FRACTURE CRITICAL

INSPECTION REPORT

SFN4400038 (LAW-07-0240)
SR-7 OVER SYMMES CREEK
LAWRENCE COUNTY, OH
DISTRICT 9

September 2024

Prepared for:

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

STATE OF OHIO
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EXECUTIVE SUMMARY

Project: Symmes Creek Truss NSTM Inspection (PID No. 105476)

Purpose of Project: To perform a fracture critical / nonredundant steel tension member (NSTM) and NBIS routine inspection for the LAW-07-0240 structure for the Ohio Department of Transportation, District 9.

Inspection Team: Team Leader – Michael Seal, P.E. – Collins Engineers, Inc.
Team Member – Nicholas Lane – Collins Engineers, Inc.
Team Member – Kelsey MacLeod E.I.T. – Collins Engineers, Inc.

Inspection Date(s): September 26, 2024

Summary of Findings:

- Deck/Wearing Surface/Traffic Safety
  - The overlay exhibited locations of wear with transverse cracking.
  - The soffit exhibited extensive cracking with efflorescence present.
  - Vertical offsets between spans at the joints are up to 1-1/4" at Pier 2, with the maximum having not changed since 2022. Smaller offsets for other piers have changes generally around 1/8".
  - The approaches had recently been repaved.
  - Impact damage to the approach rail transition at two corners. Multiple posts are damaged.
- Superstructure
  - Painted over pitting is common on truss members. This is up to 1/8" deep at locations. Many locations exhibit reactivated corrosion.
  - Pack rust is reactivating between lower chord plates.
  - Cracks are present at the coped corners of the end floor beams. Growth of 1/8" to two cracks was observed on the north side of Floor Beam 0 and 1/16" to a crack at Floor Beam 9.
- Substructure
  - The abutments exhibited cracks and a few small spalls with exposed reinforcing bars. These areas are not structural concerns at this time.
  - A few pier caps exhibited larger spalls with exposed reinforcing bars.
  - Cracks with efflorescence are common throughout the concrete substructure units.

Summary of Recommendations:

- Monitor the deck wear and concrete cracks for advancing deterioration during future inspections.
- Monitor the cracks present on the end floor beams during future inspections. These cracks currently exhibit slow but continual growth for inspection cycles.
- Reset the rocker bearing for Beam 1 at the Rear Abutment.
- Monitor the section loss, painted over pitting, and reactivating corrosion/pack rust on the lower chords and at the lower panel points in future inspections.
- Monitor the spalls and exposed reinforcing steel on substructure units.

SNBI Ratings:

Item ID	Description	Condition Rating	Summary
B.C.01	Deck	6-Satisfactory	Overlay wear; cracks with efflorescence present
B.C.02	Superstructure	5-Fair	Painted over pitting common on truss members, cracks on fracture critical members, reactivating corrosion on truss members
B.C.03	Substructure	5-Fair	Spalls, exposed reinforcement.
B.C.05	Bridge Railings	7-Good	Some minor defects.
B.C.06	Bridge Railings Transitions	4-Poor	Collision damage at corners.
B.C.07	Bridge Bearings	5-Fair	Corrosion, excessive expansion.
B.C.08	Bridge Joints	7-Good	Localized tears, debris present.
B.C.09	Channel	8-Very Good	Sloughing and erosion gulley.
B.C.10	Channel Protection	7-Good	
B.C.14	NSTM	5-Fair	Isolated surface corrosion. No major defects overall.

AASHTO National Bridge Element (NBE) Ratings:

Element #	Description	Units	Total	Condition State			
				1	2	3	4
12	Reinforced Concrete Deck	SF	12,437	0	12419	18	0
510	Wearing Surfaces	SF	11,905	6,396	3,060	1,824	625
107	Steel Open Girder	LF	1,458	1,350	72	36	0
113	Steel Stringer	LF	2,464	2,328	78	58	0
120	Steel Truss	LF	324	151	95	88	0
152	Steel Floor Beam	LF	365	274	38	53	0
162	Steel Gusset Plate	LF	42	16	6	20	0
205	Reinforced Concrete Columns	EA	4	2	2	0	0
215	Reinforced Concrete Abutment	LF	96	73	20	3	0
220	Reinf Concrete Pile Cap/Footing	EA	91	16	45	30	0
227	Reinf Concrete Pile	EA	34	30	1	3	0
234	Reinforced Concrete Cap	LF	89	32	13	44	0
300	Strip Seal Expansion Joint	LF	188	0	163	25	1
302	Compression Joint Seal	LF	34	12	22	0	0
310	Elastomeric Bearing	EA	8	6	2	0	0
311	Moveable Bearing	EA	18	0	5	13	0
313	Fixed Bearing	EA	26	0	16	10	0

321	Reinforced Concrete Approach Slab	SF	1,864	1,757	105	2	0
330	Metal Bridge Railing	LF	625	611	10	4	0
815	Drainage	EA	13	0	13	0	0
830	Abutment Backwall	LF	103	69	34	0	0

Note: Ratings were developed using the FHWA Specifications for the National Bridge Inventory and AASHTO Manual for Bridge Element Inspection, 2nd Edition.

1.0 INTRODUCTION

1.1 Purpose and Scope

This report consists of the results of a detailed inspection of non-redundant steel tension members (fracture critical) performed at the SR-7 Bridge over Symmes Creek in Lawrence County, OH. Collins Engineers, Inc. (Collins) completed the fracture critical (NSTM) and routine inspection for the Ohio Department of Transportation (ODOT), District 9 on September 26, 2024.

1.2 General Description of the Structure

The LAW-7-02.40 Bridge is a two-lane, four-span, 348'-8" long structure that carries one lane of State Route 7 in each direction over Symmes Creek in Chesapeake, Ohio. The bridge was constructed in 1933 and features 63'- 0" long simple rolled steel multi-beam spans for Spans 1 and 3, a 162'-0" long Parker through truss main span in Span 2, and a simple span rolled steel multi-beam Span 4 that varies in length from 15'-0" to 47'-8 1/2" due to a skew with the Far Abutment and a concrete retaining wall. The reinforced concrete bridge deck measures 34'-0" curb-to-curb with 7'-3" wide sidewalks on either side. Spans 1 through 3 are original to the structure and Span 4 was added at an unknown date prior to 1990. When Span 4 was added a new forward abutment and forward approach slab were constructed, with the original forward abutment modified and repurposed as Pier 3. A substantial bridge rehabilitation occurred in 1990 and consisted of a deck removal and replacement with a composite concrete deck, replacement of the traffic railing, heat straightening of damaged truss members, portal bracing members were raised to increase vertical clearance, the Span 4 concrete beams were replaced with steel beams, partial removal and reconstruction of the abutments, approach slab replacement, and other miscellaneous repairs. The bridge was last painted in 1993. An epoxy overlay was added to the deck and sidewalks at an unknown date.

The truss upper chords and endposts are comprised of riveted, built-up box sections consisting of rolled channels and top cover plates and bottom lacing bars. Truss lower chords are comprised of riveted web plates

with intermittent plate diaphragms connected via angles. The truss verticals, diagonals, and mid-height horizontal struts are comprised of rolled 12" wide flange members of various sections with riveted gusset plates at each panel point. The floor beams consist of rolled steel 36" wide flange sections connected to the gusset plates through riveted connection angle. Riveted, built-up tapered steel cantilevers sections frame into the outboard gusset plates through riveted connection angles and two 1" diameter bolt top flange tie rods. Eight rolled steel W18x47 stringers support the roadway deck and frame into the floor beams with riveted connection angles on the webs and a riveted seat angle on the stringer bottom flange. The sidewalks on either side are supported by rolled steel W12x32 stringers that are riveted to the top flange of the floor beam cantilevers. Truss upper and lower lateral bracing on the truss is comprised of angle sections and 1" diameter rods, respectively. The upper struts are comprised of rolled steel 10" wide flange sections.

All structure nomenclature is per the previous reports and in accordance with current ODOT standards. The substructure units are numbered from west to east and labeled as the Rear Abutment, Piers 1 to 3, and ending at the Forward Abutment. Spans (1 to 4) and truss panel points and floor beams (0 to 9) are numbered from west to east. The trusses are labeled as north (Left Truss) to and (Right Truss). Similarly, the beams and stringers are numbered from north to south (left to right looking forward). In Spans 1 through 3, the roadway stringers are numbered Stringer/Beam 1 to Stringer/Beam 8. The sidewalk superstructure is labeled as Sidewalk Stringer/Beam 1 to Stringer/Beam 4, with Sidewalk Stringers/Beams 1 and 2 being on the north side of the bridge centerline and Sidewalk Stringers/Beams 3 and 4 being on the south side. In Span 4, the beams are numbered 1 through 9. Globally, State Route 7 is a south to north route but for the purposes of this report the travel lanes will be referenced as westbound (global southbound) and eastbound (global northbound) due to the orientation of the roadway and bridge at this location. Note this labeling still is in line with roadway stationing.

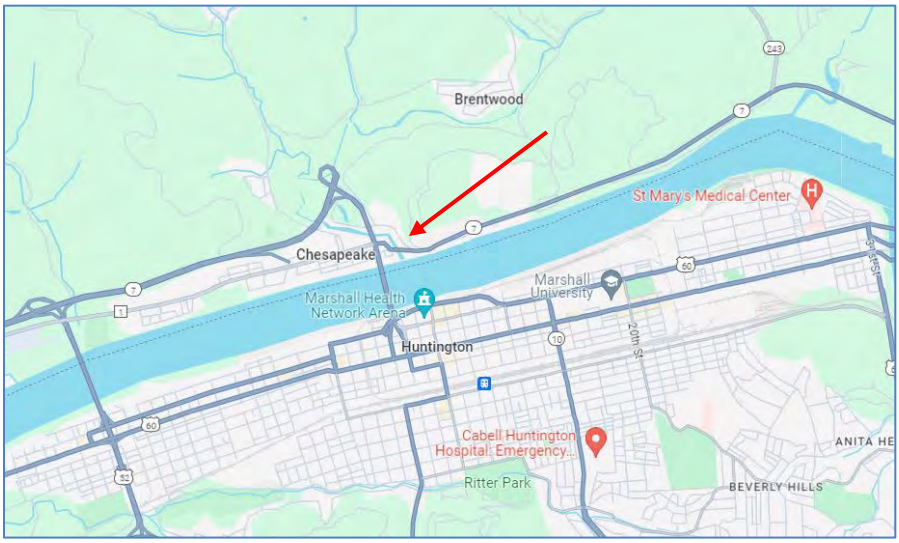
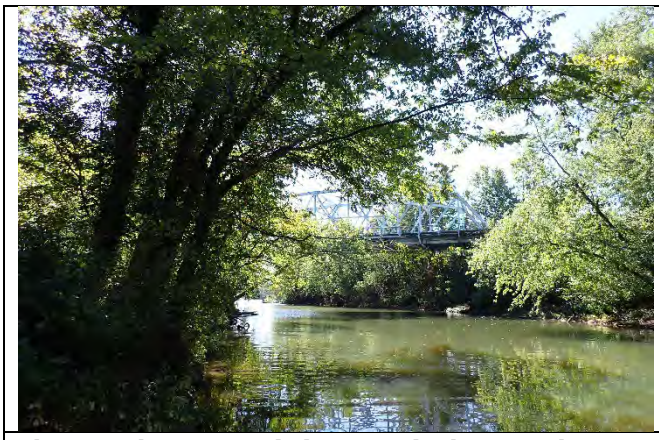


Figure 1: General Bridge Location



Photograph 1: General elevation, looking south.

Photograph 2: General endview, looking east.

1.3 Method of Investigation

This bridge was accessed through a variety of methods. Non-redundant steel tension members (NSTM) members were accessed with modified fall protection and rope access methods. Bridge bearings were accessed with ladders or through technical access methods. The deck was inspected by walking and from the floor system. The piers were inspected from the bearings and from the ground. No lane closures nor mechanical access methods were required for this inspection.

NSTM members for the Span 2 truss received an arm's length access in accordance with the fracture critical inspection procedure. Affected truss members included lower chords, diagonals, select verticals, primary truss gusset plates, and floor beams. A routine element level inspection was performed for the entire bridge. All bridge bearings were accessed at an arm's length distance. The Fracture Critical Plan is included as Exhibit 1. The 2024 Assetwise report is included as Exhibit 2. Updated bridge condition and section loss tables are included as Exhibit 3.

Inspection findings were recorded on bridge specific spreadsheets and inspection tables. Personal inspection equipment utilized included hammers, scrapers, pit gauges, and measuring tapes. Non-destructive testing was performed on floor beam cracks with magnetic particle testing to determine crack limits. To continue the method of the prior report and more easily track deterioration, easier, notable changes from the prior inspection have been marked in RED in this report.

1.4 Condition Rating Criteria

State and federal guidelines for evaluating the condition of bridges have been developed to promote uniformity in the inspections performed by different teams at different times. Condition ratings are used to describe the existing, in-place bridge as compared to the as-built condition. The following table was used as a guide in evaluating the condition of the various members of the structure.

CODE	CONDITION	DESCRIPTION
N	NOT APPLICABLE	Component does not exist.
9	EXCELLENT	Isolated inherent defects.
8	VERY GOOD	Some inherent defects.
7	GOOD	Some minor defects.
6	SATISFACTORY	Widespread minor or isolated moderate defects.
5	FAIR	Some moderate defects; strength and performance of the component are not affected.
4	POOR	Widespread moderate or isolated major defects; strength and/or performance of the component is affected.
3	SERIOUS	Major defects; strength and/or performance of the component is seriously affected. Condition typically necessitates more frequent monitoring, load restrictions, and/or corrective actions.
2	CRITICAL	Major defects; component is severely compromised. Condition typically necessitates frequent monitoring, significant load restrictions, and/or corrective actions in order to keep the bridge open.
1	IMMINENT FAILURE	Bridge is closed to traffic due to component condition. Repair or rehabilitation may return the bridge to service.
0	FAILED	Bridge is closed due to component condition and is beyond corrective action. Replacement is required to restore service.

The inspection of this bridge was performed in accordance with the following documents:

1. Manual of Bridge Inspection, Ohio Department of Transportation (ODOT), 2014.
2. Manual for Bridge Element Inspection, AASHTO, 2019.
3. Bridge Inspector's Reference Manual, U.S. Department of Transportation, 2002 (rev 2012).
4. Inspection of Fracture Critical Bridge Members, U.S. Department of Transportation, 1986.
5. Specifications for the National Bridge Inventory, U.S. Department of Transportation, 2022.

2.0 EXISTING CONDITIONS

Item 58 - Deck Summary

2.1 12 – Reinforced Concrete Deck

The reinforced concrete deck top surface is covered with an epoxy overlay and exhibits minor local cracks (Photo 6); however, in some locations, the wearing surface has completely worn away exposing the deck top surface (Photo 3). In these locations the deck top surface exhibited hairline to 1/32" wide map cracking and generally spaced at 2' to 3'. A few small and localized spalls are present on top of the deck at exposed locations; these generally are less than 1 square foot in size and of shallow depth. This overall has not substantially changed since the prior inspection. In Span 2, there is a 14" long by 4" wide by 2 1/2" high corner spall in the south edge of deck between Floor beams 2 and 3; no change for this inspection.

The deck soffit for the beam spans typically exhibited random transverse hairline to 1/32” cracks with efflorescence present; on average these cracks are spaced at 2' and occur along the full bridge length (Photos 4 and 5). There are isolated longitudinal cracks with efflorescence that are present along the bridge, generally these are a couple feet in length. The deck soffit in Span 2 exhibits hairline to 1/32" wide map cracks spaced as close as 12", transverse hairline cracks with minor to moderate efflorescence and isolated leakage, and isolated longitudinal hairline cracks with minor to moderate efflorescence (See Photo 3). Overall there were no substantial changes observed on the soffit.

Photograph 3: General example of the deck top condition. Note worn away overlay and a small isolated spall on the top. No change this inspection.

Photograph 4: General example of transverse and map cracks with efflorescence on the soffit. Span 1 between Girders 4 and 5 shown.

	
Photograph 5: General example of transverse and map cracks with efflorescence on the soffit. Span 1 shown.	Photograph 6: Typical example of transverse and longitudinal cracks on the wearing surface. Span 2 eastbound near Pier 1 shown.

2.2 510 – Wearing Surfaces

The 1/4" thick deck epoxy overlay exhibits moderate wear in the wheel lines (Photo 7). There are small, isolated locations throughout the bridge where the overlay is completely worn away and exposes the concrete surface. The largest is on the eastbound lane of Span 4 and currently a 6.5ft long x 2ft wide section is worn away (Photo 8); this location has slightly grown since the prior inspection.

