

# 2023 Interim Bridge Inspection

PennDOT Bridge Inspection Report

ECMS No: E04533

Bridge Category: B3 - Interim

Inspection Cost: \$3,092.95

Municipality: Borough of Dunmore

County: Lackawanna County

BMS ID: 35 7407 1312 0024

BRKEY: 20928

Feature Carried: Mill Street

Feature Under: Delaware & Lackawanna RR

Structure Owner: Borough of Dunmore

Structure Length: 400'

Roadway Width on Bridge

Curb-to-curb: 17.6'

Out-to-out of deck: 25.6'



AECOM No. WO5-41

## Not for Public Record – Structure Safety Inspection Study

This document is the property of Borough of Dunmore. The data and information contained herein are part of a structure safety inspection study. This safety study is only provided to those official agencies or persons who have responsibility in the highway transportation system and may only be used by such agencies or persons for safety-related planning or research. The document and information are not public pursuant to 65 P.S. §67.101 et seq. and 23 U.S.C. §409 and may not be published, released or disclosed without the written permission of the Borough of Dunmore.

Next Inspection Due: 9/2023 (Interim)

Superstructure Type: 21919

Span 1, 3, 4, 6 and 7: Reinforced Concrete T-Beams

Span 2: Steel Thru-Girders

Span 5: Concrete Open Spandrel Arch

Fracture Critical: 1

Substructure Type:

Abutments: Reinforced Concrete

Piers: Reinforced Concrete

Deck Wearing Surface: Bituminous

Deck Type: Reinforced Concrete

No. of Spans: 7

Year Built: 1917

Year of Last Rehabilitation: N/A

Bridge Posting: 5 Ton Weight Limit

Roadway Posting: N/A

One Lane Bridge: No

Recalculate Rating: No

Scour Critical: 5

Scour Plan of Action Required: No

Vertical Clearance: 36'-0" under SR 0081 Northbound

Underwater Inspection Required: No

Inspection Date: March 22, 2023

April Yorkonis, EIT, CBSI

Riley LaRiviere, EIT, CBSI

Brendan Kearns, CBSI



625 West Ridge Pike (Suite E-100)

Conshohocken, PA 19428



*Brett Canimore*

Brett Canimore, PE 053513E PA

**2023 INTERIM BRIDGE INSPECTION REPORT**  
**Mill Street over Delaware & Lackawanna RR and Roaring Brook**

**BMS No. 35 7407 1312 0024**

<b>Bridge Inspection Access Equipment and Maintenance and Protection of Traffic Requirements</b>
Bridge Inspection Access Equipment Used: Bridge Tracker
Bridge Inspection Access Equipment Provided By: Harcon
Maintenance and Protection of Traffic Required: No
Maintenance and Protection of Traffic Provided By: N/A
Required Lane Closure Restrictions: N/A
Hours Required for Lane Closures: N/A

**Overall Condition:**

The interim inspection is required because the bridge is posted for load due to the condition of the Superstructure. The report focuses on the areas of the bridge that were evaluated during the interim inspection and all other notes are carried forward from the previous inspection.

- **3 - SERIOUS** – The overall condition is governed by the Superstructure and Inventory ratings.

**Sign Information**

The bridge is currently posted for 5 Tons. The weight limit signs are in place at the bridge and far advance. Signs are not required at the near advance because the bridge is at an intersection. A water filled barrier is in place along the left curblin. Because the bridge roadway width is <18', "Narrow Bridge" signs are required and in place at each bridge site. Hazard Clearance markers are recommended at each bridge corner, but are not in place.

**Deck (1A01)**

**Previous Condition Rating: 3 - Serious**

**Current Condition Rating: 3 - Serious**

- The top of deck is not visible due to the bituminous wearing surface.
- The sidewalk on the left has transverse cracks throughout and random delaminations and spalls, some with exposed rebar. A barrier is in place along the left curblin and pedestrians are restricted from the sidewalk on the left by chain link fences. The curbs along the right exhibit cracks and spalling with areas of exposed rebar.
- The underside of the deck has moderate to heavy scale, random spalls with exposed and heavily rusted rebar, hairline to fine cracks with efflorescence and rust, and areas of delaminations.

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**Superstructure (1A04)**

**Previous Condition Rating: 3 - Serious**

**Current Condition Rating: 3 - Serious**

- The superstructure consists of concrete T-beams in Spans 1, 3, 4, 6 and 7; Steel thru girders and floorbeams in Span 2 and a Concrete Open Spandrel Arch in Span 5.
  - The reinforced concrete T-beams exhibit full length longitudinal cracks with efflorescence and delaminations, heavy scale and spalls. Some of the spalls expose the bottom longitudinal reinforcement with typical moderate to heavy rust and some debonded bars. At the near end of Beam 5 in Span 3 and Beams 3 and 4 in Span 7, there are shear like cracks that extends thru the haunch at the near end. The worst case condition for the T-beam spans occurs in Span 3. Beam 1v exhibits spalling across the bottom that exposes six longitudinal bars which are partially to fully debonded. Similarly, Beam 2 has the bottom longitudinal reinforcement exposed and partially debonded throughout mid-span.
  - Span 2 exhibits moderate to heavy rust and pitting with areas of section loss to the girders and exposed flanges of the floorbeams. Above the deck, holes were found in several knee braces and stiffeners. The right through girder 7th knee brace is bent. The longitudinal web plate along the sidewalk is almost entirely rusted through at the far left end. The right through girder has a few holes in the web and section loss above the bearing at the near end. The fascia webs have pack rust at the longitudinal repair plate located at mid-height. Typically the bearing stiffeners have up to 100% section loss at the bottoms. The concrete encasement is spalling along the bottom flange of the girders and reveals bottom flanges with heavy rust and moderate section loss. Several of the floorbeams also exhibit spalling of the concrete encasement along the top and bottom flanges. Typically, the exposed areas of the bottom flanges have section loss with  $\frac{3}{8}$ " remaining at the toe and  $\frac{5}{16}$ " thick remaining across the underside of the flange. The worst case being Floorbeams 1 and 15 which are located under the deck joints. The steel girder bearings have heavy rust, pack rust and are almost fully expanded and appear frozen.
  - The concrete open spandrel arch in Span 5 exhibits areas of cracking and scaling throughout. The arch ribs have delaminated areas and some spalls with exposed reinforcement. The concrete arch columns have wide cracks with delaminations and spalls with exposed rebar. Typically, the floorbeams have random cracks and vertical and diagonal shear cracks adjacent to the arch columns. Floorbeams 5 and 6 exhibit severe spalling and concrete loss along the bottom exposing all longitudinal reinforcement. There is a 6" gap between the bars and the remaining concrete. The fascia beams have similar cracking, scaling and spalling with diagonal shear cracks found at several locations.

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**Substructure (1A02)**

**Previous Condition Rating: 4 - Poor**

**Current Condition Rating: 4 - Poor**

- The substructure consists of reinforced concrete abutments, piers, and wingwalls.
  - The abutments consists of three concrete columns with a concrete cap beam and concrete wall. Typically, the caps and columns have delaminations, spalls and cracks with efflorescence. The top of the footings are exposed at Near Abutment Columns 2 and 3. The concrete wall has heavy spalling with exposed rebar throughout. The Far Abutment also has a few spalls with exposed rebar and minor to moderate scaling.
  - The concrete pier columns exhibit scaling, ¼" wide cracking, delaminations and spalls with exposed rebar. The random gunite repairs have cracking with spalls. Typically, the pier caps have cracking, delaminations and spalls with exposed rebar. At Piers 4 and 5, the caps have increased deterioration due to the active seepage from the deck. The footings are exposed at Piers 2, 3, 4 and 6 due to drainage runoff. Some of the footings exhibit cracking or minor
  - The concrete wingwalls at the Near Abutment have cracking and spalling. The Far Left Wingwall exhibits a full length horizontal crack with heavy spalling and the Far Right Wingwalls has a ½" wide crack with spall at the fixed end.

**Scour Inspection Findings (IN24)**

- The substructure units are not within normal flow, no scour was noted. The bridge is not considered Scour Critical and does not require a Scour Plan of Action.



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NOTE: The following recommended maintenance items pertain to those Elements inspected during this Interim Inspection, and may not reflect all maintenance items recommended during the previous Routine Inspection.

**MAINTENANCE RECOMMENDATIONS:**

**PRIORITY 0 - IMMEDIATE ACTION REQUIRED (WITHIN 7 DAYS)**

NONE

**PRIORITY 1 - AS SOON AS WORK CAN BE SCHEDULED (WITHIN 6 MONTHS)**

NONE

**PRIORITY 2 - ADJUST SCHEDULE AS NEEDED (WITHIN 2 YEARS)**

A743201		Paint girders and floorbeams where visible/exposed							
	1	EB @ \$20,000.00 per EB	=	\$		20,000.00			
A744501		Rehab the deteriorated girder bearings							
	4	EA @ \$1,795.00 per EA	=	\$		7,180.00			
A744603		Repair T-beam spalls, floorbeams, and arch fascia beams							
	33	EA @ \$18,000.00 per EA	=	\$		594,000.00			
C744603		Repair arch ribs and columns							
	17	EA @ \$10,000.00 per EA	=	\$		170,000.00			
A744101		Repair/replace all deck joints							
	120	LF @ \$40.00 per LF	=	\$		4,800.00			
B744602		Repair deteriorated steel floorbeams							
	15	EA @ \$12,000.00 per EA	=	\$		180,000.00			
C744602		Repair/rehab the steel through girders							
	2	EA @ \$44,000.00 per EA	=	\$		88,000.00			

**PRIORITY 3 - ADD TO SCHEDULED WORK**

D744802		Repair spalls, delaminations, and cracks in piers							
	13	CY @ \$2,230.00 per CY	=	\$		28,990.00			
D744303		Repair spalled and holed through concrete deck							
	25	SY @ \$560.00 per SY	=	\$		14,000.00			
C744802		Repair spalls and seal cracks in wingwalls							
	2	CY @ \$2,230.00 per CY	=	\$		4,460.00			

*Continued on next page*

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**MAINTENANCE RECOMMENDATIONS (CONT.):**

**PRIORITY 3 - ADD TO SCHEDULED WORK**

B744802		Repair spalls and seal cracks in abutments							
	2	CY	@	\$2,230.00	per	CY	=	\$	4,460.00
RDCLSGN		Install hazard clearance signs at all corners							
	4	EA	@	\$100.00	per	EA	=	\$	400.00

**PRIORITY 4 - ROUTINE STRUCTURAL**

BITWRGS		Patch potholes and seal cracks in wearing surface							
	10	SY	@	\$50.00	per	SY	=	\$	500.00
E744303		Repair spalls and seal cracks in sidewalks and curbs							
	7	SY	@	\$140.00	per	SY	=	\$	980.00
C744402		Repair/replace or extend current downspouts							
	16	EA	@	\$1,300.00	per	EA	=	\$	20,800.00
RDLDSGN		Update far advance sign to reflect accurate distance.							
	1	EA	@	\$500.00	per	EA	=	\$	500.00

**PRIORITY 5 - ROUTINE NON-STRUCTURAL**

B743101		Clean/flush drains and re-open paved over drains							
	1	EB	@	\$455.00	per	EB	=	\$	455.00
A743101		Clean and flush the deck.							
	1	EB	@	\$720.00	per	EB	=	\$	720.00
C743102		Clean and flush the bridge seat.							
	1	EB	@	\$480.00	per	EB	=	\$	480.00

<b>TOTAL COST OF RECOMMENDED REPAIRS</b>	<b>=</b>	<b>\$1,140,725.00</b>
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Note: These costs are estimates for maintenance items only. They do not include costs for engineering, permitting, right-of-way easements, contractor's overhead and construction inspection which could add significantly to the total cost of rehabilitating the structure

