

Other Special Bridge Inspection Report

NBI Bridge No.: 04085

Local ID: -1

Route U.S. 281 over S. CANADIAN RIVER



Prepared for:

Oklahoma Department of Transportation

Field Division 4

Inspection Date:

4/6/2019



Report Prepared By:

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BURGESS & NIPLE
Engineers ■ Surveyors ■ Planners

Oklahoma Dept. of Transportation - Bridge Inspection Report

NBI No.: 04085	Structure No.: 0902 0000 X	Local ID: -1	Suff. Rating: 10.10	SD
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Bridge Description: <div style="border: 1px solid black; padding: 2px;">38-100ft. PONY TRUSS & 2-36ft. I-BM. SPANS(BRIDGEPORT BR.)</div> <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> 1. State: Oklahoma 2. Division: Division 4 3. County: CANADIAN 4. City: Unknown Admin Area: L/T Truss 5a. On/Under: Route On Structure 5b. Kind of Hwy: U.S. Hwy 5c. Lvl of Svc: Mainline 5d. Route No.: 00281 5e. Dir. Sufx: N/A (NBI) </div> <div style="width: 48%;"> 7. Facility Carried: U.S. 281 6. Feat. Intersect: S. CANADIAN RIVER 9. Location: CADDO CANADIAN CL 11. Mile Post: NA 13. LRS Inv. / Sub Rte: 0902 0000 / 01 16. Latitude: 35° 32' 25.00" 17. Longitude: 098° 19' 22.00" 98. Border Brdg: Unknown (P) % Responsible: 0.00 99. Border Brdg #: Unknown </div> </div>	INSPECTION <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Type</th> <th>Insp. Req.</th> <th>Insp. Done</th> <th>Freq.</th> <th>Insp. Date</th> <th>Next Insp.</th> </tr> </thead> <tbody> <tr> <td>NBI:</td> <td></td> <td>0</td> <td>12 months</td> <td>10/14/2018</td> <td>10/14/2019</td> </tr> <tr> <td>FC:</td> <td>Y</td> <td>0</td> <td>12 months</td> <td>10/14/2018</td> <td>10/14/2019</td> </tr> <tr> <td>UW:</td> <td>N</td> <td>0</td> <td></td> <td>NA</td> <td>NA</td> </tr> <tr> <td>OS:</td> <td>Y</td> <td>1</td> <td>12 months</td> <td>4/6/2019</td> <td>4/14/2020</td> </tr> </tbody> </table>	Type	Insp. Req.	Insp. Done	Freq.	Insp. Date	Next Insp.	NBI:		0	12 months	10/14/2018	10/14/2019	FC:	Y	0	12 months	10/14/2018	10/14/2019	UW:	N	0		NA	NA	OS:	Y	1	12 months	4/6/2019	4/14/2020
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STRUCTURE TYPE AND MATERIALS <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> 43a/b. Main Span: 44a/b. Appr. Span: 45. # of Main Spans: 46. # of Appr. Spans: 107. Deck Type: 108a. Wearing Surface: 108b. Membrane: 108c. Deck protection: </div> <div style="width: 48%;"> Steel / Truss-Thru Steel / Stringer/Girder 38 2 Concrete-Cast-in-Place Bituminous Unknown Unknown </div> </div>	CLASSIFICATION <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> 12. Base Hwy Net.: On Base Network 20. Toll Facility: On free road 21. Custodian: State 22. Owner: State 26. Function Class: 06 Rural Minor Arterial 37. Historical Sig.: Br eligible for NRHP 100. Def. Hwy: Not a STRAHNET hwy </div> <div style="width: 48%;"> 101. Parallel Str.: No bridge exists 102. Traffic Dir.: 2-way traffic 103. Temp. Str.: Not Applicable (P) 104. Hwy System: Not on NHS 105. Fed Land Hwy: N/A (NBI) 110. Defense Hwy: Not a STRAHNET hwy 112. NBIS Length: Long Enough </div> </div>
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AGE AND SERVICE <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> 19. Detour Length: 11.8 mi 27. Year Built: 1933 28a/b. Lanes on/und: 2 / 0 29. ADT: 1,100 30. Year of ADT: 2017 42a/b. Type of Svc on/und: Highway / Waterway </div> <div style="width: 48%;"> 106. Year Reconst.: 109. Truck ADT: 16% </div> </div>	CONDITION <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> 58. Deck: 5 Fair 62. Culvert: N/A (NBI) </div> <div style="width: 48%;"> 59. Sup.: 4 Poor 60. Sub: 5 Fair 61. Chan./Chan. Prot.: 5 Bank Prot Eroded </div> </div> <div style="border: 1px solid black; padding: 2px; margin-top: 5px;"> OCT-2018: Flow too high to measure. Channel now in span 11. OCT-2017: 29.7' TOC at L4, west truss, span 10 </div>
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GEOMETRIC DATA <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> 10. Vert. Clearance: 99.99 ft 32. Appr Rwy Width: 30.00 ft 33. Median: No median 34. Skew: 0.00° 35. Struct. Flared: No flare 47. Horizontal Clr: 24.00 ft 48. Length Max Span: 100.07 ft 49. Struct. Length: 3,937.01 ft </div> <div style="width: 48%;"> 50a. Curb/Sdwk Width L: 1.00 ft 50b. Curb/Sdwk Width R: 1.00 ft 51. Width Curb to Curb: 24.00 ft 52. Width Out to Out: 26.00 ft Deck Area: 102,364.79 sq. ft 53. Min. Vert. Cl. Ovr Brg: 99.99 ft 54a. Min. Vt. Undclr. Ref.: N Feature not hwy c 54b. Min. Vert. Undclr.: 0.00 ft 55a. Min. Lat. Undclr. Ref.: N Feature not hwy 55. Min. Lat. Underclr. R: 99.90 ft 56. Min. Lat. Underclr. L: 99.90 ft </div> </div>	LOAD RATING AND POSTING <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> 31. Design Load: M 13.5 (H 15) 41. Post. Status: P Posted for load 70. Posting: 2 20.0-29.9% below 63. Op / 65. Inv. Rating Meth.: 1 LF Load Factor / 1 LF Load Factor </div> <div style="width: 48%;"> Date Rated: 03/25/2019 <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>H</th> <th>HS</th> <th>3-3</th> <th>EV3</th> <th>SHV</th> </tr> </thead> <tbody> <tr> <td>9.00</td> <td>9.10</td> <td></td> <td></td> <td>0.00</td> </tr> <tr> <td>8.00</td> <td>8.10</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> </div> </div>	H	HS	3-3	EV3	SHV	9.00	9.10			0.00	8.00	8.10			
H	HS	3-3	EV3	SHV												
9.00	9.10			0.00												
8.00	8.10															

OKLAHOMA ITEMS <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> 200c. Temperature: 50 200d. Weather: Rain/Snow 201. Struc. Stl. ASTM Desig.: -1 / -1 202. Waterprf. Membrane: -1 Date Installed: 01/01/1901 203. Type Exp. Device: Sliding Plate Open Joint-No Device 204. Type of Railing: Metal Railing (other) 205. Material Quantity: 10.00 208a. Type of Abutment: Pedestal b. Type of Found.: Bears on Natural Found. 209. Type of Pier/Found.: 2 / Yes No Piling/Drilled Shaft 210. Foundation Elev.: <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>-1.00</td> <td>-1.00</td> </tr> <tr> <td>-1.00</td> <td>-1.00</td> </tr> </table> 211. Wear. Surf. Prot. Sys: None Date Installed: 01/01/1901 213. Utilities Attached: Communication </div> <div style="width: 48%;"> 214a. Posted Weight Limit: 090909 b. Posted Speed Limit: c. Narrow/1way Brdg Sign: d. Vertical Clr. Sign: No Adv. Warning Sign: No e. Navigation Lights?: No Working/Not Working: No 215. Overpass: U.S. HIGHWAY 221. Substr. Cond. (U/W): 222. Fill Over RCB: 223. Appr. Slab/Rwy Cond.: 3 225. Paint Type/Ovrct: Red Lead 3 Coat System N/A 226. Date Painted: 1933 227. Paint Color: Silver 233. Deck Forming: Conventional Forming 238. School Bus Rte.: Current & Desired route 240. Appr. Rwy Type.: Concrete 243. Grdr Spacing/No.: / </div> </div>	-1.00	-1.00	-1.00	-1.00	APPRAISAL <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> 36a. Brdg Rail: 0 Substandard 36b. Transition: 0 Substandard 36c. Appr. Rail: 0 Substandard 36d. Appr. Rail Ends: 0 Substandard 67. Str Evaluation: 2 Intolerable - Repl </div> <div style="width: 48%;"> 68. Deck Geom.: 4 Tolerable 69. Vert./Horiz. Undclr: Not applicable (NB) 71. Waterway Adeq: 5 Above Tolerable 72. Appr. Alignment: 6 Equal Min Criteria 113. Scour Critical: 7 Countermeasures </div> </div>
-1.00	-1.00				
-1.00	-1.00				

