FY2021 Annual Inspection and Underwater Inspection, Trestle CNB

FY2021 Facility Annual Inspection Report

1 | 1

December 18, 2020

Chesapeake Bay Bridge and Tunnel District

Task Orders 10 & 15

Document history and status

Revision	Date	Description	Author	Checked	Reviewed	Approved
0	11/24/2020	DRAFT	JEG	CF/TA/JL	DG	DRAFT
1	12/18/2020	FINAL	JEG		CBBT	FINAL

Distribution of copies

Revision	Issue approve	Date issued	Issued to	Comments
0	DRAFT	11/25/2020	CBBT	CBBT Draft Review Document
1	FINAL	12/18/2020	CBBT	

FY2021 Annual Inspection and Underwater Inspection, Trestle CNB

Project No:	F5Y68315
Document Title:	FY2021 Facility Annual Inspection Report
Document No.:	1
Revision:	1
Document Status:	DRAFT
Date:	December 18, 2020
Client Name:	Chesapeake Bay Bridge and Tunnel District
Client No:	Task Orders 10 & 15
Project Manager:	John E. Gaul
Author:	John E. Gaul
File Name:	!CBBT FY2021 Annual&UW Inspection Report

Jacobs Engineering Group Inc.

5701 Cleveland Street, Suite 200
Virginia Beach, Virginia 23462
United States
T +1.757.518.9666

www.jacobs.com

© Copyright 2020 Jacobs Engineering Group Inc. The concepts and information contained in this document are the property of Jacobs. Use or copying of this document in whole or in part without the written permission of Jacobs constitutes an infringement of copyright.

Limitation: This document has been prepared on behalf of, and for the exclusive use of Jacobs' client, and is subject to, and issued in accordance with, the provisions of the contract between Jacobs and the client. Jacobs accepts no liability or responsibility whatsoever for, or in respect of, any use of, or reliance upon, this document by any third party.

Table of Contents

Executive Summary ..... **vi**

1. Inspection Schedule **1-1**

2. Ratings for GASB 34 ..... **2-1**

3. Repair Recommendations **3-1**

3.1 Trestles, North Channel Bridges, and Fisherman Inlet Bridges 3.1.1-1

3.2 Tunnels 3.1.12-1

3.3 General Facility 3.3-1

4. VDOT Structure Inventory and Appraisal (SI&A) Records (B-6 and B-7 Forms) **4-1**

4.1 Trestle ANB SI&A Forms 4.1-1

4.2 Trestle ASB SI&A Forms 4.2-1

4.3 Trestle BNB SI&A Forms 4.3-1

4.4 Trestle BSB SI&A Forms 4.4-1

4.5 Trestle CNB SI&A Forms 4.5-1

4.6 Trestle CSB SI&A Forms 4.6-1

4.7 NCB-NB SI&A Forms 4.7-1

4.8 NCB-SB SI&A Forms 4.8-1

4.9 Trestle DNB SI&A Forms 4.9-1

4.10 Trestle DSB SI&A Forms 4.10-1

4.11 Trestle ENB, FIB-NB, & FNB SI&A Forms 4.11-1

4.12 Trestle ESB, FIB-SB, & FSB SI&A Forms 4.12-1

5. Bridge Element Level Data **5-1**

5.1 Trestle ANB Element Level Data 5.1-1

5.2 Trestle ASB Element Level Data 5.2-1

5.3 Trestle BNB Element Level Data 5.3-1

5.4 Trestle BSB Element Level Data 5.4-1

5.5 Trestle CNB Element Level Data 5.5-1

5.6 Trestle CSB Element Level Data 5.6-1

5.7 NCB-NB Element Level Data 5.7-1

5.8 NCB-SB Element Level Data 5.8-1

5.9 Trestle DNB Element Level Data 5.9-1

5.10 Trestle DSB Element Level Data 5.10-1

5.11 Trestle ENB, FIB-NB, & FNB Element Level Data 5.11-1

5.12 Trestle ESB, FIB-SB, & FNB Element Level Data 5.12-1

6. Tunnel Inventory Items **6-1**

6.1 TSCT Inventory Items 6.1-1

6.2 CCT Inventory Items 6.2-1

7. Tunnel Element Level Data 7-1
7.1 Thimble Shoal Channel Tunnel - Element Level Data 7.1-1
7.2 Chesapeake Channel Tunnel - Element Level Data 7.2-1
8. Photographs 7.2-1
8.1 Trestle ANB Photographs 8.1-1
8.2 Trestle ASB Photographs 8.2-1
8.3 Trestle BNB Photographs 8.3-1
8.4 Trestle BSB Photographs 8.4-1
8.5 Trestle CNB Photographs 8.5-1
8.6 Trestle CSB Photographs 8.6-1
8.7 NCB-NB Photographs 8.7-12
8.8 NCB-SB Photographs 8.8-1
8.9 Trestle DNB Photographs 8.9-1
8.10 Trestle DSB Photographs 8.10-1
8.11 Trestle ENB, FIB-NB, & FNB Photographs 8.11-1
8.12 Trestle ESB, FIB-SB, & FSB Photographs 8.12-1
8.13 TSCT Photographs 8.13-1
8.14 CCT Photographs 8.14-1
8.15 General Facility 8-0
9. Bay Bottom Profiles 8-6
9.1 Trestle ANB Bay Bottom Profile 9-0
9.2 Trestle ASB Bay Bottom Profile 9-2
9.3 Trestle BNB Bay Bottom Profile 9-3
9.4 Trestle BSB Bay Bottom Profile 9-4
9.5 Trestle CNB Bay Bottom Profile 9-5
9.6 Trestle CSB Bay Bottom Profile 9-6
9.7 NCB-NB Bay Bottom Profile 9-7
9.8 NCB-SB Bay Bottom Profile 9-8
9.9 Trestle DNB Bay Bottom Profile 9-9
9.10 Trestle DSB Bay Bottom Profile 9-10
9.11 Trestle ENB, FIB-NB, & FNB Bay Bottom Profile 9-11
9.12 Trestle ESB, FIB-SB, & FSB Bay Bottom Profile 9-12
10. Testing Documentation 10-1
11. Electronic Submittals 11-1

List of Tables

Table 1: GASB 34 Cluster Item Ratings vi
Table 2: CBBT Facility Component Inspection Schedule 1-1
Table 3: CBBT Trestles ANB, ASB, BNB, BSB, CNB, and CSB Projected Hands-on Inspection Schedule 1-5
Table 4: GASB 34 Components with Condition Rating Below 7 2-1
Table 5: GASB 34 Condition Ratings 2-2
Table 6: ANB Critical Findings 3.1.1-1
Table 7: ANB Priority Repairs 3.1.1-1
Table 8: ANB Routine Repairs 3.1.1-1
Table 9: ASB Critical Findings 3.1.2-1
Table 10: ASB Priority Repairs 3.1.2-1
Table 11: ASB Routine Repairs 3.1.2-1
Table 12: BNB Critical Findings 3.1.3-1
Table 13: BNB Priority Repairs 3.1.3-1
Table 14: BNB Routine Repairs 3.1.3-1
Table 15: BSB Critical Findings 3.1.4-1
Table 16: BSB Priority Repairs 3.1.4-1
Table 17: BSB Routine Repairs 3.1.4-1
Table 18: CNB Critical Findings 3.1.5-1
Table 19: CNB Priority Repairs 3.1.5-1
Table 20: CNB Routine Repairs 3.1.5-1
Table 21: CSB Critical Findings 3.1.6-1
Table 22: CSB Priority Repairs 3.1.6-1
Table 23: CSB Routine Repairs 3.1.6-1
Table 24: NCB-NB Critical Findings 3.1.7-1
Table 25: NCB-NB Priority Repairs 3.1.7-1
Table 26: NCB-NB Routine Repairs 3.1.7-1
Table 27: NCB-NB Critical Findings 3.1.8-1
Table 28: NCB-NB Priority Repairs 3.1.8-1
Table 29: NCB-NB Routine Repairs 3.1.8-1
Table 30: Trestle DNB Critical Findings 3.1.9-1
Table 31: Trestle DNB Priority Repairs 3.1.9-1
Table 32: Trestle DNB Routine Repairs 3.1.9-1
Table 33: Trestle DSB Critical Findings 3.1.10-1
Table 34: Trestle DSB Priority Repairs 3.1.10-1
Table 35: Trestle DSB Routine Repairs 3.1.10-1
Table 36: ENB, FIB-NB, and FNB Critical Findings 3.1.11-1
Table 37: ENB, FIB-NB, and FNB Priority Repairs 3.1.11-1
Table 38: ENB, FIB-NB, and FNB Routine Repairs 3.1.11-1
Table 39: ESB, FIB-SB, and FSB Critical Findings 3.1.12-1
Table 40: ESB, FIB-SB, and FSB Priority Repairs 3.1.12-1
Table 41: ESB, FIB-SB, and FSB Routine Repairs 3.1.12-1
Table 42: TSCT Critical Findings 3.2.1-1
Table 43: TSCT Priority Repairs 3.2.1-1
Table 44: TSCT Routine Repairs 3.2.1-1
Table 45: CCT Critical Findings 3.2.2-1
Table 46: CCT Priority Repairs 3.2.2-1
Table 47: CCT Routine Repairs 3.2.2-1
Table 48: General Facility Critical Findings 3.3-1
Table 49: General Facility Priority Repairs 3.3-1

Table 50: General Facility Routine Repairs 3.3-1
Table 51: ANB Element Level Data 5.1-1
Table 52: ASB Element Level Data 5.2-1
Table 53: BNB Element Level Data 5.3-1
Table 54: BSB Element Level Data 5.4-1
Table 55: CNB Element Level Data 5.5-1
Table 56: CSB Element Level Data 5.6-1
Table 57: NCB-NB Element Level Data 5.7-1
Table 58: NCB-SB Element Level Data 5.8-1
Table 59: DNB Element Level Data 5.9-1
Table 60: DSB Element Level Data 5.10-1
Table 61: ENB, FIB-NB, & FNB Element Level Data 5.11-1
Table 62: ESB, FIB-SB, & FSB Element Level Data 5.12-1
Table 63: TSCT Identification Items 6.1-1
Table 64: TSCT Age and Service Items 6.1-1
Table 65: TSCT Classification Items 6.1-2
Table 66: TSCT Geometric Data Items 6.1-2
Table 67: TSCT Inspection Items 6.1-2
Table 68: TSCT Load Rating and Posting Items 6.1-3
Table 69: TSCT Navigation Items 6.1-3
Table 70: TSCT Structure Type and Materials Items 6.1-3
Table 71: CCT Identification Items 6.2-1
Table 72: CCT Age and Service Items 6.2-1
Table 73: CCT Classification Items 6.2-2
Table 74: CCT Geometric Data Items 6.2-2
Table 75: CCT Inspection Items 6.2-2
Table 76: CCT Load Rating and Posting Items 6.2-3
Table 77: CCT Navigation Items 6.2-3
Table 78: CCT Structure Type and Material Items 6.2-3
Table 79: TSCT Element Level Data 7.1-1
Table 80: CCT Element Level Data 7.2-1

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) for Fiscal Year 2021 (FY2021, July 1, 2020 – June 30, 2021). 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: GASB 34 Cluster Item Ratings

Cluster Item	Rating
A. Approach Roads	8
B. Fisherman Island Causeway	8
C. Tunnels	7
D. Portal Islands	8
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. Approximately 20% of the piles along Trestle BNB and 6% of the piles along Trestle CNB were coded as Condition State 4 (Severe) due to bay bottom elevations found to be below the Allowable Scour Depth. Otherwise, most of the piles would be coded as Condition State 2 (Fair) based on the physical condition of the pile. It is believed that a conservative approach was taken in the historical structural analysis, and based on the current ratings, the District will undertake an engineering analysis to reevaluate Allowable Scour Depths. The District will use the results of the additional engineering analysis to identify where additional scour remediation will have the greatest immediate impact.

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 11: 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 or engineering analysis 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.

- Little Creek Pier Fender System will be replaced as part of the lease agreement that the District has with Chesapeake Tunnel Joint Venture (CTJV) prior to the expiration of necessary permits in March 2021.

- Facility wide repairs to concrete pile substructure units to extend service life by approximately 50 years.
- Engineering Analysis of Allowable Scour Depths at piles.

1. Inspection Schedule

Portions of the CBBT facility covered during the FY2021, FY2020, FY2019, & FY2018 Inspection are noted in Table 2. An underwater inspection was performed on Trestle CNB.

Table 2: CBBT Facility Component Inspection Schedule

Facility Component		Portion Inspected
1	Trestle A - Northbound (ANB)	Completed in FY2021: Hands-on: Abutment A'NB1 to Span ANB32 Visual: Spans ANB33 to Abutment ANB226
		Completed in FY2020: *Hands-on: Spans ANB177 to Abutment ANB226* *Visual: Spans A'NB1 to ANB176*
		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 FY2021: Hands-on: Spans ASB1 to ASB38 Visual: Spans ASB39 to Abutment ASB205
		Completed in FY2020: *Hands-on: Spans ASB39 to ASB80* *Visual: Spans ASB1 to ASB18 from Chic's Beach and ASB204 and Abutment ASB205*
		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 FY2021: Hands-on: Spans BNB213 to Abutment BNB266 Visual: Spans BNB1 to Abutment BNB212
		Completed in FY2020: *Hands-on: Spans BNB159 to BNB212* *Visual: Spans BNB1 to 158 and 213 to 265* *Underwater Inspection of Trestle 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 FY2021: Hands-on: Spans BSB17 to BSB56 Visual: Spans Abutment BSB1 to Span BSB16 and BSB57 to Abutment BSB203
		Completed in FY2020: *Hands-on: Spans BSB57 to BSB100* *Visual: Spans BSB1 and BSB202*
		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 FY2021:* *Hands-on: Spans CNB264 to Span CNB322 and Pier NCB-NB1* *Visual: Spans CNB1 to 263 and 264 to 322*
		Completed in FY2020: *Hands-on: Spans CNB198 to CNB263* *Visual: Spans CNB1 to 197 and 264 to 322*
		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 FY2020: Hands-on: Abutment CSB1 to Spans CSB52 to CSB104 Visual: Spans CSB53 to CSB246
		Completed in FY2020: *Hands-on: Spans CSB53 to CSB104* *Visual: CSB1*
		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*
7	North Channel Bridge - Northbound (NCB-NB)	*Fracture Critical: Spans 1 thru 17 (Fracture Critical)* *Above Water: Piers 1 thru 18 all completed in FY2020*
8	North Channel Bridge - Southbound (NCB-SB)	Hands-on: Entire component completed in FY2021
		Underwater Inspection of NCB-SB completed in FY2020
9	Trestle D - Northbound (DNB)	Hands-on: Entire component completed in FY2021
10	Trestle D - Southbound (DSB)	Hands-on: Entire component completed in FY2021
		Underwater Inspection of DSB completed in FY2020
11	Trestle E - Northbound, Fisherman Inlet Bridge - Northbound, Trestle F - Northbound (ENB, FIB-NB, FNB)	Hands-on: Entire component completed in FY2021
12	Trestle E - Southbound, Fisherman Inlet Bridge - Southbound, Trestle F - Southbound (ESB, FIB-SB, FSB)	Hands-on: Entire component completed in FY2021
		Underwater Inspection of ESB, FIB-SB, FSB completed in FY2020
13	Thimble Shoals Channel Tunnel (TSCT)	*Routine inspection of the entire Tunnel, including Open Approaches on Islands 1 and 2 (completed in FY2020)*
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
		Overhead Sign Structures (S-1, S-2, and S-3) Inspection completed in FY2020
19	North Toll Plaza	Main components, spot check minor components, and review of District maintenance records
		Overhead Sign Structures (N-2 & N-3) and Butterfly Sign Structure (N-1) Inspections completed in FY2020
20	Toll Plaza Infrastructure	Main components, spot check minor components, and review of District maintenance records
21	Site-Wide Utilities	Main components, spot check minor components, and review of District maintenance records

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 (FY2022, FY2024, etc.) and Trestles ASB, BSB, and CSB during odd FYs (FY2023, 2025, 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			
		FY2021	FY2022	FY2023	FY2024
1	Trestle ANB (48 spans/year)	ANB'1 – ANB'10, ANB1 - 34	35 – 82	83 – 128	129 – 176
2	Trestle ASB (41 spans/year)	1 – 38	165 – 205	123 – 164	81 - 122
3	Trestle BNB (54 spans/year)	213 – 266	1 – 54	55 – 104	105 - 158
4	Trestle BSB (41 spans/year)	17 – 56	1 – 16 178 – 203	143 – 177	101 - 142
5	Trestle CNB (65 spans/year)	264 – 322 NCB-NB1	1 – 66	67 – 131	132 – 196
6	Trestle CSB (41 spans/year)	1 – 52	197 – 246	155 – 196	105 – 154

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). Table 4 identifies specific components with 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 - Elevator	6	Elevator will not level out in Ventilation Building Nos. 1 or 2 when the doors open. Programmed for replacement.
3	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.
4	Portal Islands – Approach Walls	6	Several locations of spalled/delaminated concrete with the potential to fall into the roadway with one area at the location of an Overhead Signal Structure Anchorage on Portal Island No. 4, East Approach Wall.

Table 5: GASB 34 Condition Ratings

Overall Ratings Summary	FY2021
A. Approach Roads	8
B. Fisherman Island Causeway	8
C. Tunnels	7
D. Portal Islands	8
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	FY2021 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)

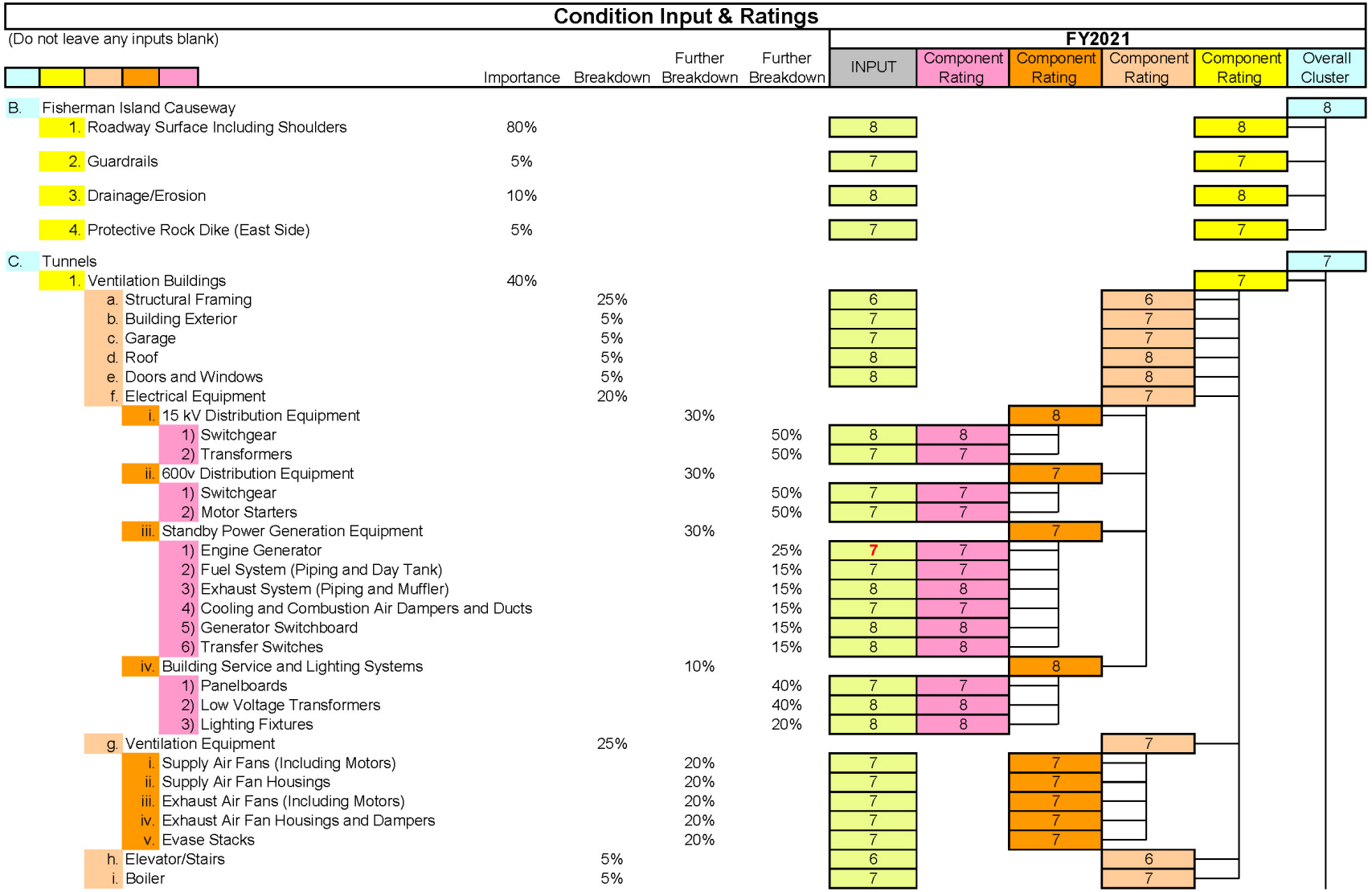


Table 5: GASB 34 Condition Ratings (continued)

Condition Input & Ratings

(Do not leave any inputs blank)

		Importance	Breakdown	Further Breakdown	Further Breakdown	FY2021 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%		9		9			
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	FY2021 INPUT	Component Rating	Component Rating	Component Rating	Component Rating	Overall Cluster
D.	Portal Islands										8
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%			6			6		
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%								8	
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%			9			9		
f.	Armor Stone		25%			8			8		

Table 5: GASB 34 Condition Ratings (continued)

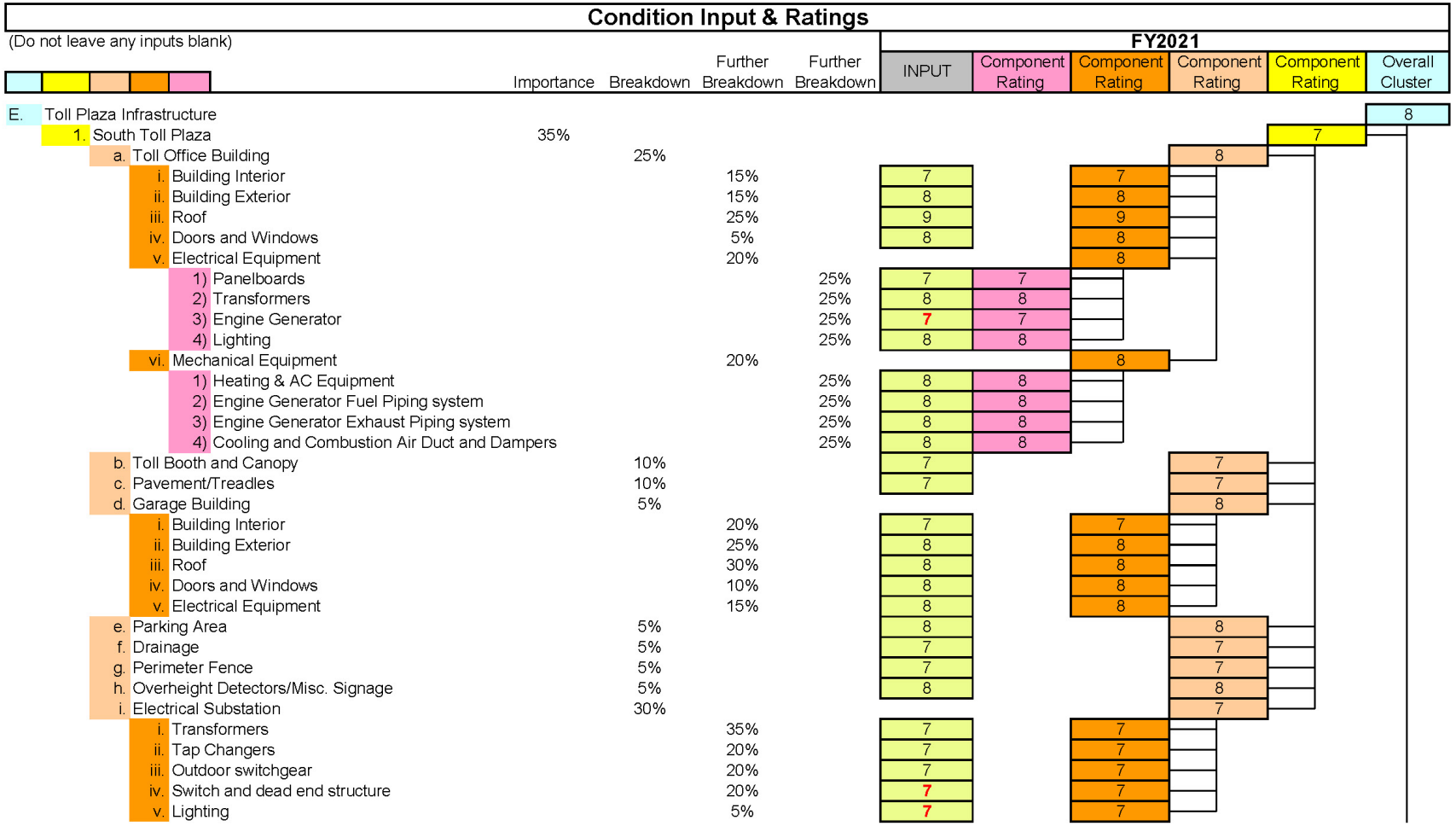
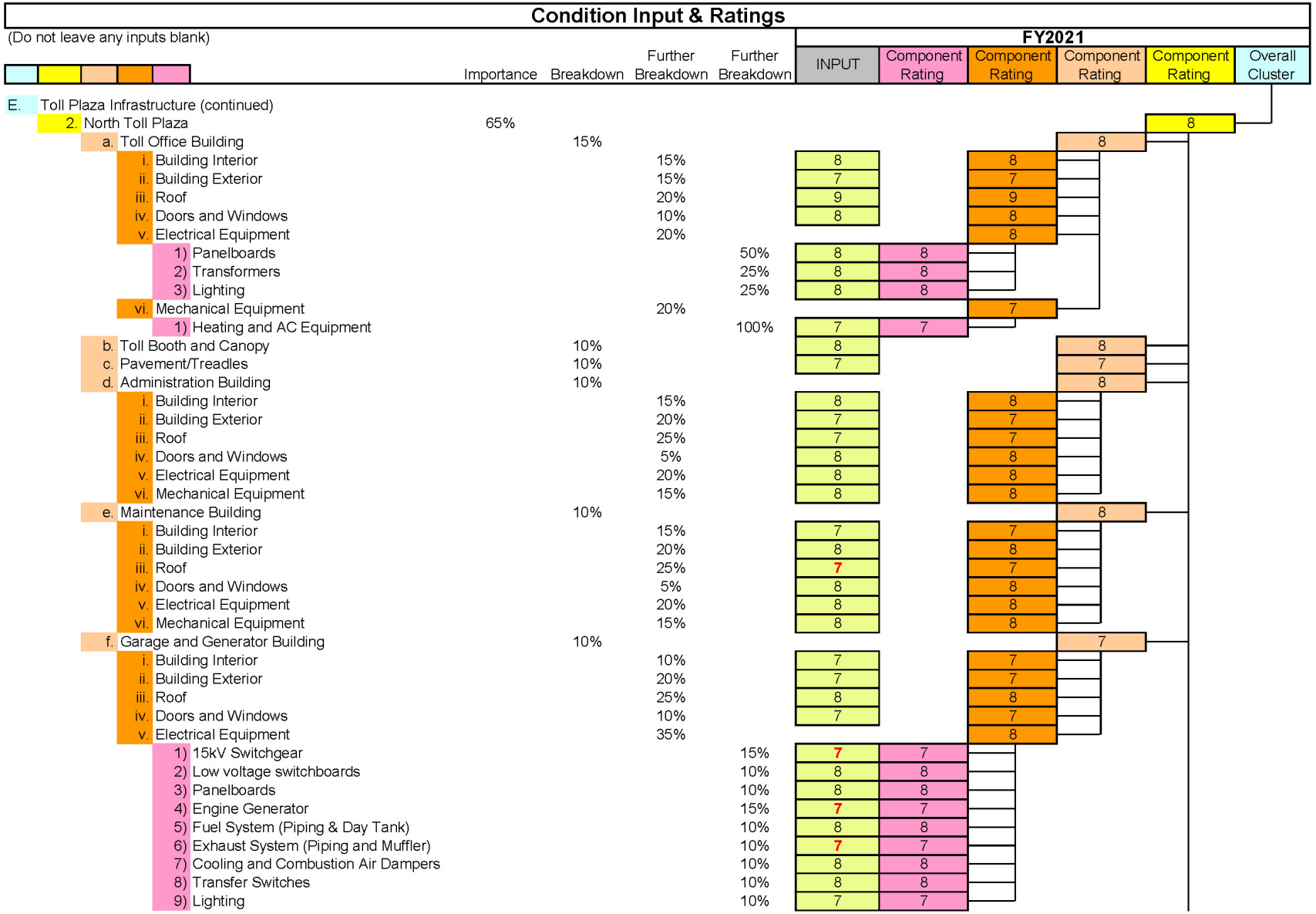
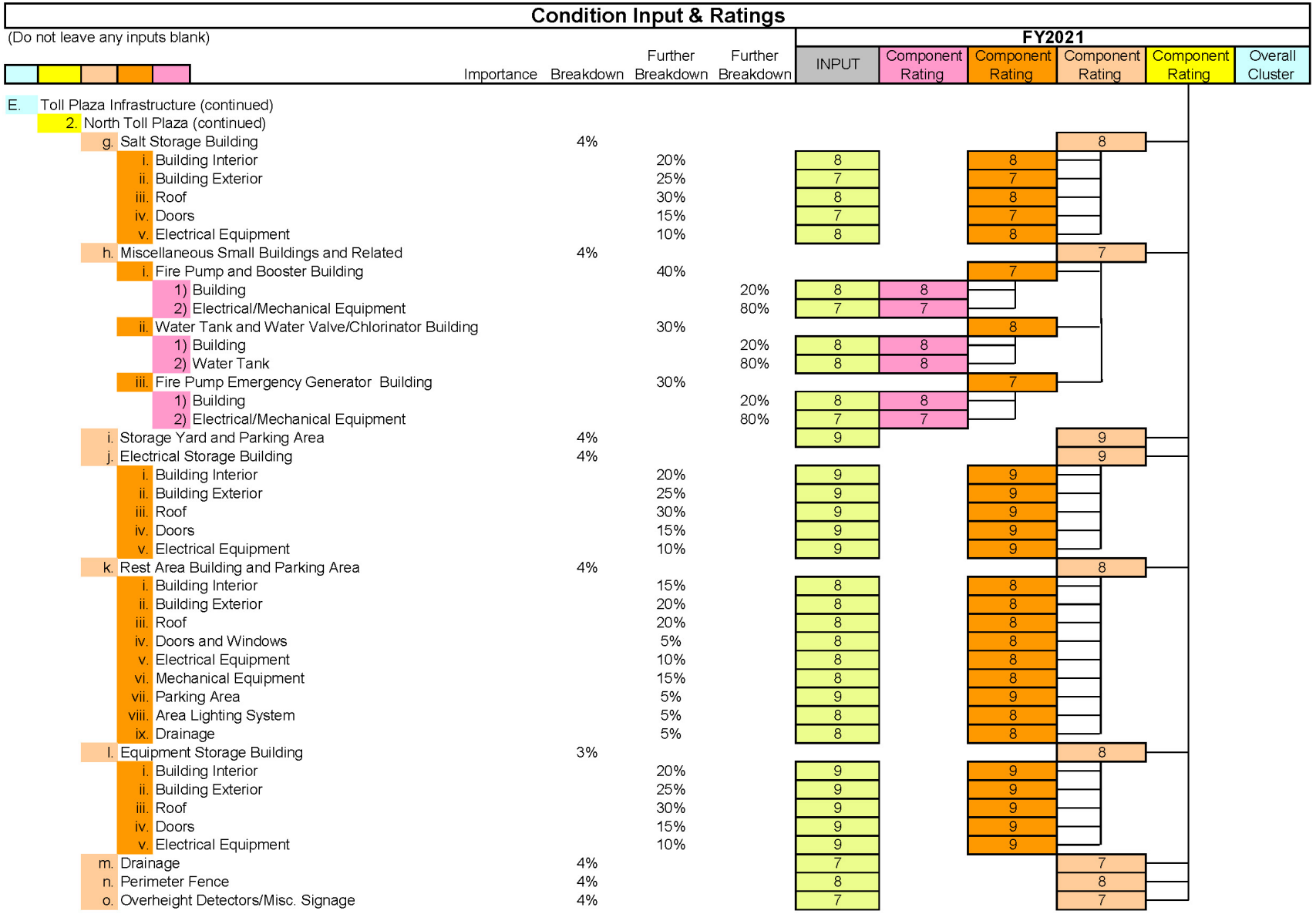


Table 5: GASB 34 Condition Ratings (continued)



Condition Input & Ratings (Do not leave any inputs blank)	Importance	Breakdown	Further Breakdown	Further Breakdown	FY2021 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%		7		7			
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%						7		
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%	7	7				
2) Low voltage switchboards				10%	8	8				
3) Panelboards				10%	8	8				
4) Engine Generator				15%	7	7				
5) Fuel System (Piping & Day Tank)				10%	8	8				
6) Exhaust System (Piping and Muffler)				10%	7	7				
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)					FY2021					
	Importance	Breakdown	Further Breakdown	Further Breakdown	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%						7		
i. Fire Pump and Booster Building			40%				7			
1) Building				20%	8	8				
2) Electrical/Mechanical Equipment				80%	7	7				
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	FY2021 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	Part of PTST Project. Ratings carried forward from last inspection.			7	
2. Sewer From South Shore to Island #1		5%			7				7	
3. Roadway Lighting System		15%							9	
a. Fixtures			20%		9			9		
b. Poles			20%		8			8		
c. Substations			20%		9			9		
d. Panelboards			20%		9			9		
e. Cable and Cable Tray System			20%		8			8		
4. Emergency Telephone system		15%							9	
a. Telephones			50%		9			9		
b. Cabling/wiring			50%		9			9		
5. SCADA System		20%							9	
a. CNC Cabinets and Equipment			25%		9			9		
b. Standby Engine-Generators			25%		8			8		
c. Panelboards			25%		9			9		
d. Traffic Control signals			25%		9			9		
6. 15K Distribution System		30%							8	
a. 15Kv Cable			70%		8			8		
b. Cable Tray System			30%		7			7		
7. Toll Collection Systems		10%			8				8	

3. Repair Recommendations

Repair recommendations are separated into two categories, Priority Repairs and Routine Repairs, and are subject to change at each annual report based on progression of degradation observed during each inspection cycle. For this facility, Priority Repairs are for defects that likely will become problematic or repair costs could escalate significantly if not addressed within the next 24 months. Routine Repairs are for defects that will likely not become problematic or see a significant increase in repair costs if not addressed within 60 months and should be completed as the opportunities present themselves during other maintenance and capital improvement operations. 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.