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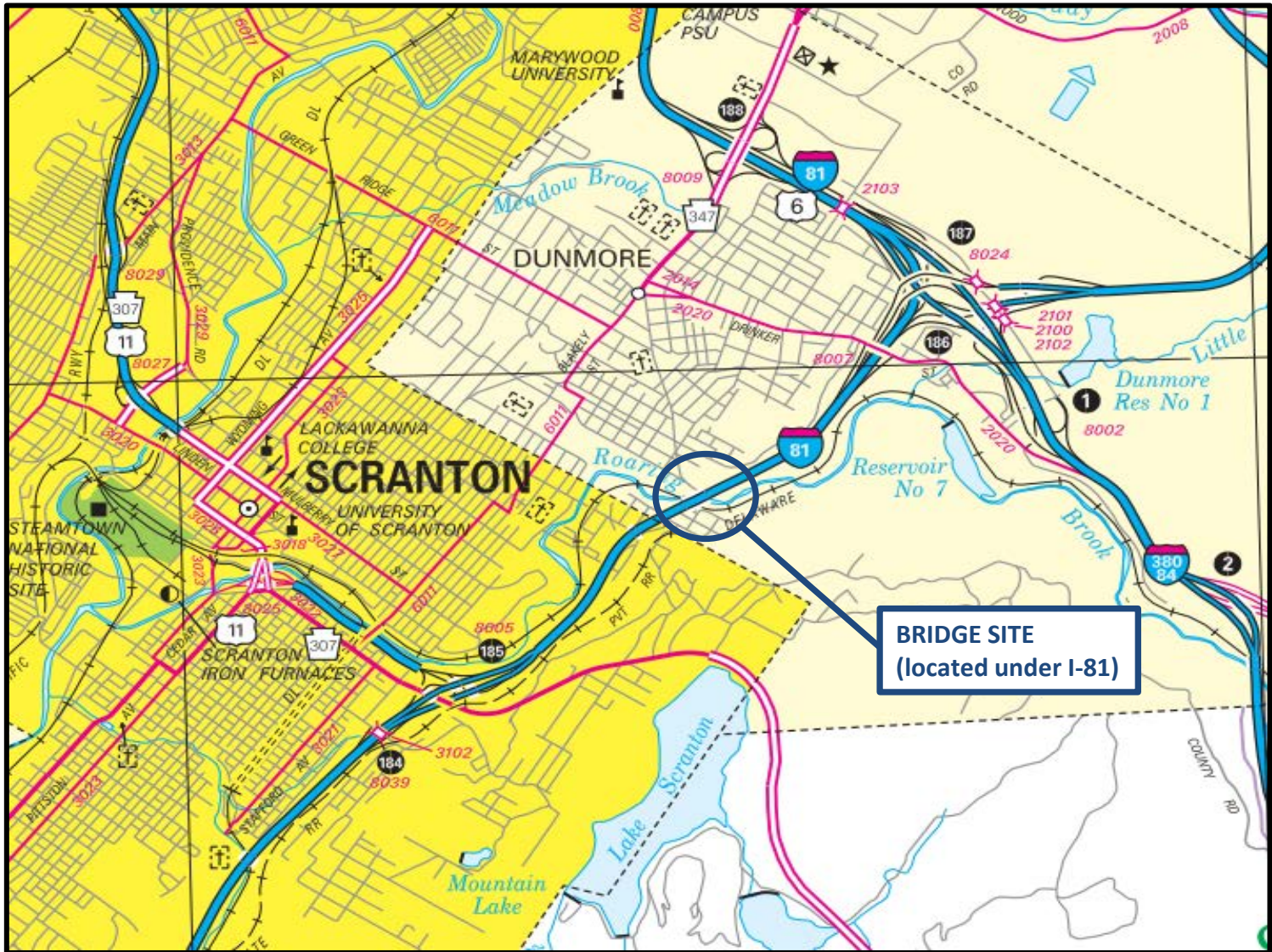
Appendix E – Sketches and Additional Field Notes

Appendix F – Bridge Posting

Appendix G – Fracture Critical Member Plan

**APPENDIX A**

**LOCATION MAP**



## LOCATION MAP

**Mill Street over Delaware & Lackawanna RR and Roaring Brook**

Borough of Dunmore  
Lackawanna County  
Coordinates: 41.4078, -75.6264

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## **APPENDIX B**

### **LOAD RATING SUMMARY**

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**LOAD RATING SUMMARY**

The load rating values in the following table are based on the 2020 rating by HNTB. The concrete T-Beams in Span 3 control the rating. Per SOL 495-13-08, with ADTT < 500 and superstructure condition rating = 3, the ratings were reduced by a Safe Load Capacity Reduction Factor of 0.8 (Note: Reduction Factor of 1.0 applied to H vehicle).

<b>LOAD RATING SUMMARY</b>			
<b>TRUCK</b>	<b>INVENTORY RATING (TONS)</b>	<b>OPERATING RATING (TONS)</b>	<b>SLC OPERATING RATING (TONS)</b>
<b>H20</b>	<b>3</b>	<b>6</b>	<b>6</b>
<b>HS20</b>	<b>4</b>	<b>8</b>	<b>6</b>
<b>ML80</b>	<b>4</b>	<b>7</b>	<b>5</b>
<b>TK527</b>	<b>4</b>	<b>8</b>	<b>6</b>

**POSTING SUMMARY**

The following restrictions are currently placed on the bridge under §4902(a) of the PA Vehicle Code:

- **Bridge Weight Limit 5 Tons**

A water filled plastic barrier is placed flush against the left sidewalk curbline to remove vehicular and pedestrian traffic from Beam 1 in Span 3.

**APPENDIX C**

**PHOTOGRAPHS**



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1. Left Elevation



2. Right Elevation



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3. Near approach, looking ahead.



4. Far approach, looking back.



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5. Closed sidewalk, Near Left Approach, looking ahead.



6. Top of deck, looking ahead.



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7. Left bridge rail and closed sidewalk, top of deck, looking left.



8. Span 2 right through girder and bridge railing, looking ahead.



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9. Left Girder with 100% section loss to the bottom of the stiffeners and knee brace webs.



10. Hole in the web of the knee braces for the Right Girder.



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11. Typical section loss to the web plates along the Right Girder.



12. Areas of spalling with exposed rebar along the outside edges of the deck.



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13. Underside of Span 1, looking back.



14. Beam 2, Span 1 with cracks, delamination and spalls with exposed rebar.



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15. Beam 5 in Span 1 with spall with exposed longitudinal reinforcement near mid-span.



16. Underside of the superstructure, Span 2, looking ahead.



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17. Spalls with exposed rebar in the underside of the deck in Span 2.



18. Typical moderate to heavy rust along the through girder webs.



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19. Hole in the web of the right girder at the near end.



20. Advanced section loss to the bottom of the web of the right girder at the near end.

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21. Newly noted hole in the Left Girder web at Floorbeam 13.



22. Span 2 floorbeams with spalled concrete exposing the bottom flanges.



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23. Close up of the floorbeam bottom flanges with rust and section loss.



24. Section loss to the underside of the floorbeam bottom flanges.



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25. Girder bearings in Span 2 with heavy rust and pack rust. Note the bearings are frozen in expansion.



26. Underside of Span 3, looking ahead. Note that Span 4 is similar.

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27. Spall with exposed rebar in the underside of the deck, Span 3, Bay 4.



28. Span 3, Beam 1 spall throughout length with exposed and debonded rebar.



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29. Spall with exposed rebar in the bottom of Beam 2 in Span 3.



30. Beam 5 in Span 4 spall with six exposed longitudinal bars.



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31. Underside of Span 5, looking ahead.



32. Cracks with delaminated concrete and spalling along the left arch rib.



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33. Left arch rib at mid-span with spall with exposed rebar.



34. Floorbeams 5 and 6 in Span 5 with severe spalling across the bottom.



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35. Close up of Floorbeam 5 with up to 12" gap between the concrete and bottom reinforcement.



36. Full height spalling with exposed rebar to the right of Column 1.

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37. Underside of Span 6, looking ahead. Note that Span 7 is similar.



38. Spall with exposed rebar to Beam 2 at the drain outlet in Span 6.



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39. Shear crack in the haunches of the beams in Span 7.



40. Cracks with rust and efflorescence and delaminated concrete in the bottom of Beam 3, Span 7.

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41. Near Abutment.



42. Spall with exposed rebar at the left end of the Near Abutment.



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43. Near Right Wingwall.



44. Wide diagonal crack in the Near Right Wingwall.



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45. Pier 1, looking ahead.



46. Spall with exposed rebar in the Pier 1 cap.



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47. Cracks and spall in the left face of Column 2 at Pier 2.



48. Typical pier for the T-beam spans. Pier 3 shown, looking ahead.



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49. Exposed footings at Pier 3.



50. Pier 4, looking ahead.



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51. Spalls with exposed rebar in the cap at Pier 4.



52. Spall with exposed rebar at the bottom of the right column at Pier 4.

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53. Pier 5, looking back.



54. Spall with exposed rebar in the cap of Pier 6.



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55. Cracks and spalls at the corners of Column 3 at Pier 6.



56. Far Abutment.



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57. Upstream channel, looking right.



58. Downstream channel, looking left.

## **APPENDIX D**

### **FIELD INSPECTION FORMS (*iForms*)**

**5A01** SR ID: 35740713120024 **5A03** BR Key: 20928 **7A01** Inspection Date: March 22, 2023

**1A09** Inspection Status: 2 - Submitted  
**7A02** Team Leader: A. Yorkonis (2350)  
**7A03** Inspection Type: I - Interim (special)  
**7A05** Inspected By: 8 - Consulting Firm

## Structure Description

**5A08** FHWA Facility Carried: MILL STREET  
**5A07** Features Intersected: DEL-LACK RR/ROARING BRK  
**5A09** Location: 3/4 MI SE OF SR 6011  
**5C01** Roadway Name: MILL STREET  
**5A06** City / Borough Name: 35/407 - DUNMORE  
**6B48** Combust. Mat. Under Bridge: 12 - No Reportable Materials

Combust. Mat. Under Bridge Note:

## Structure Type ( Dept )

Main

Approach

<b>6A26</b> Material Makeup: 2 - Concrete(in place)	<b>6A26</b> Material Makeup: 1 - Steel
<b>6A27</b> Physical Makeup: 1 - Reinforced	<b>6A27</b> Physical Makeup: 9 - Other or none
<b>6A28</b> Span Interaction: 9 - Other	<b>6A28</b> Span Interaction: 1 - Simple, non-comp
<b>6A29</b> Structural Config: 19 - Arch deck - open	<b>6A29</b> Structural Config: 14 - Girder riv/thru

## Sign Information

ID01	ID02	ID03	ID04	ID06	ID07	ID05	ID08
Type of Sign	Sign Needed	Sign Message	Near Adv	Bridge Near	Site Far	Far Adv	Signing Notes
0 - Bridge	Yes		N	G	G	G	Near Adv not required due to near intersection
1 - Bridge Weight Limit	Yes	5 Tons	N	G	G	G	Near Adv not required due to near intersection
2 - Except Combinations	No		N	N	N	N	
3 - One Truck at a Time	No						
4 - Vertical Clearance On	No						
5 - Vertical Clearance Under	No						
6 - One Lane Bridge	No						
7 - Narrow Bridge	No	Yield	N	G	G	N	Roadway width <18'
8 - Hazardous Clearance	Yes			M	M		Required due to temporary barrier, not installed
9 - Other	Yes	distance	N			D	Far Adv. = 1/8 Mile Ahead @ Chestnut St Far Adv should be updated to current standard to read "500 FT AHEAD" Yield signs near and far side

**5A01** SR ID: 35740713120024 **5A03** BR Key: 20928 **7A01** Inspection Date: March 22, 2023

**Features Intersected**

<b>6C02</b>	<b>5C03</b>	<b>5B09</b>	<b>5C06</b>	<b>5C29</b>	<b>4A20</b>	<b>4A19</b>	<b>6C18</b>	<b>6C19</b>	<b>6C20</b>	<b>6C21</b>	<b>6C22</b>	<b>6C23</b>	<b>6B17</b>
SR ID	On/Under	Skew Angle	Dir	NHS	Min Lat CI		Tot Hor CI		Min Vrt CI Rdwys		Vrt CI Over 10ft		ADT
SR	Seg				Left	Right	Left	Right	Left	Right	Left	Right	
-	-	1	90	0 -	0 - Not on NHS	0.0	99.9	0.0	17.6	99.9	45.0	99.9	2000
-	-	A	85	N/A		0.0	99.9	0.0	0.0	-1.0	21.8	-1.0	70
		B	-1	N/A		0.0	99.9	-1.0	-1.0	-1.0	25.0	-1.0	-1

**Vertical Details**

<b>6C02</b>	<b>5C03</b>	<b>6C35</b>	<b>6C37</b>	<b>6C36</b>	<b>6C38</b>
SR ID	On/Under	Left		Right	
SR	Seg	Vertical Clearance	Signing	Vertical Clear Posting	Vertical Clearance Signing
-	-	1	0 - not req/not existing	0 ft 0 in	0 ft 0 in
-	-	A		0 ft 0 in	0 ft 0 in
		B		0 ft 0 in	0 ft 0 in

**6B15** Design Exceptions:

**6A50** Sup Latent Problem:

**6A51** Sub Latent Problem:

**Deck Geometry**

**6B14** Table Used for Appraisal: 1 - 2A/2B

**Controlling Values**

**5C10** ADT: 2,000

**5C27** Bridge Road Width: 17.6

**4A10** Appraisal: 2 - Intolerable-Replace

Notes: Use Table 2A

**4A11** Underclr Appr: 4 - Tolerable

**6B13** Controlling Vertical: 21.0 FT

Controlling Lateral: 21.16



**5A01** SR ID: 35740713120024 **5A03** BR Key: 20928 **7A01** Inspection Date: March 22, 2023

### Traffic Safety Features

Feature Type	IA01 Location	IA02 Adequacy Rating	IA03 Description	5C08 Posted Spd Lmt (mph)
1 - Railing	2 - Right	2 - Req not provided	concrete pillars w/ fence; curb only @ girder (RT)	15
<b>Comment:</b> Span 1, 3-7 - Concrete pillars w/ wrought iron fence: pillars - heavy scale, few cracks, heavy rust where rebar exposed @ spalls; damage @ span 1 right, span 3 right, span 4 left & span 6 left; fence - some loose/disconnected to pillars; few missing, disconnected pickets (rusted through); NR Span 3 pillar rotated;  Span 2: 7.5" curb right, 6.5" curb/sidewalk left @ girder; pipe railing on top of girders - 2 posts rusted thru @ right (1 with 100% sextn loss @ base/loose); left & right thru-girder fascia base plates cracked.  42" high Temporary water-filled plastic barrier in front of left sidewalk - placed since 2020 inspection. Collision damage at far left end.				
2 - Transition	5 - Far Left	2 - Req not provided	curb & sidewalk; guiderail only @ FR	15
<b>Comment:</b> NR - 31"x8" conc. wall w/ curb above u-wall (8.5"x11" curb) NL - short conc. pillars w/ steel tube behind sidewalk; bridge end is detached/spalled & loose; (1st Vert steel post exhibits 100% sextn loss) FL - rough bituminous sidewalk, tapered to roadway (None) FR - 2 bolt attachment to steel angle attached to end pillar				
3 - Approach Guiderail	5 - Far Left	2 - Req not provided	short length curbs/sidewalks, only guiderail @ FR	15
<b>Comment:</b> NR - 31" conc. wall w/ curb, heavy spalled curb for ~14 LF with exp reinforcement & One 1/16" Vert Crack NL - short conc. pillars w/ steel tube between sidewalk, 2nd post is spalled (loose) at base tube FL - rough bituminous sidewalk, tapered to roadway FR - total 25 lf Type 2-S w/ steel offsets, flared; some missing bolts/attachments, 3 LF minor impact damage				
4 - Approach railend	5 - Far Left	2 - Req not provided	curbs/sidewalks end	15
<b>Comment:</b> NR - None. No curb NL - sidewalk ends w/ ramp to roadway FL - rough bituminous sidewalk ends, tapered to roadway FR - blunt end of w-beam element is buried				

