*	*LF*			*4*		*4*
1110	*Cracking (PSC)*	*LF*		*31*			*31*
811	Beam/Girder End	EA	149	23	38	0	210
1080	*Delamination/Spall/ Patched Area*	*EA*		*14*			*14*
1090	*Exposed Rebar*	*EA*			*19*		*19*
1100	*Exposed Prestressing*	*EA*			*4*		*4*
1110	*Cracking (PSC)*	*EA*		*9*	*15*		*24*
BEARINGS							
310	Elastomeric Bearing	EA	210	0	0	0	210
SUBSTRUCTURE							
215	Reinforced Concrete Abutment	LF	40	0	0	0	40

DSB (1016) Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
226	Prestressed Concrete Pile	EA	11	40	9	0	60
1110	*Cracking (PSC)*	*EA*		*40*	*8*		*48*
1120	*Efflorescence/Rust Staining*	*EA*			*1*		*1*
234	Reinforced Concrete Pier Cap	LF	736	39	0	0	775
1080	*Delamination/Spall/ Patched Area*	*EA*		*1*			*1*
1120	*Efflorescence/Rust Staining*	*LF*		*1*			*1*
1130	*Cracking (RC and Other)*	*LF*		*37*			*37*
JOINTS							
304	Open Expansion Joint	LF	280	0	0	0	280
845	Joint Effectiveness	EA	7	0	0	0	7
SLOPE AND CHANNEL ELEMENTS							
854	Channel	EA	0	1	0	0	1
6000	*Scour*	*EA*		*1*			*1*

5.11 Trestle E, Fisherman Inlet Bridge, Trestle F - Northbound

A hands-on inspection was performed this year, and element level data is presented in this section.

Table 61: ENB, FIB-NB, and FNB Element Level Data

ENB, FIB-NB, and FNB (1017) Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
DECKS AND SLABS							
12	Reinforced Concrete Deck	SF	17,540	860	0	0	18,400
1130	*Cracking (RC and Other)*	*SF*		*860*			*860*
16	Reinforced Concrete Top Flange	SF	65,674	15	4	0	65,693
1080	*Delamination/Spall/ Patched Area*	*SF*			*4*		*4*
1130	*Cracking (RC and Other)*	*SF*		*15*			*15*
RAILINGS							
330	Metal Bridge Railing	LF	4,191	9	5	0	4,205
1010	*Cracking*	*LF*		*7*			*7*
1080	*Delamination/Spall/ Patched Area*	*LF*		*2*	*1*		*3*
1090	*Exposed Rebar*	*LF*			*4*		*4*
SUPERSTRUCTURE							
107	Steel Open Girder/Beam	LF	1,794	42	0	0	1,836
1000	*Corrosion*	*LF*		*42*			*42*
811	Beam/Girder End	EA	7	1	0	0	8
1000	*Corrosion*	*EA*		*1*			1
109	Prestressed Concrete Open Girder/Beam	LF	9,784	41	29	0	9,854
1080	*Delamination/Spall/ Patched Area*	*LF*		*23*	*4*		*27*
1090	*Exposed Rebar*	*LF*			*25*		*25*
1110	*Cracking (PSC)*	*LF*		*18*			*18*

ENB, FIB-NB, and FNB (1017) Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
811	Beam/Girder End	EA	23	27	22	0	72
1080	*Delamination/Spall/ Patched Area*	*EA*		*10*	*3*		*13*
1090	*Exposed Rebar*	*EA*			*19*		*19*
1110	*Cracking (PSC)*	*EA*		*17*			*17*
BEARINGS							
310	Elastomeric Bearing	EA	204	0	0	0	204
311	Movable Bearing	EA	0	8	0	0	8
1000	*Corrosion*	*EA*		*8*			*8*
313	Fixed Bearing	EA	0	8	0	0	8
1000	*Corrosion*	*EA*		*8*			*8*
SUBSTRUCTURE							
215	Reinforced Concrete Abutment	LF	80	0	0	0	80
226	Prestressed Concrete Pile	EA	5	53	7	0	65
1080	*Delamination/Spall/ Patched Area*	*EA*			*1*		*1*
1090	*Exposed Rebar*	*EA*			*2*		*2*
1110	*Cracking (PSC)*	*EA*		*53*	*4*		*57*
234	Reinforced Concrete Pier Cap	LF	708	24	0	0	732
1080	*Delamination/Spall/ Patched Area*	*LF*		*2*			*2*
1130	*Cracking (RC and Other)*	*LF*		*22*			*22*
824	Reinforced Concrete Wingwall	EA	4	0	0	0	4
JOINTS							
304	Open Expansion Joint	LF	320	312	8	0	320
2360	*Adjacent Deck or Header*	*LF*		*8*			*8*
305	Assembly Joint without Seal	LF	80	0	0	0	80
845	Joint Effectiveness	EA	10	0	0	0	10

ENB, FIB-NB, and FNB (1017) Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
APPROACH SLABS							
321	Reinforced Concrete Approach Slab	SF	1,440	0	0	0	1,440
WEARING SURFACES, PROTECTIVE COATINGS, AND CONCRETE REINFORCING STEEL PROTECTIVE SYSTEMS							
510	Wearing Surfaces	SF	46,949	12,156	19	0	59,124
3210	*Delamination/Spall/ Patched Area/Pothole (Wearing Surface)*	*SF*		*11,704*	*19*		*11,723*
3220	*Crack (Wearing Surface)*	*SF*		*452*			*452*
515	Steel Protective Coating	SF	30,374	426	0	0	30,800
3440	*Effectiveness (Steel Protective Coatings)*	*SF*		*426*			*426*
886	Beam/Girder End Protective Coating - Steel	EA	7	1	0	0	8
3440	*Effectiveness (Steel Protective Coatings)*	*EA*		*1*			*1*
SLOPE AND CHANNEL ELEMENTS							
853	Protected Slope Riprap	EA	2	0	0	0	1
854	Channel	EA	0	1	0	0	1

5.12 Trestle E, Fisherman Inlet Bridge, Trestle F - Southbound

A hands-on inspection was performed this year, and element level data is presented in this section.

Table 62: ESB, FIB-SB, and FSB Element Level Data

ESB, FIB-SB, and FSB (1007) Element Level Data							
Element Number	**Element Name**	**Unit**	**Condition State 1**	**Condition State 2**	**Condition State 3**	**Condition State 4**	**Total**
DECKS AND SLABS							
12	Reinforced Concrete Deck	SF	13,871	992	0	0	14,863
1130	*Cracking (RC and Other)*	*SF*		*992*			*992*
16	Reinforced Concrete Top Flange	SF	53,876	70	2	0	53,948
1090	*Exposed Rebar*	*SF*			*2*		*2*
1120	*Efflorescence/Rust Staining*	*SF*		*39*			*39*
1130	*Cracking (RC and Other)*	*SF*		*31*			*31*
RAILINGS							
330	Metal Bridge Railing	LF	4,158	54	1	0	4,213
1000	*Corrosion*	*LF*		*1*			*1*
1010	*Cracking*	*LF*		*45*			*45*
1080	*Delamination/Spall/ Patched Area*	*LF*		*8*	*1*		*9*
SUPERSTRUCTURE							
107	Steel Open Girder/Beam	LF	0	1,820	0	0	1,820
1000	*Corrosion*	*LF*		*1,816*			*1,816*
1900	*Distortion*	*LF*		*4*			*4*
811	Steel Open Beam/Girder End	EA	0	8	0	0	8
1000	*Corrosion*	*EA*		8			8

ESB, FIB-SB, and FSB (1007) Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
109	Prestressed Concrete Open Girder/Beam	LF	12,698	361	153	0	13,212
1080	*Delamination/Spall/ Patched Area*	*LF*		*49*	*47*		*96*
1090	*Exposed Rebar*	*LF*			*3*		*3*
1100	*Exposed Prestressing*	*LF*			*103*		*103*
1110	*Cracking (PSC)*	*LF*		*312*			*312*
1120	*Efflorescence/Rust Staining*	*LF*			*4*		*4*
811	Prestressed Concrete Beam/Girder End	EA	203	143	6	0	352
1080	*Delamination/Spall/ Patched Area*	*EA*			2		2
1090	*Exposed Rebar*	*EA*			*3*		*3*
1110	*Cracking (PSC)*	*EA*		*143*			*143*
1120	*Efflorescence/Rust Staining*	*EA*			*1*		*1*
BEARINGS							
310	Elastomeric Bearing	EA	343	9	0	0	352
2230	*Bulging, Splitting, or Tearing*	*EA*		*9*			*9*
311	Movable Bearing	EA	0	12	0	0	12
1000	*Corrosion*	*EA*		*12*			*12*
313	Fixed Bearing	EA	0	4	0	0	4
1000	*Corrosion*	*EA*		*4*			*4*
SUBSTRUCTURE							
215	Reinforced Concrete Abutment	LF	64	1	0	0	65
1130	*Cracking (RC and Other)*	*LF*		*1*			*1*

ESB, FIB-SB, and FSB (1007) Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
226	Prestressed Concrete Pile	EA	2	68	16	0	86
1080	*Delamination/Spall/ Patched Area*	*EA*		*4*			*4*
1090	*Exposed Rebar*	*EA*			*16*		*16*
1110	*Cracking (PSC)*	*EA*		*55*			*55*
1120	*Efflorescence/Rust Staining*	*EA*		*9*			*9*
234	Reinforced Concrete Pier Cap	LF	596	196	4	0	796
1080	*Delamination/Spall/ Patched Area*	*LF*			*4*		*4*
1120	*Efflorescence/Rust Staining*	*LF*		*2*			*2*
1130	*Cracking (RC and Other)*	*LF*		*194*			*194*
824	Reinforced Concrete Wingwall	EA	4	0	0	0	4
JOINTS							
304	Open Expansion Joint	LF	709	10	0	0	719
2360	*Adjacent Deck or Header*	*LF*		*10*			*10*
305	Assembly Joint without Seal	LF	57	8	0	0	65
2370	*Metal Deterioration or Damage*	*LF*		*8*			*8*
845	Joint Effectiveness	EA	24	0	0	0	24
APPROACH SLABS							
321	Reinforced Concrete Approach Slab	SF	1,344	0	0	0	1,344
WEARING SURFACES, PROTECTIVE COATINGS, AND CONCRETE REINFORCING STEEL PROTECTIVE SYSTEMS							
510	Wearing Surfaces	SF	45,680	550	11	0	46,241
3210	*Delamination/Spall/ Patched Area/Pothole (Wearing Surface)*	*SF*			*11*		*11*
3220	*Crack (Wearing Surface)*	*SF*		*259*			*259*
3230	*Effectiveness (Wearing Surface)*			*291*			*291*

ESB, FIB-SB, and FSB (1007) Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
515	Steel Protective Coating	SF	26,347	6,193	0	0	32,540
3440	*Effectiveness (Steel Protective Coatings)*	*SF*		*6,193*			*6,193*
520	Concrete Reinforcing Steel Protective System	SF	5,587	0	0	0	5,587
521	Concrete Protective Coating	SF	112	0	0	0	112
886	Beam/Girder End Protective Coating - Steel	EA	0	8	0	0	8
3440	*Effectiveness (Steel Protective Coatings)*	*EA*		*8*			*8*
SLOPE AND CHANNEL ELEMENTS							
853	Protected Slope Riprap	EA	2	0	0	0	2
854	Channel	EA	1	0	0	0	1

6. Tunnel Inventory Items

The tables provided in this section reflect the current tunnel inventory data coded per the Specifications for the National Tunnel Inventory (SNTI) at the time of this inspection.

6.1 Thimble Shoal Channel Tunnel - Inventory Items

Table 63: TSCT Identification Items

TSCT Identification Items			
I.1	Tunnel Number	CBBT0000000001R	AN15
I.2	Tunnel Name	Thimble Shoal Tunnel	AN100
I.3	State Code	51	N (2,0)
I.4	County Code	131	N (3,0)
I.5	Place Code	12808	N (5,0)
I.6	Highway Agency District	HR	AN2
I.7	Route Number	00013	AN5
I.8	Route Direction	0	N (1,0)
I.9	Route Type	2	N (1,0)
I.10	Facility Carried	US13	AN100
I.11	LRS Route ID	000000001300	AN120
I.12	LRS Mile Point	43.06	N (8,3)
I.13	Tunnel Portal's Latitude	00000000036.96620000	N (11,8)
I.14	Tunnel Portal's Longitude	00000000076.11260000	N (11,8)
I.15	Border Tunnel State or Country Code		AN2
I.16	Border Tunnel Financial Responsibility		N (3,0)
I.17	Border Tunnel Number		AN15
I.18	Border Tunnel Inspection Responsibility		N (1,0)

Table 64: TSCT Age and Service Items

TSCT Age and Service Items			
A.1	Year Built	1964	N (4,0)
A.2	Year Rehabilitated	2014	N (4,0)
A.3	Total Number of Lanes	02	N (2,0)
A.4	Annual Average Daily Traffic	008800	N (6,0)
A.5	Annual Average Daily Truck Traffic	000704	N (6,0)
A.6	Year of Average Daily Traffic	2016	N (4,0)
A.7	Detour Length	425	N (3,0)
A.8	Service in Tunnel	1	N (1,0)

Table 65: TSCT Classification Items

TSCT Classification Items			
C.1	Owner	32	N (2,0)
C.2	Operator	32	N (2,0)
C.3	Direction of Traffic	2	N (1,0)
C.4	Toll	2	N (1,0)
C.5	NHS Designation	1	N (1,0)
C.6	STRAHNET Designation	1	N (1,0)
C.7	Functional Classification	2	N (1,0)
C.8	Urban Code	90892	N (5,0)

Table 66: TSCT Geometric Data Items

TSCT Geometric Data Items			
G.1	Tunnel Length	005738	N (6,0)
G.2	Minimum Vertical Clearance over Tunnel Roadway	00013.5	N (5,1)
G.3	Roadway Width, Curb-to-Curb	0024.0	N (4,1)
G.4	Left Sidewalk Width	002.5	N (3,1)
G.5	Right Sidewalk Width	000.0	N (3,1)

Table 67: TSCT Inspection Items

TSCT Inspection Items			
D.1	Routine Inspection Target Date	10012017	D
D.2	Actual Routine Inspection Date	09152017	D
D.3	Routine Inspection Interval	24	N (2,0)
D.4	In-Depth Inspection	0	N (1,0)
D.5	Damage Inspection	0	N (1,0)
D.6	Special Inspection	0	N (1,0)

Table 68: TSCT Load Rating and Posting Items

TSCT Load Rating and Posting Items			
L.1	Load Rating Method	1	AN1
L.2	Inventory Load Rating Factor	0.75	N (4,2)
L.3	Operating Load Rating Factor	1.26	N (4,2)
L.4	Tunnel Load Posting Status	A	AN1
L.5	Posting Load - Gross		N (2,0)
L.6	Posting Load - Axle		N (2,0)
L.7	Posting Load - Type 3		N (2,0)
L.8	Posting Load - Type 3S2		N (2,0)
L.9	Posting Load - Type 3-3		N (2,0)
L.10	Height Restriction	1	N (1,0)
L.11	Hazardous Material Restriction	1	N (1,0)
L.12	Other Restrictions	1	N (1,0)

Table 69: TSCT Navigation Items

TSCT Navigation Items			
N.1	Under Navigable Waterway	1	N (1,0)
N.2	Navigable Waterway Clearance	055.0	N (3,1)
N.3	Tunnel or Portal Island Protection from Navigation	1	N (1,0)

Table 70: TSCT Structure Type and Materials Items

TSCT Structure Type and Material Items			
S.1	Number of Bores	1	N (1,0)
S.2	Tunnel Shape	4	N (1,0)
S.3	Portal Shapes	3	N (1,0)
S.4	Ground Conditions	1	N (1,0)
S.5	Complex	1	N (1,0)

6.2 Chesapeake Channel Tunnel - Inventory Items

Table 71: CCT Identification Items

CCT Identification Items			
I.1	Tunnel Number	CBBT00000000002	AN15
I.2	Tunnel Name	Chesapeake Channel Tunnel	AN100
I.3	State Code	51	N (2,0)
I.4	County Code	131	N (3,0)
I.5	Place Code	12808	N (5,0)
I.6	Highway Agency District	HR	AN2
I.7	Route Number	00013	AN5
I.8	Route Direction	0	N (1,0)
I.9	Route Type	2	N (1,0)
I.10	Facility Carried	US13	AN100
I.11	LRS Route ID	000000001300	AN120
I.12	LRS Mile Point	37.32	N (8,3)
I.13	Tunnel Portal's Latitude	00000000037.03640000	N (11,8)
I.14	Tunnel Portal's Longitude	00000000076.07680000	N (11,8)
I.15	Border Tunnel State or Country Code		AN2
I.16	Border Tunnel Financial Responsibility		N (3,0)
I.17	Border Tunnel Number		AN15
I.18	Border Tunnel Inspection Responsibility		N (1,0)

Table 72: CCT Age and Service Items

CCT Age and Service Items			
A.1	Year Built	1964	N (4,0)
A.2	Year Rehabilitated	2018	N (4,0)
A.3	Total Number of Lanes	02	N (2,0)
A.4	Annual Average Daily Traffic	010956	N (6,0)
A.5	Annual Average Daily Truck Traffic	000990	N (6,0)
A.6	Year of Average Daily Traffic	2017	N (4,0)
A.7	Detour Length	425	N (3,0)
A.8	Service in Tunnel	1	N (1,0)

Table 73: CCT Classification Items

CCT Classification Items			
C.1	Owner	32	N (2,0)
C.2	Operator	32	N (2,0)
C.3	Direction of Traffic	2	N (1,0)
C.4	Toll	2	N (1,0)
C.5	NHS Designation	1	N (1,0)
C.6	STRAHNET Designation	1	N (1,0)
C.7	Functional Classification	2	N (1,0)
C.8	Urban Code	90892	N (5,0)

Table 74: CCT Geometric Data Items

CCT Geometric Data Items			
G.1	Tunnel Length	005424	N (6,0)
G.2	Minimum Vertical Clearance over Tunnel Roadway	00013.5	N (5,1)
G.3	Roadway Width, Curb-to-Curb	0024.0	N (4,1)
G.4	Left Sidewalk Width	002.5	N (3,1)
G.5	Right Sidewalk Width	000.0	N (3,1)

Table 75: CCT Inspection Items

CCT Inspection Items			
D.1	Routine Inspection Target Date	10012018	D
D.2	Actual Routine Inspection Date	09272018	D
D.3	Routine Inspection Interval	24	N (2,0)
D.4	In-Depth Inspection	0	N (1,0)
D.5	Damage Inspection	0	N (1,0)
D.6	Special Inspection	0	N (1,0)

Table 76: CCT Load Rating and Posting Items

CCT Load Rating and Posting Items			
L.1	Load Rating Method	1	AN1
L.2	Inventory Load Rating Factor	0.63	N (4,2)
L.3	Operating Load Rating Factor	1.05	N (4,2)
L.4	Tunnel Load Posting Status	A	AN1
L.5	Posting Load - Gross		N (2,0)
L.6	Posting Load - Axle		N (2,0)
L.7	Posting Load - Type 3		N (2,0)
L.8	Posting Load - Type 3S2		N (2,0)
L.9	Posting Load - Type 3-3		N (2,0)
L.10	Height Restriction	1	N (1,0)
L.11	Hazardous Material Restriction	1	N (1,0)
L.12	Other Restrictions	1	N (1,0)

Table 77: CCT Navigation Items

CCT Navigation Items			
N.1	Under Navigable Waterway	1	N (1,0)
N.2	Navigable Waterway Clearance	055.0	N (3,1)
N.3	Tunnel or Portal Island Protection from Navigation	1	N (1,0)

Table 78: CCT Structure Type and Material Items

CCT Structure Type and Material Items			
S.1	Number of Bores	1	N (1,0)
S.2	Tunnel Shape	4	N (1,0)
S.3	Portal Shapes	3	N (1,0)
S.4	Ground Conditions	1	N (1,0)
S.5	Complex	1	N (1,0)

7. Tunnel Element Level Data

The tables provided in this section display the tunnel elements and condition states coded per the Specifications for the National Tunnel Inventory (SNTI) at the time of this inspection.