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
Prestressed Concrete Girder	Repair delamination/spalling with exposed prestressing strands at 43 locations	101	LF
Prestressed Concrete Girder	Repair failed repairs of delamination with rust staining or spalling with exposed prestressing strands at 21 locations	51	LF
Prestressed Concrete Piles	Determine effectiveness of Lifejacket system at ANB57 Pile A where anode does not have a cable connecting it to the junction box at the top of the pile 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

Table 8: ANB Routine Repairs

Element	Item Description	Quantity	Unit
Metal Bridge Railing	Repair spalled concrete curb with exposed reinforcement at ANB'9, ANB11, 23, & 155	4	LF
Metal Bridge Railing	Repair delaminated failed concrete curb repair at ANB131, 165 and 198 (all left lane)	3	LF
Metal Bridge Railing	Repair bent or damaged railing on Spans ANB10, 12, 23, 27, 31, & 217	10	LF
Reinforced Concrete Slab (Underside)	Repair area of delaminated concrete on Span ANB226	6	SF
Concrete Top Flange (Underside)	Repair spalling with exposed longitudinal and transverse reinforcement or where previous repairs have failed at 57 locations	125	SF

Prestressed Concrete Girder	Repair areas near bearings with degraded concrete or where previous repairs have failed at 49 locations	77	LF
Prestressed Concrete Girder	Repair minor spalling with exposed reinforcement at 79 locations	107	LF
Prestressed Concrete Piles	Provide a repair to piles and pile caps with failed protective concrete coatings at locations where cracks, delamination, or spalling is present.	1,759	SF
Prestressed Concrete Piles	Repair portion of pile near water exhibiting minor spalls with exposed reinforcement at ANB112-B	1	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
Light Pole	Replace light poles that exhibit cracking at baseplate at: ANB129, 141, 213, 219, and 222	5	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 spalled concrete near railing post on west side of ASB2.	3	LF

Table 11: ASB Routine Repairs

Element	Item Description	Quantity	Unit
Reinforced Concrete Deck	Seal concrete deck on with a High Molecular Weight Methacrylate (HMWM) and fill spalled areas of ASB3 with epoxy	81,408	SF
Open Expansion Joint	Clean and fill voids at joint header and asphalt wearing surface interface with joint sealant material at ASB40, 44, 48, 56, 60, & 76 (7 locations)	20	LF
Open Expansion Joint	Clean and fill cracked elastomeric concrete header with joint sealant material at ASB21 & 52	6	LF
Prestressed Concrete Girder	Repair spalling with exposed reinforcing or exposed strands at girder ends or in the lower portion of the continuity closure pours (75 locations)	86	LF
Prestressed Concrete Girder	Repair minor spalling with exposed reinforcing at 22 locations	25	LF
Prestressed Concrete Girder	Repair failed repairs of delamination with rust staining or spalling with exposed prestressing strands at ASB41 G6-Z3; 46 G6-Z3; 49 G6-Z3; 57 G4-Z3; and 61 G6-Z3	6	LF
Prestressed Concrete Piles	Repair top portion of pile exhibiting minor spall with exposed reinforcement at Bent-Pile: ASB20-A, 46-A, & 53-C	3	EA
Prestressed Concrete Piles	Repair failed repairs or areas of delamination with rust staining or spalling with exposed prestressing strands or reinforcement at Bent-Pile: ASB43-B, 60-B, 62-B, & 64-B,	4	EA
Protected Slope Paved	Place fill at locations of erosion on east side of the South Abutment ASB1 around water and sewer lines and under slope protection.	1	EA
Light Poles	Monitor light poles at ASB42, 45, 57, & 69 that exhibit cracking or delamination/spalling near the baseplate and replace if vertically oriented steel reinforcement becomes exposed and degraded.	4	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 161 locations.	389	LF
Prestressed Concrete Girder	Repair failed repairs of spalling with exposed prestressing strands at 24 locations	79	LF
Prestressed Concrete Piles	Perform an engineering analysis on all piles with a Condition State Rating Below 4 due to Scour.	1	EA
Bridge Abutment	Replace material that has eroded away under the bridge abutment at Portal Island No.2 (BNB1).	1	EA

Table 14: BNB Routine Repairs

Element	Item Description	Quantity	Unit
Metal Bridge Railing	Repair/replace dented railing on Span BNB219, 234, 238, 249, and 261.	5	EA
Reinforced Concrete Slab (Underside)	Repair area of delaminated and spalled concrete on Span BNB265 at 3 locations	15	SF
Concrete Top Flange (Underside)	Repair spalling with exposed longitudinal and transverse reinforcement or where previous repairs have failed at 7 locations	18	SF
Prestressed Concrete Girder	Repair areas near bearings with degraded concrete or where previous repairs have failed at 112 locations	207	LF
Prestressed Concrete Girder	Repair spall with exposed reinforcement at 17 locations	24	LF
Prestressed Concrete Piles	Repair piles with wide cracks, exposed prestressing strand on top portion, or exhibit rust staining at 100 locations	100	EA
Prestressed Concrete Piles	Repair top portion of piles exhibiting minor spalls with exposed reinforcement at 34 locations	34	EA
Prestressed Concrete Piles	Perform a repair to the steel built-up pile at BNB78 Pile B to prevent additional degradation or corrosion.	1	EA
Light Pole	Replace light poles that exhibit cracking at baseplate at: BNB108, 111, 120, 129, 132, 141, 144, 156, 180, and 189	10	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
Metal Bridge Railing	Repair spalled concrete near railing post on west side of BSB32.	3	LF
Bridge Abutment	Replace material that has eroded away under the bridge abutment at Portal Island No. 2 (BSB1).	1	EA

Table 17: BSB Routine Repairs

Element	Item Description	Quantity	Unit
Metal Bridge Railing	Repair/replace dented railing on Span BSB20, 21, and 67 near mid-span on West Side	5	LF
Reinforced Concrete Deck	Seal concrete deck on with a High Molecular Weight Methacrylate (HMWM)	103,808	SF
Steel Girders	Repair paint system at scattered locations where overcoat is peeling.	1	LS
Prestressed Concrete Girder	Repair spalling with exposed reinforcing or exposed strands at girder ends or in the lower portion of the continuity closure pours (99 locations)	118	LF
Prestressed Concrete Girder	Repair minor spalling with exposed reinforcing at 55 locations	59	LF
Prestressed Concrete Girder	Repair minor spalling with exposed strands at BSB98 G8-Z1	1	LF
Prestressed Concrete Piles	Repair portion of piles exhibiting minor spalls with exposed reinforcement at BSB46-A&B, 98-B, 103-A, 103-C, and 111-B	5	EA
Light Poles	Monitor light poles at BSB59, 61, 63, 67, 73, 91, and 93 that exhibit cracking or delamination/spalling near the baseplate and replace if vertically oriented steel reinforcement becomes exposed.	7	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
Prestressed Concrete Girder	Repair spalling with exposed prestressing strands at 57 locations	171	LF
Prestressed Concrete Girder	Repair failed prestressing strand repairs or areas with delaminated concrete at prestressing strands at 87 locations	274	LF
Prestressed Concrete Piles	Fill void in spalled pile joint on CNB267 Pile C with Epoxy	1	EA

Table 20: CNB Routine Repairs

Element	Item Description	Quantity	Unit
Metal Bridge Railing	Repair/replace dented railing on Span CNB210, 283, and 298.	3	EA
Metal Bridge Railing	Repair spalled concrete curb with exposed reinforcement at CNB149, 232, and 241 on underside of curb	6	LF
Metal Bridge Railing	Repair failed concrete curb repair at CNB158, 177, 187, 188, 216, and 220	10	LF
Concrete Top Flange (Underside)	Repair spalling with exposed longitudinal and transverse reinforcement at Span CNB150, 186, 253 (2 locations), and 303.	7	SF
Prestressed Concrete Girder	Repair areas near bearings with degraded concrete or where previous repairs have failed at 211 locations	430	LF
Prestressed Concrete Girder	Repair spall with exposed reinforcement at 24 locations	36	LF
Prestressed Concrete Piles	Repair top portion of piles exhibiting minor spalls with exposed reinforcement at 26 locations	26	EA
Prestressed Concrete Piles	Replace junction box cover on Lifejacket System at Bent-Pile: 183-B and 191-C	2	EA
Light Pole	Replace light pole at CNB153, 159, 162, 165, 186, 192, 195, 198, 222, 246, and 258	11	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
Metal Bridge Railing	Repair delaminated concrete at railing post on west side of CSB48 (no apparent damage to railing at the time of inspection).	1	EA

Table 23: CSB Routine Repairs

Element	Item Description	Quantity	Unit
Metal Bridge Railing	Repair bent or damaged railing on Spans CSB26, 75, and 82.	3	EA
Metal Bridge Railing (Curb)	Repair spalling with exposed reinforcement or failed repairs at 35 locations	75	SF
Reinforced Concrete Deck	Seal concrete deck on with a High Molecular Weight Methacrylate (HMWM)	40,992	SF
Concrete Top Flange (Underside)	Repair spalling with exposed longitudinal and transverse reinforcement at CSB187 Bay 2	1	SF
Concrete Top Flange (Underside)	Repair failed repairs of delamination with rust staining or spalling with exposed reinforcement at: CSB23, 29, 32, 42, 52, 54, & 82 (7 locations)	7	SF
Steel Diaphragms and Bracing	Replace top protective coating on steel girders at locations where coating has bubbled and exhibits freckled rust along CSB1.	1	LS
Prestressed Concrete Girder	Repair large spalling or locations with exposed reinforcing or exposed strands at girder ends or in the lower portion of the continuity closure pours (126 locations)	126	SF
Prestressed Concrete Girder	Repair minor spalling with exposed reinforcing or prestressing at 52 locations	66	LF
Concrete Pier Caps	Repair detached conduit at CSB25 north face and replace broken conduit near light pole at CSB57	2	EA
Light Poles	Monitor light poles at CSB55, 67, 73, 85, 91, 93, 99, 101, & 103 that exhibit cracking or delamination/spalling near the baseplate and replace if vertically oriented steel reinforcement becomes exposed and degraded.	9	EA

3.1.7 North Channel Bridge – Northbound (NCB-NB)

This component was last inspected in FY2020 and will be inspected again in FY2022.

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
Metal Bridge Railing	Repair delaminated concrete at railing post on east side of NCB-SB span 12.	1	EA
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 Tooth Expansion Joints	Monitor openings at Pier 1 and Pier 15 on extremely cold days when temperatures are expected to remain near or below 25°F to observe if decreased tooth (finger) overlap has created an unsafe condition for the travelling public or snowplow equipment.	2	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	Replace top protective coating on steel girders at locations where zinc primer is exposed or coating has bubbled and exhibits freckled rust.	1	LS
Reinforced Concrete Pier Cap	Repair spalled concrete around pad eye on NCB-SB9	1	SF
Prestressed Concrete Piles	Seal NCB-SB13 Pile H exhibiting degradation with carbon fiber sheets	1	EA
Prestressed Concrete Piles	Perform an engineering analysis on NCB-SB13 that has a Condition State Rating 4 due to Scour at all piles except for Pile K which has a Condition State Rating 3 due to Scour (16 piles total at this pier). Bay bottom elevation has been stable since the 2004 Underwater Inspection.	1	EA
Light Pole	Replace light pole at NCB-SB8 that exhibits an exposed prestressing strand at approximately 10' above the base.	1	EA

3.1.9 Trestle D – Northbound (DNB)

Table 30: Trestle DNB Critical Findings

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

Table 31: Trestle DNB Priority Repairs

Element	Item Description	Quantity	Unit
Prestressed Concrete Girder	Repair delamination/spalling with exposed prestressing strands at 13 locations.	35	LF
Prestressed Concrete Girder	Repair failed repairs of spalling with exposed prestressing strands at 9 locations	23	LF

Table 32: Trestle DNB Routine Repairs

Element	Item Description	Quantity	Unit
Metal Bridge Railing	Repair/replace dented railing on Span DNB3, 4, 7 (2 locations), 8 (2 locations), 9 (2 locations), 10 (3 locations), 12, 13, & 14.	14	EA
Concrete Top Flange (Underside)	Repair spalling with exposed longitudinal and transverse reinforcement at Span DNB1 & DNB16	2	SF
Prestressed Concrete Girder	Repair areas near bearings with degraded concrete or where previous repairs have failed at 8 locations	14	LF
Prestressed Concrete Girder	Repair spall with exposed reinforcement at 6 locations	15	LF
Prestressed Concrete Girder	Repair piles exhibiting minor spalls with exposed reinforcement at Bent-Pile: 1-C, 2-C, 4-C, 7-A, 8-B, 8-C, and 13-B	7	EA
Prestressed Concrete Piles	Repair piles exhibiting wide cracks or rust staining at Bent-Pile 3-A, 3-B, 6-B, 9-B, and 10-A	5	EA

3.1.10 Trestle D – Southbound (DSB)

Table 33: Trestle DSB Critical Findings

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

Table 34: Trestle DSB Priority Repairs

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

Table 35: Trestle DSB Routine Repairs

Element	Item Description	Quantity	Unit
Reinforced Concrete Deck	Seal concrete deck on with a High Molecular Weight Methacrylate (HMWM), and in interim seal the newly placed concrete at the NCB-SB expansion joint with a 100% Silane Sealant.	83,531	SF
Prestressed Concrete Girder	Repair spalling near closure diaphragm with exposed reinforcement at 73 locations.	73	LF
Prestressed Concrete Piles	Monitor the shoreline and its proximity to DSB12 annually and after large storm events. Perform an engineering analysis for installing scour countermeasures if the shoreline has moved such that the piles are in water during all tide cycles. Bay bottom elevation has been stable since the 2004 Underwater Inspection.	1	EA
Prestressed Concrete Piles	Perform an engineering analysis on DSB2 that has a Condition State Rating 4 due to Scour at Pile A. Bay bottom elevation has been stable since the 2009 Underwater Inspection.	1	EA

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
Cable/Electrical Trays	Remove vegetation and debris from the cable trays	1	EA

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

Element	Item Description	Quantity	Unit
Reinforced Concrete Deck	Repair minor spalling with exposed reinforcement or delamination on east side of deck, ENB1 2 locations and ENB4; west side of deck on ENB6.	4	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 at 46 locations	46	SF
Steel Girders, Diaphragms, and Bracing	Replace top protective coating on steel girders at locations where zinc primer is exposed or coating has bubbled and exhibits freckled rust (girder splices, cross frames, and rocker bearings).	1	LS
Prestressed Concrete Piles	Seal piles exhibiting degradation with carbon fiber sheets.	63	EA

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
Open Joints	Repair asphalt spalls at ESB1 and FSB8 open joints.	2	EA
Prestressed Concrete Girder	Repair delamination/spalling with exposed prestressing strands at 47 locations.	130	LF
Prestressed Concrete Girder	Repair failed prestressing strand repairs or areas with delaminated concrete at prestressing strands at 16 locations	39	LF
Prestressed Concrete Piles	Determine effectiveness of damaged Lifejacket system and repair accordingly at FIB-SB Pier 3 Pile C	1	EA
Cable/Electrical Trays	Remove vegetation and debris from the cable trays	1	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	1	EA
Metal Bridge Railing	Repair/replace top rail with impact damage at FSB2 southeast corner and on the west side near mid-span	2	EA
Metal Bridge Railing	Reconnect ground wire to railing on east side of FSB5	1	EA
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: ESB 14-G2 and FSB5-G8	2	EA
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 spall with exposed reinforcement at 4 locations	13	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

3.2 Tunnels

3.2.1 Thimble Shoal Channel Tunnel (TSCT)

This component was last inspected in FY2020 and will be inspected again in FY2022.

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 all wall drain cover plate at 489+90 and flush debris buildup along the Roadway and removal of any debris that has filled up the sidewalk gutter at the base of the west wall and removal of debris on top of the east curb.	1	EA
Ventilation System	Verify Portal Island #4 Exhaust Duct CO Monitor Device is functioning properly and remains on at all times. Consider incorporating periodic checks in daily routine of maintenance (i.e. at shift changes).	1	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 (210 locations)	1,301	SF
Concrete Invert Slab	Remove core drill hardware left in place at STA 511+57, 511+70, 513+75, 515+04, 515+05, 515+70, 516+33, 516+70, 518+37, 519+12, 519+50, & 520+96	12	EA
Concrete Ceiling Slab	Repair locations of spalled and delaminated concrete in the Exhaust Duct at 21 locations (including along haunch beam). An in-depth inspection of the ceiling slab should be performed prior to repairs to better account for repair quantities	121	SF
Concrete Invert Slab	Repair delaminated and spalled concrete, and locations of previous non-shotcrete repairs that are delaminated or cracked in the Fresh Air Duct (353 locations). Recent shotcrete repairs were performed on over 14,000 SF, of which 10 SF (0.07%) were found to be delaminated.	8,175	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
Concrete Traffic Barrier	Repair spalled concrete sidewalk at STA 511+30.	10	SF
Steel Pedestrian Railing/Steel Corrosion Protective Coating	Remove rust and recoat at isolated locations along the Roadway	674	sf
Fire Protection System	Repair fire suppression water standpipes at STA 470+05, 471+54, 473+00, 474+50, 489+08, 493+47, 496+40, 500+79, 502+25, 503+72, 506+63, 508+10, 509+43, 510+76, 512+23, 513+68, 515+15, 518+07, 519+53, 521+00 & 522+41 where section loss was noted in the main piping just above the concrete in the niche.	21	EA

3.3 General Facility

Table 48: General Facility Critical Findings

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

Table 49: General Facility Priority Repairs

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

Table 50: General Facility Routine Repairs

Element	Item Description	Quantity	Unit
Portal Island #3 & #4 – Approach Walls	Repair spalled and delaminated concrete along top of wall that has the potential for minor debris to fall on the sidewalk and break up into smaller pieces upon impact that could enter the roadway at Portal Island 4 East Approach Wall 2nd Overhead Signal Structure from Tunnel Portal	60	LF
Portal Island #3 & #4 – Light Pole	Repair/replace light poles exhibiting cracking at base and significant concrete spalling and delamination (3 at each island)	6	EA
Portal Island #3 & #4 – Grading	Continue to monitor and fill washouts and sinkholes near splash walls as required to prevent erosion.	1	LS
Portal Island #3 & #4 – Splash Wall	Repair spalled and delaminated concrete along the splash walls.	1	LS

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

4.1 Trestle ANB SI&A Forms

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

Structure-ID:	1002	**Type:**	Regular Inspection
County/City:	Northampton	**Date of Inspection:**	9/1, 9/16, 9/17, & 9/23/20
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):**	Jake Landis

WORK DONE: Routine Maintenance and Replacement of Asphalt Wearing Surface and Open Expansion Joint Header Material was completed in Spring 2020. Open Expansion Joint Steel Angle Headers were repaired or replaced as required as part of this effort. 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 10, 12, 23, 27, 31, 135, 161, 171, 174, and 217.
2. Some spalls on bottom flanges of some prestressed girders. 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 52% 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 exhibit damage 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. Piles exhibiting rust staining were sounded and concrete was intact.
8. Minor cracking and map cracking on many of the bent caps inspected.
9. Existing repairs to piles with impact damage are typically sound.
10. 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.
11. Spalls recommended for repair noted in the underside of the deck at 57 locations.

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 (worst-case observed during past inspections).
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 10, 12, 23, 27, 31, 135, 161, 171, 174, and 217.
5. Continue to patch any new spalls and failed repairs on prestressed concrete girders.
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:**	9/1, 9/16, 9/17, & 9/23/20
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):**	Jake Landis

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. Replacement of Asphalt Wearing Surface and Open Expansion Joint Header Material was completed in Spring 2020.
b. Scattered minor cracking with some locations having efflorescence, and spalling on underside of deck
c. Loose bridge railing on span 154, and bent or damaged railing on spans 10, 12, 23, 27, 31, 135, 161, 171, 174, and 217.
d. Remove anchor covers on light poles at ANB114 and ANB126 verify condition of anchors, including proper torque
e. 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. 52% of concrete girders inspected
c. Some spalls on bottom flanges of some prestressed girders, and some existing spall repairs on girders are failing or have failed. The District is continuously performing girder repairs as weather conditions allow. Worse conditions observed do not exhibit more than one prestressing strand being exposed and degraded.

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
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

***Not Visible**

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. Piles exhibiting rust staining were sounded and concrete was intact.
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 (piles considered to be Scour Condition State 4 at Bent-Pile: ANB211-C, 213-A, B, and C, and 214-A, B, and C). Perform an engineering analysis on all piles with a Condition State Rating Below 4 due to Scour.

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 (worst-case observed during past inspections, not present this year).
c. No posting of the structure is required.

4.2 Trestle ASB SI&A Forms

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

Structure-ID:	1010	**Type:**	Regular Inspection
County/City:	Northampton	**Date of Inspection:**	9/1 & 9/16/20
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):**	Jake Landis

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

CONDITION OF STRUCTURE: Good

1. Light poles at ASB42, 45, 57, 69, 81, 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. Misaligned anchor plates along ASB56 (5 total). Two posts with impact damage, ASB3 and ASB56.
4. Deck spall with exposed reinforcement at Span ASB109 and 164, and minor cracking and efflorescence at scattered locations in underside of deck. Spalls in concrete wearing surface of span ASB2 with no exposed reinforcement.
5. Spalled and cracked concrete at lower post tension duct at ASB82 and 93.
6. Girder spall with exposed prestressing strand at Span 54 Girder 3 and Span 56 Girder 2, and reinforcement at bearing on Span ASB132.
7. Scattered minor spalls along bottom flanges and webs where insufficient cover is provided to shear reinforcement or prestressing strands.
8. Large spalling or locations with exposed reinforcing or exposed strands at girder ends or in the lower portion of the continuity closure pours at 75 locations.
9. Roadway striping replaced in 2018 remains in good condition.
10. 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.
11. Most of the underwater portions of the piles are in very good condition. Minor spalling, a few hairline cracks and one narrow crack at a few bents at or below the waterline.
12. 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.
13. Degradation at joint header and asphalt wearing surface interface at ASB21, 40, 44, 48, 56 60, & 76 creating a path for water to reach the concrete deck.

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.

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

RECOMMENDATIONS:

1. Monitor light poles that exhibit cracking or delamination/spalling near the baseplate and replace if vertically oriented steel reinforcement becomes exposed and degraded.
2. Seal concrete deck on with a High Molecular Weight Methacrylate (HMWM) and fill spalled areas of ASB3 with epoxy.
3. Continue periodic hydrographic surveys in interim between underwater inspections scheduled every 5 years.
4. 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
5. Clean exposed reinforcing and repair spalling in girder bottom flanges noted this year and in previous reports.
6. Clean exposed reinforcing and patch spalls/voids previously noted in piles above water.
7. Place fill at locations of erosion on east side of the South Abutment ASB1 around water and sewer lines and under slope protection.
8. Retrofit any deteriorated cable tray expansion joint straps as required.
9. Clean and fill voids at joint header and asphalt wearing surface interface with joint sealant material.

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:**	9/1 & 9/16/20
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):**	Jake Landis

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 ASB42, 45, 57, 69, 81, 86, 99, 105, 107, 109, 115, 119, 121, 129, 131, and 133 exhibited cracking at the baseplate.
b. Deck 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. Misaligned anchor plates along ASB56 (5 total). Two posts with impact damage, ASB2 and ASB56.
d. Deck spall with exposed reinforcement at Span ASB109 and 164, and minor cracking and efflorescence at scattered locations in underside of deck. Spalls in concrete wearing surface of span ASB3 with no exposed reinforcement.
e. Roadway striping replaced in 2018 remains in good condition

B-7 ASB **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. Large spalling or locations with exposed reinforcing or exposed strands at girder ends or in the lower portion of the continuity closure pours at 75 locations.
b. Scattered minor spalls along bottom flanges and webs where insufficient cover is provided to shear reinforcement or prestressing strands.
c. Girder spall with exposed prestressing strand at Span 54 Girder 3 and Span 56 Girder 2, and reinforcement at bearing on Span ASB132
d. Damaged expansion joint plates in the cable trays at Bents ASB 125 and 128, and disconnected ground wires at ASB 123, 127, and 151.

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

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 bents with slight migration towards the south.

---

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. No posting of the structure is required.

4.3 Trestle BNB SI&A Forms

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

Structure-ID:	1004	**Type:**	Regular Inspection
County/City:	Northampton	**Date of Inspection:**	9/1 & 9/8/20
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):**	Jake Landis

WORK DONE: Routine Maintenance. Underwater Inspection performed 6/19 – 11/19

CONDITION OF STRUCTURE: Generally Fair to Good

1. Replacement of the asphalt wearing surface and open expansion joint header material is underway as part of the Mill and Repave Trestles, Replace End Dams Project (RMF 2053.2025) that began on September 8, 2020 (immediately following the inspection of this structure). Work on this structure is anticipated to be completed by the end of Fall 2020.
2. Light poles at BNB108, 111, 120, 129, 132, 141, 144, 156, 180, and 189 exhibited cracking at the baseplate.
3. Exposed sacrificial mesh or wide cracking in grouted annulus of LifeJacket System on Bent BNB23 Pile B, 74-C, 102-A, 117-A, 127-A, 161-A, and 214-A.
4. New spall repairs on bottom flange of girders in good condition with minor shrinkage cracks noted.
5. Scattered cracks and spalls on bottom flanges of prestressed girders. A few failed patches at older repair locations, including exposed strands near mid-span and exposed rebar at some bearings.
6. 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.
7. Hairline diagonal web cracking on approximately 50% of concrete girder ends inspected.
8. Minor to moderate splitting on approximately 9% of elastomeric bearings.
9. Minor map cracking on a few of the bent cap ends inspected.
10. Several locations where main cable tray grounding straps are disconnected.
11. Material has eroded away under the bridge abutment at Portal Island No. 2 (BNB1) to a maximum horizontal penetration of 6′ with vertical gaps typically at 4″ high and up to 6″ high at one isolated location. Abutment is pile supported and stable.
12. Approximately 20% of the piles along Trestle BNB were coded as Condition State 4 (Severe) due to bay bottom elevations found to be below the Allowable Scour Depth. Otherwise, most of the piles would be coded as Condition State 2 (Fair) based on the physical condition of the pile.
13. For complete details on condition of the underwater portion of piles, see the FY2020 Underwater Inspection Forms. A Level II and III Inspection of the Pile Repair at BNB78 Pile B was performed and the steel built-up pile used for the repair appears to exhibit moderate corrosion (approximately 25% section loss).

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 (worst-case observed during past inspections).
c. No posting of the structure is required.

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

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 BNB23 Pile B, 74-C, 102-A, 117-A, 127-A, 161-A, and 214-A.; repair accordingly.
3. Continue periodic hydrographic surveys in interim between underwater inspections scheduled every 5 years. Perform an engineering analysis on all piles with a Condition State Rating Below 4 due to Scour.
4. Continue to monitor paint condition of steel beam span (BNB1/BNB2).
5. Repair bent cable tray retainer plate at BNB71.
6. Replace material at Portal Island No. 2 (BNB1) abutment that has eroded away.
7. Perform a repair to the steel built-up pile at BNB78 Pile B to prevent additional degradation or corrosion.

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:**	9/1 & 9/8/20
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):**	Jake Landis

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. Replacement of the asphalt wearing surface and open expansion joint header material is underway as part of the Mill and Repave Trestles, Replace End Dams Project (RMF 2053.2025) that began on September 8, 2020 (immediately following the inspection of this structure). Work on this structure is anticipated to be completed by the end of Fall 2020.
b. Scattered minor cracking and spalling on underside of deck.
c. 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 9% of the bearings pads inspected
b. Some spalls on bottom flanges of some prestressed girders, and some existing spall repairs on girders are failing or have failed. The District is continuously performing girder repairs as weather conditions allow. Worse conditions observed do not exhibit more than one prestressing strand being exposed and degraded.
c. Hairline diagonal web cracking on 50% of girders inspected

60 SUBSTRUCTURE **GENERAL CONDITION RATING [4]**

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

***Not Visible**

REMARKS:

a. Condition rating controlled by scour, see 61 Channel: Channel Slope/Protection.
b. Spalls with exposed reinforcement on pile cap at BNB100 and abutment at BNB266, and delamination on BNB85, 243, & 265,
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 or rust staining. Some spalling with exposed reinforcing steel noted near top.
d. Spall of LifeJacket fiberglass jacket with exposed sacrificial mesh on Bent BNB23 Pile B, 74-C, 102-A, 117-A, 127-A, 161-A, and 214-A are recommended for evaluation to determine effectiveness of the cathodic protection system and to be repaired accordingly.
e. Material has eroded away under the bridge abutment at Portal Island No. 2 (BNB1) to a maximum horizontal penetration of 3' with vertical gaps typically at 4" high and up to 6" high at one isolated location.
f. Defects noted during 2019 Underwater Inspection include wide, narrow and hairline cracks, large spalls and moderate scaling. See Underwater Inspection Forms for additional details. A Level II and III Inspection of the Pile Repair at BNB78 Pile B was performed and the steel built-up pile used for the repair appears to exhibit moderate corrosion (approximately 25% section loss).

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

61 CHANNEL: CHANNEL/SLOPE PROTECTION **GENERAL CONDITION RATING [4]**

1. Channel Scour	P	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. Approximately 20% of the piles along Trestle BNB were coded as Condition State 4 (Severe) from the UWI due to bay bottom elevations found to be below the Allowable Scour Depth. It is believed that a conservative approach was taken in the historical structural analysis, and based on the current ratings, the District will undertake an engineering analysis. Pile B of Bent BNB78 originally damaged and repaired during construction exhibited moderate corrosion where exposed and appeared to be less robust of a structural element as historical records have shown and will also be reviewed in the engineering analysis. The District will use the results of the additional engineering analysis to identify where additional scour remediation will have the greatest immediate impact and proceed accordingly.
b. Scour remediation present at some locations and recommended at other locations (2019 UWI Report)
c. Material has eroded away under the bridge abutment at Portal Island No. 2 (BNB1) to a maximum horizontal penetration of 6′ with vertical gaps typically at 4″ high and up to 6″ high at one isolated location. Abutment is pile supported and stable.