	
Photograph 7: General example of wear on the overlay, Span 1 near Pier 1 shown.	Photograph 8: Larger than normal example of wear occurring on top of the wearing surface in Span 4 eastbound.

2.3 300 – Strip Seal Expansion Joint

Strip seals are present at each pier. the joints still have moderate to heavy accumulation of loose debris, which is worst in the shoulders. Snowplow damage is present and is heaviest at Piers 2 and 3 (Photos 11, 12, and 17). The steel armor exhibits isolated laminating corrosion on the steel armor, with localized section losses of 1/16" on top of the armor. This has not substantially changed since the prior inspection, and no armor was observed to be loose.

The middle 2ft of the joint seal is missing at Pier 2 at the centerline/yellow stripe (Photo 15). Additionally the end 4' of the joint on the south end is depressed down but has not fallen (Photo 16). At the Forward Abutment there is a total of 6" bulging/debonded joint seal over the eastbound lane (Photos 9 and 10).

Vertical misalignments have previously been observed and recorded, and are still present at the joints. The largest vertical offset was at Pier 2 and currently measures 1-1/4" difference (Photos 17 and 18) with the Span 3 side higher. These measurements have not substantially changed from the prior inspection and there were no major condition differences noted from the prior inspection. The table below lists current and prior measurements of this situation for all the piers.

Joint opening measurements were taken at each joint and are presented in the table below. The measurements were taken along the edge line for both directions and the ambient temperature was 75° F at the time of inspection. Overall, the joints are behaving as expected, as the warmer temperatures for this inspection translate to smaller joint measurements from thermal expansion.

Photograph 9: Close up view of Far Abutment joint. Note typical slow plow damage and debris in the joint. Looking south.

Photograph 10: Overall view of the Far Abutment joint, looking south.

Photograph 11: Overall view of the Pier 3 joint. Note misalignment, debris in the joint, and armor damage. Looking south.

Photograph 12: Overall view of the Pier 2 joint. Note misalignment, debris in the joint, and armor damage. Looking south.

Photograph 13: Overall view of Pier 1 joint, looking south. Note debris in the joint.

Photograph 14: Overall Rear Abutment joint, looking south. Note debris in the joint.

Photograph 15: Close up view of the Pier 2 joint near the centerline. Note the hole in the joint seal.

Photograph 16: View of the sunken joint seal over Pier 2 on the south end.

Photograph 17: View of the Pier 2 vertical offset and snowplow damage. Looking northeast.

Photograph 18: View of the Pier 2 vertical offset and snowplow damage. Looking southeast.

Location	Vertical Misalignment	Rear/Forward Side Higher	Prior Measurement (Change)
Rear Abutment	1/4"	Rear	1/8" (1/8" decrease)
Pier 1	3/8"	Rear	1/4" (1/8" decrease)
Pier 2	1 1/4"	Forward	1 1/4" (no change)
Pier 3	3/4"	Forward	1/2" (1/8" decrease)
Forward Abutment	3/4"	Forward	1/4" (1/2" decrease)

Location	2022 WB (57F)	2024 WB (75F)	2022 EB (57F)	2024 EB (75F)
Rear Abutment	1-1/2"	1-1/2"	1-1/2"	1-1/2"
Pier 1	2 3/8"	2-1/2"	2 3/8"	2-1/4"
Pier 2	2 1/4"	2-1/8"	1 3/4"	1-3/4"
Pier 3	1 3/4"	2"	1 3/4"	1-7/8"
Forward Abutment	1/2"*	1/4"*	1"	1-1/2"

Note: all measurements measured longitudinal with the roadway except the westbound Forward Abutment, which was measured normal to the joint to match the method from the prior inspection.

2.4 302 – Compression Seal

There is a compression joint above Pier 3 for the rear end of Span 4 that is obscured/sealed over with tar. Leakage through the joint and tar compound was evident during this inspection on to the east face of Pier 3. This leakage will continue to affect the steel beams below.

2.5 330 – Metal Bridge Railing

The roadway railing on the bridge consists of post- and truss-mounted W-beam with steel tubular backup. At the rear end of the right (south) bridge rail in Span 1, the first two posts have significant collision damage (See Photos 20 and 21). The first post has a 3" long tear in the weld between the southwest flange and base plate and it is rotated to the east approximately 45°. The second post has a 3" long tear in the weld between the southwest flange and base plate and is slightly twisted (Photo 22). This has not changed since the prior inspection. Additionally, at the forward end on the left rail, the first post is rotated to the west approximately 45° due to collision and the northwest flange is partially torn (Photo 19). The top blockout on the second post is partially torn. This has not changed since the prior inspection. Minor dents and impact scrapes are present throughout both bridge rails.

Photograph 19: Impact damage to the first post for the left forward rail, Span 4, looking southwest.

Photograph 20: Impact damage to the first post for right rear rail, Span 1, looking northeast. No change.

Photograph 21: Impact damage to first post for the right rear rail, Span 1, looking northwest.

Photograph 22: Impact damage to second post for the right rear rail, Span 1, looking east. No change.

2.6 815 – Drainage

There are thirteen total scuppers in Spans 2 through 4 for drainage. These freely drain onto the embankment or creek below the bridge. At the time of inspection, the scuppers were typically full of loose leaves and during rain it was noted the drainage system function as designed.

2.7 107 – Steel Open Girder/Beam

The beams in Spans 1, 3, and 4 have areas of minor to moderate painted over pitting at the beam ends that is typically over or beyond the bearings; at this area most of the load has already been transferred to the bridge bearings and then to the substructure. The worst case of painted over pitting noted was in Span 3, Beam 7 at Pier 2, where there are two areas of substantial painted over pitting. The end 12" exhibits 1/8" deep cleaned and painted over pitting for the full height of the web on both faces and with 1/16" deep cleaned and painted pitting to both flanges. Just east of the bearing, where shear forces are highest and most of the load is carried by the web, there is a 24" length where there is 1/4" deep cleaned and painted pitting on the bottom 5" of the south web and the bottom flange has 1/2" of 11/16” original thickness remaining on the end 2" of the bottom flange. This is an old condition with no active corrosion and no change.

Beams 1 through 5 in Span 4 have extensive soot staining due to a fire event under the bridge. The remaining beams in Span 4 have light to moderate soot staining. The paint system appears to function as intended overall in this area and no active corrosion was observed.

The end 2 feet of the beams in Span 4 at Pier 3 exhibit widespread laminating corrosion with negligible section loss. This has not changed since the prior inspection. The previously noted cracked weld between the north face of the Span 4 Beam 4 web and the cross frame bottom strut at the Forward Abutment is still present with no change. This is more of a broken weld than a true weld crack (Photo 23). A corrosion hole is present in Span 3 Pier 3 between Beams 1 and 2 (towards Beam 2), in the cope of the diaphragm (Photo 24).

Photograph 23: Beam 4 at the Forward Abutment, north face. Note no change to broken cross frame weld.

Photograph 24: View of corrosion hole on diaphragm between Beams 1 and 2 at Pier 3 Span 3. Looking west.

2.8 113 – Steel Stringer

The roadway stringers in Span 2 are numbered 1 through 8 from left to right (north to south). The roadway stringers have isolated cleaned and painted areas of pitting up to 1/8" deep at the end floor beams. There are isolated locations of painted over pitting on the exterior stringers (1 and 8) near floor beam connections with 3/8" cross section remaining (9/16" original thickness) for the full width of the outboard side of the bottom flange (Photo 25). This is an old condition that has not changed. Active pack rust up to 1" thick exists between some stringer bottom flanges and seat angles with up to 1/16" deep pitting to the stringer bottom flange underside (Photo 26). This is an old condition that has not changed since the prior inspection. The roadway stringers in Span 2 typically have failing paint with minor surface corrosion on the top flanges at the ends; this is not currently significant.

Photograph 25: View of the typical painted over pitting on the top of the bottom flange at the exterior face of the exterior stringer near floor beam connections. Floor Beam 3 Stringer 1 shown.

Photograph 26: Typical example of pack rust up to 1" thick between stringer bottom flanges and seat angles with up to 1/16" deep pitting to the stringer bottom flange underside.

2.9 113 – Sidewalk Stringers

There are four sidewalk stringers in Spans 1 through 3 labeled Sidewalk Stringers 1 through 4. Sidewalk Stringers 1 and 4 in Span 2 typically have advanced section loss and large corrosion holes at the ends. These holes measured up to 9" long by 2" high in the web and up to 8" long by 2" wide in the outboard bottom flange. In Spans 1 and 3, Sidewalk Stringers 1 and 4 have similar advanced section loss at the beam ends over Piers 1 and 2 with up to 10" long by 1" high corrosion holes in the webs and up to 2" wide by 1" long corrosion holes in the bottom flanges.

Sidewalk Stringers 2 and 3 have corrosion holes in the webs up to 24" long by 4 1/2" high and knife edging of the bottom flange isolated to the beam ends at the connections to the end floor beams (Photos 27 and 29). Little to no active corrosion was observed at these corrosion holes. The rivets connecting the sidewalk stringer bottom flanges to the sidewalk bracket top flanges regularly have over 80% loss to the rivet heads. This has not changed since the prior inspection. The Sidewalk Stringer 2 and 3 stub beam cantilevers at Piers 1 and 2 have advanced section loss and corrosion holes throughout (See Photo 28).

Photograph 27: General example of corrosion hole on the bottom of the sidewalk stringer web, Span 2.

Photograph 28: typical configuration of sidewalk stringer and cantilever.

Photograph 29 (left): Sidewalk stringer 3 at L0 right truss Span 2. Note corrosion hole on web and flange. No change from prior inspection.

2.10 120 – Steel Truss

The truss in Span 2 typically has moderate to advanced section loss at the lower chord panel points and the chord members at deck level and moderate active pack rust between elements on the lower chord. Prior inspections have tracked specific areas of section loss to truss members and gusset plates. This is included as Exhibit 3 for this report. Overall, there were no major changes to observed deterioration to truss members when compared to the prior inspection. Observations for specific types of truss members are detailed below by the type of member, similar to prior inspection reports.

Lower Chord

Lower chord members have 1" wide by up to 1/8" deep pitting (1/16" typical) along the full height of the exterior faces of the lower chords at the gusset plate interfaces and on the interior faces at diaphragm angle interfaces. This generally is similar to the prior inspection observations unless noted otherwise, though the active corrosion continues to slowly deteriorate the members. On L6L7 south truss near L7 there is up to 1 1/8" thick pack rust between the web plates that has bowed the top and bottom 4" of the interior plates (Photo 30). There is pack rust up to 5/8" thick between the lower chords and the internal diaphragm angles and pack rust up to 1/4" thick between lower chords and gusset plates.

Photograph 30: View of pack rust on L6L7 right truss. Looking east.

Upper Chord

The truss upper chord members have isolated areas of paint failure with minor surface corrosion. Overall, the deterioration had not significantly changed since the prior inspection, unless noted otherwise below. On U8L9 left truss there is up to 1/2" thick pack rust between the bridge plaque and the top flange plate with up to 1/16" deep associated pitting to the top flange plate. The top cover plate for U8L9 over L9 has up to 2" diameter corrosion holes that reactivating, with broken rivet heads present. This is not a load bearing component of this area. The end posts have up to 3/4" thick pack rust between the bottom flange and lacing bars.

Verticals

Up to 1/4" deep painted over pitting is present on truss vertical webs and flanges at the sidewalk level and on the exterior face of the inboard flange at previous guardrail connections (Photo 31). At these locations the load is still carried by the truss member. The truss verticals typically have section loss from painted over pitting up to 1/8” on most faces within the lower chord gusset plates. The worst case was noted at L2 south truss, where the L2U2 vertical has 1/4" deep pitting in the web with localized 5/8" deep pockets that extend to the flanges, with isolated corrosion holes. At these locations most of member load has been developed to the

gusset plates. Pack rust up to 1/2" thick was noted between the verticals and the thin fill plates at the lower chord gusset plates, with small corrosion holes present. The fill plates are not primary load bearing members.

	Photograph 31: Typical example of painted over pititng on truss vertical webs at the sidewalk level above lower panel points, L2 right truss shown looking southeast.

Diagonals

At deck level, the truss diagonals have up to 1/4" deep cleaned and painted pitting at the interface where the members go through the deck. There is up to 3" high by full width by 3/16" deep pitting to the exterior of the flanges of the truss diagonals along lower gusset plate interfaces (Photo 32). Pack rust up to 1/4" thick was noted between the diagonals and lower gusset plates.

	Photograph 32: View of typical painted over pitting on truss diagonals at lower gusset plates. U2L3 right truss shown looking southeast.

2.11 152 – Steel Floor Beams

Roadway Floor beams

There are cracks emanating from the copes in the webs at both end floor beams. At these locations the floor beam rotates with the deck flexure with passing cars, and the stress riser at the cope is cracking as a result. These cracks are noted in prior inspection reports and changes from the prior inspection are documented below. At the Floor beam 0 connection to the left truss, there is a 1-1/2” long (was 1-3/8") horizontal crack on the top of the web and a 1-7/8” long (was 1-3/4") vertical crack below this (Photos 34 and

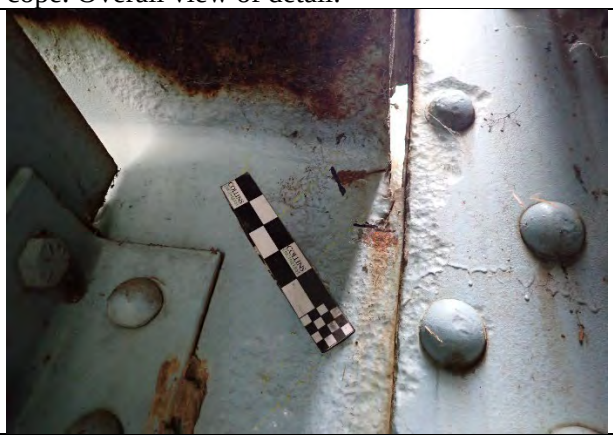
36). An overcut measuring 1/4" long is between them. Evidence from prior inspection reports shows that these cracks are slowly, but continually, growing.

At Floor Beam 9 there are cracks at both truss connections. At the Floor Beam 9 connection to the left (north) truss, there is a 1-1/16” long (was 1") horizontal crack on the top of the web and a 1 3/8" long diagonal crack below this that has not changed (Photos 33 and 35). Between the cracks there is a 1/4" long overcut. The horizontal crack has a slight growth from the prior inspection. At the Floor Beam 9 connection to the right (south) truss there are three diagonal cracks present in the floor beam web at the cope. These cracks have not grown since the prior inspection. The top and middle diagonal cracks measure 1" and 1/4" long, respectively; the bottom crack, which emanates from a 1/2" overcut in the web, is 5/8" long (Photos 37 and 38). Prior inspection reports have called out as cracks locations that are actually overcuts (Floor beam 3 at the right (south) truss) or just paint cracks (Floor Beams 3 and 5). These locations have not changed for this inspection and no cracks were observed in the primary steel. The cope radius for Floor Beams 1 through 8 is not sufficient and overcuts are common in the floor beam webs.

Photograph 33: General view, Floor Beam 9 right (south) truss cracks

Photograph 34: View of cracks at Floor Beam 0 left cope. Overall view of detail.

Photograph 35: Close up view, Floor Beam 9 right (south) truss cracks



Photograph 36: Close up of Floor Beam 0 left truss cracks.

Photograph 37: View of cracks at Floor Beam 9 left (north) truss. Overall view looking east.

Photograph 38: View of cracks at Floor Beam 9 left (north) truss. Overall view looking east

Generally, the floor beams exhibited up to 1/4" deep pitting (1/8" deep typical) on the webs adjacent to floor beam connection angles (Photos 40 to 43). This is a high shear zone where most the load is carried by the floor beam web. Typically, floor beam pitting is painted over but isolated areas are reactivating. Floor Beam 0 has a 12' long by 6" high area of 1/4” deep pitting on the rear web that starts 5' from the right truss. This section was caused by joint leakage at the Rear Abutment. A plug weld was observed on Floor Beam 8, forward (east) face just above Stringer 1 (Photo 44). No defects or cracks were observed. The bottom flange of Floor beam 9 has isolated 3/8" deep pitting on the forward bottom flange edge adjacent to the left truss and isolated 1/4" deep pitting to the forward bottom flange edge and underside at the right truss. Specific details of floor beam pitting and section loss are listed in Exhibit 3.

Photograph 39: Overall view of the configuration and condition of floor beams, looking west.

Photograph 40: Typical example of pitting on the floor beam web at truss floor beam connections.

Photograph 44: Typical example of floor beam web pitting around the end stringer connection.

