

ODOT District 8
2024 In-Depth & NSTM Inspection Report

INSPECTION July/Aug 2024
REPORT Sept 2024

Bridge No. HAM-50-2180N
SFN: 3103390

PID: 105475



Prepared for:



Department of
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**2024 IN-DEPTH & NONREDUNDANT STEEL
TENSION MEMBER (NSTM) INSPECTION REPORT**

of

BRIDGE NO. HAM-50-2180N

SFN: 3103390

CINCINNATI, OHIO

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**OHIO DEPARTMENT OF TRANSPORTATION
DISTRICT 8**

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BRIDGE DESCRIPTION

The Columbia Parkway Viaduct (HAM-50-2180N) is a seventeen span structure that connects East 5th Street to US 50 in Downtown Cincinnati (see Location Map). There are four lanes of vehicular traffic on the bridge that carry both eastbound and westbound traffic over Butler Street, Culvert Street, Eggleston Avenue, Interstate 471, local streets, and ramps to US 50. On the south side of the bridge, there is a pedestrian sidewalk. The overall structure length is 1,660'-9" and was opened to traffic in 1938 with rehabilitations in 1997-1998 and 2017-2018. The rear (west) approach spans (Spans 1-4) and the forward (east) approach spans (Spans 12-17) consist of three lines of simple span, built-up steel girders. The main spans (Spans 5-11) consist of three Pratt deck truss lines. Spans 5-6 and 10-11 are two-span continuous units, while Spans 7-9 are a three-span continuous unit.



Location Map

In the truss spans, the diagonals and verticals consist of rolled members and the upper and lower chords of built-up box sections with lacing bars. The floorbeams consist of rolled members and the cantilevered floorbeams are of welded plate construction. The sway bracing and the lower lateral bracing are riveted to the gusset plates at even-numbered panel points. In the approach spans, crossframe and lower lateral bracing spacing varies due to the curved geometry. There is a reinforced concrete deck with a roadway width of 56'-4" and a pedestrian sidewalk with a width of 10'-8" across the bridge. Both the Rear (Abutment 1) and Forward (Abutment 18) Abutments are wall type substructure units. All piers (Piers 2-17) are reinforced concrete cap and column style. The bridge stationing runs west to east. The girders and truss lines are labeled north, center, and south. The truss panel points and floorbeams are numbered from west to east starting with 0 at the start of each continuous unit. See the next section for a detailed sketches of the nomenclature and identification of the NSTMs.

BRIDGE LAYOUT & NSTM IDENTIFICATION

The following sketches show the layout and nomenclature of the bridge. NSTMs are highlighted red.

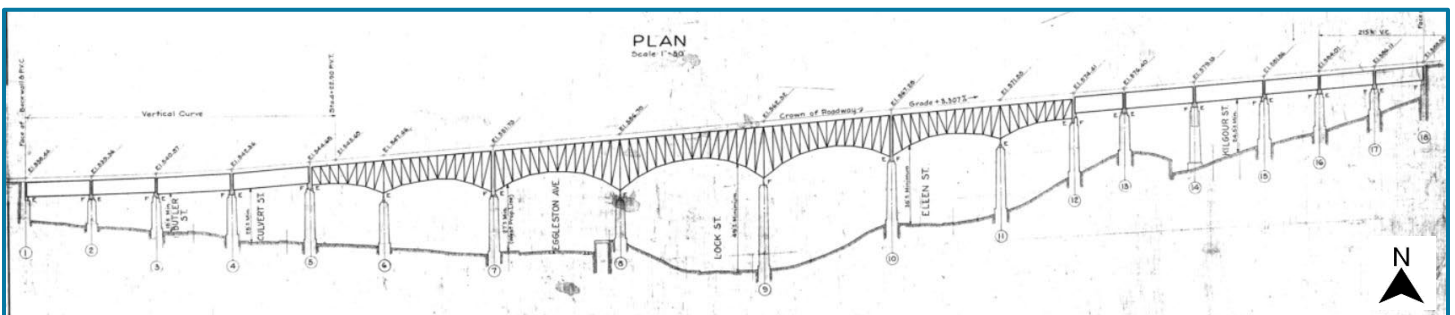


Figure 1 - HAM-50-2180N Overall Bridge Profile



Figure 2 - HAM-50-2180N Bridge Nomenclature (Substructure Layout)

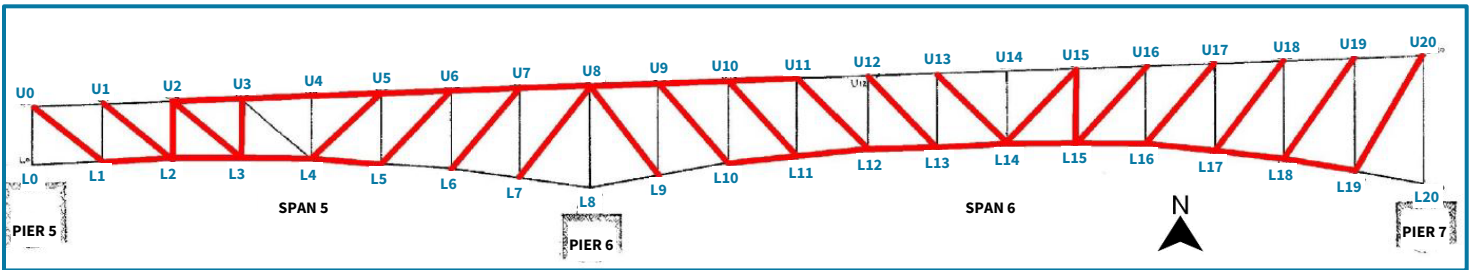


Figure 3 - HAM-50-2180N Bridge Nomenclature (Truss Layout and NSTMs - Spans 5 to 6)

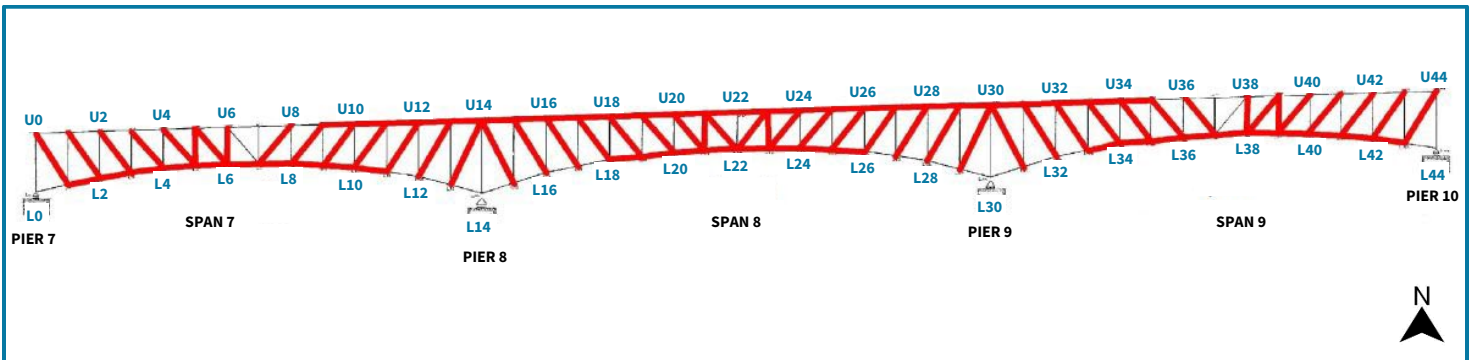


Figure 4 - HAM-50-2180N Bridge Nomenclature (Truss Layout and NSTMs - Spans 7 to 9)

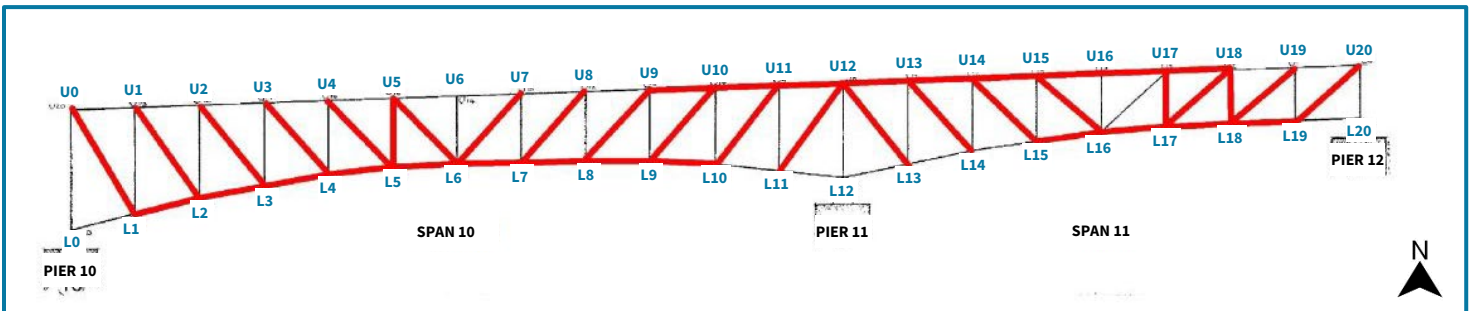


Figure 5 - HAM-50-2180N Bridge Nomenclature (Truss Layout and NSTMs - Spans 10 to 11)

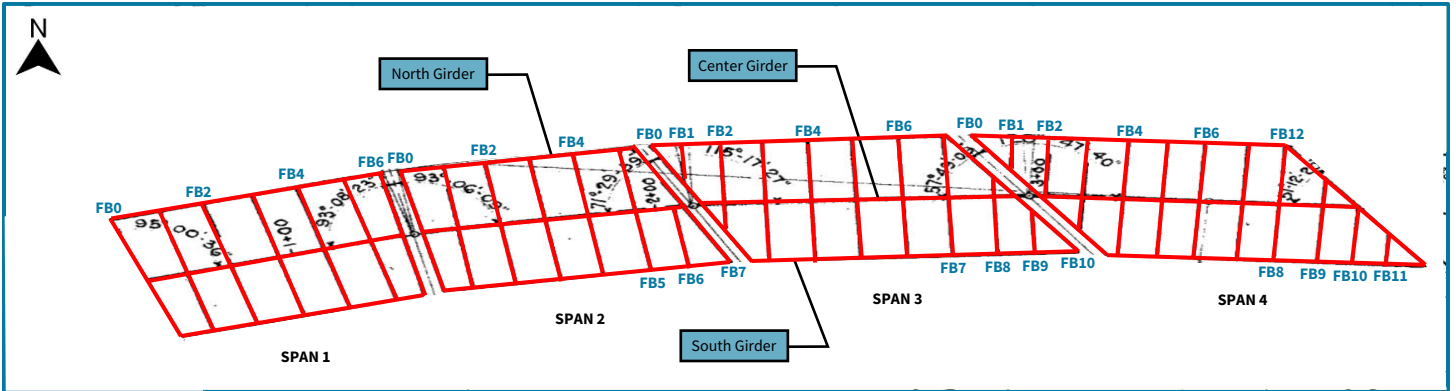


Figure 6 - HAM-50-2180N Bridge Nomenclature (Framing Plan Layout and NSTMs - Spans 1 to 4)

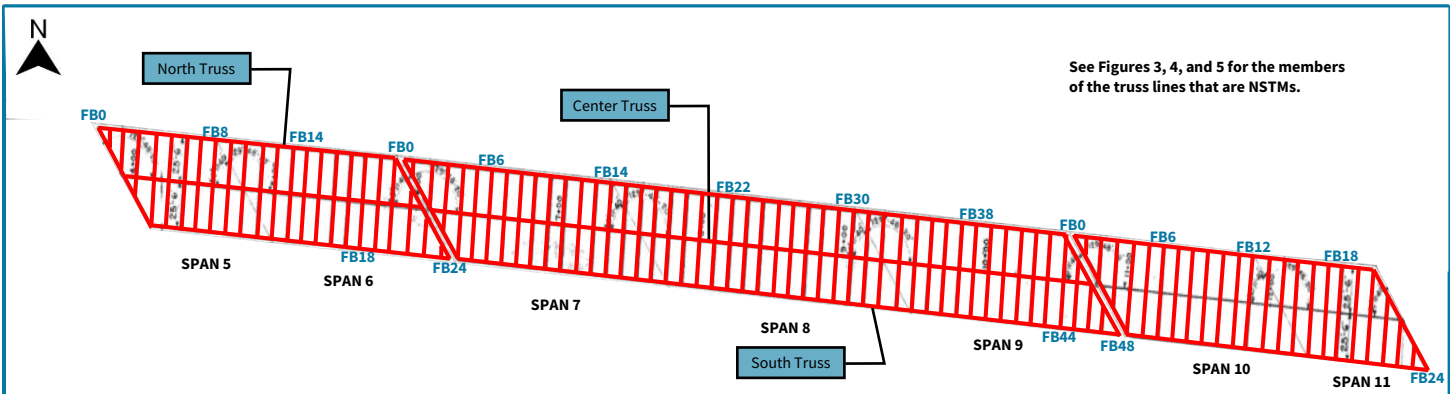


Figure 7 - HAM-50-2180N Bridge Nomenclature (Framing Plan Layout and NSTMs - Spans 5 to 11)