PROPOSED IMPROVEMENTS <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> 94. Bridge Cost: \$6,781,689 95. Roadway Cost: \$4,500,000 96. Total Cost: \$11,920,275 97. Yr. of Cost Est.: 2015 </div> <div style="width: 48%;"> 75. Type of Work: 31 Repl-Load Capacity 76. Lngth of Improvement: 3,937.0 ft 114. Future ADT: 1,760 115. Yr. of Future ADT: 2037 </div> </div>	NAVIGATION DATA <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> 38. Nav. Control: Permit Not Required 39. Vert. Clearance: 0.0 ft 40. Horiz. Clearance: 0.0 ft </div> <div style="width: 48%;"> 111. Pier Protect.: 1 Not Required 116. Lift Bridge Vert. Clr.: 0.0 ft </div> </div>
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244. Span Lengths: 245. Girder Depth: 48.00 246a. Type of Overlay: AC Overlay b. Overlay Thickness: 3.00 c. Overlay Date: 12/04/2003 d. Ovl Depth Changed >1": 247. Protective Systems: <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> </table>					248. # Field Splices w/ Corrosion: 249. Scour Crit. POA Exists?: 250. Headwall: 254. Thru Truss Type: 257a. OkiePROS Truck Routing: Yes 258. Plans w/Found.in ODOT File: 259. Scour Eval. in ODOT File: 263. Interchange at Intersection: No 264. Interstate Milepoint:

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NBI No.:
04085

Structure No.:
0902 0000 X

Local ID:
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Suff. Rating:
10.10

SD

Inspection Date: 4/6/19

Dale Poorman

Invoice No.: 854219

Inspected With:

-1

BRIDGE NOTES:

(38) 100-foot long riveted pony trusses with (2) 36-foot long steel beam approach spans. The bridge had a 15-ton load restriction at the time of the inspection. The posting was lowered to 9 tons after cracks were discovered in the east U4 inboard gusset plates of spans 32 and 37 during the inspection. It was also discovered that the latest load rating report, dated March 25, 2014, used 8 rivets per gusset plate for the U1L0 and U4L3 panel points where only 6 exist.

OS Inspection Items: See Appendix tables in 2018-10-14 FC report for list of the following: Inspect cracks in stringer web copes, stringer connection angles, floor beams web copes, lower chord gusset plates above bearings for growth, stringer connections at end floor beams for additional loss or broken rivets; pier beams and supplemental pier beams at piers 1 and 39 for distress; misalignment of W U1U2 sp 37; floor beam section loss; gusset plate cracks at east U4 spans 32 and 37; scour from stream in spans 10 and 11; areas of collision damage on deck to steel trusses; east bearing at pier 3 for any undermining.

INSPECTION NOTES: 4/6/19

PX – Strengthen the stringer webs as recommended in Appendix D (spans 15, 16, 21, 24, 31, 36, and 38); Reinforce/replace the damaged concrete bridge railing in spans 1 and 40; Seal cracks in the asphalt in both the bridge and approach wearing surfaces; Remove loose elastomeric concrete and patch the joint headers as necessary to provide a smooth riding surface across the bridge; Reseal the poured seal expansion joints; Install elastomeric pads or steel shims at missing locations on the supplemental pier beams over piers 1 and 39; Compare lengths of cracks in stringer and floor beam webs with Appendix A values. Drill stringer crack tips noted in Appendix A that grow significantly; Repair cracks in stringer connection angles noted in Appendix B by adding seat brackets below the stringer; Repair section loss in stringer and floor beam webs where corrosion holes and/or heavy section loss exists with welded plates and/or angles; Remove broken rivets for the stringer connections at the locations noted in Appendix C and replace with bolts; Replace sheared rivets in the vertical connection, upper chord, and end post with bolts at west U1 in spans 31 and 37; Remove pack rust and apply caulking and paint along the edges of the gusset plates at L0 and L5; Clean and paint the stringer ends and floor beams adjacent to the joints above the piers and the lower chord panel points including the splice locations; Add rip rap around piers near the current channel to protect against scour; Repave the south approach near the bridge to provide a smooth transition; Install full depth pressure relief joints in both approaches to mitigate ongoing effects of pavement pressure.

FX – Monitor: Cracks in the inboard gusset plates at east U4, spans 32 and 37, and at west U1 span 37 for growth; Channel for further movement; Beam connections to the original pier beams at piers 1 and 39 for further cracking; Notches and cuts in inboard flange and gusset plate at west U1L2, span 31 for cracks or signs of distress; Collision damage to W U1L2 span 6, W U1L0 in spans 7 and 37, and E U1L0 in spans 14 and 39 for distress; Pack rust and section loss in truss web members and end posts at railing connections; Spalls and corroding reinforcing steel in soffit for further deterioration; Lower chord gusset plates over the bearings for the development of horizontal cracks; Cracks at floor beam copes for growth and further deterioration; Horizontal cracks in the web of the end floor beams at span 6 in floor beam 0, span 11 in floor beam 5, and span 20 in floor beam 0; Fatigue prone stitch welds of angle strengthening at floor beam 0, span 2 for cracking; Corrosion holes through the floor bracing system gusset plates for the development of cracks; 1/4-inch bow in W U1U2 due to collision damage for further distress and development of cracks; Bowed gusset plates near bearings for distress; Lower chord section loss at floor system bracing connections, splices, and adjacent to stay/batten plates; Bullet strike damage to east truss span 4 members/gusset plates for crack development; Cracking/spall of the east column capital, pier 3 for conditions which would undermine the bearing; Expansion bearing pins for signs of additional wear or distress.

ELEMENT CONDITION STATE DATA

Elem. / Env	Description	Unit	Total Qty	% 1	Qty. 1	% 2	Qty. 2	% 3	Qty. 3	% 4	Qty. 4
12 / 1	Re Concrete Deck	sq.ft	94,488.00	0%	0.00	0%	0.00	100%	94,488.00	0%	0.00
Many portions of the curbs exhibit spalls and/or cracking with corroding reinforcing steel especially over the ends of the intermediate floor beams. Some spalls have been patched in isolated areas throughout the deck. Deck appears to be growing from center of each span causing cracking of floor beam webs at connection angles and distress/cracking of stringer connection angles at end floor beams.											
510 / 1	Wearing Surfaces	sq.ft	94,488.00	80%	75,488.00	10%	9,500.00	10%	9,500.00	0%	0.00
PX – The asphalt wearing surface has unsealed longitudinal and transverse cracks throughout the spans. Raveling and patching exists along outside wheel lines at isolated locations.											
107 / 1	Steel Opn Girder/Beam	ft	259.00	67%	174.00	33%	85.00	0%	0.00	0%	0.00
Surface corrosion along top flange of exterior beams.											
113 / 1	Steel Stringer	ft	9,501.00	0%	0.00	65%	6,175.60	35%	3,325.40	0%	0.00
Section loss of the top flange is typical in the exterior stringers. Pack rust is lifting the deck from the exterior stringers.											
120 / 1	Steel Truss	ft	7,600.00	0%	0.00	65%	4,940.00	35%	2,660.00	0%	0.00
PX – Impact damage at E U3U4 span 9 and W U1U2 span 31 has sheared rivets for the bottom lacing bars. FX – W U1 span 37 has a 5/16-inch long crack in the bottom edge of the inboard gusset plate; Impact damage exists to the truss web members at multiple locations; West U1U2 in span 37 is bowed globally to the east 1/4in.; Impact damage exists on the inboard flanges of the upper chord. Pack rust is common at the end post connection to the inboard gusset plate at the lower chord connection; Horizontal cracks were observed in the inboard truss gusset plate between the bearing pin and the end floor beam. All eight locations noted during the previous Fracture Critical inspection have been strengthened with the addition of a welded steel angle on the inboard face. Vehicular collision damage exists at numerous locations of the truss end posts. See FC Report.											
515 / 1	Steel Protective Coating	sq.ft	406,533.00	0%	0.00	0%	0.00	100%	406,533.00	0%	0.00