7.1 Thimble Shoal Channel Tunnel - Element Level Data

Table 79: TSCT Element Level Data

TSCT Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
STRUCTURAL SECTION							
10002	Precast Concrete Tunnel Liner	SF	606,517	4,334	1,568	481	612,900
10051	Concrete Portal	SF	3,256	20	10		3,286
10061	Concrete Ceiling Slab	SF	149,100	75	13		149,188
10080	Steel Hangers and Anchorages	EA	469				469
10101	Concrete Invert Slab	SF	121,319	15,428	965		137,712
10132	Compression Joint Seal	LF	184				184
CIVIL SECTION							
10158	Asphalt Wearing Surface	SF	128,627				128,627
10161	Concrete Traffic Barrier	LF	11,475	1			11,476
10170	Steel Pedestrian Railing	LF	5,162	574	2		5,738
10950	*Steel Corrosion Protective Coating*	*SF*	*6,422*			*714*	*7,136*
MECHANICAL SYSTEMS SECTION							
10200	Ventilation System	EA	2				2
10201	Fans	EA	11		1		12
10300	Drainage and Pumping System	EA	3				3
10301	Pumps	EA	2	11			13
10400	Emergency Generator System	EA	2				2
ELECTRICAL AND LIGHTING SYSTEMS SECTION							
10500	Electrical Distribution System	EA	1				1
10550	Emergency Distribution System	EA	2				2

TSCT Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
10600	Tunnel Lighting Systems	EA	2				2
10601	Tunnel Lighting Fixture	EA	1,449	1	1	2	1,453
10620	Emergency Lighting System	EA	2				2
FIRE/LIFE SAFETY/SECURITY SYSTEMS SECTION							
10650	Fire Detection System	EA	1				1
10700	Fire Protection System	EA		1			1
10750	Emergency Communication System	EA	1				1
10800	Tunnel Operations and Security System	EA	1				1
SIGNS SECTION							
10850	Traffic Sign	EA	19				19
10910	Lane Signal	EA	2				2

7.2 Chesapeake Channel Tunnel - Element Level Data

Table 80: CCT Element Level Data

CCT Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
STRUCTURAL SECTION							
10002	Precast Concrete Tunnel Liner*	SF	575,853	1,904	1,325	695	579,307
10051	Concrete Portal	SF	3,266	20			3,286
10061	Concrete Ceiling Slab*	SF	140,703	298	10		141,011
10080	Steel Hangers and Anchorages	EA	446				446
10101	Concrete Invert Slab**	SF	80,722	42,114	7,282	46	130,164
10132	Compression Joint Seal	LF	184				184
CIVIL SECTION							
10158	Asphalt Wearing Surface	SF	121,557	18	2		121,577
10161	Concrete Traffic Barrier	LF	10,821	7	19		10,847
10170	Steel Pedestrian Railing	LF	4,874	543	7		5,424
10950	*Steel Corrosion Protective Coating*	*SF*	*6,070*			*674*	6,744
MECHANICAL SYSTEMS SECTION							
10200	Ventilation System	EA	1	1			2
10201	Fans	EA	4	8			12
10300	Drainage and Pumping System	EA	3				3
10301	Pumps	EA	10	3			13
10400	Emergency Generator System	EA	2				2

CCT Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
ELECTRICAL AND LIGHTING SYSTEMS SECTION							
10500	Electrical Distribution System	EA	1				1
10550	Emergency Distribution System	EA	2				2
10600	Tunnel Lighting Systems	EA	2				2
10601	Tunnel Lighting Fixture	EA	1,381	1			1,382
10620	Emergency Lighting System	EA	2				2
FIRE/LIFE SAFETY/SECURITY SYSTEMS SECTION							
10650	Fire Detection System	EA	1				1
10700	Fire Protection System	EA		2			2
10750	Emergency Communication System	EA	1				1
10800	Tunnel Operations and Security System	EA	1				1
SIGNS SECTION* **							
10850	Traffic Sign****	EA	3				3
10870	Egress Sign	EA	67				67

* The 2016 Condition State 2 values are significantly larger compared to this year's value as the 2016 inspection considered tile defects as defects in the ceiling slab. The FY2018 Inspection of TSCT and this year's inspection of CCT does not consider tile to be part of the liner or ceiling slab; resulting in cracking and delamination of tiles to be omitted from element level counts unless rust staining or other indications of degradation to those structural elements is observed.

** Precast Concrete Tunnel Liner and Invert Slab concrete in the Fresh Air Duct is under repair as part of the Tunnel(s) Invert Slab Repairs Project (RMF 3060.3017) that began in Spring 2018 and is scheduled to be completed in Winter 2019. The repair work was underway from STA 508+45 to 522+75 at the time of inspection. This 1,430 ft portion of the Fresh Air Duct was not inspected other than at locations of previous repairs, and the Condition State of the Invert Slab elements for that portion has been assumed to be CS2 (representative of a patched area that is sound) unless superseded by a failed patch. The Condition State of the Tunnel Liner reported in 2016 for that portion has been assumed for this inspection cycle.

*** Items 10910 Lane Signal and 10911 Lane Signal Fixture have been removed as they are not present within the tunnel.

**** Traffic Signs total quantity has been reduced from 11 to 3 to account only for the signs within the tunnel.

8. Photographs

8.1 Trestle A - Northbound

Photo 8.1-1: ANB129 Asphalt Wearing Surface – Surface Spall along Center Line (Looking Southeast)

Photo 8.1-2: ANB143 Asphalt Wearing Surface – Surface Spall along Center Line (Looking Northeast)

Photo 8.1-3: ANB144 Asphalt Wearing Surface – Full Depth Surface Spall in Right Lane (Looking Northeast)

Photo 8.1-4: ANB142 Reinforced Concrete Top Flange (Underside) - Spall with Exposed Reinforcing in Bay 3 Zone 3 (Looking North)

Photo 8.1-5: ANB132 Girder 6 – Failed Repair at Bearing (Looking Southwest)

Photo 8.1-6: ANB133 Girder 3 - Spall at Bearing with 1 Exposed Reinforcement Bar (Looking Southeast)

Photo 8.1-7: ANB133 Girder 4 - Spall with 1 Exposed Prestressing Strand (Looking Northeast)

Photo 8.1-8: ANB149 Girder 8 - Girder Spall and Prestressing Strand Repair Preparation exhibiting Corrosion along Replacement Strand and Coupler (Looking West) ~ The District Corrected and Completed the Repair per Email dated 11/20/2018

Photo 8.1-9: ANB159 Girder 6 - Spall with 1 Exposed Prestressing Strand (Looking Southeast)

Photo 8.1-10: ANB146 Elastomeric Bearing at Girder 4 - Split with Exposed and Corroded Steel Plates (Looking South)

Photo 8.1-11: ASB Bent 135 – Spalled Shear Tab (Looking Northwest)

Photo 8.1-12: ANB75 Pile A - Wide Crack in Pile through Protective Coating with Rust Staining (Looking West)

Photo 8.1-13: ANB89 Pile A - Damaged Life Jacket missing Grout and Zinc Mesh on Northwest Quadrant

Photo 8.1-14: ANB96 Pile A - Crack through Protective Coating with Rust Staining (Looking Northeast)

Photo 8.1-15: ANB112 Pile B - Protective Coating Failures with Cracking, Spalling, and Rust Staining (Looking South)

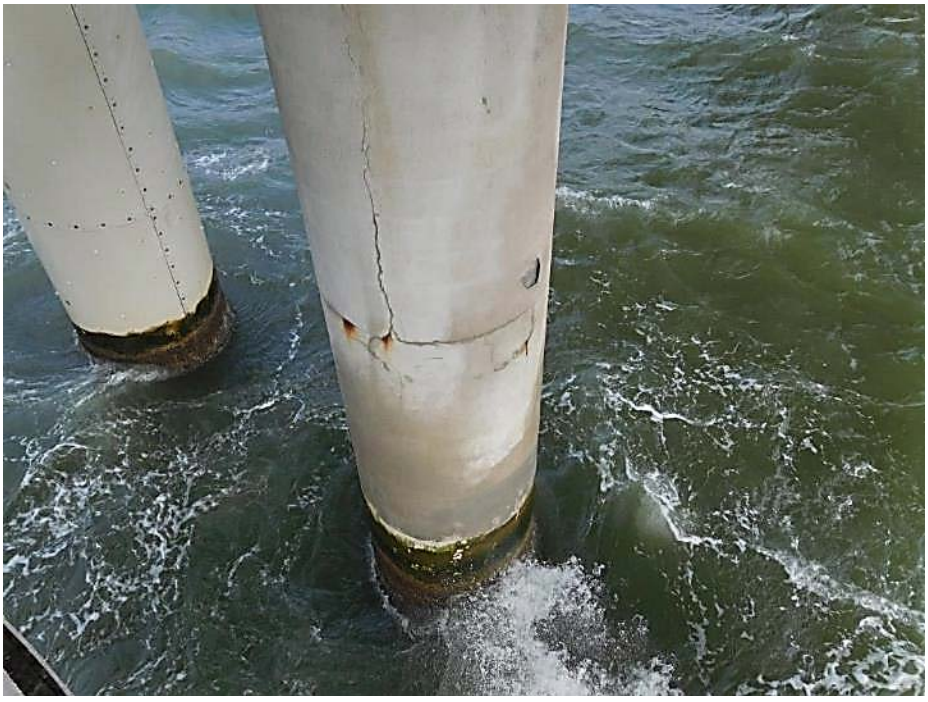


Photo 8.1-16: ANB122 Pile B - Protective Coating Failures with Cracking and Rust Staining (Looking Northwest)

Photo 8.1-17: ANB117 Pile A - Cracks through Protective Coating with Rust Staining (Looking Northwest)

Photo 8.1-18: BNB133 Pile A - Life Jacket with Damaged Fiberglass Jacket and Slightly Exposed Zinc Mesh (Looking North)

Photo 8.1-19: BNB133 Pile A - Life Jacket with Damaged Fiberglass Jacket and Slightly Exposed Zinc Mesh (Looking Northeast)

Photo 8.1-20: BNB135 Pile B - Cracks through Protective Coating with Rust Staining (Looking Northeast)

Photo 8.1-21: ANB129 Light Pole – Cracking at Baseplate (Looking Northwest)

8.2 Trestle A - Southbound

Photo 8.2-1: ASB109 Bay 2 Zone 3 Reinforced Concrete Top Flange (Underside) – Spall with Exposed Reinforcement (Looking Southwest)

Photo 8.2-2: ASB95 Girder 5 – End Cracking at Bearing (Looking Southwest)

Photo 8.2-3: ASB117 Girder 1 – Portion of Bottom Corner Missing (appears to have been constructed this way) (Looking Southeast)

Photo 8.2-4: ASB93 Bay 5 Zone 1/2 Intermediate Diaphragm – Spalling, Cracking, and Efflorescence Surrounding the Lower Post Tension Duct (Looking Southeast)

Photo 8.2-5: ASB82 Bay 1 Zone 2/3 Intermediate Diaphragm – Spalling, Cracking, and Efflorescence Surrounding the Lower Post Tension Duct (Looking Southeast)

Photo 8.2-6: ASB Bent 96 - Disconnected Cable (Looking Southwest)

Photo 8.2-7: ASB87 Light Pole – Vertical Cracking Near Baseplate (Looking Southwest)

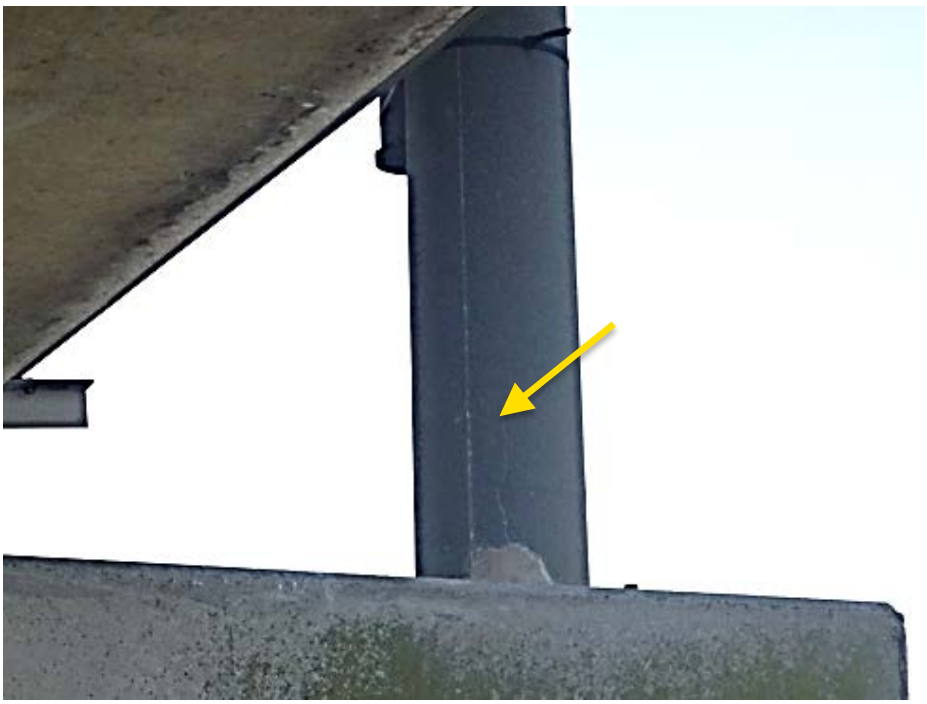


Photo 8.2-8: ASB15 Light Pole – Vertical Cracking Near Baseplate above Repair Area (Looking Southwest)

Photo 8.2-9: ASB119 Light Pole – Vertical Cracking Near Baseplate (Looking Southwest)

8.3 Trestle B - Northbound

Photo 8.3-1: BNB119 Metal Bridge Railing – Failed Curb Repair with Exposed Reinforcement (Looking South)

Photo 8.3-2: BNB109 Asphalt Wearing Surface – Elevated Pavement at Previous Repair in Right Lane (Looking East)

Photo 8.3-3: BNB130 Asphalt Wearing Surface – Deck Spall at Patch (Looking East)

Photo 8.3-4: BNB132 Asphalt Wearing Surface – Rust Staining along Joint with EPO (Looking North)

Photo 8.3-5: BNB106 Girder 1 - Spall with 1 Exposed Prestressing Strand, 3 Locations (Looking Northeast)

Photo 8.3-6: BNB107 Girder 8 - Spall with 1 Exposed Prestressing Strand, 3 Locations (Looking Southeast)

Photo 8.3-7: BNB116 Girder 8 - Spall with 1 Exposed Prestressing Strand, 3 Locations (Looking Northwest)

Photo 8.3-8: ANB127 Girder 2 - Failed Repair with 1 Exposed Prestressing Strand (Looking Northeast)

Photo 8.3-9: ANB145 Girder 5 - Failed Repair at Bearing with 1 Exposed Reinforcement Bar (Looking Southwest)

Photo 8.3-10: BNB151 Girder 1 - Spall with 2 Exposed Prestressing Strands, 2 Locations with 1 Exposed Strand (Looking Southeast)

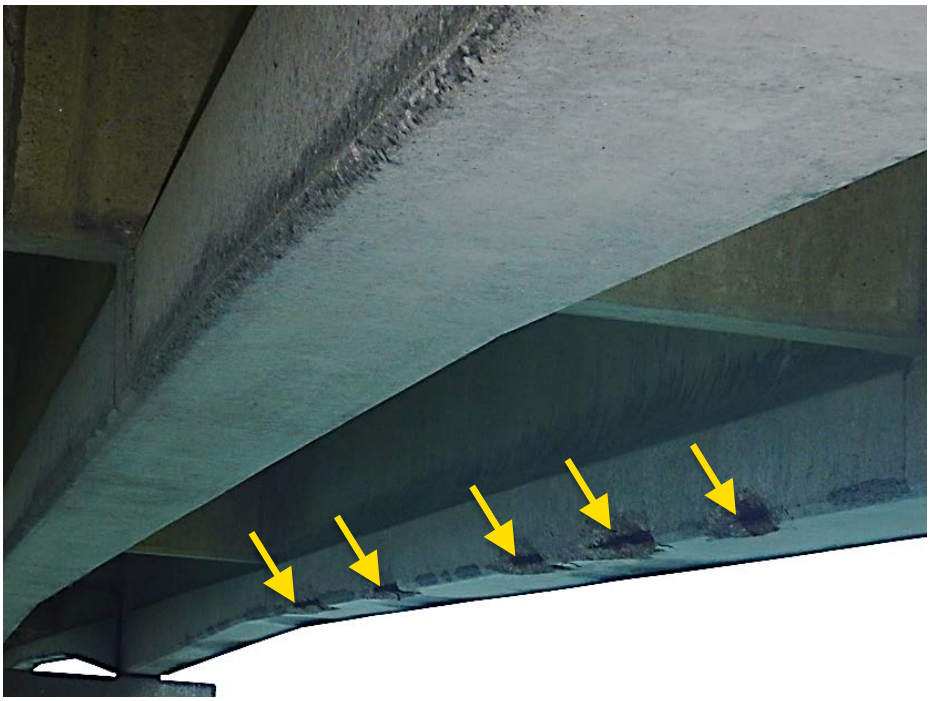


Photo 8.3-11: BNB157 Girder 1 - Spall with 1 Exposed Prestressing Strand, 5 Locations (Looking Northeast)