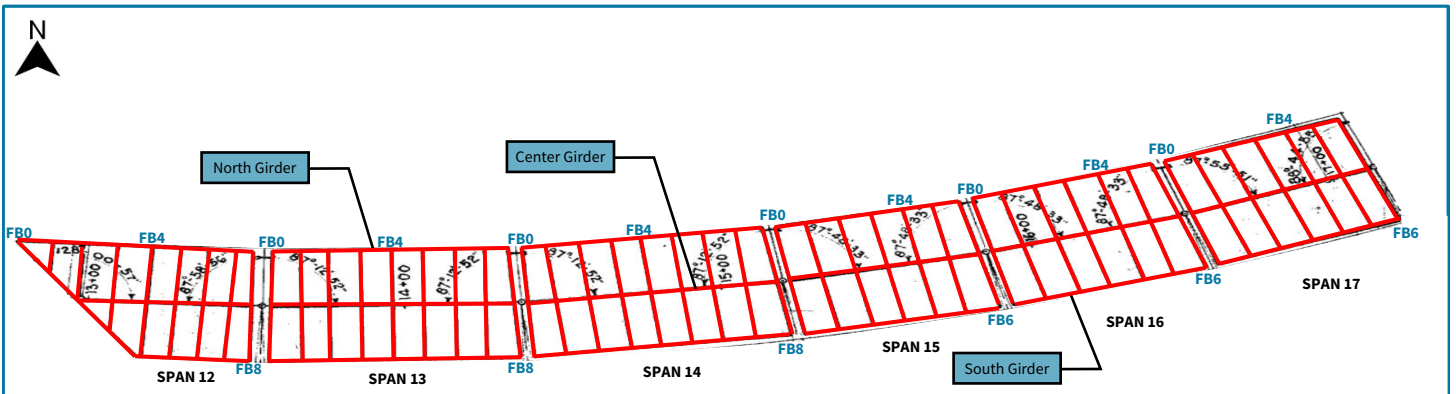


Figure 8 - HAM-50-2180N Bridge Nomenclature (Framing Plan Layout and NSTMs - Spans 12 to 17)

INSPECTION SCOPE AND PROCEDURE

Personnel from TranSystems Corporation and TRC performed an in-depth and nonredundant steel tension member (NSTM) inspection of the bridge between July 8 to 10 and August 12 to 16, 2024. Access to the structure was gained using one (1) 41-ft bucket truck, one (1) ODOT owned Aspen Aerial A-62 UBIV, one (1) 85-ft boomlift, a 24-foot extension ladder, industrial rope access methods, and on foot. The 41-ft bucket truck was used to gain hands-on access to the approach span components and the substructure units. The Aspen Aerial A-62 was used to inspect the North Truss line, north end of the floorbeams, and north floorbeam cantilevers. The remaining portions of the truss and hands-on inspection of the floorbeams were accessed using industrial rope access methods.

Traffic control was necessary to perform the inspection of the North Truss line and floorbeams using the A-62. The inspection using the A-62 included examination of the north end of the floorbeams between the North Truss and Center Truss, inspection of the north floorbeam cantilevers, and inspecting all the North Truss elements (upper chord, lower chord, diagonals, verticals, and connection components). A single right lane closure in the westbound lane across the bridge was necessary during the July 8th through 10th inspection dates. A short-term single lane closure was performed on August 13th on Culvert Street to inspect the girder spans. The A-62 was provided by ODOT and traffic control was provided by A&A Safety. The signs/devices were placed in accordance with the latest Ohio Manual for Uniform Traffic Control Devices.

The floorbeams were accessed from the catwalk using beam clamps to traverse across the length. At the South Truss and Center Truss, the inspectors rappelled from the floorbeams down along the vertical to the lower chord, then traversed back and forth to inspect each bay of the Center and South Truss lines.

The inspection findings were recorded on bridge specific field inspection forms. Each of the forms for the bridge element were marked up with defects and notes. Inspection equipment utilized during the inspection included, but was not limited to chipping hammers, wire brushes, measuring tapes, 6-foot carpenter rules, and flashlights. Color digital photographs were taken of areas of deterioration, condition changes, typical details, and any immediate maintenance needs, if found.

INSPECTION TEAM

The inspection team members were as follows:

- Josh Sadlock, PE – TranSystems (Team Leader)
- Brian Dietrich, PE – TranSystems
- Ann Griessmann, PE – TranSystems
- Brian Janus, PE – TranSystems
- Robert Flinn, PE – TranSystems
- Jacob Adamrovich, EI – TranSystems
- Craig Jacob, PE – TRC

CONDITION RATING

State and federal guidelines for evaluating the condition of bridges have been developed to promote uniformity in the inspections performed by different teams and at different times. Condition ratings are used to describe the existing, in-place bridge as compared to the as-built condition. Table 1 was used as a guide in evaluating the condition of the various members of the bridge.

SUMMARY ITEMS (SNBI)	CONDITION	DEFECTS
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.

Table 1 – Codes and descriptions for component condition ratings (SNBI Table 20).

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, 2nd Edition, AASHTO, 2019 (rev 2022).
3. Manual for Bridge Evaluation, AASHTO, 2018 (3rd edition with 2020 and 2022 Interim Revisions).
4. Bridge Inspector’s Reference Manual, U. S. Department of Transportation, 2022 NBIS (rev 2023).
5. National Bridge Inspection Standards, U.S. Department of Transportation, 2022.
6. Specifications for the National Bridge Inventory, Federal Highway Administration, 2022.
7. Ohio Manual of Uniform Traffic Control Devices (OMUTCD), ODOT, 2012 (rev 2011).

EXECUTIVE SUMMARY

The HAM-50-2180N Bridge (Columbia Parkway Viaduct) is in SATISFACTORY CONDITION [6-NBIS] overall. Significant findings include:

- The bridge rail has various size spalls with exposed rebar and cracking. Areas of map cracking have efflorescence and possible ASR.
- The crash attenuator at the Sixth St. Downtown exit ramp has been deployed and has damage throughout.
- Large spalls in concrete joint header and construction joint pulling out at Abutment 1 (Rear Abutment).
- Slope protection areas broken and undermined at Pier 11, 12, and 13. Adjacent approach slab undermined at Pier 13.
- Missing fasteners throughout the superstructure with isolated locations of plug welds.
- Painted over pitting up to 3/16” deep to the girders and truss members.
- Pack rust up to 1” thick between element components throughout. Many locations are causing distortion to the members.
- Broken tack welds at several locations. Most are located at the truss gusset plates or fill plates.
- Isolated locations of overcuts at the floorbeam copes.
- Section loss to bearing anchor bolt nuts.
- Failed protective coating system at isolated locations with surface corrosion.
- Cracking and spalls with exposed and corroded rebar and delaminated concrete at various substructure units.
- Wide cracking in the East Approach pavement.

The overall item ratings can be summarized in Table 2:

Bridge Condition Summary Ratings		
ITEM	RATING	TYPICAL NOTES
DECK	6	Longitudinal and transverse cracks with efflorescence in the deck. The wearing surface has wide cracks near the scuppers and expansion joints.
SUPERSTRUCTURE	6	Surface corrosion, cracked tack welds, pack rust at connections, areas of painted over pitting, isolated active corrosion, misdrilled holes and plug welds, isolated failure of the PCS, and isolated corrosion holes.
SUBSTRUCTURE	6	Isolated spalls, delaminated concrete, and hairline cracking with rust staining or efflorescence.

Table 2 – Bridge Condition Summary Ratings

INSPECTION FINDINGS

B.C.01 – DECK CONDITION RATING (ITEM 58)

The deck is in SATISFACTORY CONDITION [6-SNBI] overall with isolated haunch spalls and widespread longitudinal and transverse cracks with efflorescence in the deck underside (see Photo 1). The wearing surface has isolated hairline longitudinal and transverse cracks in all spans. The bridge railings have isolated locations of wide cracking, delaminations, and spalls with exposed rebar. All expansion joints typically have loosely packed debris and isolated locations of surface corrosion.

ELEMENT 12 – REINFORCED CONCRETE DECK

The reinforced concrete deck is in satisfactory condition with isolated haunch spalls and some hairline longitudinal and transverse cracks with light buildup of efflorescence. The longitudinal cracks are located between the floorbeams (see Photos 2-3). There are isolated areas of hairline map cracking adjacent to the haunches. There are also isolated spalls in the floorbeam haunches measuring up to 1 ft in diameter. Majority of the transverse cracks are located in the deck overhangs and have light to moderate build-up of efflorescence (see Photo 4).



Photo 1 – Typical condition of the deck underside (looking up and east in Span 17).



Photo 2 – Typical hairline longitudinal cracks in the deck between the floorbeams (Span 10 shown).



Photo 3 – Longitudinal cracking with efflorescence in the deck between floorbeams (Span 9 shown).

ELEMENT 805 – WEARING SURFACE – MONOLITHIC CONCRETE

The monolithic concrete wearing surface is in satisfactory condition overall with some minor longitudinal and transverse cracking throughout. There are isolated locations of moderate to wide cracks near drainage scuppers and expansion joints. At the drainage scuppers, the cracks are propagating from the corners of the scupper grate (see [Photo 5](#)). For the expansion joints, the cracking is typically near the areas where the joint armor bends (see [Photo 6](#)). In the shoulder between Piers 16 and 17, there is some trash and a small (3 ft long) discarded tree.



Photo 4 – Transverse cracking with efflorescence in the deck overhang (Span 9 shown).



Photo 5 – Moderate to wide cracks propagating from the scupper grate corner (near Pier 10).



Photo 6 – Moderate to wide cracks near where the expansion joint armor bends (near Pier 10).

B.C.05 – BRIDGE RAILING CONDITION RATING

The bridge railings are in SATISFACTORY CONDITION [6-SNBI] overall with isolated locations of wide cracking, delaminations, and spalls with exposed rebar (see [Photo 7](#)).

ELEMENT 331 – REINFORCED CONCRETE BRIDGE RAILING

The reinforced concrete bridge railings run the full length of both sides of the bridge and along the north side of the sidewalk. They are in satisfactory condition. Between Pier 5 and Pier 6 of the north railing, the decorative extension to the post is cracked and fully delaminated (see [Photo 8](#)). Between Pier 6 and Pier 7 of the north railing, there is a 2' H x 1' W delamination at the stem (see [Photo 9](#)).



Photo 7 – Bridge railing (looking northwest).



Photo 8 – Crack with delamination at the decorative post cap (looking southwest).



Photo 9 – 2' H x 1' W delamination with a crack in the north railing stem (looking southeast).

Throughout the length of the railing, there are several locations of various sizes of spalls up to 5" W x 1' H, some with exposed and corroded rebar (see Photo 10). Two locations were noted as having map cracking with efflorescence, but there are indications (tight spiderweb style cracking with thin leakage along the cracking) that these areas may have alkali-silica reaction (ASR) (see Photo 11). The two areas are at posts and are located on the south railing between Piers 7-8 and between Piers 17-18. The protective coating system is faded and is chipping off throughout.

In the westbound lane just east of I-471, there is a crash attenuator at the exit ramp for Sixth St Downtown. The crash attenuator has been damaged and has panels hanging loose, deployed cushions, and loose cables (see Photo 12).



Photo 10 – Spall with exposed rebar in the railing stem (looking northwest at north railing).



Photo 11 – Map cracking with efflorescence (possible ASR) in the concrete railing (looking south at the south railing).



Photo 12 – Damaged crash attenuator with hanging panels, deployed cushions, and loose cables (looking west).

B.C.06 – BRIDGE RAILING TRANSITION CONDITION RATING

The bridge railing transitions are in GOOD CONDITION [7-SNBI] overall with isolated spalls and cracking at the northeast end. The southwest end is only a ramped concrete rail the length of the approach slab. The protective coating is faded and is chipping off at all locations.

B.C.08 – BRIDGE JOINTS CONDITION RATING

The joints are in SATISFACTORY CONDITION [6-SNBI] overall with debris accumulation, areas of surface corrosion, isolated tears to the seal material, and shallow spalling along the edges.

ELEMENT 300 – STRIP SEAL EXPANSION JOINT

The strip seal expansion joints (located at Abutment 1 (Rear Abutment), Piers 2 through 5, Pier 7, Pier 10, Piers 12 through 17, and Abutment 18 (Forward Abutment)) are in satisfactory condition overall. All joint openings have some level of debris impaction ranging from partially full to completely full of debris (see Photo 13). The debris does not appear

to be affecting the overall movement of the joints at this time. The joint armor at Abutment 1 (Rear Abutment), Piers 2, 7, 10, 13-16, and Abutment 18 (Forward Abutment) have areas of surface corrosion that vary from initiation to fully developed. Majority of the surface corrosion is located in the shoulder area (see Photo 14), but at Piers 2, Piers 13-15, and Abutment 18 (Forward Abutment), the surface corrosion is more abundant across the entire length of the joint armor (see Photo 15). Minor popouts and edge spalls are present along the entire length of all the joints and there are isolated tears in the seal material.



Photo 13 – Debris accumulation in the deck joint (Pier 4 shown, looking south).



Photo 14 – Surface corrosion to the deck joint armour in the shoulder (Pier 16 shown, looking east).