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PX – Corrosion and significant section loss are occurring at many locations on the lower chord, floor beams, and stringers due to deck drainage passing through joints. Widespread section loss and corrosion holes exist in the exterior stringers and end floor beams.											
152 / 1	Steel Floor Beam	ft	6,155.00	0%	0.00	62%	3,816.10	38%	2,338.90	0%	0.00
PX – Section loss with corrosion holes is common in the end floor beams and floor beams at the east truss connection (57 locations - See Appendix F). FX – Horizontal cracks in the end floor beams between the top flange and connection angle range between 5/8 inch to 9 3/16 inches (71 locations - See Appendix G)											
162 / 1	Stl Gus Plate	each	1,672.00	0%	0.00	45%	758.00	55%	914.00	0%	0.00
PX- Horizontal cracks in the inboard truss gusset plates above the bearings range in length between 6 3/4 inches to 17 5/8 inches long (10 locations - See Appendix H); Noted cracks have been strengthened; Numerous locations where paint cracks exists at this location suggesting eminent development of cracks. FX- Cracks in edge of E U4 in spans 32 and 37 due to pack rust (NEW 2018) and W U1 span 37 due to collision damage; LC inboard gusset plates typically bowed at L0 and L5 due to pack rust; West U1 span 31 has tears (1 7/8 inch and 1 inch) in edge of inboard gusset plate Bullet strike damage to E M2.5 span 4.											
205 / 1	Re Conc Column	each	78.00	0%	0.00	99%	77.00	1%	1.00	0%	0.00
FX – A 7/8-inch maximum wide crack exists in the capital of the east column of pier 3 which is emanating from the span 2 bearing anchor bolt.											
215 / 1	Re Conc Abutment	ft	49.20	50%	24.60	50%	24.60	0%	0.00	0%	0.00
No significant deficiencies were noted in the abutments except for moderate debris on the bearing seats of both abutments and map cracking exposing a few reinforcing bars at the ends of the south abutment.											
301 / 1	Pourable Joint Seal	ft	495.00	0%	0.00	0%	0.00	50%	247.50	50%	247.50
PX – Spalling of the headers was observed along the joints at piers 1, 13, 27, 33, 35 and 39; The poured joint seals typically are deteriorated and show evidence of leaking. Many of the poured seals were never installed at many of the repaired header locations leaving only the form board to fill the joint.											
310 / 1	Elastomeric Bearing	each	7.00	50%	5.00	0%	0.00	50%	2.00	0%	0.00
PX – Elastomeric bearing pads missing under beams at supplemental pier beams (beams 1-4 at pier 1, beams 1-3 at pier 39). The pads appear to be walking at pier 39 under beams 4 and 5. Unreinforced elastomeric bearing pads exists under the supplemental pier beams.											
311 / 1	Moveable Bearing	each	86.00	0%	0.00	71%	61.00	29%	25.00	0%	0.00
FX – Wear causing grooving in the expansion bearing pins and enlarging of the pin hole in the connecting gusset plates are common throughout the spans. The wear is a result of bearing rotation under live loads. This condition is most severe at L0 span 38 over pier 37 which has 3/16-inch total wear to the pin and gusset plate. Heavy pack rust with minor associated pitting is wide spread on and between the bearing components. Bronze sliding plate between the sole and masonry plates has slid out and broken at several bearings. Anchor bolts have corroded away at many of the sliding bearings.											
313 / 1	Fixed Bearing	each	84.00	0%	0.00	100%	84.00	0%	0.00	0%	0.00
Surface corrosion exists at the fixed bearings.											
330 / 1	Metal Bridge Railing	ft	7,600.00	0%	0.00	95%	7,220.00	5%	380.00	0%	0.00
FX- Pack rust is typical between the metal bridge railing, truss end posts, and web members. Small cracks were observed in the railing where the flange and web have been coped.											
859 / 1	Soffit	(EA)	1.00	0%	0.00	0%	0.00	100%	1.00	0%	0.00
FX- Spalls exposing corroded rebar are common in the underside of the deck at the expansion joints due to leakage thru joints. The underside of the deck exhibits transverse cracks with light efflorescence. Spalls and deteriorated concrete exist in exterior stringer bays at isolated locations.											
865 / 1	St.Open Gird End(5Ft	(LF)	100.00	0%	0.00	80%	80.00	20%	20.00	0%	0.00
FX - Connection angles to pier beam 39 are deformed due to longitudinal force from approach pavement. Elastomeric bearing pads missing at supplemental pier beams (beams 1-4 at pier 1, beams 1-3 at pier 39).											
877 / 1	St. Stringer End(5Ft)	(LF)	9,501.00	0%	0.00	50%	4,750.50	50%	4,750.50	0%	0.00
PX - Significant loss including corrosion holes through exterior stringer webs at end floor beams (59 locations - See Appendix D); Cracks in the web at the top flange cope range from 1/8 inch to 2 1/2 inches long (98 locations - See Appendix A); Cracks in the stringer connection angles at the end floor beams range from 1 1/4 inches to 7 inches long (61 locations - See Appendix B); Broken rivets at the stringer connections to the end floor beams (121 rivets at 92 locations - See Appendix C).											
909 / 1	Pourable Fix Jt.Seal	(LF)	495.40	0%	0.00	0%	0.00	50%	247.70	50%	247.70
Fixed joints are paved over with transverse crack in asphalt above joint. Space between floor beams under joint at pier 20 has been filled with asphalt.											
916 / 1	St.Bearing Assembly	(LF)	4.00	100%	4.00	0%	0.00	0%	0.00	0%	0.00
Surface corrosion with no significant deficiencies. Note: Bearing assemblies do not exist between beams and supplemental pier beams											
956 / 1	St. Cracking/Fatigue	(SF)	1.00	0%	0.00	0%	0.00	100%	1.00	0%	0.00
PX- Cracks in the stringer web at the top flange cope range from 1/8 inch to 2 1/2 inches long (98 locations - See Appendix A); Cracks in the stringer connection angles at the end floor beams range from 1 1/4 inches to 7 inches long (61 locations - See Appendix B). FX- Cracks in edge of E U4 in spans 32 and 37 due to pack rust (NEW 2018) and W U1 span 37 due to collision damage; Horizontal cracks in the end floor beams between the top flange and connection angle range between 5/8 inch to 9 3/16 inches (71 locations - See Appendix G).											
957 / 1	Pack Rust Smart Flag	(EA)	1.00	0%	0.00	0%	0.00	100%	1.00	0%	0.00

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<p>PX – Pack rust is common at the end post connection to the inboard gusset plate at the lower chord connection causing bowing of the gusset plates.</p> <p>FX – Cracks in edge of E U4 in spans 32 and 37 due to pack rust (NEW 2018); Pack rust is forming at many of the bridge railing to inboard end post channel connections.</p> <p>Pack rust occurs between the lower chord components and at the gusset plates at M2.5.</p>											
961 / 1	Scour SF	(EA)	1.00	0%	0.00	0%	0.00	100%	1.00	0%	0.00
<p>PX - Local scour exists around the columns at piers 5 through 9 and pier 23. The top of the column foundation is exposed up to 4 1/2 feet at these locations. Local scour was also observed at the columns in the flood plain north of the river.</p>											
962 / 1	Super.Traffic Impact	(EA)	1.00	0%	0.00	0%	0.00	100%	1.00	0%	0.00
<p>Collision damage has bent or damaged the above deck truss members with no significant loss in capacity at</p> <p>PX - E U3U4 span 9, W U1U2 U1L1 and the U1 gusset plate span 31,</p> <p>FX- W U1L2 span 6, W U1U2 and U1L2 span 37.</p>											
963 / 1	Steel Section Loss SF	(EA)	1.00	0%	0.00	0%	0.00	100%	1.00	0%	0.00
<p>PX - Significant loss including corrosion holes through exterior stringer webs at end floor beams (59 locations - See Appendix D); Section loss with corrosion holes is common in the end floor beams and floor beams at the east truss connection (57 locations - See Appendix F).</p> <p>FX- Corrosion of the lower chord has caused section loss on inboard top flange.</p>											
965 / 1	Debris SF	(EA)	1.00	0%	0.00	100%	1.00	0%	0.00	0%	0.00
<p>Drift consisting of large trees exists on the west flood plain under and around spans 5 through 10.</p>											
969 / 1	OutOfPlane Dist./Load	(EA)	1.00	0%	0.00	100%	1.00	0%	0.00	0%	0.00
<p>FX – Pier beams 1 and 39 have severe sweep and have been sistered.</p>											
973 / 1	Horizontal Force SF	(EA)	1.00	0%	0.00	0%	0.00	100%	1.00	0%	0.00
<p>PX- Significant approach pavement pressure occurs at both abutments pushing inward from both ends as evidenced by the movement of the deck, and sheared rivets and cracks in stringer to floor beam connections.</p>											
975 / 1	Supplemental Support	(EA)	76.00	100%	76.00	0%	0.00	0%	0.00	0%	0.00
<p>Shim plate between floor beam 5, span 26 and the stiff leg is rotating out from under the floor beam bottom flange.</p>											

NBI #	Structure #	County	Fac. Carried	Fac. Intersected	Insp. Date
04085	0902 0000 X		U.S. 281	S. CANADIAN RIVER	4/6/2019



Photograph 1 - Looking north at the bridge end view.

NBI #	Structure #	County	Fac. Carried	Fac. Intersected	Insp. Date
04085	0902 0000 X		U.S. 281	S. CANADIAN RIVER	4/6/2019



Photograph 2 - Looking northeast at the bridge elevation.

NBI #	Structure #	County	Fac. Carried	Fac. Intersected	Insp. Date
04085	0902 0000 X		U.S. 281	S. CANADIAN RIVER	4/6/2019



Photograph 3 - Looking north at the south approach load posting sign.

NBI #	Structure #	County	Fac. Carried	Fac. Intersected	Insp. Date
04085	0902 0000 X		U.S. 281	S. CANADIAN RIVER	4/6/2019



Photograph 4 - Looking south at the north approach load posting sign.

NBI #	Structure #	County	Fac. Carried	Fac. Intersected	Insp. Date
04085	0902 0000 X		U.S. 281	S. CANADIAN RIVER	4/6/2019



Photograph 5 - Looking southwest at the asphalt wearing surface in span 39. Note: 1-foot diameter x 3-inch deep spall at the bridge centerline and additional unsealed transverse cracking throughout.

NBI #	Structure #	County	Fac. Carried	Fac. Intersected	Insp. Date
04085	0902 0000 X		U.S. 281	S. CANADIAN RIVER	4/6/2019



Photograph 6 - Looking west along the joint over pier 21 joint. Note: missing joint material allowing leakage into substructure below.

NBI #	Structure #	County	Fac. Carried	Fac. Intersected	Insp. Date
04085	0902 0000 X		U.S. 281	S. CANADIAN RIVER	4/6/2019



Photograph 7 - Looking west at stringer 1 connection to the north face of floor beam 3, span 9. Note: two 3/8" cracks on east face of stringer (previously one crack).