Photograph 42: Typical example of floor beam web pitting near the truss connection.

Photograph 43: Typical example of floor beam web pitting near the truss connection.

Photograph 44: Floor Beam 8, forward (east) face just above Stringer 1. Note plug weld present, no defects or cracks observed. Overall view looking west.

Floor beam Cantilevers

The floor beam cantilevers supporting the sidewalk stringers have advanced section loss to the top flange at the sidewalk stringer connections with typical 1/8" deep pitting for the full flange width. Knife edging and corrosion holes up to 1" wide by 4" long exist at isolated locations. The top flange tie rods have advanced section loss and heavy laminating corrosion. This was heaviest at Floor beam 8 left truss where the west bolt has essentially corroded away. This is an old condition and is not structurally significant.

2.12 162 – Steel Gusset Plate

The lower gusset plates in Span 2 have pitting up to 3/16" deep (1/16" to 1/8" deep typical) along the lower chord shear plane, with isolated locations randomly present on the exterior (Photo 45). The pitting is generally painted over but corrosion is reactivating on the exteriors of the outboard plates at the sidewalk

cantilevers. Pack rust up to 1/4" thick is present between the lower gusset plates and truss members; this has caused minor bows to the plate free edges at the pack rust locations (usually at the base of the plate). These are localized and not global bows.

Corrosion has reactivated along the edges of the gusset plates and between truss members. Additionally, there is paint failure with minor active corrosion along the edges of the gusset plates and along the interfaces with the truss members.

The upper gusset plates had no significant deficiencies noted. The gusset plates at the mid- height connections have isolated locations where the rivets have been replaced with high-strength bolts and scattered areas of peeling paint with minor surface corrosion. Specific details of section loss and pitting for each gusset pate are listed in Exhibit 3.

Photograph 45: Typical example of pitting along the lower chord gusset plate interior face shear plane. L2 rear left truss shown looking east.

2.13 310 – Elastomeric Bearings

The original bearings at the forward abutment have been replaced with elastomeric bearings. Debris has accumulated around a few bearings, which retains moisture and has caused active corrosion to form on the sole plates. This has not changed for this inspection. The bearing pad for Beam 3 is expanded more than the other beams. Beams 5 and 6 exhibit minor gaps between the rear face of the elastomeric pads and the beam seat for up to 2” under the pad. The sole plates are slightly misaligned and overhang the forward side of the bearing up to 2”. This appears to be an as built condition and doesn't indicate unexpected movement at the abutment. These conditions have all been previously noted and have not significantly changed since the prior inspection.

2.14 311 – Moveable Bearings

The Rear Abutment rocker bearings exhibit minor to advanced cleaned and painted section loss on the bearing components, with up to 7/16" deep pitting noted on the bearing at Beam 3. See photos 46 and 47 for typical conditions. The Beam 1 rocker has excessive expansion tilt toward the rear backwall and the lead plate

between the masonry plate and the top of the abutment is displaced (Photo 48). This bearing measured 19.8 degrees expansion while the other bearings are expanded between 4 and 6 degrees. This condition has not changed since the previous inspection.

At Pier 2, the Span 2 truss rocker bearings have active corrosion reactivating on the masonry plate. The right truss rocker bearing northwest, and northeast anchor bolt nuts have 80% and 50% section loss, respectively, and the southwest and southeast anchor bolt nuts have up to 20% section loss. The left truss rocker bearing southwest anchor bolt nut has 50% section loss and there is moderate debris on the masonry plate (no change). At L9 of the right truss, the right pin plate has a localized distortion at the top of the pin. The Pier 3 rocker bearings for the beams in Span 3 have up to 1/4" deep cleaning and painted pitting on the bearing components. There is active corrosion on Beam 1 bearing. The south anchor bolt for Beam 8 is bent to the south approximately 10°.

Photograph 46: View of the typical bearing at the Rear Abutment, Beam 4 shown.

Photograph 47: View of the typical pitting on the Rear Abutment bearings, Beam 8 shown.

Photograph 48: View of the excessive rotation of Beam 1, Rear Abutment looking north.

2.15 313 – Fixed Bearing

Fixed bearings are present at Pier 1 for both spans. The fixed bearings at Pier 1 for Span 1 exhibit painted over pitting up to 1/16" deep with corrosion reactivating at the base of the castings. The anchor bolts are typically tilted toward the east and isolated anchor bolt nuts are backed off up to 1 5/8". The Beam 7 bearing

at Pier 1 is undermined up to 1" due to a spall in the forward face of the beam seat. The Pier 1 Span 2 truss bearings have freckling corrosion and pitting up to 1/8" deep with isolated corrosion around the pin retainer nuts. The anchor bolt nuts have up to 70% section loss.

The Pier 2 Span 3 bearings have painted over pitting up to 1/8" deep with corrosion reactivating at the masonry plates. The Span 3 Pier 2 Beam 6 bearing is undermined up to 3/4" due to a spall on the rear face of the beam seat.

The Pier 3 Span 4 fixed bearings have heavy active corrosion with negligible section loss. Additionally, the Pier 3 Span 4 Beam 4 bearing is undermined up to 5 1/2" due to a spall in the forward face of the beam seat.

2.16 515 – Steel Protective Coating

The protective coating system throughout the structure has widespread minor surface dulling and chalking with isolated areas of paint failure and active corrosion. The active corrosion is typically at the ends of beams, floor beams, and stringers. Isolated areas of active corrosion occur on truss lower chords, lower chord gusset plates, and upper chord members.

2.17 205 – Reinforced Concrete Column

The reinforced concrete columns of Pier 2 exhibit spalls up to 12" wide by 6" high with exposed reinforcement at the top of both columns on the east face . Additionally, the top of the south column on Pier 2 has widespread hairline vertical and horizontal cracks with heavy efflorescence on the south face (See Photo 49). The north column on Pier 1 has heavy vegetation growth throughout the full height of the column. This vegetation continues along the north rail and in the north conduit along Span 2.

Photograph 49: View of the heavy efflorescence in the cracks for the south column at Pier 2. Looking northeast.

2.18 215 - Reinforced Concrete Abutment

There are multiple shallow edge spalls/delaminations up to 24" long by 6" high by 3" deep along the top edge of the Rear Abutment beam seat. Additionally, there is a 14" high by 6" wide by 3/4" deep spall with exposed and corroded reinforcement with no measurable section loss on the vertical face of the Rear Abutment beam seat at the center. These have not changed since the prior inspection. The visible portion of the Forward Abutment at the north end has minor hairline cracks; the remainder of the abutment is buried and not visible for inspection.

2.19 220 - Reinforced Concrete Pile Cap/Footing

The bottom rear edge of the Pier 3 pile cap has exposed reinforcement due to shallow spalls and lack of cover over its full length with one broken reinforcing bar noted near the north end of the cap. The end of several secondary bars are exposed and bent. There is a 15" high by 24" wide by 5 1/2" deep spall with 1 exposed reinforcement on the forward side of Pier 3 below Beam 4 in Span 4 (Photo 51). This was previously noted to be undermining the bearing seat up to 5 1/2" and has not changed. On the rear face there are spalls on the cap exposing reinforcing under Beams 6 and 7 which has not changed for this inspection (Photo 50). Additionally, there are isolated full height by up to 3' wide by 1" deep spalls with exposed reinforcing in the vertical faces of the beam seats on the rear face of the Pier 3 pile cap.

Photograph 50: Rear face of Pier 3 under Beam 6. Note no change to spall under the beam.

Photograph 51: Forward face of Pier 3, under Beam 4. Note no major change to spall undermining the bearing up to 5-1/2".

2.20 227 - Reinforced Concrete Pile

There are 34 exposed reinforced concrete piles at Pier 3 that are split into two rows. In the rear row, between Beams 4 and 6, one pile has a full height by full width by 2" deep spall with exposed reinforcing on the west face and two piles have full height by 12" wide by 2" deep spalls with exposed reinforcing on the west face (Photo 52). Additionally, the pile under Beam 7 on the rear face does not support the cap, as it was constructed incorrectly and sits in front of the cap (Photo 53).

Photograph 52: Pier 3, rear pile row, under Beams 4 to 6, note extensive spalls and exposed reinforcing steel for the pile. Looking east.

Photograph 53: Pier 3, the rear face pile under Beam 7 does not provide support for the cap. Looking southeast.

2.21 234 – Reinforced Concrete Pier Cap

The rear face of the Pier 2 cap has moderate spalls with exposed and corroded reinforcement in the beam seat. The largest exists below Beams 5 and 6 and measures 68" long by 12" high by 3-3/4" deep with multiple exposed reinforcement including one broken vertical reinforcing bar. This spall undermines the Beam 6 bearing up to 3/4" (Photo 50). There are three delaminations/spalls with exposed reinforcement up to 48" high by 10" wide by 3/4" below Beam 7. Other moderate spalls are present throughout the rear face of Pier 2 up to 10' long by 12" high by 3" deep with exposed reinforcement (Photos 54 and 55). The forward face of the Pier 2 cap has less volume and severity of deterioration than the rear face.

The Pier 1 cap has minor to moderate spalls with exposed reinforcement on both beam seat faces (Photo 56). There is a 24" wide by 3" high by 7" deep corner spall between Beams 7 and 8 on the forward face of the beam seat that undermines the Beam 7 bearing up to 1". The remaining spalls on the beam seats do not extend under the beam bearings. The Pier 1 cap below the beam seats has various spalls/delaminations up to 7' high by 12" wide by 1" deep with exposed reinforcement.

	
Photograph 54: Overall view of the rear face of Pier 2. Note extensive spalls and exposed reinforcing steel.	Photograph 55: Overall view of the rear face of Pier 2. Note extensive spalls and exposed reinforcing steel.
	Photograph 56: Overall view of spalls with exposed rebar on the forward face of Pier 1.

2.22 <u>830 – Abutment Backwall</u>

Both of the abutment backwalls have isolated minor vertical cracks, some with light efflorescence. This is an old comment that has not changed nor is structurally significant.

2.23 <u>321 – Reinforced Concrete Approach Slab</u>

The rear approach slab has a 17" long by 4" wide by 1" deep spall in the eastbound lane adjacent to the roadway centerline. The epoxy overlay on the rear approach slab exhibits moderate wear throughout and has completely worn away along the centerline.

2.24 Other Inspection Comments / Non-Element Comments

Sidewalk/Curb/Railing

Pedestrian sidewalks and a railing are located on both sides of the bridge. The epoxy overlay on the sidewalks typically is failing with the concrete top visible at locations. Hairline transverse cracks are present spaced at 2' to 3'. These cracks generally occur to the sidewalk curb under the pedestrian railing. Reflective hairline transverse cracks with efflorescence are present on the sidewalk soffit and have not changed since the prior inspection. The inboard sidewalk edges have isolated corner spalls adjacent to the joints up to 11" long by full height by 3 1/2" deep. The sidewalk stringers and floor beam brackets that support the concrete sidewalk typically have advanced section loss. See element 113 – steel stringer and element 152 – steel floor beam for additional information. The pedestrian railing on the bridge consists of a decorative steel rail with a masonry termination at each end. The pedestrian rail typically exhibits paint failure with surface corrosion on the connections throughout its length (See Photo 8). Heavy section loss with isolated corrosion holes to the bases of the railing posts is typical at the interface with the sidewalk cantilever top flanges (See Photo 9). The right pedestrian railing top connection plate is disconnected from the east side of the third post from the rear end of Span 1 (See Photo 10). Isolated bolt heads and nuts on the railing connections are missing or have minor section loss.

The sliding plate sidewalk joints have some minor debris accumulation. Vertical misalignments between the plate and sliding surface are present; the most significant was noted at Pier 3 where the right sidewalk sliding plate rear end is 1” higher than the forward side. In Span 4, the left sidewalk is partially supported by the retaining wall and has settled up to 4”. No major changes overall

Diaphragms/Cross Frames

The diaphragms have cleaned and painted advanced section loss with isolated corrosion holes noted in the webs and bottom flanges. Corrosion holes were noted in the diaphragms between Beams 1 and 2 and Beams 7 and 8 in Span 3 at Pier 2, between Beams 1 and 2 and Beams 2 and 3 in Span 3 at Pier 3, and between Beams 7 and 8 in Span 4 near midspan.

Slope Protection

Large diameter rip rap is present in front of both abutments. The slope protection works as intended with no major scour or erosion gulleys present in front of the abutments.

Utilities

The water main that runs along the south side of the truss has a broken wire hanger between Panel Points 7 and 8 and minor pack rust accumulation between the water main and floor beam cantilever brackets. The small flexible conduit along the north (left) side of the truss is disconnected adjacent to the Rear Abutment (Photo 57). Several of the support brackets are bent downwards or have broken/missing rollers. There is a single sidewalk luminaire that is mounted near the middle of the right truss upper chord that is powered by an electrical line that runs from a utility pole at the southwest corner of the bridge.

Photograph 57: No change to the broken conduit at the north side of the bridge near the Rear Abutment.

Signs

A “No wake zone entire creek” sign is present on the right side of the truss between L5 and L6.

Approach Roadway Surface

The approaches are in good condition overall (Photos 58 and 59). A new overlay was installed on both approaches since the prior inspection. The scaling and cracks previously mentioned are now not visible. The east approach transition is smooth. The west approach transition is smooth overall though settlement of 1/8” is present at the end of the west approach slab.

Photograph 58: View of the forward (east) approach looking east.

Photograph 59: View of the rear (west) approach looking west.

Approach Embankment

The southwest corner slope along the wingwall is being retained by roadway signs and ratchet straps to retain fill and prevent an erosion gulley from forming along the wingwall and at the top of the slop riprap. This is an old item that has not changed. See Item 61 – Channel Summary below for more specifics.

Sidewalk

Both rear approach sidewalks have settled (Photos 60 and 61). These measured 2 1/2" at the northwest corner and 2 1/4" at the southwest corner (relative to the Span 1 sidewalk). This is an old comment that has not appreciably changed for this inspection.

Photograph 60: View of the settlement to the rear right (southwest) approach sidewalk.

Photograph 61: View of the settlement to the rear left (northwest) approach sidewalk.

Wingwalls

The southwest corner slope along the wingwall is being retained by roadway signs and ratchet straps to retain fill and prevent an erosion gulley from forming along the wingwall and at the top of the slope riprap. This is an old item that has not changed for this inspection. See item 61 – channel summary for additional information.

ITEM 61 – CHANNNEL SUMMARY

The channel flows under Span 2 at a skew with no flow against the piers. The channel overall is in good condition overall with no significant scour nor channel bank deterioration noted. The channel banks are vegetated with small trees and extensive ivy.

There is an erosion gulley on the southwest embankment that runs down near the Pier 1 right column (Photo 63). This gulley currently measures up to 5’ wide x 5’ deep and runs for approximately 40’. This erosion gulley starts just up from the scupper drainage at L1 above. It currently is not affecting the column but can be monitored in future inspections; there is a slight growth on this gulley from the prior inspection. The

embankment on the right rear side (southwest) is sloughing but there is extensive vegetation present that will protect against erosion (Photo 62).

	
Photograph 62: View of sloughing on the right rear (southwest) embankment.	Photograph 63: View of the lower part of the erosion gulley as it goes from scupper down to the channel.

3.0 EVALUATION AND RECOMMENDATIONS

Based on this inspection, the fracture critical/NSTM components of SFN4400038 were in Fair Condition (5) overall. Collins appreciates the opportunity to work with the Ohio Department of Transportation on this project and looks forward to working together in the future. We would be happy to discuss any aspect of the report with you in person or via phone or email.

Respectfully Submitted,
COLLINS ENGINEERS, INC.

Michael Seal, P.E.
Project Manager/Team Leader

Olivia Farmer

Originated by:
Olivia Farmer, E.I.T.

EXHIBIT 1 – FRACTURE CRITICAL PLAN AND FATIGUE DETAILS

Fracture Critical Member (FCM) Inspection Procedure

Reference: ODOT Manual of Bridge Inspection, Chapter 4

Inspection Responsibility:	ODOT District 9
County-Route-SLM:	LAW-007-0240
Structural File Number:	4400038
Inspection Frequency:	24 Months
Fatigue Life Study:	Year of Study: Not Calculated Remaining Fatigue Life: Not Calculated
Load Path Redundant:	Main Span: No, Parker truss span is a two-truss system and floorbeam spacing exceeds 14'. Approach Spans: Yes, multi-beam system.
Structurally Redundant:	No, truss span and approach spans are simple span.
Internally Redundant:	No, tension members are rolled members (only select lower chord members consist of multiple riveted plates).
System Redundant:	No rigorous analysis performed (i.e. finite element, 3-D modeling)

Figure 1 – LAW-7-02.40 south elevation looking northeast.