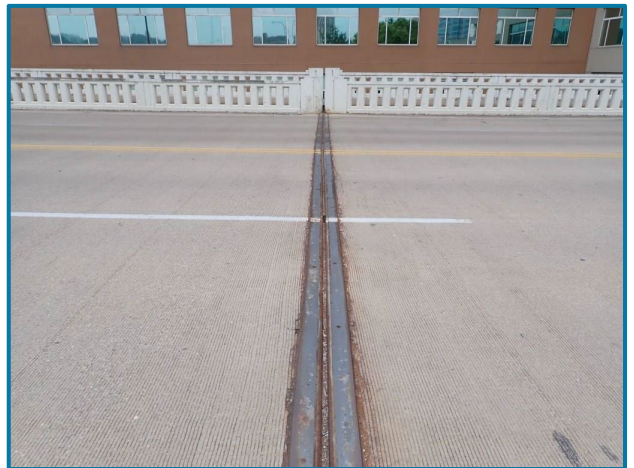


Photo 15 – Surface corrosion to the full length of the deck joint armor (Pier 2 shown, looking south).

At Pier 3, the expansion joint has a 1/2" vertical offset (see Photo 16). The horizontal measurements of the joint openings were taken at the exterior edge of the white striping on the left and right sides of the bridge. The measurements compare well to past measurements at similar temperatures. See Table 3 for the current and previous two inspection cycle measurements. At both Abutment 1 (Rear Abutment) and Abutment 18 (Forward Abutment), there is a concrete header that runs along the full length of the

approach side. At Abutment 18 (Forward Abutment), the header has isolated shallow edge spalls and hairline transverse cracks, but at Abutment 1 (Rear Abutment), the spalling is larger in size and the adjacent construction joint is detaching and being pulled away (see Photo 17).



Photo 16 – 1/2" vertical offset in the deck joint (Pier 3 shown, looking south).



Photo 17 – Spalls in the joint header with damaged construction joint material (Abutment 1 shown, looking north).

LOCATION	2020 (84°F)		2022 (75°F)		2024 (89°F)	
	North Curb	South Curb	North Curb	South Curb	North Curb	South Curb
Abutment 1 (Rear Abutment)	1-1/2"	7/8"	1-1/8"	7/8"	1-1/2"	1"
Pier 2	1-1/4"	3/4"	1-1/4"	13/16"	1-1/4"	7/8"
Pier 3	1-3/4"	1-3/4"	1-7/8"	1-3/16"	1-1/2"	1-7/8"
Pier 4	1"	1-1/2"	1-7/8"	1-5/8"	1-3/4"	1-1/2"
Pier 5	1-1/2"	1-1/4"	1-3/8"	1-1/2"	1-1/4"	1-1/4"
Pier 7	2-3/4"	2-3/8"	2-5/8"	2-3/4"	2-7/8"	2-5/8"
Pier 10	1-3/4"	1-3/8"	2-3/8"	1-3/8"	2"	1-1/4"
Pier 12	1-1/2"	1"	7/8"	7/8"	5/8"	1-1/16"
Pier 13	1-3/8"	1-3/8"	1-5/8"	1-1/4"	1-1/2"	1-1/2"
Pier 14	1-1/2"	1-3/8"	1-5/8"	1-3/8"	1-5/8"	1-3/16"
Pier 15	1-1/2"	1-3/4"	1-1/2"	1-3/4"	1-5/8"	1-3/4"
Pier 16	1-1/4"	1-3/8"	1-1/4"	1-3/8"	1-3/16"	1-1/2"
Pier 17	7/8"	1-1/8"	1/2"	1-1/4"	7/8"	1"
Abutment 18 (Forward Abutment)	1-7/8"	1-3/8"	1-3/4"	1-1/2"	2"	1-7/8"

Table 3 – Bridge Joint Opening Measurements

ELEMENT 815 – DRAINAGE

The bridge deck drainage is in satisfactory condition. There are isolated locations where the deck scupper has debris build-up as a result of trash being discarded, but all appear to be draining (see Photo 18). At Pier 5, near the north column, the drain is partially clogged and has minor obstruction to the flow. The drainpipe is aimed near the edge of the drain rather than the center (see Photo 19). At Pier 11, near the south column, the slope protection is broken and undermined (see Photo 20). At Pier 12, near the north column, the slope protection is broken and has a void directly underneath the drainpipe (see Photo 21). At Pier 13, near the south column, the adjacent slope protection and approach slab are undermined (see Photo 22).



Photo 18 – Debris/Trash build-up at isolated deck scuppers (Pier 17 shown, looking north).



Photo 19 – Grate partially obstructed and drainpipe not directly aimed at grate center (Pier 5 shown, looking north).



Photo 20 – Slope protection is broken and undermined (Pier 11 shown, looking south).



Photo 21 – Broken slope protection with a void underneath drainpipe (Pier 12 shown, looking northeast).



Photo 22 – Slope protection and adjacent approach slab are undermined (Pier 13 shown, looking west).

SIDEWALK (Non-Element)

The pedestrian sidewalk is located on the south side of the bridge and runs the full length (see Photo 23). The sidewalk is in very good condition. Isolated hairline longitudinal and transverse cracks were observed throughout the sidewalk. No other deficiencies were noted.

B.C.02 – SUPERSTRUCTURE CONDITION RATING (ITEM 59)

The superstructure is in SATISFACTORY CONDITION [6-NBIS] overall with areas of painted over pitting throughout the truss, active corrosion to the gusset plates along the lower chord members, cracked tack welds, misdrilled holes and plug welds, isolated locations of PCS failure, and widespread pack rust causing distortion to the gusset plates and fill plates.

ELEMENT 107 – STEEL OPEN BEAMS/GIRDERS

The steel built-up riveted plate girders are located in the approach spans. In Spans 1 - 4 and 12 - 17, there are three girder lines (see Photo 24). The girders are in satisfactory condition. There are isolated locations of stiffeners with distortion. The distortion noted does not exceed 1/4" over 4" to 12" (see Photo 25). In Span 14, the South Girder has 1'-2" of torch cut edges on the bottom flange (see Photo 26). In Span 12, there are multiple locations where the bottom flange is distorted (see Photo 27). Each occurs over a small area (8" to 12").



Photo 23 – Pedestrian sidewalk on the south side of the bridge (looking west).



Photo 24 – Approach span girders (Span 14 shown, looking south).



Photo 25 – 1/4" distortion over 4" at the stiffener (North Girder, Span 15, looking south).



Photo 26 – 1'-2" torch cut bottom flange (Span 14 shown, looking south).

Tack welds are present at several floorbeam connection angles and at isolated diaphragm connection angles where the fill plates are attached to the girder. No cracks were found during the 2024 inspection. Throughout the approach spans, there are random locations where either rivet heads are missing or there are blind holes (see Photo 28). In Span 16, the South Girder at FB 6 has 4 plug welds in the fill plate to web connection (see Photo 29). No distress was observed in the surrounding area. The girders commonly have areas ranging from 1/16" to 1/4" of pitting near the girder ends (see Photo 30). The pitting is commonly in the end section above the bearing. There is also commonly 1/16" pack rust between the cover plates along the bottom flange of the girders (see Photo 31). In Span 13, the South Girder has a 2" diameter corrosion hole in the web behind the bearing.



Photo 27 – Bent bottom flange (Span 12 shown, looking southeast).



Photo 28 – Blind hole and missing rivet (Span 3 shown, looking east).

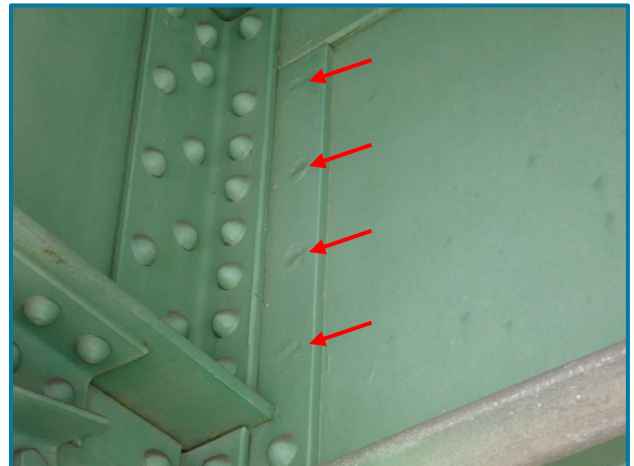


Photo 29 – South Girder near FB 6 has 4 plug welds (Span 16 shown, looking southeast).



Photo 30 – 1/4" pitting at the Center Girder end (Span 14 shown, looking southwest).



Photo 31 – 1/16" pack rust between the bottom flange cover plates (Span 16 shown, looking northwest).

ELEMENT 120 – STEEL TRUSS

The steel truss is in satisfactory condition overall. The truss is located in Spans 5 through 11 and consists of three truss lines (see Photo 32). The following sections (lower chord, diagonals, verticals, and upper chord) describe the deficiency findings for the truss components that contribute to the overall condition rating.

Lower Chord

The lower chord is in satisfactory condition. Throughout the truss length, the lower chord has various levels of pack rust between the web and flange components and internal stiffeners. The pack rust is commonly located on both sides and varies from 1/16” to 1” thickness (see Photo 33). The areas of thicker pack rust have caused the web plate to warp giving it a wavelike appearance (see Photo 34).



Photo 32 – Steel truss has three truss lines (Span 6 shown, looking east).

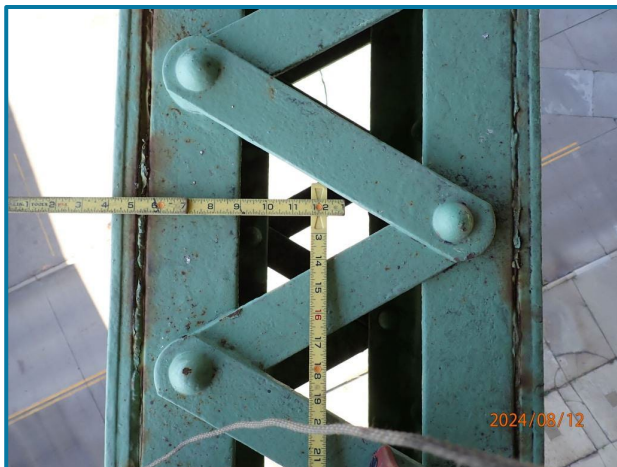


Photo 33 – 1/2” pack rust between the web and flange components (L6L7 of the South Truss, Span 10).



Photo 34 – Pack rust causing warping of the web plate (L28L29 of the Center Truss, Span 8, looking east).

At locations where there are internal stiffeners, typically near the bearings, the pack rust measures up to 1-1/2” wide (see Photo 35). Other areas that are being affected by pack rust include at fill plates where the lower chord connects to the vertical (panel points) and at the batten plates. At isolated locations, the pack rust is prying the plate away from the connected member (see Photo 36). Inside the panel points, bird debris is common. Near L40 of the North Truss, Span 9, a 4 SF area of paint has peeled off exposing the primer below. Isolated locations inside the panel points have the paint peeled up exposing bare metal with surface corrosion present (see Photo 37).



Photo 35 – Pack rust up to 1-1/2” wide at the internal stiffeners (L43L44 of the North Truss, Span 9).



Photo 36 – Pack rust prying up the lower chord batten plate (L5L6 of the South Truss, Span 7).



Photo 37 – Peeled paint with exposed bare metal and surface corrosion (L38 of the Center Truss, Span 9).

The lower chord components typically have areas of section loss ranging from 1/16” to 3/16” depth with isolated areas that have corrosion holes. The areas tend to be focused mainly around the panel points and typically are located on the batten plate, top flange ends, or web plates adjacent to the gusset plate (see Photos 38-39).

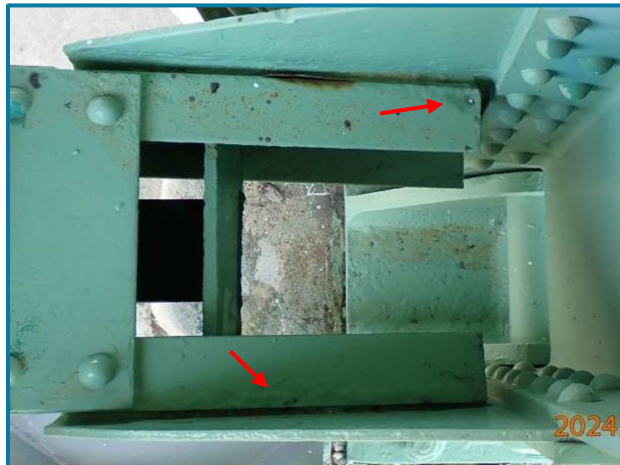


Photo 38 – 3/16” deep section loss to the top flange (L19L20 of the South Truss, Span 6).



Photo 39 – 3/16” deep section loss to the lower chord adjacent to the gusset plate (L0L1 of the Center Truss, Span 7).

Rivet head loss up to 50% is noted at isolated panel points within the lower chord ([see Photo 40](#)). Corrosion holes are noted in several batten plates near the truss bearings ([see Photo 41](#)).



Photo 40 – Up to 50% section loss to the rivet heads inside the lower chord (L0L1 of the Center Truss, Span 7).