Photo 8.3-12: BNB109 Elastomeric Bearing at Girder 2 - Split with Exposed and Corroded Steel Plates (Looking South)

Photo 8.3-13: BNB116 Pile A - Damaged Life Jacket missing Grout and Zinc Mesh on Southeast Quadrant with Exposed Cable (Looking Northwest)

Photo 8.3-14: BNB117 Pile A - Damaged Life Jacket missing Grout and Zinc Mesh (Looking South)

Photo 8.3-15: BNB121 Pile B – Wide Cracks with Efflorescence (Looking Northeast)

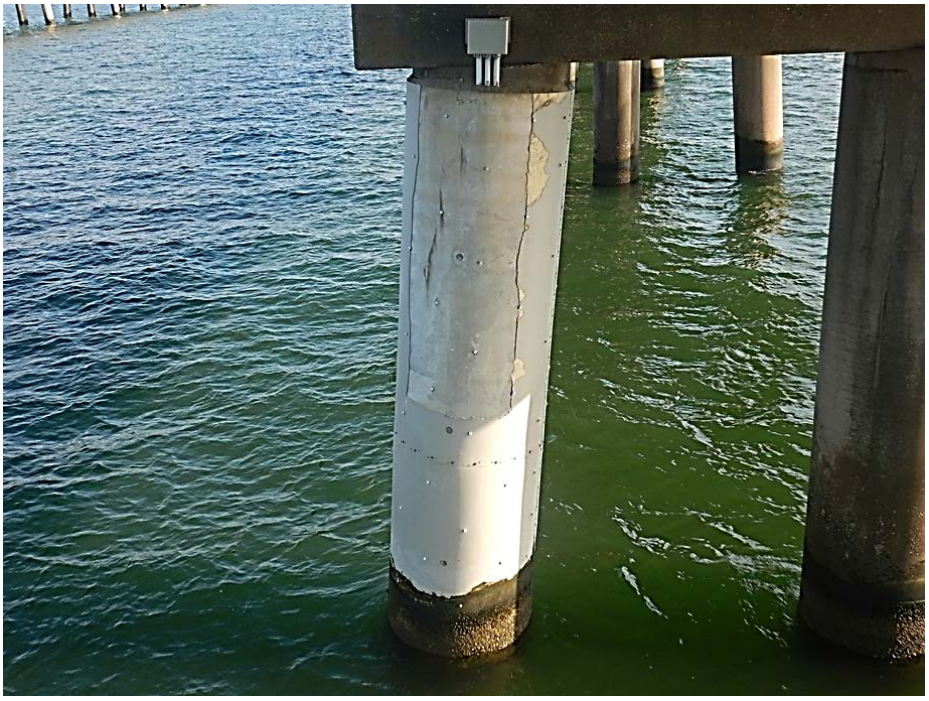


Photo 8.3-16: BNB127 Pile A – Life Jacket with Damaged Fiberglass Jacket, Cracking in Grout at Nylon Spacers, and Slightly Exposed Zinc Mesh (Looking North)

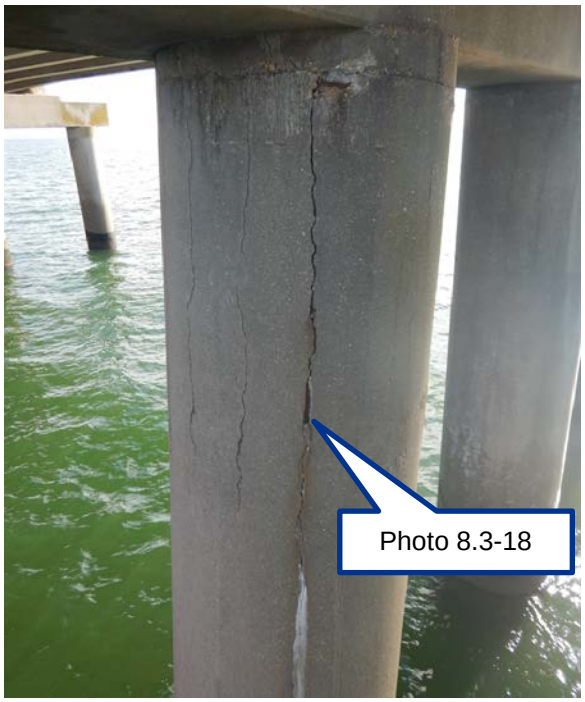


Photo 8.3-17: BNB129 Pile A – Wide Crack along Exposed Prestressing Strand with Efflorescence and Rust Staining (Looking Northeast)

Photo 8.3-18: BNB129 Pile A – Wide Crack along Exposed Prestressing Strand with Efflorescence and Rust Staining (Looking Northeast) - Closeup

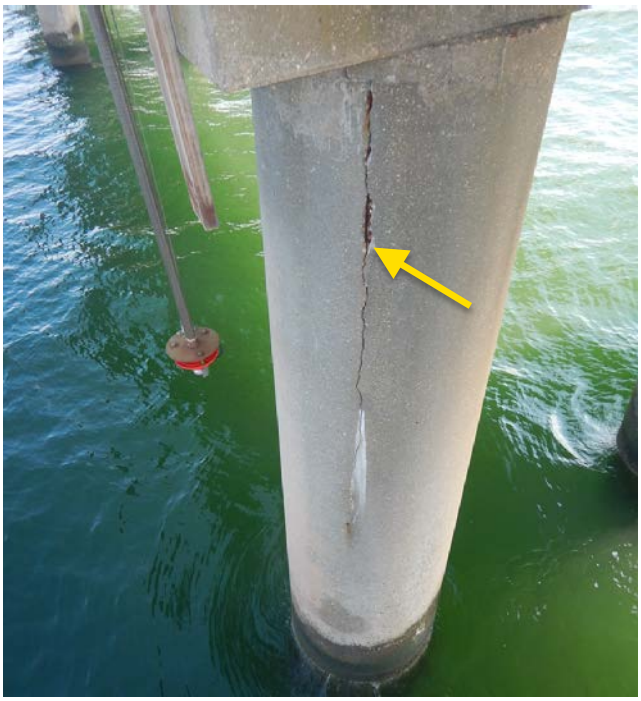


Photo 8.3-19: BNB131 Pile A – Wide Crack along Exposed Prestressing Strand with Efflorescence and Rust Staining (Looking Northeast)

Photo 8.3-20: BNB111 Light Pole – Cracking at Baseplate (Looking Northwest)

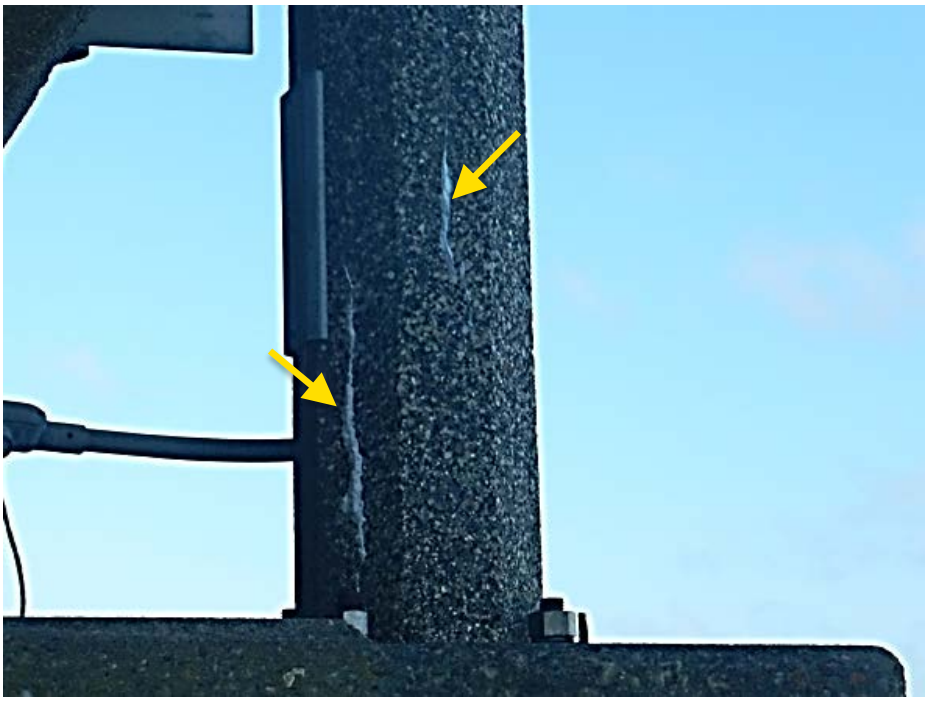


Photo 8.3-21: BNB129 Light Pole – Cracking at Baseplate with Efflorescence (Looking Southwest)

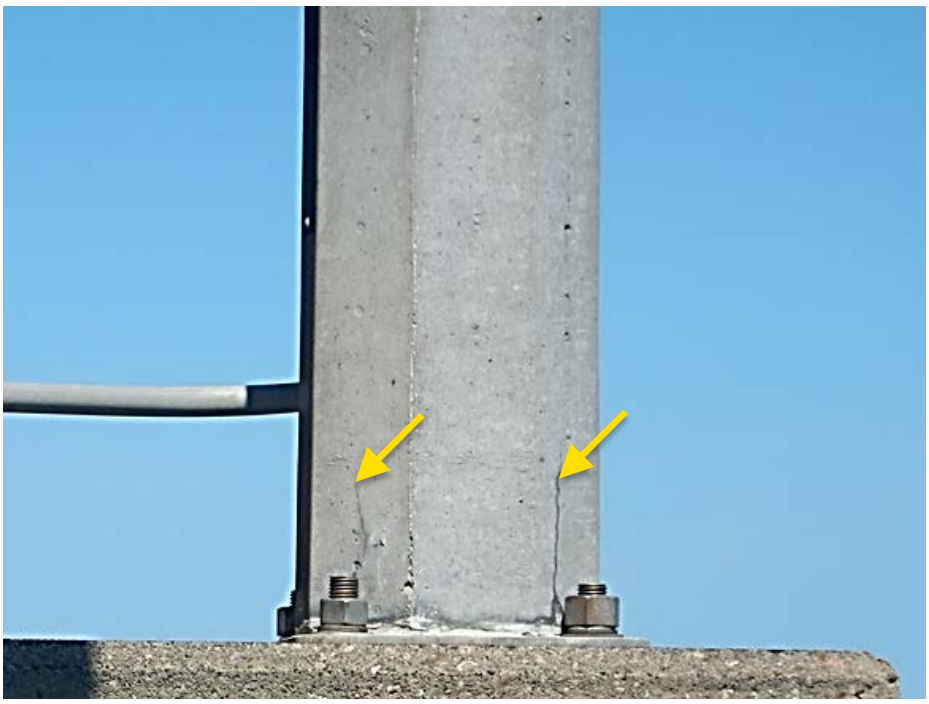


Photo 8.3-22: BNB144 Light Pole – Cracking at Baseplate (Looking North)

8.4 Trestle B - Southbound

Photo 8.4-1: BSB104 Asphalt Wearing Surface – Crack along Pavement extends to BSB105 (Looking North)

Photo 8.4-2: BSB103 Asphalt Wearing Surface – Crack along Pavement extends to BSB102 (Looking South)

Photo 8.4-3: BSB 103 Pile B - Wide Crack/Minor Spalling along Seam (Looking Southwest)

Photo 8.4-4: BSB 104 Pile A - Wide Crack/Minor Spalling along Seam (Looking Northwest)

Photo 8.4-5: BSB 111 Pile B - Wide Crack/Minor Spalling along Seam (Looking North)

Photo 8.4-6: BSB Bent 107 - Disconnected Cable (Looking Southwest)

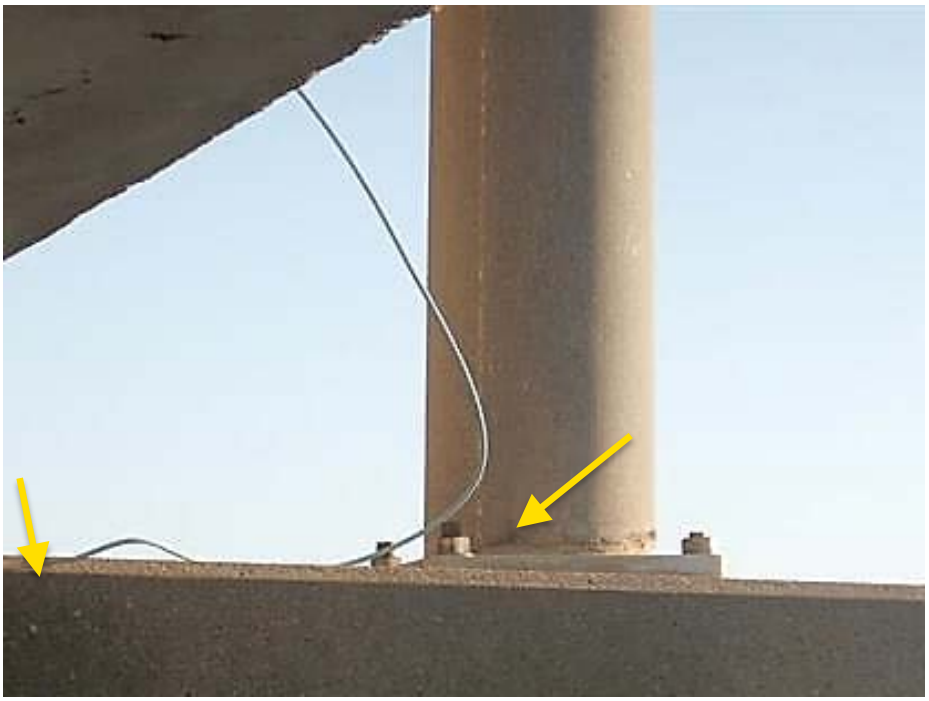


Photo 8.4-7: BSB105 Light Pole – Vertical Cracking Near Baseplate and Disconnected Cable (Looking Northeast)

8.5 Trestle C - Northbound

Photo 8.5-1: CNB171 Metal Bridge Railing 1st Post from the South – Rust and Tightly Fastened Connection Results in Bolts that do not Extend Above Nuts (Looking Northwest)

Photo 8.5-2: CNB178 Metal Bridge Railing - Failed Curb Repair

Photo 8.5-3: CNB181 Metal Bridge Railing 2nd Post from the North - Impact Damage to Post above Middle Rail (Looking Northwest)

Photo 8.5-4: CNB144 Asphalt Wearing Surface – Scaling and Surface Spalling (Looking Northeast)

Photo 8.5-5: CNB150 Open Expansion Joint that has been Paved over Exhibiting Reflective Cracking (Looking East)

Photo 8.5-6: CNB150 Open Expansion Joint – Steel Joint Header, Worse Condition observed during FY2019 Inspection – Closeup

Photo 8.5-7: CNB156 Asphalt Wearing Surface – Surface Spalling (Looking Northeast)

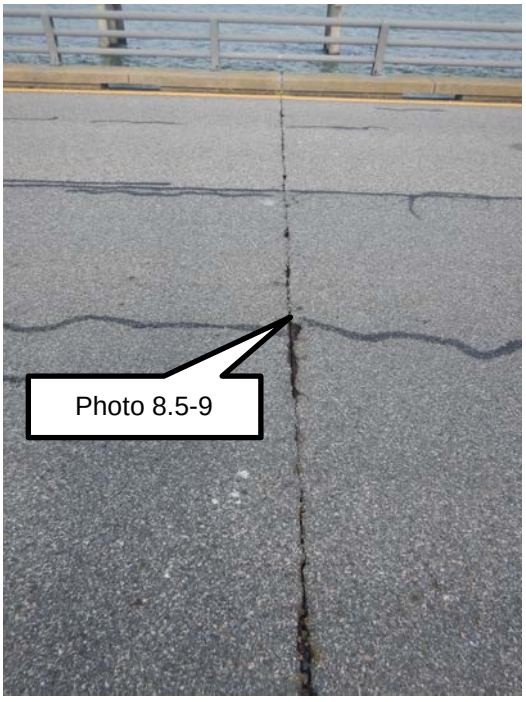


Photo 8.5-8: CNB159 Open Expansion Joint that has been Paved over Exhibiting Reflective Cracking (Looking West)

Photo 8.5-9: CNB159 Open Expansion Joint – Steel Joint Header - Closeup

Photo 8.5-10: CNB184 Asphalt Wearing Surface – Surface Spalling and Cracking (Looking Southeast)

Photo 8.5-11: CNB136 Girder 3 - Repair with Exposed Prestressing Strand (Looking Northeast)

Photo 8.5-12: CNB138 Girder 8 - Failed Repair with Rust Staining Near Bearing (Looking Northeast)

Photo 8.5-13: CNB147 Girder 8 - Repair with Minor Transverse Cracking (Looking Northwest)

Photo 8.5-14: CNB138 Girder 8 - Failed Repair with Rust Staining Near Bearing (Looking Northeast)

Photo 8.5-15: CNB174 Girder 6 - Failed Repair with Exposed Reinforcement Near Bearing (Looking Southeast)

Photo 8.5-16: CNB187 Girder 1 - Galvanized Hardware used for Core Extraction should be removed (Looking Southeast)

Photo 8.5-17: CNB187 Girder 8 - Failed Repair with Exposed Reinforcement Near Bearing (Looking Northeast)

Photo 8.5-18: CNB138 Elastomeric Bearings at Girders 4, 5, 6, & 7 - Split with Exposed and Corroded Steel Plates (Looking Northwest)

Photo 8.5-19: CNB175 Pile A - Spall with Exposed Reinforcement (Looking Southwest)

Photo 8.5-20: CNB182 Pile B - Spall with Exposed Reinforcement (Looking Northeast)

Photo 8.5-21: CNB183 Pile B – Life Jacket Rectifier with No Cover (Looking North)

Photo 8.5-22: CNB184 Pile A - Spall with Exposed Reinforcement (Looking Northeast)