---

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 (worst-case observed during past inspections, not present this year).
c. No posting of the structure is required.

4.4 Trestle BSB SI&A Forms

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

Structure-ID:	1012	**Type:**	Regular Inspection
County/City:	Northampton	**Date of Inspection:**	9/15 & 9/16/20
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):**	Jake Landis

WORK DONE: Routine Maintenance.

CONDITION OF STRUCTURE: Good

a. Light poles at BSB59, 61, 67, 73, 91, 93, 103, 115, 113, 127, 129, and 133 exhibit cracking or delamination/spalling 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. Dented railing on Span BSB20, 21, and 67.
c. Asphalt wearing surface exhibits cracks, splits, surface spalls, and scaling at isolated locations throughout.
d. Minor hairline cracking and minor spalling on some piles and bent caps.
e. Minor cracking and spalling with exposed reinforcing near the bearings in a few concrete girders.
f. Minor hairline cracking scattered on the underside of the deck.
g. Steel beam span BSB1 and 202 repainted in 2013, structurally in good condition with scattered minor rusting of girders, diaphragms, and bearing connections in areas over armor stones.
h. Large spalling or locations with exposed reinforcing or exposed strands at girder ends or in the lower portion of the continuity closure pours at 99 locations.
i. Minor horizontal cracking, some with efflorescence, in intermediate concrete girder diaphragms.
j. 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.
k. 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.
l. 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.

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

RECOMMENDATIONS:

1. Monitor light poles that exhibit cracking or delamination/spalling near the baseplate and replace if vertically oriented steel reinforcement becomes exposed and degraded.
2. Seal concrete deck on with a High Molecular Weight Methacrylate (HMWM).
3. Repair/replace dented railing on Span BSB20, 21, and 67.
4. Repair paint system at scattered locations where overcoat is peeling.
5. Continue periodic hydrographic surveys in interim between underwater inspections.
6. Repair spalls noted this year along with those previously noted on girder bottom flanges.

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:**	9/15 & 9/16/20
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):**	Jake Landis

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 BSB59, 61, 67, 73, 91, 93, 103, 115, 113, 127, 129, and 133 exhibit cracking or delamination/spalling 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. Seal concrete deck on with a High Molecular Weight Methacrylate (HMWM).
c. Asphalt wearing surface exhibits cracks, splits, surface spalls, and scaling at isolated locations throughout.
d. Minor hairline and map cracking scattered on the underside of the deck
e. Isolated minor shallow spalls on underside of deck at one location
f. Longitudinal reflective cracks in the overlay sealed, but a few scattered unsealed cracks were noted
g. Transverse cracks in bare concrete deck need sealing
h. Roadway striping replaced in 2018 remains 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 with little to no section loss on portions over armor stones with remaining paint system in Good Condition and are structurally sound
b. Large spalling or locations with exposed reinforcing or exposed strands at girder ends or in the lower portion of the continuity closure pours at 99 locations.
c. 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 CNB SI&A Forms

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

Structure-ID:	1009	**Type:**	Regular Inspection
County/City:	Northampton	**Date of Inspection:**	9/9/2020
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):**	Jake Landis

WORK DONE: Routine Maintenance and Replacement of Asphalt Wearing Surface and Open Expansion Joint Header Material was completed in Spring 2020. Open Expansion Joint Steel Angle Headers were repaired or replaced as required as part of this effort. Underwater Inspection performed 6/20 – 10/20

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, 193, 210, 242, 267, 271, 283, 289, 297, 298, 301, 312, 318, 320, and 321.
2. Light poles at CNB108, 111, 120, 129, 153, 159, 162, 165, 186, 192, 195, 198, 222, 246, and 258 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. 13% of the elastomeric bearings.
7. Hairline diagonal web cracking on approximately 26% of concrete girder ends inspected.
8. Map cracking at the ends of many of the bent caps.
9. Scattered minor to moderate cracking and spalling on a few of the piles, some of which are recommended for repair. Spall in grout at pile joint with rust staining and minor cracking with rust staining on CNB267 Pile C.
10. Scour ratings govern over the condition ratings at approximately 37% of the bents (2020 UWI).
11. Bay bottom elevation below Allowable Scour Depth (ASD) at 55 locations, and all have scour protection.
12. 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.
13. Approximately 6% of the piles along Trestle CNB were coded as Condition State 4 (Severe) due to bay bottom elevations found to be below the Allowable Scour Depth. Otherwise, most of the piles would be coded as Condition State 2 (Fair) based on the physical condition of the pile.
14. For complete details on condition of the underwater portion of piles, see the Underwater Inspection Forms included as an electronic submittal this year.

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 (worst-case observed during past inspections).
3. No posting of the structure is required.

RECOMMENDATIONS:

1. Continue to patch spalls on prestressed concrete girders.
2. Patch spalled grout at pile joint on CNB267 Pile C with epoxy.
3. Reconnect loose bridge railing on spans 193 and 194, and repair bent or damaged railing on spans 149, 181, 185, and 193, 210, 242, 283 and 298.

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

4. Replace light poles at CNB108, 111, 120, 129, 153, 159, 162, 165, 186, 192, 195, and 198.
5. Replace damaged expansion joint plates in the cable tray at Bent CNB124 and realign cable tray plate.
6. Repair piles that exhibit significant cracking or spalling.
7. Continue periodic hydrographic surveys in interim between underwater inspections.
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:**	9/9/2020
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):**	Jake Landis

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. Replacement of Asphalt Wearing Surface and Open Expansion Joint Header Material was completed in Spring 2020.
b. Light poles at CNB108, 111, 120, 129, 153, 159, 162, 165, 186, 192, 195, 198, 222, 246, and 258 exhibited cracking or spalling at the baseplate, and the light pole at CNB131 has a loose anchor nut
c. Damaged expansion joint plates in cable tray and misaligned cable tray plate at Bent CNB124
d. Scattered minor transverse cracking and spalling in curbs, with exposed reinforcement at spans CNB82, 98, and 118
e. 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 13% 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. Some spalls on bottom flanges of some prestressed girders, and some existing spall repairs on girders are failing or have failed. The District is continuously performing girder repairs as weather conditions allow. Worse conditions observed do not exhibit more than one prestressing strand being exposed and degraded.
e. Hairline diagonal web cracking on 26% of concrete girders inspected

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
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

***Not Visible**

REMARKS:

a. Condition rating controlled by scour, see 61 Channel: Channel Slope/Protection.
b. Some minor cracking and spalling on many of the piles above water
c. Minor to moderate map cracking at ends of some bent cap beams
d. Spall in grout at pile joint with rust staining and minor cracking with rust staining on CNB267 Pile C
e. 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
f. Bent CNB20 Pile B and Bent CNB46 Pile C retrofitted with Cathodic Protection jackets and remain in good condition
g. Defects noted during the Underwater Inspection include wide, narrow and hairline cracks, large spalls and moderate scaling. See Underwater Inspection Forms for additional details.

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 37% of the bents
b. Bay bottom elevation below Allowable Scour Depth (ASD) at 55 locations, and all have scour protection.
c. Scour remediation present at approximately 50% of the pile 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 (worst-case observed during past inspections, not present this year).
c. No posting of the structure is required.

4.6 Trestle CSB SI&A Forms

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

Structure-ID:	1014	**Type:**	Regular Inspection
County/City:	Northampton	**Date of Inspection:**	9/15/20
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):**	Jake Landis

WORK DONE: Routine Maintenance. Replacement of Asphalt Wearing Surface, Open Expansion Joint Header Material was completed in Fall 2019. Underwater Inspection performed 6/17 – 10/17.

REVISED DIMENSIONS: None

MISCELLANEOUS: No Encroachment Violations

CONDITION OF STRUCTURE: Good

1. Light poles at CSB55, 67, 73, 85, 99, & 101 exhibited cracking or spalling at the baseplate. Light poles at CSB85, 91, 93, & 103 have one anchor bolt that does not extend past the nut when the nut is fully engaged. The light pole at CSB93 has one bolt (same anchor bolt that does not extend past the nut) that is near the outer edge of the baseplate.
2. Portions of guardrail on Spans 26, 75, and 82 has minor impact damage on one section of railing.
3. 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.
4. Minor spalling with no exposed reinforcement (except at span 187), and minor cracking and efflorescence at scattered locations in underside of deck.
5. Large spalling or locations with exposed reinforcing or exposed strands at girder ends or in the lower portion of the continuity closure pours at 126 locations.
6. Minor horizontal cracking, some with efflorescence, in intermediate concrete girder diaphragms.
7. Scour generally stable indicated by bay bottom elevations, but several bents noted at or below acceptable scour depth (FY2018 Underwater Inspection Forms and 2019 Hydrographic Survey).

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. Seal concrete deck on with a High Molecular Weight Methacrylate (HMWM).
3. Replace top protective coating on steel girders at locations where coating has bubbled and exhibits freckled rust.
4. Monitor light poles exhibit cracking or delamination/spalling near the baseplate and replace if vertically oriented steel reinforcement becomes exposed and degraded.
5. Replace corroded and missing conduit brackets on bent cap faces with stainless steel.

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:**	9/15/20
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):**	Jake Landis

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. Replacement of Asphalt Wearing Surface, Open Expansion Joint Header Material was completed in Fall 2019
b. Seal concrete deck on with a High Molecular Weight Methacrylate (HMWM).
c. Minor spalling with no exposed reinforcement (except at span 187), and minor cracking and efflorescence at scattered locations in underside of deck
d. Scattered minor transverse cracking and spalling or failed repairs in curbs, with exposed reinforcement at spans 54, 88, 100, 105, 108, 116, 119, 121, 122, 130, 131, 134, 135, 138, 140, 141, 142, 145, 146(2), 150, 151, 156, 169, and 170.
e. Adjust bridge railing baseplate on underside of deck on Spans CSB 98 near midspan on the East side and 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 81 locations, 75 locations are at girder ends or in the lower portion of the continuity closure pours.
b. Minor spalling with no exposed reinforcement (except at span 187), and minor cracking and efflorescence at scattered locations in underside of deck.
c. Minor cracking and spalling in concrete girder diaphragms.
d. Freckled rust and coating failure typical at the flanges and connections from near mid-span to Portal Island #4 due to being in the splash zone of breaking waves.

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
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

***Not Visible**

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 2019 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 NCB-NB SI&A Forms

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:**	9/9/19 – 9/23/19
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 at stiffener locations 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 2018, more recent surveys from 2019 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 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 Unit NCBA1 – 4-Span Steel Approach Girders, NCBA2 – Steel Floorbeams (on Approach), and NCBT4 – Truss Gusset Plates.
3. No posting of the structure is required.

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.

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

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.
12. Monitor stringer-to-floorbeam connection for pack rust development and corrosion of connection hardware.
13. Seal cracks in splash zone at Piers 1, 2, 3, 7, 8, 11, 12, 13 and 14 with carbon fiber sheets.
14. 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:**	9/9/19 – 9/23/19
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

---

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. Seal cracks in splash zones at Piers 1, 2, 3, 7, 8, 11, 12, 13 and 14. with carbon fiber sheets
c. Repair cracks in tops of pier columns
d. For the underwater portions of the piers, see the 2016 Underwater Inspection Report

---

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.2018, and recent surveys from 2019 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 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 Unit NCBA1 – 4-Span Steel Approach Girders, NCBA2 – Steel Floorbeams (on Approach), and NCBT4 – Truss Gusset Plates.
c. No posting of the structure is required.

4.8 NCB-SB SI&A Forms

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

Structure-ID:	1015	**Type:**	Regular Inspection
County/City:	Northampton	**Date of Inspection:**	9/14/20
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):**	Jake Landis

WORK DONE: Routine Maintenance. Replacement of Steel Sliding Plate Expansion Joints with Steel Tooth Expansion Joints completed in Fall 2020. Damage Inspection of Pier 9 Fender System performed on 9/3/20. Underwater Inspection performed 6/19 – 11/19

REVISED DIMENSIONS: None

MISCELLANEOUS: No Encroachment Violations

CONDITION OF STRUCTURE: Generally Good

1. Northwest portion of Pier 9 Fender System was impacted by a barge on 9/3/20. Damage Inspection identified extents of damage limited to the fender system and repairs are anticipated in the near future.
2. Steel Tooth Expansion Joint at Pier 1 opening was off by about 1/4" from the east side (2 1/2") to the west side (2 1/4"). The weather was cloudy at the time of measurement (9/14/2020 at 5:07pm) with an ambient air temperature around 76°F with the steel girders and concrete girders measuring at 77°F and 78°F, respectively. The opening dimension for these conditions should have been 2 1/16" according to construction documents.
3. Steel Tooth Expansion Joint at Pier 15 opening was off by about 1/4" from the east side (2 13/16") to the west side (1 7/8"). The weather was cloudy at the time of measurement (9/14/2020 at 1:12pm) with an ambient air temperature around 77°F with the steel girders and concrete girders measuring at 79°F and 80°F, respectively. The opening dimension for these conditions should have been 2 1/16" according to construction documents.
4. Rust around perimeter of some bearing base plates.
5. Isolated minor rust spots on crossframes, diaphragms, and lower lateral bracing members.
6. Minor rust on scattered nuts and bolts of longitudinal girder splices and of crossframe, diaphragm and lower lateral bracing connections.
7. Scattered minor rust on ladder systems at Piers NCB-SB9 and NCB-SB10. Minor rusting of bolts anchoring ladder systems to piers.
8. Minor cracking on some of the pier caps. Repairs to pile cap (footing) completed in fall of 2015 to NCB-SB9 appear satisfactory with minor cracking of the repair material.
9. Minor transverse cracks scattered in concrete deck, mostly hairline, but some noted as narrow.
10. Failing patch in bridge deck surface in Span NCB-SB8.
11. 2019 Hydrographic Survey and the 2019 Underwater Inspection indicates bay bottom was below ASD at Pier NCB-SB13. Bay bottom is stable due to scour blanket in place as indicated in the 2009, 2014, and 2019 Underwater Inspections.
12. No significant defects noted on the underwater portions of the piles in the FY2020 Underwater Inspection Forms.

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.

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

RECOMMENDATIONS:

1. Monitor Steel Tooth Expansion Joints on extremely cold days when temperatures are expected to remain near or below 25°F for several hours to observe if decreased tooth (finger) overlap has created an unsafe condition for the travelling public or snowplow equipment. At 25°F the tooth overlap is anticipated to be below the 1.5" requirement specified in the AASHTO LRFD Bridge Design Specifications.
2. Continue periodic hydrographic surveys in interim between underwater inspections scheduled every 5 years. Perform an engineering analysis on all piles with a Condition State Rating Below 4 due to Scour.
3. Seal concrete deck with a High Molecular Weight Methacrylate (HMWM), and in interim seal the newly placed concrete at the expansion joints with a 100% Silane Sealant.
4. Repair failing patch in bridge deck surface in Span NCB-SB8
5. Replace top protective coating on steel girders at locations where zinc primer is exposed or coating has bubbled and exhibits freckled rust.

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:**	9/14/20
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):**	Jake Landis

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. Monitor Steel Tooth Expansion Joints on extremely cold days (temperatures approaching 25°F) to observe if decreased tooth (finger) overlap has created an unsafe condition for the travelling public or snowplow equipment. At 25°F the tooth overlap is anticipated to be below the 1.5" requirement specified in the AASHTO LRFD Bridge Design Specifications.
b. Minor transverse hairline cracks in deck surface, with a few cracks up to 1/8"
c. Curb and railing are generally in good condition
d. 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
f. Span 4 Bay 2 Cross Frame 4 Intermediate Crossframe Lower Member Distorted with surface rust, no action required

---

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

***Not Visible**

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. The 2019 Underwater Inspection revealed minor 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** **[7]**

1. Channel Scour	F	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. Northwest portion of Pier 9 Fender System was impacted by a barge on 9/3/20. Damage Inspection identified extents of damage limited to the fender system and repairs are anticipated in the near future. Findings of the Damage Inspection were submitted to the District on 9/10/20.
b. 2019 Hydrographic Survey and the 2019 Underwater Inspection indicates bay bottom was below ASD at Pier NCB-SB13. Bay bottom is stable due to scour blanket in place as indicated in the 2009, 2014, and 2019 Underwater Inspections.
c. Repairs to fender system completed in fall 2015 at NCB-SB9 resulting from boat impact noted in good condition
d. Repairs to pile cap (footing) completed in fall of 2015 to NCB-SB9 appear satisfactory with minor cracking of the repair material

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 DNB SI&A Forms

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

Structure-ID:	1008	**Type:**	Regular Inspection
County/City:	Northampton	**Date of Inspection:**	9/10/20
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):**	Jake Landis

WORK DONE: Routine Maintenance and Replacement of Asphalt Wearing Surface was completed in Spring 2020. Open Expansion Joint Steel Angle Headers were repaired or replaced as required as part of this effort.

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. 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 (worst-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:**	9/10/20
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):**	Jake Landis

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. Top of roadway deck and components in good condition with limited minor impact damage to railings noted
b. No significant defects noted in underside of deck in spans 1 thru 18

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

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
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

***Not Visible**

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

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

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 (worst-case observed during past inspections, not present this year).
c. No posting of the structure is required.

4.10 Trestle DSB SI&A Forms

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

Structure-ID:	1016	**Type:**	Regular Inspection
County/City:	Northampton	**Date of Inspection:**	9/11 & 9/14/20
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):**	Jake Landis

WORK DONE: Routine Maintenance and Roadway Striping Replaced in Spring 2020. Underwater Inspection performed 6/19 – 11/19

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. Widespread map cracking (hairline to narrow) of concrete deck surface in Spans DSB13, DSB14, DSB17 and DSB18.
4. The 2019 Underwater Inspection revealed only a few hairline cracks and a few minor shallow spalls on some of the piles.
5. The 2019 Underwater Inspection indicates bay bottom was below ASD at DSB2 Pile A and Pier DSB12. Bay bottom is relatively stable as indicated in the 2004, 2009, 2014, and 2019 Underwater Inspections.

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 concrete deck on with a High Molecular Weight Methacrylate (HMWM), and in interim seal the newly placed concrete at the NCB-SB expansion joint with a 100% Silane Sealant.
3. Seal piles exhibiting degradation with carbon fiber sheets.
4. Perform an engineering analysis on all piles with a Condition State Rating Below 4 due to Scour.

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:**	9/11 & 9/14/20
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):**	Jake Landis

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	G	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 DSB2, DSB3, DSB,5, DSB13, DSB14, DSB17, and DSB18.

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 with exposed reinforcement/prestressing with little to no relevant section loss.
b. Spans 1 thru 19 inspected from Snooper vehicle

---

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

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 **F**
   - G. Settlement _
3. Pile Bent
   - A. Caps **G**
   - B. Bearing Seats **G**
   - C. Piles **G**
   - D. Bracing **N**

REMARKS:

a. The 2019 Underwater Inspection revealed only a few hairline cracks and a few minor shallow spalls on some of the piles
b. Minor hairline cracks in most piles above water or above ground line adjacent to pile section joints. Crack with rust staining observed above water on Bent 7 Pile B.
c. Minor hairline cracks on a few bent caps

B-7 DSB **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 remediation was performed at Bent DSB1 in 2002
b. The 2019 Underwater Inspection indicates active scour along majority of bottoms with the bay bottom below ASD at DSB2 Pile A and all piles at DSB12. Bay bottom is relatively stable as indicated in the 2004, 2009, 2014, the 2019 Underwater Inspections.
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 ENB, FIB-NB, & FNB SI&A Forms

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 & 9/14/20
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):**	Jake Landis

WORK DONE: Routine Maintenance and Replacement of Asphalt Wearing Surface and Open Expansion Joint Header Material was completed in Spring 2020. Replacement of Steel Sliding Plate Expansion Joints with Steel Tooth Expansion Joints completed in Winter 2020. Underwater Inspection performed 6/19 – 11/19

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. Steel Tooth Expansion Joint at FIB-NB Pier 4 opening was off by about 1/2" from the east side (1 3/4") to the west side (1 1/4"). The weather was cloudy at the time of measurement (9/10/2020 at 2:11pm) with an ambient air temperature around 80°F with both the steel girders and concrete girders measuring at 80°F. The opening dimension for these conditions should have been 1 15/16" according to construction documents.
3. No apparent change in spiral cracking on piles at Bents ENB7 and ENB9 (caused during construction).
4. Rip rap encompassing Bent FNB4 remains well placed and stable.
5. Minor spalls noted in the girders and at the diaphragm closure pours at scattered locations in the trestle spans.
6. Isolated surface spalls in Span ENB1.
7. Scattered minor transverse cracks in concrete portions of FIB bridge deck.
8. Isolated minor rust spots and peeled off topcoat with exposed zinc primer on FIB girders, cross frames and bracing.
9. Minor rust continues to develop on nuts and bolts of FIB girder splices and at cross frames and lower lateral bracing connections.
10. Moderate rust around perimeter of FIB rocker bearing base plates and isolated rust spots on some pins and anchor bolts.
11. The 2019 Underwater Inspection revealed only a few hairline cracks and a few minor shallow spalls on some of the piles.
12. North Fender system was repaired in Fall 2018 after damage that was caused around May 27, 2018.

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. Monitor the Steel Tooth Expansion Joint opening on extremely hot days (temperatures approaching 120°F) to observe if opening closes and if any distress occurs on the superstructure.
2. Seal concrete deck on FIB-NB with a High Molecular Weight Methacrylate (HMWM), and in interim seal the newly placed concrete at the expansion joints with a 100% Silane Sealant.

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

3. Clean exposed reinforcing and patch girder spalls on trestle spans.
4. Replace top protective coating on steel girders at locations where zinc primer is exposed or coating has bubbled and exhibits freckled rust (girder splices, cross frames, and rocker bearings).
5. Seal piles exhibiting degradation with carbon fiber sheets.

SIGNATURE OF INSPECTOR

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

Structure-ID:	1017	**Type:**	Regular Inspection
County/City:	Northampton	**Date of Inspection:**	9/10 & 9/14/20
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) :**	Jake Landis

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. Minor transverse hairline cracks scattered in concrete FIB-NB deck surface.
b. Steel Tooth Expansion Joint at FIB-NB Pier 4 opening was off by about 1/2" from the east side (1 3/4") to the west side (1 1/4"). The weather was cloudy at the time of measurement (9/10/2020 at 2:11pm) with an ambient air temperature around 80°F with both the steel girders and concrete girders measuring at 80°F. The opening dimension for these conditions should have been 1 15/16" according to construction documents.
c. Isolated surface spalls on ENB1 east side.

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 topcoat with exposed zinc primer on FIB girders, cross frames and bracing
c. Minor rust continues to develop on nuts and bolts of FIB girder splices and at cross frame 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

---

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
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

***Not Visible**

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. The 2019 Underwater Inspection revealed only a few hairline cracks and a few minor shallow spalls on some of the piles.

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. Rip rap encompassing Bent FNB4 remains well placed and stable.

---

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 ESB, FIB-SB, & FSB SI&A Forms

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 & 9/11/20
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):**	Jake Landis

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 2020.
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 at Pier FIB-SB3 exhibited damage to the fiberglass jackets.
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 repaired in Fall 2018 after 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. Seal concrete deck on with a High Molecular Weight Methacrylate (HMWM).
3. Perform periodic hydrographic surveys in interim between underwater inspections.
4. Monitor and repair any exposed zinc mesh under the spalled fiberglass jackets on Pier FIB-SB3.
5. 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**

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

SIGNATURE OF INSPECTOR

B-7 ESB, FIB-SB, & FSB VDOT – BRIDGE INSPECTION REPORT

Structure-ID:	1007	**Type:**	Regular Inspection
County/City:	Northampton	**Date of Inspection:**	9/10 & 9/11/20
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):**	Jake Landis

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

B-7 ESB, FIB-SB, & FSB 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 **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

---

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.

B-7 ESB, FIB-SB, & FSB 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. 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. North Fender system was repaired in Fall 2018 after damage that was caused around May 27, 2018.
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.

---

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 ANB Element Level Data

Trestle ANB consists of Spans A'NB1-10 and Spans ANB 1-226. Spans A'NB1-ANB32 received a hands-on inspection this year (approximately 20% of the entire trestle). Element level data is presented in this section for all portions of the trestle that have a received hands-on inspection since FY2018. An underwater inspection was performed on the entire trestle in FY2019, 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	407,605	506	101	0	408,212
1080	*Delamination/Spall/ Patched Area*	*SF*		*38*	*54*		*92*
1090	*Exposed Rebar*	*SF*		*24*	*47*		*79*
1120	*Efflorescence/Rust Staining*	*SF*		*301*			*301*
1130	*Cracking (RC and Other)*	*SF*		*143*			*143*
38	Reinforced Concrete Slab	SF	1,188	6	0	0	1,194
1080	*Delamination/Spall/ Patched Area*	*SF*		*6*			*6*
RAILINGS							
330	Metal Bridge Railing	LF	28,417	471	14	0	28,902
1020	*Connection*	*LF*		*3*			*3*
1080	*Delamination/Spall/ Patched Area*	*LF*		*59*	*13*		*72*
1090	*Exposed Rebar*	*LF*		*12*	*1*		*13*
1130	*Cracking (RC and Other)*	*LF*		*383*			*383*
7000	*Damage*	*LF*		*14*			*14*

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	111,812	3,850	299	0	115,961
1080	*Delamination/Spall/ Patched Area*	*LF*		*314*	*61*		*375*
1090	*Exposed Rebar*	*LF*		*58*	*86*		*144*
1100	*Exposed Prestressing*	*LF*		*15*	*98*		*113*
1110	*Cracking (PSC)*	*LF*		*3,456*	*3*		*3,459*
1120	*Efflorescence/Rust Staining*	*LF*		*7*	*51*		*58*
811	Beam/Girder End	EA	1,294	1,720	94	0	3,108
1080	*Delamination/Spall/ Patched Area*	*EA*		*29*	*22*		*51*
1090	*Exposed Rebar*	*EA*		*10*	*39*		*49*
1100	*Exposed Prestressing*	*EA*			*8*		*8*
1110	*Cracking (PSC)*	*EA*		*1,679*	*1*		*1,680*
1120	*Efflorescence/Rust Staining*	*EA*		*5*	*24*		*29*
BEARINGS							
310	Elastomeric Bearing	EA	3,040	12	64	0	3,116
1000	*Corrosion*	*EA*		*8*			*8*
2230	*Bulging, Splitting, or Tearing*	*EA*		*4*	*64*		*68*

ANB (1002) Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
SUBSTRUCTURE							
215	Reinforced Concrete Abutment	LF	66	0	0	0	66
226	Prestressed Concrete Pile	EA	132	495	86	7	720
1080	*Delamination/Spall/ Patched Area*	*EA*		*175*	*25*		*200*
1090	*Exposed Rebar*	*EA*		*1*	*4*		*5*
1110	*Cracking (PSC)*	*EA*		*186*	*4*		*190*
1120	*Efflorescence/Rust Staining*	*EA*		*61*	*44*		*105*
1190	*Abrasion/Wear (PSC/RC)*	*EA*		*6*			*6*
6000	*Scour*	*EA*		*66*	*9*	*7*	*82*
234	Reinforced Concrete Pier Cap	LF	5,928	550	15	0	6,493
1080	*Delamination/Spall/ Patched Area*	*LF*		*43*	*14*		*58*
1120	*Efflorescence/Rust Staining*	*LF*		*196*	*1*		*197*
1130	*Cracking (RC and Other)*	*LF*		*311*			*311*
824	Reinforced Concrete Wingwall	EA	2	0	0	0	2
JOINTS							
304	Open Expansion Joint*	LF	6,938	0	0	0	6,938
845	Joint Effectiveness*	EA	198	0	0	0	198
WEARING SURFACES, PROTECTIVE COATINGS, AND CONCRETE REINFORCING STEEL PROTECTIVE SYSTEMS							
510	Wearing Surfaces*	SF	405,615	2	0	0	405,617
3210	*Delamination/Spall/ Patched Area/Pothole (Wearing Surface)*	*SF*		*2*			*2*

ANB (1002) Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
520	Concrete Reinforcing Steel Protective System	SF	59,977	2,568	1,490	551	64,586
3600	*Effectiveness - Protective System (e.g. cathodic)*	*SF*		*2,568*	*1,484*	*371*	*4,423*
7000	*Damage*	*SF*			*6*	*180*	*186*
521	Concrete Protective Coating	SF	138,800	257	170	2,092	141,319
3540	*Effectiveness (Concrete Protective Coatings)*	*SF*		*257*	*170*	*2,092*	*2,519*
SLOPE AND CHANNEL ELEMENTS							
852	Protected Slope – Paved	EA	1	0	0	0	1
6506	*Paved Slope Effectiveness*	*EA*	*1*				*1*
853	Protected Slope - Riprap	EA	1	0	0	0	1
6507	*Loss of Riprap*	*EA*	*1*				*1*
854	Channel	EA	0	1	0	0	1
6000	*Scour*	*EA*		*1*			*1*

*Replacement of Asphalt Wearing Surface and Open Expansion Joint Header Material was completed in Spring 2020. Open Expansion Joint Steel Angle Headers were repaired or replaced as required as part of this effort.