Throughout the length of the truss, there are various locations of blind holes and missing fasteners. The blind holes are commonly located in the lower chord top flange near the panel point where a batten plate or lacing bar is installed or in the lower chord web adjacent to a bearing, where previous jacking plates were installed or are still installed ([see Photo 42](#)). Missing rivets are noted at the batten plates at the following locations:

- North Truss: L0 bottom (Span 5), L0 top (Span 5), L20 top (Span 11)
- Center Truss: L1 bottom (Span 5), L20 bottom (Span 11), L20 top (Span 11)
- South Truss: L0 top (Span 5), L20 top (Span 11)

Three locations of rivet heads, inside the lower chord, show deformation due to clearance with the interior gusset plate ([see Photo 43](#)). The rivet heads were not properly shaped as a result, but they are currently still functioning. The locations where this occurs are as follows:

- Center Truss: L28 (Span 8)
- South Truss: L32 (Span 9), L40 (Span 9)



Photo 41 – 10” H x 6” W corrosion hole in the lower batten plate at the bearing (L0 of the North Truss, Span 5).



Photo 42 – Blind hole in the lower chord top flange near (L27L28 of the Center Truss, Span 8).

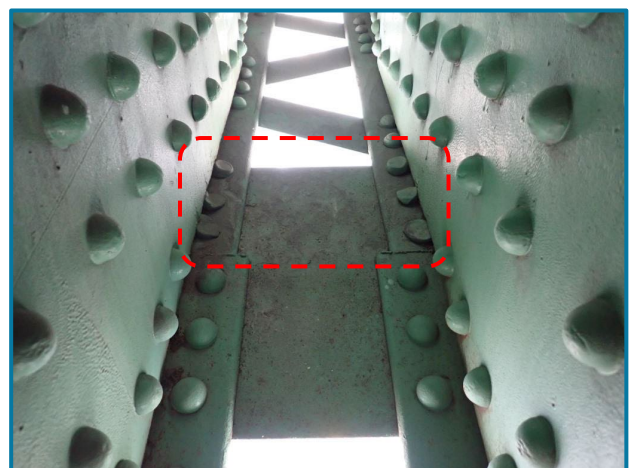


Photo 43 – Deformation of the rivet heads inside the lower chord (L32 of the South Truss, Span 9).

Upper Chord

The upper chord is in satisfactory condition. Pack rust is located at isolated locations. U42U43 bottom batten plate has 3/4" pack rust between the plate and the upper chord bottom flange (see Photo 44). The top batten plates or splice plates also have isolated locations of pack rust underneath averaging 1/2". There are isolated locations of pack rust distorting the fill plates (see Photo 45).



Photo 44 – 3/4" pack rust at the bottom batten plate (U42U43 of the North Truss, Span 9).



Photo 45 – Pack rust at the top splice plate and distortion at the fill plate (U12U13 of the Center Truss, Span 6).

Painted over and active section loss is present throughout the upper chord. Section loss on the upper chord is most commonly noted on the bottom flanges at the ends of the members and on the web plates under the floorbeam connections. The bottom flanges exhibit corrosion holes, some with active corrosion, and painted over pitting up to 1/16" deep (see Photo 46). Under the floorbeam connections, painted over pitting up to 1/8" deep is noted (see Photo 47).



Photo 46 – Corrosion holes, pitting, and active corrosion to the bottom flanges (U0 of the Center Truss, Span 10).



Photo 47 – 6" L x 2" H x 1/8" D pitting underneath the floorbeam connection (U35 of the Center Truss, Span 9).

There is an isolated location of section loss to the fill plate at U9U10 of the Center Truss in Span 6. There is 100% section loss over an 8" L x 2" W area at the end of the plate (see Photo 48). The exposed top flange has initial pitting developing and the remaining end of the fill plate is warped.

There are isolated misdrilled holes in the upper chord member. Two misdrilled holes are noted in the splice plate at U9U10 of the Center Truss in Span 10 (see Photo 49). One misdrilled hole is noted at the floorbeam connection to U1 of the Center Truss in Span 7. At U25 of the North Truss in Span 8, there are four plug welds on each side of the upper chord (see Photo 50). No issues were seen during the inspection.



Photo 48 – 8" L x 2" W area of 100% section loss to the fill plate (U9U10 of the Center Truss, Span 6).

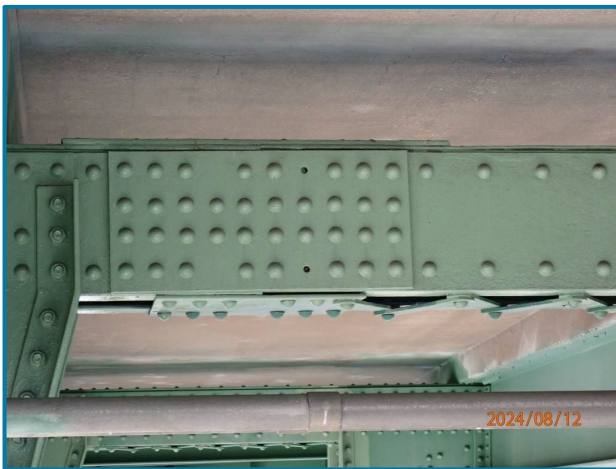


Photo 49 – Misdrilled holes in the splice plate (U9U10 of the Center Truss, Span 10).



Photo 50 – Four plug welds on each side of the upper chord member (U25 of the North Truss, Span 8).

Verticals

The verticals are in satisfactory condition. At the lower connection to the gusset plate, there is typically pack rust between the vertical and the fill plate (see Photo 51). The pack rust depth varies from 1/8" up to 9/16", causing distortion of the fill plate. The verticals also have isolated locations of painted over section loss. U6L6 of the South Truss in Span 10 has 1/8" painted over pitting over the length of the north flange. There is commonly section loss across the width of the flange adjacent to the lower gusset plate measuring 1/8" (see Photo 52).



Photo 51 – 9/16” pack rust at the fill plate causing distortion to the plate (U13L13 of the South Truss, Span 7).



Photo 52 – 1/8” section loss across the flange width at the lower gusset plate (U44L44 of the Center Truss, Span 9).

Several of the welds attaching items to the vertical are of poor quality. Throughout the truss, there are locations where the remains of a previously welded attachment are still on the vertical (see Photo 53). The attachment was torch cut off and the partial pieces of steel remain welded. Many verticals have errant welds attached to the flange and locations of gouging (see Photo 54).



Photo 53 – Remains of a welded attachment (U0L0 of the South Truss, Span 10).



Photo 54 – Errant weld attached to the vertical flange (U0L0 of the South Truss, Span 7).

At U40 of the North Truss, Span 9, there are gaps at three bolted connections. The bolts are not loose to the touch, but they have not been properly tightened (see Photo 55). At U11 of the Center Truss, Span 7, there are three plug welds near the top end of the vertical. No deficiencies are noted in this area. Two rivet heads have been torch cut off at U20 of the North Truss, Span 11 (see Photo 56).

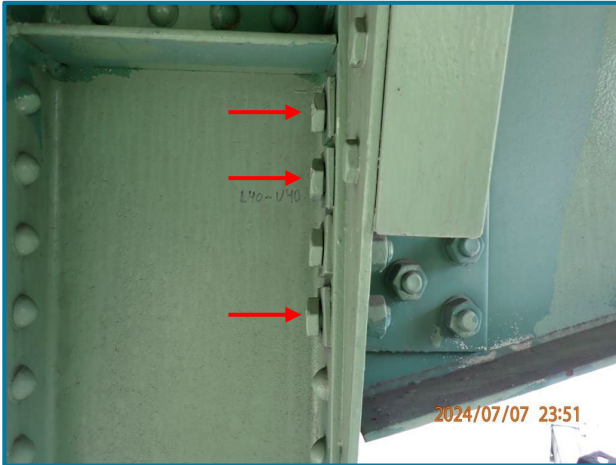


Photo 55 – Three bolts not properly snug (U40 of the North Truss, Span 9).



Photo 56 – Rivet head has been torch cut off (U20 of the North Truss, Span 11).

Ten cracks are currently noted at the verticals and are summarized in Table 4 below. One of the cracks is in the fill plate between the gusset plate and the vertical, two occur at the catwalk attachment, and the remaining are at the fill plate weld to the vertical. No cracks changed in size from the previous inspection.

VERTICAL	TRUSS LINE	SPAN	CRACK LOCATION	CRACK SIZE	STATUS	PHOTO
U13L13	Center	6	Fill Plate Weld	1" 1"	New Broken (No change)	57
U8L8	Center	7	Fill Plate Weld	1"	New	58
U25L25	Center	8	Fill Plate Weld	1/2" west 1" east	No change No change	
U36L36	Center	9	Catwalk Support	1" east	No change	
U36L36	Center	9	Catwalk Support	3/4" west	No change	
U36L36	Center	9	Fill Plate Weld	1" west 3/4" east	No change No change	
U2L2	North	10	Fill Plate	1"	No change	

Table 4 – Crack Summary Table (Verticals)

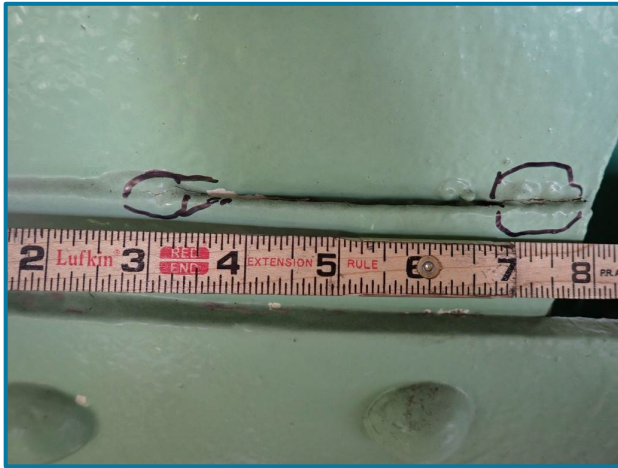


Photo 57 – 1” crack and broken weld at the fill plate welds to the vertical (U13L13 of the Center Truss, Span 6).

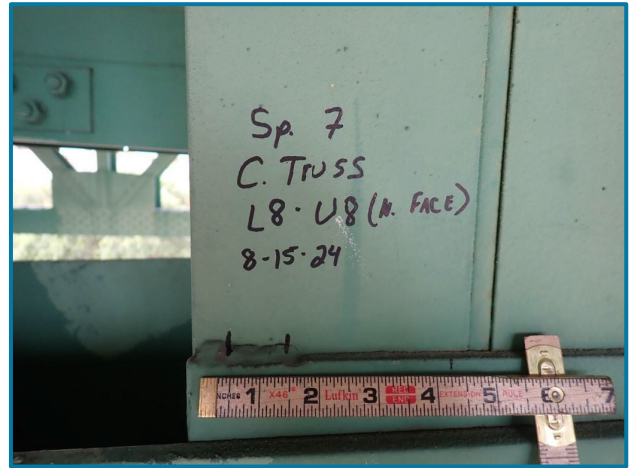


Photo 58 – 1” crack in the fill plate weld to the vertical (U8L8 of the Center Truss, Span 7).

Diagonals

The diagonals are in satisfactory condition. There is an isolated location at U16L17 that has 1/8” pack rust between the fill plate and the diagonal (**see Photo 59**). At L33 of U32L33, Span 9 of the North Truss, there is surface corrosion with an area of pack rust forming (**see Photo 60**).



Photo 59 – 1/8” pack rust at the fill plate causing distortion to the plate (U16L17 of the North Truss, Span 8).



Photo 60 – Surface corrosion at the diagonal end with pack rust forming (U32L33 of the North Truss, Span 9).

A plug weld exists at U3L4, Center Truss, Span 5. There are misdrilled holes at the following locations:

- L5U6, Center Truss, Span 5
- L39U40, North Truss, Span 9
- U2L3, North Truss, Span 10
- L16U17, North Truss, Span 11
- U14L15, Center Truss, Span 11

At U18 of L17U18, North Truss, Span 6, there is a 1-1/2" long cracked tack weld between the diagonal and the north gusset plate (see Photo 61).

ELEMENT 152 – STEEL FLOORBEAM

The steel floorbeams are in satisfactory condition overall. There are isolated locations of pack rust ranging from 3/16" to 3/8" at the intersection with the girders and at the floorbeam cantilever connection to the girder top flange. The protective coating system is faded. There are isolated locations of surface corrosion with the largest being a 2' L x 3" W area on the bottom flange of Floorbeam 24 (see Photo 62).

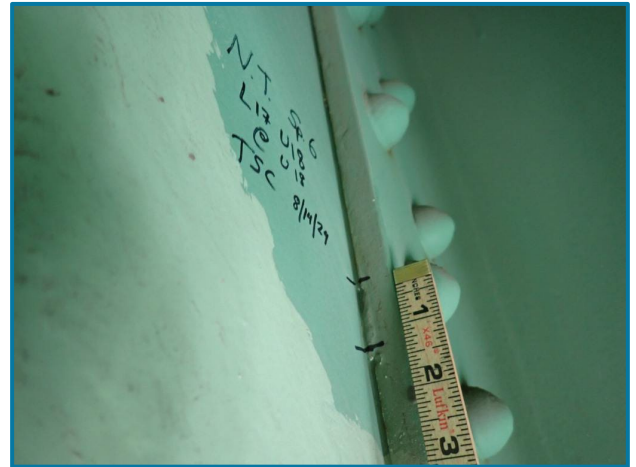


Photo 61 – 1-1/2" long cracked tack weld (L17U18 of the North Truss, Span 6).



Photo 62 – 2' L x 3" W area of light surface corrosion to the bottom flange (Span 6 over Pier 7).