Location: The LAW-7-2.40 Bridge **(see Figure 1)** carries one lane of State Route 7 northbound and one lane of State Route 7 southbound over Symmes Creek in Chesapeake, Ohio **(see Figure 2)**. It is located 0.11 miles north of SR 527.

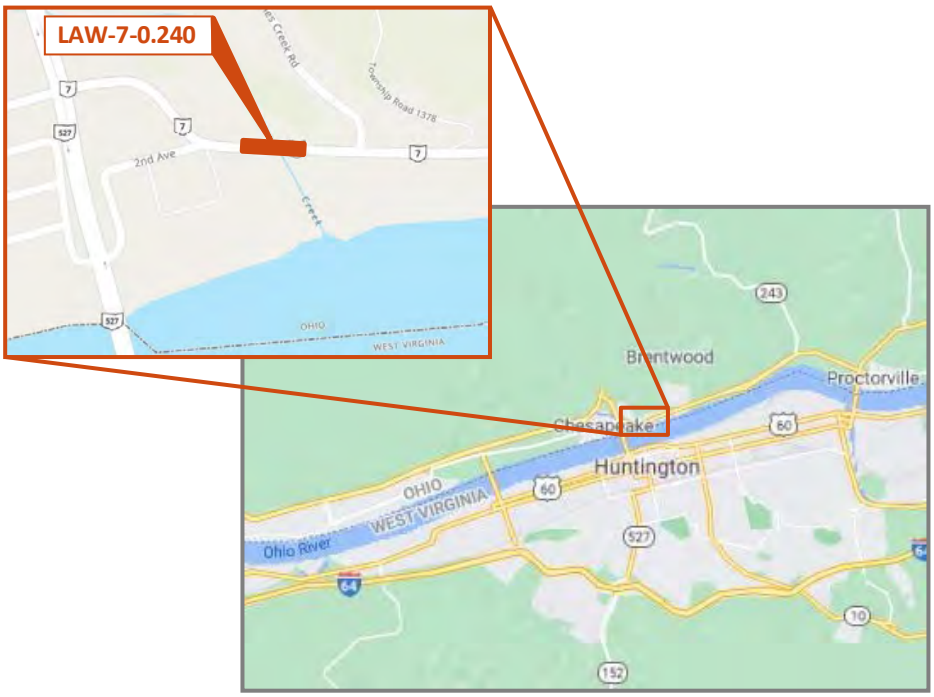


Figure 2 – LAW-7-02.40 location map.

Structure Description: This structure is composed of 4 spans for a total length of 348'-8" with a maximum span length of 162'. It carries two lanes of traffic with a 34'-0" roadway width, and it also carries two sidewalks outside the truss lines. Spans 1, 2, and 3 are original to the structure, and Span 4 was added at an unknown date prior to 1990. During this rehabilitation, the original forward abutment was retained and renamed to Pier 3, and a new forward abutment and forward approach slab were added. Span 2, the main span, is a 162'-0" long Parker through truss while Spans 1, 3, and 4 are simple span rolled steel multi-beam spans **(see Figure 1).**

The truss is comprised of riveted built-up box sections (channels with cover plates and lacing bars) for the upper chord and end posts, rolled beams for the diagonals and verticals, two plates or two sets of riveted plates with internal diaphragms for the lower chord, riveted gusset plates, rolled floorbeams, and rolled stringers. Floorbeams are spaced at 18'-0". The fracture critical members are the primary truss members that experience tension (lower chord, diagonals, select verticals) and the floorbeams **(see Figure 3).**

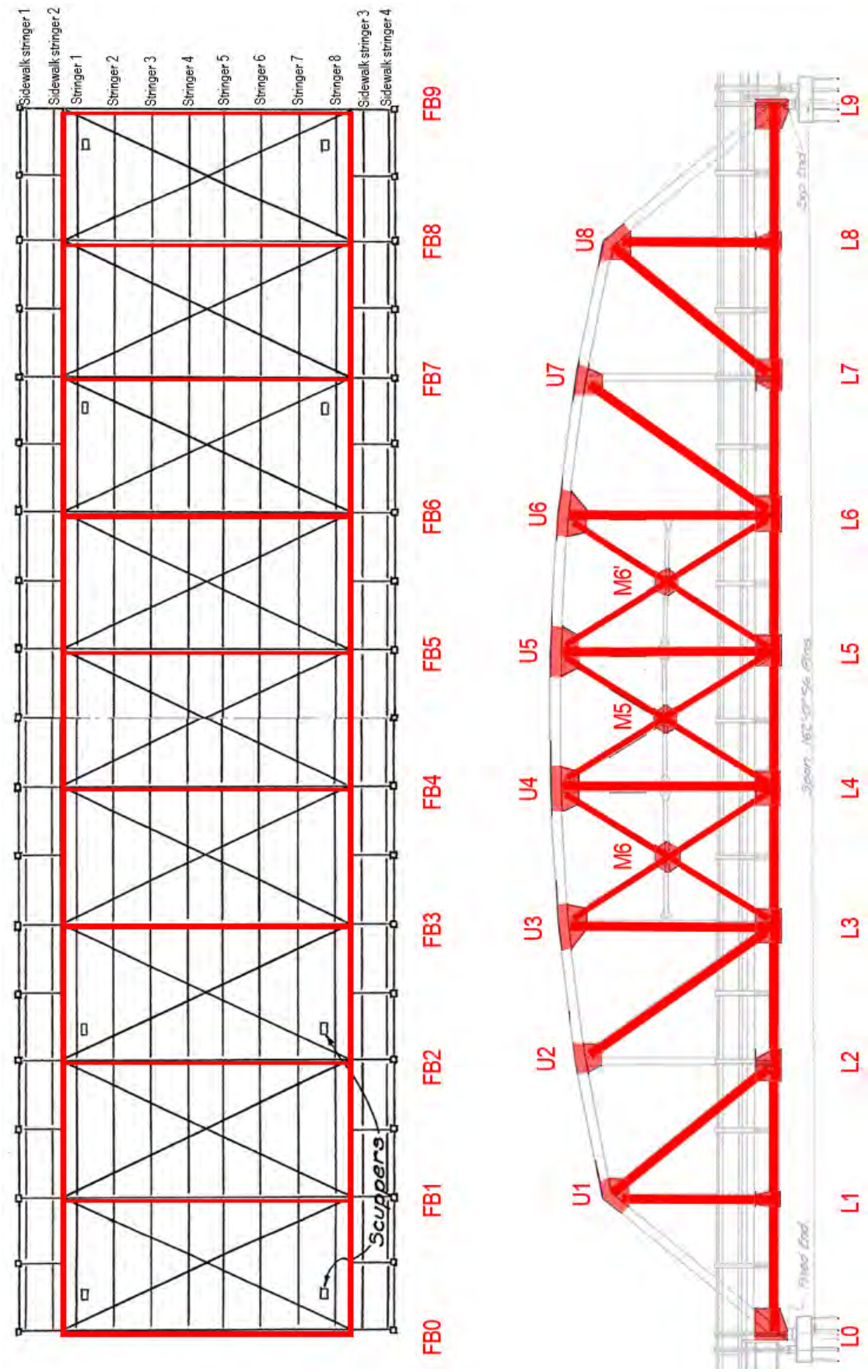


Figure 3 – Span 2 framing plan and truss south elevation (Images taken from the 1932 design drawings).
Lower chord members, diagonals, verticals (except U2-L2 & U7-L7), gusset plates, and floorbeams are fracture critical members.

Inspection Risk Factors

Inspection Procedure and Inspector Access Risk Factors: A combination of rope access techniques, protected climbing techniques, ladders, and/or rigging are required to gain hands-on access to all the fracture critical members and their tension regions. In the 2022 inspection, all fracture critical members were access with rope access techniques and protected climbing techniques.

- Inspection Methods
    - Primary truss members (including gusset plates): Inspect the entire member for the full length, especially for distress at fatigue prone details.
    - Floorbeams: Inspect the bottom flange and bottom half of the web of the beam over its length and the web for the full height in the primary shear regions, especially at the copes for cracks and for distress at fatigue prone details.
- Access
    - Protected climbing and rope access: Used to gain hands-on access to all primary truss members, including gusset plates and floorbeam tension/primary shear areas.
- Maintenance of Traffic
    - Traffic control is not required; however, cones at the bridge corners for pedestrian and bike traffic along with advanced warning signs on the approaches are recommended.
- Inspector Risks
    - Work at heights
    - Cold/Hot extreme temperatures
    - Biological/Wildlife hazards
    - Traffic on the bridge
    - Working over water

Inspection Risk Factors			
Risk Factor	**Location**	**Description**	**Photo**
Fracture Critical Structure	Superstructure	Primary truss member (including gusset plates) or floorbeam failure would cause collapse of structure.	-
Fatigue Prone Detail - E	Vertical members U3-L3, U4-L4, U5-L5 & U6-L6	Base metal of the vertical member interior flange at the sway bracing connection angle attached by fillet welds with no transition radius (Category E)	1
Previous Cracking and Repairs	Floorbeam upper web at cope adjacent to inboard truss connection	Cracks in the web of the copes at Floorbeams 0 and 9 and overcuts in the webs of various floorbeams. No crack arrest holes have been drilled.	2 & 3
High ADTT	All primary truss members and floorbeams	Average daily truck traffic is 567.	-

Fatigue prone detail categories are in accordance with AASHTO LRFD specifications Table 6.6.1.2.3-1

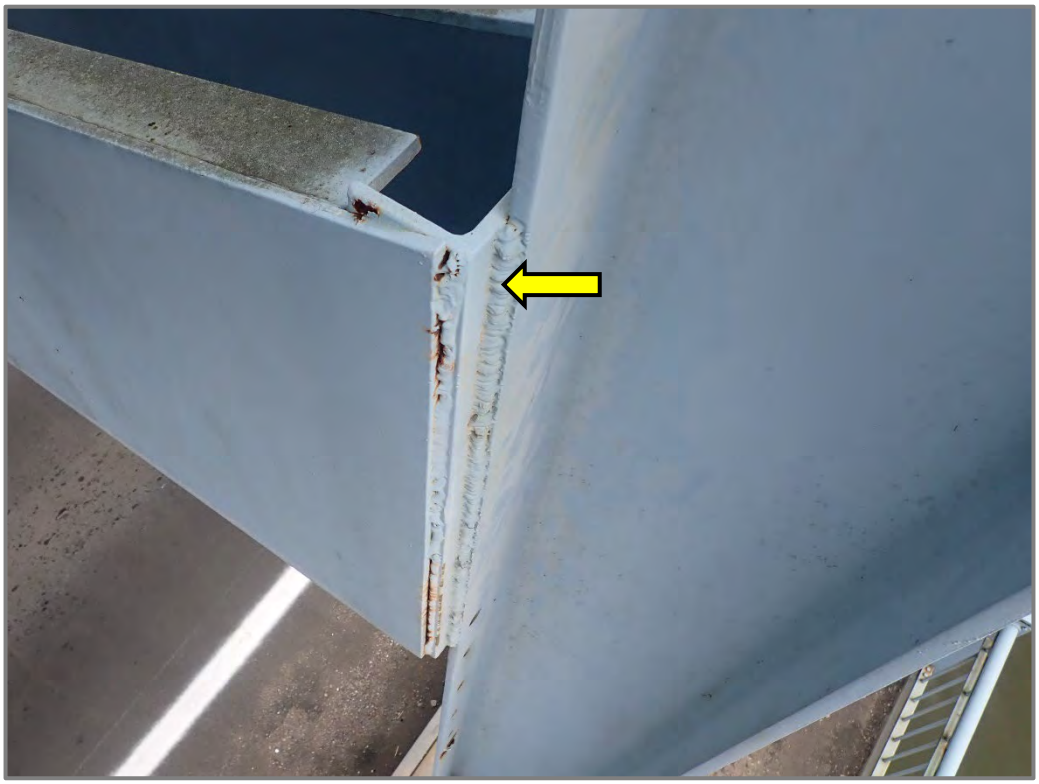


Photo 1 – Sway bracing connection angle attached by fillet welds with no transition radius (Category E). U6-L6 of the Right Truss is shown (looking northeast).

Photo 2 – Cracking in the web of a floorbeam at the upper cope (looking east at Floorbeam 0 in Span 2 adjacent to the Left Truss).

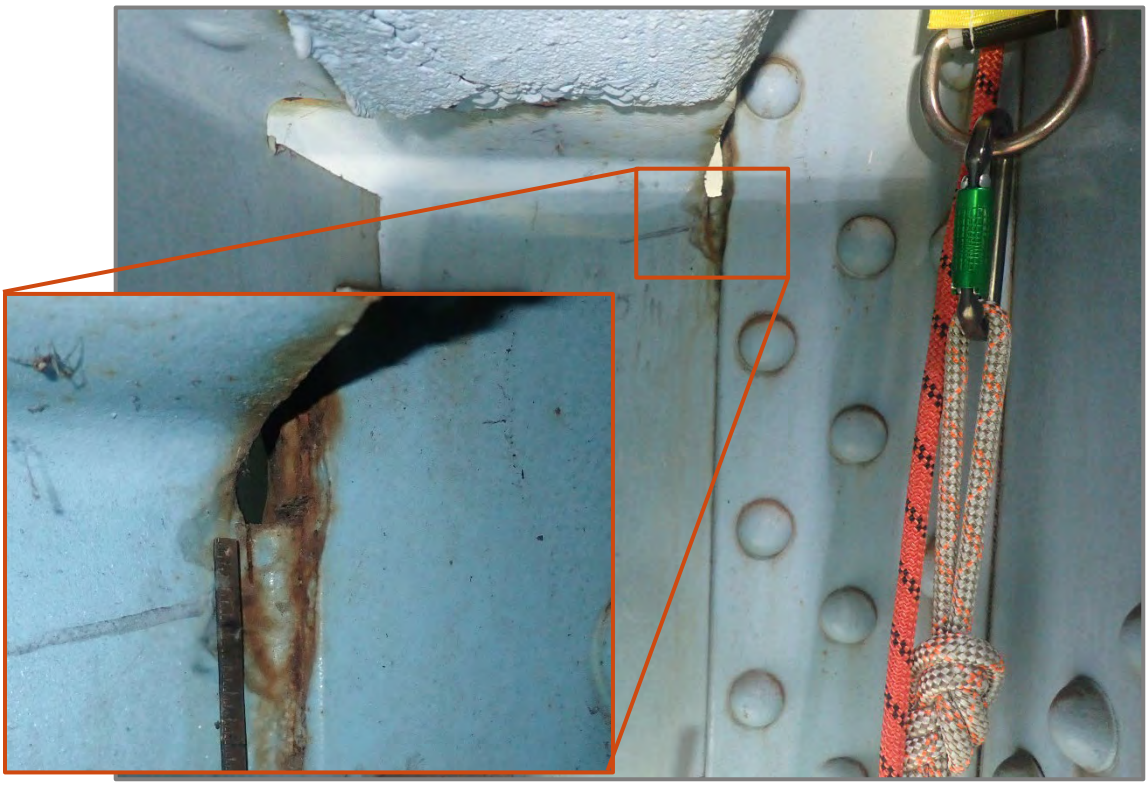


Photo 3 – Overcut in a floorbeam web at the upper cope at the connection to the truss (looking east at Floorbeam 3 adjacent to the Right Truss).

EXHIBIT 2 – ASSETWISE REPORT

Inspector: Lane,Nicholas **Structure Number:** 4400038

Inspection Date: 09/26/2024 **Facility Carried:** SR 7

Ohio Bridge Inspection Summary Report LAW-00007-0240 (4400038)

2: District District 09 13904 - CHESAPEAKE (LAW county)

5A: Inventory Route 1 00007

21: Major Maint A/B 01 - State Highway Agency /

225 Routine Main A/B 02 - County Highway Agency /

221 Inspection A/B 01 - State Highway Agency /

220: Inv. Location DISTRICT 09

7: Facility On SR 7

6: Feature Ints SYMMES CREEK

9: Location .11 MI N OF SR 527

Lat, Lon 38.428263 ,-82.450327

Condition

58: Deck	**6 - Satisfactory Condition**
58.01 Wearing Surface	6 - Satisfactory (1-10% distress)
58.02 Joint	4- Poor (heavy leaking, offset)
59: Superstructure	**5 - Fair Condition**
59.01 Paint & PCS	4 - Poor PCS (15-20% corr.)
60: Substructure	**5 - Fair Condition**
61: Channel	**7**
61.01 Scour	**6 - Satisfactory**
62: Culverts	**N - Not Applicable**
67.01 GA	**5**

Appraisal

Sufficiency Rating	77.8 SD/FO 0 - ND
36: Rail, Tr, Gd, Term Std	1 1 N N
72: Approach Alignment	6 - Equal to present minimum criteria
113: Scour Critical	8 - Stable for scour conditions
71: Waterway Adequacy	8 - Bridge Above Approaches

Geometric

48: Max Span Length (ft)	162.0
49: Structure Length (ft)	348.0
52: Deck Width, Out-To-Out (ft)	36.0
424: Deck Area (sf)	12528
32: Appr Roadway Width (ft)	35.0
51: Road Width, Curb-Curb (ft)	34.0
50A: Curb/SW Width: Left (ft)	7.4
50A: Curb/SW Width: Right (ft)	7.4
34: Skew (deg)	0
33: Bridge Median	0 - No median
54B: Min Vert Underclearance (ft)	0
336A: Min Vert Clrnce IR Cardinal (ft)	15.417
336B: Min V Clr IR Non-Cardinal (ft)	0
578: Culvert Length (ft)	0

Load Posting

41: Op/Post/Closed	A - Open
70: Posting	5 - Equal to or above legal loads
70.01: Date	
70.02: Sign Type	
734: Percent Legal (%)	115
704: Analysis Date	02/07/2019
63: Analysis Method	6 - Load Factor (LF) rating reported by rating factor (RF) method using MS18 loading.