NBI #	Structure #	County	Fac. Carried	Fac. Intersected	Insp. Date
04085	0902 0000 X		U.S. 281	S. CANADIAN RIVER	4/6/2019



Photograph 8 - Looking east at stringer 5 connection to the south face of floor beam 1, span 30. Note: no change to 3/8 and 5/8-inch long cracks in the stringer cope.

NBI #	Structure #	County	Fac. Carried	Fac. Intersected	Insp. Date
04085	0902 0000 X		U.S. 281	S. CANADIAN RIVER	4/6/2019



Photograph 9 - Looking west at stringer 1 connection to south face of floor beam 5, span 36. Note: new 1/2-inch long diagonal crack in stringer cope.

NBI #	Structure #	County	Fac. Carried	Fac. Intersected	Insp. Date
04085	0902 0000 X		U.S. 281	S. CANADIAN RIVER	4/6/2019



Photograph 10 - Looking northwest at stringer 3 connection to the south face of floor beam 5, span 5. Note: no change to 3 1/4-inch crack in the connection angle.

NBI #	Structure #	County	Fac. Carried	Fac. Intersected	Insp. Date
04085	0902 0000 X		U.S. 281	S. CANADIAN RIVER	4/6/2019



Photograph 11 - Looking southwest at stringer 3 connection to the north face of floor beam 0, span 26. Note: no change to 5 3/8-inch connection angle crack.

NBI #	Structure #	County	Fac. Carried	Fac. Intersected	Insp. Date
04085	0902 0000 X		U.S. 281	S. CANADIAN RIVER	4/6/2019



Photograph 12 - Looking southwest at stringer 2 connection to the north face of floor beam 0, span 30. Note: 5 3/4-inch (1/8-inch growth) connection angle crack.

NBI #	Structure #	County	Fac. Carried	Fac. Intersected	Insp. Date
04085	0902 0000 X		U.S. 281	S. CANADIAN RIVER	4/6/2019



Photograph 13 - Looking north at stringer 5 connection to the south face of floor beam 1, span 30.
Note: new 9/16-inch long crack indication in the stringer connection angle.

NBI #	Structure #	County	Fac. Carried	Fac. Intersected	Insp. Date
04085	0902 0000 X		U.S. 281	S. CANADIAN RIVER	4/6/2019



Photograph 14 - Looking south at stringer 2 connection to the north face of floor beam 0, span 18.
Note: no change to broken rivet with shank no longer in the shear plane.

NBI #	Structure #	County	Fac. Carried	Fac. Intersected	Insp. Date
04085	0902 0000 X		U.S. 281	S. CANADIAN RIVER	4/6/2019



Photograph 15 - Looking east at stringer 3 connection to the south face of floor beam 5, span 37.
Note: no change to broken rivet head.

NBI #	Structure #	County	Fac. Carried	Fac. Intersected	Insp. Date
04085	0902 0000 X		U.S. 281	S. CANADIAN RIVER	4/6/2019



Photograph 16 - Looking east at stringer 5 connection to the south face of floor beam 5, span 15.
Note: typical welded plate repair to the stringer web.

NBI #	Structure #	County	Fac. Carried	Fac. Intersected	Insp. Date
04085	0902 0000 X		U.S. 281	S. CANADIAN RIVER	4/6/2019



Photograph 17 - Looking east at stringer 5 connection to the south face of floor beam 5, span 29.
Note: corrosion hole with two cracks. One 1-inch crack extends from the top cope to hole and one 2 1/4-inch (1 1/4-inch growth) crack below hole.

NBI #	Structure #	County	Fac. Carried	Fac. Intersected	Insp. Date
04085	0902 0000 X		U.S. 281	S. CANADIAN RIVER	4/6/2019



Photograph 18 - Looking east at stringer 5 connection to the north face of floor beam 0, span 30.
Note: 1 1/2-inch x 1 1/2-inch corrosion hole and 1 1/4-inch (1/4-inch growth) vertical crack.

NBI #	Structure #	County	Fac. Carried	Fac. Intersected	Insp. Date
04085	0902 0000 X		U.S. 281	S. CANADIAN RIVER	4/6/2019



Photograph 19 - Looking east at stringer 5 connection to the south face of floor beam 1, span 39.
Note: no change to 1/2-inch high x 1/4-inch wide corrosion hole with 1/2-inch long crack extending below corrosion hole.

NBI #	Structure #	County	Fac. Carried	Fac. Intersected	Insp. Date
04085	0902 0000 X		U.S. 281	S. CANADIAN RIVER	4/6/2019



Photograph 20 - Looking east at stringer 1 connection to the south face of floor beam 5, span 39.
Note: multiple corrosion holes over 5 1/8-inch wide x 2-inch tall area under stringer connection angle with significant section loss along edge of connection angle.

NBI #	Structure #	County	Fac. Carried	Fac. Intersected	Insp. Date
04085	0902 0000 X		U.S. 281	S. CANADIAN RIVER	4/6/2019



Photograph 21 - Looking north at floorbeam 2 connection to the east truss, span 7. Note: 2-inch wide x 3/4-inch tall corrosion hole with 1 1/2-inch horizontal crack.

NBI #	Structure #	County	Fac. Carried	Fac. Intersected	Insp. Date
04085	0902 0000 X		U.S. 281	S. CANADIAN RIVER	4/6/2019



Photograph 22 - Looking northwest at floor beam 5 over the stiff leg, span 11. Note: 6-inch x 1 1/2-inch corrosion hole with a 30-inch long (1/2-inch growth) crack with slight offset. Crack ends are turning down into bottom flange fillet.

NBI #	Structure #	County	Fac. Carried	Fac. Intersected	Insp. Date
04085	0902 0000 X		U.S. 281	S. CANADIAN RIVER	4/6/2019



Photograph 23 - Looking north at the south face of floor beam 2 at the east truss connection, span 27. Note: 1 1/4-inch high x 1 1/4-inch wide corrosion hole with 3/4-inch (1/4-inch growth) vertical crack below hole.

NBI #	Structure #	County	Fac. Carried	Fac. Intersected	Insp. Date
04085	0902 0000 X		U.S. 281	S. CANADIAN RIVER	4/6/2019



Photograph 24 - Looking south at floor beam 2 connection to the east truss, span 28. Note: two corrosion holes, 3/4-inch diameter and 1-inch wide x 3/4-inch high with 1/4-inch (1/8-inch growth) crack emanating from hole at cope.

NBI #	Structure #	County	Fac. Carried	Fac. Intersected	Insp. Date
04085	0902 0000 X		U.S. 281	S. CANADIAN RIVER	4/6/2019



Photograph 25 - Looking north at floor beam 0 connection to the east truss, span 39. Note: 4-inch high x 1 3/8-inch wide corrosion hole with adjacent knife edging below the hole along the connection angle.

NBI #	Structure #	County	Fac. Carried	Fac. Intersected	Insp. Date
04085	0902 0000 X		U.S. 281	S. CANADIAN RIVER	4/6/2019



Photograph 26 - Looking south at floor beam 0 connection to the west truss, span 2. Note: 2-inch (1-inch growth) crack at top cope.

NBI #	Structure #	County	Fac. Carried	Fac. Intersected	Insp. Date
04085	0902 0000 X		U.S. 281	S. CANADIAN RIVER	4/6/2019



Photograph 27 - Looking south at floorbeam 1 connection to the east truss, span 24. Note: 1 1/4-inch by 3/8-inch wide corrosion hole at top cope, previously a 3/4-inch crack.

NBI #	Structure #	County	Fac. Carried	Fac. Intersected	Insp. Date
04085	0902 0000 X		U.S. 281	S. CANADIAN RIVER	4/6/2019



Photograph 28 - Looking northwest at the inboard gusset plate of east L0, span 20. Note: 9 3/4-inch (2 1/4-inch growth) horizontal crack along lower chord. Plate has been previously strengthened.

NBI #	Structure #	County	Fac. Carried	Fac. Intersected	Insp. Date
04085	0902 0000 X		U.S. 281	S. CANADIAN RIVER	4/6/2019



Photograph 29 - Looking west at inboard gusset plate of east L0, span 24. Note: 9 1/4-inch (3/4-inch growth) horizontal crack along lower chord. Plate has been previously strengthened.

NBI #	Structure #	County	Fac. Carried	Fac. Intersected	Insp. Date
04085	0902 0000 X		U.S. 281	S. CANADIAN RIVER	4/6/2019



Photograph 30 - Looking east at pier beam 1. Note: span 1 stringers 1 through 4 do not have bearing pads between pier beam 1 and stringer bottom flanges. Bearing pad is in place for stringer 5.

NBI #	Structure #	County	Fac. Carried	Fac. Intersected	Insp. Date
04085	0902 0000 X		U.S. 281	S. CANADIAN RIVER	4/6/2019



Photograph 31 - Looking east at the inboard gusset plate of east U4, span 37. Note: no change to crack length.

NBI #	Structure #	County	Fac. Carried	Fac. Intersected	Insp. Date
04085	0902 0000 X		U.S. 281	S. CANADIAN RIVER	4/6/2019



Photograph 32 - Looking northeast at east U1L0, span 14. Note: collision damage to the end post.

