PHYSICAL CONDITION REPORT

FOR THE 2022 ROUTINE ELEMENT LEVEL AND FRACTURE CRITICAL INSPECTION

I-480 OVER THE ROCKY RIVER VALLEY

BR#: CUY-480-0647
SFN: 1812831
Cuyahoga County, OH

PREPARED FOR:

OHIO DEPARTMENT OF TRANSPORTATION
District 12
PID#: 115405

Inspected: September 7-9, 2022
Report: December 19, 2022

OHIO DEPARTMENT OF TRANSPORTATION

STRINTEG

2022 ROUTINE LEVEL & FRACTURE CRITICAL INSPECTION PHYISCAL CONDITION REPORT

of the

I-480 OVER THE ROCKY RIVER VALLEY
BRIDGE NO. CUY-480-0647
SFN: 1812831

Cuyahoga County, Ohio

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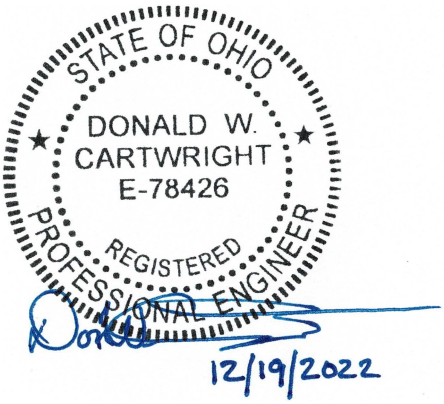

Prepared for:

OHIO DEPARTMENT OF TRANSPORTATION
DISTRICT 12

TRANSYSTEMS CORPORATION
PID No. 115405

Report Submitted December 19, 2022

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EXECUTIVE SUMMARY

The I-480 Bridge over Rocky River (CUY-480-0647), located between the cities of Fairview Park and Cleveland, is one of the major river crossings over the Rocky River Valley. The bridge consists of twin nine-span plate girder structures carrying four lanes of I-480 traffic in each direction **(See Photo 1)**. Originally constructed in 1970, the eastbound and westbound structures are 1,571' long and 1,535' long, respectively, and each consist of a nine-span superstructure divided into three continuous units by seated hinges in Spans 4 and 6. The structure is owned and maintained by the Ohio Department of Transportation (ODOT).

Strinteg Corporation, as a subconsultant to TranSystems Corporation, was contracted by the ODOT to perform the 2022 routine element level and fracture critical inspection of the CUY-480-0647 Bridge (SFN 1812831). A hands-on inspection was performed on the fracture critical members and fatigue prone details on the structure. These members include the main girders and all floorbeams. Inspection findings were recorded on bridge specific field inspection forms and field sketches were created to document specific conditions. Items highlighted in red text within this report denote new conditions that were not noted during previous inspections or defects that have notably changed since the previous inspection.

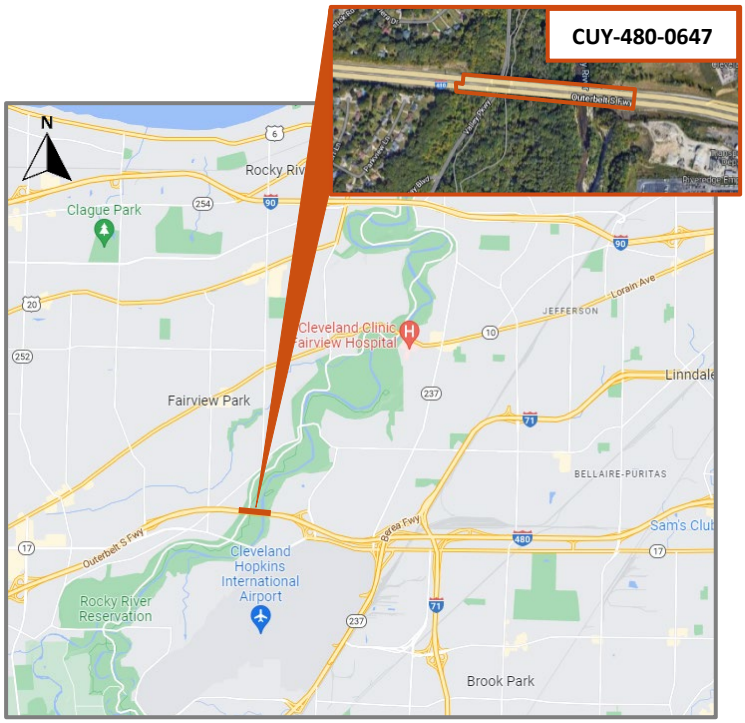
Photo 1 – Partial south elevation of the CUY-480-0647 Bridge, looking northwest. Note snooper access in Span 7.