The floorbeams have some locations of painted over pitting. The pitting is typically across the length of the bottom flange and up to 4" H on the lower portion of the web (see Photo 63). In this area, the bottom flange has areas of reduced flange thickness. The floorbeam on the south side of U39, Center Truss, Span 9, has a 3/8" vertical overcut (see Photo 64). No additional issues are noted at this location. There is a misdrilled hole at the floorbeam connection to the gusset plate at U15, South Truss, Span 6. Over Pier 10, North Truss, Span 10, there is a blind hole in the top floorbeam flange.

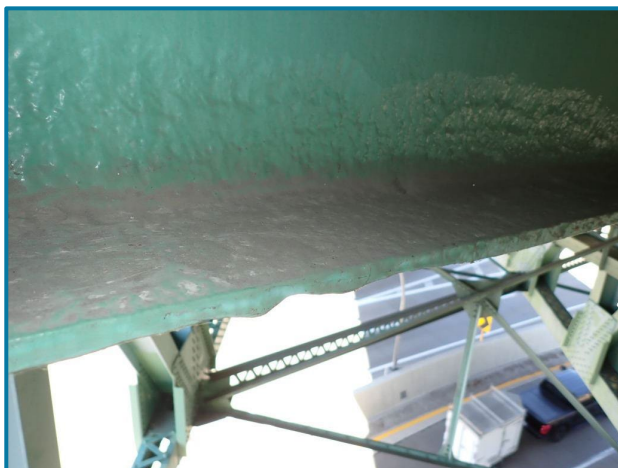


Photo 63 – 1/8" section loss across the bottom flange and lower web (over Pier 10 looking west).



Photo 64 – 3/8" overcut in the floorbeam cope (south side of U39, Center Truss, Span 9).

ELEMENT 162 – STEEL GUSSET PLATE

The steel gusset plates are in satisfactory condition. There has been some rehabilitation work done to the gusset plates due to the bowing/deformation (see Photo 65). Stiffening angles have been added to several gusset plates. At U33 of the South Truss in Span 9, there is an isolated location of deformation in the gusset plate in an area where pack rust is not contributing, but a stiffening angle is in place (see Photo 66). Pack rust up to 1/2" is typical throughout the truss between the gusset plates and truss members (see Photo 67). In Span 5 of the South Truss at L0, there is up to 1" pack rust between the lower lateral bracing fill plate and the inboard gusset plate (see Photo 68).



Photo 65 – Rehabilitation work to stiffen the gusset plates that were bowed (looking west).

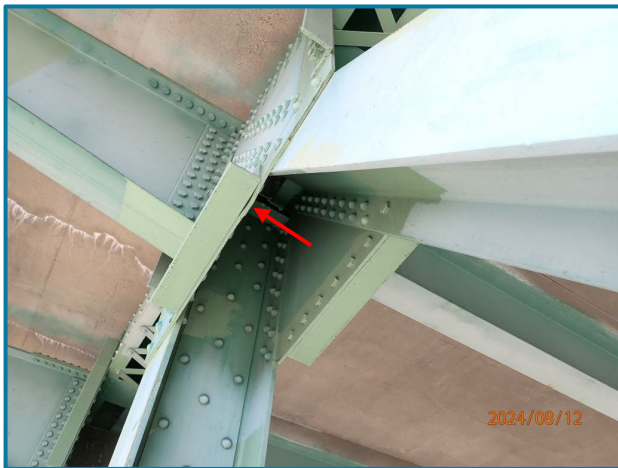


Photo 66 – Distortion to the gusset plate at the stiffening angle (U33, South Truss, Span 9, looking up).



Photo 67 – Typical pack rust at the gusset plate causing distortion (L33, North Truss, Span 9).

The protective coating system of the gusset plates is in good condition. There are isolated locations of light surface corrosion, but most have some level of paint covering them. Some of the paint has faded and some gusset plates have been spot painted following the rehabilitation. At L44 of the Center Truss in Span 9, the paint has failed along the interface with the lower chord and the exposed steel has surface corrosion (see Photo 69). There are misdrilled holes at the gusset plates in the following locations:

- (1) L18, Center Truss, Span 6
- (1) L42, South Truss, Span 9
- (2) L8, South Truss, Span 10
- (1) L10, North Truss, Span 10



Photo 68 – 1" pack rust between the lower lateral bracing fill plate and the gusset plate (L0, South Truss, Span 5).

At L28, Center Truss, Span 8, a rivet is being deformed at the gusset plate due to a conflict with the sway bracing connection angle (see Photo 70). Plug welds are located at the following locations with no issues noted:

- (12) U12, North Truss, Span 6
- (4) U8, North Truss, Span 10
- (12) U13, North Truss, Span 11



Photo 69 – Failed protective coating system with surface corrosion (L44, Center Truss, Span 9).



Photo 70 – Rivet deformation due to conflict with the sway bracing connection (L28, Center Truss, Span 8).

The gusset plates have widespread section loss. The section loss typically comes in one of two forms. The most abundant being painted over pitting ranging from 1/16” to 3/16” depth at various locations of the gusset plate (see Photos 71-73). This section loss is typically found over the entire gusset plate as scattered shallower pitting or it is focused in an area adjacent to another member where it is typically deeper. The second form is section loss along the interface with the lower chord where the corrosion is active (see Photo 74). This area typically holds debris or water which will exacerbate corrosion.



Photo 71 – 2'-4" L x 6" H x 3/16" D painted over pitting adjacent to the bearing (L20, South Truss, Span 6).



Photo 72 – 3/16" painted over pitting to multiple locations on the gusset plate (L0, South Truss, Span 7).



Photo 73 – 3/16” painted over pitting adjacent to the lower chord (L1, North Truss, Span 10).

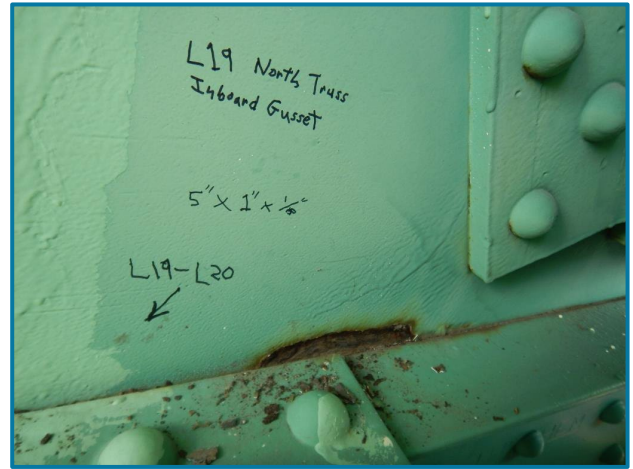


Photo 74 – 1/8” pitting with active corrosion (L19, North Truss, Span 6).

B.C.07 – BRIDGE BEARING CONDITION RATINGS

The bridge bearings are in GOOD CONDITION [7-SNBI] overall due to painted over pitting, some locations of anchor nut section loss, and light surface corrosion.



Photo 75 – 3/16” pack rust between the lower chord and the bearing (North Truss, Span 4, looking southwest).

ELEMENT 310 – ELASTOMERIC BEARING

The elastomeric bearing devices are in good condition overall with an isolated location of pack rust between the lower chord member and the sole plate occurring in Span 4, North Girder, at Floorbeam 0 (see Photo 75). The bearing at this location is also missing a bolt attaching the sole plate to the girder on the east side (see Photo 76). There is surface corrosion on the bearings at isolated locations.



Photo 76 – Missing bolt attaching the sole plate to the girder (North Girder, Floorbeam 0, Span 4, looking west).

ELEMENT 313 – FIXED BEARING

The fixed bearing devices are in satisfactory condition overall with some locations having 1/8” painted over pitting and section loss to the anchor nuts. The pin nut at Pier 12, Center Girder, Span 12, has a gouge in the side and the remaining surface has 1/16” to 1/8” pitting (see Photo 77). The bearings commonly have areas of surface corrosion with the worst areas being at the base. At Pier 4, Span 3, North Girder, the bearing to the 471 S ramp has one loose anchor nut and two with section loss up to 30% (see Photo 78). The masonry plate also has light laminar corrosion. The anchor nuts at the Center Girder of Pier 4 have up to 40% section loss (see Photo 79). Painted over pitting is common at the anchor nuts in the approach spans.



Photo 77 – Gouge in the pin nut with painted over pitting (Pier 12, Center Girder, Span 12, looking southwest).



Photo 78 – 1 loose anchor nut and 2 with 30% section loss (Pier 4, North Girder, Span 3, looking east).



Photo 79 – Up to 40% section loss to the anchor nuts (Pier 4, Center Girder, Span 3, looking southeast).

ELEMENT 314 – POT BEARING

The pot bearing devices are in good condition overall with areas of surface corrosion or staining and isolated locations of painted over pitting (see Photo 80). At L44, Center Truss, Span 9, there is pack rust developing between the bearing and truss member near the pin.



Photo 80 – Surface corrosion and rust staining to the bearing (L14, North Truss, Pier 8, looking southeast).

B.C.14 – NSTM INSPECTION CONDITION

The NSTMs are in SATISFACTORY CONDITION [6-NBIS] overall. In 2017, repairs were made to strengthen the bowed gusset plates and during the 2024 inspection, the bowing previously noted was no longer seen. There are still locations of pack rust causing distortion to localized areas. These areas need to be monitored to determine when additional repairs are required. The remaining NSTMs are still in satisfactory condition, as mentioned above.

Fatigue

There are no Category E or E' details, but there are problematic details. There are tack welds on the gusset plates, fill plates, and splice plates. Some of these are broken or cracked, but none have propagated into the base metal. Many of the cracked locations are due to pack rust occurring between the plates.

NON-INVENTORIED SUPERSTRUCTURE ITEMS

Alignment

The alignment is in good condition. No deficiencies were observed where there was any horizontal or vertical misalignment.

Crossframes

The crossframes are in good condition with no deficiencies observed.

Sway Bracing

The sway bracing is in satisfactory condition. The batten plates commonly have painted over pitting up to 3/16" (**see Photo 81**). At the ends of the bottom strut, there are isolated locations where there is pack rust between the flange angles and either the batten plate or the lower gusset plate (**see Photo 82**).



Photo 81 – Painted over pitting up to 3/16" (L0, Center Truss, Span 5, looking northeast).



Photo 82 – 3/4" pack rust at the bottom strut flange angle (L20, North Truss, Span 6, looking northwest).

There are two sheared off rivet heads at the sway bracing connection at L0 of the Center Truss, Span 10 (see Photo 83).

Lower Lateral Bracing

The lower lateral bracing is in satisfactory condition. The batten plates at the ends of the members typically have painted over pitting up to 3/16", similar to the sway bracing bottom struts. In Span 8, 6' south of L18 near the Center Truss, the lateral bracing member has some distortion, possibly due to impact damage (see Photo 84).

There is also impact damage to the top flange of the lateral bracing near L8, Center Truss, Span 7. At L20, North Truss, Span 11, the connection of the lateral bracing to the south gusset plate has up to 1" pack rust (see Photo 85). The paint has failed on lateral bracing member near the Floorbeam 0, South Girder, Span 14 (see Photo 86).



Photo 83 – 2 sheared off rivet heads at the sway bracing bottom strut (L0, Center Truss, Span 10, looking west).



Photo 84 – Impact damage to the lower lateral bracing (6' south of L18, Center Truss, Span 8, looking north).



Photo 85 – Up to 1" pack rust at the connection to the truss (L20, North Truss, Span 11, looking northwest).



Photo 86 – Paint failure at the lower lateral bracing (Floorbeam 0, South Girder, Span 14, looking west).

B.C.03 – SUBSTRUCTURE CONDITION RATING (ITEM 60)

The substructure is in SATISFACTORY CONDITION [6-NBIS] overall with isolated locations with cracking, spalls with exposed and corroded rebar, and delaminations.

ELEMENT 205 – REINFORCED CONCRETE COLUMN

The reinforced concrete columns are in satisfactory condition. The columns typically have various locations of large spalls with exposed rebar on the side faces and areas of delaminations. There are also several locations of hairline cracking or map cracking, some with rust staining. There are isolated locations on the top of the column with spalls that have exposed rebar. See Table 5 for notable deficiencies for this element with supporting photos.

PIER	COLUMN	COLUMN FACE	DEFECT	SIZE	PHOTO
Pier 2	Center	SE Corner	Spall with Exposed Rebar	1' H x 6" W x 1" D	
Pier 3	Center	East	Spall with Exposed Rebar	2' H x 1' W x 2" D	
	Center	West	Spall with Delamination	2' L x 1' H x 2" D	
	South	East	Spall with Exposed Rebar	3' H x 1' W x 2" D	
Pier 5	Center	North	Spall with Exposed Rebar	4' L x 8" W x 6" D	87
Pier 7	South	SE Corner	Spall with Delamination	2' L x 5' H delamination with 1 SF x 1" spall	88
	North	South	Spall with Exposed Rebar	1' L x 4' H x 1-1/2" D	89
	North	West	Spall with Exposed Rebar	2' L x 3' H x 1-1/2" D	89
Pier 8	South	North	Spall with Exposed Rebar	1'-9" L x 8" H x 2" D	90
Pier 10	North	SW Corner	Spall with Exposed Rebar	1'-6" L x 3' H x 3" D	
Pier 11	South	NE Corner	Spall with Exposed Rebar	1'-6" L x 2'-1" H x 1" D	
Pier 12	North	East	HL Cracking with Rust Staining	Full Face	91
Pier 13	Center	SE Corner	Spall with Exposed Rebar	2' L x 2' H x 2" D	92
Pier 17	South	West	Spall with Exposed Rebar	2' L x 3' H x 1" D	

Table 5 – Reinforced Concrete Column (Notable Deficiencies)



Photo 87 – 4' L x 8" W x 6" D spall with exposed rebar (Pier 5, Center Column, North Face, looking southwest).