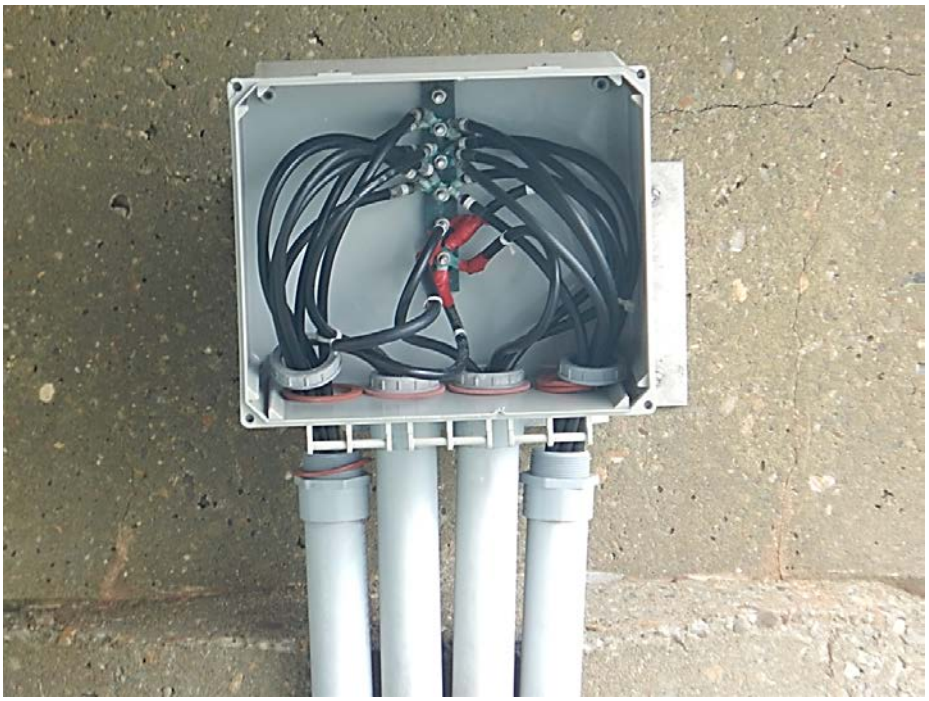


Photo 8.5-23: CNB191 Pile C – Life Jacket Rectifier with No Cover (Looking North)

Photo 8.5-24: CNB193 Pile B - Spall with Exposed Reinforcement (Looking Northeast)

Photo 8.5-25: CNB159 Light Pole – Cracking at Baseplate (Looking North)

Photo 8.5-26: CNB162 Light Pole – Cracking near Baseplate with Rust Staining (Looking Southwest)

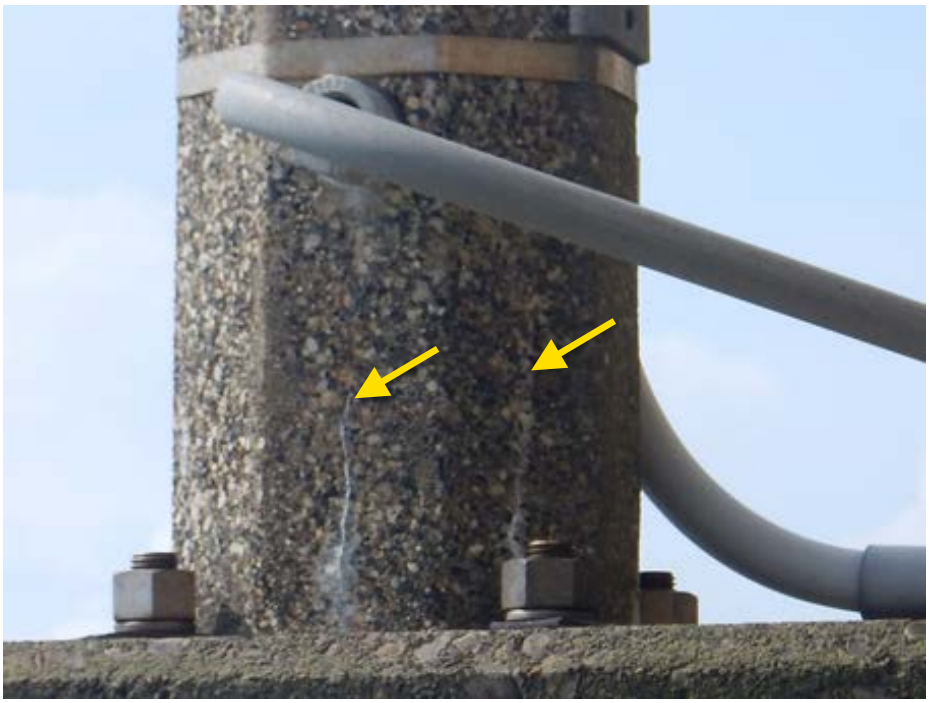


Photo 8.5-27: CNB165 Light Pole – Cracking at Baseplate with Efflorescence (Looking Southeast)

Photo 8.5-28: CNB186 Light Pole – Cracking at Baseplate (Looking Northwest)

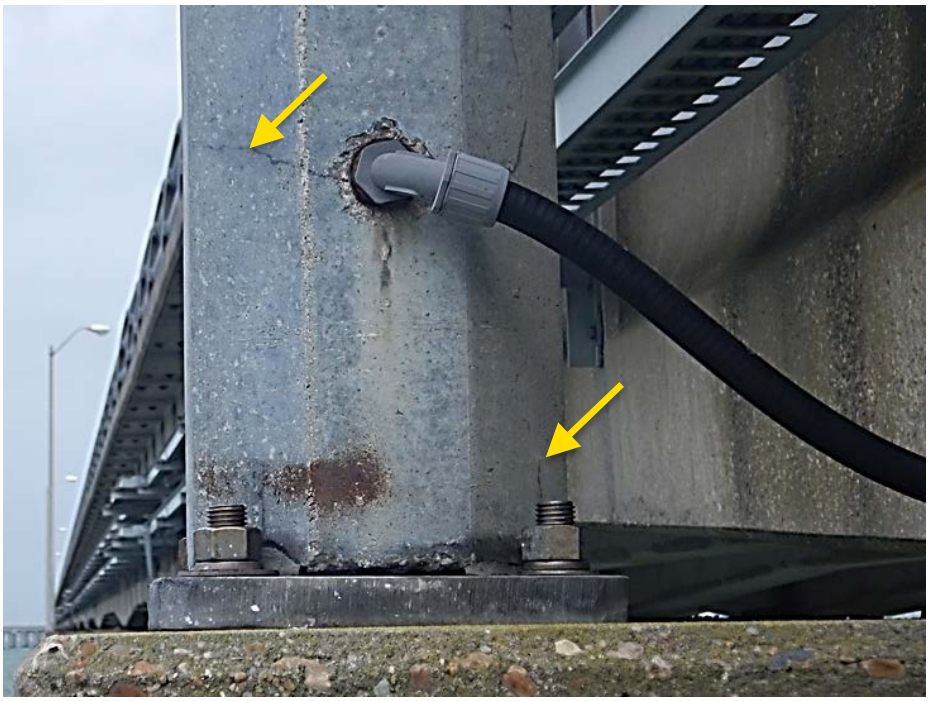


Photo 8.5-29: CNB192 Light Pole – Cracking at Baseplate (Looking Northeast)

Photo 8.5-30: CNB195 Light Pole – Cracking at Baseplate with Efflorescence and Rust Staining (Looking North)

Photo 8.5-31: CNB198 Light Pole – Cracking at Baseplate (Looking North)

8.6 Trestle C - Southbound

Photo 8.6-1: CSB115 Metal Bridge Railing – Loose Anchor Bolt Connection near Bent CSB115 (Looking Northwest)

Photo 8.6-2: CSB136 Metal Bridge Railing – Top Connection is Loose, 4th Post from North (Looking Southwest)

Photo 8.6-3: CSB152 Metal Bridge Railing – Failed Curb Repair (Looking Northwest)

Photo 8.6-4: CSB110 Asphalt Wearing Surface – Typical Abrasion and Scaling (Looking Southwest)

Photo 8.6-5: CSB120 Asphalt Wearing Surface – Surface Spall in Right Lane (Looking West)

Photo 8.6-6: CSB125 Open Joint – Area of Degradation in Header (Looking West)

Photo 8.6-7: CSB153 Girder 6 – Spalling at Closure Diaphragm with Exposed Reinforcement and Prestressing Strand (Looking West)

Photo 8.6-8: CSB128 Pile B - Spall with Exposed Reinforcement Spirals (Looking North)

Photo 8.6-9: CSB Bent 121 - Conduit Separated (Looking South)

Photo 8.6-10: CSB Bent 131 - Disconnected Cable (Looking Northwest)

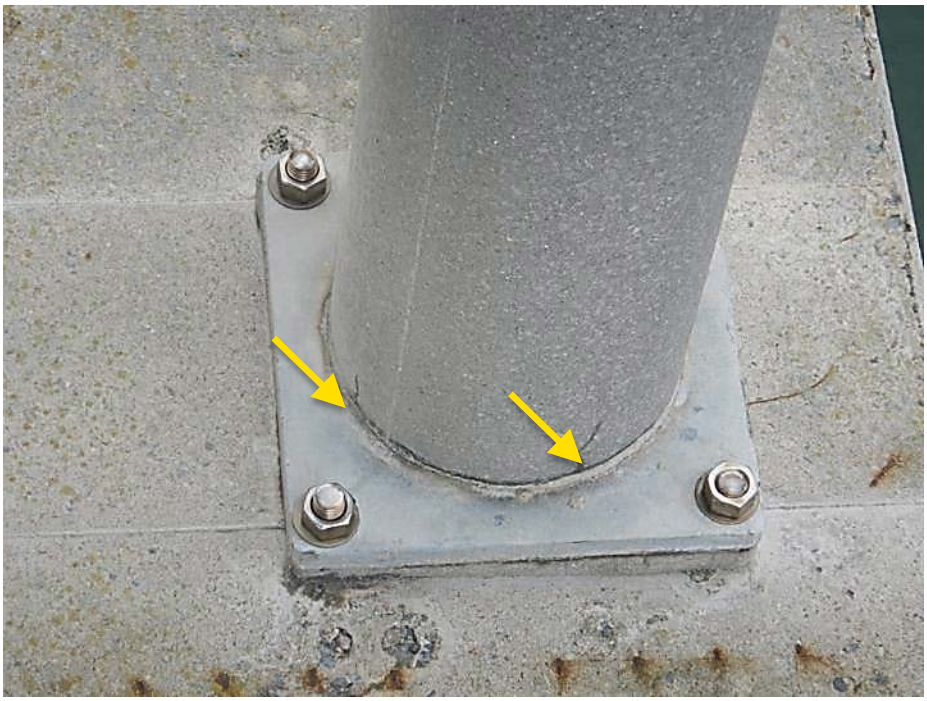


Photo 8.6-11: CSB115 Light Pole – Vertical Cracking Near Baseplate (Looking Southwest)

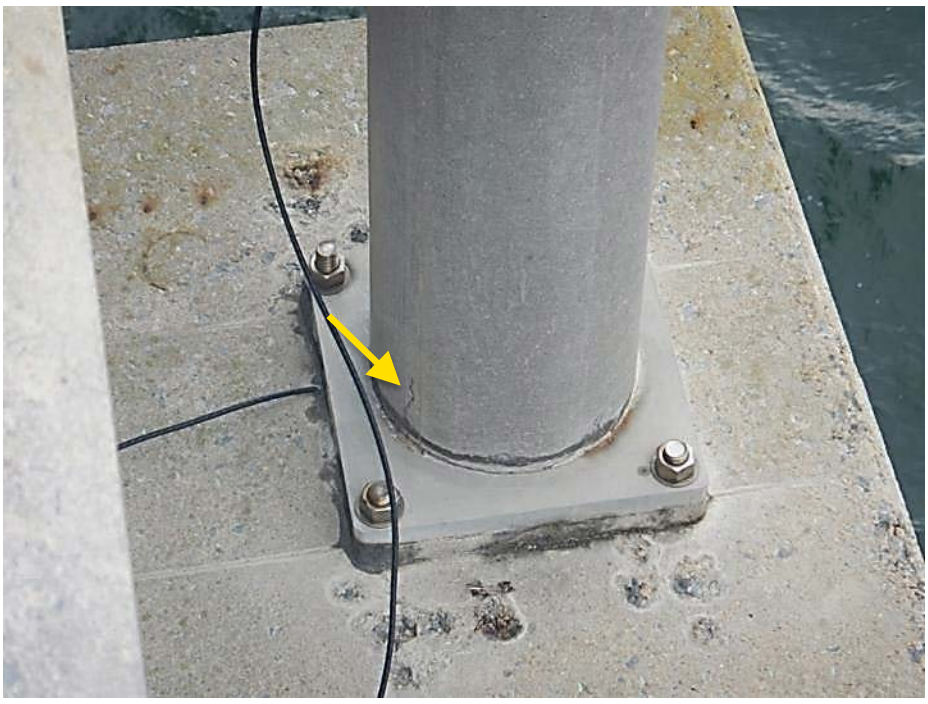


Photo 8.6-12: CSB117 Light Pole – Vertical Cracking Near Baseplate (Looking North)

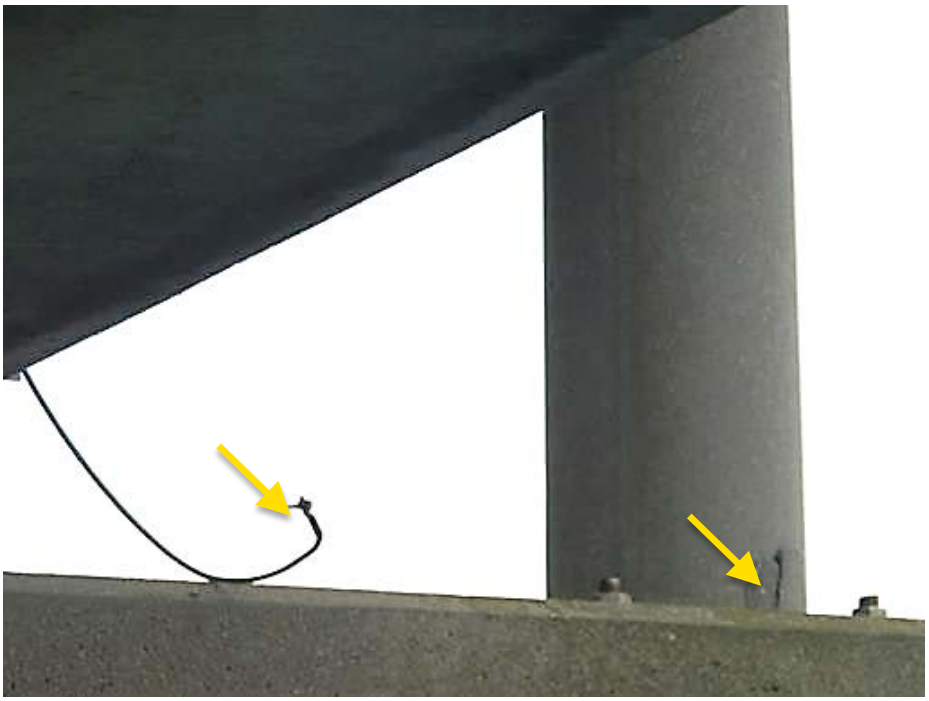


Photo 8.6-13: CSB123 Light Pole – Delamination Near Baseplate and Disconnected Cable (Looking Southwest)

Photo 8.6-14: CSB129 Light Pole – Vertical Cracking Near Baseplate (Looking North)

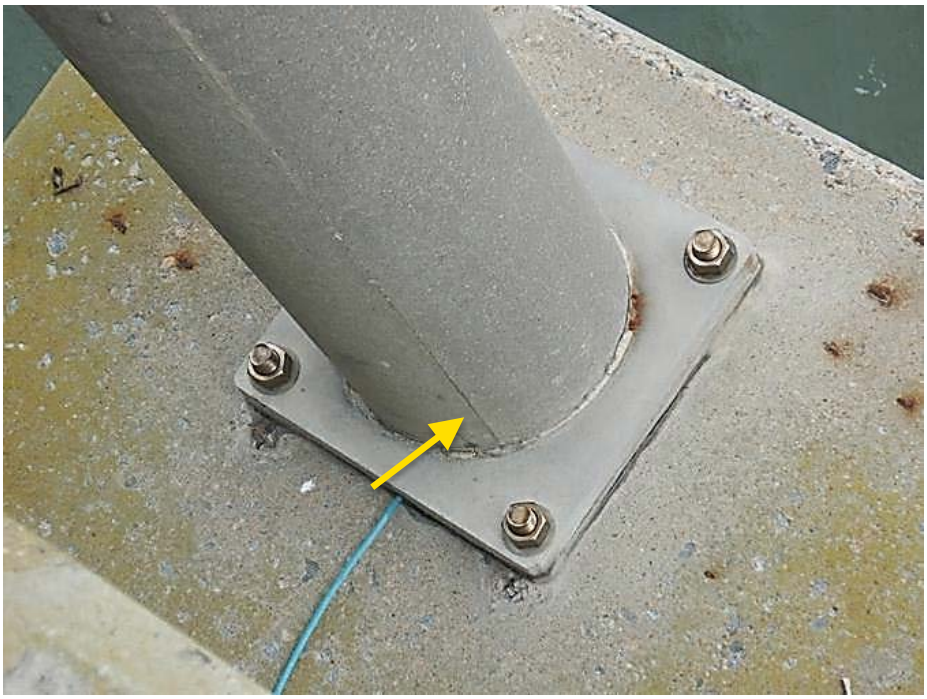


Photo 8.6-15: CSB133 Light Pole – Vertical Cracking Near Baseplate (Looking Northeast)

Photo 8.6-16: CSB139 Light Pole – Delamination Near Baseplate (Looking Southwest)

Photo 8.6-17: CSB141 Light Pole – Vertical Cracking Near Baseplate (Looking Northeast)

Photo 8.6-18: CSB147 Light Pole – Vertical Cracking Near Baseplate (Looking Northwest)