Based upon the results of the 2022 inspection, the CUY-480-0647 Bridge is in **SATISFACTORY CONDITION [6-NBIS]** overall due to cracks and spalls in the reinforced concrete deck; failed patches and widespread deterioration of the wearing surface; widespread cracks, delaminations, and spalls in the reinforced concrete bridge railings; isolated areas of cleaned and painted section loss on the steel floorbeams and previous cracks in the steel girders; and moderate delaminations and spalls in the reinforced concrete substructure. As such, the operational status of the bridge remains OPEN WITH NO RESTRICTIONS [A-NBIS].

Detailed inspection findings are included within this narrative Physical Condition Report. Rehabilitation and maintenance recommendations are included within this report to extend the usable life and safe function of the structure. Based upon these inspection findings, no High Priority Repairs are required at this time.

BRIDGE DESCRIPTION

The CUY-480-0647 Bridge consists of twin nine-span plate girder structures carrying eight lanes of I-480 traffic over the Rocky River Valley between the cities of Fairview Park and Cleveland in Cuyahoga County, Ohio. Originally constructed in 1970, the existing eastbound structure is approximately 1,571' long, and the existing westbound structure is approximately 1,535' long **(See Figures 1 and 4)**. Each structure consists of a nine-span superstructure divided into three continuous units by seated hinges present in Spans 4 and 6. Span 1 for the eastbound and westbound structures are 139'-8" long and 103'-8" long, respectively, while the remaining spans are the same across both bridges: Spans 2 and 3 are each 177'-4" long, Spans 4, 5, and 6 are each 199'-6" long, Span 7 is 177'-4" long, Span 8 is 155'-2" long, and Span 9 is 82'-8" long.



LOCATION MAP

The 8 3/4" thick reinforced concrete deck for each structure is 72'-0" out-to-out with a roadway width of approximately 69'-0". Each structure carries four lanes of traffic with wide shoulders along each reinforced concrete railing. The deck for each structure is supported by six steel stringers: the interior stringers consist of rolled 21WF55 or 21WF62 sections, stringers along the median (Stringers 6 and 7) consist of rolled 12WF45 sections, and exterior stringers (Stringers 1 and 12) consist of small welded haunched I-sections. The steel floorbeams, which are generally spaced at 22'-2" on-center but have intervals as short as 11'-6" at the ends, consist of built-up I-sections of varying height comprised of both rolled wide flange beams and built-up plate sections with transverse stiffeners. The main girders, spaced at 25'-6" on-center, are comprised of haunched, welded plate girders that vary from 12'-0" to 15'-0" in height. The plate girders for each structure are supported by reinforced concrete pier caps on two columns and cellular reinforced concrete abutments. The substructure units are each founded on spread footings in shale.

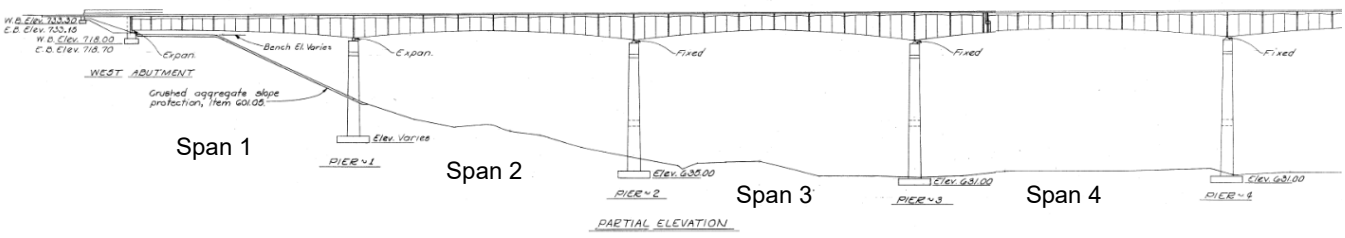


Figure 1 – Partial south elevation of CUY-480-0647 (west half).

The westbound bridge was closed in 2000 due to a crack being found on the support side of the seated hinge in Span 4 at Girder D **(See Figure 2)**. Shortly thereafter, the bridge was repaired by jacking each seated hinge and installing carrier beam retrofits at all twelve hinge locations to provide redundancy **(See Figure 3)**.