5.2 Trestle ASB Element Level Data

Trestle ASB consists of Spans ASB 1-205. Spans 1-38 received a hands-on inspection this year (approximately 19% of the entire trestle). Element level data is presented in this section for all portions of the trestle that have a received hands-on inspection since FY2018. An underwater inspection was performed on the entire trestle in FY2019, 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	35,034	593	3	0	35,630
1080	*Delamination/Spall/ Patched Area*	*SF*			*3*		*3*
1120	*Efflorescence/Rust Staining*	*SF*		*105*			*105*
1130	*Cracking (RC and Other)*	*SF*		*488*			*488*
16	Reinforced Concrete Top Flange	SF	532,709	1,164	75	0	533,948
1080	*Delamination/Spall/ Patched Area*	*SF*		*22*	*46*		*68*
1090	*Exposed Rebar*	*SF*		*2*	*27*		*29*
1120	*Efflorescence/Rust Staining*	*SF*		*8*			*8*
1130	*Cracking (RC and Other)*	*SF*		*1,132*	*2*		*1,134*
RAILINGS							
330	Metal Bridge Railing	LF	28,586	113	35	0	28,734
1020	*Connection*	*LF*		*3*			*3*
1080	*Delamination/Spall/ Patched Area*	*LF*		*26*	*6*		*32*
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*	*2*		*14*

ASB (1010) Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
SUPERSTRUCTURE							
107	Steel Open Girder/Beam	LF	436	3	0	0	439
1000	*Corrosion*	*LF*		*3*			*3*
109	Prestressed Concrete Open Girder/Beam	LF	86,548	207	57	0	86,812
1080	*Delamination/Spall/ Patched Area*	*LF*		*104*	*11*		*115*
1090	*Exposed Rebar*	*LF*		*60*	*46*		*106*
1100	*Exposed Prestressing*	*LF*		*12*			*12*
1110	*Cracking (PSC)*	*LF*		*27*			*27*
1120	*Efflorescence/Rust Staining*	*LF*		*4*			*4*
811	Beam/Girder End	EA	1,903	138	43	0	2,048
1080	*Delamination/Spall/ Patched Area*	*EA*		*90*	*7*		*97*
1090	*Exposed Rebar*	*EA*		*41*	*35*		*76*
1100	*Exposed Prestressing*	*EA*		*3*			*3*
1110	*Cracking (PSC)*	*EA*		*4*	*1*		*5*
BEARINGS							
310	Elastomeric Bearing	EA	2,084	0	0	0	2,084
SUBSTRUCTURE							
215	Reinforced Concrete Abutment	LF	40	0	0	0	40
226	Prestressed Concrete Pile	EA	272	312	43	8	635
1080	*Delamination/Spall/ Patched Area*	*EA*		*74*	*19*		*93*
1090	*Exposed Rebar*	*EA*		*6*	*2*		*8*
1110	*Cracking (PSC)*	*EA*		*122*	*2*		*124*
1120	*Efflorescence/Rust Staining*	*EA*		*5*	*4*		*9*
1190	*Abrasion/Wear (PSC/RC)*	*EA*		*44*	*1*		*45*
6000	*Scour*	*EA*		*61*	*15*	*8*	*84*

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	6,205	457	15	0	6,677
1080	*Delamination/Spall/ Patched Area*	*LF*		*17*	*14*		*31*
1090	*Exposed Rebar*	*LF*			*1*		*1*
1120	*Efflorescence/Rust Staining*	*LF*		*1*			*1*
1130	*Cracking (RC and Other)*	*LF*		*439*			*439*
824	Reinforced Concrete Wingwall	EA	2	0	0	0	2
JOINTS							
304	Open Expansion Joint	LF	3,568	9	35	0	3,612
2360	*Adjacent Deck or Header*	*LF*		9	*35*		*44*
845	Joint Effectiveness	EA	59	0	0	0	59
WEARING SURFACES, PROTECTIVE COATINGS, AND CONCRETE REINFORCING STEEL PROTECTIVE SYSTEMS							
510	Wearing Surfaces	SF	472,325	4,899	1,603	0	478,827
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*		*3,690*	*1,602*		*5,292*
SLOPE AND CHANNEL ELEMENTS							
853	Protected Slope - Riprap	EA	1	0	0	0	1
6507	*Loss of Riprap*	*EA*	*1*				*1*
854	Channel	EA	0	1	0	0	1
6000	*Scour*	*EA*		*1*			*1*

5.3 Trestle BNB Element Level Data

Trestle BNB consists of Spans BNB 1/2-265. Spans 213-265 received a hands-on inspection this year (approximately 20% of the entire trestle). Element level data is presented in this section for all portions of the trestle that have a received hands-on inspection since FY2018. An underwater inspection was performed on the entire trestle in FY2020, and element level data has been provided for all piles that were inspected along 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	493,576	1,109	15	0	494,700
1080	*Delamination/Spall/ Patched Area*	*SF*		*16*	*3*		*19*
1090	*Exposed Rebar*	*SF*		*6*	*12*		*18*
1120	*Efflorescence/Rust Staining*	*SF*		*489*			*489*
1130	*Cracking (RC and Other)*	*SF*		*598*			*598*
38	Reinforced Concrete Slab	SF	1,174	15	5	0	1,194
1080	*Delamination/Spall/ Patched Area*	*SF*		*11*			*11*
1090	*Exposed Rebar*	*SF*			*4*		*4*
1120	*Efflorescence/Rust Staining*	*SF*		*4*	*1*		*5*
RAILINGS							
330	Metal Bridge Railing	LF	29,438	526	11	0	29,975
1020	*Connection*	*LF*		*18*	*2*		*20*
1080	*Delamination/Spall/ Patched Area*	*LF*		*2*	*9*		*11*
1130	*Cracking (RC and Other)*	*LF*		*473*			*473*
7000	*Damage*	*LF*		*33*			*33*

BNB (1004) 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	115,455	4,478	645	22	120,600
1080	*Delamination/Spall/ Patched Area*	*LF*		*1,340*	*110*		*1,450*
1090	*Exposed Rebar*	*LF*		*25*	*63*		*88*
1100	*Exposed Prestressing*	*LF*		*8*	*375*	*22*	*405*
1110	*Cracking (PSC)*	*LF*		*3,104*	*4*		*3,108*
1120	*Efflorescence/Rust Staining*	*LF*		*1*	*93*		*94*
811	Beam/Girder End	EA	1,729	1,401	86	0	3,216
1080	*Delamination/Spall/ Patched Area*	*EA*		*26*	*19*		*45*
1090	*Exposed Rebar*	*EA*		*13*	*30*		*43*
1110	*Cracking (PSC)*	*EA*		*1,361*	*3*		*1,364*
1120	*Efflorescence/Rust Staining*	*EA*		*1*	*34*		*35*
BEARINGS							
310	Elastomeric Bearing	EA	2,922	38	256	0	3,216
1000	*Corrosion*	*EA*		*18*			*18*
2230	*Bulging, Splitting, or Tearing*	*EA*		*20*	*256*		*276*
SUBSTRUCTURE							
215	Reinforced Concrete Abutment	EA	29	3	5	0	37
1080	*Delamination/Spall/ Patched Area*	*LF*		*2*			*2*
1090	*Exposed Rebar*	*LF*			*4*		*4*
1120	*Efflorescence/Rust Staining*	*LF*			1		*1*
1130	*Cracking (RC and Other)*	*LF*		*1*			*1*

BNB (1004) 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	10	380	260	164	814
1080	*Delamination/Spall/ Patched Area*	*EA*		*17*	*14*		*31*
1090	*Exposed Rebar*	*EA*		*1*	*20*		*21*
1110	*Cracking (PSC)*	*EA*		*144*	*15*		*159*
1120	*Efflorescence/Rust Staining*	*EA*		*62*	*30*		*92*
1190	*Abrasion/Wear (PSC/RC)*	*EA*		*38*			*38*
6000	*Scour**	*EA*		*118*	*181*	*164*	*463*
234	Reinforced Concrete Pier Cap	LF	5,307	1,328	4	0	6,639
1080	*Delamination/Spall/ Patched Area*	*LF*		*27*	*1*		*28*
1090	*Exposed Rebar*	*LF*			*1*		*1*
1120	*Efflorescence/Rust Staining*	*LF*		*2*			*2*
1130	*Cracking (RC and Other)*	*LF*		*1,299*	*2*		*1,301*
JOINTS							
304	Open Expansion Joint*	LF	7,166	0	0	0	7,166
845	Joint Effectiveness*	EA	209	0	0	0	209
WEARING SURFACES, PROTECTIVE COATINGS, AND CONCRETE REINFORCING STEEL PROTECTIVE SYSTEMS							
510	Wearing Surfaces**	SF	423,152	0	0	0	423,152
520	Concrete Reinforcing Steel Protective System	SF	2,533	745	12	45	3,335
3600	*Effectiveness - Protective System (e.g. cathodic)*	*SF*		*745*	*12*	*45*	*802*

BNB (1004) Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
SLOPE AND CHANNEL ELEMENTS							
853	Protected Slope - Riprap	EA	1	0	0	0	1
6507	*Loss of Riprap*	*EA*	*1*				*1*
854	Channel	EA	0	0	0	1	1
6000	*Scour**	*EA*				*1*	*1*

*The condition state rating of 464 piles (approximately 57%) is governed by Scour, with 164 piles at Condition State 4 in accordance with the guidelines set at the beginning of this section. These guidelines were developed from historical engineering analysis performed for the facility and in accordance with the AASHTO Manual for Bridge Element Inspection, First Edition and the VDOT Supplement to the AASHTO Manual for Bridge Element Inspection (2016). Otherwise, most of the piles would be coded as Condition State 2 (Fair) based on the physical condition of the pile. It is believed that a conservative approach was taken in the historical engineering analysis, and based on the current ratings, the District will undertake an engineering analysis. The District has an on-going monitoring program that includes an annual hydrographic survey of the entire facility to monitor changes in the bay bottom. The District also has an ongoing program for scour remediation that targets locations along the facility in which the bay bottom elevation has dropped below the Allowable Scour Depth (ASD) that has resulted in stabilization of the bay bottom where installed. The District will use the results of the additional engineering analysis to identify where additional scour remediation will have the greatest immediate impact and proceed accordingly.

**Replacement of the asphalt wearing surface and open expansion joint header material is underway as part of the Mill and Repave Trestles, Replace End Dams Project (RMF 2053.2025) that began on September 8, 2020 (immediately following the inspection of this structure). Recording of condition state quantities for these elements will resume on the next inspection (September 2021).

5.4 Trestle BSB Element Level Data

Trestle BSB consists of Spans BSB 1-203. Spans 17 – 56 received a hands-on inspection this year (approximately 20% of the entire trestle). Element level data is presented in this section for all portions of the trestle that have a received hands-on inspection since FY2018.

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	634,810	998	59	0	635,867
1080	*Delamination/Spall/ Patched Area*	*SF*		*44*	*34*		*78*
1090	*Exposed Rebar*	*SF*		*5*	*7*		*12*
1120	*Efflorescence/Rust Staining*	*SF*		*256*	*18*		*274*
1130	*Cracking (RC and Other)*	*SF*		*693*			*693*
RAILINGS							
330	Metal Bridge Railing	LF	31,543	74	8	0	31,625
1080	*Delamination/Spall/ Patched Area*	*LF*		*8*	*5*		*13*
1090	*Exposed Rebar*	*LF*			*3*		*3*
1130	*Cracking (RC and Other)*	*LF*		*60*			*60*
7000	*Damage*	*LF*		*6*			*6*
SUPERSTRUCTURE							
109	Prestressed Concrete Open Girder/Beam	LF	96,445	422	89	0	96,956
1080	*Delamination/Spall/ Patched Area*	*LF*		*208*	*23*		*231*
1090	*Exposed Rebar*	*LF*		*80*	*65*		*145*
1100	*Exposed Prestressing*	*LF*		*27*			*27*
1110	*Cracking (PSC)*	*LF*		*103*	*1*		*104*
1120	*Efflorescence/Rust Staining*	*LF*		*4*			*4*

BSB (1012) 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	1,660	236	62	0	1,958
1080	*Delamination/Spall/ Patched Area*	*EA*		*144*	*17*		*161*
1090	*Exposed Rebar*	*EA*		*37*	*38*		*75*
1100	*Exposed Prestressing*	*EA*		*1*	*6*		*7*
1110	*Cracking (PSC)*	*EA*		*53*	*1*		*54*
1120	*Efflorescence/Rust Staining*	*EA*		*1*			*1*
BEARINGS							
310	Elastomeric Bearing	EA	1,957	0	1	0	1,958
2230	*Bulging, Splitting, or Tearing*	*EA*			*1*		*1*
SUBSTRUCTURE							
226	Prestressed Concrete Pile	EA	184	287	24	0	495
1080	*Delamination/Spall/ Patched Area*	*EA*		*3*			*3*
1090	*Exposed Rebar*	*EA*		*9*	*6*		*15*
1110	*Cracking (PSC)*	*EA*		*268*	*6*		*274*
1120	*Efflorescence/Rust Staining*	*EA*		*6*	*12*		*18*
1190	*Abrasion/Wear (PSC/RC)*	*EA*		*1*			*1*
234	Reinforced Concrete Pier Cap	LF	5,876	492	7	0	6,375
1080	*Delamination/Spall/ Patched Area*	*LF*		*13*	*1*		*14*
1090	*Exposed Rebar*	*LF*			*6*		*6*
1120	*Efflorescence/Rust Staining*	*LF*		*2*			*2*
1130	*Cracking (RC and Other)*	*LF*		*477*			*477*
JOINTS							
304	Open Expansion Joint	LF	2,157	3	0	0	2,160
2360	*Adjacent Deck or Header*	*LF*		*3*			*3*
845	Joint Effectiveness	EA	54	0	0	0	54

BSB (1012) 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	562,510	7,531	1,030	0	571,071
3220	*Crack (Wearing Surface)*	*SF*			*686*		*686*
3230	*Effectiveness (Wearing Surface)*	*SF*		*7,531*	*344*		*7,875*
SLOPE AND CHANNEL ELEMENTS							
854	Channel	EA	0	1	0	0	1
6000	*Scour*	*EA*		*1*			*1*

5.5 Trestle CNB Element Level Data

Trestle CNB consists of Spans CNB 1-322. Spans 264-322 received a hands-on inspection this year (approximately 20% of the entire trestle). Element level data is presented in this section for all portions of the trestle that have a received hands-on inspection since FY2018. An underwater inspection was performed on the entire trestle in this year, and element level data has been provided for all piles that were inspected along 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	626,873	3,179	498	0	630,550
1080	*Delamination/Spall/ Patched Area*	*SF*		*7*	*71*		*78*
1090	*Exposed Rebar*	*SF*		*1*	*3*		*4*
1120	*Efflorescence/Rust Staining*	*SF*		*394*	*400*		*794*
1130	*Cracking (RC and Other)*	*SF*		*2,777*	*24*		*2,801*
RAILINGS							
330	Metal Bridge Railing	LF	36,291	503	32	0	36,826
1020	*Connection*	*LF*		*19*			*19*
1080	*Delamination/Spall/ Patched Area*	*LF*		*29*	*14*		*43*
1090	*Exposed Rebar*	*LF*		*5*	*9*		*14*
1130	*Cracking (RC and Other)*	*LF*		*415*			*415*
7000	*Damage*	*LF*		*35*	*9*		*44*
SUPERSTRUCTURE							
109	Prestressed Concrete Open Girder/Beam	LF	141,616	6,272	906	0	148,794
1080	*Delamination/Spall/ Patched Area*	*LF*		*4,226*	*553*		*4,779*
1090	*Exposed Rebar*	*LF*		*21*	*88*		*109*
1100	*Exposed Prestressing*	*LF*		*17*	*154*		*171*
1110	*Cracking (PSC)*	*LF*		*1,981*	*11*		*1,992*
1120	*Efflorescence/Rust Staining*	*LF*		*27*	*100*		*127*

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	2,673	1,052	243	0	3,968
1080	*Delamination/Spall/ Patched Area*	*EA*		*80*	*134*		*214*
1090	*Exposed Rebar*	*EA*		*7*	*46*		*53*
1100	*Exposed Prestressing*	*EA*		*2*	*3*		*5*
1110	*Cracking (PSC)*	*EA*		*950*	*4*		*954*
1120	*Efflorescence/Rust Staining*	*EA*		*13*	*56*		*69*
BEARINGS							
310	Elastomeric Bearing	EA	3,449	32	487	0	3,968
1000	*Corrosion*	*EA*		*16*			*16*
2220	*Alignment*	*EA*		*5*			*5*
2230	*Bulging, Splitting, or Tearing*	*EA*		*11*	*487*		*498*
311	Movable Bearing	EA	0	*8*	0	0	8
1000	*Corrosion*	*EA*		*8*			*8*
SUBSTRUCTURE							
226	Prestressed Concrete Pile	EA	3	692	234	55	984
1080	*Delamination/Spall/ Patched Area*	*EA*		*36*	*71*		*107*
1090	*Exposed Rebar*	*EA*		*9*	*12*		*21*
1100	*Exposed Prestressing*	*EA*			*3*		*3*
1110	*Cracking (PSC)*	*EA*		*207*	*12*		*219*
1120	*Efflorescence/Rust Staining*	*EA*		*94*	*98*		*192*
1190	*Abrasion/Wear (PSC/RC)*	*EA*		*78*			*78*
6000	*Scour*	*EA*		*268*	*38*	*55*	*361*

CNB (1009) 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	6,054	2,323	22	0	8,399
1080	*Delamination/Spall/ Patched Area*	*LF*		*1*	*14*		*15*
1120	*Efflorescence/Rust Staining*	*LF*		*4*	*3*		*7*
1130	*Cracking (RC and Other)*	*LF*		*2,318*	*5*		*2,323*
JOINTS							
304	Open Expansion Joint*	LF	8,936	0	0	0	8,936
845	Joint Effectiveness*	EA	258	0	0	0	258
WEARING SURFACES, PROTECTIVE COATINGS, AND CONCRETE REINFORCING STEEL PROTECTIVE SYSTEMS							
510	Wearing Surfaces*	SF	520,552	10	3	0	520,565
3230	*Effectiveness (Wearing Surface)*	*SF*		*10*	*3*		*13*
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*

*Replacement of Asphalt Wearing Surface and Open Expansion Joint Header Material was completed in Spring 2020. Open Expansion Joint Steel Angle Headers were repaired or replaced as required as part of this effort.

5.6 Trestle CSB Element Level Data

Trestle CSB consists of Spans CSB 1-246. Spans 1-52 received a hands-on inspection this year (approximately 21% of the entire facility). Element level data is presented in this section for all portions of the trestle that have received hands-on inspection since FY2018. An underwater inspection was performed on the entire trestle in FY2018, and element level data has been provided for all piles that were inspected along 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							
12	Reinforced Concrete Deck	SF	41,123	435	0	0	41,558
1120	*Efflorescence/Rust Staining*	*SF*		*435*			*435*
16	Reinforced Concrete Top Flange	SF	715,431	251	18	0	715,700
1080	*Delamination/Spall/ Patched Area*	*SF*		*23*	*12*		*35*
1090	*Exposed Rebar*	*SF*		*3*			*3*
1120	*Efflorescence/Rust Staining*	*SF*		*6*	*6*		*12*
1130	*Cracking (RC and Other)*	*SF*		*219*			*219*
RAILINGS							
330	Metal Bridge Railing	LF	37,484	179	50	0	37,713
1020	*Connection*	*LF*		*62*	*1*		*63*
1080	*Delamination/Spall/ Patched Area*	*LF*		*31*	*19*		*50*
1090	*Exposed Rebar*	*LF*		*1*	*30*		*31*
1130	*Cracking (RC and Other)*	*LF*		*79*			*79*
7000	*Damage*	*LF*		*6*			*6*
SUPERSTRUCTURE							
107	Steel Open Girder/Beam	LF	493	419	0	0	912
1000	*Corrosion*	*LF*		*419*			*419*

CSB (1014) 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	113,648	784	176	0	114,608
1080	*Delamination/Spall/ Patched Area*	*LF*		*375*	*69*		*444*
1090	*Exposed Rebar*	*LF*		*115*	*91*		*206*
1100	*Exposed Prestressing*	*LF*		*44*	*2*		*46*
1110	*Cracking (PSC)*	*LF*		*153*			*153*
1120	*Efflorescence/Rust Staining*	*LF*		*97*	*13*		*110*
811	Beam/Girder End	EA	1,901	337	62	0	2,300
1000	*Corrosion*	*LF*		*16*			*16*
1080	*Delamination/Spall/ Patched Area*	*EA*		*252*	*20*		*272*
1090	*Exposed Rebar*	*EA*		*55*	*41*		*96*
1100	*Exposed Prestressing*	*EA*		*9*	*1*		*10*
1110	*Cracking (PSC)*	*EA*		*21*			*21*
1120	*Efflorescence/Rust Staining*	*EA*		*3*	*7*		*10*
BEARINGS							
310	Elastomeric Bearing	EA	2,285	14	1	0	2,300
1000	*Corrosion*	*EA*		*14*			*14*
2230	*Bulging, Splitting, or Tearing*	*EA*			*1*		*1*
SUBSTRUCTURE							
215	Reinforced Concrete Abutment	LF	40	0	0	0	40

CSB (1014) 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	311	319	78	44	752
1080	*Delamination/Spall/ Patched Area*	*EA*		*39*	*17*		*56*
1090	*Exposed Rebar*	*EA*			*2*		*2*
1110	*Cracking (PSC)*	*EA*		*179*			*179*
1120	*Efflorescence/Rust Staining*	*EA*		*4*	*12*		*16*
1190	*Abrasion/Wear (PSC/RC)*	*EA*		*26*			*26*
6000	*Scour*	*EA*		*71*	*47*	*44*	*162*
234	Reinforced Concrete Pier Cap	LF	6,831	679	7	0	7,517
1080	*Delamination/Spall/ Patched Area*	*LF*		*12*	*4*		*16*
1090	*Exposed Rebar*	*LF*			*1*		*1*
1120	*Efflorescence/Rust Staining*	*LF*		*20*	*2*		*22*
1130	*Cracking (RC and Other)*	*LF*		*647*			*647*
824	Reinforced Concrete Wingwall	EA	2	0	0	0	2
JOINTS							
304	Open Expansion Joint*	LF	2,680	*	*	*	2,680
845	Joint Effectiveness*	EA	67	*	*	*	67
APPROACH SLABS							
321	Reinforced Concrete Approach Slab	SF	771	0	0	0	771
WEARING SURFACES, PROTECTIVE COATINGS, AND CONCRETE REINFORCING STEEL PROTECTIVE SYSTEMS							
510	Wearing Surfaces*	SF	643,528	0	0	0	643,528
515	Steel Protective Coating	SF	8,994	419	0	10	9,413
3420	*Peeling/Bubbling/ Cracking (Steel Protective Coatings)*	*SF*		*419*			*419*

CSB (1014) Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
SLOPE AND CHANNEL ELEMENTS							
853	Protected Slope - Riprap	EA	1	0	0	0	1
6507	*Loss of Riprap*	*EA*	*1*				*1*
854	Channel	EA	0	1	0	0	1
6000	*Scour*	*EA*		*1*			*1*

*Replacement of the asphalt wearing surface and open expansion joint header material was completed in Fall 2019.

5.7 NCB-NB Element Level Data

A fracture critical inspection and routine inspection was performed in FY2020, 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	7,582	1	4	0	7,586
1080	*Delamination/Spall/ Patched Area*	*LF*			*1*		*1*
7000	*Damage*	*LF*			*3*		*3*
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
811	Beam/Girder End	EA	7	48	11	0	66

NCB-NB (1006) Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
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	*Efflorescence/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	369,252	269	0	27,813	397,335
3420	*Peeling/Bubbling/ Cracking (Steel Protective Coatings)*	*SF*		*269*			*269*
3440	*Effectiveness (Steel Protective Coatings)*	*SF*				*27,813*	*27,813*
886	Beam/Girder End Protective Coating - Steel	EA	7	48	11	0	66

NCB-NB (1006) Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
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 NCB-SB Element Level Data

A hands-on inspection was performed this year, and element level data is presented in this section. An underwater inspection was performed on the entire trestle in FY2020, and element level data has been provided for all piles that were inspected along the trestle.

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	90,867	33,133	0	0	124,000
1080	*Delamination/Spall/ Patched Area*	*SF*		*17*			*17*
1130	*Cracking (RC and Other)*	*SF*		*33,116*			*33,116*
RAILINGS							
330	Metal Bridge Railing	LF	6,176	7	17	0	6,200
1080	*Delamination/Spall/ Patched Area*	*LF*		*2*			*2*
1130	*Cracking (RC and Other)*	*LF*		*5*			*5*
7000	*Damage*	*LF*			*17*		*17*
SUPERSTRUCTURE							
107	Steel Open Girder/Beam	LF	11,204	1,194	2	0	12,400
1000	*Corrosion*	*EA*		*1,194*	*2*		*1,196*
811	Steel Open Beam/Girder End	EA	0	32	0	0	32
1000	*Corrosion*	*EA*		*32*			*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*

NCB-SB (1015) Element Level Data							
Element Number	Element Name	Unit	Condition State 1	Condition State 2	Condition State 3	Condition State 4	Total
SUBSTRUCTURE							
205	Reinforced Concrete Column	EA	8	20	2	0	30
1080	*Delamination/Spall/ Patched Area*	*EA*		*2*	*1*		*3*
1120	*Efflorescence/Rust Staining*	*EA*			*1*		*1*
1130	*Cracking (RC and Other)*	*EA*		*18*			*18*
220	Reinforced Concrete Pile Cap/Footing	LF	435	3	446	0	884
1080	*Delamination/Spall/ Patched Area*	*LF*			*430*		*430*
1120	*Efflorescence/Rust Staining*	*LF*			*16*		*16*
1130	*Cracking (RC and Other)*	*LF*		*3*			*3*
226	Prestressed Concrete Pile	EA	133	39	32	15	219
6000	*Scour*	*EA*		39	32	15	86
234	Reinforced Concrete Pier Cap	LF	411	129	0	0	540
1080	*Delamination/Spall/ Patched Area*	*LF*		*2*			*2*
1120	*Efflorescence/Rust Staining*	*LF*		*23*			*23*
1130	*Cracking (RC and Other)*	*LF*		*104*			*104*
JOINTS							
305	Assembly Joint without Seal	LF	200	0	0	0	200
845	Joint Effectiveness	EA	5	0	0	0	5

NCB-SB (1015) 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							
515	Steel Protective Coating	SF	295,198	4,462	0	10	299,670
3420	*Peeling/Bubbling/ Cracking (Steel Protective Coatings)*	*SF*		*4,461*			*4,461*
3440	*Effectiveness (Steel Protective Coatings)*	*SF*		*1*		*10*	*11*
886	Beam/Girder End Protective Coating - Steel	EA	0	32	0	0	32
SLOPE AND CHANNEL ELEMENTS							
854	Channel	EA	0	1	0	0	1
6000	*Scour*	*EA*		*1*			*1*

5.9 Trestle DNB Element Level Data

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	41,551	116	5	0	41,672
1080	*Delamination/Spall/ Patched Area*	*SF*		*3*	*2*		*5*
1090	*Exposed Rebar*	*SF*			*1*		*1*
1120	*Efflorescence/Rust Staining*	*SF*		*107*	*2*		*109*
1130	*Cracking (RC and Other)*	*SF*		*6*			*6*
RAILINGS							
330	Metal Bridge Railing	LF	2,489	62	0	0	2,551
1130	*Cracking (RC and Other)*	*LF*		*37*			*37*
7000	*Damage*	*LF*		*25*			*25*
SUPERSTRUCTURE							
109	Prestressed Concrete Open Girder/Beam	LF	9,916	209	79	0	10,204
1080	*Delamination/Spall/ Patched Area*	*LF*		*25*	*5*		*30*
1090	*Exposed Rebar*	*LF*		*4*	*15*		*19*
1100	*Exposed Prestressing*	*LF*		*4*	*49*		*53*
1110	*Cracking (PSC)*	*LF*		*173*			*173*
1120	*Efflorescence/Rust Staining*	*LF*		*3*	*10*		*13*
811	Beam/Girder End	EA	195	87	6	0	288
1080	*Delamination/Spall/ Patched Area*	*EA*		*2*			*2*
1090	*Exposed Rebar*	*EA*		*2*	*1*		*3*
1110	*Cracking (PSC)*	*EA*		*81*			*81*
1120	*Efflorescence/Rust Staining*	*EA*		*2*	*5*		*7*

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	272	3	5		280
2230	*Bulging, Splitting, or Tearing*	*EA*		*3*	*5*		*8*
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	0	38	13	0	51
1080	*Delamination/Spall/ Patched Area*	*EA*		*1*	*3*		*4*
1090	*Exposed Rebar*	*EA*			*7*		*7*
1110	*Cracking (PSC)*	*EA*		*34*	*1*		*35*
1120	*Efflorescence/Rust Staining*	*EA*		*2*	*2*		*4*
1190	*Abrasion/Wear (PSC/RC)*	*EA*		*1*			*1*
234	Reinforced Concrete Pier Cap	LF	560	37	0	0	597
1130	*Cracking (RC and Other)*	*LF*		*37*			*37*
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	35,715	0	0	0	35,715
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*

*Replacement of Asphalt Wearing Surface and Open Expansion Joint Header Material was completed in Spring 2020. Open Expansion Joint Steel Angle Headers were repaired or replaced as required as part of this effort.

5.10 Trestle DSB Element Level Data

A hands-on inspection was performed this year, and element level data is presented in this section. An underwater inspection was performed on the entire trestle in FY2020, and element level data has been provided for all piles that were inspected along the trestle.

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
1120	*Efflorescence/Rust Staining*	*SF*		*6*			*6*
1130	*Cracking (RC and Other)*	*SF*		*7,250*			*7,250*
RAILINGS							
330	Metal Bridge Railing	LF	4,166	6	5	0	4,177
1080	*Delamination/Spall/ Patched Area*	*LF*		*2*	*5*		*7*
1130	*Cracking (RC and Other)*	*LF*		*4*			*4*
SUPERSTRUCTURE							
109	Prestressed Concrete Open Girder/Beam	LF	10,345	70	26	0	10,441
1080	*Delamination/Spall/ Patched Area*	*LF*		*33*	*26*		*59*
1090	*Exposed Rebar*	*LF*		*19*			*19*
1110	*Cracking (PSC)*	*LF*		*18*			*18*
811	Beam/Girder End	EA	119	65	26	0	210
1080	*Delamination/Spall/ Patched Area*	*EA*		*29*	*26*		*55*
1090	*Exposed Rebar*	*EA*		*18*			*18*
1110	*Cracking (PSC)*	*EA*		*18*			*18*
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	5	36	15	4	60
1080	*Delamination/Spall/ Patched Area*	*EA*		*4*	*3*		*7*
1090	*Exposed Rebar*	*EA*		*7*	*1*		*8*
1110	*Cracking (PSC)*	*EA*		*23*			*23*
1120	*Efflorescence/Rust Staining*	*EA*			*1*		*1*
6000	*Scour*	*EA*		*2*	*10*	*4*	*16*
234	Reinforced Concrete Pier Cap	LF	640	135	0	0	775
1080	*Delamination/Spall/ Patched Area*	*LF*		*1*			*1*
1120	*Efflorescence/Rust Staining*	*LF*		*1*			*1*
1130	*Cracking (RC and Other)*	*LF*		*133*			*133*
824	Reinforced Concrete Wingwall	EA	2	0	0	0	2
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 ENB, FIB-NB, & FNB Element Level Data

A hands-on inspection was performed this year, and element level data is presented in this section. An underwater inspection was performed on the entire trestle in FY2020, and element level data has been provided for all piles that were inspected along the trestle.

Table 61: ENB, FIB-NB, & 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	65,644	45	4	0	65,693
1080	*Delamination/Spall/ Patched Area*	*SF*		*12*	*4*		*16*
1090	*Exposed Rebar*	*LF*		*2*			*2*
1130	*Cracking (RC and Other)*	*SF*		*31*			*31*
RAILINGS							
330	Metal Bridge Railing	LF	4,185	15	5	0	4,205
1080	*Delamination/Spall/ Patched Area*	*LF*		*2*	*1*		*3*
1090	*Exposed Rebar*	*LF*			*4*		*4*
1130	*Cracking (RC and Other)*	*LF*		*7*			*7*
7000	*Damage*	*LF*		*6*			*6*
SUPERSTRUCTURE							
107	Steel Open Girder/Beam	LF	1,656	180	0	0	1,836
1000	*Corrosion*	*LF*		*180*			*180*
811	Steel Open Beam/Girder End	EA	0	8	0	0	8
1000	*Corrosion*	*EA*		*8*			8

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
109	Prestressed Concrete Open Girder/Beam	LF	9,787	64	3	0	9,854
1080	*Delamination/Spall/ Patched Area*	*LF*		*50*	*2*		*52*
1090	*Exposed Rebar*	*LF*		*12*	*1*		*13*
1100	*Exposed Prestressing*	*LF*		*1*			*1*
1110	*Cracking (PSC)*	*LF*		*1*			*1*
811	Beam/Girder End	EA	25	45	2	0	72
1080	*Delamination/Spall/ Patched Area*	*EA*		*39*	*2*		*41*
1090	*Exposed Rebar*	*EA*		*5*			*5*
1110	*Cracking (PSC)*	*EA*		*1*			*1*
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	2	58	5	0	65
1080	*Delamination/Spall/ Patched Area*	*EA*		*1*	*2*		*3*
1090	*Exposed Rebar*	*EA*		*2*			*2*
1110	*Cracking (PSC)*	*EA*		*52*			*52*
1120	*Efflorescence*	*EA*		*2*	*3*		*5*
1190	*Abrasion/Wear*	*EA*		*1*			*1*
234	Reinforced Concrete Pier Cap	LF	686	45	1	0	732
1080	*Delamination/Spall/ Patched Area*	*LF*			*1*		*1*
1130	*Cracking (RC and Other)*	*LF*		*45*			*45*

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
824	Reinforced Concrete Wingwall	EA	4	0	0	0	4
JOINTS							
304	Open Expansion Joint	LF	320	0	0	0	320
305	Assembly Joint without Seal	LF	80	0	0	0	80
845	Joint Effectiveness	EA	10	0	0	0	10
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	59,124	0	0	0	59,124
515	Steel Protective Coating	SF	30,699	101	0	0	30,800
3440	*Effectiveness (Steel Protective Coatings)*	*SF*		*101*			*101*
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	0	1	0	0	1

*Replacement of Asphalt Wearing Surface and Open Expansion Joint Header Material was completed in Spring 2020. Open Expansion Joint Steel Angle Headers were repaired or replaced as required as part of this effort.