### Approach Alignment

**4A02** **Code:** 3 - Intolerable-Correct  
**Comment:** sharp horizontal curve near & far - limited sight, speed reduction

### Approach Roadway

**6B39** **Code:** 4 - Poor  
**Pavement:** bituminous - heavy wear, moderate/severe cracking typ.  
near - pattern cracks @ transition with 1 SF pothole at NR, settle./pattern cracks left & right, up to 1" wide  
longitudinal and transverse cracks  
far - extensive potholes/spalls, up to 4" deep, some rough patching  
**Drainage:** FL inlet - slightly fill w/ dirt  
**Shoulders:** n/a

### Approach Slab

**6B38** **Code:** N - N/A  
**Pavement:**  
**6B04** **Bump at Bridge:** No Bump

**5A01** SR ID: 35740713120024 **5A03** BR Key: 20928 **7A01** Inspection Date: March 22, 2023

**6A39** Relief Joints: 0 - Joints not present **6A41** Number of Joints: 3  
Comment:

**6B02** New Wearing Surface Under Bridge: No



**5A01** SR ID: 35740713120024 **5A03** BR Key: 20928 **7A01** Inspection Date: March 22, 2023

## Deck Wearing Surface

### Main

**5B02** Type of Wearing Surface: 6 - Asphalt  
**5B03** Type of Memb. Water-Proof: 0 - None  
**5B04** Deck Corrosion Protection: 0 - None  
**6A33** Thickness: 3.0  
**6A34** Date Recorded: 04/28/2014

**6B40** Condition Rating: 5 - Fair-all primary structural elements are sound but may have minor section loss, cracking spalling.

**1C02** Dk WS Notes: bituminous:  
 heavy wear, centerline crack/seam, numerous random cracks up to 1" wide;  
 7.5'L x 8.5'W bituminous patch with cracks at P01 left (appears slightly loose);  
 transverse & pattern cracks @ piers - heavier above expansion joints;  
 wide map cracking in bitumionus @ Piers 2 and 3.  
 up to 3" deep potholes @ right edge span 2 (70 sf) with standing water present; e  
 potholes with exposed joint @ P04;  
 heavy scale, potholes, rough patches along left from span 4 to far end (25 TSF);

### Approach

**6A30** Type of Wearing Surface: 6 - Asphalt  
**6A31** Type of Memb. Water-Proof: 0 - None  
**6A32** Deck Corrosion Protection: 0 - None  
**6A33** Thickness: 3.0  
**6A34** Date Recorded: 04/28/2014

## Expansion Joints: **6A41** Number of Expansion Joints: 3

	<b>VD25</b>	<b>VD26</b>	<b>VD27</b>
Joint Number	Joint Type	Movement Class	Manufacture Code
1	D - Plate	A - Up to 2"	G - Unknown
2	M - Strip	A - Up to 2"	G - Unknown
3	A - Open	A - Up to 2"	G - Unknown

## Bridge Cleaning

**VD31** Bridge Seat Cleaning: 0 **VD32** Bridge Seat Cleaning Note:  
**VD33** Scuppers w/ Downspouts: 0 **VD34** Scuppers w/o Downspouts: 0

**5A01** SR ID: 35740713120024 **5A03** BR Key: 20928 **7A01** Inspection Date: March 22, 2023

## Joint Inventory and Inspection Information

IJ01 Overall Joint Condition Rating: N - Not Applicable

IJ02 / IJ03 Joint / Record Key	IJ04 Joint Type	IJ05 Joint Location	IJ06 Joint Movement	IJ07 Joint Manufacturer	IJ08 Joint Length (ft)	IJ09 Debris Impact?	IJ10 Leaking?	IJ13 Condition Rating
						N	N	
IJ02 / IJ03 Joint / Record Key	IJ11 Damaged?	IJ12 Covered?	IJ14 Extrusion Install Year	IJ15 Seal Install Year	IJ16 ECMS NO	IJ17 Replacement Reason	IJ18 Replacement Comments	IJ19 Condition Summary
	N	N						

## Bearing Inventory and Inspection Information

IB01 Overall Bearing Condition Rating: N - Not Applicable

IB02/IB03 Bearing / Record Key	IB04 Bearing Type	IB05 Bearing Location	IB06 Bearing Count	IB07 Bearing Movement	IB08 Corrosion?	IB09 Alignment Issues?	IB10 Anchor Bolt Issues?	IB11 Loss of Bearing Area?	IB12 Condition Rating
IB02/IB03 Bearing / Record Key	IB13 Install Year	IB14 ECMS NO	IB15 Replacement Reason	IB16 Replacement Comment	IB17 Condition Summary				

## Deck

<b>1A01</b>	<b>Condition</b>	3 - Serious-loss of section, deterioration, spalling or scour have seriously affected primary structure				
<b>6B07</b>	<b>Est. Spall Delamination:</b>	5.00%	<b>6B08</b>	<b>Date:</b>	04/09/2009	
<b>6B10</b>	<b>Est. Chloride Content:</b>	50.00%	<b>6B11</b>	<b>Date:</b>	04/09/2009	
<b>1A07</b>	<b>Unrepaired Spalls:</b>	5381.96 SF	<b>6B47</b>	<b>Deck Cracking Metric:</b>	0.00	YD/SY
	<b>Deck Top:</b>	Pier 3 hole patched with bituminous. Previously noted Pier 1 hole covered with steel plate covered with bituminous patch prior to March 2020 inspections.  remainder not visible due to the bituminous wearing surface.				



## Form B

**5A01** SR ID: 35740713120024 **5A03** BR Key: 20928 **7A01** Inspection Date: March 22, 2023

**Deck Underside:** Concrete -  
- Random moderate/heavy scale, random spalls w/ heavily rusted rebar  
- Hairline/fine random cracks w/ efflorescence, some rust;  
- Areas of delamination, heavy efflorescence

Girder, Span 2:  
- Additionally some bays w/ moderate cover spalling;  
- Numerous bars bays 1, 3, 4, 5 & 6  
- Bay 7 edge spall w/ efflo @ sdwlk interface  
- Possible old patches in bay 6  
- Spalled left sidewalk edges (under curb) w/ rebar

T-beam Span 3:  
- Spall with exposed rebar, Bay 4, Span 3 (5 TSF)

T-beam, Span 4:  
- Spall with exposed rebar in Bay 1 near drain (2 SF)

Arch, Span 5:  
- Spall with exposed rebar above P04 (10 SF)

**Deck Drainage:** most are blocked/clogged, some previously paved over but leak after rain; leakage through P02 & P05 joints - has scaled the pier & diaphragms. Down spouting is heavily corroded.

**Expansion Joints:** typ. paved over - heavy transverse & pattern cracks

P01 left - recent patch covers previously exposed plate  
P02 - plate visible on sidewalk, rusted. 1.5' sf spall @ P02 Lt

**Deck Notes:** Sidewalk:  
- Transverse cracks, random delamination & spalls, moderate dirt/debris, random rust stains;  
- Areas of severe spalls/delamination along variable height curb (some w/ exp reinf.);  
- Outside edge spans 1 & 3-7 has some moderate deterioration;  
- Bituminous curb along Span 3/4 SW edge;  
- Span 2: Mod rust stains & cracks w/ increasing spalls;  
- Span 2: 18" curb spall, near with exposed reinforcement (Lt SW);  
- 2" settlement @ NL transition

Right curb (4" to 8"), Spans 1 & 3:  
- Heavy spalling, rebar exposed in spans 3 & 4;  
- Outside edge Spans 1 & 3-7: Some mod deterioration (Severe on right in Span 4)  
- Moderate dirt & debris

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**Superstructure**

**1A04** **Condition Rating:** 3 - Serious-loss of section, deterioration, spalling or scour have seriously affected primary structure

**Narrative:** Spans 1, 3, 4, 6 & 7 - 5 Concrete T-beams (see Detailed Notes in narrative report)  
Span 2 - Steel Girder / Floorbeam, Riveted, Bottom Encased (see below)  
Span 5 - Concrete Open Spandrel Arch (see Detailed Notes in narrative report)

**5A01** SR ID: 35740713120024 **5A03** BR Key: 20928 **7A01** Inspection Date: March 22, 2023**Girders/Beams:** Span 2 (Through Girders) -

## Top:

- Heavy pitting, areas of moderate rust, scattered web repair plates
- Heavy rust/pack rust/moderate section loss @ sidewalk interface & midspan all floorbeams (includes knee braces, stiffeners, web, repair plates & extreme ends)
- Holes in knee braces and stiffeners thruout left girder (see attached notes for more detail)
- Longitudinal web plates along sidewalk almost rusted thru thruout the left
- Hole is rusted thru plate to girder web adj to 4th knee brace on right
- Rt knee brace 7 bent

## Outer webs:

- Isolated pack rust/prying @ longitudinal mid-height repair plates;
- 16" x 2" hole @ right (inside face repair plate visible through hole) at near end; 1" diameter in same location, near side of bolted angle
- 1-1/2" dia hole above floorbeam 6 @ right
- Severe rust with small holes at midheight right between FB 7 & 8
- 1" diameter hole in web at FB 11 @ right
- Near end right girder with 6"H to 3"H x 42"L x 3/8" SL to bottom of web
- Left exterior web, 5th stiff: 1/2" diameter hole at bottom
- At FB 13, right girder with 4"H x 2.5"L hole;

## Bearing stiffeners:

- Perforations/small holes @ bottoms (FL/P02 has area of severe holing)
- Couple previous repairs (plates), small holes @ NR bearing stiffener

## Bottom:

- Heavily spalled concrete encasement;
- Heavy rust/minor loss where bottom flange exposed (mostly @ ends)
- Several rivets show heavy section loss

**Floorbeams:** Span 2 (15 Encased Beams) -

- FB1, underside of bottom flange: 3/16" SL, measured at midspan.
- FB1, 3 - 7, 15: Full length bottom flange spalls
- FB2, 8 - 14: Heavy cracks/delamination, spalls @ ends
- Typical bottom flange section loss with 3/8" thick remaining at the top
- 5/16" thick remaining across underside of bottom flange
- Indeterminate bottom flange section loss due to encasement, moderate loss (worst) @ FB1 & 15 due to deck joint leakage (~ 3/8" remains at the flange tips, bottom interior portions of the flange has a 3/16" section loss (FB1) & up to 3/8" (FB15))

some top flange exposure @ spalls - mostly FB4 thru 10 (also indeterminate section loss); large spalls under sidewalk above top flange

**Stringers:** Span 3, critical findings (see detailed notes for more information): Span 3 controls the current load rating. Beam 1 bottom reinforcing is complete exposed (6 bars), 4 exterior debonded and consider ineffective, 4 interior are only partially bonded. Due to this condition Beam 1 should be taken out of service. Beam 2 has the bottom mat of 3 bars exposed and the bars are considered to be partially bonded and control the rating.

**Diaphragms:** concrete ends @ abutments -  
random cracks, some scale, minor spalls w/ exp. reb.

**Truss Members:** Span 5 Open Spandrel concrete arch (see detailed notes for more information) Critical findings: The floorbeam exhibits shear cracks near the supports, this is typical throughout. Floorbeams 5 & 6 appear to originally been constructed deeper than the other floorbeams. These floorbeams exhibit severe concrete loss on the bottom completely exposing the flexure reinforcing. There is a gap of APPROX. 6"-12" between the reinforcing and concrete. This renders the flexure reinforcing ineffective in the traditional sense. Additionally the severe concrete loss allows the observation that no shear reinforcing was placed in the floorbeams when the bridge was constructed.

**Portals/Bracings:** n/a



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**Bearings:** Span 2 (Through Girders)

steel - heavy pack rust, minor/moderate section loss @ inside halves, moderate rust outside;  
almost fully expanded, likely frozen

**Drainage System:** steel pipes - heavy rust, few are rusted off

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**Substructure**

**1A02** Substructure Condition Rating: 4 - Poor-adv. section loss, deterioration, spalling or scour.

Notes: Reinforced Concrete.