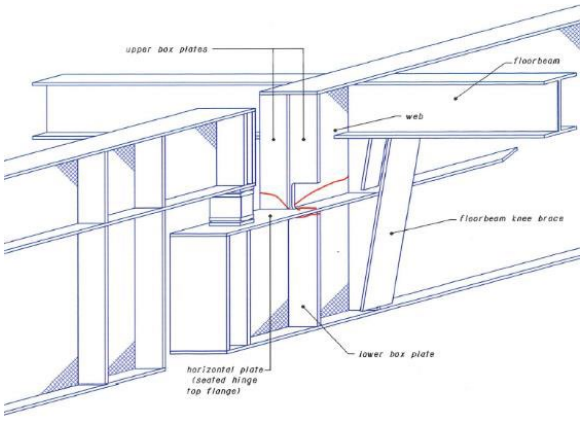


Figure 2 – Schematic diagram showing location of cracks found during the 2000 inspection (cracks shown in **red**).

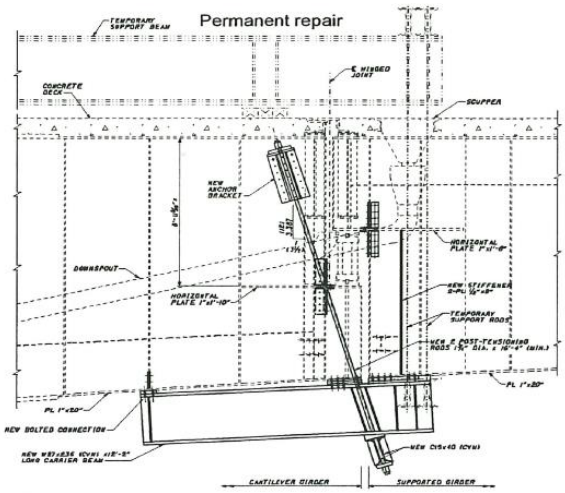


Figure 3 – Plan details showing carrier beam retrofits installed during 2001 emergency repair.

In addition to the 2001 emergency repairs, the structure has undergone several minor modifications and rehabilitations since its original construction, as summarized below:

- **1990 Minor Rehabilitation**: Retrofits to lower lateral bracing connections at the webs; sealing of concrete; drainage system improvements; safety cable and handrail installation for aid in inspections; and IZEU protective coating system.
- **2001 Emergency Repairs**: Installation of carrier beams below all twelve seated hinges to address cracks that were found during the 2000 inspection.
- **2002 Overlay**: Latex modified concrete overlay installed over bridge.
- **2015 Overlay**: Microsilica overlay installed over the middle two lanes on each structure.
- **2020-2021 Painting and Slope Repairs:** Cleaning and painting of the steel superstructure with an OZEU protecting coating system; installation of new slope protection on the east and west slopes.

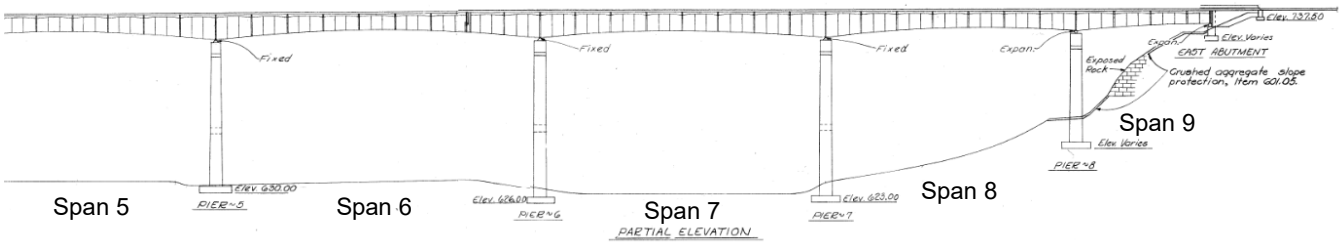


Figure 4 – Partial south elevation of CUY-480-0647 (east half).

All structure nomenclature is per the existing bridge plans and in concurrence with appendices used within recent prior inspection reports **(See Appendix B)**. The westbound bridge is denoted as the Left (or "L") structure, and the eastbound bridge is denoted as the Right (or "R") structure. The substructure units are numbered from west to east, starting with the Rear Abutment, continuing with Piers 1 through 8, and ending with the Forward Abutment. Similarly, the spans (1 through 9) and floorbeams (1 through 72) are numbered from west to east. Note that on the westbound structure, Floorbeams 2 and 3 are not present; the floorbeams at the west end of the bridge start at Floorbeam 1 (at the Rear Abutment) and skip to Floorbeam 4 (in line with Floorbeam 4 on the eastbound bridge) due to the differing lengths of Span 1. The girders and stringers are numbered continuously across both structures from south to north as shown on the original bridge plans; as such, Girders A through C and Stringers 1 through 6 are located on the eastbound bridge, while Girders D through F and Stringers 7 through 12 are located on the westbound bridge. All steel superstructure members are comprised of ASTM A36 structural steel.