5.12 Trestle ESB, FIB-SB, & FNB Element Level Data

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

Table 62: ESB, FIB-SB, & 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	53,830	101	17	0	53,948
1080	*Delamination/Spall/ Patched Area*	*SF*		*5*			*5*
1090	*Exposed Rebar*	*SF*			*2*		*2*
1120	*Efflorescence/Rust Staining*	*SF*		*82*	*15*		*97*
1130	*Cracking (RC and Other)*	*SF*		*14*			*14*
RAILINGS							
330	Metal Bridge Railing	LF	4,139	73	1	0	4,213
1080	*Delamination/Spall/ Patched Area*	*LF*		*8*	*1*		*9*
1130	*Cracking (RC and Other)*	*LF*		*62*			*62*
7000	*Damage*	*LF*		*3*			*3*
SUPERSTRUCTURE							
107	Steel Open Girder/Beam	LF	0	1,817	3	0	1,820
1000	*Corrosion*	*LF*		*1,813*	*3*		*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	12,717	351	144	0	13,212
1080	*Delamination/Spall/ Patched Area*	*LF*		*64*	*37*		*101*
1090	*Exposed Rebar*	*LF*		*5*	*12*		*17*
1100	*Exposed Prestressing*	*LF*		*9*	*90*		*99*
1110	*Cracking (PSC)*	*LF*		*271*	*4*		*275*
1120	*Efflorescence/Rust Staining*	*LF*		*2*	*1*		*3*
811	Prestressed Concrete Beam/Girder End	EA	203	145	4	0	352
1080	*Delamination/Spall/ Patched Area*	*EA*		2			2
1090	*Exposed Rebar*	*EA*		*1*	*1*		*2*
1100	*Exposed Prestressing*	*EA*			*1*		*1*
1110	*Cracking (PSC)*	*EA*		*140*	*2*		*142*
1120	*Efflorescence/Rust Staining*	*EA*		*2*			*2*
BEARINGS							
310	Elastomeric Bearing	EA	332	20	0	0	352
2230	*Bulging, Splitting, or Tearing*	*EA*		*20*			*20*
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	62	3	0	0	65
1130	*Cracking (RC and Other)*	*LF*		*3*			*3*

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	4	69	13	0	86
1080	*Delamination/Spall/ Patched Area*	*EA*		*1*	*1*		*2*
1090	*Exposed Rebar*	*EA*		*8*	*4*		*12*
1110	*Cracking (PSC)*	*EA*		*59*	*2*		*61*
1120	*Efflorescence/Rust Staining*	*EA*		*1*	*6*		*7*
234	Reinforced Concrete Pier Cap	LF	556	239	1	0	796
1080	*Delamination/Spall/ Patched Area*	*LF*		*1*			*1*
1120	*Efflorescence/Rust Staining*	*LF*		*7*	*1*		*8*
1130	*Cracking (RC and Other)*	*LF*		*231*			*231*
824	Reinforced Concrete Wingwall	EA	4	0	0	0	4
JOINTS							
304	Open Expansion Joint	LF	689	10	20	0	719
2360	*Adjacent Deck or Header*	*LF*		*10*	*20*		*30*
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	45,691	550	0	0	46,241
3220	*Crack (Wearing Surface)*	*SF*		*259*			*259*
3230	*Effectiveness (Wearing Surface)*	*SF*		*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	26,344	6,193	0	0	32,540
3440	*Effectiveness (Steel Protective Coatings)*	*SF*		*6,193*			*6,193*
520	Concrete Reinforcing Steel Protective System	SF	5,524	0	0	63	5,587
3540	*Effectiveness (Concrete Protective Coatings)*	*SF*				*63*	*63*
521	Concrete Protective Coating	SF	112	0	0	63	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 TSCT 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	010956*	N (6,0)
A.5	Annual Average Daily Truck Traffic	000990*	N (6,0)
A.6	Year of Average Daily Traffic	2019*	N (4,0)
A.7	Detour Length	425	N (3,0)
A.8	Service in Tunnel	1	N (1,0)

*Traffic Counts for 2020 have been greatly reduced due to the COVID-19 Pandemic. The 2019 Traffic Counts have been shown to provide a more realistic metric for what would be considered normal operating conditions.

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	09262019	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	0.63	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 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 CCT 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	2019	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	2019*	N (4,0)
A.7	Detour Length	425	N (3,0)
A.8	Service in Tunnel	1	N (1,0)

*Traffic Counts for 2020 have been greatly reduced due to the COVID-19 Pandemic. The 2019 Traffic Counts have been shown to provide a more realistic metric for what would be considered normal operating conditions.

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	10012016	D
D.2	Actual Routine Inspection Date	09232020	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	610,939	1,043	636	282	612,900
10051	Concrete Portal	SF	3,256	20	10		3,286
10061	Concrete Ceiling Slab	SF	149,007	162	19		149,188
10080	Steel Hangers and Anchorages	EA	469				469
10101	Concrete Invert Slab	SF	118,666	16,210	2,836		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	5,139	571	28		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	12				12
10300	Drainage and Pumping System	EA	3				3
10301	Pumps	EA	13				13
10400	Emergency Generator 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
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	1,452	1			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

* The 2017 Condition State 2 and 3 values are significantly larger compared to this year's values as the 2017 inspection considered tile defects and defects in the built-in sidewalls of the Supply Duct and Exhaust Duct not designed to provide additional structural capacity of the tunnel liner as part of the Tunnel Liner Element. This year's inspection of TSCT does not consider tile or the built-in side walls of the Supply Duct to be part of the liner; resulting in cracking and delamination in these portions of the tunnel to be omitted from element level counts.

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	574,447	2,621	1,545	695	579,307
10051	Concrete Portal	SF	3,266	20			3,286
10061	Concrete Ceiling Slab	SF	140,544	429	38		141,011
10080	Steel Hangers and Anchorages	EA	446				446
10101	Concrete Invert Slab	SF	95,606	33,881	631	46	130,164
10132	Compression Joint Seal	LF	184				184
CIVIL SECTION							
10158	Asphalt Wearing Surface	SF	121,569	8			121,577
10161	Concrete Traffic Barrier	LF	10,821	7	19		10,847
10170	Steel Pedestrian Railing	LF	4,881	543			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	3	9			12
10300	Drainage and Pumping System	EA	3				3
10301	Pumps	EA	13				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	1,382				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	1	1			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

8. Photographs

8.1 Trestle ANB Photographs

Photo 1: ANB23 Metal Bridge Railing – Apparent Impact Damage to Rail, Worst-Case Observed (Looking Northeast)

Photo 2: ANB11 Concrete Bridge Curb, 2nd Span – Isolated Area of Spalling and Exposed Reinforcement with No Apparent Section Loss, Worst-Case Observed (Looking Northeast)

Photo 3: ANB31 Metal Bridge Railing – Typical Good Condition of Rail and Curb Repaired as Required (Looking Northeast)

Photo 4: ANB'1 Metal Bridge Railing – Typical Good Condition of Rail End Treatment and Curb (Looking Southwest)

Photo 5: ANB'4 Asphalt Wearing Surface – Typical Very Good Condition (Looking South)

Photo 6: ANB27 Asphalt Wearing Surface – Typical Very Good Condition with Minor Water Ponding Observed near the Curbs During a Rain Event (Looking North)

Photo 7: ANB25 Asphalt Wearing Surface – Very Good Condition with Isolated Areas of Degradation (Looking Southeast)

Photo 8: ANB'3 over Lake Pleasure House – Typical Good Condition with Isolated Areas of Minor to Moderate Degradation or Repairs (Looking North)

Photo 9: ANB32 Girder and Deck – Typical Good Condition with Isolated Areas of Minor to Moderate Degradation or Repairs (Looking North)

Photo 10: BNB226 Reinforced Concrete Voided Slab (Underside) – Typical Good Condition with Isolated Areas of Minor to Moderate Degradation (Looking Southeast)

Photo 11: ANB4 Bay 4 Zone 3 Reinforced Concrete Top Flange (Underside) – Typical Good Condition with Isolated Spall with Exposed Reinforcing (Looking South)

Photo 12: ANB11 Bay 2 Zone 3 Reinforced Concrete Top Flange (Underside) – Typical Good Condition with Isolated Spall with No Exposed Reinforcing, Likely Occurred During Original Construction (Looking North)

Photo 13: ANB2 Girder 3 Zone 2 – Isolated Exposed Prestressing Strand Exhibiting Moderate Section Loss (Looking Southeast)

Photo 14: ANB26 Girder 7 Zone 2 – Failing and Improperly Performed Repair with Prestressing Strand Exhibiting Noticeable Section Loss (Looking Northwest)

Photo 15: ANB3 Girder 1 Zones 2 & 3 – Failing and Improperly Performed Repair with Prestressing Strand Exhibiting Noticeable Section Loss, Girder Repair in Zone 2 is in Good Condition (Looking Northeast)

Photo 16: ANB12 Bay Zone 3 – Satisfactory Condition with Isolated Spall Exposing Shear Stirrup and Hairline Shear Crack at Girder End, Reported at Approximately 52% of Girder Ends, Typically on Girders 2, 3, 6, & 7 (Looking South)

Photo 17: ANB28 Girder 4 Zone 3 – Exposed Reinforcement with Moderate Section Lose Near Bearing (Looking Southeast)

Photo 18: ANB6 Pile Cap and Piles – Typical Fair to Good Condition with Isolated Areas of Minor to Moderate Degradation, Repairs, and Repairs with Minor to Moderate Degradation (Looking North)

Photo 19: ANB13 Pile Cap – Typical Good Condition with Isolated Area of Minor Spalling/Abrasion and Epoxy Coating Failure (Looking Northeast)

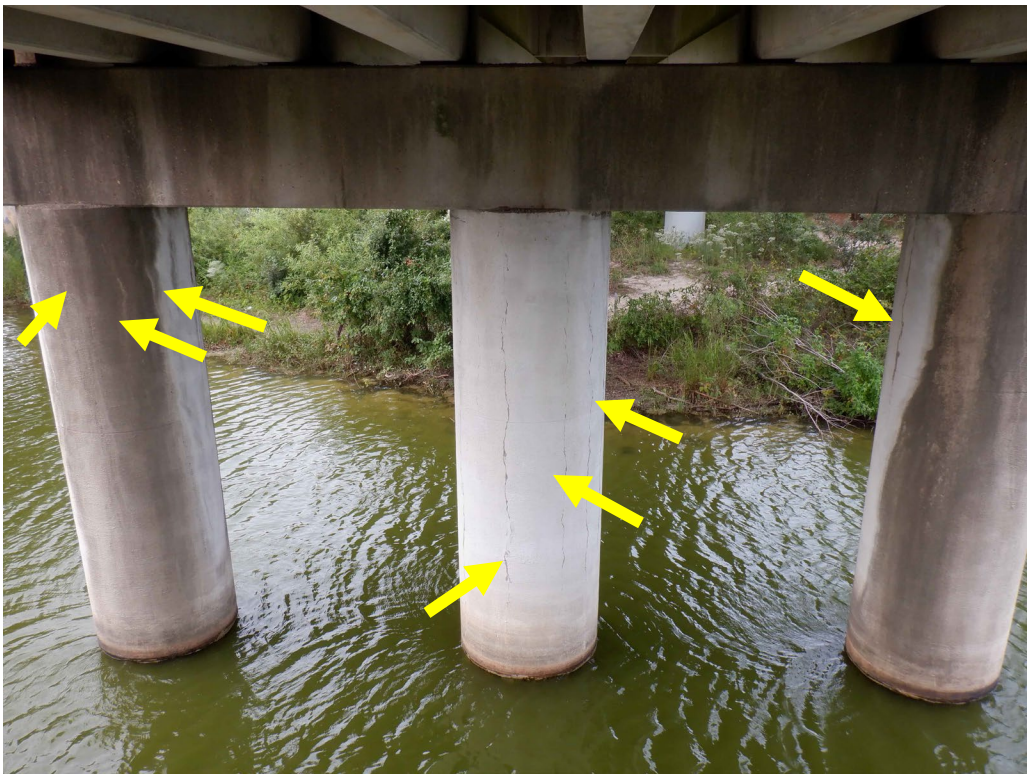


Photo 20: ANB'4 Piles with Epoxy Coating – Typical Fair to Good Condition with Isolated Areas of Minor to Moderate Degradation and Coating Failure at Cracks (Looking North)

Photo 21: ANB7 Pile Cap with Epoxy Coating and Piles – Typical Fair to Good Condition with Isolated Areas of Minor to Moderate Degradation, Repairs, and Repairs with Minor to Moderate Degradation (Looking North)

Photo 22: ANB7 Pile A –Repairs with Minor to Moderate Degradation Exposing Zinc Mesh (Looking North)

Photo 23: ANB31 Pile A – Vertical Crack with Rust Staining (Looking Northwest)

Photo 24: ANB'1 Abutment and Protected Slope Paved – Good Condition (Looking South)

Photo 25: ANB'1 Abutment, Wingwall, and Protected Slope Paved – Good Condition (Looking East)

Photo 26: ANB North Approach Spans to Portal Island #1, Abutment, and Protected Riprap Slope – Good Condition (Looking Northwest)

8.2 Trestle ASB Photographs

Photo 27: ASB36 Metal Bridge Railing – Typical Good Condition of Rail and Curb Repaired and Replaced as Required (Looking East)

Photo 28: ASB2 Metal Bridge Railing – Apparent Impact Damage to Rail and Delamination in Surrounding Concrete, Worst-Case Observed (Looking West)

Photo 29: ASB34 Metal Bridge Railing – Isolated Spall with Exposed Reinforcement in Concrete Curb (Looking Southwest)

Photo 30: ASB34 Asphalt Wearing Surface – Typical Good Condition (Looking North)

Photo 31: ASB1 Concrete Deck – Typical Good Condition (Looking South)

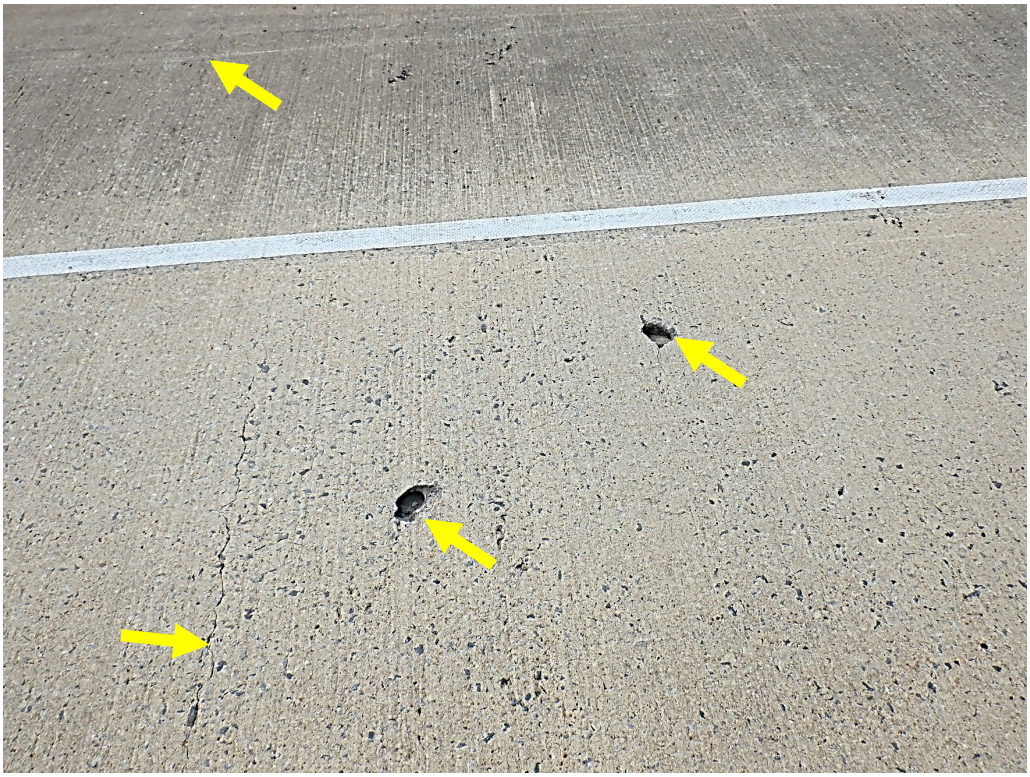


Photo 32: ASB3 Concrete Deck – Typical Good Condition with Isolated Minor Hairline Transverse Cracks and Minor Spalling with No Exposed Reinforcement (Looking West)

Photo 33: ASB25 Open Joint – Typical Good Condition (Looking West)

Photo 34: ASB25 Open Joint – Typical Good Condition (Looking West)

Photo 35: ASB1 Metal Bridge Railing, Concrete Deck, & Steel Superstructure – Good Condition (Looking Northeast)

Photo 36: ASB1 Concrete Deck & Steel Superstructure – Good Condition with Frequent Minor Hairline Transverse Cracking with Efflorescence in the Deck and One Location of Freckled Rust (Looking North)

Photo 37: ASB1 Concrete Deck, Steel Superstructure, Concrete Abutment, and Protected Slope Paved – Good Condition (Looking South)

Photo 38: ASB2 over Lake Pleasure House – Typical Good Condition with Isolated Areas of Minor to Moderate Degradation or Repairs (Looking Northwest)

Photo 39: ASB16 Concrete Superstructure & Substructure – Typical Good Condition with Isolated Areas of Minor to Moderate Degradation or Repairs (Looking South)

Photo 40: ASB38 Concrete Superstructure & Substructure – Typical Good Condition with Isolated Areas of Minor to Moderate Degradation or Repairs (Looking South)

Photo 41: ASB10 Concrete Superstructure & Substructure – Typical Good Condition with Isolated Areas of Minor to Moderate Degradation or Repairs (Looking South)

Photo 42: ASB10 Pile B – Fair Condition with Minor Hairline Cracks with Discoloration at Cracks, not Efflorescence or Rust Staining (Looking South)

Photo 43: ASB20 Pile A – Fair Condition with Isolated Spall with Exposed Reinforcement, Worst-Case Observed (Looking South)

Photo 44: ASB20 Pile A – Fair Condition with Isolated Spall with Exposed Reinforcement, Worst-Case Observed (Looking South)

Photo 45: ASB1 Abutment and Protected Slope Paved – Good Condition (Looking West)

Photo 46: ASB1 Abutment and Protected Slope Paved – Erosion on East Side at Water and Sewer Lines and Under the Slope Protection

8.3 Trestle BNB Photographs

Photo 47: BNB214 Metal Bridge Railing – Typical Good Condition of Rail and Curb Repaired and Replaced as Required (Looking Northeast)

Photo 48: BNB265 Metal Bridge Railing – Typical Good Condition of Rail End Treatment and Curb (Looking Northeast)

Photo 49: BNB264 Bay 4 Girders and Deck – Typical Good Condition with Isolated Areas of Minor to Moderate Degradation or Repairs (Looking North)

Photo 50: BNB265 Reinforced Concrete Voided Slab (Underside) – Typical Good Condition with Isolated Areas of Minor to Moderate Degradation (Looking Southwest)

Photo 51: BNB217 Bay 1 Zone 1 Reinforced Concrete Top Flange (Underside) – Typical Good Condition with Isolated Spall with Exposed Reinforcing (Looking North)

Photo 52: BNB252 Bay 4 Zone 1 Reinforced Concrete Top Flange (Underside) – Typical Good Condition with Isolated Cracking with Efflorescence (Looking North)

Photo 53: BNB219 Girder 3 Zone 2/3 – Isolated Cracking with Rust Staining Extending from Repair (Looking Northeast)

Photo 54: BNB227 Girder 4 Zone 1 – Isolated Exposed Prestressing Strand Exhibiting Moderate Section Loss (Looking Southeast)

Photo 55: BNB250 Girder 2 Zone 3 – Satisfactory Condition with Hairline Shear Crack at Girder End, Reported at Approximately 50% of Girder Ends, Typically on Girders 2, 3, 6, & 7 (Looking Southeast)

Photo 56: BNB226 Girders 2, 3, & 4 Zone 3 – Failed Repairs Near Bearing (Looking Southeast)

Photo 57: BNB215 Girder 1 Elastomeric Bearing – Misaligned by Approximately 0.5in., Observed on 2 Girders (Looking North)

Photo 58: BNB215 Girder 3 Elastomeric Bearing – Isolated Condition of Splitting with Exposed Steel Plates Exhibiting Corrosion and Misaligned by Approximately 0.5in. (Looking North)

Photo 59: BNB214 Pile Cap and Piles – Typical Fair to Good Condition with Isolated Areas of Minor to Moderate Degradation, Repairs, and Repairs with Minor to Moderate Degradation (Looking North)

Photo 60: BNB243 Pile Cap – Typical Good Condition with Isolated Area of Delamination (Looking Northeast)

Photo 61: BNB265 Pile Cap – Fair Condition with Delamination, Worse Case Observed Caused by Frequent Exposure to Sea Spray from Breaking Waves Approaching Portal Island #3 (Looking Southeast)

Photo 62: CNB215 Pile B – Spall in Grout at Pile Joint with Rust Staining (Looking Southeast)

Photo 63: CNB247 Piles B & C – Spall in Pile Build-up Above Prestressed Concrete Pile Top (Looking Northwest)

Photo 64: CNB256 Pile C – Multiple Wide Cracks with Rust Staining (Looking Southeast)

Photo 65: BNB266 Abutment and Protected Riprap Slope – Good Condition (Looking East)

Photo 66: BNB266 Abutment and Protected Riprap Slope – Good Condition (Looking Northwest)

8.4 Trestle BSB Photographs

Photo 67: BSB24 Metal Bridge Railing – Typical Good Condition of Rail and Curb Repaired as Required (Looking Southwest)

Photo 68: BSB21 Metal Bridge Railing – Typical Good Condition with Isolated Areas of Apparent Impact Damage to Rail, Worst-Case Observed in Railing (Looking Southwest)

Photo 69: BSB32 Metal Bridge Railing – Spall with Exposed Reinforcement in Concrete Curb Near Post, No Apparent Damage to Railing or Post, Worst-Case Observed in Curb (Looking Southwest)

Photo 70: BSB45 Asphalt Wearing Surface – Typical Good Condition (Looking South)

Photo 71: BSB40 Asphalt Wearing Surface – Typical Good Condition with Isolated Areas of Minor Cracking (Looking Southwest)

Photo 72: BSB35 Open Joint – Typical Good Condition (Looking West)

Photo 73: BSB20 Open Joint at Asphalt and Concrete Interface – Typical Good Condition (Looking South)

Photo 74: BSB18&19 Concrete Deck – Typical Good Condition with Frequent Minor Hairline Transverse Cracks (Looking West)

Photo 75: BSB29 Concrete Superstructure & Substructure – Typical Good Condition with Isolated Areas of Minor to Moderate Degradation or Repairs (Looking South)

Photo 76: BSB19 Concrete Superstructure and Substructure – Typical Good Condition with Frequent Minor Hairline Transverse Cracking with Efflorescence, Typical for Spans with AASHTO Girders and no Stay-in Place Forms (Looking North)

Photo 77: BSB54 Girder 2 Zone 1 – Isolated Exposed Prestressing Strands and Shear Reinforcement with No Section Loss (Looking Northwest)

Photo 78: BSB34 Girders 2 Zone 1 – Isolated Delamination and Exposed Prestressing Strand and Shear Reinforcement with No Section Loss (Looking North)

Photo 79: BSB17 Pile Cap and Piles – Typical Good Condition with Isolated Areas of Minor Degradation or Repairs (Looking South)

Photo 80: BSB46 Piles A & B – Typical Good Condition with Isolated Locations Exhibiting Minor Degradation (Looking Southwest)

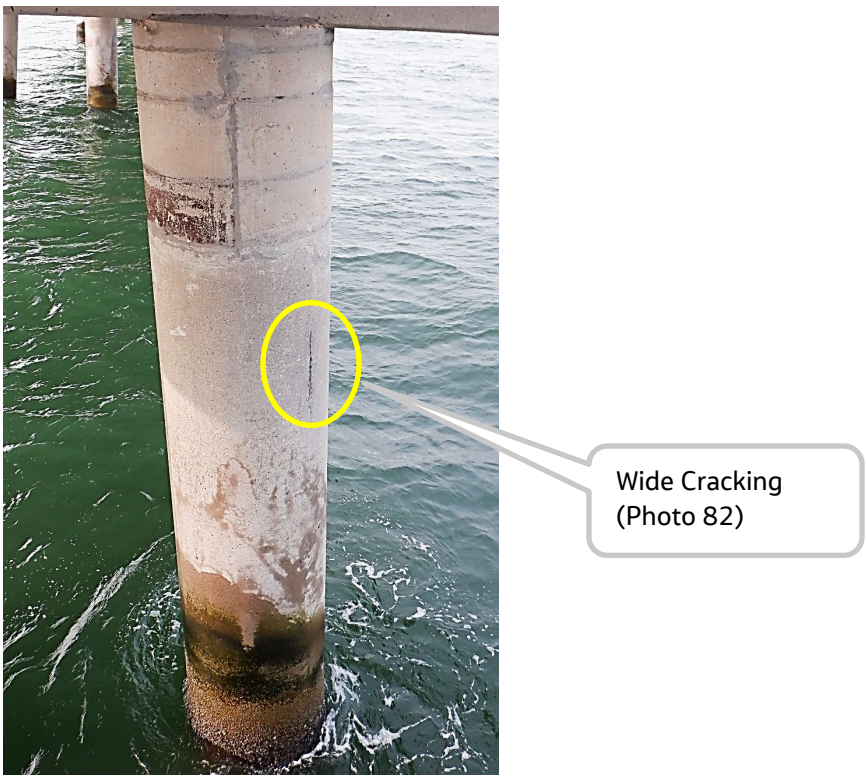


Photo 81: BSB39 Pile A – Fair Condition with Isolated Location Exhibiting Wide Cracking, Worst-Case Observed (Looking South)

Photo 82: BSB39 Pile A – Fair Condition with Isolated Location Exhibiting Wide Cracking, Worst-Case Observed (Looking Southwest)

Photo 83: BSB1 Abutment and Protected Riprap Slope – Good Condition (Looking Southeast)

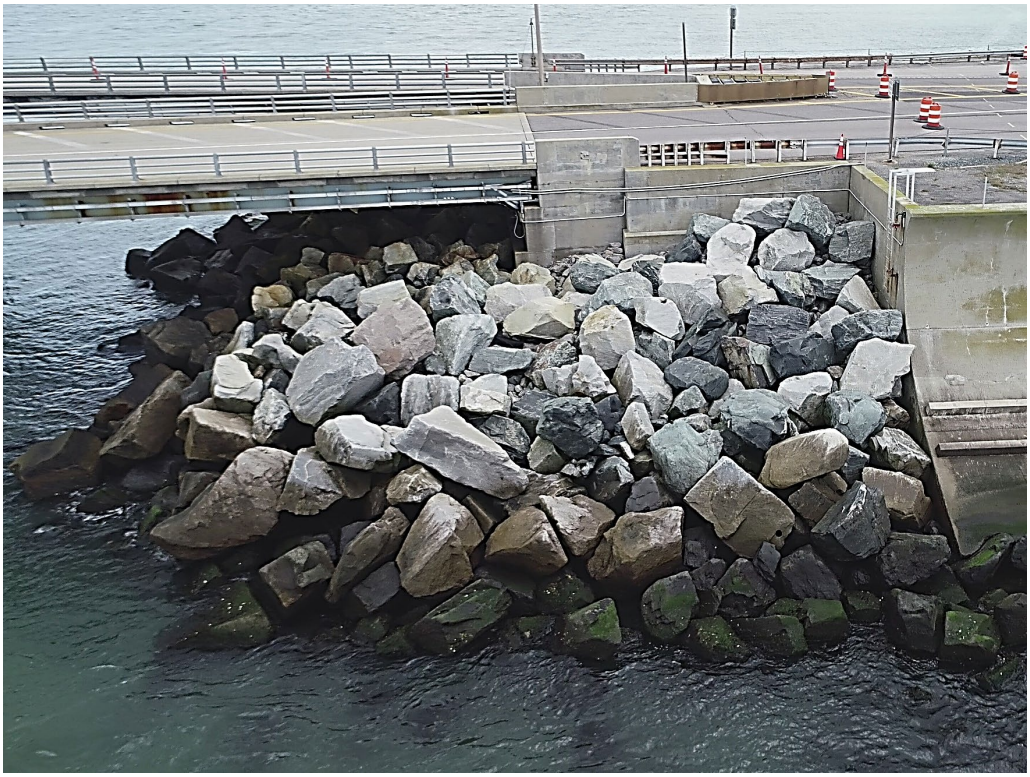


Photo 84: BSB1 Abutment and Protected Riprap Slope – Good Condition (Looking East)

8.5 Trestle CNB Photographs

Photo 85: CNB272 Metal Bridge Railing – Typical Good Condition of Rail and Curb Repaired and Replaced as Required (Looking Southeast)

Photo 86: CNB283 Metal Bridge Railing – Typical Good Condition of Rail and Curb with Isolated Areas of Minor Denting in Railing (Looking Northwest)

Photo 87: CNB265 Asphalt Wearing Surface – Typical Very Good Condition with Isolated Areas of Water Ponding Immediately Following a Rain Event (Looking South)

Photo 88: CNB320 Asphalt Wearing Surface – Typical Very Good Condition (Looking South)

Photo 89: CNB272 Asphalt Wearing Surface – Very Good Condition with Isolated Areas of Abrasion (Looking North)

Photo 90: CNB272 Asphalt Wearing Surface – Very Good Condition with Isolated Areas of Abrasion (Close-up Looking Northeast)

Photo 91: CNB310 Asphalt Wearing Surface and Open Joint with Elastomeric Header along Emergency Pull-off – Typical Very Good Condition (Looking North)

Photo 92: CNB275 Open Joint with Elastomeric Header – Typical Very Good Condition (Looking East)

Photo 93: CNB301 Bay 5 Girders and Deck – Typical Good Condition with Isolated Areas of Minor to Moderate Degradation or Repairs (Looking North)

Photo 94: CNB301 Girder 1 Zone 1 – Typical Good Condition of Girder Repair with Isolated Areas of Exposed Reinforcement with Little to No Measurable Section Loss (Looking Southeast)

Photo 95: CNB302 Girder 4 – Failing and Improperly Performed Repair with Prestressing Strand Exhibiting Noticeable Section Loss, Girder Repairs on Girders 2 & 3 in the Background in Good Condition (Looking Northeast)

Photo 96: CNB306 Girders 1 & 2 – Debonding of Repair Concrete on Girder 2, and Failed Repair with Cracking on Girder 1 (Looking Northeast)

Photo 97: CNB311 Girders 3, 4, 6, 7, 9, & 10 – Failed Repairs with Exposed Prestressing Strands Exhibiting Moderate to Complete Section Loss (Looking Southeast)

Photo 98: CNB301 Girder 2 – Satisfactory Condition with Hairline Shear Crack at Girder End, Reported at Approximately 26% of Girder Ends, Typically on Girders 2, 3, 6, & 7 (Looking Southwest)

Photo 99: CNB280 Bay 3 – Asphalt Debris from Recent Overlay Replacement Project Resting on Pile Cap Covering Elastomeric Bearings and Girder Sides (Looking Southeast), Typical at Majority of Bents

Photo 100: CNB271 Elastomeric Bearings at Girder 8 – Typical Good Condition on North Bearing and Isolated Condition of Splitting with Exposed Steel Plates Exhibiting Corrosion on South Bearing (Looking East)

Photo 101: End of CNB at NCB-NB Pier 1 – Concrete Members in Good Condition and Steel Members in Satisfactory Condition Exhibiting Minor Paint Failure and Freckled Rust (Looking North)

Photo 102: End of CNB at NCB-NB Pier 1 – Steel Rocker Bearings and Steel End Support in Satisfactory Condition Exhibiting Minor Paint Failure Freckled Rust (Looking Northwest)

Photo 103: CNB302 Pile Cap and Piles – Typical Good Condition with Isolated Areas of Minor to Moderate Degradation or Repairs (Looking North)

Photo 104: CNB274 Pile Cap – Satisfactory Condition with Hairline Pattern Cracking, Cracking Reported along Approximately 28% of Pile Cap Element Units Measured in Linear Feet (Looking Southwest)

Photo 105: CNB279 Pile A – LifeJacket System in Good Condition (Looking Northwest)

Photo 106: CNB267 Pile C – Spall in Grout at Pile Joint with Rust Staining and Minor Cracking with Rust Staining (Looking Northwest)