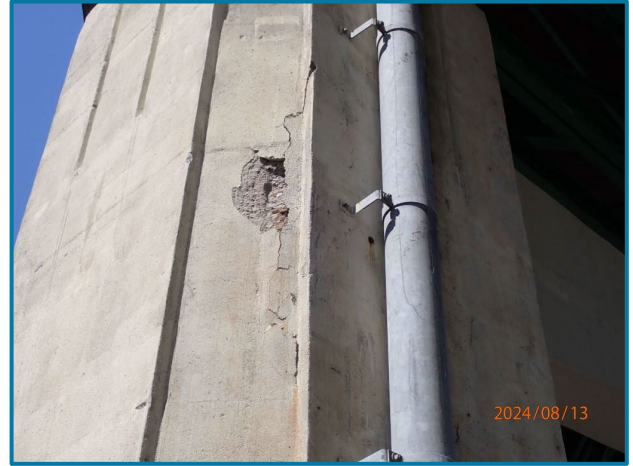


Photo 88 – 2' L x 5' H delamination with 1 SF x 1" spall (Pier 7, South Column, SE Corner, looking northwest).



Photo 89 – Two spalls with exposed rebar (Pier 7, North Column, South and West Faces, looking northeast).



Photo 90 – 1'-9" L x 8" H x 2" D spall with exposed rebar (Pier 8, South Column, North Face, looking south).



Photo 91 – Hairline cracking with rust staining (Pier 12, North Column, East Face, looking west).



Photo 92 – 2' L x 2' H x 2" D spall with exposed rebar (Pier 13, Center Column, SE Corner, looking northwest).

ELEMENT 215 – REINFORCED CONCRETE ABUTMENT

The reinforced concrete abutments are in satisfactory condition. The abutment walls have isolated spalls with exposed rebar and cracking (some with rust staining and/or efflorescence). See Table 6 for notable deficiencies for Abutment 1 (Rear Abutment) and Abutment 18 (Forward Abutment) with supporting photos.

ABUTMENT	DEFECT	SIZE	PHOTO
1	Cracking with rust staining and/or efflorescence	Hairline	93
18	Spall with exposed rebar	3' L x 2' H x 1" D	94
18	Map cracking	5' L x 2' H	95
18	Sealed crack with rust staining and efflorescence	18' L	96

Table 6 – Reinforced Concrete Abutment (Notable Deficiencies)



Photo 93 – Hairline cracking with rust staining (Abutment 1, East Face, looking west).



Photo 94 – 3' L x 2' H x 1" D spall with exposed rebar (Abutment 18, West Face, looking east).



Photo 95 – Hairline map cracking over an area of 5' L x 2' H (Abutment 18, West Face, looking east).



Photo 96 – 18' L horizontal sealed crack with rust staining and efflorescence (Abutment 18, West Face, looking east).

ELEMENT 234 – REINFORCED CONCRETE PIER CAP

The reinforced concrete pier caps are in satisfactory condition. The pier caps have isolated spalls with exposed rebar, cracking, areas of rust staining, and failed repair patches. See Table 7 for notable deficiencies with supporting photos.

PIER	PIER FACE	DEFECT	SIZE	PHOTO
8	Top	Spall with Exposed Rebar	(2) 1'-4" diameter x 1-1/2" D	97
10	West/Bottom Top	Repair Patch Cracking Full Length Crack	95 SF 1/16" x Full Length	
12	West/Bottom	Wide Crack with Rust Staining	4' L	98
13	East/Bottom	Spall with Exposed Rebar; Crack Spall with Exposed Rebar Spall with Exposed Rebar	1' L x 1'-6" H x 1" D; 6' L x 1/16" 1' L x 3' H x 1" D 1' L x 1' H x 1" D	99 99
15	East	Cracked Patch	10' L and extends 1' underneath	100
16	East West	Spall with Exposed Rebar with SL Spall with Exposed Rebar	3'- 8" L x 1'-1" H x 3" D 1'-8" diameter x 2" D	101 102
17	West	Wide Crack	6' L x 1/16"	

Table 7 – Reinforced Concrete Pier Cap (Notable Deficiencies)



Photo 97 – (2) 1'-4" diameter x 1-1/2" D spall with exposed rebar (Pier 8, Top Face, looking down and north).



Photo 98 – 4' L wide crack with rust staining (Pier 12, West/Bottom Face, looking east).



Photo 99 – 1' L x 3' H x 1" D and 1' L x 1' H x 1" D spalls with exposed rebar (Pier 13, East Face, looking west).



Photo 100 – 10' L section of cracked repair patch that extends 1' underneath (Pier 15, East Face, looking west).



Photo 101 – 3'-8" L x 1'-1" H x 3" D spall with exposed rebar (Pier 16, East Face, looking west).



Photo 102 – 1'-8" diameter x 2" D spall with exposed rebar (Pier 16, West Face, looking east).

NON-INVENTORIED SUBSTRUCTURE ITEMS

Wingwalls

The wingwalls are in good condition. There is hairline horizontal cracking in the wingwall at the northwest corner.

APPROACH SUMMARY

The approaches are in GOOD CONDITION [7-NBIS] overall with hairline cracking and wear in the approach slabs.

ELEMENT 321 – REINFORCED CONCRETE APPROACH SLABS

The reinforced concrete approach slabs are in good condition. No significant deficiencies are noted. There is hairline cracking and some wear to the tines in the wheel lines (see Photo 103).

NON-INVENTORIED APPROACH ITEMS

Approach Pavement

The approach pavement is in satisfactory condition. Majority of the deficiencies noted are located at the east approach pavement. There is abundant wide map cracking near the East Approach Slab and wide random cracking to the remainder of the pavement at the east end

(see Photo 104). The approach pavement at the west end exhibits less deterioration (see Photo 105).



Photo 103 – Wear in the wheel lines of the approach slab (West Approach Slab, looking north).

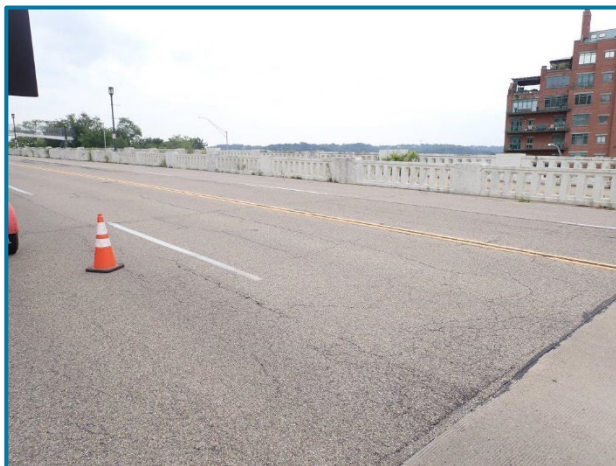


Photo 104 – Wide map and random cracking in the approach pavement (East Approach, looking southeast).

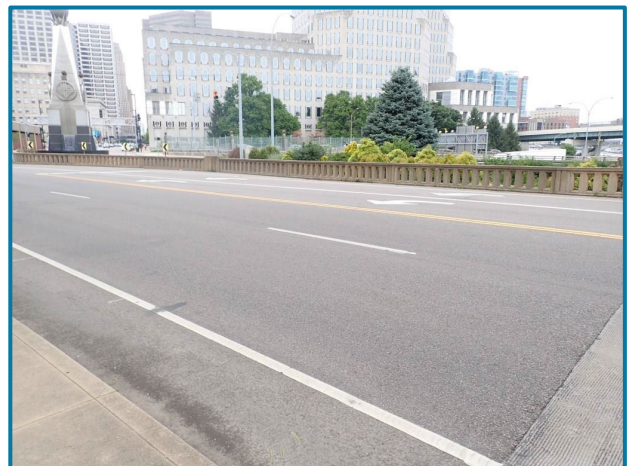


Photo 105 – Approach pavement at the west end of the bridge (West Approach, looking northwest).

Reinforced Concrete Approach Barrier

The approach reinforced concrete barrier is in good condition. The protective coating system is chipping and there are isolated hairline cracks.

Embankment

The embankment is in good condition. No significant deficiencies are noted.

Sign Supports

The sign supports are in good condition. No significant deficiencies are noted.

RECOMMENDATIONS

The four categories of recommendations for the HAM-50-2180N Bridge are as follows:

- **Priority Work:**
(Within 1 Year Period) Work which should be performed as soon as possible to address deficiencies which affect the capacity of the structure or public safety.
- **Rehabilitation/Evaluation:**
(Within 5 Year Period) Recommendations for large-scale deficiencies which are extensive in nature and require engineering analysis.
- **Maintenance:**
(As Scheduled) Recommendations that are minor in nature and can be easily repaired.
- **Monitoring:**
(As Recommended) Regular field observation of defects which are not currently in need of repair but will require corrective action if deterioration continues.

Priority Work: None.

Rehabilitation/Evaluation:

Deck

1. Repair the expansion joint header at Abutment 1 (Rear Abutment).

Approach

2. Resurface the East Approach pavement.

Slope Protection

3. Repair the broken and undermined slope protection.

Superstructure

4. Replace missing fasteners throughout the bridge.
5. Spot paint areas of the bridge with heavier corrosion or failed PCS.

Substructure

6. Repair the spalls with exposed rebar and areas of cracking with delaminations.

Maintenance:

Deck

7. Clean debris from the bridge deck and scuppers.
8. Repair the spalls in the bridge railing.
9. Remove debris from the strip seals and add a protective coating to the joint armor.
10. Replace the crash attenuator at the Sixth St. Downtown exit ramp.

Monitoring:

Bearings

11. Monitor the corrosion and section loss.

Superstructure

12. Monitor the cracked tack welds and plug welds.
13. Monitor the section loss to all members.
14. Monitor the pack rust and how it affects the elements.
15. Monitor the overcuts in the floorbeam copes.
16. Monitor the stiffening repairs at the gusset plates.

Substructure

17. Monitor the cracking.

APPENDIX A

ASSETWISE REPORT

Inspector: Griessmann,Ann

Structure Number: 3103390

Inspection Date: 08/16/2024

Facility Carried: COLUMBIA PARKWAY

ODOT District: District 08

HAM-00050-2180N_(3103390)

Date Built: 07/01/1938

Major Maint: 01 - State Highway Agency

Facility Carried: COLUMBIA PARKWAY

Traffic On: 1 - Highway

Rehab Date: 07/01/1997

Routine Maint: 04 - City or Municipal Highway Agency

Feature Inters: IR471,RAMP,EGG,CUL

Traffic Under: 1 - Highway, with or w/out pedestrian

Insp. Resp A: 01 - State Highway Agency

FIPS Code: 15000 - CINCINNATI (HAM county)

Location: DISTRICT 08

N OF I471 & US50 INT

Insp Resp B:

Inspector

Griessmann,Ann

Inspection Date 08/16/2024

Reviewer Hammerschmidt,Steve
n

Inspector Comments - Deck and Approach

Deck

Floor/Deck

Isolated haunch spalls and some hairline longitudinal and transverse cracks with light buildup of efflorescence. The longitudinal cracks are located between the floorbeams. There are isolated areas of hairline map cracking adjacent to the haunches. There are also isolated spalls in the floorbeam haunches measuring up to 1 ft in diameter. Majority of the transverse cracks are located in the deck overhangs and have light to moderate build-up of efflorescence

Bridge Wearing Surface

Some minor longitudinal and transverse cracking throughout. There are isolated locations of moderate to wide cracks near drainage scuppers and expansion joints. At the drainage scuppers, the cracks are propagating from the corners of the scupper grate. For the expansion joints, the cracking is typically near the areas where the joint armor bends.

Isolated hairline longitudinal and transverse cracks were observed throughout the sidewalk. No other deficiencies were noted.

Strip Seal Expansion Joint

The strip seal expansion joints are located at Abutment 1 (Rear Abutment), Piers 2 through 5, Pier 7, Pier 10, Piers 12 through 17, and Abutment 18 (Forward Abutment). All joint openings have some level of debris impaction ranging from partially full to completely full of debris. The debris does not appear to be affecting the overall movement of the joints at this time. The joint armor at Abutment 1 (Rear Abutment), Piers 2, 7, 10, 13-16, and Abutment 18 (Forward Abutment) have areas of surface corrosion that vary from initiation to fully developed. Majority of the surface corrosion is located in the shoulder area, but at Piers 2, Piers 13-15, and Abutment 18 (Forward Abutment), the surface corrosion is more abundant across the entire length of the joint armor. Minor popouts and edge spalls are present along the entire length of all the joints and there are isolated tears in the seal material. At Pier 3, the expansion joint has a 1/2" vertical offset. At Abutment 18 (Forward Abutment), the header has isolated shallow edge spalls and hairline transverse cracks, but at Abutment 1 (Rear Abutment), the spalling is larger in size and the adjacent

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construction joint is detaching and being pulled away.