**Near Abutment**

Backwall: n/a

Bridge Seats: n/a

Cheekwalls: n/a

Stem: 3 concrete columns w/ concrete cap beam;  
concrete wall behind w/ pressure mortar:

C1 - cracks/efflorescence, delamination @ bottom inside  
C2 - scale/spall left face, cracks/delam./spall @ front right corner  
C3 - cracks/efflorescence, spalled bottom

cap - horizontal cracks w/ efflorescence, heavy scale/spalling/delaminations Bays 2 thru 4, exposed rebar Bay 4 for 2SF

wall - pressure mortar peel @ ends,  
heavy (exposed 2 courses rebar - sect. loss) ends/corners 7' x 3' left (4 exp vert bars, 7 exp horizontal bars), 5' x 2' right (6 exposed horizontal bars, 3 debonded)  
typ. spalls, hairline map cracks & rust staining throughout

Wings: left - couple hairline/fine full height cracks;  
spalling, delamination both ends (more severe @ fixed end)  
right - full height 1/8" crack, hairline vertical cracks/efflorescence;  
1/2" diagonal crack @ bricked-up opening;  
spalling along Abutment/WW interface

Footings: top of middle column foundation is visible - no observed problems  
top of 3rd column foundation is visible - no problems

Piles: unknown

**IN20** Scour Undermine: 0 - No

Settlement: none evident

Embank Slope-wall: old concrete driveway/parking failing out from stem

Wall Drainage: none

**Far Abutment**

Backwall: n/a

Bridge Seats: n/a

Cheekwalls: n/a

Stem: 3 concrete columns w/ concrete cap beam;  
concrete wall behind w/ pressure mortar:

C1 - minor scale, random cracks with efflo  
C2 - heavy scale, delamination, peeling pressure mortar, spall (1 SF) at NR corner  
C3 - minor scale, hairline cracks with heavy efflo & rust

cap - moderate scale, efflorescence, few cracks; previous repair right half - solid - 1/8" horizontal cracks Bays 1 & 2  
wall - rust stains top, hairline cracks, top edge spalls left w/ 27"H x 24"W x 3"DP spall with exposed rebar (2 vertical bars, 2 horizontal bars) below;  
64"W x 24"H x 2"DP spalled pressure mortar right exposes original spalled concrete

Wings: left - full length horizontal crack w/ heavy spalling  
right - cracking (to 1/2"), small spall @ fixed end

Footings: not visible

Piles: unknown

**IN20** Scour Undermine: 0 - No

Settlement: none evident



**5A01** SR ID: 35740713120024 **5A03** BR Key: 20928 **7A01** Inspection Date: March 22, 2023

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Embank Slope-wall: n/a  
Wall Drainage: none

**5A01** SR ID: 35740713120024 **5A03** BR Key: 20928 **7A01** Inspection Date: March 22, 2023**Navigational Control****4A21** Controls Exist: No  
**4A22** Vert Clearance: 0.00  
**4A24** Lift Vertical: 0.00  
**4A23** Horz Clearance: 0.00  
**4A07** Pier Protection:**Pier Details****5D02** Pier/Bent Number: P01 **IN20** Scour Undermine: No**Condition Summary:** Concrete cap -  
- Moderate scale, delamination, efflorescence;  
- Hairline/wide cracks w/ efflorescence & rust stains  
- Spall on underside between Column 1 & 2 (10 SF)

Footing - not visible

**Bridge Seats:** n/a**Cheekwalls:** n/a**Columns/Stems:** 3 Concrete Columns

C1 - hairline cracks typ.;  
NL - 5 lf spall @ mid-ht. w/ additional heavy cracking / delamination;  
NR - honeycomb, map cracks, efflorescence;  
FL - spall/delam for approx 10 LF;  
top half far - patch w/ no defects  
Cable wrapped around column

C2 - near top 1/3 - HL to 1/8" wide vertical cracks;  
far top 1/3 - gunite repair w/ minor delamination;  
right - 1/8" to 1/4"+ vertical crack / delamination @ edge of gunite extending ~  
3.5' above column base  
let - 1/8" wide vertical crack extending from top to midheight

C3 - hairline to 1/8" cracks typ.;  
NL corner - honeycomb, map cracks, efflorescence;  
NR corner - delam/breaking up for 3/4 height;  
left - wide crack w/ delamination thruout;  
far side - patch, HL cracks with efflo @ top

**Settlement:** n/a



**5A01** SR ID: 35740713120024 **5A03** BR Key: 20928 **7A01** Inspection Date: March 22, 2023**5D02** Pier/Bent Number: P02 **IN20** Scour Undermine: No

**Condition Summary:** Concrete cap - vertical cracks @ insides behind bearings (extend into columns);  
full ht. vertical/diagonal cracks @ ends of C2;  
NR bottom corner - spall, exposed rebar (6 SF) w/ adj wide crack with delam (5 LF)  
Top of near haunch spalled thruout right half;

Footing - exposed due to drainage run-off,  
Col 1 footing exposed 11"H x 40"W on near and FL x 4"H on right  
Col 2 footing exposed on all faces up to 22" high  
Col 3 footing exposed along left face for 3" high and near face 2"W x 6" high

**Bridge Seats:** n/a**Cheekwalls:** n/a**Columns/Stems:** 3 Concrete Columns

C1 - hairline cracks typ., spalls @ outside corners;  
spall @ top outside;  
NL - cracks/delamination/spall full HT;  
NR - honeycomb + corner cover spall @ bottom 5' with exposed bar;  
FL - full height vertical cracking, spalls, severe scaling below deck joint;  
deterioration adjacent to inside face patch

C2 - full height hairline to 1/8" cracks;  
increasing top NL & NR corner delamination

C3 - severe vertical spall adjacent to left face patch;  
NR - vertical crack @ bottom 2/3 w/ delamination/spall;  
right bottom 3/4 - gunite w/ cracks & spalls;  
FR - vertical crack @ bottom 3/4;  
middle far - cracks, delamination mid ht. to top, 6 lf spall w/ adj. deterioration

**Settlement:** None evident.**5D02** Pier/Bent Number: P03 **IN20** Scour Undermine: No

**Condition Summary:** Concrete cap - scale, hairline cracks w/ efflorescence,;  
crack/delamination @ NR top;  
vertical cracks @ ends of cap/transverse beam

Footing - Exposed at  
Col 1 - all sides up to 34" high max on right face, typ HL vert cracks  
Col 2 - all sides up to 54" high on far face, typ HL vert cracks, spall on top of far face and FL corner  
(1 SF each)

**Bridge Seats:** n/a**Cheekwalls:** n/a**Columns/Stems:** 3 Concrete Columns - typ. hairline map cracks, scaling

C1 - FL bottom corner 1sf spall, top FR has vertical crack w/ efflorescence

C3 - 1/4" wide vertical crack in left face at mid-height, spall with exposed rebar at NR corner at top (3 SF)

**Settlement:** n/a

**5A01** SR ID: 35740713120024 **5A03** BR Key: 20928 **7A01** Inspection Date: March 22, 2023

**5D02** Pier/Bent Number: P04 **IN20** Scour Undermine: No

**Condition Summary:** Concrete cap - scale, cracks/spalls w/ efflo due to water seepage;  
full height cracks @ ends of cap/transverse beam;  
full width crack @ bottom corner both beams;  
spall w/ exposed & debonded rebar @ far bottom edges of near cap

Footing - exposed 2.0' max at far (drainage run-off and/or scour from flooding)

**Bridge Seats:** n/a

**Cheekwalls:** n/a

**Columns/Stems:** 2 Concrete Columns - hairline cracks typ., efflorescence @ far, light scaled areas

C1 - full height crack @ NL & FL corners;  
top right - heavy scale and spall with exposed rebar below deck joint;  
NL - 2' corner spall @ 3/4 ht.;  
base - widespread hairline cracks, efflorescence,  
delamination starting @ interior face

C2 - short cracks @ left bottom, hairline cracks outside face;  
small spall bottom near face;  
NR - full ht. cracks, edge spalls & delam. @ top 1/2;  
FL - full ht. cracks, edge spalls (rusted rebar), spalls @ top of vert. crack @ cap;  
bottom half FL & top middle left face;  
base - 4' x 4' spalled left face w/ adj. delamination & 2'x1' spall;  
efflorescence, hairline map cracks

**Settlement:** none evident

**5D02** Pier/Bent Number: P05 **IN20** Scour Undermine: No

**Condition Summary:** Concrete Cap:  
- Minor/moderate scale  
- Cracking w/ efflo and rust stains (esp. inside face) due to seepage.  
- Full height vertical to slight diagonal cracks at ends of cap & transverse beams at far side  
- Horiz. cracks w/ delam on bottom  
- Underside: Spall with exposed rebar (3 debonded & 6 fully exposed horizontal bars)

Footing - not exposed

**Bridge Seats:** n/a

**Cheekwalls:** n/a

**Columns/Stems:** 2 Concrete Columns

C1 - minor scale, hairline map cracks;  
gunite @ NL (6" x 12" spall) top & NR (intact);  
heavy scale @ top below deck joint;  
base - hairline map cracking  
Right face: Delam (5 SF)

C2 - hairline map cracks;  
NL - 1/4" vertical crack @ mid-height;  
gunite @ NL & NR - delaminations (6 SF)  
moderate scale/efflorescence between outside corners;  
heavy scale @ top right;  
base - hairline map cracks, moderate scale & spall (2 SF) at FR corner  
separate concrete in front - large spall w/ hairline cracks right

**Settlement:** None evident



**5A01** SR ID: 35740713120024 **5A03** BR Key: 20928 **7A01** Inspection Date: March 22, 2023

**5D02** Pier/Bent Number: P06 **IN20** Scour Undermine: No

**Condition Summary:** Concrete Cap - cracks, rust, efflorescence;  
4.5' x 2'L x 3"DP spall with 3 exposed longit bars @ near bay 1 (deteriorated rebar);  
spall/delam. @ near bay 2 (1 SF);  
3' W x 1'L edge spall (rebar) @ near bay 4;  
up to 1/2" wide horizontal crack w/ rust stains @ far bays 1 & 2 & associated  
delam  
delaminated gunite on bottom;  
left bottom has transverse cracks w/ rust & efflorescence up to 1/4" wide

Footing - pedestal visible @ C1 at near and right up to 5" high and C2 at near and right up to 1' high

**Bridge Seats:** n/a

**Cheekwalls:** n/a

**Columns/Stems:** 3 Concrete Columns - light scale & hairline cracks typ.

C1 - 1/8" wide vertical crack @ top FR, 1/8" wide @ NL; Cable wrapped around column

C2 - 1/16" wide vertical crack at bottom NL (1 LF)

C3 - vertical & map cracks on near face, 1/8" to 1/4"+ vertical cracks on corners;  
6 lf spall (rebar) @ FL edge;  
spall with exposed rebar for 4' high at FR with 3 SF delam

**Settlement:** n/a

**5D02** Pier/Bent Number: P07 **IN20** Scour Undermine: No

**Condition Summary:** No actual Pier 7. Element previously entered and could not be successfully removed.

**Bridge Seats:** N/A

**Cheekwalls:** N/A

**Columns/Stems:** N/A

**Settlement:** N/A

**5A01** SR ID: 35740713120024 **5A03** BR Key: 20928 **7A01** Inspection Date: March 22, 2023

**Main**

**6A44** Group: 9 - Group 9  
**6A45 - 6A48** Critical Ranking Factor: 9993  
**6A49** Total Critical Ranking Factor: 30

**Structure Type (Dept)**

**6A26** Material Makeup: 2 - Concrete(in place)  
**6A27** Physical Makeup: 1 - Reinforced  
**6A28** Span Interaction: 9 - Other  
**6A29** Structural Config: 19 - Arch deck - open

**Approach**

**6A44** Group: 1 - Group 1  
**6A45 - 6A48** Critical Ranking Factor: 3333  
**6A49** Total Critical Ranking Factor: 12

**Structure Type (Dept)**

**6A26** Material Makeup: 1 - Steel  
**6A27** Physical Makeup: 9 - Other or none  
**6A28** Span Interaction: 1 - Simple, non-comp  
**6A29** Structural Config: 14 - Girder riv/thru

**Fracture Critical Details**

**IF01** Location: M - 2 **IF02** Type: 01 - Girder **IF05** FC Stress Category: D  
**IF03** Member: FB-Girder Connection

**IF04** Member Detail: Base metal at riveted connections  
**IF06** Notes: Concrete encased

**IF01** Location: M - 2 **IF02** Type: 01 - Girder **IF05** FC Stress Category: D  
**IF03** Member: Transverse Stiffeners

**IF04** Member Detail: Base metal at riveted connections  
**IF06** Notes: Mostly concrete encased

**5A01** SR ID: 35740713120024 **5A03** BR Key: 20928 **7A01** Inspection Date: March 22, 2023

**IF01** Location: M - 2 **IF02** Type: 01 - Girder **IF05** FC Stress Category: D  
**IF03** Member: Built-up Girder Tension Zone

**IF04** Member Detail: Base metal, riveted section in tension zone  
**IF06** Notes: Concrete encased

**IF01** Location: M - 2 **IF02** Type: 01 - Girder **IF05** FC Stress Category: B  
**IF03** Member: End Floorbeam Connection

**IF04** Member Detail: Potential out-of-plane bending  
**IF06** Notes: Gap at bottom flange (concrete encased) not totally visible.

**IF01** Location: M - 2 **IF02** Type: 11 - Floorbeam **IF05** FC Stress Category: A  
**IF03** Member: Rolled Floorbeam

**IF04** Member Detail: Base metal, tension zone  
**IF06** Notes: Mostly concrete encased. Bottom flange has heavy scale rust w/ indeterminate section loss

**IF01** Location: M - 2 **IF02** Type: 11 - Floorbeam **IF05** FC Stress Category: D  
**IF03** Member: FB-Girder connection

**IF04** Member Detail: Base metal at riveted connections  
**IF06** Notes: Mostly concrete encased. Where exposed, steel has scale rust @ bottom flange connections with girder.