NBI #	Structure #	County	Fac. Carried	Fac. Intersected	Insp. Date
04085	0902 0000 X		U.S. 281	S. CANADIAN RIVER	4/6/2019



Photograph 33 - Looking northeast at east capital of pier 3. Note: spalling and cracking at bearings. No undermining present.

NBI #	Structure #	County	Fac. Carried	Fac. Intersected	Insp. Date
04085	0902 0000 X		U.S. 281	S. CANADIAN RIVER	4/6/2019



Photograph 34 - Looking north at the channel under span 9. Note: heavy drift at the west end of pier 9.

Stringer Cope Cracks

Span	Floor beam	Floor beam face	Stringer	Stringer Face	Length (inches)	2019 OS Comment	Photo
2	0	North	5		1 1/2 vertical, 1 horizontal		
2	2	South	1	East	3/8		
2	4	South	1	West	1/8		
2	5	South	1		1/2		
3	0	North	1		1 1/4		
3	0	North	5		1/2		
3	5	South	1		3/8		
4	0	North	1		5/8		
4	2	South	5	West	1/4		
4	5	South	5		1 1/4	Arrested by drilled hole.	
5	0	North	5		1/2		
6	2	North	1	West	1/8		
6	3	North	1	East	1/4		
6	3	North	1	West	1/8		
7	0	North	5		2 1/4		
7	5	South	5		3/4	Adjacent 50% section loss to the web 3 inches high	
8	4	North	5		1 1/4, 7/8 (exterior), 1 1/4, 1 1/4 (interior)		
8	5	South	1		1 3/8		
9	1	North	1		1/4		
9	3	North	1		3/8	Two 3/8" cracks on east face of stringer (Previously one crack)	7
9	3	South	1		3/8		
9	4	North	1		3/8		
10	0	North	1		5/8		
10	1	South	2		3/4		
10	2	North	1		5/8		
10	5	South	5		1		
11	0	North	1		3/4		
11	0	North	5		9/16		
12	5	South	1		1 1/2, 1 1/2		
13	5	South	5		5/8		
14	5	South	1		1 1/4		
15	0	North	1		3/8		
16	1	South	5		1 5/8		
16	4	North	5		1/2		
17	0	North	5		1 3/8		
18	0	North	1		7/8		
18	2	North	1		1/4		
18	2	South	1		3/8		
19	0	North	5		1/2		
19	5	South	1		3/4		
19	5	South	3		5/16		
19	5	South	5		1 1/4		
20	0	North	1		1		
20	1	North	5		1/8		
20	2	North	1		3/8		
20	2	South	1		3/4		
20	4	North	1		3/16		
20	4	North	5		1/8		
20	5	South	1		1/8		
21	0	North	5		7/8		
21	3	North	1		1/8		
21	4	South	1		1/8		
23	0	North	5		1/4		
23	1	South	5		3/16		
25	0	North	5		3/4		
25	2	South	1		1/4		
26	3	North	1		3/16		
26	5	South	1		2 1/2		
27	1	North	1		1/2 and 1 1/16	Heavy corrosion.	
27	1	South	1		1 1/4		
27	1	South	5		1/4		
27	2	South	1		3/16		
28	1	North	1		3/16		
28	2	North	1		5/8		
28	2	South	1		1/4		

Stringer Cope Cracks

Span	Floor beam	Floor beam face	Stringer	Stringer Face	Length (inches)	2019 OS Comment	Photo
28	3	North	5		3/8		
28	5	South	1		5/8		
29	4	South	5		1 3/4 and 1/4		
30	1	South	5		1/2		
30	1	South	5	East	3/4		
30	1	South	5	West	3/8, 5/8		8
30	4	North	5		1/2		
31	1	North	1		1/4		
31	2	North	1		1/4		
32	0	North	5		5/8		
32	2	South	1		1/4		
32	4	North	1		1/8		
32	5	South	1		1/4		
33	2	South	1		1/8		
33	3	South	1		1/4		
33	5	South	1		1 1/4		
34	1	South	1		1/4		
34	2	South	1		5/16		
34	5	South	1	East	1/2		
35	0	North	1		1/2		
35	4	South	1		1/8		
36	0	North	1		1/2		
36	1	North	1		3/8		
36	2	South	1		3/8		
36	4	North	1		1/8		
36	5	South	1		2 1/4	Crack is in the top flange.	
36	5	South	1		1/2	New cope crack.	9
37	0	North	5		1/2		
37	3	North	1		1/4		
38	2	North	1		3/4		
38	2	South	1		5/8		
38	5	South	1		1/2		
39	1	North	1		1/8		

Stringer Connection Angle Cracks

Span	Floor beam	Floor beam face	Stringer	Stringer face	Length (inches)	2019 OS Comment	Photo
2	0	North	2	West	3 1/4		
3	5	South	4	West	2 1/2		
4	0	North	2	West	3		
5	5	South	3	East	3 1/4		10
8	0	North	3	West	3 1/2		
9	5	South	3	East	2 1/4		
9	5	South	3	West	3 5/8		
10	0	North	3	West	3		
12	0	North	2	West	2 7/8		
12	0	North	2	East	3		
13	5	South	4	West	4		
15	5	South	4	West	3 7/8		
17	5	South	4	East	4 1/2		
18	0	North	3	East	2 3/4		
18	0	North	4	East	2 3/4		
22	0	North	1	East	3 3/4		
22	0	North	3	East	4		
22	0	North	4	East	2 3/4		
23	5	South	4	West	3 1/2		
24	0	North	2	West	2 3/4		
24	0	North	3	East	4		
24	0	North	3	West	4		
24	0	North	4	East	3 1/4		
25	5	South	2	West	3 1/2		
25	5	South	3	West	4 3/4		
25	5	South	3	East	1 1/4		
25	5	South	4	West	3 5/8		
25	5	South	5	West	5 1/2		
26	0	North	2	East	2 7/8		
26	0	North	2	West	3 1/4		
26	0	North	3	East	5 3/8		11
26	0	North	3	West	2 5/8		
26	0	North	4	East	3 1/2		
27	5	South	3	East	2 1/2		
27	5	South	3	West	3 3/4		
27	5	South	4	West	4 1/4		
28	0	North	2	East	4 1/4		
28	0	North	3	East	3 7/8		
29	5	South	3	West	4		
29	5	South	4	East	1 1/2		
29	5	South	4	West	2 1/8		
30	0	North	2	East	5 3/4	1/8-inch growth	12
30	0	North	3	East	4 5/8		
30	0	North	4	East	3 3/4		
30	1	South	5	West	9/16	NEW 9/16-inch long crack indication in connection angle.	13
31	5	South	4	East	3 3/4		
31	5	South	4	West	6 1/8		

Stringer Connection Angle Cracks

Span	Floor beam	Floor beam face	Stringer	Stringer face	Length (inches)	2019 OS Comment	Photo
33	5	South	3	West	4		
33	5	South	4	West	7		
34	0	North	2	East	3 1/2		
34	0	North	2	West	2		
34	0	North	3	West	2 1/4		
34	5	South	5	West	3 1/2		
35	5	South	2	West	1 1/4		
35	5	South	3	West	4 1/4		
35	5	South	4	West	4		
36	0	North	2	West	3		
36	0	North	3	West	2		
36	0	North	4	East	4 1/8		
38	0	North	2	West	2 1/8		
38	0	North	3	West	2 1/2		

Missing Stringer Rivets

Span	Floor beam	Floor beam face	Stringer	Stringer face	Number	2019 OS Comment	Photo
2	0	North	2		1	All shanks still in shear plane unless noted otherwise.	
2	0	North	3		2		
4	0	North	2		1	Shanks not in shear plane.	
4	1	South	2	East	1		
4	3	South	3	West	1		
5	1	North	2		1		
5	1	North	3		1		
5	2	North	2		1		
5	4	South	4		1		
5	5	South	4	East	1		
6	0	North	2		2	East shank not in shear plane	
6	0	North	3	East	1	Shank not in shear plane.	
6	1	North	2		1		
6	2	North	2	Both	2		
7	1	North	2	East	1		
7	2	North	2	Both	2		
7	2	North	3	West	1		
7	5	South	3		2	Shanks not in shear plane.	
7	5	South	4		2	Shanks not in shear plane.	
8	0	North	2		2	Shanks not in shear plane.	
8	0	North	3	East	1	Rivet shank is welded to connection angle, weld has broken away from rivet. Rivet shank no longer in shear plane.	
8	1	North	2	East	1		
9	1	North	2	Both	2	1 missing rivet each connection angle. 2 total	
9	4	South	4		1		
9	5	South	4		2		
10	0	North	2		2		
10	0	North	3	East	1	Shank not in shear plane.	
10	1	North	2		2		
10	1	North	3		2		
10	4	South	4		1		
11	1	North	2		1		
11	4	South	4		2		
11	5	South	3		2	Shanks not in shear plane.	
11	5	South	4		2		
12	0	North	2	East	1		
12	0	North	3		2	Shanks not in shear plane.	
12	0	North	4	West	1		
13	2	North	2		2		