Structure Type

43: Bridge Type	3 - Steel 10 - Truss - Thru N- Not Applicable
45: Spans Main / Approach	1 / 3
107: Deck Type	1 - Concrete Cast-in-Place
408: Composite Deck	Y - Composite Construction
414A Joint Type 1	8 - Elastomeric Strip Seal
414B: Joint Type 2	N - None
108A: Wearing Surface	5 - Epoxy Overlay N- Not Applicable
422: WS Date	
423: WS Thick (in)	1.2
482: Protective Coating	5 - Paint System OZEU
483: PCS Date	10/01/1993
453: Bearing Type 1	2 - Rockers & Bolsters
455: Bearing Type 2	3 - Sliding (Bronze)
528: Foundn: Abut Fwd	A - Cast-in-Place Reinforced Concrete Piles (12" diameter)
533: Foundn: Abut Rear	A - Cast-in-Place Reinforced Concrete Piles (12" diameter)
536: Foundn: Pier 1	N - None (Such as most Culverts)
539: Foundn: Pier 2	N - None (Such as most Culverts)

Age and Service

27: Year Built/ 106 Rehab	1933 / 1990
42A: Service On	1 - Highway
42B: Service Under	5 - Waterway
28A: Lanes on	02
28B: Lanes Under	00
19: Bypass Length	5
29: ADT	9467
109: % Trucks (%)	10

Inspections

		Months	
90: Routine Insp.		12	09/26/2024
92A: FCM Insp.	Y	12	09/26/2024
92B: Dive Insp.	N	0	
92C: Special Insp.	N	0	
92D: UBIT Insp.	Y	24	09/27/2023
92E: Drone Insp.	Y	0	07/25/2023

Inspector Lane,Nicholas

Inspector: Lane,Nicholas
Inspection Date: 09/26/2024
Structure Number: 4400038
Facility Carried: SR 7

	Environment	Total Quantity	Units	Condition State 1	Condition State 2	Condition State 3	Condition State 4
12-Reinforced Concrete Deck	3 - Mod.	12437	sq. ft.	0	12419	18	0
	2024 Inspection (see attached physical condition report for additional information and photos) The reinforced concrete deck top surface is covered with an epoxy overlay and exhibits minor local cracks; however, in some locations, the wearing surface has completely worn away exposing the deck top surface. In these locations the deck top surface exhibited hairline to 1/32" wide map cracking and generally spaced at 2' to 3'. A few small and localized spalls are present on top of the deck at exposed locations; these generally are less than 1 square foot in size and of shallow depth. This overall has not substantially changed since the prior inspection. In Span 2, there is a 14" long by 4" wide by 2 1/2" high corner spall in the south edge of deck between Floor beams 2 and 3; no change for this inspection. The deck soffit for the beam spans typically exhibited random transverse hairline to 1/32” cracks with efflorescence present; on average these cracks are spaced at 2' and occur along the full bridge length. There are isolated longitudinal cracks with efflorescence that are present along the bridge, generally these are a couple feet in length. The deck soffit in Span 2 exhibits hairline to 1/32" wide map cracks spaced as close as 12", transverse hairline cracks with minor to moderate efflorescence and isolated leakage, and isolated longitudinal hairline cracks with minor to moderate efflorescence. Overall there were no substantial changes observed on the soffit.						
1080-Delamination/Spall/Patched Area		15		0	0	15	0
1120-Efflorescence/Rust Staining		8280		0	8280	0	0
1130-Cracking (RC and Other)		4142		0	4139	3	0
510-Wearing Surfaces		11905	sq. ft.	6396	3060	1824	625
	2024 Inspection (see attached physical condition report for additional information and photos) The 1/4" thick deck epoxy overlay exhibits moderate wear in the wheel lines. There are small, isolated locations throughout the bridge where the overlay is completely worn away and exposes the concrete surface. The largest is on the eastbound lane of Span 4 and currently a 6.5ft long x 2ft wide section is worn away; this location has slightly grown since the prior inspection.						
3230-Effectiveness (Wearing Surface)		5509		0	3060	1824	625

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	Environment	Total Quantity	Units	Condition State 1	Condition State 2	Condition State 3	Condition State 4
107-Steel Open Girder/Beam	3 - Mod.	1458	ft.	1350	72	36	0
	2024 Inspection (see attached physical condition report for additional information and photos) The beams in Spans 1, 3, and 4 have areas of minor to moderate painted over pitting at the beam ends that is typically over or beyond the bearings; at this area most of the load has already been transferred to the bridge bearings and then to the substructure. The worst case of painted over pitting noted was in Span 3, Beam 7 at Pier 2, where there are two areas of substantial painted over pitting. The end 12" exhibits 1/8" deep cleaned and painted over pitting for the full height of the web on both faces and with 1/16" deep cleaned and painted pitting to both flanges. Just east of the bearing, where shear forces are highest and most of the load is carried by the web, there is a 24" length where there is 1/4" deep cleaned and painted pitting on the bottom 5" of the south web and the bottom flange has 1/2" of 11/16" original thickness remaining on the end 2" of the bottom flange. This is an old condition with no active corrosion and no change. Beams 1 through 5 in Span 4 have extensive soot staining due to a fire event under the bridge. The remaining beams in Span 4 have light to moderate soot staining. The paint system appears to function as intended overall in this area and no active corrosion was observed. The end 2 feet of the beams in Span 4 at Pier 3 exhibit widespread laminating corrosion with negligible section loss. This has not changed since the prior inspection. The previously noted cracked weld between the north face of the Span 4 Beam 4 web and the cross frame bottom strut at the Forward Abutment is still present with no change. This is more of a broken weld than a true weld crack. A corrosion hole is present in Span 3 Pier 3 between Beams 1 and 2 (towards Beam 2), in the cope of the diaphragm.						
1000-Corrosion		108		0	72	36	0
515-Steel Protective Coating		13025	sq. ft.	0	12765	130	130
	2022 Inspection (see attached physical condition report for additional information and photos) CS2 - 12765 SF due to minor surface dulling and chalking t/o. CS3 - 130 SF for corrosion and failing paint at beam ends CS4 - 130 SF for corrosion and complete paint failure at ends						
3410-Chalking (Steel Protective Coatings)		12765		0	12765	0	0
3440-Effectiveness (Steel Protective Coatings)		260		0	0	130	130
113-Steel Stringer	3 - Mod.	2464	ft.	2328	78	58	0

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	2024 Inspection (see attached physical condition report for additional information and photos) [Note that the overall quantity includes Sidewalk Stringers in Spans 1 and 3] The roadway stringers in Span 2 are numbered 1 through 8 from left to right (north to south). The roadway stringers have isolated cleaned and painted areas of pitting up to 1/8" deep at the end floor beams. There are isolated locations of painted over pitting on the exterior stringers (1 and 8) near floor beam connections with 3/8" cross section remaining (9/16" original thickness) for the full width of the outboard side of the bottom flange. This is an old condition that has not changed. Active pack rust up to 1" thick exists between some stringer bottom flanges and seat angles with up to 1/16" deep pitting to the stringer bottom flange underside. This is an old condition that has not changed since the prior inspection. The roadway stringers in Span 2 typically have failing paint with minor surface corrosion on the top flanges at the ends; this is not currently significant. There are four sidewalk stringers in Spans 1 through 3 labeled Sidewalk Stringers 1 through 4. Sidewalk Stringers 1 and 4 in Span 2 typically have advanced section loss and large corrosion holes at the ends. These holes measured up to 9" long by 2" high in the web and up to 8" long by 2" wide in the outboard bottom flange. In Spans 1 and 3, Sidewalk Stringers 1 and 4 have similar advanced section loss at the beam ends over Piers 1 and 2 with up to 10" long by 1" high corrosion holes in the webs and up to 2" wide by 1" long corrosion holes in the bottom flanges. Sidewalk Stringers 2 and 3 have corrosion holes in the webs up to 24" long by 4 1/2" high and knife edging of the bottom flange isolated to the beam ends at the connections to the end floor beams. Little to no active corrosion was observed at these corrosion holes. The rivets connecting the sidewalk stringer bottom flanges to the sidewalk bracket top flanges regularly have over 80% loss to the rivet heads. This has not changed since the prior inspection. The Sidewalk Stringer 2 and 3 stub beam cantilevers at Piers 1 and 2 have advanced section loss and corrosion holes throughout.						
1000-Corrosion		136		0	78	58	0
515-Steel Protective Coating		7157	sq. ft.	0	6412	716	29
	2022 Inspection (see attached physical condition report for additional information and photos) CS2 - 6412 SF for surface dulling and chalkiness throughout CS3 - 716 SF for corrosion/paint failing mostly at ends CS4 - 29 SF in Span 2 for complete failure of paint on top flange of S8 between FBs 3 & 4, isolated complete failure at ends of S1 & S8 and paint failures at the ends of the sidewalk stringers with active corrosion.						
3410-Chalking (Steel Protective Coatings)		6412		0	6412	0	0
3440-Effectiveness (Steel Protective Coatings)		745		0	0	716	29
120-Steel Truss	3 - Mod.	324	ft.	141	95	88	0
	2024 Inspection (see attached physical condition report for additional information and photos) CS2 - areas of surface rust typically around panel points CS3 - areas of section loss and corrosion typically on the verticals, diagonals, and lower chord around lower panel points, areas of section loss on the verticals around guardrail connections and active pack rust between connecting elements typically at the lower chord panel points						
1000-Corrosion		183		0	95	88	0
515-Steel Protective Coating		11021	sq. ft.	0	9368	1102	551
	2022 Inspection (see attached physical condition report for additional information and photos) Note includes paint for entire truss including gusset plates CS2 - all paint on truss is typically chalky CS3 - areas of corrosion where the paint has limited effectiveness, typically at the lower panel points and along the lower chord CS4 - areas where the paint has failed and exposed bare metal, typically around the lower chord and lower panel points, but also some isolated areas on the upper chord, mid panel points, and web members						

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3410-Chalking (Steel Protective Coatings)		9368		0	9368	0	0
3440-Effectiveness (Steel Protective Coatings)		1653		0	0	1102	551
152-Steel Floor Beam	3 - Mod.	365	ft.	271	38	56	0
	2024 Inspection (see attached physical condition report for additional information and photos) [note that the overall quantity includes the diaphragms between Beams 1 & 2 and Beams 7 & 8 in Spans 1 & 3 since they are a main load carrying path] There are cracks emanating from the copes in the webs at both end floor beams. At these locations the floor beam rotates with the deck flexure with passing cars, and the stress riser at the cope is cracking as a result. These cracks are noted in prior inspection reports and changes from the prior inspection are documented below. At the Floor beam 0 connection to the left truss, there is a 1-1/2” long (was 1-3/8") horizontal crack on the top of the web and a 1-7/8” long (was 1-3/4") vertical crack below this. An overcut measuring 1/4" long is between them. Evidence from prior inspection reports shows that these cracks are slowly, but continually, growing. At Floor Beam 9 there are cracks at both truss connections. At the Floor Beam 9 connection to the left (north) truss, there is a 1-1/16” long (was 1") horizontal crack on the top of the web and a 1 3/8" long diagonal crack below this that has not changed. Between the cracks there is a 1/4" long overcut. The horizontal crack has a slight growth from the prior inspection. At the Floor Beam 9 connection to the right (south) truss there are three diagonal cracks present in the floor beam web at the cope. These cracks have not grown since the prior inspection. The top and middle diagonal cracks measure 1" and 1/4" long, respectively; the bottom crack, which emanates from a 1/2" overcut in the web, is 5/8" long. Prior inspection reports have called out as cracks locations that are actually overcuts (Floor beam 3 at the right (south) truss) or just paint cracks (Floor Beams 3 and 5). These locations have not changed for this inspection and no cracks were observed in the primary steel. The cope radius for Floor Beams 1 through 8 is not sufficient and overcuts are common in the floor beam webs. Generally, the floor beams exhibited up to 1/4" deep pitting (1/8" deep typical) on the webs adjacent to floor beam connection angles. This is a high shear zone where most the load is carried by the floor beam web. Typically, floor beam pitting is painted over but isolated areas are reactivating. Floor Beam 0 has a 12' long by 6" high area of 1/4” deep pitting on the rear web that starts 5' from the right truss. This section was caused by joint leakage at the Rear Abutment. A plug weld was observed on Floor Beam 8, forward (east) face just above Stringer 1. No defects or cracks were observed. The bottom flange of Floor beam 9 has isolated 3/8" deep pitting on the forward bottom flange edge adjacent to the left truss and isolated 1/4" deep pitting to the forward bottom flange edge and underside at the right truss.						
1000-Corrosion		91		0	38	53	0
1010-Cracking		3		0	0	3	0
515-Steel Protective Coating		4552	sq. ft.	0	4228	288	36
	2022 Inspection (see attached physical condition report for additional information and photos) CS2 - for surface dullness and chalky paint with isolated areas of minor surface rust CS3 - 288 SF in Span 2 for corrosion at ends of FBs CS4 - 36 SF in Span 2 for paint failure and corrosion typically at ends of FBs						
3440-Effectiveness (Steel Protective Coatings)		4552		0	4228	288	36
162-Steel Gusset Plate	3 - Mod.	42	each	16	6	20	0

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	2024 Inspection (see attached physical condition report for additional information and photos) The lower gusset plates in Span 2 have pitting up to 3/16" deep (1/16" to 1/8" deep typical) along the lower chord shear plane, with isolated locations randomly present on the exterior. The pitting is generally painted over but corrosion is reactivating on the exteriors of the outboard plates at the sidewalk cantilevers. Pack rust up to 1/4" thick is present between the lower gusset plates and truss members; this has caused minor bows to the plate free edges at the pack rust locations (usually at the base of the plate). These are localized and not global bows. Corrosion has reactivated along the edges of the gusset plates and between truss members. Additionally, there is paint failure with minor active corrosion along the edges of the gusset plates and along the interfaces with the truss members. The upper gusset plates had no significant deficiencies noted. The gusset plates at the mid- height connections have isolated locations where the rivets have been replaced with high-strength bolts and scattered areas of peeling paint with minor surface corrosion.						
1000-Corrosion		26		0	6	20	0
205-Reinforced Concrete Column	3 - Mod.	4	each	2	2	0	0
	2024 Inspection (see attached physical condition report for additional information and photos) The reinforced concrete columns of Pier 2 exhibit spalls up to 12" wide by 6" high with exposed reinforcement at the top of both columns on the east face . Additionally, the top of the south column on Pier 2 has widespread hairline vertical and horizontal cracks with heavy efflorescence on the south face. The north column on Pier 1 has heavy vegetation growth throughout the full height of the column. This vegetation continues along the north rail and in the north conduit along Span 2.						
1090-Exposed Rebar		1		0	1	0	0
1120-Efflorescence/Rust Staining		1		0	1	0	0
215-Reinforced Concrete Abutment	3 - Mod.	96	ft.	73	20	3	0
	2024 Inspection (see attached physical condition report for additional information and photos) Note that the total quantity does not include wingwalls. There are multiple shallow edge spalls/delaminations up to 24" long by 6" high by 3" deep along the top edge of the Rear Abutment beam seat. Additionally, there is a 14" high by 6" wide by 3/4" deep spall with exposed and corroded reinforcement with no measurable section loss on the vertical face of the Rear Abutment beam seat at the center. These have not changed since the prior inspection. The visible portion of the Forward Abutment at the north end has minor hairline cracks; the remainder of the abutment is buried and not visible for inspection.						
1080-Delamination/Spall/Patched Area		15		0	15	0	0
1090-Exposed Rebar		3		0	0	3	0
1190-Abrasion/Wear (PSC/RC)		5		0	5	0	0
220-Reinforced Concrete Pile Cap/Footing	3 - Mod.	91	ft.	16	45	30	0
	2024 Inspection (see attached physical condition report for additional information and photos) The bottom rear edge of the Pier 3 pile cap has exposed reinforcement due to shallow spalls and lack of cover over its full length with one broken reinforcing bar noted near the north end of the cap. The end of several secondary bars are exposed and bent. There is a 15" high by 24" wide by 5 1/2" deep spall with 1 exposed reinforcement on the forward side of Pier 3 below Beam 4 in Span 4. This was previously noted to be undermining the bearing seat up to 5 1/2" and has not changed. On the rear face there are spalls on the cap exposing reinforcing under Beams 6 and 7 which has not changed for this inspection. Additionally, there are isolated full height by up to 3' wide by 1" deep spalls with exposed reinforcing in the vertical faces of the beam seats on the rear face of the Pier 3 pile cap.						
1080-Delamination/Spall/Patched Area		30		0	20	10	0