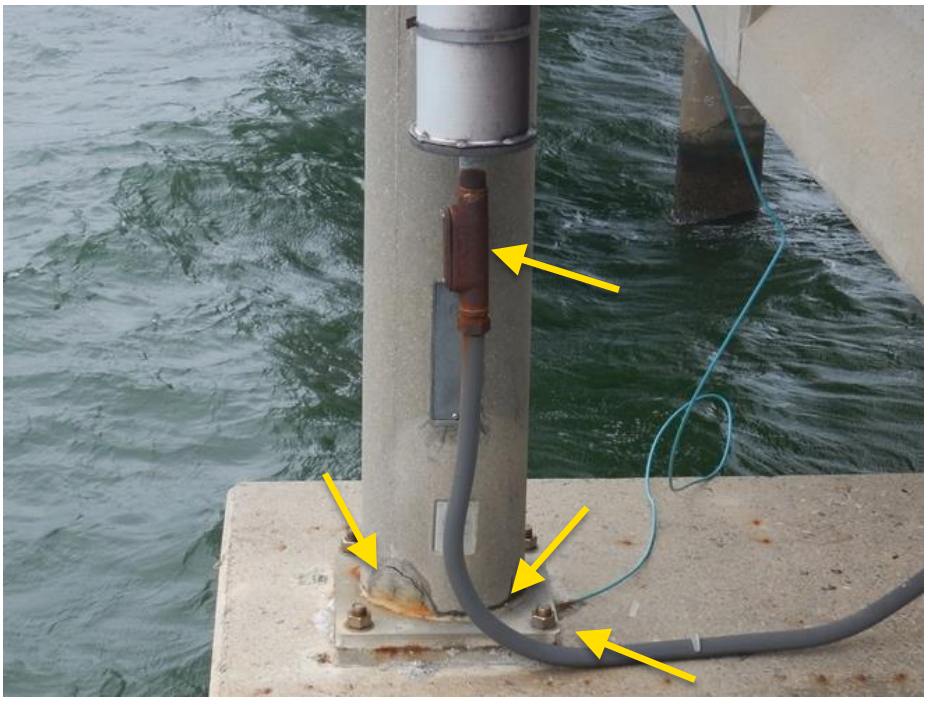


Photo 8.6-19: CSB149 Light Pole – Vertical Cracking and Failed Repair Near Baseplate, Corroded Conduit and Disconnected Cable (Looking South)

Photo 8.6-20: CSB151 Light Pole – Vertical Cracking Near Baseplate (Looking Southwest)

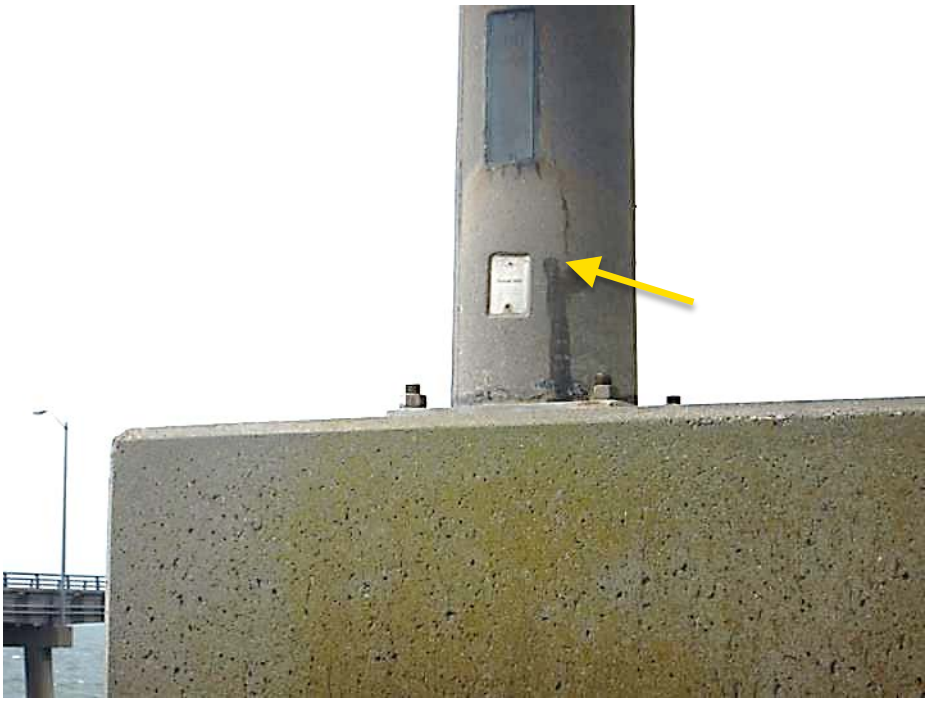


Photo 8.6-21: CSB153 Light Pole – Vertical Cracking Near Baseplate (Looking Southeast)

8.7 North Channel Bridge - Northbound

Not inspected this year, will be inspected in FY2020.

8.8 North Channel Bridge - Southbound

Photo 8.8-1: NCB-SB Span 8 Concrete Deck – Typical Frequent Transverse Cracking (Looking East)

Photo 8.8-2: NCB-SB Span 8 Concrete Deck – Spall (Previously Patched), No Exposed Reinforcement (Looking West)

Photo 8.8-3: NCB-SB Span 10 Concrete Deck – Surface Spall, No Exposed Reinforcement (Looking Southeast)

Photo 8.8-4: NCB-SB Span 12 Concrete Deck – Surface Spall, No Exposed Reinforcement (Looking East)

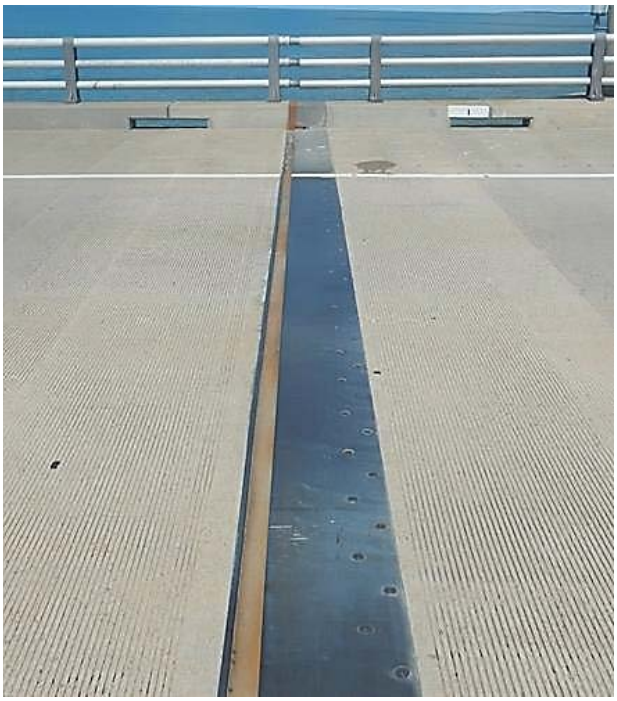


Photo 8.8-5: NCB-NB Pier 1 Assembly Joint without Seal – Sliding Plate Expansion Joint Typical Condition with Minor and Isolated Locations of Freckled Rust (Looking West)

Photo 8.8-6: NCB-SB Pier 11 Assembly Joint without Seal – Tooth Expansion Joint Typical Condition with Minor and Isolated Locations of Freckled Rust (Looking East)

Photo 8.8-7: NCB-SB Span 9 Girder 2 – Top Protective Coating Bubbling with Freckled Rust (Looking Northwest)

Photo 8.8-8: NCB-SB Span 12 Girder 2 – Top Protective Coating Peeled Off Exposing Zinc Primer (Looking West)

Photo 8.8-9: NCB-SB Span 8 Bracing – Typical Freckled Rust at Connections (Looking South)

Photo 8.8-10: NCB-SB Span 8, Bay 1, Cross Frame 7 Bracing – Typical Freckled Rust at Connections and Paint Failure on Bracing (Looking Southwest)

Photo 8.8-11: NCB-NB Pier 11 G2 Movable Bearing - Typical Condition of Isolated areas of Surface Rust (Looking Southeast)

Photo 8.8-12: NCB-NB Pier 9 G2 Fixed Bearing - Typical Condition of Isolated areas of Surface Rust (Looking Southwest)

Photo 8.8-13: NCB-SB Pier 11 Reinforced Concrete Pier Cap and Columns - Minor Cracking with Efflorescence (Looking South)

Photo 8.8-14: NCB-SB Pier 10 Reinforced Concrete Pile Cap/Footing and Columns - Minor Cracking with Efflorescence/Rust Staining (Looking South)

Photo 8.8-15: NCB-SB Span 11 Cable Tray – Lower Cable Tray Detached at 2 Clips Adjacent to Light Pole (Looking Southeast)

Photo 8.8-16: NCB-SB Span 12 Cable Tray – Cable Displaced from Tray (Looking Southeast)

Photo 8.8-17: NCB-SB Span 2 Southeast Light Pole – Cracking at Baseplate (Looking Northeast)

Photo 8.8-18: NCB-SB Span 5 Light Pole – Concrete Support Pedestal Spalled with Exposed Reinforcement (Looking Southwest)

Photo 8.8-19: NCB-SB Span 6 Southeast Light Pole – Cracking at Baseplate (Looking Northeast)

Photo 8.8-20: NCB-SB Span 6 Northwest Light Pole – Cracking and Delamination at Baseplate (Looking Northwest)

Photo 8.8-21: NCB-SB Span 9 Light Pole – Cracking at Baseplate was Previously Filled and Crack Has Reappeared (Looking Southwest)

8.9 Trestle D - Northbound

Photo 8.9-1: DNB18 Asphalt Wearing Surface – Repair Areas and Minor Cracking (Looking Northeast)

Photo 8.9-2: DNB1 Reinforced Concrete Top Flange (Underside) - Spall with Exposed Reinforcing in Zone 1 between Girder 4 and Girder 5 (Looking South)

Photo 8.9-3: DNB1 Girder 1 - Failed Repair in Zone 1 with 1 Exposed Prestressing Strands (Looking Southeast)

Photo 8.9-4: DNB1 Girder 3 - Spall with 1 Exposed Prestressing Strand (Looking Southeast)

Photo 8.9-5: DNB2 Girder 1 – 3 Spall Locations with 1 Exposed Prestressing Strand (Looking Northeast)

Photo 8.9-6: DNB3 Girder 3 – 2 Spall Locations with 1 Exposed Prestressing Strand (Looking Southeast)

Photo 8.9-7: DNB5 Girder 5 – Failed Repair at Bearing (Looking Northeast)

Photo 8.9-8: DNB7 Girder 1 – Spall with 1 Exposed Prestressing Strand (Looking Southeast)

Photo 8.9-9: DNB7 Girder 4 – 2 Spall Locations with 1 Exposed Prestressing Strand (Looking Northeast)

Photo 8.9-10: DNB11 – Girder 2 – Spall with 1 Exposed Prestressing Strand (Looking East)

Photo 8.9-11: DNB1 – Rocker Bearings with Minor Paint Failure, Rust Staining, and Relatively No Section Loss (Looking Southeast)

Photo 8.9-12: DNB1 Girder 1 – Elastomeric Bearing Bulging Greater than 15% of Thickness (Looking North)

Photo 8.9-13: DNB5 Light Pole – Cracking at Baseplate (Looking Northeast)

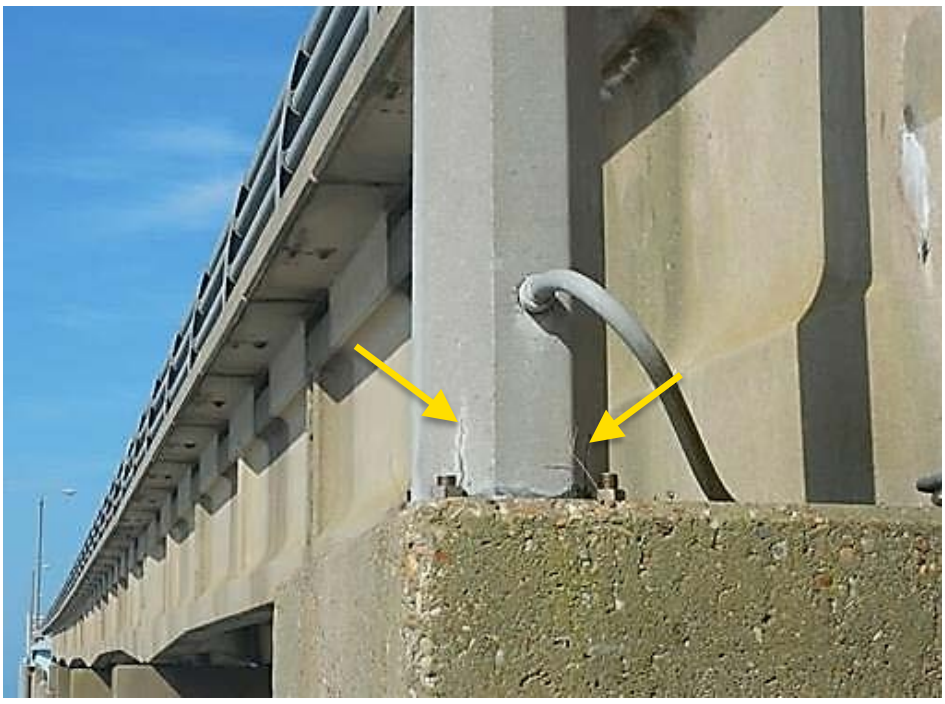


Photo 8.9-14: DNB5 Light Pole – Cracking at Baseplate (Looking Southwest)

8.10 Trestle D - Southbound

Photo 8.10-1: DSB9 Concrete Deck – Narrow Width Longitudinal Crack, Full Span Length (Looking Southeast)

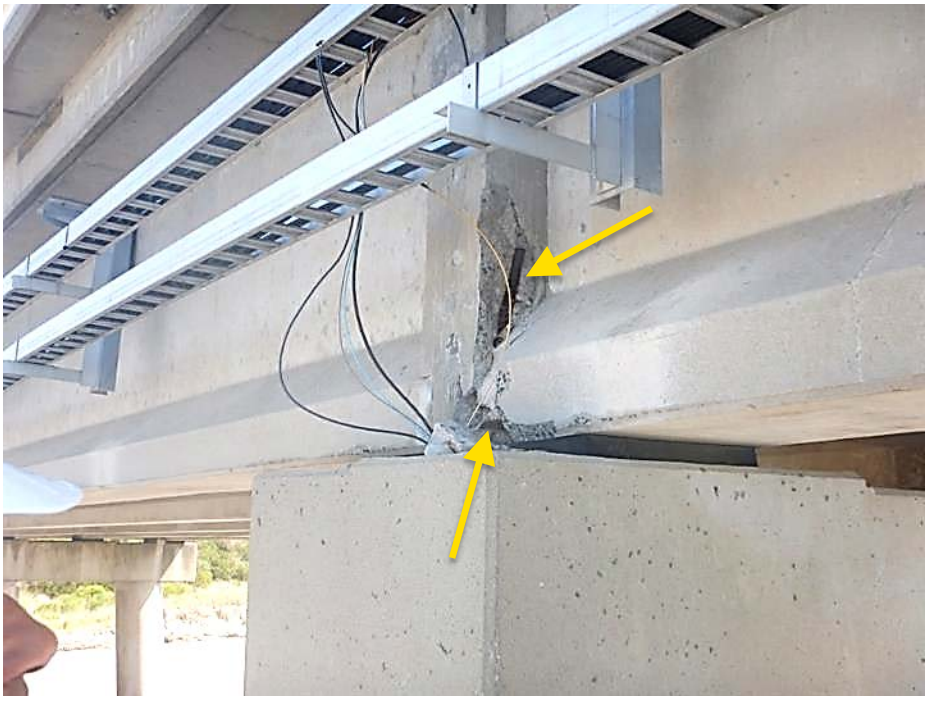


Photo 8.10-2: DSB11 Girder 1 – Spalling at Closure Diaphragm with Exposed Reinforcement and Prestressing Strand (Looking Northeast)

Photo 8.10-3: DSB18 Bay 4 – Vegetation on Pile Cap, Diaphragm, Girders, and Deck Underside (Looking North)

Photo 8.10-4: DSB Bent 18 Pile C – Vegetation on Pile and Pile Cap (Looking North)

Photo 8.10-5: DSB11 Light Pole – Vertical Cracking Near Baseplate (Looking Southeast)

Photo 8.10-6: DSB15 Light Pole – Delamination and Vertical Cracking Near Baseplate (Looking Northwest)

Photo 8.10-7: DSB7 Cable Tray – Blue Cable Disconnected (Looking Southeast)

Photo 8.10-8: DSB9 Cable Tray – Debris in Cable Tray (Looking Southeast)

Photo 8.10-9: DSB9 Cable Tray – Cable Displaced from Tray (Looking Northeast)

Photo 8.10-10: DSB12 Cable Tray – Cable Displaced from Tray (Looking Southeast)

8.11 Trestle E, Fisherman Inlet Bridge, Trestle F - Northbound

Photo 8.11-1: ENB1 Asphalt Wearing Surface - Good Seal Repair of Cracks and Surface Spalls at Striping Patch (Looking East)

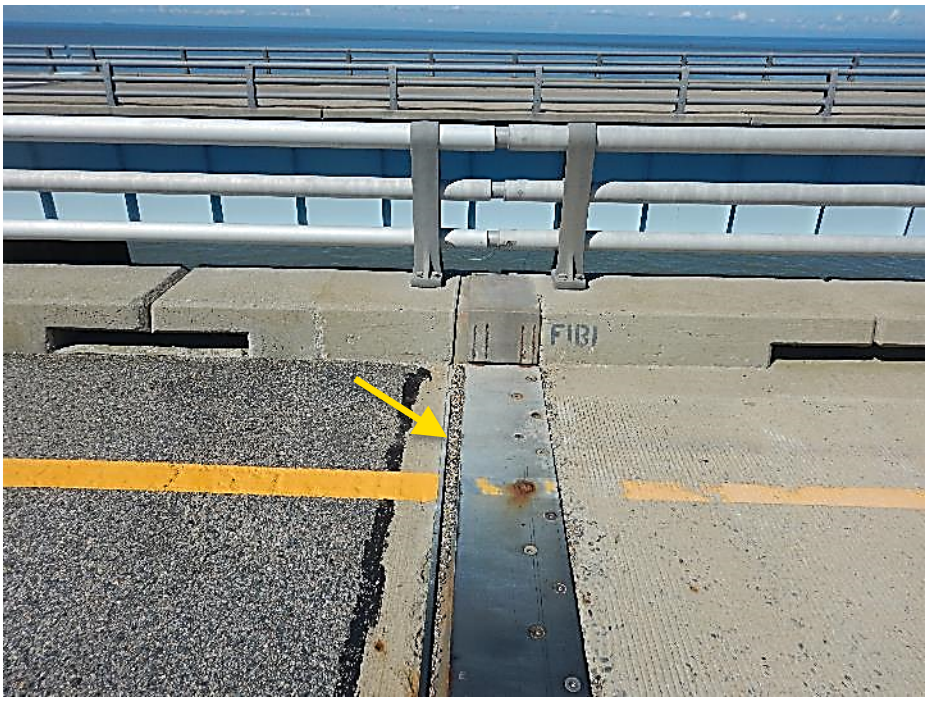


Photo 8.11-2: FIB1 Assembly Joint without Seal - Sliding Plate Expansion Joint Loose Debris Present in Joint (Looking West)