Missing Stringer Rivets

Span	Floor beam	Floor beam face	Stringer	Stringer face	Number	2019 OS Comment	Photo
13	2	North	3		1		
14	0	North	2		2	Shanks not in shear plane.	
14	1	North	2		1		
15	5	South	3		2	West shank not in shear plane.	
15	5	South	4	East	1	Shank not in shear plane.	
16	0	North	2		2	Shanks not in shear plane.	
16	0	North	3	West	1		
17	5	South	4	West	1		
18	0	North	2		2	Shanks not in shear plane.	14
18	0	North	3	West	1	Shank not in shear plane.	
18	4	South	3		1		
20	0	North	1	West	1		
20	0	North	2	West	1		
22	0	North	2		2	Shanks not in shear plane.	
22	0	North	3	West	1	Shank not in shear plane.	
23	2	North	2		1		
23	4	South	4		1		
24	0	North	2		2	East shank not in shear plane.	
24	4	South	4		2		
25	2	North	2		1		
25	5	South	4	East	1	Shank not in shear plane.	
26	0	North	2	East	1		
28	1	North	2		1		
29	1	North	2		2		
29	2	North	2		1		
30	0	North	3	West	1		
31	2	North	2		1		
31	5	South	3		2		
32	0	North	2		2	East rivet shank not in shear plane.	
32	0	North	3	East	1	East rivet shank not in shear plane.	
33	1	North	2		1		
33	5	South	3	East	1	Shank not in shear plane	
34	0	North	3	East	1	Shank not in shear plane	
34	1	North	2		1		
34	1	North	3		1		
35	2	North	2		2		
35	4	South	4		1		
35	5	South	3	East	1	Shank not in shear plane.	
35	5	South	4	East	1	Shank not in shear plane.	
36	0	North	2	East	1	Shank not in shear plane.	
36	0	North	3	East	1	Shank not in shear plane.	
36	1	North	2		2		
36	1	North	3		2		
36	4	North	3		1		
36	4	South	3		1		
37	1	North	2		1		
37	2	North	2	Both	2		

Missing Stringer Rivets

Span	Floor beam	Floor beam face	Stringer	Stringer face	Number	2019 OS Comment	Photo
37	5	South	3		2		15
37	5	South	4	West	1		
38	0	North	2		2	East shank not in shear plane.	
38	0	North	3	East	1	East shank not in shear plane.	
38	1	North	2		1		
39	5	South	3	West	1		
39	5	South	4	East	1		

Stringer Loss

Span	Floor beam	Floor beam face	Stringer	Stringer face	2019 OS Comment	Photo
2	0	North	1		3/4-inch diameter corrosion hole with 1/4-inch crack and 3-inch tall knife edge loss below hole.	
4	0	North	5		1 1/4-inch diameter corrosion hole with two 1/2-inch and 5/8-inch horizontal cracks and 3-inch high x 3/16-inch remaining below hole.	
5	5	South	5		1-inch diameter corrosion hole with 1/2-inch horizontal crack and 3/8-inch vertical crack.	
6	0	North	1		1 1/2-inch diameter corrosion hole with 1 1/8-inch vertical crack and 2-inch tall knife edge loss below hole.	
6	0	South	5		1 3/8-inch diameter corrosion hole with 1/2-inch vertical crack and 3-inch tall knife edge loss below hole.	
7	5	South	1		1/2-inch diameter corrosion hole with 1/4-inch crack	
8	0		5		3-inch long x 2 1/2-inch high corrosion hole.	
9	1	South	5		2 3/8-inch x 1-inch corrosion hole	
9	5	South	1		2 7/8-inch high x 1 1/4-inch wide corrosion hole with 1-inch vertical crack and 2-inch tall x 50% web loss below hole.	
9	5	South	5		1-inch wide x 1 1/4-inch high corrosion hole with 1/8-inch crack.	
10	0	North	5		1/2-inch diameter corrosion hole with 3-inch high x 3/16-inch deep, 4-inch high x 1/8-inch deep, and 3-inch high x 1/16-inch deep pitting extending below the hole. Two cracks, 3/4-inch and 1/2-inch above the hole and one crack, 1/2-inch below hole.	
10	5	South	5		4-inch wide x 1 1/8-inch high corrosion hole with 1/2-inch knife edging adjacent in lower web.	
11	5	South	1		3-inch high x 25% web loss at cope.	
11	5	South	5		5/8-inch diameter corrosion hole with 7/8-inch long crack and 3-inch high knife edge loss below hole.	
12	0	North	1		1-inch diameter corrosion hole with 5/16-inch vertical crack.	
12	0	North	5		1 1/8-inch high x 5/8-inch wide corrosion hole with 3/4-inch vertical crack.	
12	1	North	5		1-inch high x 3/4-inch wide corrosion hole.	
13	5	South	1		1 5/8-inch high x 1/2-inch wide corrosion hole with 1/4-inch crack and 2-inch high knife edge loss below hole	
14	0	North	5		1/2-inch diameter corrosion hole with 1 3/4-inch vertical crack. 10% average loss full web height.	
14	5	South	1		5/16-inch diameter corrosion hole with 3-inch high knife edge loss below hole	
15	1	South	5		1 1/2-inch high x 1-inch wide corrosion hole.	
15	5	South	1		1/2-inch diameter corrosion hole adjacent to cope with 1/8-inch deep x 3-inch high x 1 1/2-inch wide adjacent loss.	
15	5	South	5		Repaired with welded plate. Previously noted, 1 1/4-inch diameter corrosion hole at cope with 3/8-inch crack. 2-inch high x 5-inch wide corrosion hole below connection angle.	16
16	0	North	5		Repaired with welded plate. Previously noted, 5-inch high x 1 1/2-inch wide corrosion hole with 3/4-inch crack below hole. 5-inch wide x 1-inch high corrosion hole below connection angle.	
17	4	North	5		2 1/2-inch x 1-inch corrosion hole with 1 1/8-inch long crack.	
17	5	South	1		Two corrosion holes: 1 3/4-inch high x 1/4-inch wide and 3/4-inch high x 1 3/4-inch wide with 3/16-inch crack.	
17	5	South	5		2 1/4-inch high x 1-inch wide corrosion hole with 5/8" long crack.	
18	0	North	5		2 1/4-inch diameter corrosion hole with 7-inch high x 3/16-inch deep adjacent pitting.	
18	5	South	1		2 1/2-inch long by 5/8-inch wide. No longer cracked and web below has 25% loss.	
19	5	South	1		5/8-inch diameter corrosion hole with 3/4-inch crack.	
19	5	South	5		7 1/2-inch wide x 4-inch high corrosion hole to lower web with 3/8-inch long crack from top of hole and 2-inch high knife edge loss above hole. Approx 50% total web loss.	

Stringer Loss

Span	Floor beam	Floor beam face	Stringer	Stringer face	2019 OS Comment	Photo
20	0	North	5		1 1/4-inch diameter corrosion hole.	
21	5	South	1		1 1/4-inch wide x 1/4-inch high corrosion hole with 1/4-inch vertical crack.	
21	5	South	5		Repaired with welded plate. Previously noted, 2 1/2-inch high x 1 1/2-inch wide corrosion hole with 4 1/2-inch long crack.	
22	0	North	1		2 1/4-inch wide x 1/2-inch high corrosion hole.	
23	5	South	5		2 3/4-inch high x 5/8-inch wide corrosion hole.	
24	0	North	1		1 1/4-inch high x 3/4-inch wide corrosion hole with 3/16-inch deep max loss over 6-inch high below hole	
24	0	North	5		Repaired with welded plate. Previously noted, 10 1/2-inch wide x 2-inch high corrosion hole with 1/16 to 1/8-inch remaining section for the full height at edge of connection angle. 1-inch and 3/4-inch diameter corrosion holes in web adjacent to connection angle with multiple holes emanating from lower holes, 1/4-inch max L.	
24	5	South	5		1-inch diameter corrosion hole in web adjacent to bottom flange, approx 10 inches from end.	
25	1	North	1		1-inch diameter corrosion hole at stringer cope.	
25	2	North	5		Heavy section loss on south stringer end around floor beam connection. North stringer end exhibits a 1-inch x 1/2-inch corrosion hole with 1/2-inch crack at top cope.	
25	5	South	1		2-inch high x 5/8-inch wide corrosion hole with 5/8-inch crack.	
25	5	South	5		1/8-inch deep section loss, full height.	
26	0	North	1		1/2-inch diameter corrosion hole with 3/8-inch crack and 3-inch high knife edge loss below hole.	
26	0	North	5		2-inch high x 5/8-inch wide corrosion hole with 2-inch high x 1-inch wide x 3/16-inch deep adjacent loss.	
27	5	South	1		3 3/4-inch high x 1-inch wide corrosion holes with 1/4-inch vertical crack.	
29	4	South	5		5/8-inch diameter corrosion hole with 1 3/4-inch long crack.	
29	5	South	5		1 1/2-inch high x 1-inch wide corrosion hole with two cracks. One 1-inch crack extends from the top cope to hole and one 2 1/4-inch (1 1/4-inch growth) crack below hole. Two additional corrosion holes: 1/2-inch and 5/8-inch diameter in lower web.	17
30	0	North	5		1 1/2-inch x 1 1/2-inch corrosion hole and 1 1/4-inch (1/4-inch growth) vertical crack.	18
31	5	South	5		Repaired with welded plate. Previously noted, three corrosion holes: 1-inch high x 1-inch wide (top), 1 1/2-inch high x 1/8-inch wide (mid height of web), and 1 3/4-inch high x 1 1/4-inch wide (near bottom flange). Total web section loss = approx 75%, with 5-inch vertical crack extending below top crack.	
33	5	South	5		6 1/4-inch wide x 2 1/2-inch high corrosion hole at base of stringer web. Severe section loss to east connection angle with near 100% section loss to top two rivet heads (no loss to west connection angle).	
34	3	South	5		2 3/4-inch high x 1/2-inch wide corrosion hole with 1/2-inch crack at bottom of hole.	
34	4	South	5		1-inch high x 1 1/4-inch wide corrosion hole with 3/4-inch vertical crack at bottom of hole. Additional two corrosion holes in lower web, 2-inch wide x 1-inch high and 3/4-inch diameter.	
35	5	South	5		6 1/4-inch wide x 1 3/4-inch high corrosion hole with 6-inch wide x 1-inch high x 1/4-inch deep adjacent section loss.	