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1090-Exposed Rebar		10		0	0	10	0
1120-Efflorescence/Rust Staining		10		0	5	5	0
1130-Cracking (RC and Other)		25		0	20	5	0
227-Reinforced Concrete Pile	3 - Mod.	34	each	30	1	3	0
	2024 Inspection (see attached physical condition report for additional information and photos) There are 34 exposed reinforced concrete piles at Pier 3 that are split into two rows. In the rear row, between Beams 4 and 6, one pile has a full height by full width by 2" deep spall with exposed reinforcing on the west face and two piles have full height by 12" wide by 2" deep spalls with exposed reinforcing on the west face (Photo 52). Additionally, the pile under Beam 7 on the rear face does not support the cap, as it was constructed incorrectly and sits in front of the cap.						
1080-Delamination/Spall/Patched Area		1		0	1	0	0
1090-Exposed Rebar		2		0	0	2	0
4000-Settlement		1		0	0	1	0
234-Reinforced Concrete Pier Cap	3 - Mod.	89	ft.	32	13	44	0
	2024 Inspection (see attached physical condition report for additional information and photos) The rear face of the Pier 2 cap has moderate spalls with exposed and corroded reinforcement in the beam seat. The largest exists below Beams 5 and 6 and measures 68" long by 12" high by 3-3/4" deep with multiple exposed reinforcement including one broken vertical reinforcing bar. This spall undermines the Beam 6 bearing up to 3/4". There are three delaminations/spalls with exposed reinforcement up to 48" high by 10" wide by 3/4" below Beam 7. Other moderate spalls are present throughout the rear face of Pier 2 up to 10' long by 12" high by 3" deep with exposed reinforcement. The forward face of the Pier 2 cap has less volume and severity of deterioration than the rear face. The Pier 1 cap has minor to moderate spalls with exposed reinforcement on both beam seat faces. There is a 24" wide by 3" high by 7" deep corner spall between Beams 7 and 8 on the forward face of the beam seat that undermines the Beam 7 bearing up to 1". The remaining spalls on the beam seats do not extend under the beam bearings. The Pier 1 cap below the beam seats has various spalls/delaminations up to 7' high by 12" wide by 1" deep with exposed reinforcement.						
1080-Delamination/Spall/Patched Area		44		0	0	44	0
1090-Exposed Rebar		13		0	13	0	0
300-Strip Seal Expansion Joint	3 - Mod.	188	ft.	0	163	24	1

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	Environment	Total Quantity	Units	Condition State 1	Condition State 2	Condition State 3	Condition State 4
	2024 Inspection (see attached physical condition report for additional information and photos) Strip seals are present at each pier. the joints still have moderate to heavy accumulation of loose debris, which is worst in the shoulders. Snowplow damage is present and is heaviest at Piers 2 and 3. The steel armor exhibits isolated laminating corrosion on the steel armor, with localized section losses of 1/16" on top of the armor. This has not substantially changed since the prior inspection, and no armor was observed to be loose. The middle 2ft of the joint seal is missing at Pier 2 at the centerline/yellow stripe. Additionally the end 4' of the joint on the south end is depressed down but has not fallen. At the Forward Abutment there is a total of 6" bulging/debonded joint seal over the eastbound lane. Vertical misalignments have previously been observed and recorded, and are still present at the joints. The largest vertical offset was at Pier 2 and currently measures 1-1/4" difference with the Span 3 side higher. These measurements have not substantially changed from the prior inspection and there were no major condition differences noted from the prior inspection. The table below lists current and prior measurements of this situation for all the piers. Joint opening measurements were taken at each joint and are presented in the table below. The measurements were taken along the edge line for both directions and the ambient temperature was 75° F at the time of inspection. Overall, the joints are behaving as expected, as the warmer temperatures for this inspection translate to smaller joint measurements from thermal expansion. Location Vertical Misalignment Rear/ForwardSide Higher Prior Measurement (Change) RearAbutment 1/4" Rear higher 1/8" (1/8" decrease) Pier 1 3/8" Rear higher 1/4" (1/8" decrease) Pier 2 1 1/4" Forward higher 1 1/4" (no change) Pier 3 3/4" Forward higher 1/2" (1/8" decrease) Forward Abutment 3/4" Forward 1/4" (1/2" decrease)						
2310-Leakage		43		0	43	0	0
2320-Seal Adhesion		9		0	0	8	1
2350-Debris Impaction		132		0	120	12	0
2370-Metal Deterioration or Damage		4		0	0	4	0
302-Compression Joint Seal	3 - Mod.	34	ft.	12	22	0	0
	2024 Inspection (see attached physical condition report for additional information and photos) There is a compression joint above Pier 3 for the rear end of Span 4 that is obscured/sealed over with tar. Leakage through the joint and tar compound was evident during this inspection on to the east face of Pier 3. This leakage will continue to affect the steel beams below.						
2310-Leakage		22		0	22	0	0
310-Elastomeric Bearing	3 - Mod.	8	each	0	6	2	0
	2024 Inspection (see attached physical condition report for additional information and photos) The original bearings at the forward abutment have been replaced with elastomeric bearings. Debris has accumulated around a few bearings, which retains moisture and has caused active corrosion to form on the sole plates. This has not changed for this inspection. The bearing pad for Beam 3 is expanded more than the other beams. Beams 5 and 6 exhibit minor gaps between the rear face of the elastomeric pads and the beam seat for up to 2" under the pad. The sole plates are slightly misaligned and overhang the forward side of the bearing up to 2". This appears to be an as built condition and doesn't indicate unexpected movement at the abutment. These conditions have all been previously noted and have not significantly changed since the prior inspection.						
1000-Corrosion		6		0	6	0	0
2220-Alignment		2		0	0	2	0

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311-Movable Bearing	3 - Mod.	18	each	0	5	13	0
	2024 Inspection (see attached physical condition report for additional information and photos) The Rear Abutment rocker bearings exhibit minor to advanced cleaned and painted section loss on the bearing components, with up to 7/16" deep pitting noted on the bearing at Beam 3. The Beam 1 rocker has excessive expansion tilt toward the rear backwall and the lead plate between the masonry plate and the top of the abutment is displaced. This bearing measured 19.8 degrees expansion while the other bearings are expanded between 4 and 6 degrees. This condition has not changed since the previous inspection. At Pier 2, the Span 2 truss rocker bearings have active corrosion reactivating on the masonry plate. The right truss rocker bearing northwest, and northeast anchor bolt nuts have 80% and 50% section loss, respectively, and the southwest and southeast anchor bolt nuts have up to 20% section loss. The left truss rocker bearing southwest anchor bolt nut has 50% section loss and there is moderate debris on the masonry plate (no change). At L9 of the right truss, the right pin plate has a localized distortion at the top of the pin. The Pier 3 rocker bearings for the beams in Span 3 have up to 1/4" deep cleaning and painted pitting on the bearing components. There is active corrosion on Beam 1 bearing. The south anchor bolt for Beam 8 is bent to the south approximately 10°.						
1000-Corrosion		17		0	5	12	0
2210-Movement		1		0	0	1	0
313-Fixed Bearing	3 - Mod.	26	each	0	16	10	0
	2024 Inspection (see attached physical condition report for additional information and photos) Fixed bearings are present at Pier 1 for both spans. The fixed bearings at Pier 1 for Span 1 exhibit painted over pitting up to 1/16" deep with corrosion reactivating at the base of the castings. The anchor bolts are typically tilted toward the east and isolated anchor bolt nuts are backed off up to 1 5/8". The Beam 7 bearing at Pier 1 is undermined up to 1" due to a spall in the forward face of the beam seat. The Pier 1 Span 2 truss bearings have freckling corrosion and pitting up to 1/8" deep with isolated corrosion around the pin retainer nuts. The anchor bolt nuts have up to 70% section loss. The Pier 2 Span 3 bearings have painted over pitting up to 1/8" deep with corrosion reactivating at the masonry plates. The Span 3 Pier 2 Beam 6 bearing is undermined up to 3/4" due to a spall on the rear face of the beam seat. The Pier 3 Span 4 fixed bearings have heavy active corrosion with negligible section loss. Additionally, the Pier 3 Span 4 Beam 4 bearing is undermined up to 5 1/2" due to a spall in the forward face of the beam seat.						
1000-Corrosion		25		0	16	9	0
2240-Loss Bearing Area		1		0	0	1	0
321-Reinforced Concrete Approach Slab	3 - Mod.	1864	sq. ft.	1757	105	2	0
	2024 Inspection (see attached physical condition report for additional information and photos) The rear approach slab has a 17" long by 4" wide by 1" deep spall in the eastbound lane adjacent to the roadway centerline. The epoxy overlay on the rear approach slab exhibits moderate wear throughout and has completely worn away along the centerline.						
1080-Delamination/Spall/Patched Area		2		0	0	2	0
1190-Abrasion/Wear (PSC/RC)		105		0	105	0	0

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330-Metal Bridge Railing	3 - Mod.	625	ft.	611	10	4	0
	2024- 10 LF t/o bridge for minor impact damage and scrapes The roadway railing on the bridge consists of post- and truss-mounted W-beam with steel tubular backup. At the rear end of the right (south) bridge rail in Span 1, the first two posts have significant collision damage. The first post has a 3" long tear in the weld between the southwest flange and base plate and it is rotated to the east approximately 45°. The second post has a 3" long tear in the weld between the southwest flange and base plate and is slightly twisted. This has not changed since the prior inspection. Additionally, at the forward end on the left rail, the first post is rotated to the west approximately 45° due to collision and the northwest flange is partially torn. The top blockout on the second post is partially torn. This has not changed since the prior inspection. Minor dents and impact scrapes are present throughout both bridge rails						
1900-Distortion		10		0	6	4	0
7000-Damage		4		0	4	0	0
815-Drainage	3 - Mod.	13	each	0	13	0	0
	2024 Inspection (see attached physical condition report for additional information and photos) There are thirteen total scuppers in Spans 2 through 4 for drainage. These freely drain onto the embankment or creek below the bridge. At the time of inspection, the scuppers were typically full of loose leaves and during rain it was noted the drainage system function as designed.						
830-Abutment Backwall	3 - Mod.	103	ft.	69	34	0	0
	2022 Inspection (see attached physical condition report for additional information and photos) CS2 - 10 LF at each backwall with hairline vertical cracks, isolated cracks with efflorescence						

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LAW-00007-0240 _(4400038)

ODOT District:	District 09					Date Built:	07/01/1933
Major Maint:	01 - State Highway Agency	Facility Carried:	SR 7	Traffic On:	1 - Highway	Rehab Date:	01/01/1990
Routine Maint:	02 - County Highway Agency	Feature Inters:	SYMMES CREEK	Traffic Under:	5 - Waterway	Insp. Resp A:	01 - State Highway Agency
FIPS Code:	13904 - CHESAPEAKE (LAW county)	Location:	DISTRICT 09	.11 MI N OF SR 527		Insp Resp B:	

Inspector Lane,Nicholas Inspection Date 09/26/2024 Reviewer Not Approved

Inspector Comments - Deck and Approach

Deck

Reference the 2024 Inspection Physical Condition Report for additional information and photos

Spans, panel points, and substructure units labeled looking upstation (west to east); Trusses are labeled left to right (north to south); Beams in Spans 1, 3 & 4 labeled left to right from B1 to B8; Stringers in Spans 1 & 3 labeled left to right from S1 to S4; Primary truss stringers in Span 2 labeled left to right from S1 to S8 and sidewalk stringers in Span 2 labeled left to right from SW1 to SW4.

Floor/Slab

Transverse cracking is typical with many locations having efflorescence. Longitudinal and map cracking, some with efflorescence, is more isolated. Cracks are spaced at 2' to 3'. There is a moderate spall in the right edge of deck in Span 2.

Bridge Wearing Surface

Epoxy shows wear in wheel paths; a few areas are exposing the concrete deck. There are some minor sized longitudinal/transverse cracks throughout the length of the wearing surface of the structure.

Expansion Joint

Joint strip seals are partially to mostly filled with debris and the joint armor has areas of loss up to 1/16" deep. The gland at the Forward Abutment is extruded in small sections and beginning to tear. and there is a 1' long missing section of joint seal over Pier 2 at roadway centerline. Minor vertical misalignments were noted at all joint locations, with worst noted at Pier 2 with the east side being 1 1/4" higher. The compression seal joint at Pier 3 is sealed over with tar. Evidence of leakage was noted at the Forward Abutment strip seal joint and the Pier 3 compression seal joint.

Joints were measured along the both edge lines at 57º F.
Left Lane: Rear Abut (1) - 1 1/2"; Pier 1 (2) 2 3/8"; Pier 2 (3) 2 1/4"; Pier 3 (4) 1 3/4"; Fwd Abut (5) 1/2".
Right Lane: Rear Abut (1) - 1 1/2"; Pier 1 (2) 2 3/8"; Pier 2 (3) 1 3/4"; Pier 3 (4) 1 3/4"; Fwd Abut (5) 1".

Bridge Railing

[includes post/truss mounted deep beam roadway guardrail]

The end of the right rail in Span 1 has impact damage with the first post bent and torn and the second post rotated and torn. The end of the left rail in Span 4 has impact damage with the first post bent and torn and a torn blockout at the second post. There are also some isolated minor scrapes/dents and areas of rust in various locations. Heavy debris is typical along the back face of the rails that is trapped between the W-beam and the longitudinal tube.

Deck Drainage

Scuppers have minimal leaf debris bloackage.

Sidewalk/Curb/Railing

Pedestrian sidewalks and a railing are located on both sides of the bridge. The epoxy overlay on the sidewalks typically is failing with the concrete top visible at locations. Hairline transverse cracks are present spaced at 2' to 3'. These cracks generally occur to the sidewalk curb under the pedestrian railing. Reflective hairline transverse cracks with efflorescence are present on the sidewalk soffit and have not changed since the prior inspection. The inboard sidewalk edges have isolated corner spalls adjacent to the joints up to 11" long by full height by 3 1/2" deep. The sidewalk stringers and floor beam brackets that support the concrete sidewalk typically have advanced section loss. See element 113 – steel stringer and element 152 – steel floor beam for additional information. The pedestrian railing on the bridge consists of a decorative steel rail with a masonry termination at each end. The pedestrian rail typically exhibits paint failure with surface corrosion on the connections throughout its length. Heavy section loss with isolated corrosion holes to the bases of the railing posts is typical at the interface with the sidewalk cantilever top flanges. The right pedestrian railing top connection plate is disconnected from the east side of the third post from the rear end of Span 1. Isolated bolt heads and nuts on the railing connections are missing or have minor section loss.

The sliding plate sidewalk joints have some minor debris accumulation. Vertical misalignments between the plate and sliding surface are present; the most significant was noted at Pier 3 where the right sidewalk sliding plate rear end is 1” higher than the forward side. In Span 4, the left sidewalk is partially supported by the retaining wall and has settled up to 4”. No major changes overall.

Approach

Signs

A “No wake zone entire creek” sign is present on the right side of the truss between L5 and L6.

Approach
Roadway Surface

The approaches are in good condition overall. A new overlay was installed on both approaches since the prior inspection. The scaling and cracks previously mentioned are now not visible. The east approach transition is smooth. The west approach transition is smooth overall though settlement of 1/8” is present at the end of the west approach slab.

Approach Embankment

The southwest corner slope along the wingwall is being retained by roadway signs and ratchet straps to retain fill and prevent an erosion gulley from forming along the wingwall and at the top of the slop riprap. This is an old item that has not changed. See Item 61 – Channel Summary below for more specifics.