Photo 8.11-3: FIB4 Assembly Joint without Seal - Sliding Plate Expansion Joint Loose Debris Present in Joint (Looking West)

Photo 8.11-4: ENB6 Reinforced Concrete Deck – Delamination (Looking Northeast)

Photo 8.11-5: FIB-NB1 Reinforced Concrete Deck – Typical Minor Cracking along Edge Spaced at About 3-feet (Looking North)

Photo 8.11-6: NCB-SB Span 1 Girder 2 – Top Protective Coating Peeled Off Exposing Zinc Primer (Looking Southeast)

Photo 8.11-7: FIB-NB Pier 1 G3 Movable Bearing - Typical Condition of Isolated areas of Surface Rust (Looking Southwest)

Photo 8.11-8: FIB-NB Pier 2 G2 Fixed Bearing - Typical Condition of Isolated areas of Surface Rust (Looking Northwest)

Photo 8.11-9: ENB8 Light Pole – Cracking at Baseplate (Looking Northeast)

Photo 8.11-10: ENB10 Light Pole – Cracking at Baseplate (Looking North)

8.12 Trestle E, Fisherman Inlet Bridge, Trestle F - Southbound

Photo 8.12-1: ESB1 Metal Bridge Railing - Corrosion on Top Rail at Post (Looking Southwest)

Photo 8.12-2: ESB13 Metal Bridge Railing 4th Span from the North - Impact Damage to Top Rail (Looking Southwest)

Photo 8.12-3: FSB6 Metal Bridge Railing - Disconnected Grounding Cable at Location of Recent Repair (Looking Southeast)

Photo 8.12-4: ESB5 Asphalt Wearing Surface - Deck Spall at Patch (Looking Southwest)

Photo 8.12-5: ESB8 Asphalt Wearing Surface - Deck Spall (Looking Southwest)

Photo 8.12-6: FIB-SB Pier 1 Assembly Joint without Seal - Tooth Expansion Joint Typical Condition with Minor and Isolated Locations of Freckled Rust (Looking East)

Photo 8.12-7: FIB-SB Pier 4 Assembly Joint without Seal - Tooth Expansion Joint Typical Condition with Minor and Isolated Locations of Freckled Rust (Looking West)

Photo 8.12-8: ESB1 Girders 5 thru 8 – Exposed Strand in Girder 5, and Cracking and Rust Staining in Repairs of Girders 7 and 8 (Looking East)

Photo 8.12-9: ESB10 Girder 1 - Failed Repair in Zone 2 with 1 Exposed Prestressing Strands (Looking Southwest)

Photo 8.12-10: FSB4 Girder 1 - Failed Repair in Zone 1 with 1 Exposed Prestressing Strands (Looking Northwest)

Photo 8.12-11: FSB4 Girder 8 - Failed Repair in Zone 2 with 1 Exposed Prestressing Strands (Looking Northeast)

Photo 8.12-12: FSB6 Girder 1 - Failed Repair in Zone 1 with 1 Exposed Prestressing Strands (Looking Southeast)

Photo 8.12-13: FSB8 Girder 1 - Two Spalls with 1 Exposed Prestressing Strand (Looking Northwest)

Photo 8.12-14: FIB-SB Span 2 Girder 4 – Bottom Flange Distorted for 3’ on East Edge (No Mitigation Required) with Typical Freckled Rust and Paint Failure (Looking Northwest)

Photo 8.12-15: FIB-SB Span 2, Bay 3, Cross Frame 4 Lower Lateral Bracing - Buckled Lower Lateral Bracing Member with Typical Freckled Rust and Paint Failure (Looking South)

Photo 8.12-16: FIB-SB Pier 4 G4 Movable Bearing - Typical Condition of Isolated areas of Surface Rust (Looking Southwest)

Photo 8.12-17: FIB-SB Pier 2 G1 Fixed Bearing - Typical Condition of Isolated areas of Surface Rust (Looking South)

Photo 8.12-18: ESB8 Light Pole - Disconnected Cable (Looking Southeast)

Photo 8.12-19: ESB1 Cable Tray - Vegetation Along the Entire Top Tray (Looking Northeast)

Photo 8.12-20: ESB9 Cable Tray - Debris (Looking Northeast)

Photo 8.12-21: FIB-SB Pier 1 Cable Tray - 2 Broken Cable Tray Expansion Straps (Looking West)

Photo 8.12-22: FIB-SB Pier 4 Cable Tray - 2 Broken Cable Tray Expansion Straps (Looking Southeast)

Photo 8.12-23: FIB-SB & FIB-NB Span 2 North Fender System – Missing Timber Wales and Other Damage from Vessel Impact in May 2018, Under Repair at Time of Inspection (Looking North)

8.13 Thimble Shoal Channel Tunnel

Not inspected this year, will be inspected in FY2019.

8.14 Chesapeake Channel Tunnel

Photo 8.14-1: Drainage Channel Clean Out Plate at STA 489+50 - Clogged, Typical for Clean Out Plates

Photo 8.14-2: Invert Slab at STA 473+20 - Spall at Roadway Edge with Exposed Reinforcement

Photo 8.14-3: Sidewalk at STA 511+30 - Spalling with Exposed Reinforcement

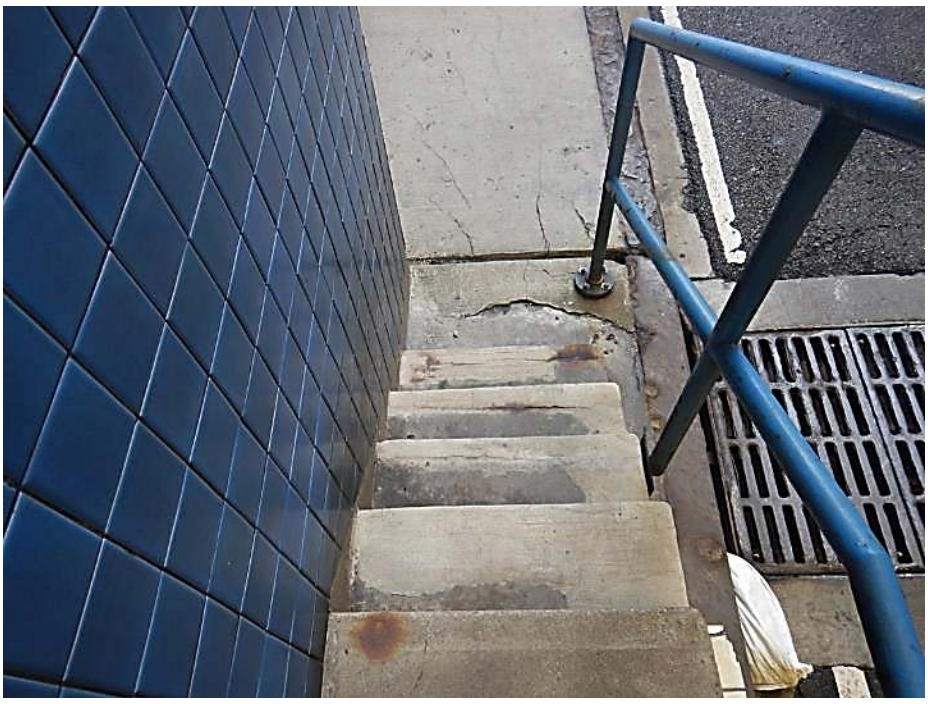


Photo 8.14-4: Sidewalk at STA 523+36 - Cracking with Rust Staining

Photo 8.14-5: Asphalt Wearing Surface at STA 513+90 – Repair Patch with Depression (Looking North)

Photo 8.14-6: Steel Pedestrian Railing at STA 486+18 - Anchor Bolt Missing

Photo 8.14-7: Fire Extinguisher and Phone Box Niche at STA 493+42 - Fire Extinguisher with Paint Loss and No Inspection Tag, and Clogged, and Heavy Efflorescence with Rust Staining at Phone Box Niche (Phone Box not Damaged)

Photo 8.14-8: Hose Valve #4 at STA 474+50 - Corrosion at Concrete Interface

Photo 8.14-9: Hose Valve #22 at STA 500+79 - Corrosion at Concrete Interface

Photo 8.14-10: Hose Valve #27 at STA 508+10 - Corrosion at Concrete Interface

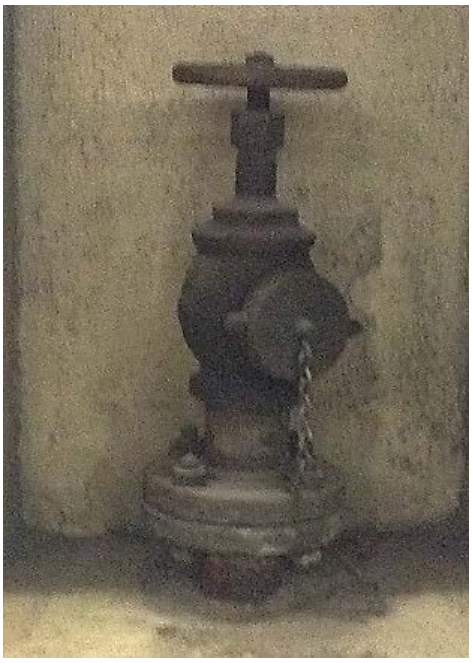


Photo 8.14-11: Hose Valve #30 at STA 512+23 - Corrosion at Concrete Interface

Photo 8.14-12: Hose Valve #31 at STA 513+69 - Corrosion at Concrete Interface

Photo 8.14-13: Hose Valve #32 at STA 515+15 - Corrosion at Concrete Interface

Photo 8.14-14: Hose Valve #35 at STA 519+53 - Corrosion at Concrete Interface

Photo 8.14-15: Hose Valve #36 at STA 521+10 - Corrosion at Concrete Interface

Photo 8.14-16: Hose Valve #37 at STA 522+40 - Corrosion at Concrete Interface

Photo 8.14-17: Light on Sidewalk Side at STA 488+75 - Light Bulb is not Lighting Completely

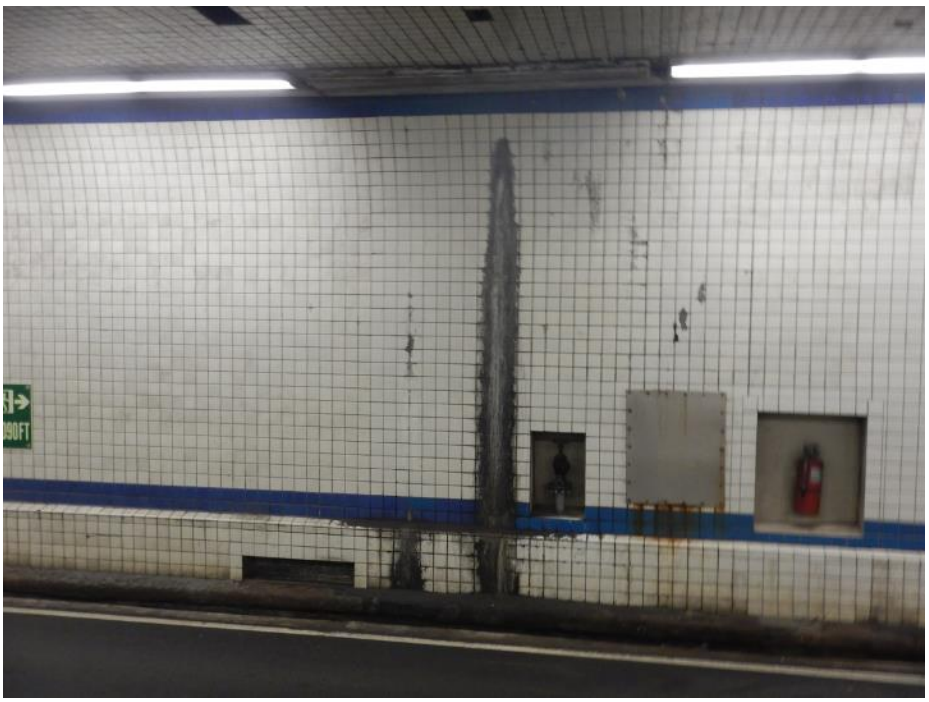


Photo 8.14-18: Wall and Light Fixture at STA 502+25 – Wall with Heavy Efflorescence and Rust Staining at Panel, Light Fixture Exhibits Corrosion with No Notable Section Loss, and Light Bulb is not Lighting

Photo 8.14-19: Light on Sidewalk Side at STA 469+85 - Light Bulb is not Lighting

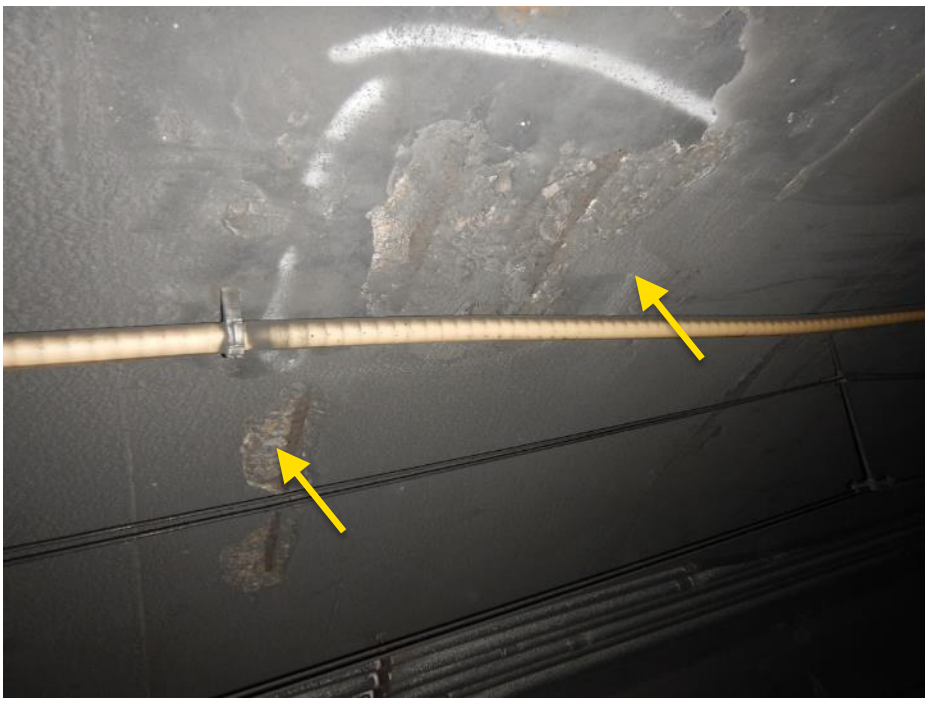


Photo 8.14-20: Exhaust Duct Liner at STA 470+98 - Spalling with Exposed Transverse Reinforcement (Little to No Section Loss of Steel Reinforcement, Looking East)

Photo 8.14-21: Ceiling Slab at STA 474+98 - Delamination in Haunch Beam Adjacent to Hanger Anchorage (Looking Northwest)

Photo 8.14-22: Exhaust Duct Liner at STA 482+70 - Spalling with Exposed Transverse Reinforcement (Little to No Section Loss of Steel Reinforcement, Looking East)

Photo 8.14-23: Exhaust Duct at STA 502+50 - Crack in Tunnel Liner with Active Heavy Efflorescence (Looking Southwest)

Photo 8.14-24: Invert Slab at STA 486+15 - Cracks with Efflorescence in FRP Repair on Underside

Photo 8.14-25: Invert Slab at STA 508+75 - Typical Condition of Invert Slab Prior to Shotcrete Repair (Little to No Section Loss of Existing Reinforcement)

Photo 8.14-26: Invert Slab at STA 514+30 - Typical Condition of Invert Slab After Shotcrete Repair

Photo 8.14-27: Ventilation System - Portal Island #4 Exhaust Duct CO Monitor Device Had an Error Reading "Sensor Flow - Fail" (Possibly Due to Moisture)

Photo 8.14-28: Emergency Generator System - Portal Island #3 Switchgear Does Not Have a Watertight Seal, and does not have NEC Acceptable Drip Pan at Locations Where Water is Ponding

Photo 8.14-29: Emergency Generator System - Portal Island #4 Switchgear Does Not Have a Watertight Seal, and does not have NEC Acceptable Drip Pan at Locations Where Water is Ponding

The following images are thermal imagery for reference only.