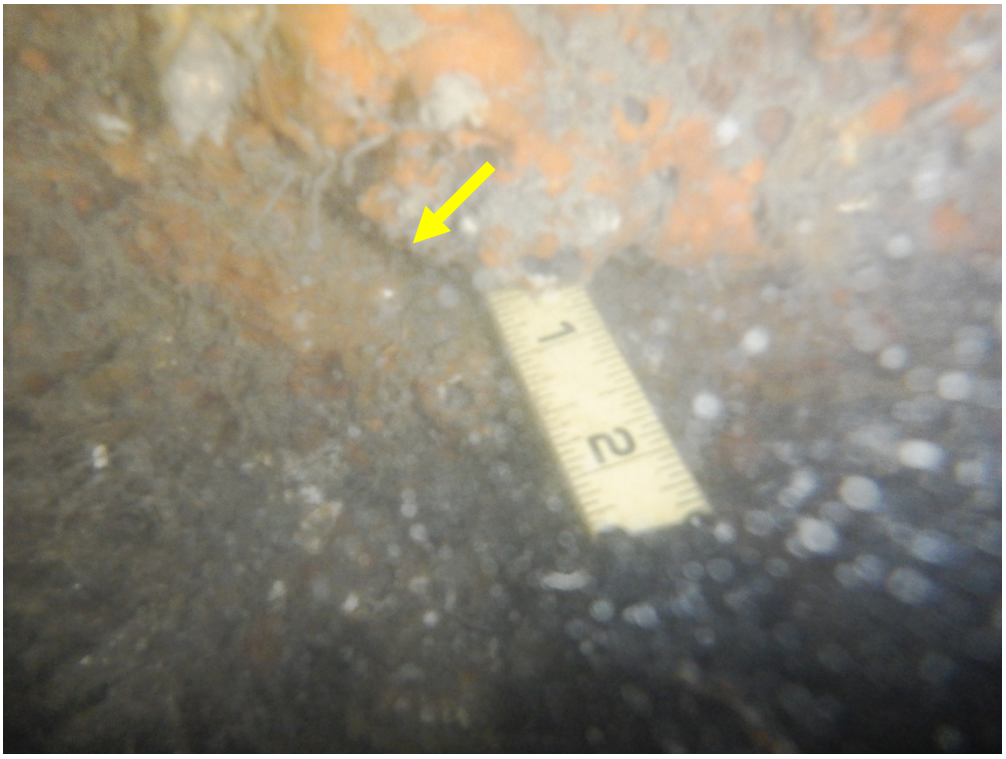


Photo 107: CNB274 Pile B – Spall at Pile Joint 3″ Wide x 9″ Tall x 1″ Deep at Elevation -34′ (Looking Southwest)

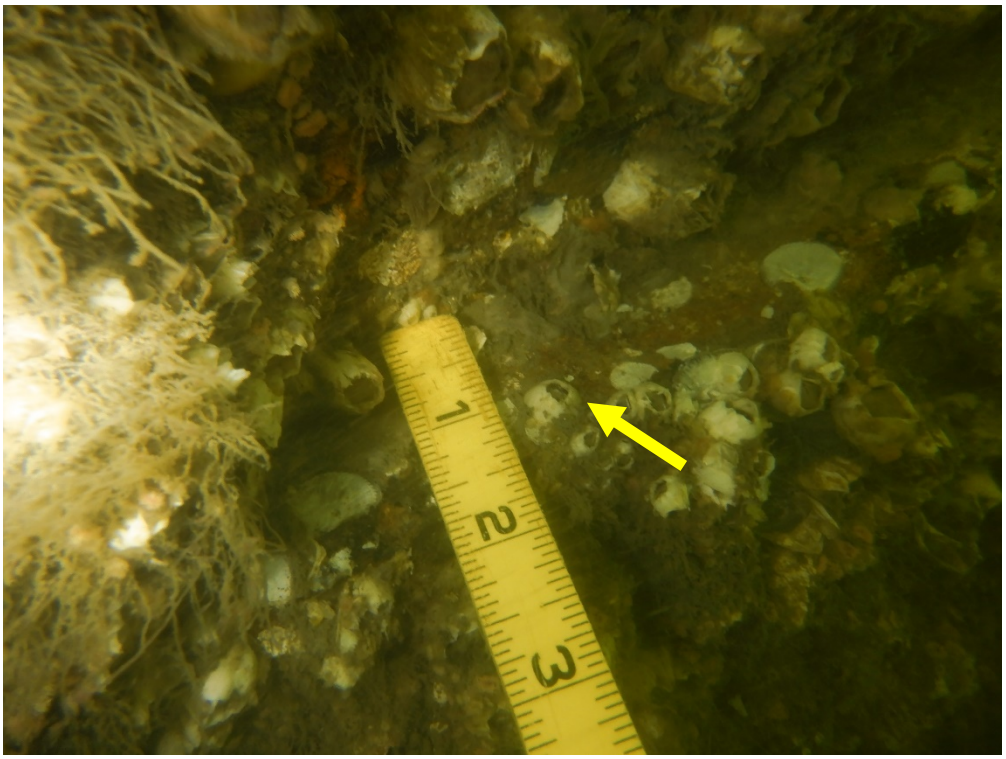


Photo 108: CNB279 Pile C – Failed Repair 1.5′ Wide x 1.5′ Tall x 2.5″ Deep at Elevation -14′ (Looking Southwest)

8.6 Trestle CSB Photographs

Photo 109: CSB26 Metal Bridge Railing – Typical Good Condition with Isolated Areas of Apparent Impact Damage to Rail, (Looking Northwest)

Photo 110: CSB48 Metal Bridge Railing – Delamination of Concrete Curb at Post, No Apparent Damage to Railing or Post, Worst-Case Observed (Looking Southwest)

Photo 111: CSB52 Asphalt Wearing Surface – Typical Very Good Condition (Looking North)

Photo 112: CSB40 Asphalt Wearing Surface – Typical Very Good Condition (Looking South)

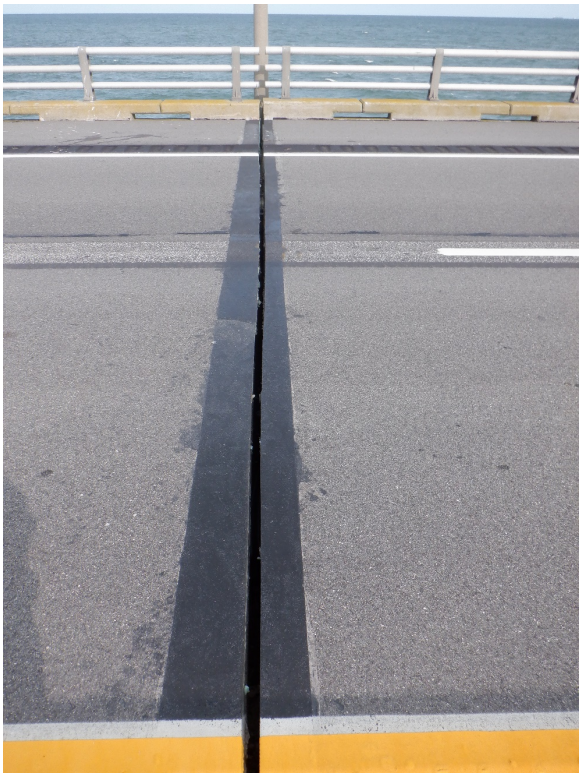


Photo 113: CSB41 Open Joint – Typical Very Good Condition (Looking West)

Photo 114: CSB12 Open Joint at Asphalt and Concrete Interface – Typical Very Good Condition (Looking Southeast)

Photo 115: CSB19 Concrete Deck – Typical Good Condition with Frequent Minor Hairline Transverse Cracks, Full Width Length (Looking South)

Photo 116: CSB14&15 Concrete Deck – Typical Good Condition with Frequent Minor Hairline Transverse Cracks (Looking West)

Photo 117: CSB1 & Portal Island #4 Asphalt and Concrete Wearing Surfaces – Typical Very Good Condition (Looking Southeast)

Photo 118: CSB38 Concrete Superstructure & Substructure – Typical Good Condition with Isolated Areas of Minor to Moderate Degradation or Repairs (Looking South)

Photo 119: CSB3 Bay 2 Concrete Superstructure and Substructure – Typical Good Condition with Isolated Areas of Minor to Moderate Degradation or Repairs, Deck not Visible Due to Stay-in Place Forms (Looking South)

Photo 120: CSB43 Concrete Deck – Typical Good Condition with Isolated Areas of Minor to Moderate Degradation or Repairs (Looking Southwest)

Photo 121: CSB18 Bay 1 Concrete Deck – Good Condition with Frequent Minor Hairline Transverse Cracking with Efflorescence, Typical for Spans with AASHTO Girders and no Stay-in Place Forms (Looking South)

Photo 122: CSB1 Bay 6 Concrete Deck & Steel Superstructure – Good Condition with Frequent Minor Hairline Transverse Cracking with Efflorescence in the Deck and Freckled Rust and Coating Failure Typical at the Flanges from Near Mid-Span to Portal Island #4 Due to Being in the Splash Zone of Breaking Waves (Looking South)

Photo 123: CSB1 Steel Superstructure, Elastomeric Bearings, and Concrete Abutment – Good Condition with Freckled Rust and Coating Failure on Steel Elements (Looking Southeast)

Photo 124: CSB47 Girder 6 Zone 4 – Isolated Exposed Prestressing Strand with No Section Loss (Looking Southeast)

Photo 125: CSB36 Girders 1 & 2 Zone 4 – Isolated Delamination and Exposed Shear Reinforcement with No Section Loss (Looking Southwest)

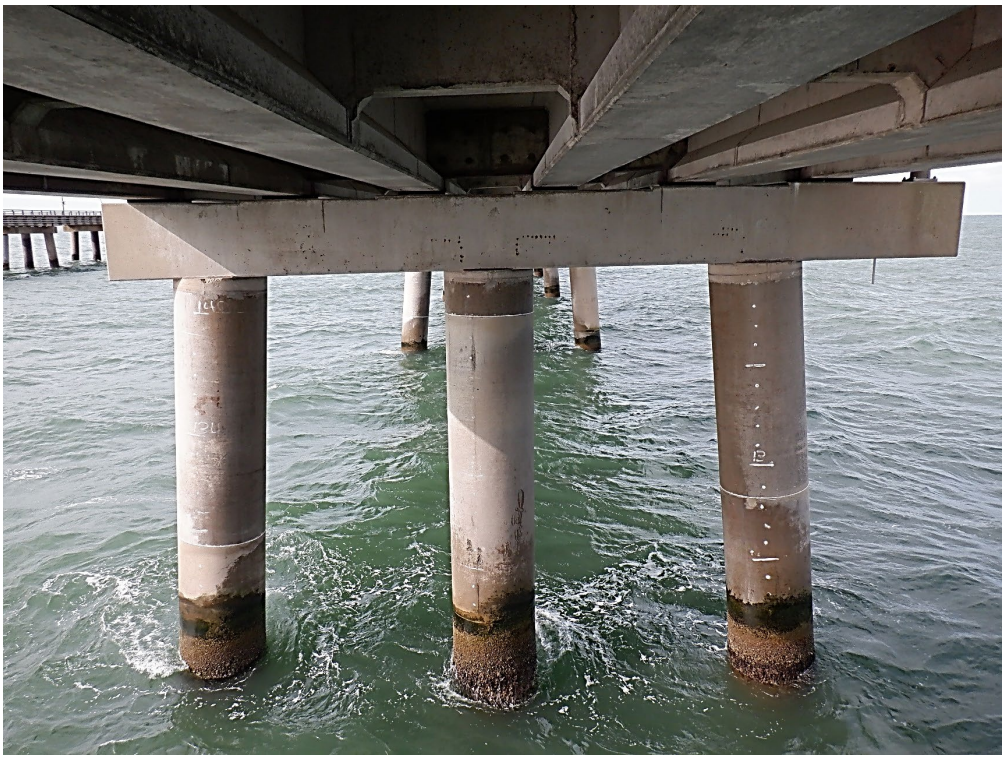


Photo 126: CSB39 Pile Cap and Piles – Typical Good Condition with Isolated Areas of Minor Degradation or Repairs (Looking South)

Photo 127: CSB12 Pile Cap and Piles – Typical Good Condition with Isolated Areas of Minor Degradation or Repairs (Looking North)

Photo 128: CSB52 Pile A – Multiple Hairline Cracks with Efflorescence (Looking South)

Photo 129: CSB1 Steel Superstructure, Abutment and Protected Riprap Slope – Good Condition with Freckled Rust and Coating Failure Typical at the Flanges and Connections from Near Mid-Span to Portal Island #4 Due to Being in the Splash Zone of Breaking Waves (Looking South)

Photo 130: CSB1 Abutment and Protected Riprap Slope – Good Condition (Looking Southeast)

8.7 NCB-NB Photographs

Not inspected this year, will be inspected in FY2022.

8.8 NCB-SB Photographs

Photo 131: NCB-SB14 Metal Bridge and Railing and Concrete Deck – Typical Good Condition, Deck Exhibiting Isolated Surface Spall with No Exposed Reinforcement (Looking Southeast)

Photo 132: NCB-SB12 Metal Bridge Railing – Apparent Impact Damage to Rail and Concrete Curb, Worst-Case Observed (Looking Northeast)

Photo 133: NCB-SB2 Concrete Deck – Typical Good Condition with Frequent Minor Hairline Transverse Cracks, Full Width Length (Looking Northwest)

Photo 134: NCB-SB8 Concrete Deck – Isolated Spall with Failing Repair (Looking Southwest)

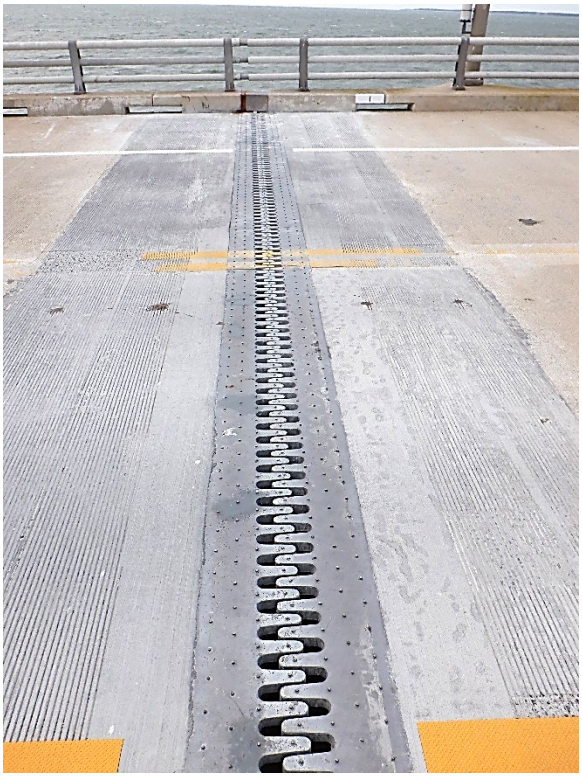


Photo 135: NCB-SB1 Steel Tooth Expansion Joint – Typical Very Good Condition with Minor Temperature and Shrinkage Cracking Observed in the Adjacent Concrete (Looking West)

Photo 136: NCB-SB1 Steel Tooth Expansion Joint – Typical Very Good Condition Exhibiting a 2 1/4" Gap on 9/14/2020 at 5:07pm, Superstructure Temperatures Recorded: 78°F for Concrete Girder and 77°F for Steel Girder (Looking West)

Photo 137: NCB-SB1 Steel Tooth Expansion Joint – Typical Very Good Condition Exhibiting a 2 1/2" Gap on 9/14/2020 at 5:07pm, Superstructure Temperatures Recorded: 78°F for Concrete Girder and 77°F for Steel Girder (Looking East)

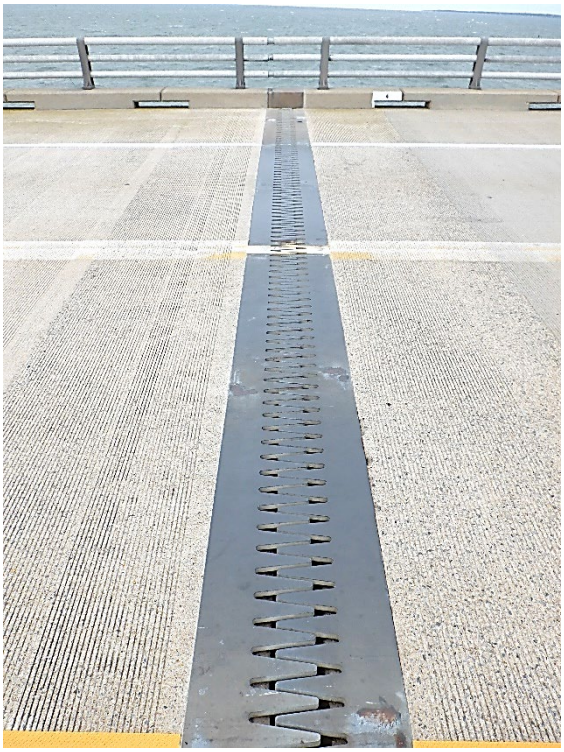


Photo 138: NCB-SB4 Steel Tooth Expansion Joint – Good Condition with Minor and Isolated Locations of Freckled Rust and Exhibiting a 2 7/8" Gap at the East End and 2 3/4" Gap at the West End on 9/14/2020 at 4:18pm, Superstructure Temperatures Recorded: 77°F for Concrete Girder and 77°F for Steel Girder (Looking East)

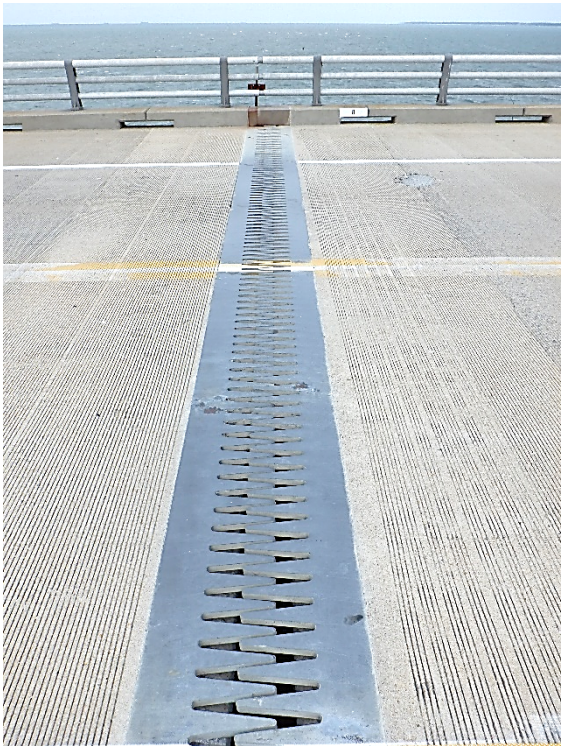


Photo 139: NCB-SB8 Steel Tooth Expansion Joint – Good Condition with Minor and Isolated Locations of Freckled Rust and Exhibiting a 5 1/8" Gap at the East End and 5" Gap at the West End on 9/14/2020 at 3:24pm, Superstructure Temperatures Recorded: 80°F for Concrete Girder and 80°F for Steel Girder (Looking East)

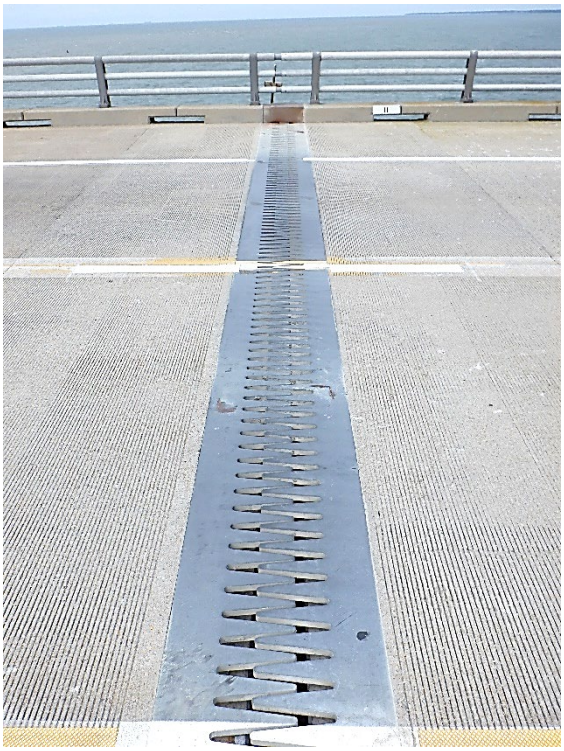


Photo 140: NCB-SB11 Steel Tooth Expansion Joint – Good Condition with Minor and Isolated Locations of Freckled Rust and Exhibiting a 4 5/8" Gap at the East End and 4 3/8" Gap at the West End on 9/14/2020 at 2:26pm, Superstructure Temperatures Recorded: 78°F for Concrete Girder and 78°F for Steel Girder (Looking East)

Photo 141: NCB-SB15 Steel Tooth Expansion Joint – Typical Very Good Condition with Minor Temperature and Shrinkage Cracking Observed in the Adjacent Concrete (Looking East)

Photo 142: NCB-SB15 Steel Tooth Expansion Joint – Typical Very Good Condition Exhibiting a 2 3/16" Gap on 9/14/2020 at 1:12pm, Superstructure Temperatures Recorded: 80°F for Concrete Girder and 79°F for Steel Girder (Looking East)

Photo 143: NCB-SB15 Steel Tooth Expansion Joint – Typical Very Good Condition Exhibiting a 1 7/8" Gap on 9/14/2020 at 1:12pm, Superstructure Temperatures Recorded: 80°F for Concrete Girder and 79°F for Steel Girder (Looking West)

Photo 144: NCB-SB Span 2 Girder 4 Splice – Typical Good Condition (Looking Southwest)

Photo 145: NCB-SB Span 10 Bay 2 Cross Frame 11 Steel Superstructure – Typical Good Condition with Isolated Areas of Surface Rust or Top Protective Coating Peeled Off Exposing Zinc Primer (Looking North)

Photo 146: NCB-SB Span 3 Bay 2 Cross Frame 11 – Typical Good Condition with Isolated Areas of Surface Rust (Typical at Connections) or Top Protective Coating Peeled Off Exposing Zinc Primer (Looking North)

Photo 147: NCB-SB Span 12 Bay 2 Cross Frame 5 – Typical Good Condition with Isolated Areas of Top Protective Coating Peeled Off Exposing Zinc Primer, Same Condition as Displayed in FY2019 Report (Looking North)

Photo 148: NCB-SB Span 9 Bay 2 Cross Frame 5 – Isolated Areas of Complete Paint Failure with Corrosion on the Intermediate Crossframe, Worse Condition Observed, and Isolated Areas of Surface Rust on the Girder and Splice (Looking North)

Photo 149: NCB-SB Span 4 Bay 2 Cross Frame 4 – Intermediate Crossframe Lower Member Distorted with Surface Rust, No Action Required (Looking North)

Photo 150: NCB-SB Span 4 Bay 2 Cross Frame 4 – Intermediate Crossframe Lower Member Distorted with Surface Rust, No Action Required (Looking East)

Photo 151: NCB-SB Span 3 Girder 4 Splice – Areas of Surface Rust with Pack Rust Starting to Develop at the Joints, Worse Condition Observed (Looking North)

Photo 152: NCB-SB Pier 4 Girder 4 Movable Bearings – Typical Good Condition with Isolated Areas of Surface Rust and Rust Staining (Looking Southeast)

Photo 153: NCB-SB Pier 13 Girder 1 Fixed Bearing and Navigational Light – Typical Good Condition with Isolated Areas of Surface Rust and Rust Staining (Looking Southeast)

Photo 154: NCB-SB Pier 1 Movable Bearings – Coating Loss and Heavy Surface Rust, Worse Case Observed and Same Condition as Observed in FY2019 Inspection (Looking Southeast)

Photo 155: NCB-SB Span 8 Light Pole – Exposed Prestressing Strand Approximately 10' Above the Base, Worse Condition Observed (Looking Southwest)

Photo 156: NCB-SB10 Pile Cap, Fender System, and Access Ladders and Platforms – Typical Good Condition with Isolated Areas of Minor Degradation (Looking South)

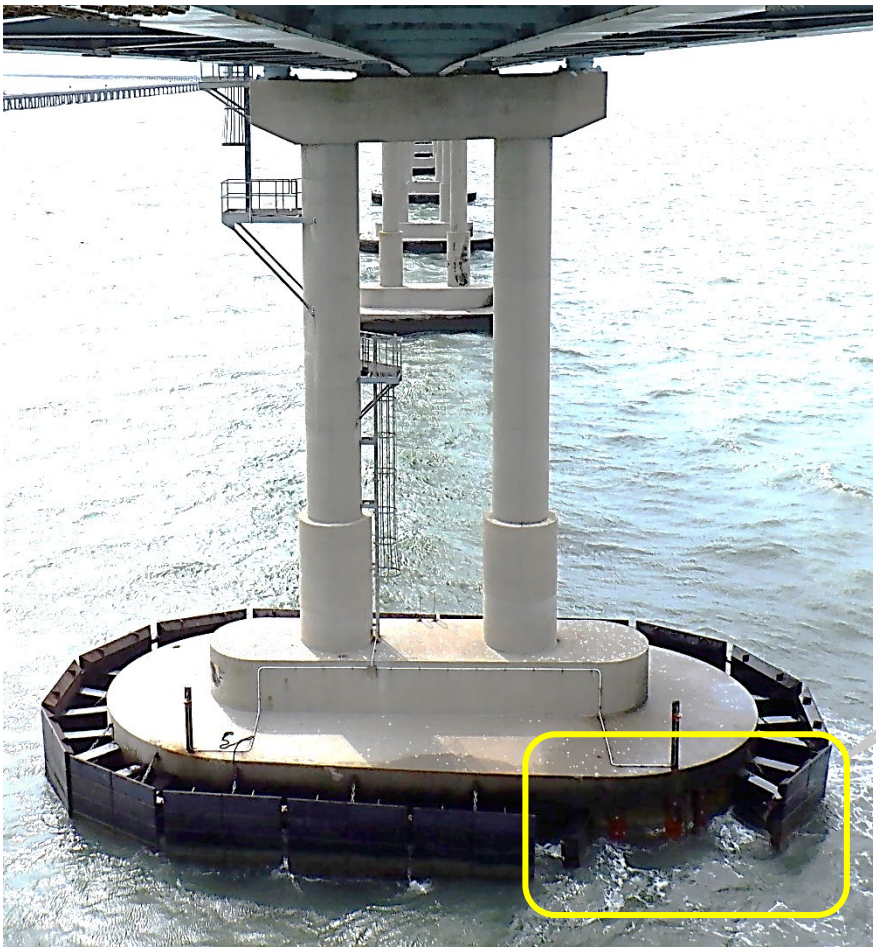


Photo 157: NCB-SB9 Pile Cap, Fender System, and Access Ladders and Platforms – Typical Good Condition Except for Fender System at Location of Barge Impact that Occurred on 9/3/2020 (Looking South)

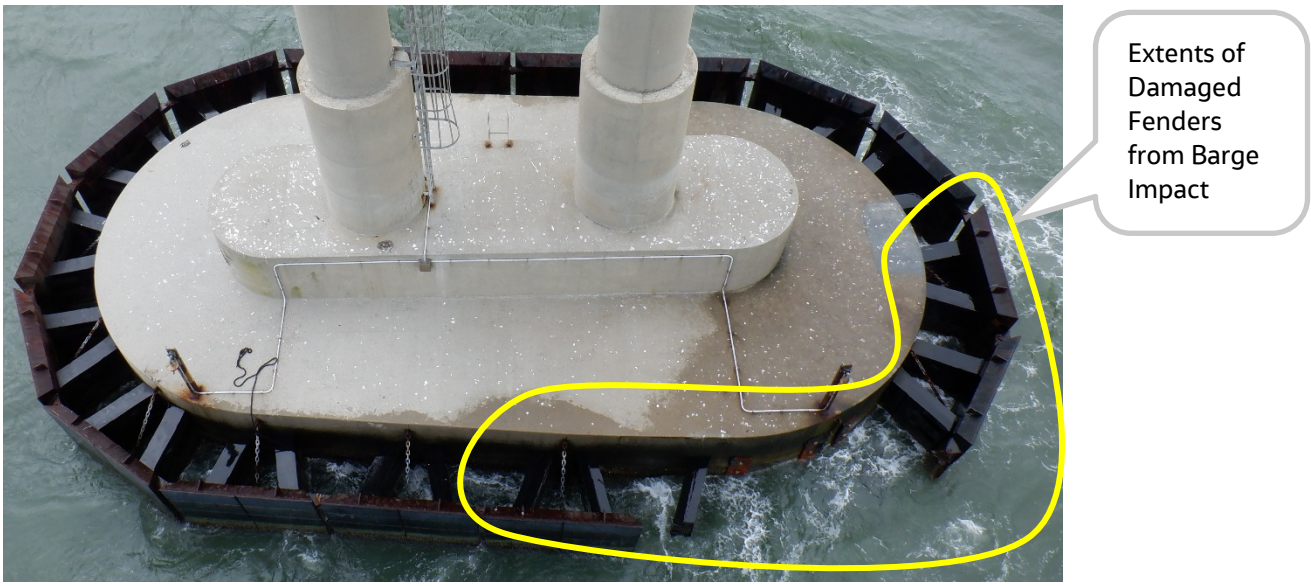


Photo 158: NCB-SB9 Pile Cap and Fender System – Typical Good Condition Except for Fender System at Location of Barge Impact that Occurred on 9/3/2020 (Looking South)

8.9 Trestle DNB Photographs

Photo 159: DNB18 Metal Bridge Railing and Approach Slab – Typical Good Condition of Railing, End Treatment, Curb, and Approach Slab, Minor Water Ponding Observed During a Rain Event (Looking East)

Photo 160: DNB3 Metal Bridge Railing – Minor Dent in Bottom Railing and Minor Deformation in Middle Railing (Looking Southeast)

Photo 161: DNB5 Asphalt Wearing Surface – Typical Very Good Condition (Looking South)

Photo 162: DNB18 Asphalt Wearing Surface – Typical Very Good Condition with Minor Water Ponding Observed During a Rain Event (Looking North)

Photo 163: DNB13 Bay 4 Girders and Deck – Typical Good Condition with Isolated Areas of Minor to Moderate Degradation or Repairs (Looking North)

Photo 164: DNB16 Bay 4 Zone 1 Reinforced Concrete Top Flange (Underside) – Typical Good Condition with Isolated Spall with Exposed Reinforcing (Looking North)

Photo 165: DNB3 Bay 4 Zone 3 Reinforced Concrete Top Flange (Underside) – Typical Good Condition with Isolated Cracking with Efflorescence (Looking North)

Photo 166: DNB15 Bay 4 Zone 3 Reinforced Concrete Top Flange (Underside) – Typical Good Condition with Isolated Spalling with No Exposed Reinforcement (Looking South)

Photo 167: DNB2 Girder 1 Zone 2 – Isolated Areas of Exposed Prestressing Strand Exhibiting Moderate Section Loss (Looking Northeast)

Photo 168: DNB2 Girder 1 Zone 2 – Isolated Exposed Prestressing Strand Exhibiting Complete Section Loss (Looking Southeast)

Photo 169: DNB3 Pile Cap and Piles – Typical Fair to Good Condition with Isolated Areas of Minor to Moderate Degradation (Looking North)

Photo 170: DNB15 Pile Cap and Piles – Typical Fair to Good Condition with Isolated Areas of Minor to Moderate Degradation (Looking North)

Photo 171: DNB1 Pile C – Spall with Exposed Reinforcement at Top of Pile (Looking Southwest)

Photo 172: DNB6 Pile B – Cracking with Rust Staining (Looking South)

Photo 173: DNB18 Abutment and Protected Riprap Slope – Good Condition (Looking North)

Photo 174: DNB18 Abutment and Protected Riprap Slope – Good Condition (Looking West)

8.10 Trestle DSB Photographs

Photo 175: DSB21 Metal Bridge Railing – Typical Good Condition of Rail End Treatment and Curb, Abutment, and Protected Riprap Slope (Looking West)

Photo 176: DSB18 Concrete Deck – Typical Good Condition with Isolated Hairline Longitudinal Crack over a Girder, Full Span Length (Looking Northeast)

Photo 177: DSB17 Concrete Deck – Typical Good Condition with Isolated Hairline Longitudinal Crack over G3 (Middle Girder), Full Span Length (Looking North)

Photo 178: DSB5/DSB6 Concrete Deck – Typical Good Condition with Isolated Hairline Longitudinal Crack over G3 (Middle Girder), Full Span Length (Looking Northeast)

Photo 179: DSB5 Concrete Deck – Typical Good Condition with No Water Ponding Observed During a Rain Event (Looking South)

Photo 180: DSB6 Concrete Deck – Typical Good Condition at Open Joint (Looking East)