**5A01** SR ID: 35740713120024 **5A03** BR Key: 20928 **7A01** Inspection Date: March 22, 2023

**IU00a** UW Reviewer Action:

**IU00b** Reviewer Comments:

**IU02** Number of Units: 0

**IU01** Recalculate SCBI: 0 - no recalc needed

**IU03** SCBI Source: O - observed

**4A08** SCBI: 5 - Stable w/in footing

**IU04** Overall SCBI: 6

**4A08b** Scour Critical Category: --

**IU04b** SCBI Recalculated: ☐

**IU06** Streambed Material #1: A6 - Stable Alluvium

**IU06** Streambed Material #2:

**IU07** Notes: cobbles, gravel, boulders, bedrock

#### Current Countermeasures

CM Num	<b>IU21</b> Type	<b>IU22</b> Location	<b>IU23</b> Condition	<b>IU24</b> Subunit
-----------	---------------------	-------------------------	--------------------------	------------------------

#### Possible Countermeasures

PCM Num	<b>IU25</b> Location	<b>IU26</b> Work Candidate
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#### SAR Calculation Data

**IU11** NAB Location: 1 - Left

**IU12** FAB Location: 2 - Right

#### US Left Wingwall

**IU13** Presence: N - not applicable

**IU14** Condition: N - not applicable

#### US Right Wingwall

**IU15** Presence: N - not applicable

**IU16** Condition: N - not applicable

#### Horizontal Debris Blockage

**IU17** Start: 0

**IU18** End: 0

#### Vertical Debris Blockage

**IU19** Start: 0

**IU20** End: 0

**5A01** SR ID: 35740713120024 **5A03** BR Key: 20928 **7A01** Inspection Date: March 22, 2023

**Sub Unit OSA Data**

**Observed Scour Rating Components**

<b>IN01</b>	<b>IN12</b>	<b>IN13</b>	<b>IN14</b>	<b>IN15</b>	<b>IN19</b>	<b>IN04</b>	<b>IN05</b>	<b>IN06</b>	<b>IN07</b>	<b>IN08</b>	<b>IN09</b>	<b>IN10</b>	<b>IN11</b>	<b>IN03</b>
Sub Unit	Pier/ Abut Type	Inv. Found Type	Found Type	Strmbd Mat	Move Ind	Chg Since Last Insp	Scour Hole	Debris Potential	Scour- ability	Opening Adeq. / Channel	Sediment	Align- ment	Velocity/ Stream Slope	Observed Scour Rating
B - FAB					0									
B - NAB					0									
P - P01	23	K	2	A6	0	9	9	8	7	9	9	7	6	8
P - P02	23	K	2	A6	0	9	9	8	7	9	9	7	6	8
P - P03	23	K	2	A6	0	9	9	8	7	9	9	7	6	8
P - P04	23	K	2	A6	0	9	8	6	7	9	9	7	6	6
P - P05	23	K	2	A6	0	9	8	6	7	9	9	7	6	6
P - P06					0									
P - P07					0									

**5A01** SR ID: 35740713120024 **5A03** BR Key: 20928 **7A01** Inspection Date: March 22, 2023

Other Subunit Details

<b>IN01</b> Sub Unit	<b>IN16</b> UW Insp Type	<b>IN18</b> Water Dept	<b>IN17</b> Observed Scour Depth	<b>IN20</b> Scour Undermine	<b>IN21</b> Counter-measures	<b>IN02</b> Info from Current Insp	<b>IN22</b> 100 yr Flood Calc Scour Depth	<b>IN23</b> 500 yr Flood Calc Scour Depth	<b>IU27</b> SCBI Code	<b>IN25</b> In 500 YR FP?
B - FAB		-1.0	-1.0	0	0	0	-1.0	-1.0		Y
<b>IN24</b> Notes:										
B - NAB		-1.0	-1.0	0	0	0	-1.0	-1.0		Y
<b>IN24</b> Notes:										
P - P01	E	0.0	0.0	0	0	1	0.0	0.0	5	Y
<b>IN24</b> Notes: well beyond normal flow										
P - P02	E	0.0	0.0	0	0	1	0.0	0.0	5	Y
<b>IN24</b> Notes: well beyond normal flow										
P - P03	E	0.0	0.0	0	0	1	0.0	0.0	5	Y
<b>IN24</b> Notes: beyond normal flow										
P - P04	E	0.0	0.0	0	0	1	0.0	0.0	5	Y
<b>IN24</b> Notes: no scour										
P - P05	E	0.0	0.0	0	0	1	0.0	0.0	5	Y
<b>IN24</b> Notes: no scour										
P - P06		-1.0	-1.0	0	0	0	-1.0	-1.0	6	Y
<b>IN24</b> Notes:										
P - P07		-1.0	-1.0	0	0	0	-1.0	-1.0	6	Y
<b>IN24</b> Notes:										

Underclearance

**IL09** Origin Description:  
**IL10** Horizontal:  
**IL11** Vertical:  
**IL12** Notes:



**5A01** SR ID: 35740713120024 **5A03** BR Key: 20928 **7A01** Inspection Date: March 22, 2023

**Channel**

**1A05** Channel/ Channel Protection Cond. Rating: 7 - Good

**Channel:** Channel flows from right to left on a slight skew through span 5 (arch), piers are outside of the normal flow no scour, significant visible bedrock

**Banks:** stable, significant visible bedrock

**Streambed Movements:** none

**Debris, Vegetation:** fairly light vegetation, scattered small trees, brush; debris caught on I-81 pier columns u/s from bridge

**River Control Devices:** n/a

**Embank/Strmbed Contr:** rock well above far river bank (on steep slope)

**Drift Other:** I-81 bridge spans diagonally across - at least 6 pier columns within channel limits

**Waterway Adequacy**

**1A06** Appraisal Code: 9 - Excellent

**Narrative:** no overtop

**IL02** Overtop Risk: R - Remote

**IL13** Worst Flood Event:

**IL03** Traffic Delay: I - Insignificant

**IL14** Worst Flood Event Date: January 01, 2001

**5C22** Functional Class: 19 - Urban Local

**High Water Mark**

**IL05** Elevation: 0

**IL06** Date: January 01, 1901

**IL07** New High Water Mark: No

**IL08** High Water Notes: unknown



**5A01** SR ID: 35740713120024 **5A03** BR Key: 20928 **7A01** Inspection Date: March 22, 2023

**Paint Condition**

**6B36** Protective Coating: 4 - Poor **6B37** Protective Coating (Extent): 3 - Blast + 40-60%

**6B35** New Protective Coating Since Last Insp: 0 - No New Coating

**Int Beam / Gird:** span 2 thru girders - heavy pitting, areas of moderate rust;  
bearing stiffener holes; also, see splash zone

**Fascias:** n/a

**Splash Zone Truss Gird:** span 2 thru girders - heavy pack rust/moderate section loss @ sidewalk interface

**Truss:** n/a

**Bearings:** span 2 thru girder - heavy rust, section loss, frozen

**Other:** n/a



**5A01** SR ID: 35740713120024 **5A03** BR Key: 20928 **7A01** Inspection Date: March 22, 2023

## Load Ratings

**IR01a** Load Rating Review Recommended: Recalc not required  
Inspection Team Comments:

**IR03** Calculation Date: May 07, 2020

**IR02** Rating Approval Date: May 20, 2021

## Load Rating Details

	IR10	IR11	IR11a	IR21	IR20	IR05	IR06	IR07	IR16	IR14	IR15	IR13	IR12
LOAD TYPE	IR LOAD	OR LOAD	SLC RATING	IR Rating Factor	OR Rating Factor	NBI IND	RTNG ANAL METH	CONT MEM TYPE	ANALYSIS ENGINEER	AASHTO MANUAL YEAR	AASHTO SPEC YEAR	OPR GOV CRIT	INV GOV CRIT
8	4	7	5			0	2	1	HNTB	1994	1996	S	S
<b>IR19</b> Notes Description: Updated following 2020 inspection. Span 3, Beam 2 controls. Rating was limited to non-spandrel arch spans. SLC of 0.8 applied because super = 3.													
2	4	8	6			1	2	2	HNTB	1994	1996	S	S
<b>IR19</b> Notes Description: Updated following 2020 inspection. Span 3, Beam 2 controls. Rating was limited to non-spandrel arch spans. SLC of 0.8 applied because super = 3.													
0	4	8	6			0	2	1	HNTB	1994	1996	S	S
<b>IR19</b> Notes Description: Updated following 2020 inspection. Span 3, Beam 2 controls. Rating was limited to non-spandrel arch spans. SLC of 0.8 applied because super = 3.													
1	3	6	6			0	2	1	HNTB	1996	1994	M	M
<b>IR19</b> Notes Description: Updated following 2020 inspection. Span 3, Beam 2 controls. Rating was limited to non-spandrel arch spans. SLC does not apply to H vehicle.													

## Posting

**VP01** Status Date: 03/22/2021  
**VP02** Posting Status: P - Posted for load  
**VP03** Special Restrictive Posting: 0 - Not Applicable  
**VP04** Posted Weight Limit: 5 ton  
**VP05** Posted Limit Combination: -1 ton  
**VP06** Posting Reason: K - Comb of one or more



**5A01** SR ID: 35740713120024 **5A03** BR Key: 20928 **7A01** Inspection Date: March 22, 2023

**Proposed Maintenance Items :-**

IM01	IM03	IM04	IM05	IM06	IM08	IM11	
Type of Work	Action	Est Qty	UOM	Priority	Init Recm'd Date	Target Year	Work Assign
Flexible	57 - A743201-SPOT PAINT SUPERSTR	1	EB	2	11/29/1995	1998	1 - Contractor
IM07	Status: 0 - Work not planned	IM15	Notes: #1 Changed P04 to P02 (3/29/16) to match girder and floorbeam priority. #2 Paint girders and floorbeams where visible/exposed.				
IM09	Location: 2						
Flexible	44 - A744501-REHAB.STEEL BRG	4	EA	2	11/29/1995	1996	1 - Contractor
IM07	Status: 0 - Work not planned	IM15	Notes: #1 N/A #2 Rehabilitate deteriorated girder bearings.				
IM09	Location: 2						
Flexible	27 - RDGDERL-CONNECT GDERAIL TO BR	4	EA	2	11/29/1995	1996	1 - Contractor
IM07	Status: 0 - Work not planned	IM15	Notes: #1 N/A #2 Install approved approach guiderail at all four corners of the bridge.				
IM09	Location: LNRLFR						
Flexible	42 - A744603-RPR/RPL.CONC.BEAM	33	EA	2	1/30/1998	1999	1 - Contractor
IM07	Status: 0 - Work not planned	IM15	Notes: #1 N/A #2 Repair spalled concrete t-beams, floorbeams and arch span fascia beams.				
IM09	Location: 1,3-7						
Flexible	26 - C744603-RPR/RPLCONC.MEMBER	17	EA	2	1/30/1998	1999	1 - Contractor
IM07	Status: 0 - Work not planned	IM15	Notes: #1 N/A #2 Repair arch ribs and columns. #3 4/20/21 - Quantity updated from 13 to 17 based on field conditions observed during 2021 interim inspection.				
IM09	Location: 5						
Flexible	4 - A744101-REPAIR DK.JOINT	120	LF	2	4/11/2005	2006	1 - Contractor
IM07	Status: 0 - Work not planned	IM15	Notes: #1 N/A #2 Repair/replace all deck joints.				
IM09	Location: 1-6						
Flexible	50 - B744602-RPR/RPL.STL.FLBM	15	EA	2	4/11/2005	2006	1 - Contractor
IM07	Status: 0 - Work not planned	IM15	Notes: #1 N/A #2 Repair deteriorated steel floorbeams. #3 Remove loose concrete encasement over the railroad (03/24/2020).				
IM09	Location: 2						
Flexible	7 - RLGBRPR-RPR/RPL.BR/PARA.RLG	800	LF	2	4/24/2008	2009	1 - Contractor
IM07	Status: 0 - Work not planned	IM15	Notes: #1 N/A #2 Update the bridge railing to meet current standards.				
IM09	Location: 1-7						
Flexible	49 - C744602-RPR.STEELGIRDER	2	EA	2	3/29/2016	0	1 - Contractor
IM07	Status: 0 - Work not planned	IM15	Notes: #1 N/A #2 Repair/rehabilitate the steel through girders.				
IM09	Location: 2						

Form M

**5A01** SR ID: 35740713120024 **5A03** BR Key: 20928 **7A01** Inspection Date: March 22, 2023

IM01	IM03		IM04		IM05	IM06	IM08	IM11
Type of Work	Action		Est Qty	UOM	Priority	Init Recm'd Date	Target Year	Work Assign

Flexible 32 - D744802-RPR. PIER 13 CY 3 11/29/1995 1998 1 - Contractor  
**IM07** Status: 0 - Work not planned **IM15** Notes: #1 N/A  
 #2 Repair spalls, delaminations and cracks.  
**IM09** Location: 1-6

Flexible 6 - D744303-RPR.CONC.DECK 25 SY 3 1/30/1998 2001 1 - Contractor  
**IM07** Status: 0 - Work not planned **IM15** Notes: #1 3/25/19 - Changed Priority 3 to Priority 0 after two holes found through deck. 3/27/19 - Changed Priority 0 to Priority 1 after steel plates were installed. Permanent repairs are required within 6 months.  
 #2 Repair spalls/delaminations (top/bottom) after cleaning rebar.  
 #3 3/25/19 - Priority 0 Notification (email) sent for two holes through the deck. The hole in the travel lane over pier 1 measures 14" x 9". The hole at the right curb over pier 3 measures 12" x 18".  
 #4 Borough responded and met w/ G. Borgacci at bridge site on 3/26/19; planned steel plate repair.  
 #5 3/27/19 email from Borough states that steel plates were installed. Photos documenting the repair will follow.  
 #6 9/19/19 Interim Inspection (Problem Area) completed by HNTB. Bituminous filled hole at Pier 3. Additional patches placed along Span 3, curb. Plate remains in left travel lane (SB) at Pier 1. Plate looks to have shifted due to bent nail. Nail should be secured and driven down. 2 in drop at near side of plate.  
 #7 03/24/20 Routine Inspection completed by HNTB. Bituminous patch installed at Pier 1 left (plate no longer visible). Priority Code changed from 1 to 3 until permanent repairs have been made for the entire deck.  
**IM09** Location: 1-7