Reinforced Concrete Bridge Railing

Between Pier 5 and Pier 6 of the north railing, the decorative extension to the post is cracked and fully delaminated. Between Pier 6 and Pier 7 of the north railing, there is a 2' H x 1' W delamination at the stem. Throughout the length of the railing, there are several locations of various sizes of spalls up to 5" W x 1' H, some with exposed and corroded rebar. Two locations were noted as having map cracking with efflorescence on the south railing between Piers 7-8 and between Piers 17-18. The protective coating system is faded and is chipping off throughout. In the westbound lane just east of I-471, there is a crash attenuator at the exit ramp for Sixth St Downtown. The crash attenuator has been damaged and has panels hanging loose, deployed cushions, and loose cables.

Drainage

There are isolated locations where the deck scupper has debris build-up as a result of trash being discarded, but all appear to be draining. At Pier 5, near the north column, the drain is partially clogged and has minor obstruction to the flow. The drainpipe is aimed near the edge of the drain rather than the center.

Approach

Approach Wearing Surface

Majority of the deficiencies noted are located at the east approach pavement. There is abundant wide map cracking near the East Approach Slab and wide random cracking to the remainder of the pavement at the east end. The approach pavement at the west end exhibits less deterioration

Approach Slabs

No significant deficiencies are noted. There is hairline cracking and some wear to the tines in the wheel lines.

Approach Embankment

No significant deficiencies are noted.

Approach Guardrail

The protective coating system is chipping and there are isolated hairline cracks.

Signs and Sign Supports

No significant deficiencies are noted.

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Structure Number: 3103390
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Inspector Comments - General Appraisal

Superstructure

Note that "inactive" as used in this report refers to areas where rusting/corrosion (pack rust, pitting, etc.) was once actively occurring, but is currently arrested with paint.

Superstructure Alignment

No deficiencies were observed where there was any horizontal or vertical misalignment.

Steel Open Girder/Beam

There are isolated locations of stiffeners with distortion.

The distortion noted does not exceed 1/4" over 4" to 12". In Span 14, the South Girder has 1'-2" of torch cut edges on the bottom flange. In Span 12, there are multiple locations where the bottom flange is distorted. Each occurs over a small area (8" to 12"). Tack welds are present at several floorbeam connection angles and at isolated diaphragm connection angles where the fill plates are attached to the girder. Throughout the approach spans, there are random locations where either rivet heads are missing or there are blind holes. In Span 16, the South Girder at FB 6 has 4 plug welds in the fill plate to web connection. No distress was observed in the surrounding area. The girders commonly have areas ranging from 1/16" to 1/4" of pitting near the girder ends. The pitting is commonly in the end section above the bearing. There is also commonly 1/16" pack rust between the cover plates along the bottom flange of the girders. In Span 13, the South Girder has a 2" diameter corrosion hole in the web behind the bearing.

Steel Protective Coating

The bridge received spot painting in areas with active corrosion during the 2017-2018 rehabilitation. The PCS still has areas of surface corrosion, peeling paint, and areas of chalking.

Diaphragm/X-Frames

No significant deficiencies are noted on the crossframes.

Steel Truss

Lower Chord

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Throughout the truss length, the lower chord has various levels of pack rust between the web and flange components and internal stiffeners. The pack rust is commonly located on both

sides and varies from 1/16" to 1" thick. The areas of thicker pack rust have caused the web plate to warp giving it a wavelike appearance. At locations where there are internal stiffeners, typically

near the bearings, the pack rust measures up to 1-1/2" wide. Other areas that are being affected by pack rust include at fill plates where the lower chord connects to the vertical (panel points) and at the batten plates.

At isolated locations, the pack rust is prying the plate away from the connected member. Inside the panel points, bird debris is

common. Near L40 of the North Truss,

Span 9, a 4 SF area of paint has peeled off exposing the primer below. Isolated locations inside the panel points have

the paint peeled up exposing bare metal with surface corrosion present. The lower chord components typically have areas of section loss ranging from 1/16" to 3/16" depth with isolated areas that have corrosion holes.

The areas tend to be focused mainly around the panel points and typically are located on the batten plate, top flange ends, or web plates adjacent to the gusset plate. Rivet head loss up to 50% is noted at isolated panel points within the lower chord. Corrosion holes are noted in several batten

plates near the truss bearings. Throughout the length of the truss, there are various locations of blind holes and missing fasteners. The blind holes are commonly located in the lower chord top flange near the panel point where a batten plate or lacing bar is installed or in the lower chord web adjacent to a bearing, where previous jacking plates were installed or are still installed. There are missing rivets at the batten plates at several locations. Three locations of rivet heads, inside the lower chord, show deformation due to clearance with the interior gusset plate. The rivet heads were not properly shaped as a

result, but they are currently still functioning.

Upper Chord

Pack rust

is located at isolated locations. U42U43

bottom batten plate has 3/4" pack rust between the plate and the upper chord bottom flange. The

top batten plates or splice plates also have isolated locations of pack rust underneath averaging 1/2". There

are isolated locations of pack rust distorting the fill plates. Painted over and active section loss is present throughout the upper chord.

Section loss on the upper chord is most commonly noted on the bottom flanges at the ends of the members and on the web plates under the floorbeam connections. The bottom flanges exhibit

corrosion holes, some with active corrosion, and painted over pitting up to 1/16" deep. Under the floorbeam connections, painted over

pitting up to 1/8" deep is noted. There is an isolated

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location of section loss to the fill plate at U9U10 of the Center Truss in Span 6. There is 100% section loss over an 8"

L x 2" W area at the end of the plate. The exposed top flange has initial pitting developing and the remaining end of the fill plate is warped. There are isolated misdrilled holes in the upper chord member.

Two misdrilled holes are noted in the splice plate at U9U10 of the Center Truss in Span 10. One misdrilled hole is noted at the floorbeam connection to U1 of the Center Truss in Span 7.

At U25 of the North Truss in Span 8, there are four plug welds on each side of the upper chord. No issues were seen during the inspection.

Verticals

At the lower connection to the gusset plate, there is typically pack rust between the vertical and the fill plate. The pack rust thickness varies from 1/8" up to 9/16", causing distortion of the fill plate.

The verticals also have isolated locations of painted over section loss. U6L6 of the South Truss in Span 10

has 1/8" painted over pitting over the length of the north flange. There is commonly section loss across the

width of the flange adjacent to the lower gusset plate measuring 1/8". Several of the welds attaching items to the vertical are of poor quality. Throughout the truss, there are locations where the remains of a previously welded attachment are still on the vertical. The attachment was torch cut off and the partial

pieces of steel remain welded. Many verticals

have errant welds attached to the flange and locations of gouging. At U40 of the North Truss, Span 9, there are gaps at three bolted connections. The bolts are not loose to the touch, but they have not been properly tightened. At U11 of the Center Truss, Span 7, there are

three plug welds near the top end of the vertical. No deficiencies are noted in this area. Two rivet heads have been torch cut off at

U20 of the North Truss, Span 11.

Diagonals

There is an isolated location

at U16L17 that has 1/8" pack rust between the fill plate and the diagonal. At L33 of U32L33, Span 9 of the North Truss,

there is surface corrosion with an area of pack rust forming. A plug weld exists at U3L4, Center Truss, Span 5. There are

misdrilled holes at the several locations. At U18 of L17U18, North

Truss, Span 6, there is a 1-1/2" long cracked tack weld between the diagonal and the north gusset plate.

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Steel Floor Beams

There are isolated locations of pack rust ranging from 3/16" to 3/8" at the intersection with the girders and at the floorbeam cantilever connection to the girder top flange. The protective coating system is faded. There are isolated locations of surface corrosion with the largest being a 2' L x 3" W area on the bottom flange of Floorbeam 24. The floorbeams have some locations of painted over pitting. The pitting is typically across the length of the bottom flange and up to 4" H on the lower portion of the web.

In this area, the bottom flange has areas of reduced flange thickness. The floorbeam on the south side of U39, Center Truss, Span 9, has a 3/8" vertical overcut. No additional issues are noted at this location. There is a misdrilled hole at the floorbeam connection to the gusset plate at U15, South Truss, Span 6. Over Pier 10, North Truss, Span 10, there is a blind hole in the top floorbeam flange.

Gusset Plates

Stiffening angles have been added to several gusset plates. At U33 of the South Truss in Span 9, there is an isolated location of deformation in the gusset plate in an area where pack rust is not contributing, but a stiffening angle is in place. Pack rust up to 1/2" is typical throughout the truss between the gusset plates and truss members. In Span 5 of the South Truss at L0, there is up to 1" pack rust between the lower lateral bracing fill plate and the inboard gusset plate. The protective coating system of the gusset plates is in good condition. There are isolated locations of light surface corrosion, but most have some level of paint covering them. Some of the paint has faded and some gusset plates have been spot painted following the rehabilitation. At L44 of the Center Truss in Span 9, the paint has failed along the interface with the lower chord and the exposed steel has surface corrosion. There are several misdrilled holes. At L28, Center Truss, Span 8, a rivet is being deformed at the gusset plate due to a conflict with the sway bracing connection angle. There are plug welds at some locations with no issues noted. The gusset plates have widespread section loss. The section loss typically comes in one of two forms. The most abundant being painted over pitting ranging from 1/16" to 3/16" depth at various locations of the gusset plate. This section loss is typically found over the entire gusset plate as scattered shallower pitting or it is focused in an area adjacent to another member where it is typically deeper. The second form is section loss along the interface with the lower chord where the corrosion is active. This area typically holds debris or water.

Lateral Bracing

The batten plates at the

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ends of the members typically have painted over pitting up to 3/16", similar to the sway bracing bottom struts. In Span 8, 6' south of L18 near the Center Truss, the lateral bracing member has some distortion, possibly due to impact damage. There is also impact damage to the top flange of the lateral bracing near L8, Center Truss, Span 7. At L20, North Truss, Span 11, the connection of the lateral bracing to the south gusset plate has up to 1" pack rust. The paint has failed on lateral bracing member near the Floorbeam 0, South Girder, Span 14.

Sway Bracing

The batten plates commonly have painted over pitting up to 3/16". At the ends of the bottom strut, there are isolated locations where there is pack rust between the flange angles and either the batten plate or the lower gusset plate. There are two broken rivet heads at the sway bracing connection at L0 of the Center Truss, Span 10.

Fatigue

There are no Category E or E' details, but there are problematic details. There are tack welds on the gusset plates, fill plates, and splice plates. Some of these are broken or cracked, but none have propagated into the base metal. Many of the cracked locations are due to pack rust occurring between the plates.

Protective Coating System

Exterior paint has faded and chalked in isolated areas. Some areas of corrosion.

Utilities

No significant deficiencies are noted.

Substructure

Abutments

The abutment walls have isolated spalls with exposed rebar and cracking (some with rust staining and/or efflorescence).

Pier Columns/Bents

The columns typically have various locations of large spalls with exposed rebar and areas of delaminations on the faces. There are also several locations of hairline cracking or map cracking, some with rust staining. There are isolated locations on the top of the column with spalls that have exposed rebar.

Pier Caps

The pier caps have isolated

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spalls with exposed rebar, cracking, areas of rust staining, and failed repair patches.

Wingwalls

There is hairline horizontal cracking in the wingwall at the northwest corner.

Slope Protection

At Pier 11, near the south column, the slope protection is broken and undermined. At Pier 12, near the north column, the slope protection is broken and has a void directly underneath the drainpipe. At Pier 13, near the south column, the adjacent slope protection and approach slab are undermined.