Inspector Comments - General Appraisal

Superstructure

Diaphragms/Cross Frames

The diaphragms have cleaned and painted advanced section loss with isolated corrosion holes noted in the webs and bottom flanges. Corrosion holes were noted in the diaphragms between Beams 1 and 2 and Beams 7 and 8 in Span 3 at Pier 2, between Beams 1 and 2 and Beams 2 and 3 in Span 3 at Pier 3, and between Beams 7 and 8 in Span 4 near midspan.

Utilities

The water main that runs along the south side of the truss has a broken wire hanger between Panel Points 7 and 8 and minor pack rust accumulation between the water main and floor beam cantilever brackets. The small flexible conduit along the north (left) side of the truss is disconnected adjacent to the Rear Abutment.
Several of the support brackets are bent downwards or have broken/missing rollers. There is a single sidewalk luminaire that is mounted near the middle of the right truss upper chord that is powered by an electrical line that runs from a utility pole at the southwest corner of the bridge.

Substructure

Abutments

The Rear Abutment has several small to moderate areas of spalling (varies shallow to up to 2" deep) with exposed reinforcement. The Forward Abutment is mostly buried/not visible. Both abutments have some hairline vertical cracks.

Pile Caps

[includes Pier 3 cap]

Pier Cap 3 has spalling with exposed reinforcing steel on the underside for the entire length, and scattered areas of spalling on the faces throughout. One broken bottom reinforcement bar noted on rear face at north end. There is cracking with heavy efflorescence on the forward face.

Pier Caps

[includes Pier 1 & Pier 2 caps]

Pier Cap 1 has several areas of spalling with exposed rebar on both faces, areas of delamination, and several minor spalls with exposed steel on both faces of the beam seat. Pier Cap 2 has several areas of spalling with exposed rebar on the rear face, vertical cracking with delamination was present on the right end of the forward face, and cracking with efflorescence was present on the right end of the cap. Pier Cap 2 has moderate spalls on the pier cap that undermine Beam 6 bearing up to 3/4".

Concrete Piles

34 total piles are exposed at Pier 3 with the west row of piles having 1 pile with delamination and minor spalling, 2 piles with moderate spalling and exposed reinforcement, and 1 pile that was incorrectly constructed in front of the cap.

Concrete Columns

[includes columns of Piers 1 and 2]

The right column of Pier 2 has minor cracking with efflorescence on the south face near the top.

Backwalls

Both the Rear and Forward Abutment backwalls have isolated hairline cracks.

Wingwalls

The southwest
corner slope along the wingwall is being retained by roadway signs and ratchet straps to retain fill and prevent an erosion gulley from forming along the wingwall and at the top of the slope riprap.
This is an old item that has not changed for this inspection. See item 61 – channel summary for additional information.

Slope Protection

Large diameter rip rap is present in front of both abutments. The slope protection works as intended with no major scour or erosion gulleys present in front of the abutments.

Culvert

Not applicable

Inspector Comments - Waterway

Waterway Adequacy

Inspector:	Lane,Nicholas	**Structure Number:**	4400038
Inspection Date:	09/26/2024	**Facility Carried:**	SR 7

Channel Hydraulic Opening

Brush and trees along the embankments.

Channel

The channel flows under Span 2 at a skew with no flow against the piers. The channel overall is in good condition overall with no significant scour nor channel bank deterioration noted. The channel banks are vegetated with small trees and extensive ivy.

There is an erosion gulley on the southwest embankment that runs down near the Pier 1 right column. This gulley currently measures up to 5' wide x 5' deep and runs for approximately 40'.
This erosion gulley starts just up from the scupper drainage at L1 above. It currently is not affecting the column but can be monitored in future inspections; there is a slight growth on this gulley from the prior inspection. The embankment on the right rear side (southwest) is sloughing but there is extensive vegetation present that will protect against erosion.

Scour Critical

Pictures

EXHIBIT 3 – 2024 BRIDGE DETERIORATION TABLES

LEFT TRUSS DETERIORATION COMMENTS

Member	Flange	Location	Defect Description
L0-L1	inboard	right face near L0	Section loss: 1/16" D x 2" H x 15" L along the top
	both	top face near L0	Active Pack rust: 1/2" thick x 2' L at diaphragm connection angles
	both	at L1 gusset plate	Section loss: < 1/16" D x FH x 1" L
L0-U1	outboard	bottom flange	Pack rust: 3/8" thick at lacing bars connection
L1-U1	outboard	web above guardrail	Section loss: 1/16" D x 4" Ø
	inboard	above old guardrail connection	Section loss: 1/8" D x 1" H x FW and 3" Ø above
	inboard	below U1 gusset plate	Section loss: 1/8" D x 1 1/2" Ø
	-	at L1 gusset plate	Section loss: 1/16" D x 2" Ø in web forward face within bounds of gusset plates
L1-L2	both	at L1 gusset plate	Section loss: < 1/16" D x FW along diaphragm angles within bounds of gusset plates
	-	bottom of flange plates at splice	Pack rust: 1/8" thick x 3.5' L (increase from 3')
			Section loss: 1/4" D x FW x 3' L
U1-L2	outboard	at mid-height	3/8" bow over 12" L
L2-U2	inboard	at old guardrail connection	Section loss: < 1/16" D x 1/2" H x FW
L3-U2	inboard	at sidewalk	Section loss: 1/8" D x 4" H x 4" W
L2-L3	-	bottom of flange plates at both L2 and L3	Active Pack rust: Up to 1/4" thick x 3' L
			Section loss: 1/8" D x 3' L
L3-U3	-	L3 gusset plate	Section loss: 1/16" D x 4" H from bottom
	inboard	at old guardrail connection	Section loss: < 1/32" D x 18" H x FW
L3-U4	inboard	at L3 gusset plate	Section loss: 1/16" D x 3" H x FW
U3-L4	inboard	at M3'	Section loss: 1/16" D x 18" L x FW
L3-L4	-	at splice near L4 at end	Active Pack Rust: 1/4" thick x 2.25' L. (was 2')
L4-U4	inboard	at old guardrail connection	Section loss: 1/8" to 1/4" D x 3" H x FW extending over an 18" height
L4-L5	inboard	18" from L4 at diaphragm angle	Section loss: 4" W x 2" H x 1/8" D (previously mismeasured)
	inboard	at L4 gusset plate	Section loss: < 1/16" D x 1" W x FH
U4-L5	inboard	at L5 gusset plate	Section loss: 1/8" D x 2"H x FW 0.27" 0.47" Pack Rust: 3/16" thick
L5-U5	inboard	at old guardrail connection	Section loss: 1/16" D x 8" H x FW with 1/8" D x 1" H x full width area of active corrosion
L5-L6	both	near L5 at splice plates	Active Pack Rust: 3/16" D x 2' L
	inboard	at L6 gusset plate	Pack rust: 1/8" thick x 8"H
L5-U6	both	at L5 gusset plate	Section loss: 1/16" D x 1/2" H x FW

Member	Flange	Location	Defect Description
U5-L6	inboard	at sidewalk	Section loss: 1/8" D x 6" W x 6" H area of active corrosion.
	both	at L6 gusset plate	Active Pack Rust: 1/8" thick x 2' L
			Section loss: 1/16" D x FW
L6-U6	-	L6 gusset plate	Section loss: 1/16" D x 4" Ø in web rear face within bounds of gusset plates
	inboard	at L6 gusset plate	Section loss: 1/16" D X FW
	inboard	at old guardrail connection	Section loss: 1/8" D x 2" H x FW (x 2)
L6-U7	inboard	at sidewalk	Section loss: 1/8" D x 3" Ø
L6-L7	both	near L6 end 2'	Active Pack rust: 1/4" thick between plates
	both	near L7 end 2'	Active Pack rust: up to 1/2" thick between plates on top and bottom edges
L7-U7	inboard	at old guardrail connection	Section loss: 1/16" D x 2" H x FW
	inboard	at floorbeam	Section loss: 1/8" D x FW
	-	at floorbeam	Section loss: 1/8" D x 3" W in web forward face
L7-U8	outboard	at sidewalk	Section loss: 0.27" D x 4" W x 3" H in right face
	inboard	at L8 gusset plate	Section loss: 1/8" D x 1" H x FW
	-	at sidewalk	Section loss: 1/16" D x 8" H x 3" W
L7-L8	both	bottom edge along splice	Active Pack Rust: Up to 1/4" thick x 2' L
	both	at L8 gusset plate	Section loss: 1/32" D x 1"W x FH
L8-U8	inboard	under old guardrail connection	Section loss: up to 1/4" D x FW x 1" H Section loss: 1/16" D x FW x 6" H
			Section loss: 1/8" D x 4" W x 1" H
L8-L9	outboard	diaphragm angle near L9	Section loss: 1/16" D x 6" H in right face
U8-L9	top	under bridge plaque	Section loss: 12" W x 9" H x 0.04" D Pack rust: 1/2" thick

RIGHT TRUSS DETERIORATION COMMENTS

Member	Flange	Location	Defect Description
L0-L1	inboard	near L0	Section loss: 1/8" D x 2 1/2" H x 1" L
	both	near L0 at diaphragm connection angles	Section loss: 1/16" D in top face
			Active Pack rust: up to 5/8" thick
	outboard	top left face near midspan	Pack rust: 1/4" thick
			Section loss: 1/16" D with isolated 1/8" D x 5" H
	inboard	near midspan	Section loss: < 1/16" D x 9" H x 20" L in right face with grinder marks
	outboard	interior connection angle near L1	Section loss: 3/16" D x 2" Ø in left face
	outboard	at L1 gusset plate	Section loss: 1/32" D (isolated 1/16" D) x 5" H x 2" L in left face.
	outboard	at L1 gusset plate	Section loss: < 1/16" D x 5 1/2" H x 2" L in right face
	inboard	at L1 gusset plate	Section loss: < 1/16" D x 3" H x 3" L in right face
L0-U1	inboard	at L0 gusset plate	Section loss: 3/16" D x 6" H x 9" L along web outside bounds of gusset plate.
	-	L0 cover plate	Section loss: < 1/16" D with broken rivets
	inboard	below portal	Pack Rust: 3/4" thick caulked between web and abandoned angle.
	-	under bridge plaque	Active corrosion
L1-U1	outboard	above L1 gusset plate	Section loss: 1/8" D x FW at fill plate
			Active pack Rust: up to 1/2" thick at fill plate Section loss: 100% in top of fill plate
	inboard	at old guardrail connection	Section loss: 1/8" D x 6" W x 1 1/2" L
	inboard	at old guardrail connection	Section loss: 3/16" D x 6" W x 2" L with adjacent smaller areas.
	-	at U1 gusset plate	3/4" Ø hole in web
L1-L2	inboard	at L1 gusset plate	Section loss: 1/16" D x FH with isolated 1/8" D at the top edge.
	outboard	near L1 gusset plate north face	Section loss: 1/8" D x 1 1/2" W x 7" H at top and 1/16" D x 1 1/2" W x remaining height at diaphragm connection angle within bounds of gusset plate.
	inboard	near L1 gusset plate south face	Section loss: 1/16" D x 2" H x 1/2" L at diaphragm connection angle.
	both	underside near L2	Pack rust: 1/8" thick at diaphragm connection angles
	both	top face and underside near L2	Pack rust: up to 1/4" thick at splice plates within bounds of gusset plate. Corrosion is active and continues from the prior inspection.
	outboard	near L2 north face	Section loss: 1/16" D x 5" H x 4" L at diaphragm connection angle.

Member	Flange	Location	Defect Description
U1-L2	inboard	at L2 gusset plate	Section loss: 1/16" D x 3" L x 1" H
	inboard	at sidewalk	Section loss: 1/16" D x 2" Ø in exterior face
	outboard	at sidewalk	Section loss: 1/16" D x 3" L x 1 1/2" H in interior face
L2-U2	-	bottom web and flanges at L2 gusset plate	Section loss: Left half of the web x 3' H x 1/4" D average with isolated 5/8" D with pin corrosion holes and up to 1/4" deep by 9" wide on within bounds of the gusset plates.
			Section loss: 100% on bottom 1' of the web with up to 1/4" deep pitting on the east half of both flanges.
			Section loss: Up to 1/4" deep x 9" W on web outside bounds of gusset plate.
	outboard	at L2 gusset plate south face	Section loss: 1/16" D x FW at fill plate
			Active pack rust with 100% section loss in top of fill plate
	inboard	at sidewalk	Section loss: 1/16" D to 1/8" D in interior face and both web faces.
	inboard	at old guardrail connection	Section loss: 1/16" D x 6" H x FW with isolated 1/8" D areas.
L2-L3	both	bottom of flange plates near L2	Pack rust and section loss: 7/16" thick at splice plates
U2-L3	outboard	at L3 gusset plate	Section loss: 1/8" D with isolated 3/16" D x 3" H x full width with pack rust and 100% section loss in top of fill plate
	inboard	at L3 gusset plate	Section loss: 3/16" D x 2" H x 7" W
	inboard	at guardrail connection	Section loss: 1/16" D
L3-U3	inboard	at old guardrail connection	Section loss: Up to 1/8" D x 2" H x FW
	-	rear web above sidewalk	Section loss: < 1/16" D x 3" W x 18" L
	inboard	at sidewalk	3/16" x 24" H bow to the right on rear side; 3/16" x 24" H bow to the left on forward side
	inboard	at L3 gusset plate	Section loss: up to 1/8" D x 6" H x 1" W from bottom of member extending into web
	ouboard	deck level	Gouges: Up to 1/16" D x 2" W on west edge
	outboard	at guardrail connection	Active section loss to 1/16" D x FW x 1" H
	outboard	at L3 gusset plate	Section loss: 1/16" D x FW at fill plate Pack Rust: 1/16" thick
			100% section loss in top of fill plate
L3-L4	both	near L4 gusset plate	Active pack rust: 3/8" thick
U3-L4	both	below M6	Section loss: < 1/16" D on inside of top flanges
	inboard	above guardrail	Section loss: 1/32" D x up to 18" H x 3" W in top interior face.
	inboard	at L4 gusset plate north face	Section loss: 1/8" D x 2" H x 3" L
L4-U4	-	web at L4 gusset plate	Corrosion holes: 2" H x 4" L at left side and 1" H x 3" L at right side at bottom free edge.
	inboard	at sidewalk	Section loss: 1/16" D x 6" H extending into web
	inboard	along L4 gusset plate north face	Section loss: 1/8" D x FW
	inboard	at old guardrail connection	Section loss: 5/32" D x 2" H x FW with remaining width 1/16" D.

Member	Flange	Location	Defect Description
U5-L4	inboard	at L4 gusset plate	Section loss: 1/8" D x FW with active pack rust 3/16" thick. Corrosion is active and continues from the prior inspection.
	inboard	top face at L4 gusset plate	Section loss: 1/8" D x 2 1/2" H x 6" W in web with up to 1/8" D x 2" W in both flanges. Corrosion is active and continues from the prior inspection.
	inboard	at sidewalk	Section loss: 1/8" D x 1 1/2" Ø
	inboard	below M5 gusset plate	Section loss: 1/32" D in top interior face
L4-L5	outboard	midspan diaphragm connection angle	Section loss: 3/16" D x 1" W x FH
	outboard	midspan diaphragm connection angle	Pack rust: 1/4" thick
U4-L5	inboard	at sidewalk	Section loss: 1/8" D x 16" H x FW with a 1/4" D x 2" H x 1" W area and a 1/4" D x 1" Ø area. Active corrosion
	outboard	at L5 gusset plate	Section loss: 1/8" D x 1 1/2" H x FW with isolated 3/16" D areas
			Active Pack Rust: 1/4" thick
L5-U5	both	at L5 gusset plate	Section loss: 1/16" D x FW
	-	bottom of web at L5 gusset plate	Section loss: 8" H x FW x 1/8" D w/ knife edging and pinholes at bottom within bounds of gusset plate Section loss: 6" W x 26" H x 1/8" D typical (3/16" D isolated) in the forward face and left flange above the FW section loss within bounds of gusset plate
	-	forward web near sidewalk	Section loss: 1/16" D x 6" W x 12" H
	-	rear web near sidewalk	Section loss: < 1/16" D x 1" W x 15" H
	both	below M4' plate	Section loss: < 1/32" D in rear face
	outboard	above gusset plate	Pack rust: up to 1/4" thick between truss and fill plate
	inboard	above old guardrail connection	Section loss: 1/8" D x FW x 1" H (x2)
L5-U6	inboard	at L5 gusset plate	Section loss: 1/8" D x FW
L5-L6	both	near L5 gusset plate	1/4" thick pack rust between flange and splice plates
		Lower chord diaphragm angle connections	Active pack rust: 1/4" thick x 2' L
U5-L6	inboard	at sidewalk	Section loss: 0.020" D x 8" H x 4" W with isolated 7/16" D area.
	inboard	at L6 north face	Section loss: 1/8" D x FW x 3" L
	-	at sidewalk	Section loss: 1/16" D x 4" W x 10" H
L6-U6	inboard	from floorbeam connection to old guardrail connection	Section loss: Up to 1/16" D x 9" H x FW
	-	rear web face from L6 gusset plate to old guardrail connection	Section loss: Up to 3/16" D x 3" W x 4" H. This occurs at several places in this location.