Photo 181: DSB10 Concrete Deck – Typical Good Condition at Open Joint with Short Isolated Hairline Cracks and Longitudinal Crack over G3 (Middle Girder), Full Span Length (Looking Northeast)

Photo 182: DSB4 Concrete Deck – Typical Good Condition with Isolated Locations Exhibiting Minor Degradation (Looking Northeast)

Photo 183: DSB2 Concrete Superstructure and Substructure – Typical Good Condition with Isolated Locations Exhibiting Minor Degradation, Hairline Crack in Stay-in-place Form (Looking North)

Photo 184: DSB11 Girder 1 – Spalling at Closure Diaphragm with Exposed Reinforcement, Same Condition as Displayed in FY2019 Report (Looking Northeast)

Photo 185: DSB12 Concrete Superstructure and Substructure – Typical Good Condition with Isolated Locations Exhibiting Minor Degradation (Looking North)

Photo 186: DSB12 Pile B – Typical Good Condition with Isolated Locations Exhibiting Minor Degradation (Looking North)

Photo 187: DSB21 Pile Cap and Piles – Typical Good Condition with Little to No Degradation (Looking North)

Photo 188: DSB21 Abutment and Protected Riprap Slope – Good Condition (Looking North)

8.11 Trestle ENB, FIB-NB, & FNB Photographs

Photo 189: ENB1 Metal Bridge Railing – Typical Good Condition of Rail End Treatment and Curb, Abutment, and Protected Riprap Slope (Looking East)

Photo 190: ENB6 Metal Bridge Railing – Typical Good Condition with Isolated Apparent Impact Damage to Rail, Worst-Case Observed (Looking Southeast)

Photo 191: ENB10 Asphalt Wearing Surface – Typical Very Good Condition (Looking Southeast)

Photo 192: ENB1 Open Joint – Typical Very Good Condition (Looking East)

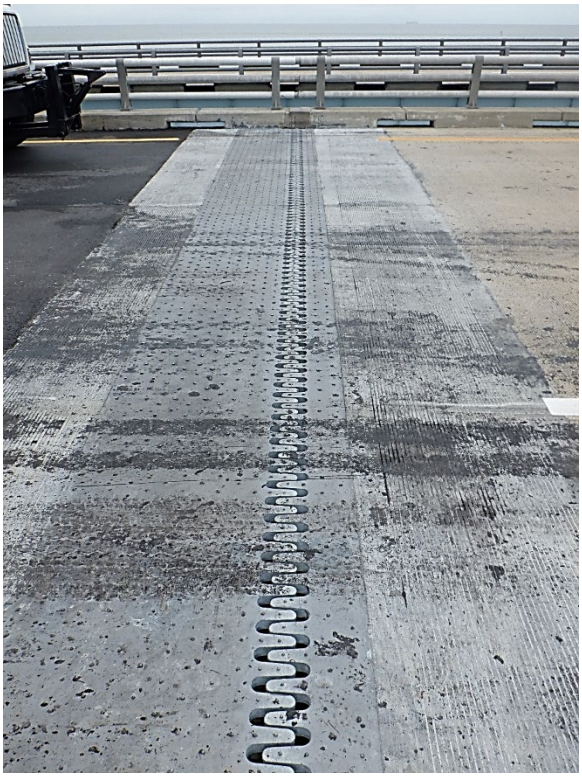


Photo 193: FIB-NB1 Steel Tooth Expansion Joint – Typical Very Good Condition with Minor Temperature and Shrinkage Cracking Observed in the Adjacent Concrete (Looking West)

Photo 194: FIB-NB1 Steel Tooth Expansion Joint – Typical Very Good Condition Exhibiting a 1 13/16" Gap on 9/10/2020 at 1:30pm, Superstructure Temperatures Recorded: 77°F for Concrete Girder and 78°F for Steel Girder (Looking West)

Photo 195: FIB-NB4 Steel Tooth Expansion Joint – Typical Very Good Condition with Minor Temperature and Shrinkage Cracking Observed in the Adjacent Concrete (Looking East)

Photo 196: FIB-NB4 Steel Tooth Expansion Joint – Typical Very Good Condition Exhibiting a 1 3/4" Gap on 9/10/2020 at 2:11pm, Superstructure Temperatures Recorded: 80°F for Concrete Girder and 80°F for Steel Girder (Looking East)

Photo 197: FIB-NB4 Steel Tooth Expansion Joint – Typical Very Good Condition with Minor Temperature and Shrinkage Cracking Observed in the Adjacent Concrete (Looking West)

Photo 198: FIB-NB4 Steel Tooth Expansion Joint – Typical Very Good Condition Exhibiting a 1 1/4" Gap on 9/10/2020 at 2:11pm, Superstructure Temperatures Recorded: 80°F for Concrete Girder and 80°F for Steel Girder (Looking West)

Photo 199: FIB-NB2 Concrete Deck – Typical Good Condition (Looking Northeast)

Photo 200: ENB1 Reinforced Concrete Top Flange – Typical Good Condition with Isolated Spall with Exposed Reinforcing (Looking Southwest)

Photo 201: FNB2 Bay 3 Girders and Deck – Typical Good Condition with Isolated Areas of Minor Degradation (Looking North)

Photo 202: FIB-NB Span 3 Girder 4 – Typical Good Condition with Isolated Areas of Surface Rust (Looking Southwest)

Photo 203: FIB-NB Span 2 Girder 1 and Channel – Typical Good Condition (Looking Northeast)

Photo 204: FIB-NB Span 1 Girder 1 – Typical Good Condition with Isolated Areas of Surface Rust (Looking Southeast)

Photo 205: FIB-NB Span 1 Bay 2 – Typical Good Condition with Isolated Areas of Surface Rust or Top Protective Coating Peeled Off Exposing Zinc Primer (Looking North)

Photo 206: FIB-NB Span 1 Girder 2 Splice – Top Protective Coating Peeled Off Exposing Zinc Primer (Looking Northeast)

Photo 207: FIB-NB Pier 1 G3 & G4 End Frame Connections and Movable Bearings – Typical Good Condition with Isolated Areas of Surface Rust and Rust Staining (Looking Southeast)

Photo 208: FIB-NB Pier 1 G1 Movable Bearing – Typical Good Condition with Isolated Areas of Surface Rust (Looking East)

Photo 209: FIB-NB Pier 3 G1 Fixed Bearing – Typical Good Condition with Isolated Areas of Surface Rust (Looking Southeast)

Photo 210: ENB1 Abutment and Protected Riprap Slope – Good Condition (Looking South)

Photo 211: ENB2 Pile B – Multiple Cracks with Rust Staining, Observed on 2 Other Piles (Looking South)

Photo 212: FIB-NB2 Pile Cap and Piles and Timber Fender System – Typical Good Condition with Isolated Areas of Minor Degradation (Looking North)

Photo 213: FNB4, Protected Riprap Slope, and Access Road – Good Condition (Looking North)

Photo 214: FNB6 Abutment and Protected Riprap Slope – Good Condition (Looking North)

8.12 Trestle ESB, FIB-SB, & FSB Photographs

Photo 215: ESB1 Metal Bridge Railing – Typical Good Condition of Rail End Treatment and Curb, Abutment, and Protected Riprap Slope (Looking East)

Photo 216: FSB8 Metal Bridge Railing – Typical Good Condition of Rail End Treatment and Curb, Abutment, and Protected Riprap Slope (Looking East)

Photo 217: FSB5 Metal Bridge Railing – Typical Good Condition of Rail and Curb with Isolated Minor Degradation and Disconnected Grounding Cable, Repaired and Replaced as Required (Looking Southeast)

Photo 218: ESB10 Asphalt Wearing Surface – Typical Good Condition with Recently Replaced Striping and Eradication of Temporary Striping from Recent Pavement Replacement Projects (Looking South)

Photo 219: FSB7 Asphalt Wearing Surface – Typical Good Condition with Recently Replaced Striping and Eradication of Temporary Striping from Recent Pavement Replacement Projects (Looking South)

Photo 220: FIB-SB2 Concrete Deck – Typical Good Condition (Looking North)

Photo 221: ESB1 Open Joint – Typical Fair to Good Condition with Isolated Minor Areas of Missing Asphalt, Deformation in the Steel Joint Headers, or Repairs as Required, (Looking West)

Photo 222: FSB8 Open Joint – Fair Condition with Exposed Steel Joint Headers, Worst-Case Observed (Looking West)

Photo 223: FIB-SB1 Steel Tooth Expansion Joint – Good Condition with Minor and Isolated Locations of Freckled Rust and Exhibiting a 5 1/4" Gap at the East and West End on 9/11/2020 at 9:20am, Superstructure Temperatures Recorded: 80°F for Concrete Girder and 79°F for Steel Girder (Looking East)

Photo 224: FIB-SB4 Steel Tooth Expansion Joint – Good Condition with Minor and Isolated Locations of Freckled Rust and Exhibiting a 3 1/2" Gap at the East and a 3 3/4" Gap at the West End on 9/11/2020 at 8:33am, Superstructure Temperatures Recorded: 80°F for Concrete Girder and 79°F for Steel Girder (Looking West)

Photo 225: ESB14 Concrete Superstructure and Substructure – Typical Fair to Good Condition with Isolated Areas of Minor to Moderate Degradation (Looking North)

Photo 226: FSB1 Concrete Superstructure and Substructure – Typical Fair to Good Condition with Isolated Areas of Minor to Moderate Degradation (Looking South)

Photo 227: ESB2 Girder 1 Zone 2 – Isolated Areas of Exposed Prestressing Strands (Looking Southwest)

Photo 228: FSB5 Girder 8 Zone 1 – Isolated Area of Exposed Shear Reinforcement and Cracking with Efflorescence (Looking Southwest)

Photo 229: FIB-SB Span 2 Girder 4 – Typical Fair to Good Condition with Isolated Areas of Surface Rust on Exterior of Girders (Looking Northwest)

Photo 230: FIB-SB Span 1 Girder 1 – Typical Fair to Good Condition with Isolated Areas of Surface Rust on Exterior of Girders (Looking Southeast)

Photo 231: FIB-SB Span 3 Bay 2 – Typical Fair to Good Condition with Frequent Areas of Surface Rust and Paint Failure (Looking South)

Photo 232: FIB-SB Span 2 Girder 4 – Bottom Flange distorted for 3' on East Edge from Apparent Impact Damage that Occurred Prior to the Construction of FIB-NB with Typical Freckled Rust and Paint Failure, Same Condition as Displayed in FY2019 Report (Looking West)

Photo 233: FIB-SB Span 1 Girder 4 – Isolated Area with Minor Section Loss and Typical Surface Rust and Paint Failure, Worst-Case Observed (Looking North)

Photo 234: FIB-SB Pier 1 G3 & G4 End Frame Connections and Movable Bearings – Typical Fair to Good Condition with Frequent Areas of Surface Rust and Rust Staining (Looking Southeast)

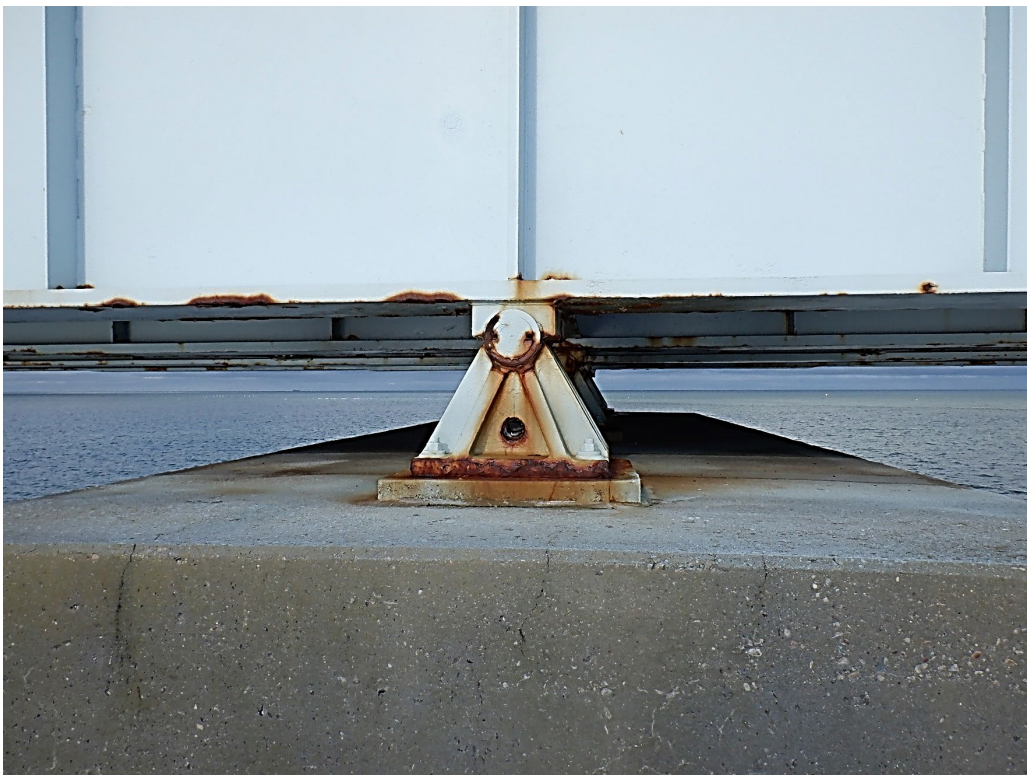


Photo 235: FIB-SB Pier 2 G4 Fixed Bearing – Typical Fair to Good Condition with Frequent Areas of Surface Rust (Looking West)

Photo 236: ESB1 Abutment and Protected Riprap Slope – Good Condition (Looking South)

Photo 237: ESB7 Pile Cap and Piles – Typical Fair to Good Condition with Isolated Areas of Minor Degradation or Repairs (Looking South)

Photo 238: FIB-SB Pier 4 Pile Cap and Piles – Typical Fair to Good Condition with Isolated Areas of Minor Degradation or Repairs (Looking South)

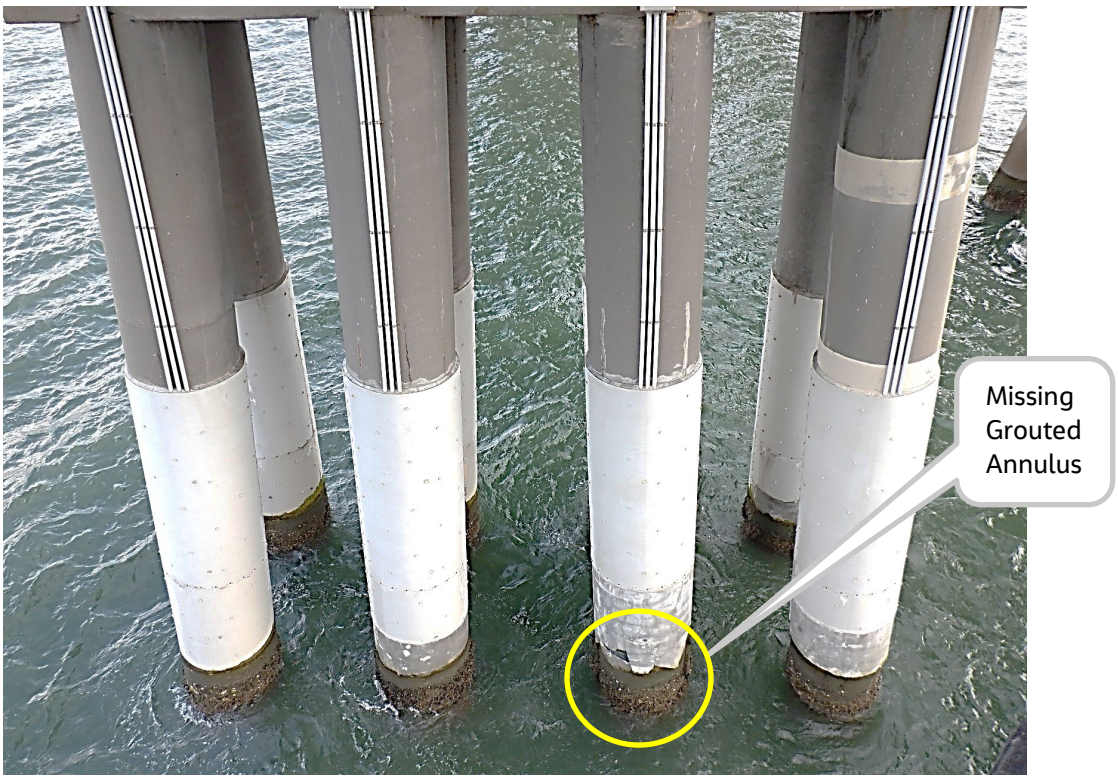


Photo 239: FIB-SB Pier 3 Pile Cap and Piles – Typical Fair to Good Condition with Isolated Areas of Minor Degradation or Repairs, Pile C Exhibiting Moderate Degradation of LifeJacket Repair (Looking North)

Photo 240: FIB-SB&NB Pile Cap and Piles and Timber Fender System – Typical Good Condition with Isolated Areas of Minor Degradation (Looking North)

Photo 241: FSB8 Abutment and Protected Riprap Slope – Good Condition (Looking North)

8.13 TSCT Photographs

Not inspected this year, will be inspected in FY2022.

8.14 CCT Photographs

Photo 242: CCT South Portal – STA 469+12 at Portal Island #3 Typical Good Condition with Isolated Areas of Minor Degradation (Looking Northwest)

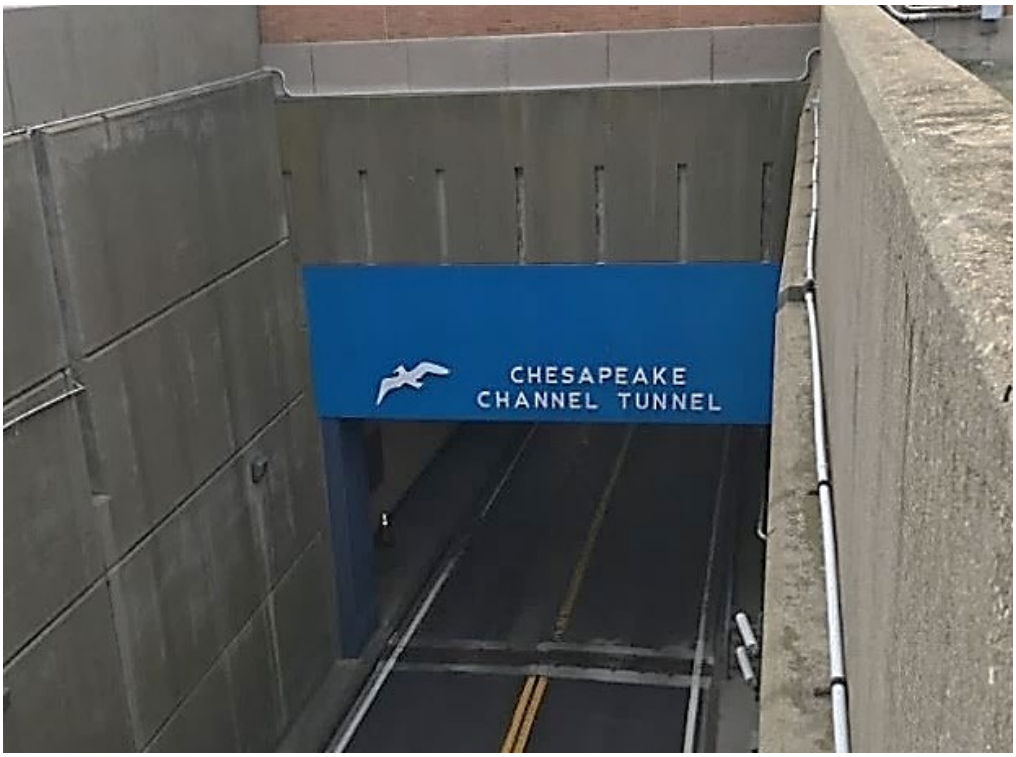


Photo 243: CCT North Portal – STA 523+36 at Portal Island #4 Typical Good Condition with Isolated Areas of Minor Degradation (Looking Southeast)

Photo 244: CCT Roadway – STA 513+00 Typical Good Condition with Isolated Areas of Minor Degradation or Repairs (Looking South)

Photo 245: CCT Roadway – STA 502+25 Area of Heavy Efflorescence and Rust Staining, Worst-Case Observed (Looking Southeast)

Photo 246: CCT Portal Drain – STA 469+12 at Portal Island #3 Very Good Condition (Looking East)

Photo 247: CCT Roadway Sidewalk Steel Pedestrian Railing STA 521+80 – Typical Good Condition with Isolated Areas of Failed Coating and Minor Surface Rust, Less Than 10% of Surface Area, Worst-Case Observed (Looking North)

Photo 248: CCT Exhaust Duct – STA 517+00 Typical Good Condition with Isolated Areas of Minor to Moderate Degradation or Repairs (Looking South)

Photo 249: CCT Exhaust Duct at STA 500+50 – Spall in Ceiling Slab at Haunch Interface with Exposed Reinforcement having Minor Section Loss, Worst-Case Observed (Looking Southeast)

Photo 250: CCT Exhaust Duct at STA 500+50 – Spall in Tunnel Liner with Exposed Longitudinal & Transverse Reinforcement, Worst-Case Observed, has not Progressed Since Last Inspection in September 2018 (Looking West)

Photo 251: CCT Invert Slab at STA 486+15 – Cracks with Efflorescence in FRP Repair on Underside, has not Progressed Since Last Inspection in September 2018 (Looking East)

Photo 252: CCT Invert Slab at STA 509+20 – Typical Good Condition of Invert Slab Shotcrete Repair with Isolated Minor Hairline Cracking with Efflorescence, observed on 23% of Repairs (Looking Northwest)

Photo 253: CCT Invert Slab at STA 507+85 – Invert Slab Shotcrete Repair with Minor Hairline Cracking with Rust Staining, Worst-Case Observed (Looking Northeast)

Photo 254: CCT Ventilation System – Portal Island #4 Exhaust Duct CO Monitor Device Was not Giving Readings Across the HMI at the Time of Inspection

Photo 255: CCT Main Generator at Portal Island #3 – Good Condition, Typical for all Generators

8.15 General Facility

Photo 256: South Toll Plaza (Looking Northeast)

Photo 257: South Toll Plaza Garage and Substation (Looking Northwest)

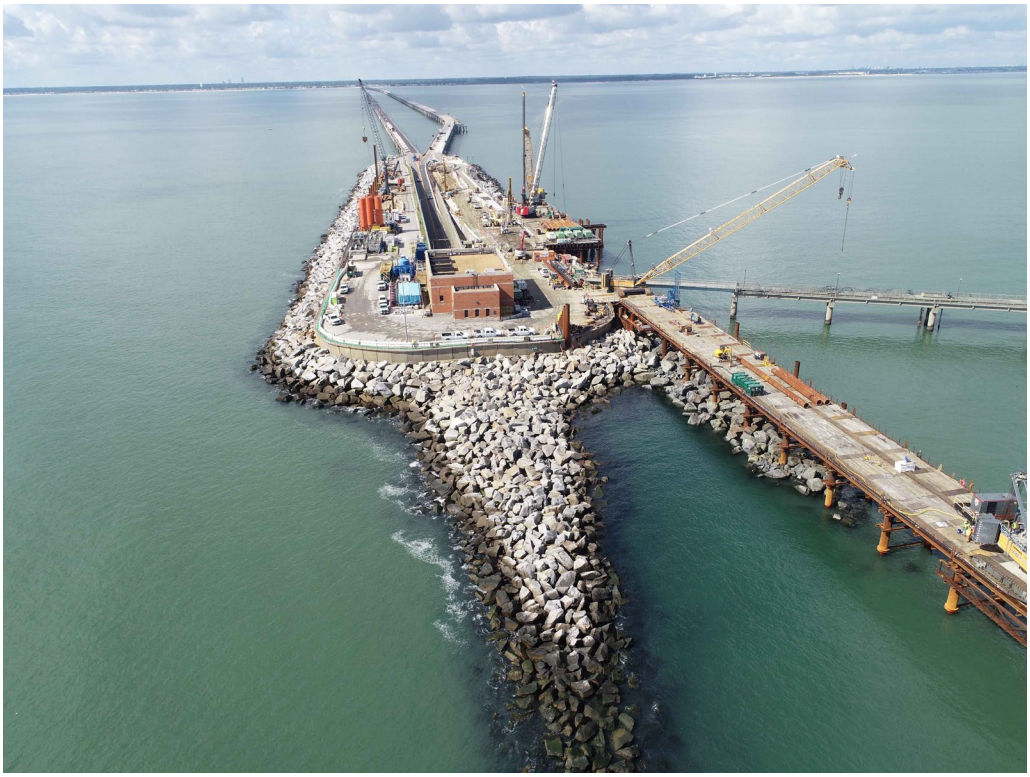


Photo 258: Portal Island #1 – View from Drone Survey Conducted on 6/18/2020 (Looking South)

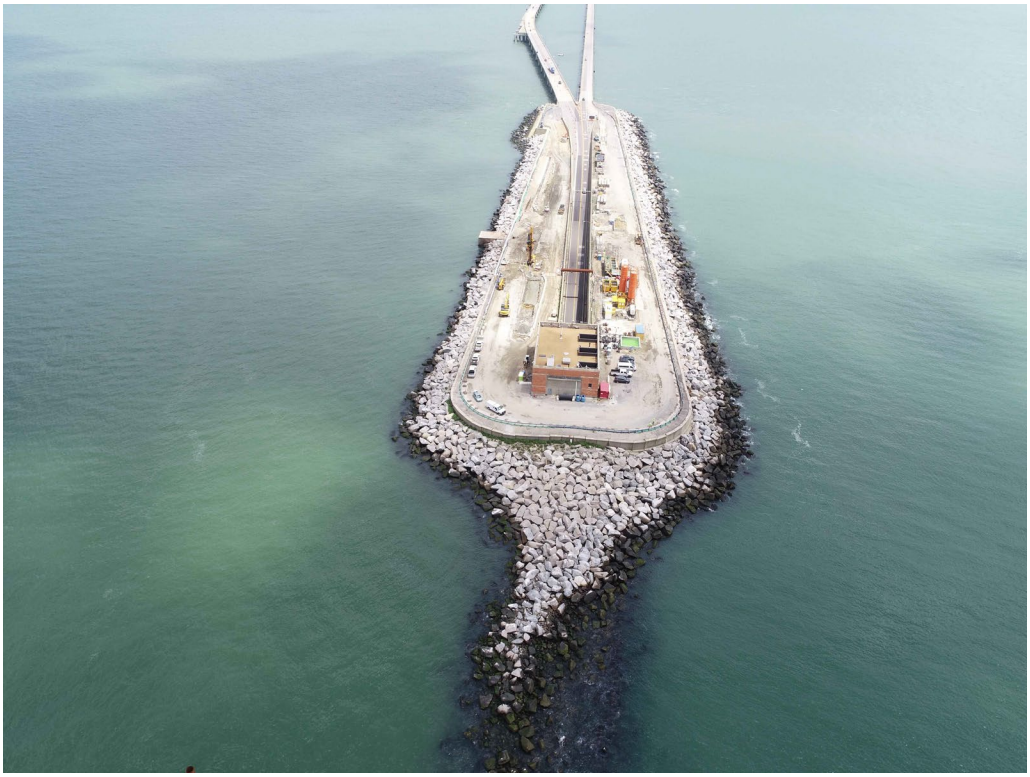


Photo 259: Portal Island #2 – View from Drone Survey Conducted on 6/18/2020 (Looking North)

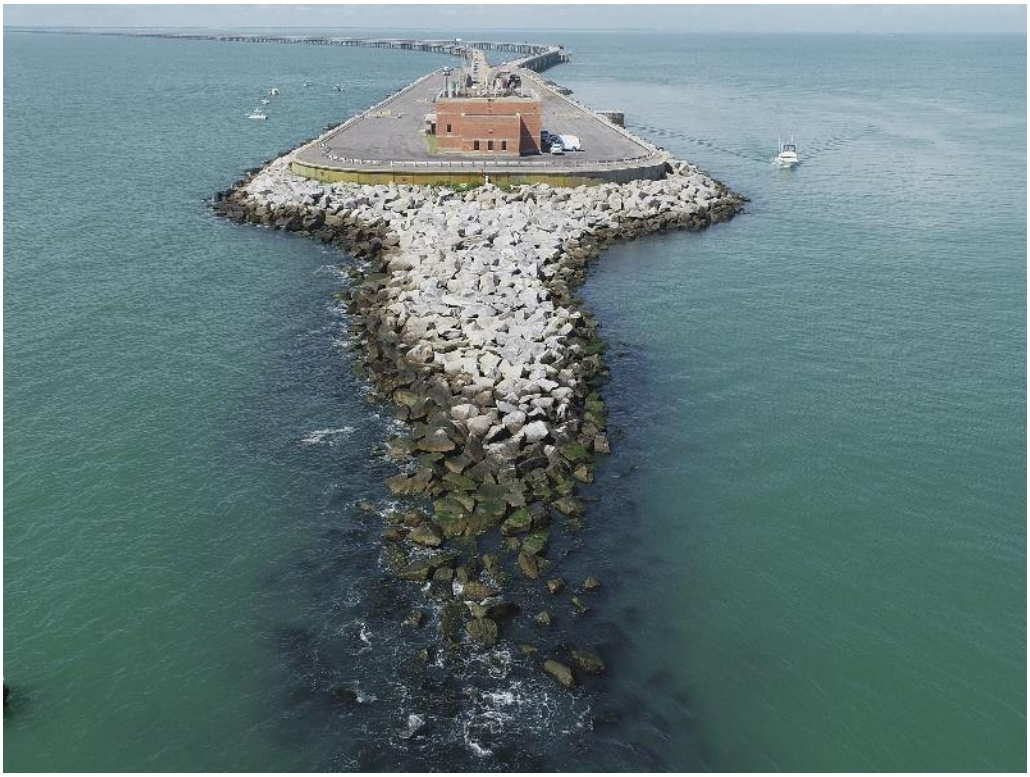


Photo 260: Portal Island #3 – View from Drone Survey Conducted on 6/18/2020 (Looking South)

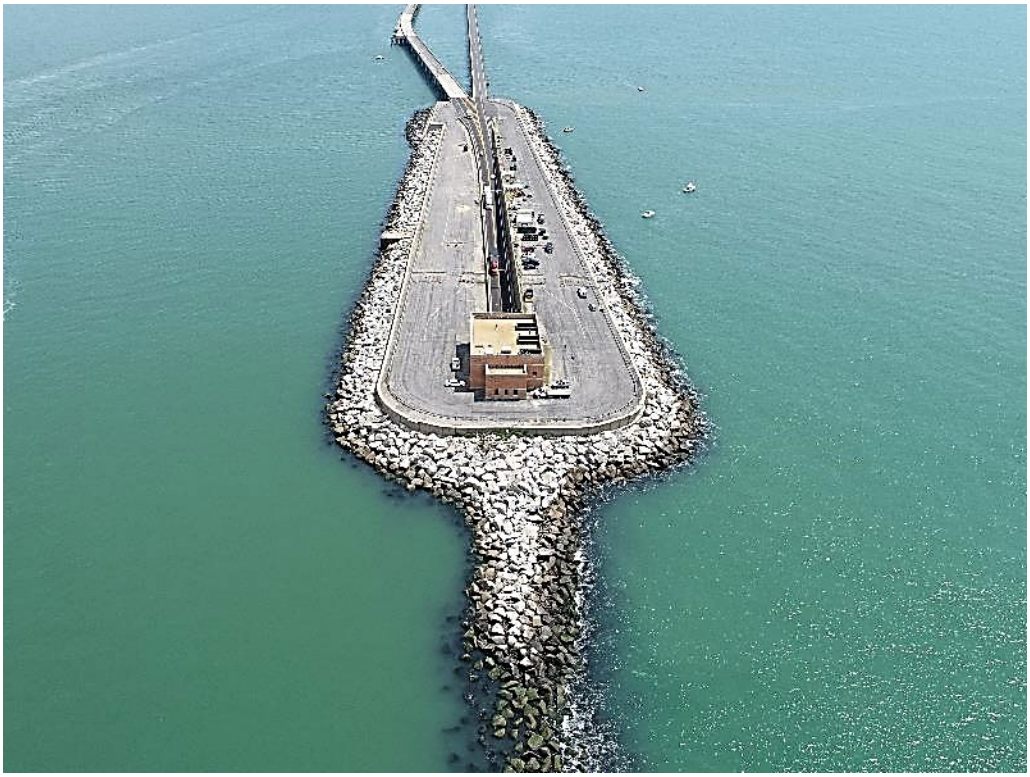


Photo 261: Portal Island #4 – View from Drone Survey Conducted on 6/18/2020 (Looking North)