Culvert

N/A

Inspector Comments - Waterway

Waterway Adequacy

N/A

Channel

N/A

Scour Critical

N/A

APPENDIX B

ELEMENT LEVEL QUANTITIES

Inspector: Griessmann,Ann
Inspection Date: 08/16/2024

Structure Number: 3103390
Facility Carried: COLUMBIA PARKWAY

	Environment	Total Quantity	Units	Condition State 1	Condition State 2	Condition State 3	Condition State 4
12-Reinforced Concrete Deck	3 - Mod.	119448	sq. ft.	91926	27511	11	0
<p>CS2 -There are hairline to 0.025" multi-directional cracking in all spans throughout. -The cantilevered overhangs exhibit transverse cracks with efflorescence. -There are hairline vertical cracks on the haunches at the ends of isolated cantilever brackets on the north side of the deck. -Small spalls were observed on the deck soffit.</p> <p>CS3 -There are spalls up to 1' in diameter in the deck haunches at isolated floorbeam ends and isolated cantilever bracket ends on the north side of the deck.</p>							
805-Wearing Surface - Monolithic Concrete		93170	sq. ft.	82921	9701	548	0
<p>CS2 -Isolated hairline to 0.030" wide longitudinal and transverse cracks were observed randomly throughout the deck. These are typically spaced around 5' to 10'. -Small shallow spalls are present along the joint armor.</p> <p>CS3 -Wide cracks were observed emanating from the deck drains and deck joints.</p>							
107-Steel Open Girder/Beam	3 - Mod.	2262	ft.	2064	177	21	0
<p>CS2 -Surface corrosion is present on the top flange in isolated areas and on rivet heads throughout. -The bottom flange of the South Girder in Span 12 is bent 1' out of plane. -There are isolated locations of stiffeners with distortion. The distortion noted does not exceed 1/4" over 4" to 1'.</p> <p>CS3 -The ends of the girder web and bottom flange below the joints exhibit locations of section loss up to 1/4" deep, and knife edging. Typically, this section loss occurs past the bearing area. -Active and inactive pack rust is present causing distortion up to 1/2" thick between flange plates. -There is a corrosion hole in the bottom of the web of the South Girder of Span 13 at Pier 14 past the bearing area. -There are gouges caused by welds/flame cuts in the bottom flanges of Spans 13-15.</p>							
515-Steel Protective Coating		50614	sq. ft.	49543	506	565	0
<p>CS2 -Paint on the outside has faded and chalked in isolated areas. -There are isolated areas of peeling or chipped paint.</p> <p>CS3 -There are isolated areas of active corrosion.</p>							

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	Environment	Total Quantity	Units	Condition State 1	Condition State 2	Condition State 3	Condition State 4
120-Steel Truss	3 - Mod.	2705	ft.	1899	136	670	0
<p>CS2 -Surface corrosion is present at various locations throughout the truss. -Random lacing bars are deformed throughout the lower chord. -Cracked and or undercut tack welds are present on the verticals and diagonals, but the cracks do not propagate into the base metal.</p> <p>CS3 -Pack rust up to 1" thick between web plates and cover/splice plates are present throughout the truss. The pack rust is mostly inactive, but some areas are reactivating. In many locations the pack rust is prying the component plates. Areas of thicker pack rust are causing the web plate of the lower chord to have a wavelike appearance. Lower chord internal stiffeners have pack rust up to 1-1/2" thick. -There are isolated gouges up to 3/8" deep in the lower chord and verticals. -Isolated painted over pitting up to 3/16" deep are present throughout the truss. -There are isolated corrosion holes in tie plates and batten plates in the lower chord. -There are isolated active and inactive corrosion holes in the upper chord flanges, primarily at the supports. -10 cracked welds throughout the verticals. Many are at the fill plate and two are at the catwalk support. -Rivet head loss up to 50% at isolated panel points within the lower chord.</p>							
515-Steel Protective Coating		95362	sq. ft.	93422	1435	505	0
<p>CS2 -There are isolated areas where the paint is peeling or chipped. -There are isolated areas with light surface corrosion. -In some areas the paint is beginning to exhibit surface dulling/ chalking. -Area of paint has peeled off exposing the primer below.</p> <p>CS3 -There are isolated areas of active corrosion, pack rust, and laminar corrosion.</p>							
152-Steel Floor Beam	3 - Mod.	9256	ft.	9116	50	90	0
<p>CS2 -There is a 5/8" long gouge on the west face of Floorbeam 4 in Span 12 at the South Girder. -Active surface corrosion is present at isolated locations throughout the bridge. Largest location is 2' L x 3" W at the bottom flange of Floorbeam 24.</p> <p>CS3 -Painted over pack rust of up to 3/8" thick with painted over pitting to 1/8" deep exists at some floorbeam connections. These locations have not reactivated since the rehabilitation. The heaviest location of this situation was observed in Span 9 at Floorbeam 36, where pack rust of 1/2" thick and pitting up to 1/4" deep was observed. -Painted over pitting up to 1/8" is present at isolated locations. Painted over pitting is present in the flanges, webs, and connection angles at isolated locations, typically at expansion joints. -Laminar corrosion between the top flange and the haunch is present at isolated locations. -3/8" vertical overcut at U39, Center Truss, Span 9.</p>							
515-Steel Protective Coating		96487	sq. ft.	95662	800	25	0
<p>CS2: -There are isolated areas where the paint is peeling or chipped. -There are isolated areas with light surface corrosion. -In some areas the paint is beginning to exhibit surface dulling/ chalking.</p> <p>CS3: -There are isolated areas of active corrosion, pack rust, and laminating corrosion.</p>							
162-Steel Gusset Plate	3 - Mod.	522	each	443	27	52	0

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Environment	Total Quantity	Units	Condition State 1	Condition State 2	Condition State 3	Condition State 4	
<p>CS2 -Tack welds are present between gusset and fill plates at isolated locations. Some tack welds and fill plates are cracked but none of the cracks propagate into the base metal of the gussets.</p> <p>CS3 -There are missing rivets or bolts at isolated locations. -There is bowing along gusset plate edges due to pack rust in several locations. This bowing ranges from 1/8" to 1" and have been retrofitted with stiffening angles. Active and inactive pack rust up to 1" thick is between the gusset plates, fill plates, bracing connections, and truss members in many locations. -Painted over section loss up to 3/16" is present at some gusset plates.</p>							
515-Steel Protective Coating	33408	sq. ft.	33083	75	250	0	
<p>CS2 -There are isolated areas where the paint is peeling or chipped. -There are isolated areas with light surface corrosion. -In some areas the paint is beginning to exhibit surface dulling/ chalking.</p> <p>CS3 -There are isolated areas of active corrosion and pack rust.</p>							
205-Reinforced Concrete Column	3 - Mod.	54	each	32	10	12	0
<p>CS2 -The pier columns generally exhibited vertical cracks, usually hairline in width, but up to 0.013" wide. -There are areas of delaminations throughout.</p> <p>CS3 -1' H x 6" W x 1" D spall with exposed rebar at the SE corner of the Center Column of Pier 2. -2' H x 1' W x 2" D spall with exposed rebar at the Center Column, Pier 3, east face. -2' L x 1' H x 2" D spall with a delamination at the Center Column, Pier 3, west face. -3' H x 1' W x 2" D spall with exposed rebar at the South Column, Pier 3, east face. -4' L x 8" W x 6" D spall with exposed rebar at the Center Column, Pier 5, north face. -2' L x 5' H delamination with a 1 SF spall at the South Column, Pier 7, SE corner. -1' L x 4' H x 1-1/2" D spall with exposed rebar at the North Column, Pier 7, south face. -2' L x 3' H x 1-1/2" D spall with exposed rebar at the North Column, Pier 7, west face. -1'-9" L x 8" H x 2" D spall with exposed rebar at the South Column, Pier 8, north face. -1'-6" L x 3' H x 3" D spall with exposed rebar at the North Column, Pier 10, SW corner. -1'-6" L x 2'-1" H x 1" D spall with exposed rebar at the South Column, Pier 11, NE corner. -HL cracking with rust staining at the North Column, Pier 12, over the full east face. -2' L x 2' H x 2" D spall with exposed rebar at the Center Column, Pier 13, SE corner. -2' L x 3' H x 1" D spall with exposed rebar at the South Column, Pier 17, west face.</p>							
215-Reinforced Concrete Abutment	3 - Mod.	144	ft.	81	37	26	0

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Inspection Date: 08/16/2024

Structure Number: 3103390
Facility Carried: COLUMBIA PARKWAY

Environment	Total Quantity	Units	Condition State 1	Condition State 2	Condition State 3	Condition State 4
CS2 -Hairline cracking with efflorescence present at the Rear Abutment (Abutment 1). -Hairline map cracking over an area of 5' L x 2' H at the Forward Abutment (Abutment 18).						
CS3 -Hairline cracking with rust staining present on the Rear Abutment (Abutment 1). -3' L x 2' H x 1" D spall with exposed rebar at the Forward Abutment (Abutment 18). -18' L sealed horizontal crack with rust staining and efflorescence at the Forward Abutment (Abutment 18).						

234-Reinforced Concrete Pier Cap	3 - Mod.	1137	ft.	859	137	141	0
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CS2 -1 SF delamination on the underside of Pier 2 between the Center Column and the South Column. -10 SF delamination on the underside of Pier 5 between the Center Column and the North Column. -180 SF delamination on the west face of Pier 10 between the Center Column and the South Column. -11 SF of delaminations on the west face of Pier 11 between the Center Column and the North Column. -8' L crack with a delamination on the east bottom of Pier 12 between the Center Column and the North Column. -106 SF delamination on the west face of Pier 13 between the Center Column and the South Column. -(2) 45 SF delaminations on the west face of Pier 13 between the Center Column and the North Column. -20 SF delamination on the west face of Pier 16 between the Center Column and the North Column.						
CS3 -(2) 1'-4" diameter x 1-1/2" D spall with exposed rebar at the top of Pier 8. -95 SF of repair patch cracking at the west bottom of Pier 10. -1/16" wide x full length crack at the top of Pier 10. -4' L x 1/16" wide crack with rust staining at the west bottom of Pier 12. -1' L x 1'-6" H x 1" D spall with exposed rebar and a 6' L x 1/16" crack on the east bottom of Pier 13. -1' L x 3' H x 1" D and 1' L x 1' H x 1" D spalls with exposed rebar on the east bottom of Pier 13. -10' L cracked patch that extends 1' underneath on the east face of Pier 15. -3'-8" L x 1'-1" H x 3" D spall with exposed rebar with section loss on the east face of Pier 16. -1'-8" diameter x 2" D spall with exposed rebar on the west face of Pier 16. -6' L x 1/16" wide crack on the west face of Pier 17.						

300-Strip Seal Expansion Joint	3 - Mod.	973	ft.	335	630	8	0
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CS2 -The expansion joints are filled with debris. -There is typically surface corrosion on the joint armor (Abutment 1 (Rear Abutment), Piers 2, 7, 10, 13-16, and Abutment 18 (Forward Abutment)).						
CS3 -Joint seal is torn in isolated areas. Spalls in the joint slab header with damaged and loose joint material. -1/2" vertical offset at the Pier 3 joint.						

Inspector: Griessmann,Ann
 Inspection Date: 08/16/2024

Structure Number: 3103390
 Facility Carried: COLUMBIA PARKWAY

	Environment	Total Quantity	Units	Condition State 1	Condition State 2	Condition State 3	Condition State 4
310-Elastomeric Bearing	3 - Mod.	30	each	14	10	6	0
CS2 -There is surface corrosion on the bearing plates in isolated locations. -The Rear Abutment, north bearing, has a manufacturing defect on the pin nut. CS3 -The elastomeric bearings have painted over pitting at the following locations: Pier 3, Span 3, north bearing; Pier 4, Span 4, all bearings; Pier 13, Span 12, north bearing; Pier 13, Span 13, north bearing. -Isolated location of pack rust between the lower chord member and the sole plate in Span 4, North Girder, Floorbeam 0. -Missing bolt attaching the sole plate to the girder at this location.							
515-Steel Protective Coating		30	sq. ft.	20	0	10	0
CS2 -There is surface corrosion on the bearing plates in isolated locations.							
313-Fixed Bearing	3 - Mod.	39	each	13	11	15	0
CS2 -There is surface corrosion on the bearings in isolated locations. CS3 -The fixed bearings have painted over pitting at the following locations: Pier 2, Span 1, north and center bearing; Pier 3, Span 2, north and center bearing; Pier 4, Span 3, all bearings; Pier 5, Span 4, all bearings; Pier 7, Span 6, all bearings; Pier 12, Span 12, center bearing. -The Pier 3, Span 2 center fixed bearing has laminar corrosion. -Pier 4, Span 3, Center Girder has 40% section loss to the anchor nuts. -The Pier 12, Span 12, center bearing has a gouge in the pin nut. -The Pier 14, Span 13, center bearing has section loss on one of the anchor nuts.							
515-Steel Protective Coating		39	sq. ft.	28	0	11	0
CS3 -There is surface corrosion on the bearings in isolated locations.							
314-Pot Bearing	3 - Mod.	21	each	9	6	6	0
CS2 -There is surface corrosion on the bearings in isolated locations. CS3 -The pot bearings have painted-over pitting at the following locations: Pier 5, Span 5, all bearings; Pier 7, Span 7, all bearings. -There is pack rust developing between the bearing and the truss member near the pin at L44, Center Truss, Span 9.							
515-Steel Protective Coating		21	sq. ft.	15	0	6	0
CS2 -There is surface corrosion on the bearings in isolated locations.							
321-Reinforced Concrete Approach Slab	3 - Mod.	2310	sq. ft.	2110	200	0	0
CS2 -The west approach slab exhibits hairline longitudinal cracks spaced at approximately 3 ft.							

Inspector: Griessmann, Ann
 Inspection Date: 08/16/2024

Structure Number: 3103390
 Facility Carried: COLUMBIA PARKWAY

	Environment	Total Quantity	Units	Condition State 1	Condition State 2	Condition State 3	Condition State 4
331-Reinforced Concrete Bridge Railing	3 - Mod.	4980	ft.	3643	1245	92	0
<p>CS2 -The railings typically exhibit hairline vertical, horizontal, and map cracking throughout the entire length of the bridge. -The protective coating is peeling and chipped throughout the railing, and scaling is present in some locations.</p> <p>CS3 -At isolated locations, primarily at the fence posts on the south side of the bridge, the railing exhibits heavy map cracking with areas of delaminated concrete, spalls with exposed rebar, and rust staining. This condition is present on both the interior and exterior faces of the bridge railing.</p>							
815-Drainage	3 - Mod.	32	each	23	8	1	0
<p>CS2 - There is light debris build up in a few of the drainage grates at the end of the downspouts, but drainage flow is not yet inhibited. -A few of the downspouts exhibit surface corrosion.</p> <p>CS3 -The downspout termination is aligned at the catch basins edge instead of the center at Pier 5.</p>							