Member	Flange	Location	Defect Description
L6-L7	outboard	at L6 gusset plate	Active Pack rust: up to 3/16" between gusset plate and flange plate.
	outboard	end 3.5' from L7	Active pack rust, up to 1 1/8" thick along end with bowing of the top 4" and bottom 4" of the thinner (~3/8" thick) interior flange plate.
	inboard	end 3.5' from L7	Active pack rust, up to 5/8" thick along end with bowing of the top 4" and bottom 4" of the thinner (~3/8" thick) interior flange plate.
L7-U7	-	bottom edge of web at L7 gusset plate	Section loss: 0.20" D x 12" H x FW with small corrosion holes within the bounds of the gusset plate
	inboard	below old guardrail connection	Section loss: 1/16" D x FW x 2" H
	outboard	above gusset plate	Pack Rust: Up to 1" thick at fill plate
	inboard	at sidewalk	Active section loss: 1/32" D x FW x 6" H
	-	both web faces below old guardrail connection	Section loss: 1/32" D x up to FW
L7-L8	both	at L8 gusset plate	Section loss: 1/16" D x 1" W x FH along diaphragm connection angle within bounds of gusset plate
	both	bottom edge at splice plate	Active pack rust: 1/4" thick
	both	near L7 gusset plate	Active pack rust: 1/8" thick at top edges of splice plate
L7-U8	inboard	at L7 gusset plate	Section loss: < 1/16" D x FW
	inboard	at sidewalk	Section loss: 0.15" D x 3" W x 6" H
L8-U8	inboard	at old guardrail connection	Section loss: 1/8" D x FW
U8-L9	inboard	from L9 gusset plate to sidewalk	Section loss: 0.20" D x 4" W
	inboard	at guardrail connection	Active section loss: <1/32" D
	outboard	4' from L9 bearing	Section loss: 1/8" D x FW x 3' H in web
	both	above sidewalk	Pack rust: 3/4" thick at lacing bars with 1/8" remaining section to lacing bars and active corrosion
	outboard	above sidewalk	Pack rust: minor between web and flange
	-	L9 cover plate	Section loss: Up to 2" Ø holes
L8-L9	ouboard	left face	Section loss: 1/32" D x 18" L x 6" H area with hammer marks.
	both	near L8 gusset plate	Section loss: 1/16" D x FH at diaphragm connection angle.

FLOOR BEAM DETERIORATION COMMENTS

FLOOR BEAM COMMENTS

Floorbeam	End	Face	Location	Defect Description
0	left	rear	web	Section loss: FH x 5" W x up to 3/16" D. Corrosion not active.
	left	forward	web	Section loss: FH x 5" W x 1/16" D. Corrosion not active.
	left	-	web at top cope	Two cracks present at the cope. A 1 1/2" (was 1 3/8") crack extends down from cope. A 1 7/8" (was 1 3/4") crack extends diagonal into the floor beam web. Starts near the base of the floor beam flange.
	left	rear	end 3' L of web and bottom flange	Section loss: 1/8" D on top and bottom up to 2" wide at edge with 3/16" D Section loss on edge. Corrosion not active.
	left	forward	end 3' L of bottom flange	Section loss: 1/16" D on top and bottom up to 2" wide at edge with 3/16" D Section loss on edge. edge with 3/16" D Section loss on edge. Corrosion not active.
	-	rear	bottom flange top face	Laminating corrosion with section loss: 1/16" D
	right	rear	bottom flange about 5' from truss	Section loss: 8' L x 3" W x 1/4" D
	right	rear	web about 5' from truss	Section loss: 12' L x 6" H x 3/16" D (isolated 1/4" D)
	right	both	web at top cope	Overcut: 1/4" long
	right	-	bottom flange	Active corrosion: 10' L
	right	rear	web around LLB connection	Section loss: 1/16" D x 1" perimeter
	right	rear	web	Section loss: 1/8" D x 4" H x 1" W at bottom
	right	forward	web	Section loss: 1/16" D x 4" H x 1" W at bottom
	right	both	web	Section loss: 1/16" D x 4"H x 1" W at top
1	right	rear	web	Section loss: 1/8" D with isolated 3/16" D x 4" H x 1 1/2" W at top
				Section loss: 4" W x 5" H x 1/16" D at bottom
	right	rear	web	Overcut: 1/4" long
	right	forward	web	Section loss: 1/16" D x 1" H x 4" L at bottom
	right	forward	web at Stringer 8	Section loss: 1/8" D x 2" H x 1" L (with active corrosion)
	-	rear	web at Stringer 7	Gouges: 3" L x 1/8" D (several over 10" L x 5" W)
	left	rear	web	Section loss: 1/8" D x 6" H x 6" W at top and bottom
	left	forward	web	Section loss: 1/16" D x 16" H x 4" L at top
				Section loss: 1/8" D x 6" H x 6" L at bottom (with some active corrosion)
2	right	both	web	Section loss: 1/8" D x 3" H x 1" W at top (active corrosion)
				Section loss: 1/8" D x 1" H x 12" W at bottom. Corrosion is currently active.
	right	forward	top flange	Section loss: < 1/16" D x 6" W x 8" L
	right	forward	web	Section loss: 1/4" D x 1 1/2" H x 1" L at top
	left	both	web	Section loss: 1/8" D x 5" W x 5" H at bottom, with laminating corrosion
3	right	rear	web	Section loss: 1/8" D x 2" H x 1" L at top
				Section loss: 1/8" D x 5" H x 4" L at bottom
	right	-	web at top cope	Overcut: 9/16" vertical
	left	rear	web	Section loss: isolated up to 1/16" D x FH x 1 1/2" L
	left	forward	web	Section loss: 1/16" D x 3" H x 4" L
	right	forward	web	Section loss: 1/16" D x 2" H x 1 1/2" L at top
				Section loss: 1/8" D x 5" H x 3" L at bottom
4	left	forward	web	Section loss: 1/8" D x 4" H x 1" L at top
				Section loss: 3/16" D x 5" H x 3" L at bottom
	left	rear	web	Section loss: 1/8" D x 3" H x 2" L at top and bottom
	right	forward	web	Section loss: 3/16" D x 2" H x 2" L at bottom. Corrosion is currently active.
	right	rear	web	Section loss: 1/8" D x 4" H x 1" L at bottom
5	left	forward	web	Section loss: 1/16" D x 3" H x 2" L at top
				Section loss: 1/8" D x 6" H x 5" L at bottom (some active corrosion)
	left	rear	web	Section loss: 4" W x 7" H x 1/8" D at bottom (active corrosion)
	left	rear	web at Stringer 1	Section loss: 4" W x 5" H x 1/16" D at top
	left	rear	web	Section loss: 3" W x 6" H x 1/16" D at top
	right	forward	web	Section loss: 1/8" D x 4" H x 2" L at top
				Section loss: 1/4" D x 4" H x 5" L at bottom (was 1/8" deep, increased). Corrosion is currently active.
	right	rear	web	Section loss: 1" W x 1" H x 1/8" at top
				Section loss: 8" W x 4" H x 1/8" D at bottom

Floorbeam	End	Face	Location	Defect Description
6	right	both	web	Section loss: 3" H x 3/16" D x 1" W at top
				Section loss: 4" W x 4" H x 3/16" D at bottom
	left	rear	web	Section loss: 4" W x 5" H x 3/16" D at bottom
	left	forward	web	Section loss: 1/16" D x 2" H x 4" W at bottom
	left	rear	web	Paint failure: 3" Ø with active corrosion at top
7	left	forward	web	Section loss: 1/16" D x 3" H x 3/4" L at bottom
	left	rear	web	Section loss: 1/8" D x 4" H x 12" L at bottom
	left	rear	web at top cope	Overcut: 1/4" long
	right	forward	web	Section loss: 3/16" D x 4" H x 2" L (some active) at bottom. Corrosion is currently active.
	right	rear	web	Section loss: 1/8" D x 2" Ø (active) at bottom. Corrosion is currently active.
8	right	forward	web	Section loss: 1/16" D x 2" H x 1" L at top
	right	rear	web	Section loss: 3/16" D x 1" H x 1" L at top
				Section loss: 3/16" D x 4" H x 4" W at bottom
	left	forward	web	Section loss: 1/16" D x 2" H x 1" L at top
	left	rear	web	Section loss: 1/8" D x 4" H x 1" L at top
				Section loss: 3/16" D x 3" H x 3" L at bottom
9	right	both	web	Section loss: 1/16" D x FH x 3" L
	right	forward	web between Stringers 6 and 7	Section loss: 1/16" D x up to 6" H
	right	-	bottom flange end 3'	Section loss: Isolated 1/4" D x 6" Ø
				Section loss: 1/16" D x 3" W to edge of top face Section loss: 1/4" deep to edge of east flange
	right	-	web at top cope	Three diagonal cracks present at floor beam cope. 1" L,1/4" L, and 5/8" L for top, middle, and bottom crack respectively.
				Overcut: 1/2" L diagonal
	left	forward	bottom flange end 2'	Freckled pitting: 1/8" D x FW on top face
				Freckled pitting: 3/8" D x FH on flange edge
	left	forward	web around LLB connection	Section loss: 1/8" D x 1" H x 1" L around perimeter with active corrosion on both faces
	left	-	web at top cope	Two cracks present at the cope. One is 1 3/8" L horizontal (was 1") and one is 1 1/4" diagonal (no growth, was mismeasured).
				Overcut: 1/4" L diagonal
	left	both	web	Section loss: 1/8" D x FH x up to 2" L
	left	both	web	Section loss: 1/16" D x 6" Ø at top

GUSSET PLATE DETERIORATION COMMENTS

TRUSS	PANEL POINT	GUSSET PLATE	FACE	LOCATION	Defect Description
Right	L0	outboard	exterior	around bearing pin	Section loss: < 1/16" D
				behind sidewalk tension bolt	Section loss: 1/8" D x 4" H x 8" W
		inboard	exterior	at bearing casting	Loose Pack rust
				around bearing pin	Section loss: 3/16" D
	L1	outboard	exterior	behind sidewalk tension bolt	Section loss: 1/16" D x 4" H x 5" W
		both	interior	along bottom of lower chord	Pack rust: Up to 1/4" thick
				along top of lower chord	Section loss: 1/32" D (Up to 1/16" D) x 1" H with light active corrosion
	L2	outboard	interior	at L1-L2 & U1-L2	Pack rust: 3/16" thick
					Pitting: 1/8" D
				along top of lower chord L1-L2	Section loss: < 1/16" D x 1 1/2" H x 6" W
				along top of lower chord L2-L3	Section loss: 3/16" D x 2 1/2" Ø
			exterior	behind sidewalk tension bolt	Section loss: 1/4" D x 4" H x 5" W (active)
		inboard	interior	at L1-L2	Pack rust: 1/16" thick
				along top of lower chord L1-L2	Section loss: 1/8" D x 2" H x 3" W at vertical
				along top of lower chord L2-L3	Section loss: 1/8" D x 1" H x 1" W at vertical
	L3	outboard	interior	along top of lower chord L2-L3	Section loss: 1/16" D x 1" H x 2" W
		both	interior	along bottom of lower chord	Pack rust: Up to 1/8" thick
				at L2-L3 interface	Pack rust: Up to 1/8" thick
	L4	inboard	interior	along L3-L4	Section loss: 1/16" D x 9" L
		both	interior	along bottom of lower chord	Pack rust: Up to 1/4" thick
		outboard	interior	along L3-L4	Section loss: 1/8" D x 4" L
	L5	inboard	interior	along L5-L6 below U6-L5	Section loss: 1/16" D x 3" H x 8" L
		outboard	interior	along L5-L6 below U6-L5	Section loss: 3/16" D x 4" H x 10" L
		both	interior	bottom and west edges	Active pack rust: up to 3/8" thick
	L6	both	interior	along top of lower chord	Section loss: 1/16" D x 6" H x 12" L
				at L6-L7	Pack rust: 1/8" thick at bottom (sides up to 3/16")
	L7	outboard	interior	along top of lower chord west of L7U7	Section loss: 1/8" D x 12" L
				along top of lower chord east of L7U7	Section loss: 1/16" D x 8" L
				at L6-L7	Pack rust: 1/4" thick at west free edge
			-	forward free edge	Pack rust: Isolated 1/16" thick
		both	interior	along bottom of lower chord	Active pack rust: up to 3/16" thick
		inboard	interior	at L6-L7	Pack rust: 1/16" thick at very bottom of west edge
				along top of lower chord	Section loss: < 1/16" D for 50% L (isolated 1/16" D)
			-	forward free edge	Pack rust: Isolated 1/8" thick
	L8	outboard	exterior	behind sidewalk tension bolt	Section loss: 1/16" D x 4" H x 8" W
			interior	along top of lower chord	Section loss: 1/16" D x 1" H x 14"W
		inboard	interior	along top of lower chord	Section loss: 1/16" D x 1" H
	L9	outboard	interior	along top of lower chord	Section loss: 1/8" D x 1" H x FL
			-	free edge between U8-L9	Active Pack rust: 1/2" thick
		inboard	exterior	around bearing pin	Section loss: 1/8" D
	U6	inboard	interior	throughout rear half	Section loss: 1/32" D
	U8	inboard	interior	throughout rear half	Section loss: 1/32" D

TRUSS	PANEL POINT	GUSSET PLATE	FACE	LOCATION	Defect Description
Left	L0	both	exterior	around bearing pin	Section loss: 1/16" D x 4" Ø
					Loose Pack rust: Up to 3/8" thick at casting
		inboard	-	free edge between U1-L0 & L0-L1	Pack rust: 1/16" thick
		outboard	-	free edge between U1-L0 & L0-L1	Pack rust: 1/8" thick at top 2"
	L1	both	interior	along bottom of lower chord	Active pack rust: Up to 1/8" thick
		outboard	interior	along top of lower chord	Section loss: < 1/16" D x 1" H x 4" L
	L2	both	interior	along bottom of lower chord	Pack rust: 1/8" thick
					Pitting: <1/16" D x 10" L
		outboard	interior	along top of lower chord	Section loss: < 1/16" D x 4" L
		inboard	exterior	at floorbeam connection	Section loss: 1/8" D x 1 1/2" H x 6" W bottom Section loss: 1/16" D x 3" H x 2" W forward side
	L3	both	interior	along top of lower chord	Section loss: Up to 1/16" D x 15" L
	L4	inboard	exterior	at floorbeam connection	Section loss: 3/8" D x 1 1/2" H x 6" W at bottom
		both	interior	along bottom of lower chord	Pack rust: Up to 3/16" D
					Section loss: 1/16" D x 2" H rear side Section loss: 1/16" D x 2" H x 10" L forward
				along top of lower chord	side
	L5	both	interior	along bottom of lower chord	Active Pack rust: Up to 1/8" thick
				along top of lower chord near vertical	Section loss: 3" H x < 1/16" D rear side Section loss: 1/16" D x 3" Ø forward side
	L6	both	interior	bottom edge along lower chord	Pack rust: 1/8" thick
				along bottom of lower chord	Active Pack rust: Up to 1/8" thick
				along U5-L6	Pack rust: 1/8" thick between members
			-	along L6-L7	Section loss: <1/16" D x 4" H x 10" long
		inboard	interior	along bottom of lower chord	Pack rust: Up to 1/8" thick
	L7	both	interior	along bottom of lower chord	Pack rust: Up to 1/8" thick
				along top of lower chord L7-L8	Section loss: Up to 1/16" D x 1" H x 10" L
	L8	both	interior	along bottom of lower chord	Pack rust: Up to 1/8" thick
				along top of lower chord L8-L9	Section loss: 1/16" D x 1" H x 14" L
		inboard	exterior	floorbeam bottom flange	Pitting: 1/8" D x 1 1/2" H x 6" L at bottom with active corrosion
	L9	both	exterior	around bearing pin	Section loss: 1/8" D
		-	-	top cover plate	Localized indent: 3/4" D
		outboard	-	free edge between L9-L8	Active Pack rust: 1/16" thick
	M6	inboard	interior	below lower diagonals	Section loss: 1/16" D x 6" H x 3" L