Stringer Loss

Span	Floor beam	Floor beam face	Stringer	Stringer face	2019 OS Comment	Photo
36	0	North	5		Repaired with welded plate. Previously noted, 2 1/2-inch high x 1 1/2-inch wide corrosion hole at cope with 1 3/4" vertical crack and 3-inch high x 1/4-inch deep pitting below hole. 1/8-inch deep loss to remaining web height. Approx 50% section loss to this location. Heavy rivet head loss on stringer connection rivets on outside face due to laminating corrosion. Additional corrosion holes in lower web up to 8-inch wide x 1 1/4-inch high.	
38	0	North	5		Repaired with welded plate. Previously noted, 1-inch diameter corrosion hole in stringer cope with up to 1/4-inch deep section loss to full web height. Up to 90% section loss to top two rivets on both faces of stringer.	
38	5	South	5		1 1/2-inch high x 4 1/2-inch wide corrosion hole below connection angle with 1/2-inch cope crack.	
39	0	North	5		1 1/4-inch high x 1/2-inch wide corrosion hole below connection angle.	
39	1	South	5		1/2-inch high x 1/4-inch wide corrosion hole with 1/2-inch long crack extending below corrosion hole and 1/8-inch deep section loss over the full height of the beam.	19

Floor Beam Sweep

Span	Floor Beam	Sweep (in.)	Sweep Direction	Stiff Leg Installed	Description
1	pier 1			Yes	Sister pier beam added due to severe sweep
2	0	-	-	Yes	
2	5	-	-	Yes	
3	0	1/2	North	Yes	
3	5	1/4	South	Yes	
4	0	1/4	North	Yes	
4	5	1/4	South	Yes	
5	0	3/4	North	Yes	
5	5	-	-	Yes	
6	0	-	-	Yes	
6	5	1/2	South	Yes	
7	0	1/2	North	Yes	
7	5	-	-	Yes	
8	0	1/4	North	Yes	
8	5	1/2	South	Yes	
9	0	3/8	North	Yes	
9	5	-	-	Yes	
10	0	-	-	Yes	
10	5	1/2	South	Yes	
11	0	5/8	North	Yes	
11	5	-	-	Yes	
12	0	1/4	North	Yes	
12	5	5/8	South	Yes	
13	0	1/2	North	Yes	
13	5	3/16	South	Yes	
14	0	5/8	North	Yes	
14	5	1/2	South	Yes	
15	0	5/8	North	Yes	
15	5	3/16	South	Yes	
16	0	3/16	North	Yes	
16	5	3/4	South	Yes	
17	0	1/2	North	Yes	
17	5	1/4	South	Yes	
18	0	5/16	North	Yes	

Floor Beam Sweep

Span	Floor Beam	Sweep (in.)	Sweep Direction	Stiff Leg Installed	Description
18	5	3/4	South	Yes	
19	0	5/8	North	Yes	
19	5	-	-	Yes	
20	0	-	-	Yes	
20	5	7/8	South	Yes	
21	0	5/8	North	Yes	
21	5	-	-	Yes	
22	0	1/4	North	Yes	
22	5	3/8	South	Yes	
23	0	1/2	North	Yes	
23	5	-	-	Yes	
24	0	1/4	North	Yes	
24	5	3/4	South	Yes	
25	0	3/8	North	Yes	
25	5	7/16	North	Yes	
26	0	3/8	North	Yes	
26	5	1/2	South	Yes	
27	0	3/4	North	Yes	
27	5	5/8	South	Yes	
28	0	1/2	North	Yes	
28	5	3/4	South	Yes	
29	0	3/4	North	Yes	
29	5	-	-	Yes	
30	0	-	-	Yes	
30	5	7/8	South	Yes	
31	0	1/2	North	Yes	
31	5	-	-	Yes	
32	0	-	-	Yes	
32	5	3/4	South	Yes	
33	0	3/8	North	Yes	
33	5	-	-	Yes	
34	0	-	-	Yes	
34	5	3/4	South	Yes	
35	0	1/2	North	Yes	
35	5	-	-	Yes	
36	0	-	-	Yes	
36	5	5/8	South	Yes	
37	0	1/2	North	Yes	
37	5	-	-	Yes	

Floor Beam Sweep

Span	Floor Beam	Sweep (in.)	Sweep Direction	Stiff Leg Installed	Description
38	0	-	-	Yes	
38	5	3/8	South	Yes	
39	0	3/8	North	Yes	
39	5	-	-	Yes	
40	pier 39				Sister pier beam added due to severe sweep

Floor Beam Loss

Span	Floor beam	Location	Comment	Photo
2	0	Between stringer 2 and 5	4-inch x 8-inch x 3/8-inch angle added to bottom of web and bottom flange with stitch welds.	
3	5	Between stringers 3 and 4	1 1/2-inch diameter	
4	0	Between stringer 4 and 5	14-inch long x 1-inch high	
5	5	Between stringers 1 and 2	3/4-inch diameter and 1-inch high x 2-inch wide	
5	5	Between stringers 3 and 4	2-inch high x 1-inch wide	
6	0	Between stringers 1 and 2	6-inch wide x 1-1/4-inch high	
6	0	Between stringers 3 and 4	1-inch high x 16 1/2-inch wide	
7	2	At East Truss	2-inch wide x 3/4-inch tall corrosion hole with 1 1/2-inch horizontal crack	21
7	3	At east truss cope	5/8-inch x 5/8-inch with 5/16-inch vertical crack	
8	3	At east truss	3/4-inch high x 1/2-inch wide corrosion hole	
9	0	Under stringer 3	3/4-inch and 3/8-inch corrosion holes just in lower web above stiff leg.	
9	1	At East truss	2 3/4-inch diameter corrosion hole with a 1 1/8-inch long crack that has self-arresting into the corrosion hole.	
9	1	West Truss	3/4-inch corrosion hole with adjacent knife edging in cope.	
10	1	At east truss cope	5/8-inch high x 3/16-inch wide	
11	5	Between stringers 4 and 5	5 corrosion holes, one 4-inch high x 1-1/2-inch and four 3/8-inch diameter.	
11	5	Near stringer 3, over stiff leg	6-inch x 1 1/2-inch corrosion hole with a 30-inch long (1/2-inch growth) crack with slight offset. Crack ends are turning down into bottom flange fillet.	22
12	0	Near stringer 4	Multiple corrosion holes over a 48 1/2-inch long x 1 5/8-inch high area.	
12	3	At E Truss	1 3/8-inch high x 1-inch wide.	
13	5	Near stringer 2	1 3/8-inch wide x 1-inch high corrosion hole	
15	3	At E Truss	9/16-inch diameter with 1/4-inch corrosion crack	
15	4	At E Truss	1/2-inch wide x 1/4-inch high corrosion hole in floor beam cope. Corrosion crack starting to form.	
15	5	Between stringers 1 and 2	Multiple holes over 21-inch length, max size 6-inch wide x 2-inch high	
16	4	East truss	3-1/2-inch high x 4-1/4-inch wide	
18	2	At E Truss	1-inch high by 5/8-inch wide and 1/4-inch diameter corrosion holes with 1-inch horizontal crack extending between holes.	
19	3	At east truss	Section loss up to knife edging in cope. Crack forming.	
19	5	Below stringer 5 connection angle	3/8-inch deep section loss adjacent to connection angle beneath stringer for 3-inch length.	
19	5	Between stringers 3 and 4	6 1/4-inch long horizontal crack along the base of the web with heavy corrosion and corrosion holes.	
20	0	Between stringers 1 and 2	Two corrosion holes, 3/4-inch diameter and 1 1/4-inch wide x 3/4-inch high.	
20	0	Between stringers 3 and 4	Multiple corrosion holes up to 1-inch high over 21-inch length (no crack detected)	
20	3	At east truss connection	1 1/8-inch wide x 9/16-inch high corrosion hole with adjacent knife edging.	