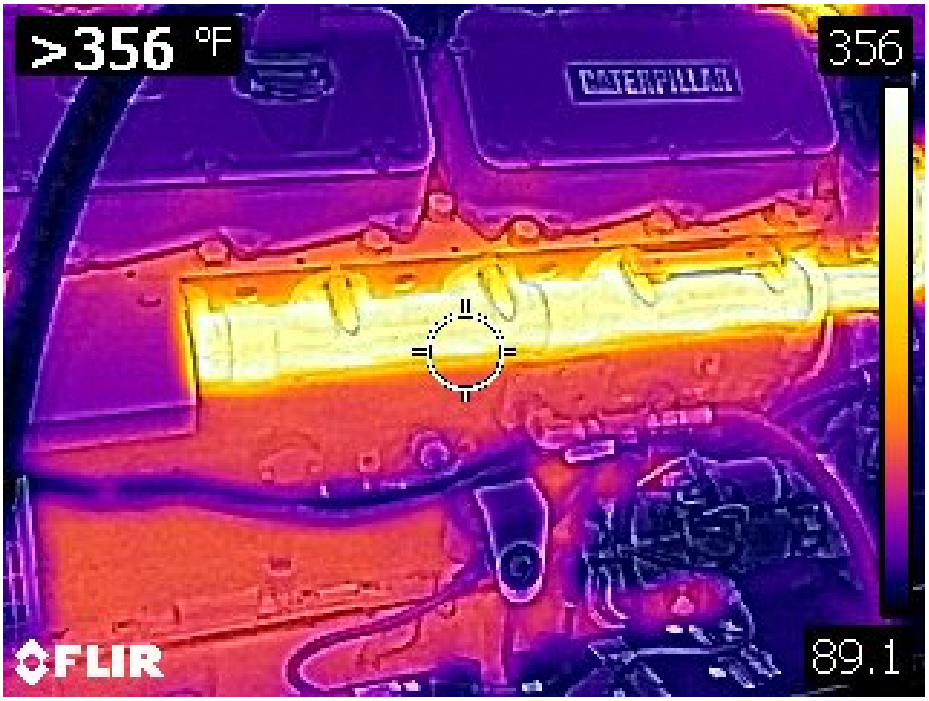


Photo 8.14-30: Emergency Generator System - Thermal Image of Portal Island #3 Exhaust Manifold

Photo 8.14-31: Emergency Generator System - Thermal Image of Portal Island #3 Generator Muffler

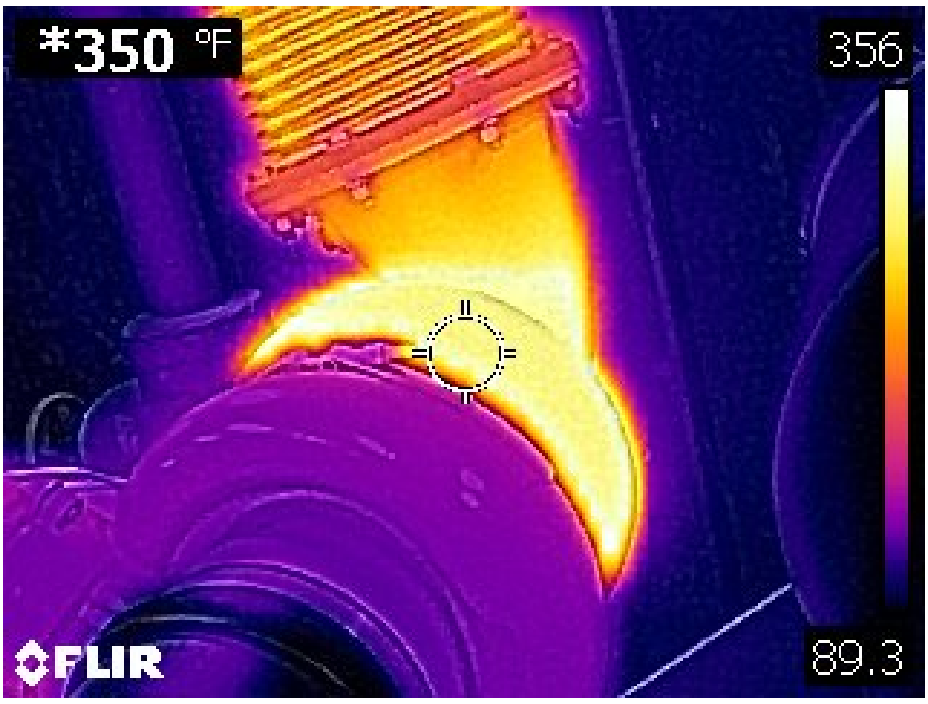


Photo 8.14-32: Emergency Generator System - Thermal Image of Portal Island #3 Generator Turbocharger

Photo 8.14-33: Emergency Generator System - Thermal Image of Portal Island #4 Generator

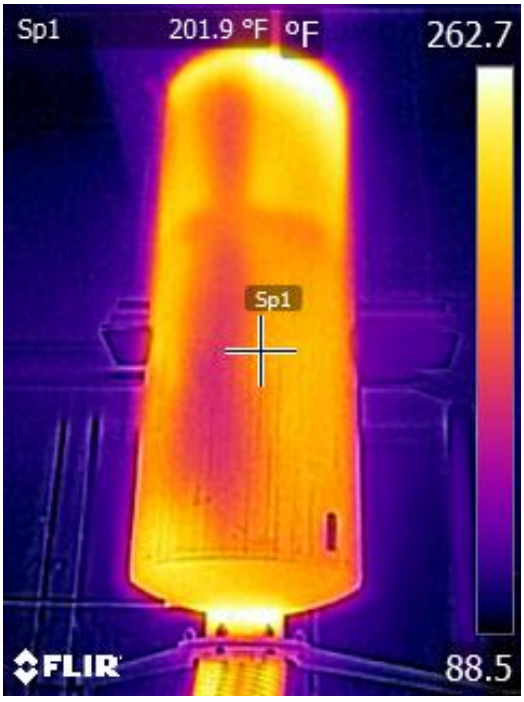


Photo 8.14-34: Emergency Generator System - Thermal Image of Portal Island #4 Generator Muffler

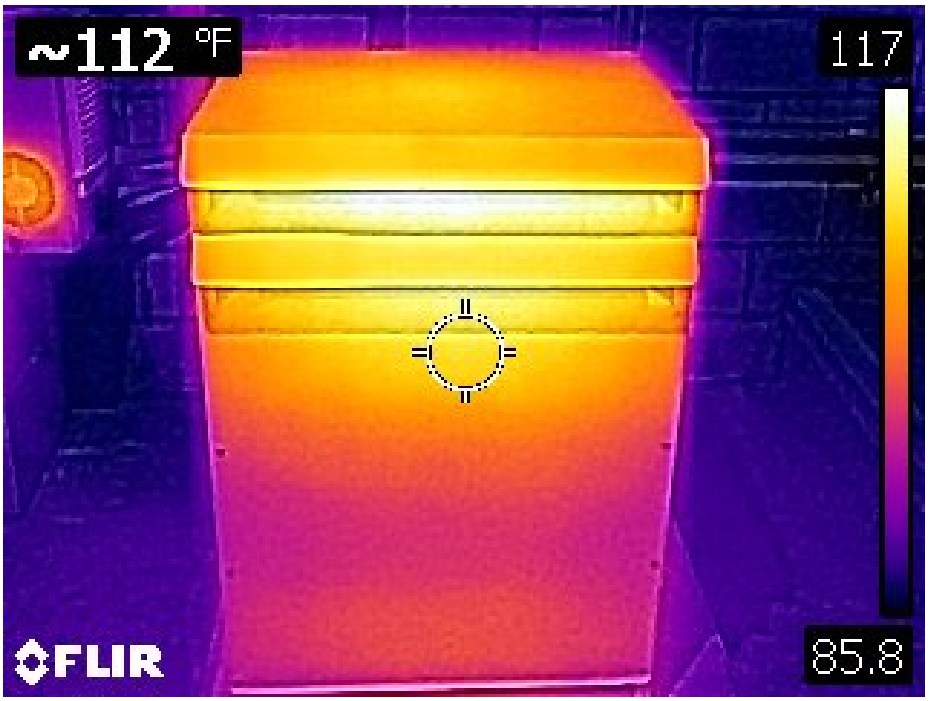


Photo 8.14-35: Electrical Distribution System - Thermal Image of Portal Island #3 CBE-3

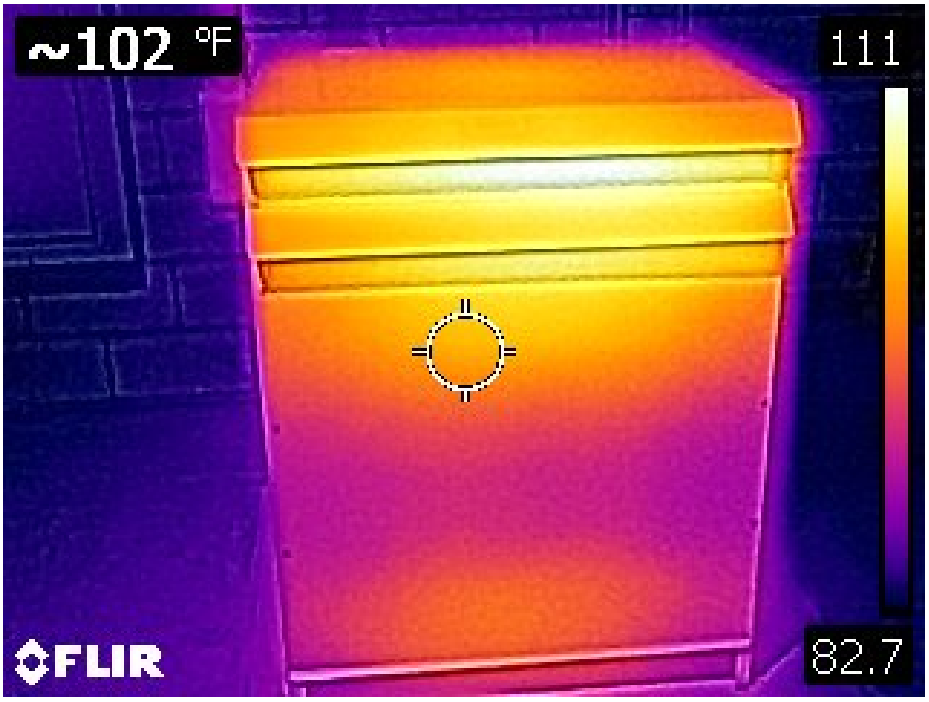


Photo 8.14-36: Electrical Distribution System - Thermal Image of Portal Island #3 CBE-4

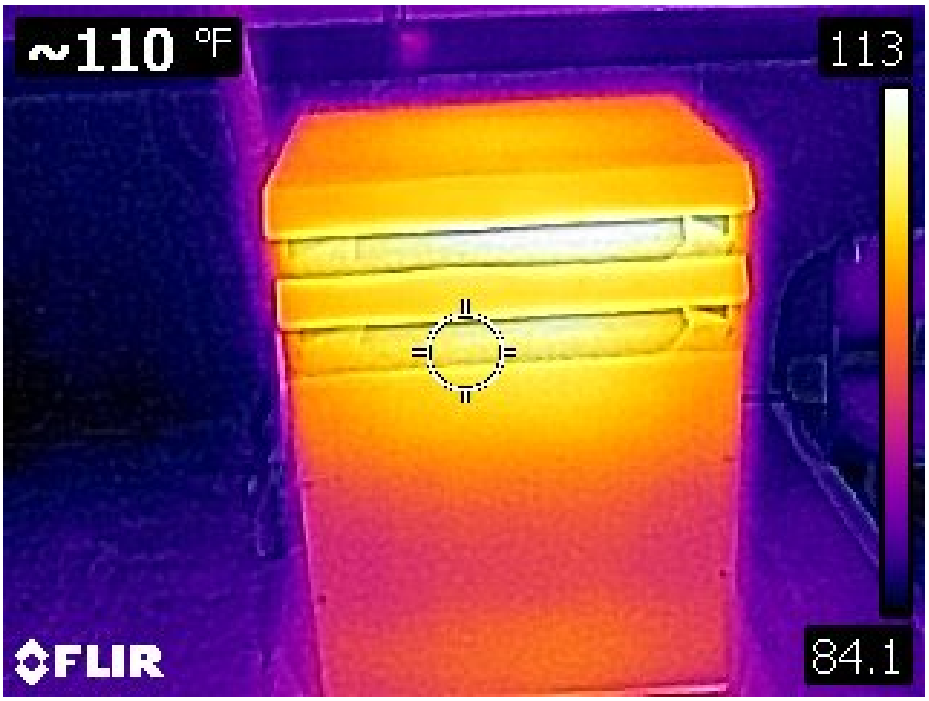


Photo 8.14-37: Electrical Distribution System - Thermal Image of Portal Island #3 CBW-1

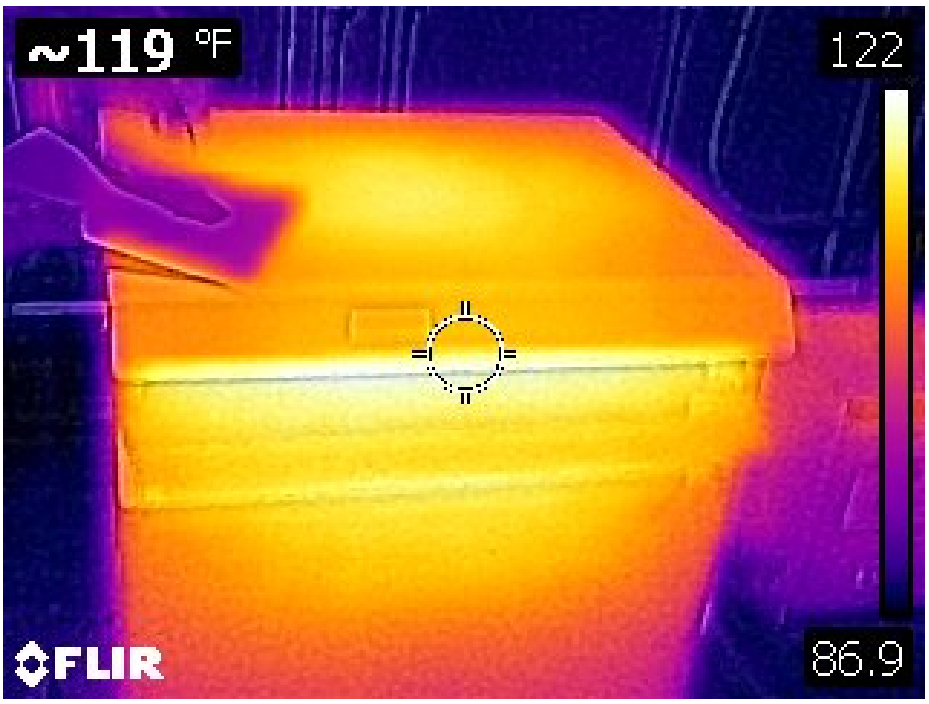


Photo 8.14-38: Electrical Distribution System - Thermal Image of Portal Island #3 CBW-2

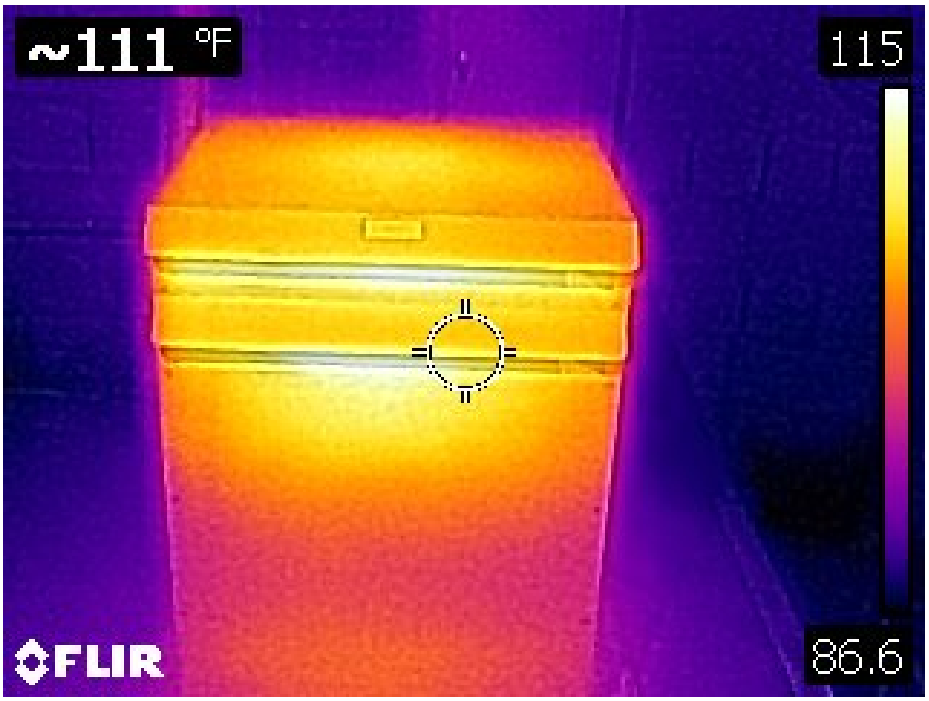


Photo 8.14-39: Electrical Distribution System - Thermal Image of Portal Island #4 CBE-3

Photo 8.14-40: Electrical Distribution System - Thermal Image of Portal Island #4 CBE-4

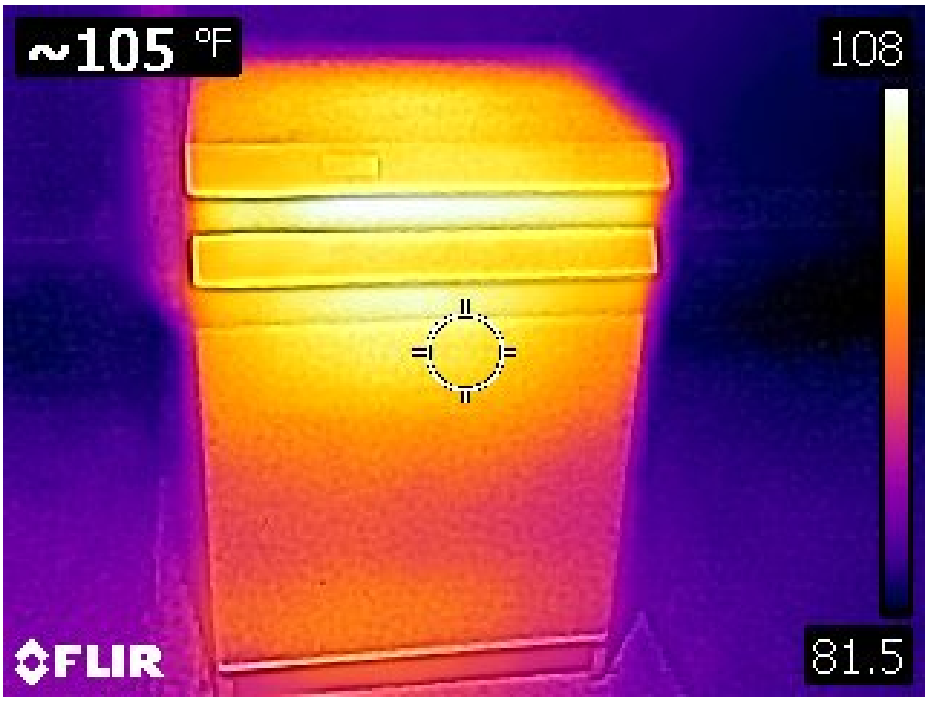


Photo 8.14-41: Electrical Distribution System - Thermal Image of Portal Island #4 CBW-1