Photo 262: Ventilation Building #3, Good Condition, Typical of all Ventilation Buildings (Looking Southwest)

Photo 263: Portal Island #3 East Approach Wall, Fair to Good Condition with Isolated Areas of Minor to Moderate Degradation, Typical for All Approach Walls (Looking Southeast)

Photo 264: Portal Island #3 Grading at Sinkhole Behind Splash Wall Panel 131 – Typical Good Condition with Isolated Areas of Sinkholes or Washouts, Typical for All Portal Islands (Looking South)

Photo 265: North Toll Plaza (Looking Northeast)

Photo 266: Maintenance Yard (Looking South)

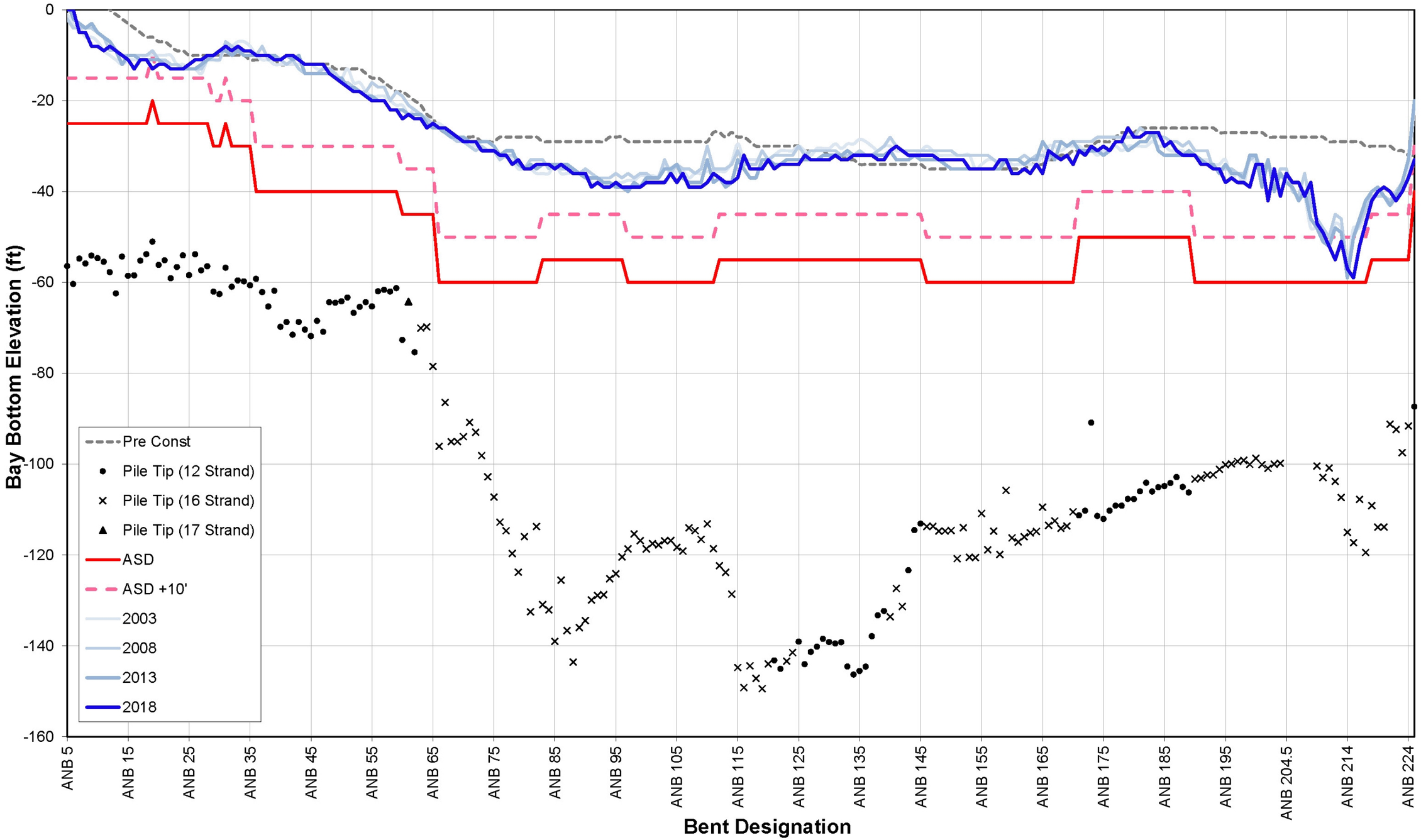
Photo 267: Rest Area (Looking East)

Photo 268: Administration Building Roof Replacement at Time of Inspection (Looking Southeast)

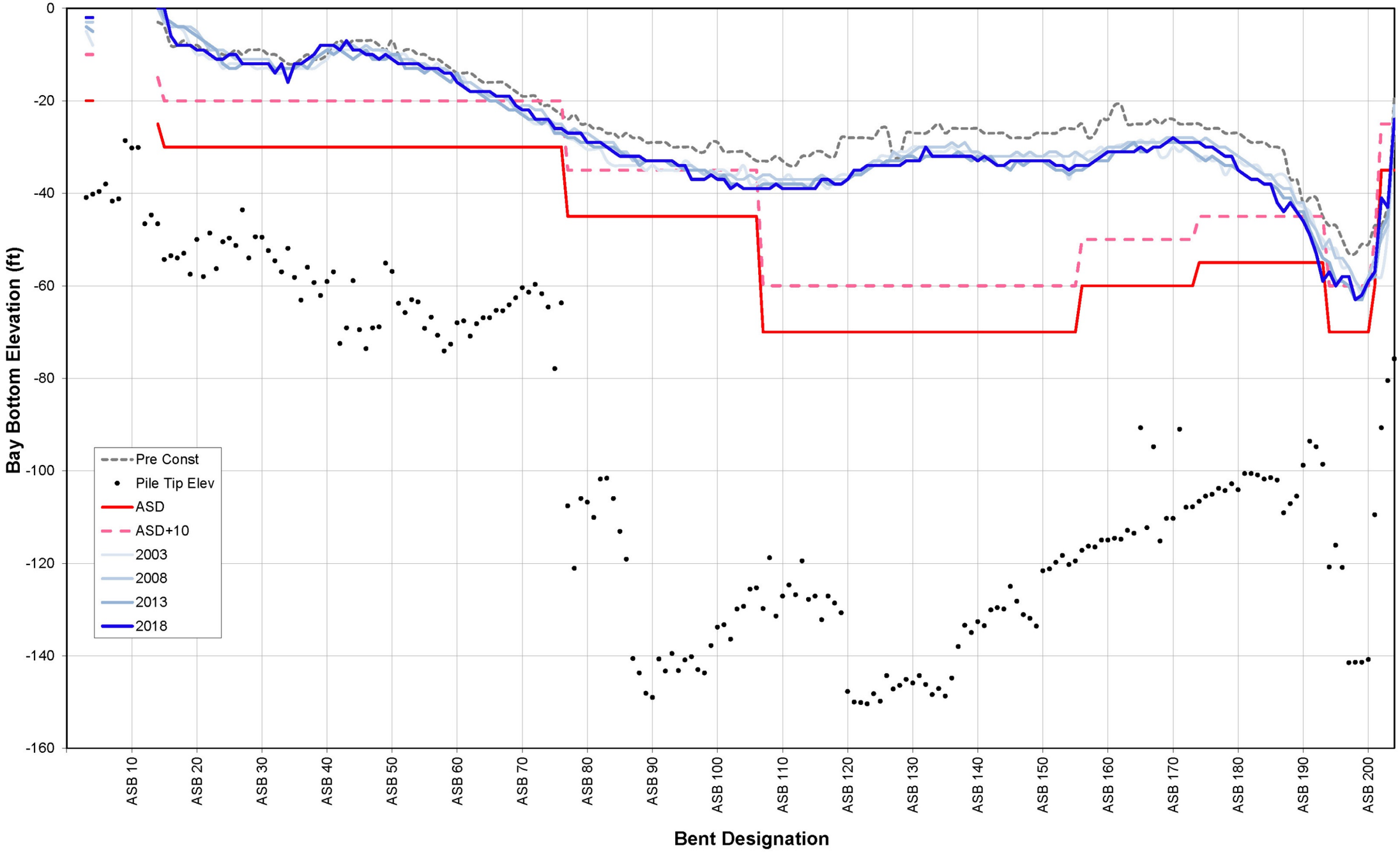
Photo 269: Septic Drain Fields (Looking West)

9. Bay Bottom Profiles

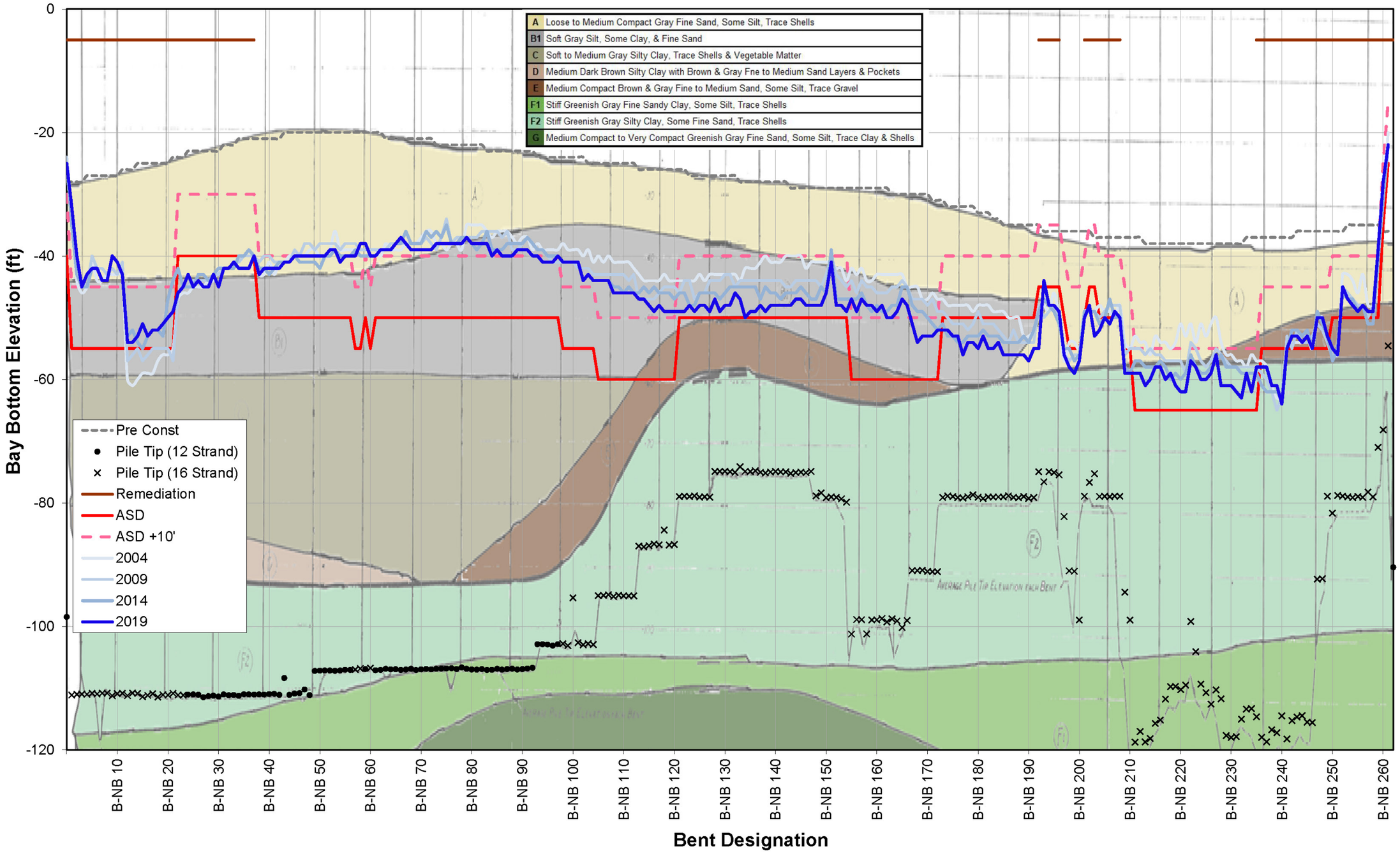
9.1 Trestle ANB Bay Bottom Profile



9.2 Trestle ASB Bay Bottom Profile



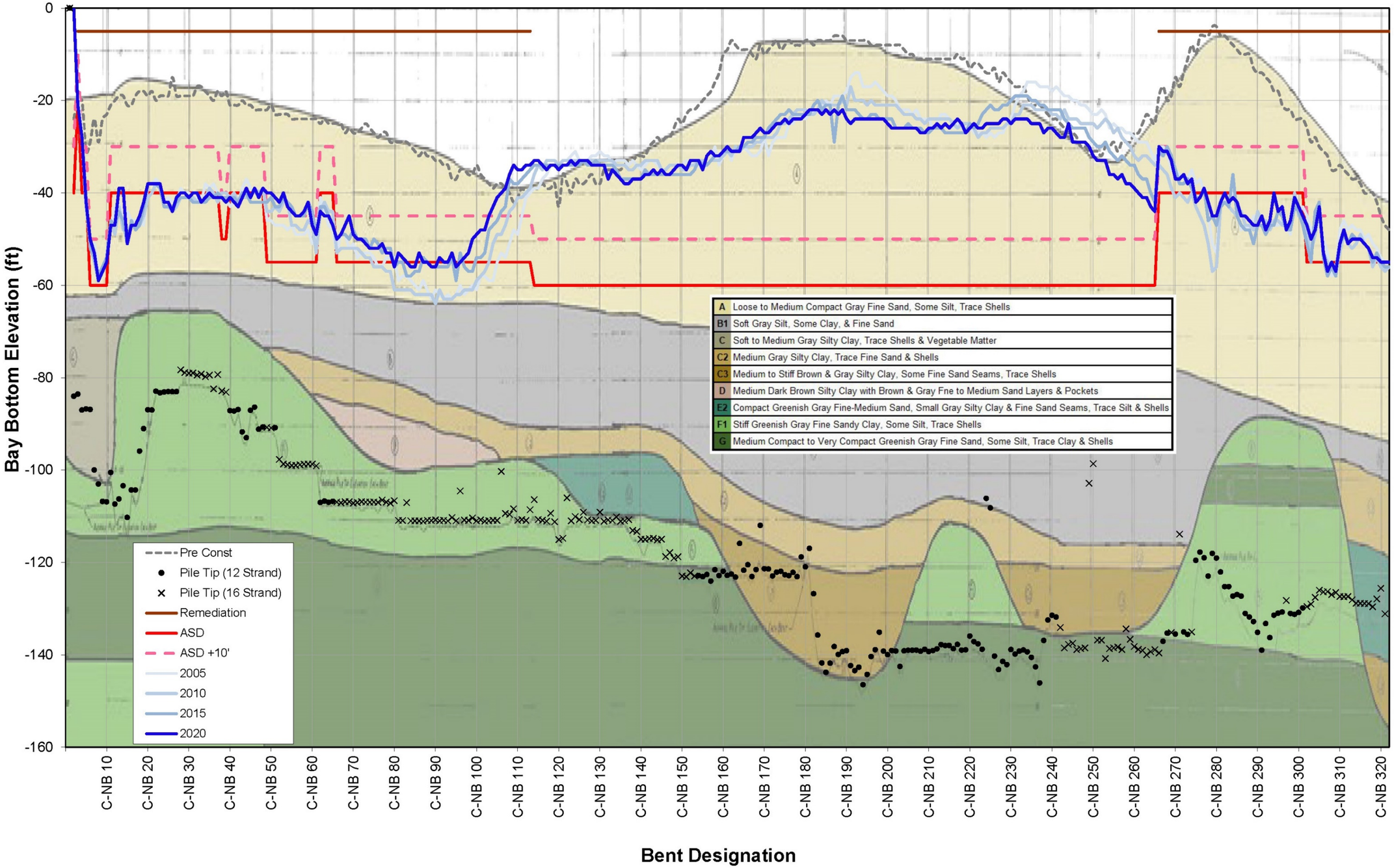
9.3 Trestle BNB Bay Bottom Profile



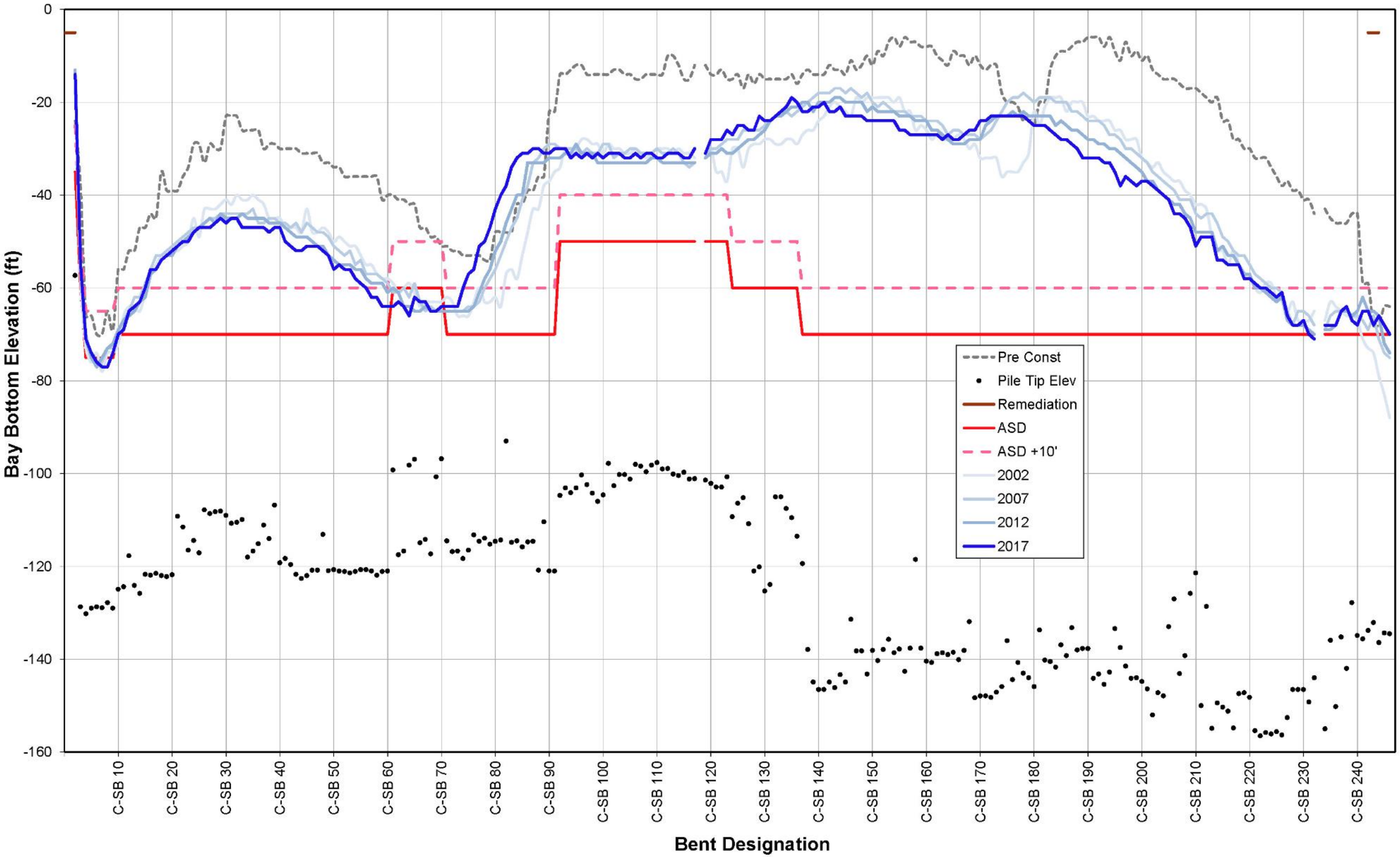
9.4 Trestle BSB Bay Bottom Profile

To be provided in FY2022 report.

9.5 Trestle CNB Bay Bottom Profile



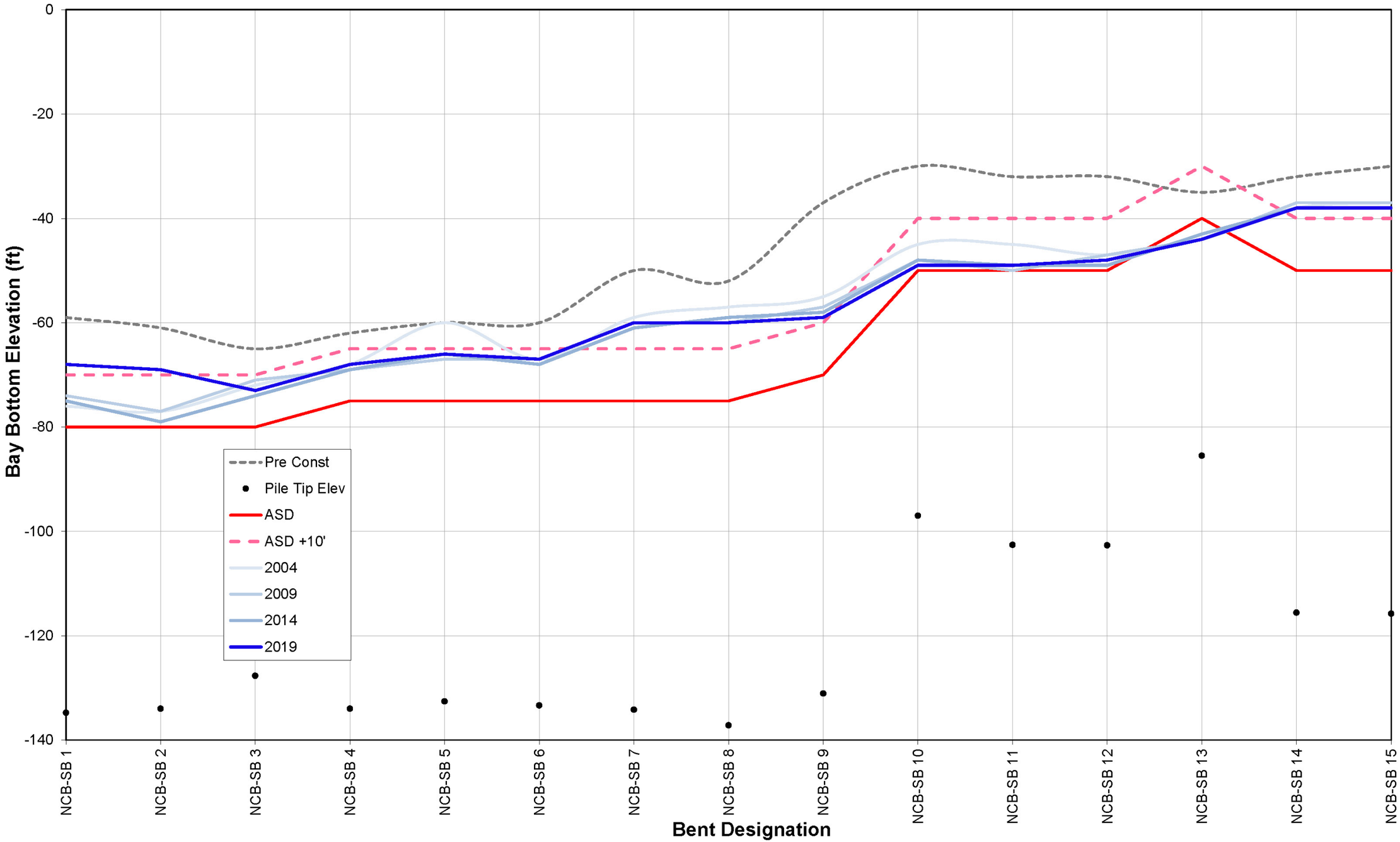
9.6 Trestle CSB Bay Bottom Profile



9.7 NCB-NB Bay Bottom Profile

To be provided in FY2022 report.

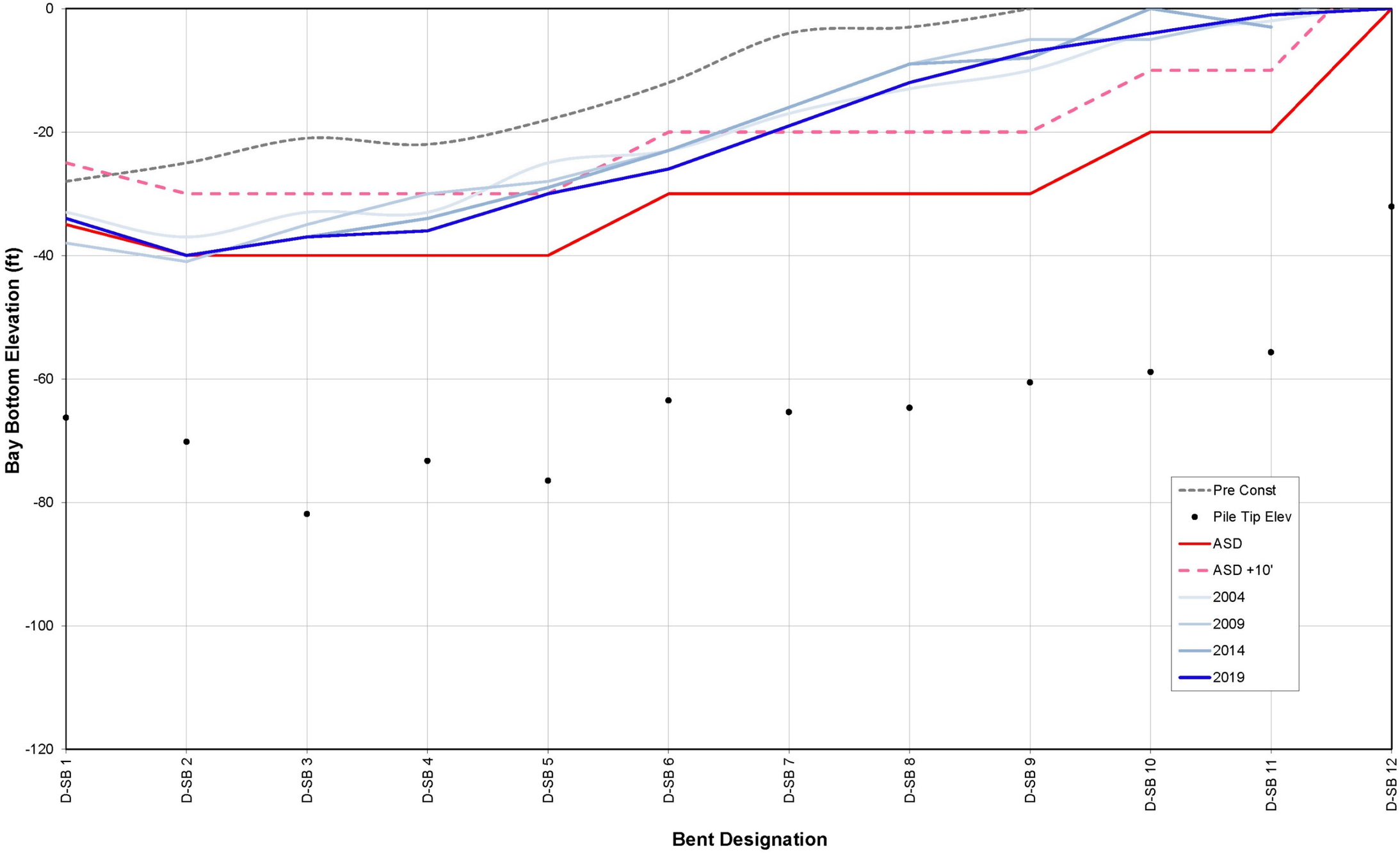
9.8 NCB-SB Bay Bottom Profile



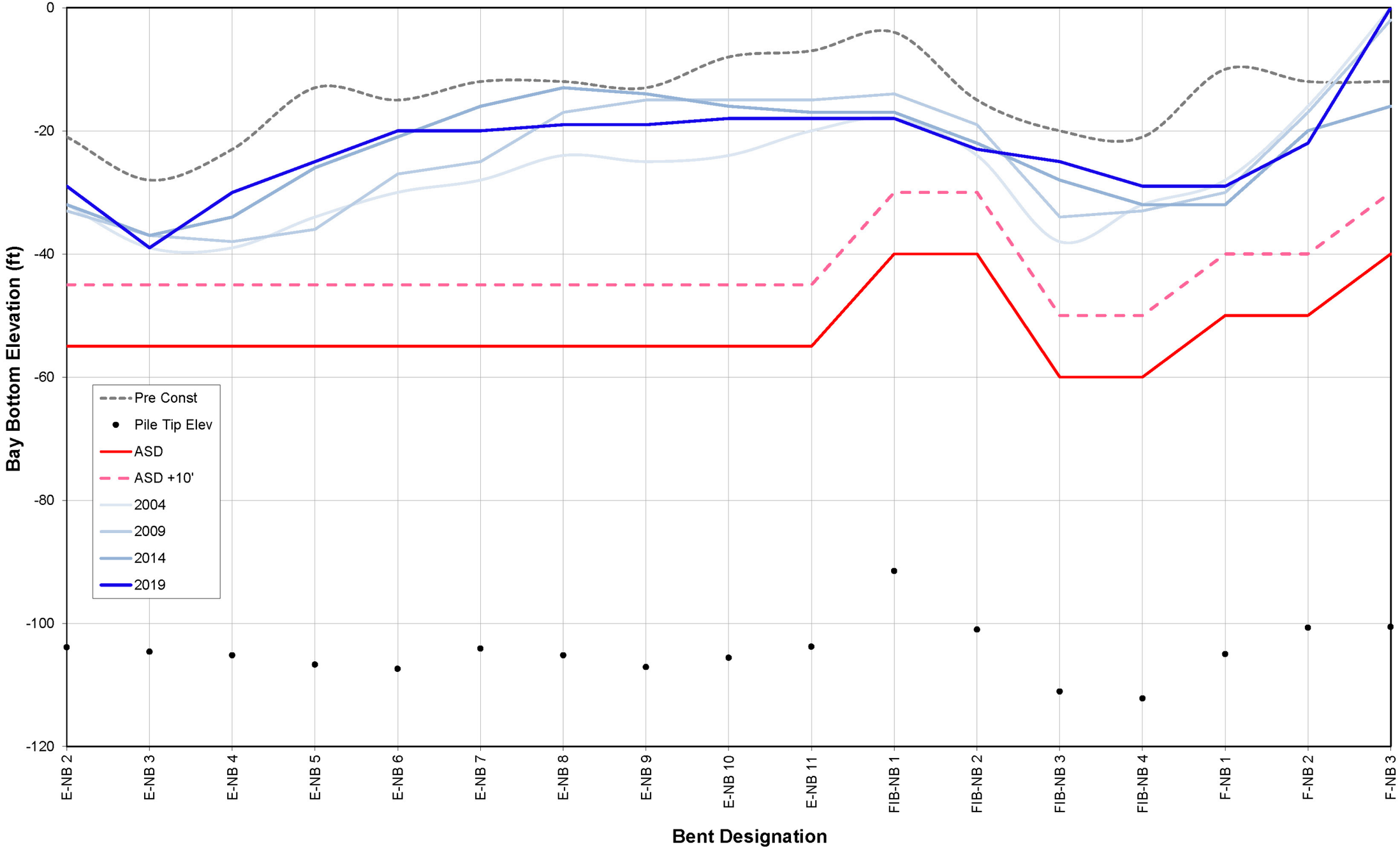
9.9 Trestle DNB Bay Bottom Profile

To be provided in FY2022 report.

9.10 Trestle DSB Bay Bottom Profile



9.11 Trestle ENB, FIB-NB, & FNB Bay Bottom Profile



9.12 Trestle ESB, FIB-SB, & FSB Bay Bottom Profile

To be provided in FY2022 report.

10. Testing Documentation

No testing was performed during this inspection.

11. Electronic Submittals

The following supplemental items will be submitted electronically to the District with the Final Report:

- Inspection Database and Photograph Logs: Includes majority of field notes from the annual inspection and the routine inspections performed on the trestles, 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 Trestle CNB
- TSCT and CCT Mechanical, Electrical and Lighting, Fire/Life Safety/Security Systems field notes