Floor Beam Loss

Span	Floor beam	Location	Comment	Photo
22	5	Near stringer 4	1 1/2-inch wide x 3/4-inch high in lower web adjacent to bottom flange	
22	5	Near west truss connection	1-inch wide x 3-inch high corrosion hole	
23	0	At E truss	2 3/4-inch high x 5/8-inch wide in lower web.	
24	0	Between stringer 1 & west truss	3/4-inch diameter in lower web	
24	2	At east truss connection	3/4-inch high x 3/4-inch wide hole at cope with 1/4-inch diagonal crack.	
25	2	At E Truss	3 1/2-inch high x 2-inch wide corrosion hole in floor beam cope, with adjacent knife ending.	
26	3	At E Truss	1/2-inch corrosion hole in floor beam cope	
26	5	Between stringer 1-2	1 3/4-inch wide x 1-inch high	
27	1	At E Truss	3/4-inch diameter corrosion hole near cope and a 3/16-inch crack at cope on north face.	
27	1	At W Truss	2-inch high x 2 1/2-inch wide.	
27	2	At east truss connection	1 1/4-inch high x 1 1/4-inch wide corrosion hole with 3/4-inch (1/4-inch growth) vertical crack below hole.	23
27	5	Between stringer 1 & 2	1 1/2-inch corrosion hole.	
28	0	Between stringers 4-5	1 1/4-inch wide x 5/8-inch high corrosion hole.	
28	2	At E Truss	Two corrosion holes, 3/4-inch diameter and 1-inch wide x 3/4-inch high with 1/4-inch (1/8-inch growth) crack emanating from hole at cope.	24
28	3	At E truss	4 1/2-inch high x 1-inch wide corrosion hole	
29	1	At W Truss	6-inch high x 3 1/2-inch wide x 1/4-inch deep section loss to floor beam web. Laminating corrosion on both faces of floor beam.	
29	5	Between stringers 2 and 3	2 1/4-inch wide x 3/4-inch high	
30	1	At west truss	1/2-inch x 1/2-inch corrosion hole with knife edging for 3 1/4-inch vertically	
30	2	At E Truss	1-inch high x 1/2-inch wide corrosion hole with 1/2-inch vertical crack. Additional section loss 8-inch high x 1-inch wide x 3/16-inch deep below corrosion hole	
31	1	At W Truss	5-inch high x 2-inch wide x 1/4-inch deep loss to floor beam web over adjacent to truss connection at top of web.	
33	2	At east truss connection	2-inch high x 5/16-inch wide corrosion hole at cope.	
33	3	At east truss connection	3/4-inch diameter corrosion hole	
33	5	Between stringers 4 and 5	5 1/4-inch wide x 1 1/8-inch high corrosion hole.	
33	5	Under Stringer 5 Conn. Angle	10-inch wide x 6-inch high x 1/4-inch deep section loss to floor beam web adjacent to stringer 5 connection angle.	
34	3	At east truss connection	Heavy web section loss over top 15-inch with 2 1/2-inch high x 1/2-inch wide and 1/2-inch diameter holes. Approx 33% total web loss. Crack has now become corrosion hole. RECOMMEND STRENGTHENING.	
35	5	Between stringers 4 and 5	1/2-inch diameter corrosion hole in floor beam web adjacent to bottom flange.	
37	5	At stringer 3, over stiff leg	Corrosion hole measuring 3/8-inch high x 1-inch wide with 3/8-inch crack to east side and 1 1/4-inch long crack to west side above stiff leg.	

Floor Beam Loss

Span	Floor beam	Location	Comment	Photo
37	5	Between stringers 4 and 5	Multiple 3/4-inch high x 2-inch wide corrosion holes in a 3/4-inch high x 12-inch wide area.	
38	0	At east truss connection	1 1/4-inch high x 3/4-inch wide corrosion hole.	
38	0	Between stringers 4 and 5	Four corrosion holes: 1-inch high x 5-inch wide, 1-inch high x 1-inch wide, 1-inch high x 1 1/2-inch wide, 1 1/2-inch diameter	
39	0	At east truss connection	4-inch high x 1 3/8-inch wide corrosion hole with adjacent knife edging below the hole along the connection angle.	25
39	1	At east truss connection	3/4-inch high x 1/2-inch wide corrosion hole at cope with 3/16-inch horizontal crack	
39	3	At east truss connection	3/8-inch high x 1/4-inch wide corrosion hole with 1/2-inch diameter corrosion holes below cope	

Floor Beam Cracks

Span	Floor beam	Location	Length (inches)	Comment	Photo
2	0	East Truss	2 1/4		
2	0	West Truss	2	1-inch growth	26
2	5	West Truss	1 3/8		
3	5	East Truss	3 1/2		
3	5	West Truss	1 1/2		
4	0	East Truss	5		
4	0	West Truss	3		
5	3	West Truss, north face	5/16		
5	5	East Truss	3 1/8		
5	5	West Truss	1		
6	0	East Truss	8		
6	0	NA Truss	8 1/4	Through web over stiff leg repair, below stringer 3	
6	0	West Truss	1 1/2		
7	0	West Truss	1		
7	2	East Truss, north face	1 1/2		
7	3	East Truss, south face	5/16		
7	5	East Truss	3 1/8		
7	5	West Truss	1 5/8		
8	0	East Truss	6 1/4		
8	0	West Truss	4 1/4		
8	3	East Truss	3/16		
9	1	East Truss	1 1/8		
9	5	East Truss	3 1/4		
9	5	West Truss	2 1/2		
10	0	East Truss	6 5/8		
10	0	West Truss	3		
11	5	East Truss	2 5/8		
11	5	West Truss	2 1/2		
12	0	East Truss	1 7/8		
12	0	West Truss	1 7/8		
13	5	East Truss	2 1/2		
13	5	West Truss	1 1/4		
14	0	East Truss	5 7/16		
14	0	West Truss	3		
14	1	East Truss	7/16		
15	3	East Truss	1/4		
15	4	West Truss	5/16		
15	5	East Truss	4 7/8		
16	0	East Truss	4		
16	0	West Truss	3 5/8		
16	1	East Truss	3/8		
16	1	West Truss	1/2		
16	3	West Truss	1		
17	1	West Truss	1/8		
17	4	East Truss	3/8		
17	4	West Truss	1/2		
17	5	East Truss	3 1/8		
17	5	West Truss	3 1/8		
18	0	East Truss	5 1/8		
18	0	West Truss	3 3/8		
18	1	West Truss	5/16		
19	5	East Truss	1 3/8		
19	5	West Truss	2 1/8		
20	0	East Truss	6 3/8		
20	0	West Truss	1 3/4		
20	2	East Truss	3/16		
21	4	West Truss	3/4		
21	5	East Truss	1 1/4		
21	5	West Truss	1 3/4		

Floor Beam Cracks

Span	Floor beam	Location	Length (inches)	Comment	Photo
22	0	East Truss	3 3/4		
22	0	West Truss	5 3/4		
22	1	West Truss	1/2		
23	3	East Truss	1/2		
23	4	West Truss	3/8		
23	5	East Truss	4		
23	5	West Truss	1 3/4		
24	0	East Truss	4 1/8		
24	0	West Truss	4 3/4		
24	1	East Truss	3/4	1 1/4" by 3/8" wide corrosion hole. Previously a crack.	27
25	5	East Truss	6 3/4		
26	0	East Truss	4 1/4		
26	0	West Truss	3 1/2		
27	5	East Truss	1 1/4		
29	4	East Truss	1/2	1" high x 1/2" wide corrosion hole. 1/2" vertical crack. Additional section loss 8" high x 1" wide x 3/16" below corrosion hole	
29	5	East Truss	5		
29	5	West Truss	5/8		
30	0	East Truss	1 5/8		
30	0	West Truss	5/8		
30	1	West Truss	9/16		
31	5	East Truss	4 1/4		
31	5	West Truss	1		
32	0	East Truss	2		
32	0	West Truss	5/8		
33	3	East Truss	3/8	3/8" crack with 3/8" diameter corrosion hole.	
33	4	West Truss	5/16		
33	5	East Truss	3 1/4		
34	0	East Truss	2 1/8		
34	1	East Truss	1/2		
35	3	East Truss	1/4		
35	5	East Truss	2 13/16		
35	5	West Truss	3 1/8		
36	0	East Truss	2 3/8		
36	0	West Truss	1 3/8		
36	1	East Truss	1/4		
36	1	West Truss	3/8		
36	4	East Truss	5/8	3/4" x 1/2" section loss with 1/4" crack.	
36	4	West Truss	1/8		
37	4	West Truss	3/8		
37	5	East Truss	2		
37	5	West Truss	1 3/4		
38	0	East Truss	9 3/16		
38	0	West Truss	3 1/2		
38	1	West Truss	1/2		
38	2	East Truss	5/8	5/8" crack with through hole 9/16" high x 3/8" wide.	
38	3	West Truss	7/16		
38	4	West Truss	1/8		
39	4	East Truss	1/4		
39	4	West Truss	1/4		
39	5	East Truss	3		
39	5	West Truss	1 1/2		

Gusset Plate Cracks

Span	Truss	Panel Point	Length of Crack (in.)	Strengthened (Y/N)	Comment	Photo
2	East	L0	17 5/8	Yes		
7	East	L0	Paint Crack	No		
8	East	L0	9 1/4	Yes		
13	East	L5	Paint crack	No		
14	West	L0	4 3/4	Yes		
17	East	L5	9 3/4	Yes		
19	West	L5	9 1/2	Yes		
20	East	L0	9 3/4	Yes	2 1/4-inch growth	28
20	East	L5	Paint Crack	No		
22	East	L0	Paint Crack	No		
23	East	L0	Paint Crack	No		
23	West	L0	Paint Crack	No		
24	East	L0	9 1/4	Yes	3/4-inch growth	29
27	East	L5	Paint Crack	No		
27	West	L5	Paint Crack	No		
28	East	L0	Paint Crack	No		
29	East	L5	11 1/2	Yes		
30	East	L0	6 3/4	Yes		
33	East	L5	14	Yes		
38	East	L0	Paint Crack	No		