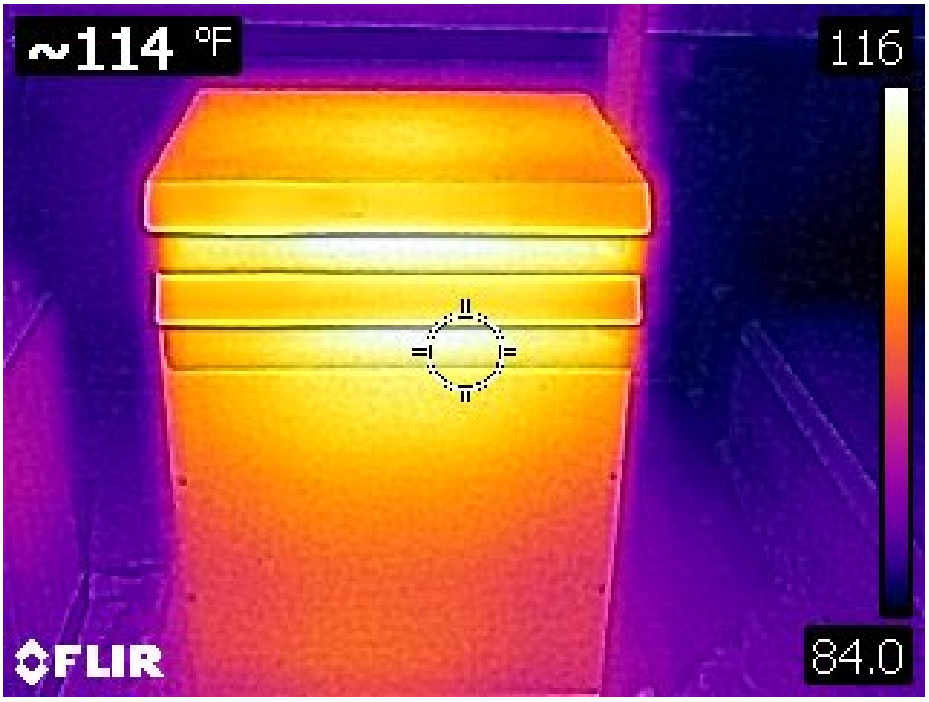


Photo 8.14-42: Electrical Distribution System - Thermal Image of Portal Island #4 CBW-2

8.15 General Facility

Photo 8.15-1: Portal Island 3 – Spalling on top of East Approach Wall Approximately 200’ from South (Looking Northwest)

Photo 8.15-2: Portal Island 3 – Cracking/Delamination on West Sidewalk Approximately 600’ from South (Looking Southwest)

Photo 8.15-3: Portal Island 3 – Cracking/Delamination on East Approach Wall Approximately 700’ from South (Looking Northwest)

Photo 8.15-4: Portal Island 3 – Cracking with Efflorescence on West Approach Wall Approximately 700’ from South (Looking West)

Photo 8.15-5: Portal Island 3 – Cracking/Delamination on West Sidewalk at Tunnel Portal (Looking Northwest)

Photo 8.15-6: Portal Island 3 – Failed Concrete Repair on East Approach Wall at Ventilation Building (Looking Northwest)

Photo 8.15-7: Portal Island 3 – Ventilation Building, Typical Erosion of Sandstone (Looking Northwest)

Photo 8.15-8: Portal Island 3 Utility Structure – Corroded Enclosures on Air Handling Unit (Looking East)

Photo 8.15-9: Portal Island 3 Utility Structure – Disconnected Grounding Cable (Looking Southeast)

Photo 8.15-10: Portal Island 3 – Delaminated Concrete on West Approach Wall at Ventilation Building (Looking Northeast)

Photo 8.15-11: Portal Island 3 – Spalling on West Approach Wall Approximately 70’ from North (Looking Southeast)

Photo 8.15-12: Portal Island 3 – Spalling with Exposed Reinforcement on top of East Approach Wall Approximately 500’ from South (Looking Southeast)

Photo 8.15-13: Portal Island 3 – Spalling with Exposed Reinforcement on East Approach Wall Approximately 100' from South (Looking East)

Photo 8.15-14: Portal Island 3 – Typical Overhead Signal Support Structure Condition with Surface Rust and Little to No Section Loss of Anchor Bolts (Looking South)

Photo 8.15-15: Portal Island 3 – 3rd Light Pole from Southeast Cracking at Base (Looking Northeast)

Photo 8.15-16: Portal Island 3 – 3rd Light Pole from Southwest Cracking at Base (Looking Northeast)

Photo 8.15-17: Portal Island 3 – Southwest Light Pole Cracking at Base (Looking Northeast)

Photo 8.15-18: Portal Island 3 – Southwest Guardrail with Impact Damage and Corrosion with Isolated Areas of Complete Section Loss (Looking North)

Photo 8.15-19: Portal Island 3 – Splash Wall Blocks 90-92, Typical Spalling along Splash Wall with Exposed Reinforcement (Looking South)

Photo 8.15-20: Portal Island 3 – Splash Wall Blocks 155-156, Typical Isolated Areas of Settlement and Erosion at Splash Wall Joints (Looking North)

Photo 8.15-21: Portal Island 4 – Cracking/Delamination on East Approach Wall Approximately 150’ from North (Looking South)

Photo 8.15-22: Portal Island 4 – Cracking/Delamination on East Approach Wall at Overhead Signal Anchorage Approximately 530’ from North (Looking South)

Photo 8.15-23: Portal Island 4 – Spalling at Location of Grounding Rod on East Approach Wall Approximately 600’ from North (Looking West)

Photo 8.15-24: Portal Island 4 – Depression in Ground near Ventilation Building (Looking West)

Photo 8.15-25: Portal Island 4 – Ventilation Building, Typical Erosion of Sandstone (Looking Northwest)

Photo 8.15-26: Portal Island 4 – Missing Delineator Post and Asphalt Cracking and Surface Spalling

Photo 8.15-27: Portal Island 4 – Southwest Light Pole with Spalling with Exposed Reinforcement and Cracking extending towards the Base (Looking Northeast)

Photo 8.15-28: Portal Island 4 – 2nd Light Pole from Northeast with Failed Repairs and Cracking extending towards the Base (Looking Southwest)

Photo 8.15-29: Portal Island 4 – 2nd Light Pole from Northwest with Delamination and Cracking extending towards the Base (Looking Northwest)

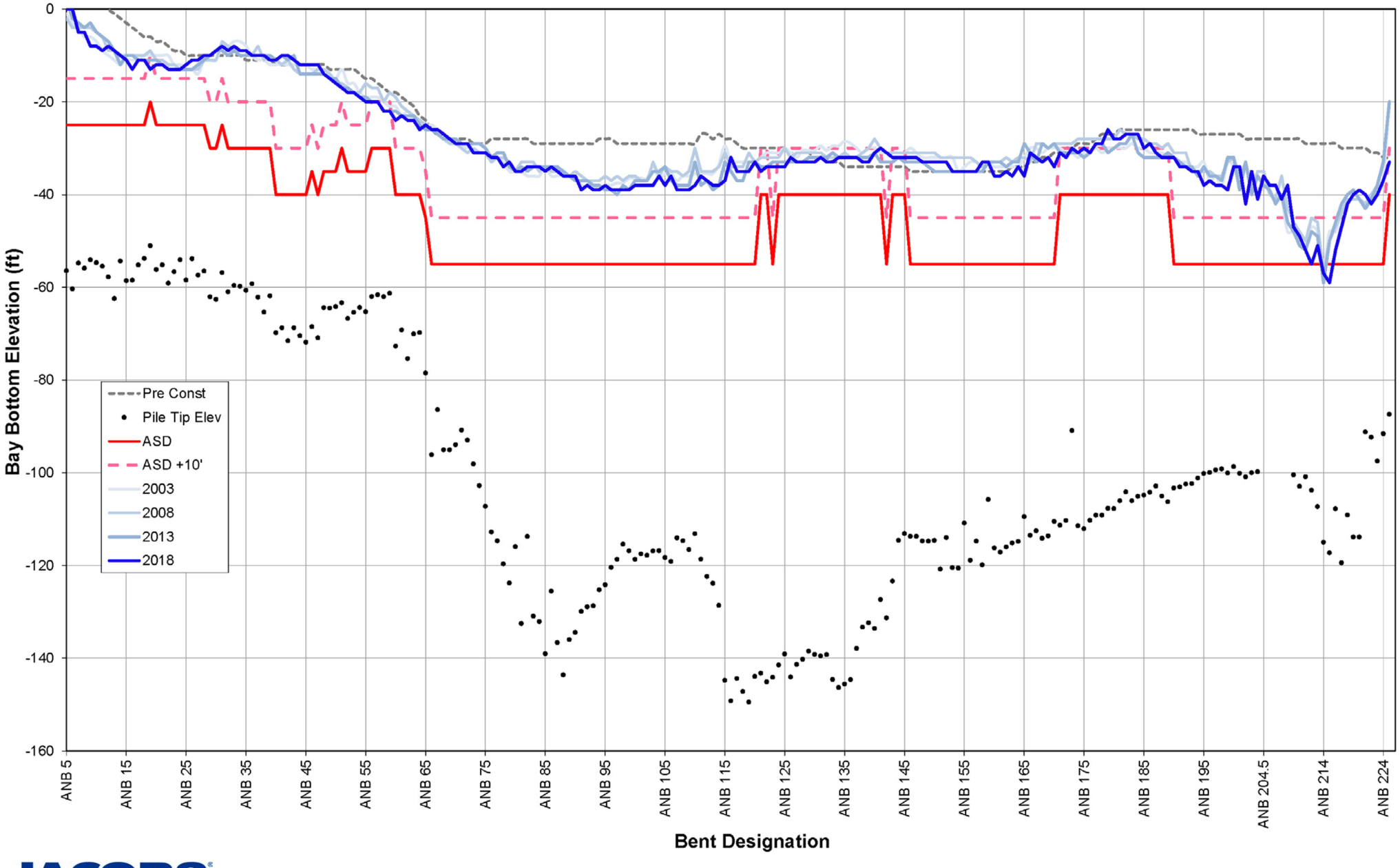
Photo 8.15-30: Portal Island 4 – Northwest Approach "Authorized Vehicles Only" Sign with Corroded Baseplate and Hardware (Looking Northeast)

Photo 8.15-31: Portal Island 4 – Northwest Guardrail with Impact Damage and Corrosion with Isolated Areas of Significant Section Loss (Looking Southeast)

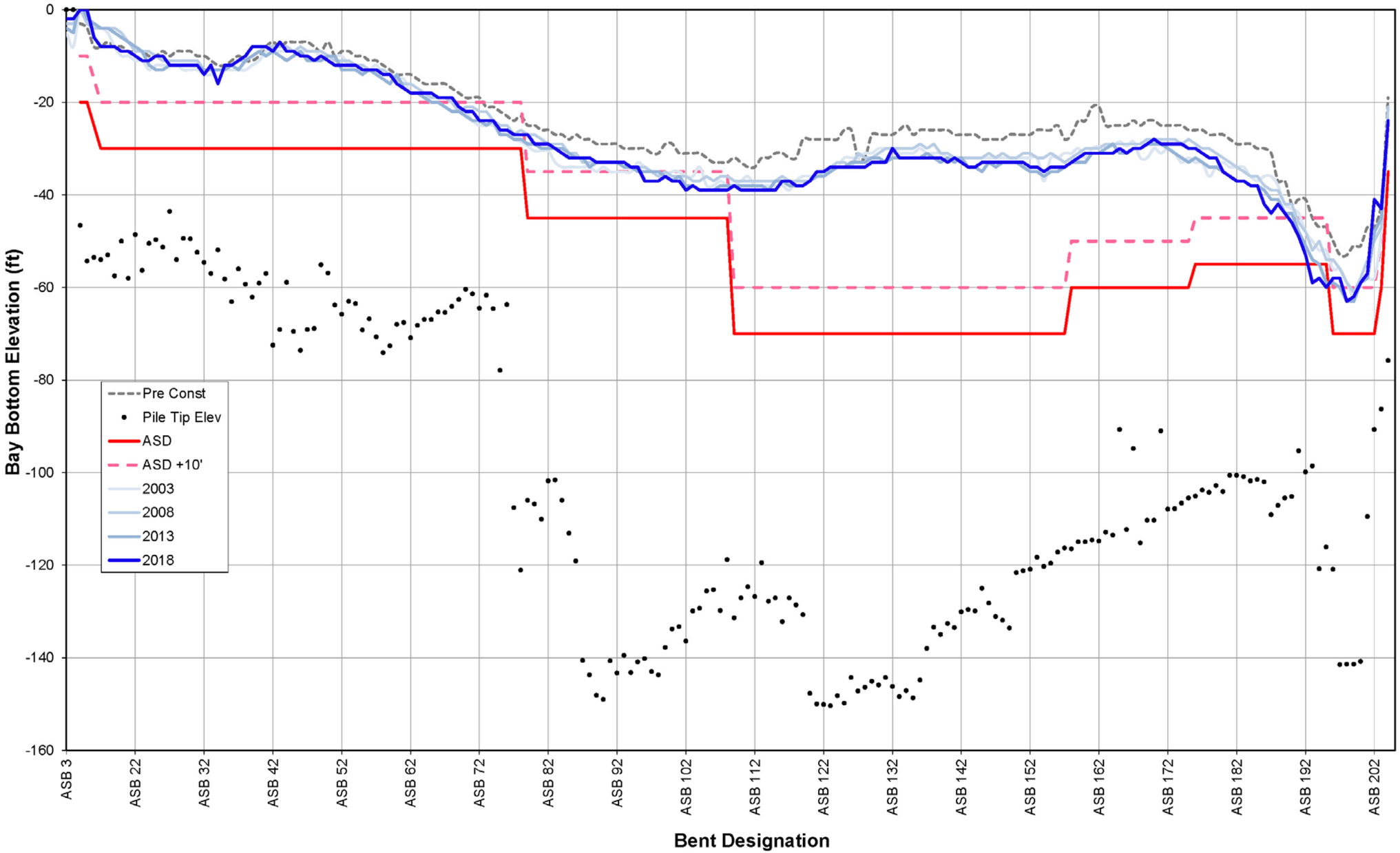
Photo 8.15-32: Portal Island 4 – Splash Walls Rotated Outward with Spalling (Looking South from Splash Wall 60)

9. Bay Bottom Profiles

9.1 Trestle A - Northbound



9.2 Trestle A - Southbound



9.3 Trestle B - Northbound

To be provided in FY2020 report.

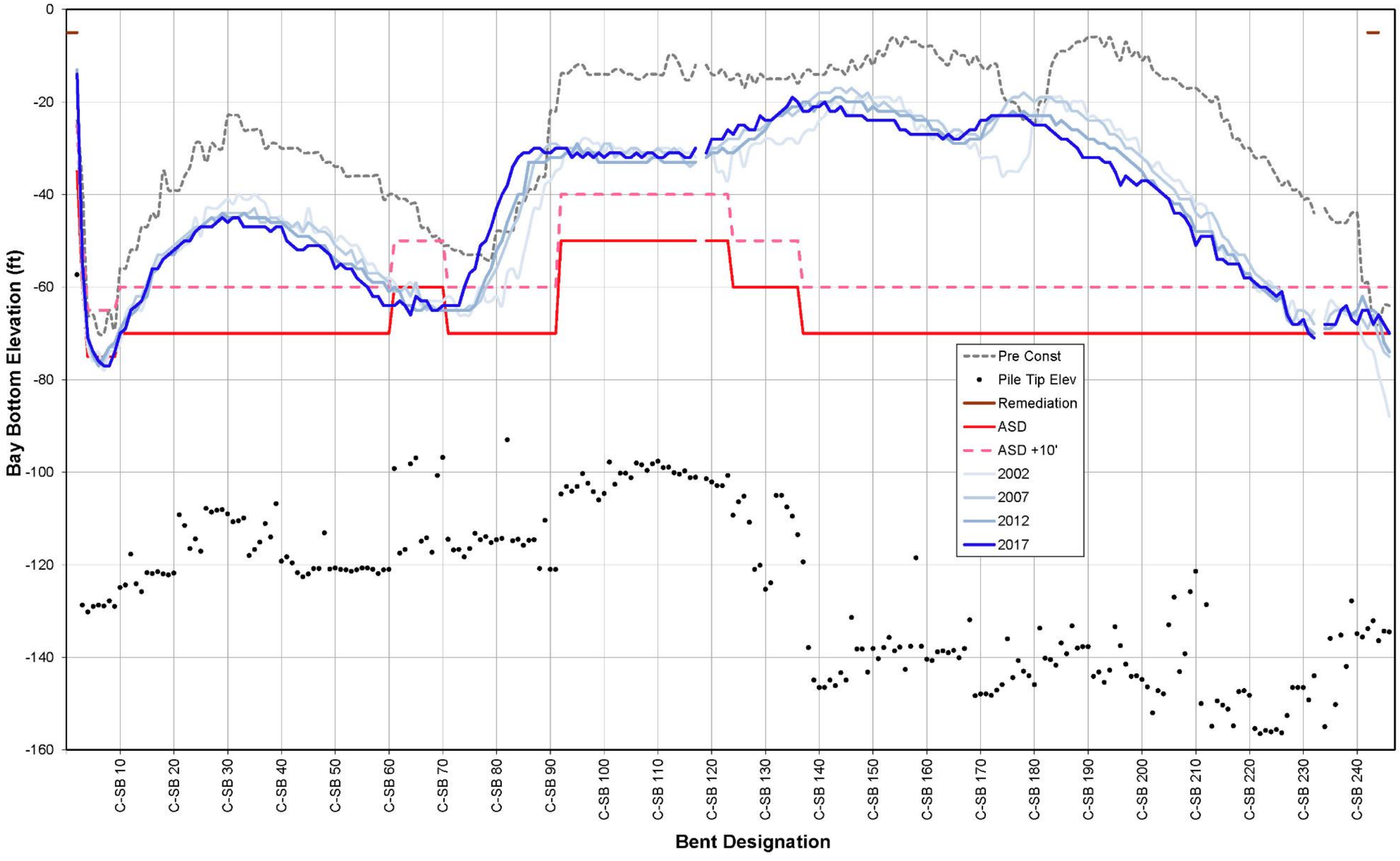
9.4 Trestle B - Southbound

To be provided in FY2022 report.

9.5 Trestle C - Northbound

To be provided in FY2021 report.

9.6 Trestle C - Southbound



9.7 North Channel Bridge - Northbound

To be provided in FY2022 report.

9.8 North Channel Bridge - Southbound

To be provided in FY2021 report.

9.9 Trestle D - Northbound

To be provided in FY2022 report.

9.10 Trestle D - Southbound

To be provided in FY2020 report.

9.11 Trestle E, Fisherman Inlet Bridge, Trestle F - Northbound

To be provided in FY2020 report.

9.12 Trestle E, Fisherman Inlet Bridge, Trestle F - Southbound

To be provided in FY2022 report.

10. Testing Documentation

No testing was performed during this inspection.

11. Electronic Submittals

The following supplemental items have been submitted electronically to the District:

- Inspection Database and Photograph Logs: Includes majority of field notes from the annual inspection and the routine inspections performed on the trestles, fracture critical inspection performed on the NCB-NB, initial inspection of the TSCT, and routine inspection of the CCT
- Bridge Element Level Data for each component that received a hands-on inspection
- Tunnel Element Level Data for TSCT and CCT
- Underwater Inspection Forms (Level I & II) of Trestles A'NB, ANB, ASB, and CSB
- TSCT and CCT Mechanical, Electrical and Lighting, Fire/Life Safety/Security Systems field notes