Flexible 13 - B745301-CONST RCK PROTECT 20 CY 3 3/29/2016 0  
**IM07** Status: 0 - Work not planned **IM15** Notes: #1 N/A  
 #2 Place rock to protect the pier 4 and pier 5 foundations.  
**IM09** Location: Piers 4 & 5

Flexible 15 - C744802-RPR/RPL WINGWALL 2 CY 3 3/29/2016 0  
**IM07** Status: 0 - Work not planned **IM15** Notes: #1 N/A  
 #2 Patch/repair spalls and seal cracks.  
**IM09** Location: NF

Flexible 28 - B744802-REPAIR ABUTMENT 2 CY 3 3/29/2016 0  
**IM07** Status: 0 - Work not planned **IM15** Notes: #1 N/A  
 #2 Patch/repair spalls and seal cracks.  
**IM09** Location: NF

Flexible 51 - RDCLSGN-RPL.CLEARANCE SIGN 4 EA 3 3/22/2021 0  
**IM07** Status: 0 - Work not planned **IM15** Notes: #1 N/A  
 #2 Install hazard clearance signs at all four corners.  
**IM09** Location: N, F

Flexible 10 - BITWRGS-RPR/RPL.BIT.W.S. 10 SY 4 3/17/2015 2015 0 - Agency  
**IM07** Status: 0 - Work not planned **IM15** Notes: #1 N/A  
 #2 Patch/repair potholes and seal cracks.  
**IM09** Location: 1-7

**5A01** SR ID: 35740713120024 **5A03** BR Key: 20928 **7A01** Inspection Date: March 22, 2023

IM01	IM03	IM04	IM05	IM06	IM08	IM11	
Type of Work	Action	Est Qty	UOM	Priority	Init Recm'd Date	Target Year	Work Assign
Flexible	39 - E744303-RPRCONCSIDEWALK	7	SY	4	3/29/2016	0	
IM07	Status: 0 - Work not planned	IM15	Notes: #1 N/A #2 Repair spalls and seal cracks throughout sidewalks and curbs.				
IM09	Location: 1-7						
Flexible	40 - RDPVMT-PATCH/RAISE PAVEMENT	80	SY	4	3/29/2016	0	
IM07	Status: 0 - Work not planned	IM15	Notes: #1 N/A #2 Seal cracks and patch the near pavement. Mill and re-pave the severely deteriorated far pavement.				
IM09	Location: NF						
Flexible	14 - C744402-RPR/RPL.DWNSPTG	16	EA	4	3/30/2017	0	
IM07	Status: 0 - Work not planned	IM15	Notes: #1 N/A #2 Repair/replace and/or extend deck drain downspouts.				
IM09	Location: 1-7						
Flexible	70 - RDLDSGN-RPL.LOAD LIMIT SIGN	1	EA	4	3/22/2021	0	
IM07	Status: 0 - Work not planned	IM15	Notes: #1 N/A #2 Update far advance distance placard to current standard. Placard should read "500 FT AHEAD".				
IM09	Location: Far Adv						
Flexible	1 - B743101-FLUSH SCUP/DNSPTG	1	EB	5	3/17/2015	2015	0 - Agency
IM07	Status: 0 - Work not planned	IM15	Notes: #1 N/A #2 Clean/flush partially blocked drains and re-open paved-over drains.				
IM09	Location: 1-7						
Flexible	23 - A743101-CLEAN/FLUSH DK	1	EB	5	3/17/2015	2015	0 - Agency
IM07	Status: 0 - Work not planned	IM15	Notes: #1 N/A #2 Clean/flush the entire deck surface.				
IM09	Location: 1-7						
Flexible	8 - C743102-CLEAN BRG/SEAT	1	EB	5	3/17/2015	2015	0 - Agency
IM07	Status: 0 - Work not planned	IM15	Notes: #1 N/A #2 Clean/flush the girder pedestals in span 2.				
IM09	Location: 2						
Flexible	90 - A742501-Replace Bridge	1	EA	5	3/22/2021	0	
IM07	Status: 0 - Work not planned	IM15	Notes: #1 N/A #2 Replace all bridge spans				
IM09	Location:						

### Completed Maintenance Items :-



**5A01** SR ID: 35740713120024 **5A03** BR Key: 20928 **7A01** Inspection Date: March 22, 2023

IM01	IM03	IM04	IM05	IM14a	IM08	IM11	
Type of Work	Action	Est Qty	UOM	Priority	Completed Date	Target Year	Work Assign
Flexible	70 - RDLDSGN-RPL.LOAD LIMIT SIGN	1	EA	0	4/21/2016	2015	No
IM07	Status: 6 - Completed/Contr	IM15	Notes #1 N/A #2 correct/replace the defaced 13 ton weight limit sign.				
IM09	Location: far end of bridge.						
Flexible	70 - RDLDSGN-RPL.LOAD LIMIT SIGN	3	EA	0	5/11/2018	2018	No
IM07	Status: 5 - Completed/Dept	IM15	Notes #1 N/A #2 Adjust the "Except Combinations" placards to read "21 Tons", instead of the current "23 Tons" (due to Safe Load Capacity reduction). Also, re-order the far advance signing so the "distance to bridge" placard is at the bottom of the set. Signing ordered 7/25/17. Awaiting delivery and installation. #3 March 19, 2018 Routine Inspection - NO signing repairs. Re-notification sent. Reply stated that signs were ordered and that they should be installed early May.				
IM09	Location: N, F, F Adv.						

**5A01** SR ID: 35740713120024 **5A03** BR Key: 20928 **7A01** Inspection Date: March 22, 2023

**Current Inspection**

**7A03** Primary Type: I - Interim (special)

**7A06** Types of Inspections Performed:

NBI	Underwater	Element	Fracture Critical	Other Special
No	No	No	Yes	Yes

**Actual Inspection Workforce Hours**

**6B26** NBI Crew: 28.00 **6B30** Underwater: 0.00

**6B28** Fracture Critical: 0.00 **6B29** Other 1: 0.00

**6B27** Crane: 0.00 **6B31** Other 2: 0.00

**Inspection Costs (Entered to nearest dollar)**

**6B32** Engineering: 3093 **6B33** Rigging: 0

**6B34** Office: 0

**Special Equip Used:** Harcon Tracker

**6B12** Temperature: 61.0 **6B09** Weather: 1 - Clear

**6B03** Inventory Review Recommended: No

Change Notes:

**5A01** SR ID: 35740713120024 **5A03** BR Key: 20928 **7A01** Inspection Date: March 22, 2023

**Inspection Team**

<b>7A05</b>	<b>Inspected By:</b> 8 - Consulting Firm
<b>7A05a</b>	<b>Insp. Org. Name:</b> AECOM Technical Services, Inc.
<b>7A02</b>	<b>Team Leader:</b> A. Yorkonis (2350)
<b>6B23</b>	<b>Team Member:</b> Brendan Kearns, CBSI
<b>6B24</b>	<b>Hired By:</b> 1
<b>6B25</b>	<b>Insp Contract Num:</b> E04533
<b>2A02</b>	<b>Inspection Notes:</b> 3/23/23: Interim inspection initiated; returned 3/30/23 with harcon tracker. Interim inspection includes signage, superstructure, deck, and substructure.

9/23/22: Interim inspection performed with harcon tracker for signage, superstructure, deck, and substructure

3/22/2021 - Interim inspection started on 3/22/2021 and complete on 4/20/2021. The interim inspection evaluated load posting signage, deck and superstructure. Load posting signage has been updated to reflect the new 5 ton rating with the left sidewalk and Beam 1 taken out of service with a temporary barrier. Minor additional deterioration noted throughout the superstructure. Engineering cost includes inspection unit, report unit and travel unit. Office cost includes printing, per diem, mileage, etc.

3/24/2020 Routine (Hands On) Inspection - Completed on 3/30/2020. Increased deterioration of the reinforced concrete T-Beam spans & arch. Bituminous wearing surface patch over the previously noted Pier 1 plate. Priority Code revised from 1 to 3. Superstructure rating reduced from 4 to 3 due in increased deterioration observed. Per Pub 238, a 6 month inspection frequency is required for bridges with a FC Superstructure condition rating of 3. For this bridge the controlling elements for the condition rating are the concrete T-beams and concrete floorbeams, therefore a 12 month inspection frequency is being retained. Engineering cost includes the inspection, travel and report costs while the office cost includes the printing, postages, mileage, etc. Revised rating completed, Posting to be reduced to 5 Tons with a temp barrier placed along the left curb line.

9/19/2019 Interim Inspection (Problem Area) - Evaluated only the deck, the cause of the priority 1 maintenance item. A plate remains over Pier 1, covering the hole, but the hole at Pier 3 was filled with bituminous. The priority 1 shall remain in place until the steel plate is removed.

3/25/2019 Interim Inspection - Evaluated only the Load Posting Signing, Deck, Superstructure and Load Rating. A "Priority 0" maintenance item was issued for two through holes in the deck. The Borough has subsequently installed steel plates over the holes. The priority has been changed to 1 until permanent repairs are completed.

3/30/17 Interim Inspection - Evaluated only the Load Posting Signing, Deck, Superstructure, Substructure and Load Rating, as well as any associated Maintenance Items. Only the span 2 through girder received a "hands-on" inspection due to it being fracture critical.

3/17/15 - Interim Inspection. "Hands-On" inspection of girder/floorbeam span 2 only. Spans 1 & 3 thru 7 were generally inspected from the ground. No significant/additional changes.

<b>6B49</b>	<b>Inaccessible Portion of Structure:</b>
<b>IC01</b>	<b>Inaccessible Inspection Location:</b>
	<b>Damage Inspection Comment:</b>



**5A01** SR ID: 35740713120024 **5A03** BR Key: 20928 **7A01** Inspection Date: March 22, 2023

**Next Inspection**

**7A14** Next Inspection By: 8 - Consulting Firm

**6B20** Next Insp Type: I - Interim (special)

**Schedule**

	<b>7A07</b>	<b>7A09</b>	<b>7A10</b>
Insp Types	Required	Frequency	Next Date
NBI:	----	24	March 22, 2024
Fracture Critical:	Yes	6	September 22, 2023
Underwater:	No	-1	January 01, 1901
Other Special:	Yes	6	September 22, 2023
Element:	No	-1	January 01, 1901
Crane:	----		<b>6B21</b> September 22, 2023

**7A19** Ext Insp Interval Eligibility No **7A20** Ext Insp Interval Concurrence No

**7A19** NBIS Ext Inspection Interval Eligibility: 0

**6B01** Special InspType:

**Estimated Inspection Workforce Hours**

<b>7A12</b> NBI Crew: 0.00	<b>7A17</b> Underwater: 0.00
<b>7A15</b> Fracture Critical: 0.00	<b>7A16</b> Other 1: 0.00
<b>7A13</b> Crane: 0.00	<b>7A18</b> Other 2: 0.00

**SNBI fields**

**1A05b** Channel Protection: 7 - Good

**1A13** Scour Condition Rating: 8 -Insignificant Scour

**1A14** UW Condition Rating: N - N/A

**IU29** Scour Vulnerability: 0 - Appraisal NC w/o CM

**IF07** Fatigue Details: No E/E' Details

## **APPENDIX E**

### **SKETCHES AND ADDITIONAL FIELD NOTES**



SUBJECT  
Mill Street  
OVER  
Delaware & Lackawanna RR & Roaring Brook

SHEET NO. 1 OF 8  
JOB NO. \_\_\_\_\_  
BY: AMY/RJL DATE: 3/30/2023  
BY: AMY/BJK DATE: 9/23/2022

BMS NO. 35 7407 1312 0024

AECOM NO. WO5-41

BR KEY 20928

DISTRICT 4

## Superstructure Notes

### Span 1:

- B1 - several longitudinal cracks, up to  $\frac{3}{8}$ " wide (some efflorescence) on left web with severe spall/delam 20 SF x 2" DP.
- several  $\frac{1}{4}$ " wide longitudinal cracks (heavy efflorescence) along bottom;
  - many longitudinal cracks, up to  $\frac{1}{8}$ " wide (some efflorescence) on inside web, moderate scaling, delam
- B2 - heavy scaling, efflorescence, several delams
- 10 LF full width spall at mid-span with three exposed bottom bars and four exposed stirrups and  $\frac{1}{8}$ " to  $\frac{1}{4}$ " wide longitudinal cracks and delam
- B3 - heavy scaling, efflorescence, several delam
- several longitudinal cracks, up to  $\frac{3}{8}$ " wide and delams
  - 7 LF x 5"W spall at mid-span with two exposed bottom longitudinal bars
  - 4 LF spall mid-span right edge
- B4 - heavy scaling, efflorescence, several delam
- 15 LF longitudinal cracks,  $\frac{1}{4}$ " to  $\frac{1}{2}$ " wide along bottom flange edges at mid-span
  - Right web with  $\frac{1}{4}$ " wide horizontal cracks at bottom
- B5 - Wide cracks with three spalls with exposed rebar 30"L x 5"W x 5"H with one longitudinal bar exposed at near end; 56"L x 19"W x 2"D with five longitudinal bars exposed at mid-span; 5'L x 16"W x 8"H with five longitudinal bars exposed far of mid-span
- heavy scaling, efflorescence and delam





SUBJECT  
Mill Street  
OVER  
Delaware & Lackawanna RR & Roaring Brook

SHEET NO. 2 OF 8  
JOB NO. \_\_\_\_\_  
BY: AMY/BJK DATE: 3/22/2023  
BY: AMY/BJK DATE: 9/23/2022

BMS NO. 35 7407 1312 0024

AECOM NO. WO5-41

BR KEY 20928

DISTRICT 4

## Superstructure Notes

### Span 2:

Above Deck, Left Girder Stiff/Knee Brace Section Loss:

- 1st Knee Brace - 3.5"W x 3"H Hole
- 1st Stiffener - 1" diam Hole
- 2nd Stiffener - 2"H x 1.5"W Hole
- 2nd Knee Brace - 3.25"W x 4.125"H Hole
- 4th Stiffener - 1.75"W x 1.5"H Hole
- 3rd Knee Brace - (2) 1"H x 3/4"W holes
- 5th Stiffener - 1"W x 1.875"H Hole
- 4th Knee Brace - 6"W x 1.75"H Hole
- 6th Stiffener - 3/4"H x 1"W Hole
- 5th Knee Brace - (1) 1/4" diameter hole, (1) 1/2" diameter hole; 4.25"H x 2.625"W Hole
- 7th Stiffener - 1" diameter area of holes
- 6th Knee Brace - 3.25"H x 2.625" W hole
- 8th Stiffener - 1/4" diamter hole
- 7th Knee Brace - 6.125"W x 6" H Hole
- 9th Stiffener - 3" diam hole
- 10th Stiffener - 2.375"W x 1.25"H Hole
- 8th Knee Brace - 5.125"H x 3.25"W Hole; 3.25"H x 1.25"W Hole

Left web plate along SW:

- Near side of 7th knee brace has 100% to repair plate, connection angle at bolt, and girder web (11"L x 8"H)
- Far end between stiffener & knee brace welded plate has 100% section loss with pitting to web plate (8"H x 3/16" to 1/4"D)
- Note: Dirt accumulation along plate throughout with 2"H x 1/8" to 3/16" SL

Above Deck, Right Girder Stiff/Knee Brace Section Loss:

- Knee braces have thick pack rust & SL throughout (Up to 2" thick pack rust)
- Stiffeners have several loactions of holes and/or SL at bottom throughout
- 1st knee brace: 2" diameter hole and 1" diameter hole
- 1st stiffener: 2" diameter hole
- 2nd knee brace: 2" x 1/8" hole
- 3rd knee brace: 1.5" x 1" hole
- 6th stiffener: Knifed edge for full height with holes at top & bottom
- 7th knee brace: Collision damage/distortion, 100% SL at bottom of FL corner
- 9th stiffener: Fractured almost full height, FL at bottom
- 8th knee brace: Hole at bottom of FL.
- 10th stiffener: 2.5"H x 2"W hole



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SHEET NO. 3 OF 8  
JOB NO. \_\_\_\_\_  
BY: AMY/RJL DATE: 3/30/23  
BY: AMY/BJK DATE: 9/23/2022

BMS NO. 35 7407 1312 0024

AECOM NO. WO5-41

BR KEY 20928

DISTRICT 4

## Superstructure Notes

### Span 3:

- B1 - full length heavy cracking, spalling (rebar) along bottom - 6 exposed bars (moderate section loss), the 2 exterior bars are ineffective and debonded at far end. 2 right interior bars are debonded and ineffective for full length. Remaining two central bars partially debonded.
- left web cracks, delam & scaling @ far 1/4. Appears to have no shear stirrups, only bent up bars.
  - Shear crack at near support with efflorescence
- B2 - 6 lf spall with delam and rebar (de-bonded) @ mid-span, delam up to 8" high
- large spall (full width) at mid-span exposes 3 bars, 1 stirrup and (1) upper bar lower #1 bar debonded for 6 LF; typ moderate to heavy rust
  - 6 LF x 3/16" crack at far end bottom flange;
  - few hairline to fine vertical web cracks
  - Left web popout spall with exposed
- B3 - few hairline cracks, hairline vertical cracks, some web delam
- Bottom near half with 1/8" to 3/16" wide crack for 8 LF
  - Left web popout spall with exposed
  - shear crack at far support
- B4 - few hairline cracks, hairline vertical cracks, some web delam
- Bottom NL has 3'L x 1/8"W crack
- B5 - 1/16" to 1/4" wide longitudinal and map cracks with associated delam along left web and bottom flange
- hairline vertical thru crack at near
  - shear crack at far support



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SHEET NO. 4 OF 8  
JOB NO. \_\_\_\_\_  
BY: AMY/RJL DATE: 3/30/23  
BY: AMY/BJK DATE: 9/23/2022

BMS NO. 35 7407 1312 0024

AECOM NO. WO5-41

BR KEY 20928

DISTRICT 4

## Superstructure Notes

### Span 4:

B1 - Delams at near and far with wide cracks

- Spall with 6 exposed bars for 12 LF
- few hairline vertical, transverse and random cracks

B2 - several hairline vertical cracks, a few wrap onto bottom flange

- NL has 1/8"W crack along bottom FL with delam continuing into web (2 LF)

B3 - several hairline vertical cracks, a few wrap onto bottom flange

B4 - several hairline vertical cracks, a few wrap onto bottom flange

B5 - Cracks along inside web, heavy efflorescence @ near

- Some map cracks (some efflorescence) at near outside web;
- spalling across most of length with 6 exposed bars (left bar debonded full length, right bar partially debonded, moderate deterioration)
- spalling to right web most of height at mid-span





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JOB NO. \_\_\_\_\_  
BY: AMY/RJL DATE: 3/30/23  
BY: AMY/BJK DATE: 9/23/2022

BMS NO. 35 7407 1312 0024

AECOM NO. WO5-41

BR KEY 20928

DISTRICT 4

## Superstructure Notes

### Span 5 Arch Ribs:

- areas of map cracking with efflorescence (more on left), heavy scaling both sides
- heavy cracking with edge spalls at bases
- typ heavy longitudinal and random cracks to  $\frac{1}{8}$ " with delam & deterioration @ FB 5 & 6

#### Left - moderate fascia spalls at top & $\frac{3}{4}$ pt

- large spalls between FB 3 & mid-span and between mid-span and FB 5 with reinforcement
- underside at FB 6 with large spall with 1 longitudinal bar exposed and debonded (20 SF)
- cracks across bottom, some with rust
- hairline map cracks and delam from FB 5 to 7
- random cracks from skew back to column 1 and @ column 3
- large spall with many cracks and efflorescence ahead of column 3

#### Right - Cracks across bottom, some with rust

- heavy rust at drain holes, area of efflorescence
- small spall at bottom left mid-span
- small spall/delam bottom right mid-span
- delamination at inside top  $\frac{1}{8}$  pt and  $\frac{3}{4}$  pt
- heavy scaling with spalls at skew backs

### Span 5 Columns:

- moderate to heavy hairline to  $\frac{3}{8}$ " wide cracks
- efflorescence, scaling, edge spalls, honeycomb

#### Left -

C1: Outer - 4' spall with rusted rebar at top with exposed and broken stirrups

C2: Both - partial ht up to  $\frac{1}{4}$ " wide vertical cracks with delams;

- scale outside at bottom;
- outer face with cracks with assoc delam at corners;
- left face at top spall with exposed rebar 3'H;

C3: Both - multiple partial ht vertical cracks to  $\frac{1}{8}$ " wide with delaminations

C5: Inner - Crack to  $\frac{1}{8}$ " wide with delam

C6: Outer - Moderate spall with crack/delam at base, minor rebar visible

C7: Outer - Cracks up to  $\frac{1}{4}$ " wide, efflorescence, scale, delam

- FL corner spall with delam



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BY: AMY/RJL DATE: 3/30/23  
BY: AMY/BJK DATE: 9/23/22

BMS NO. 35 7407 1312 0024

AECOM NO. WO5-41

BR KEY 20928

DISTRICT 4

## Superstructure Notes

### Span 5 Columns:

- Right -
- C1: Inner - 4' corner spall with delam at bottom right face and far corner
  - Outer - 10 LF severe spall with 3 exposed vertical bars and broken confinement, delam, top half inside face
    - moderate spall bottom far face
    - 3/16" wide crack, efflorescence, delam @ far right for most of height
  - C2: Outer - Heavy cracks to 3/16" wide with delam full height
    - Edge spall with exposed rebar full ht at NR
    - scale with heavy efflorescence
  - C3: Outer - Random cracks to 1/8" wide with delam and heavy scaling
  - C4: Inner - Heavy scaling
  - C7: Both - Vertical cracks up to 1/4" wide with delam and corner spalls with rebar at top
    - Outer - Spall with rebar at top FR and left
      - NR edge with FH wide vertical crack with delam and spall with rebar at bott
  - C8: Outer - Left face 1/8" to 1/4" wide cracks with delam
    - Near face and left with wide cracks and delam
    - heavy scale throughout top

### Span 5 Floorbeams:

- random cracks with efflorescence
- vertical/diagonal shear cracks to 1/8" wide at col's
- diagonal shear cracks typical adjacent to the right arch columns, similar cracks observed adjacent to the left arch columns

FB 5 & 6 - heavy cracking, spalling and delam with exposed rebar (heavy section loss)

- arches are heavily cracked to 1/2" with delam/deterioration at rebar
- bottom mat of reinforcing is ineffective, there are clear gaps of 6" to 1'
- Scaled areas

FB Pier 4 - full width spall/rebar between columns (severe rusted rebar is debonded from concrete)

FB Pier 5 - Wide cracks with rust stains and delams and efflo

### Span 5 Stringers:

- Fascias typical wide cracks with delams, some diagonal shear cracks near supports, some spalls with efflo & rust stains
- Left stringer between Columns 3 and 4 has a spall with exposed rebar



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SHEET NO. 7 OF 8  
JOB NO. \_\_\_\_\_  
BY: AMY/RJL DATE: 3/30/23  
BY: AMY/BJK DATE: 9/23/2022

BMS NO. 35 7407 1312 0024

AECOM NO. WO5-41

BR KEY 20928

DISTRICT 4

## Superstructure Notes

### Span 6:

B1 - full length longitudinal cracks to ½" with delam along bottom flange inside edge

- 10 LF spall along NR - 2 longitudinal bars & 3 longitudinal bars at midspan
- light/moderate scaling outside web

B2 - near to ¾ pt longit crack with severe delam along both bottom webs and bottom flanges

- spalled adjacent to drain pipe outlets
- 10 LF spall left web at mid-span - 1 exposed bar in each row (2 layers)
- previous repair patches are delaminated and failing
- 4 LF spall with 2 exposed bars at near left

B3 - few hairline longitudinal cracks (efflorescence) at top webs, both faces

- 6 LF longitudinal crack (rust) and couple hairline vertical web cracks at ½ pt up to ½" wide
- bottom left web and bottom flange crack up to ½" wide with delams near end to mid-span
- 4 LF near end spall with rebar with 4 longitudinal bars and 3 stirrups

B4 - ¾" longitudinal crack at bottom flange ½ pt with assoc delam

- full ht 36" delam at right web ¼ pt
- hairline vertical web crack at right mid-span
- bottom with honeycomb/scale at mid-span
- right face crack with efflorescence and top of web at ½ pt

B5 - map cracks, efflorescence at inside web, heavy map cracks with rust at outside web

- longitudinal cracks (efflorescence)
- full width spall and delam with all 4 bars at bottom flange and web ½ pt
- 36" edge spall and delam at near right with 1 rebar
- areas of delam and map cracks in patches at far end





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SHEET NO. 8 OF 8  
JOB NO. \_\_\_\_\_  
BY: AMY/RJL DATE: 3/30/23  
BY: AMY/BJK DATE: 9/23/2022

BMS NO. 35 7407 1312 0024

AECOM NO. WO5-41

BR KEY 20928

DISTRICT 4

## Superstructure Notes

### Span 7:

- B1 - several longitudinal cracks up to  $\frac{3}{8}$ " wide and delam throughout
- moderate efflorescence throughout, cracks, delam, spalls along outside web
  - 8 LF edge spall with 1 longitudinal rebar at inside web mid-span and delam
  - 6' x full width spall @ 2/3rd span with 4 longitudinal bars and one shear stirrup exposed
  - full ht spall & delam far half outside web
- B2 - near to mid-span with wide cracks with delam to bottom and web  
spall near end at right (2' diam) and left web (FH x 2'L)  
far end with honeycombed area and shallow surface spall
- B3 -  $\frac{1}{8}$ " (bot) and hairline (top) shear-like crack through haunches on both sides  
Two (2) 10 LF x  $\frac{1}{4}$ " longitudinal cracks with rust and delam  
 $\frac{1}{4}$ " wide horizontal crack in left web at mid-span with 6 LF delam
- B4 -  $\frac{1}{8}$ " (bot) and hairline (top) shear-like crack through haunches on both sides  
18" x 5" spall with rebar, delam and cracks at bottom flange left web @ mid-span  
Both webs with few shallow cover spalls
- B5 - full length several cracks up to  $\frac{1}{2}$ " wide at bottom flange/web with delam  
6" x 72" spall with rebar at mid-span outside web with cracks & efflorescence  
adjacent delam/spall across most of length  
 $\frac{1}{4}$ " wide crack x 8 LF on exterior web  
Bottom flange with (2) longitudinal cracks up to  $\frac{1}{4}$ " wide with incipient spall at  $\frac{3}{4}$  pt

## **APPENDIX F**

### **BRIDGE POSTING**

**2023 Interim Bridge Inspection**  
**Mill Street over Delaware & Lackawanna RR and Roaring Brook**

**BMS No. 35 7407 1312 0024**



1. Near bridge site posting, looking ahead



2. Far Advance posting, looking back.



**2023 Interim Bridge Inspection**  
**Mill Street over Delaware & Lackawanna RR and Roaring Brook**

**BMS No. 35 7407 1312 0024**



3. Far bridge site posting, looking right.



4. Near bridge site 'Yield' sign, looking ahead.

## **APPENDIX G**

### **FRACTURE CRITICAL MEMBER PLAN**

**Structure ID (5A01):** 35 7407 1312 0024  
**Structure Name:** Mill Street / DLRR  
**District:** 4-0

**BRKEY (5A03):** 23614  
**Original F&F Plan Date:** 10/2011  
**Reviewed/Updated:** 3/30/2023

*Note: This F&F plan is in accordance with PennDOT Pub 238 IP 2.4.5.1. This plan shall be reviewed during each FC inspection and updated during each Routine Inspection. A copy of the latest version of the F&F Plan shall be uploaded to BMS2.*

### 1. Bridge Condition:

Deck (1A01) = 3 Sub (1A02) = 4  
 Super (1A04) = 3 Posting = 5 Tons

**Notes:**

The through girders are exposed above the deck and fascias. The girder bottom flanges and floorbeams are encased in concrete which has spalled exposing steel with moderate to heavy rust and section loss.

### 2. FC Inspection Scope and Interval:

*Note: Indicate the portions of the superstructure that require a hands-on FC Inspection and the interval required for the inspection.*

**Routine Inspection:**

Span 2 is comprised of a fracture critical Girder and Floorbeam superstructure and requires a routine inspection on a 24-month cycle.

**Interim Inspection:**

A 6-month inspection interval is required for fracture critical bridges with a superstructure condition rating of a 3.

### 3. Access Equipment and Special Testing Needs:

*Note: List any access equipment necessary to complete the FC inspection. Also, list any special testing equipment required in addition to the standard magnifying glass, dye penetrant, and lighting for a FC inspection (i.e. ultrasonic testing equipment for testing of pins).*

**Routine Inspection:**

Ladder, Bucket truck or Bridge tracker required for hands-on inspection of Span 2. FC span over railroad, flagman is required.

**Interim Inspection:**

Snooper required to access Span 8.

### 4. Approval for Limited Scope Inspection (If Required, check the approved item)

*Note: Approval is required only for the following cases: Interim inspection is a limited inspection (Does not include all FCM), a less than full hands on Routine inspection of the FCMs is proposed for concrete encased FCMs, or FCMs don't control the superstructure rating and an interval longer than required by Pub 238 Table IP 2.3.2.4-1 is scheduled. For locally owned bridges, Limited scope must be approved by a Professional engineer working for the owner or their consultant.*

- ☐ The proposed Limited scope Interim F&F plan is satisfactory to meet FC inspection requirements.
- ☐ The proposed less than full hands-on FC Routine inspection of the concrete encased FCMs is satisfactory to meet FC inspection requirements.
- ☐ The proposed inspection interval, which is longer than required by Pub 238 Table 2.3.2.4-1, is satisfactory to meet FC inspection requirements due to FCM not controlling the Superstructure Rating.

District Bridge Engineer or  
Local Owner Engineer

Signature

Date





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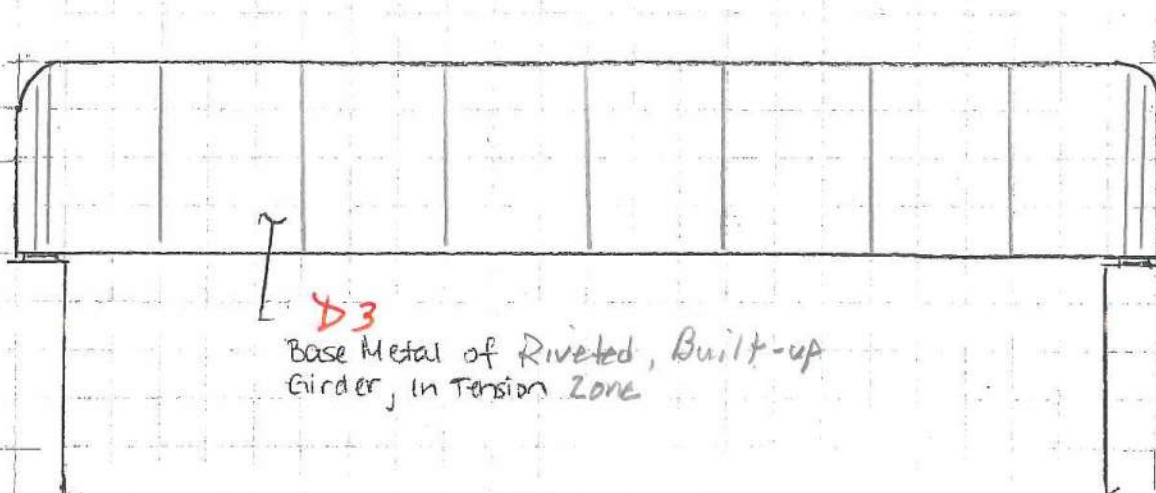
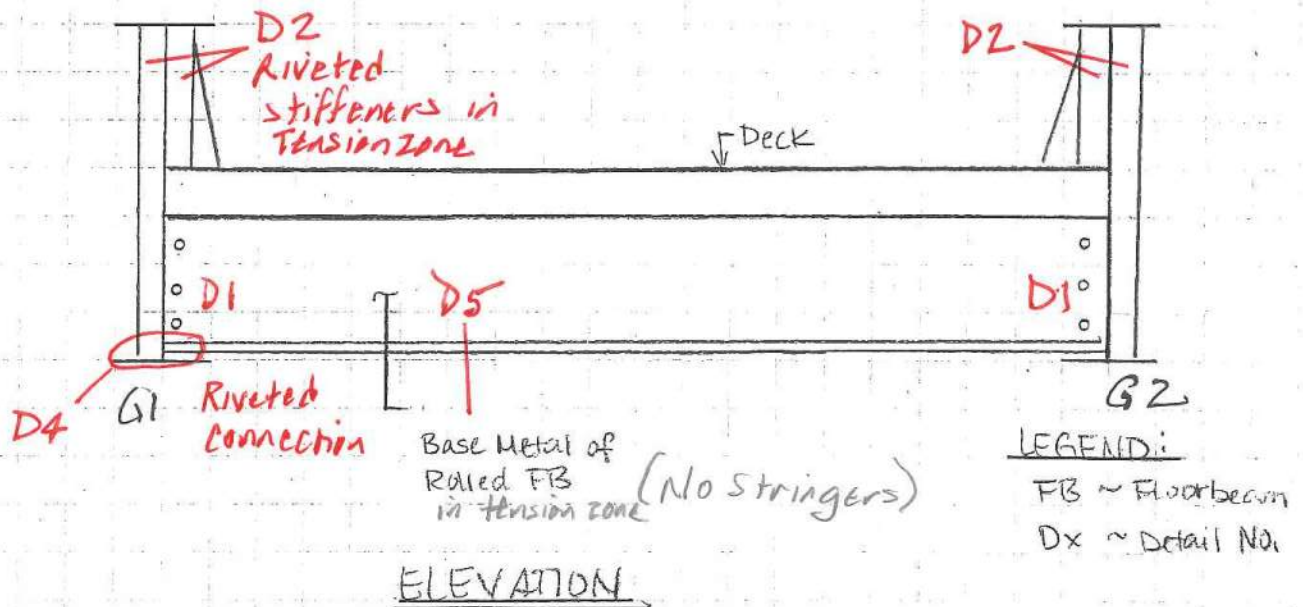
COMMONWEALTH OF PENNSYLVANIA

Rev. 2010

CO. Mill Street over D & L Rail Road & Roaring Brook SHEET NO. 1 OF 2  
S.R. \_\_\_\_\_ SUBJECT FC Plan BY WKS DATE 10-17-2011  
SEG. \_\_\_\_\_ OFFSET \_\_\_\_\_ BMS # 35 7407 1312 0024 CHKD. BY JAL DATE 10-18-2011

TYPICAL SECTION

SPAN 2



YEAR BUILT:

CO. LACKAWANNA

SHEET NO. 2 OF 2

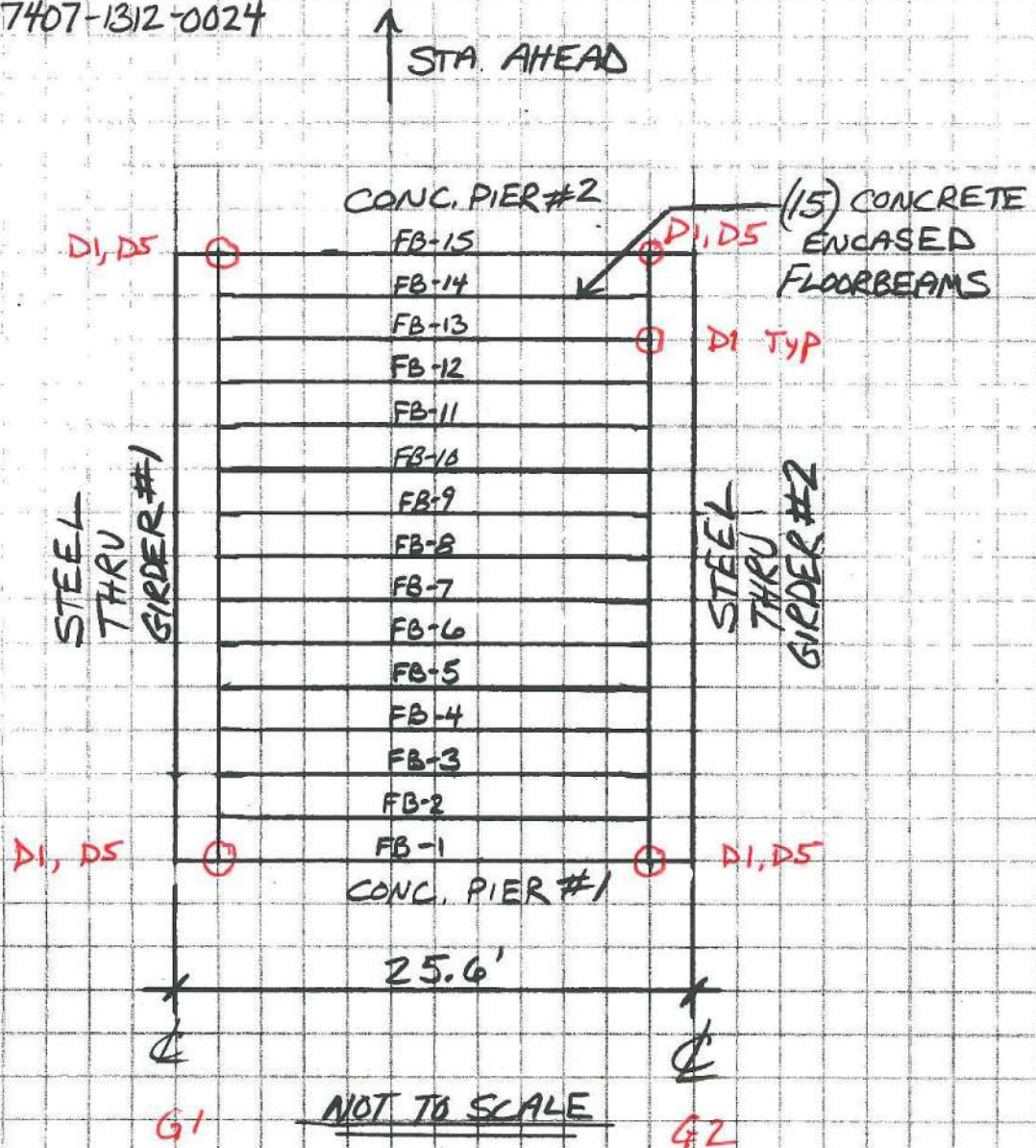
S.R. 7407 SUBJECT SPAN 2 SUPERSTRUCTURE

BY JAE DATE 10-6-11

SEG. 1312 OFFSET 0024

CHKD. BY \_\_\_\_\_ DATE \_\_\_\_\_

BMS#35-7407-1312-0024



FRACTURE CRITICAL MEMBER INSPECTION							
BMS# 35-7407-1312-0024				DATE: _____			
SPAN NO.	FCM NO.	FCM DESCRIPTION	DETAIL NO.	FATIGUE DETAIL DESCRIPTION	AASHTO CATEGORY	REMARKS	ADDITIONAL NOTES
2	G1	FB-Girder Connection	D1	BASE METAL AT RIVETED CONNECTIONS	D	RIVET	Concrete encased
		Transverse Stiffeners Riveted to Web	D2	BASE METAL AT RIVETED CONNECTIONS	D	RIVET	Concrete encased
		Built-Up Girder In Tension Regions	D3	BASE METAL RIVETED BUILT-UP SECTION IN TENSION ZONE	D	RIVET	Concrete encased
		End Floorbeam Connection	D4	POTENTIAL OUT-OF-PLANE BENDING		WEB GAP	Gap at bottom flange
	FB	Rolled Floorbeam	D5	BASE METAL ROLLED SECTION IN TENSION ZONE	A	BASE METAL IN TENSION	Concrete encased
		FB-Girder Connection	D1	BASE METAL AT RIVETED CONNECTIONS	D	RIVET	Concrete encased