INSPECTION PROCEDURE

Personnel from Strinteg Corporation performed a routine element level and fracture critical member inspection of the structure on September 7 through 9, 2022. Access to the structure was gained by walking the top of deck within lane closures, from a 62' under-bridge inspection unit (snooper), and using protected climbing and rope access techniques utilizing the installed safety cables along the girders **(See Photo 2)**. Traffic control consists of alternating single lane and shoulder closures along I-480 EB and EB. Traffic control and the under-bridge inspection unit were provided by Sofis Company, Inc.

Photo 2 – Typical protected climbing and rope access techniques utilizing the safety cables along the girders, looking northeast at Girder D in Span 3.

A hands-on inspection was performed on the fracture critical members and fatigue prone details on the structure. These members include the main girders and all floorbeams. In addition, previously installed retrofits on the structural steel members received hands-on evaluation. See **Appendix C** for the Fracture Critical Plan and Fatigue Detail Table.

Inspection findings were recorded on bridge specific field inspection forms and field sketches were created to document specific conditions. Inspection equipment utilized during the inspection included: chipping hammers, calipers, scrapers, wire brushes, measuring tapes, flashlights, markers, and pit gauges. Color digital photographs were taken of the fatigue prone details, areas of deterioration, condition changes, retrofits and repairs, and any immediate maintenance needs, as necessary.

Items highlighted in red text within this report denote new conditions that were not noted during previous inspections or defects that have notably changed since the previous inspection.

INSPECTION TEAM

The inspection was led by qualified bridge inspection team leaders as set forth by the Federal Highway Administration (FHWA) and the National Bridge Inspection Standards (NBIS). In addition, these team leaders have completed the Occupational Safety and Health Administration (OSHA) 10-hour Construction Safety and Health course and all training required by the FHWA through the National Highway Institute (NHI) which includes Safety Inspection of In-Service Bridges (Course No. 130055) and Fracture Critical Inspection Techniques for Steel Bridges (Course No. 130078).

The inspection team members were as follows:

- Donald Cartwright, PE, SPRAT III (Team Leader)
- Nicholas Fisco, PE, SPRAT II
- Molly Capistrant, EI, SPRAT I
- Andrew Mahall, EI
- Michael Mallak

CONDITION RATING

National Bridge Inspection Standards (NBIS) are federal regulations that set the national standard for the proper safety inspection and evaluation of all highway bridges. The NBIS applies to all structures defined as highway bridges located on all public roads. State and federal guidelines for evaluating the condition of bridges were 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. The following table was used as a guide in evaluating the condition of the various members of the bridge.

SUMMARY ITEMS (NBIS)	CONDITION	DEFECTS
9	Excellent	Excellent condition.
8	Very Good	No problems noted.
7	Good	Some minor problems.
6	Satisfactory	Structural elements show some minor deterioration.
5	Fair	All primary structural elements are sound but may have minor section loss, cracking, spalling or scour.
4	Poor	Advanced section loss, deterioration, spalling or scour.
3	Serious	Loss of section, deterioration, spalling or scour have seriously affected primary structural components. Local failures are possible. Fatigue cracks in steel or shear cracks in concrete may be present.
2	Critical	Advanced deterioration of primary structural elements. Fatigue cracks in steel or shear cracks in concrete may be present or scour may have removed substructure support. Unless closely monitored it may be necessary to close the bridge until corrective action is taken.
1	“Imminent” Failure	Major deterioration or section loss present in critical structural components or obvious vertical or horizontal movement affecting structure stability. Bridge is closed to traffic but corrective action may put it back in light service.
0	Failed	Out of service - beyond corrective action.

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

1. *Manual of Bridge Inspection*, Ohio Department of Transportation (ODOT), 2014 (rev 2021).
2. *The Manual for Bridge Evaluation*, AASHTO, 3rd Edition, 2018 (rev 2020).
3. *Manual for Bridge Element Inspection*, AASHTO, 2nd Edition, 2019.
4. *Bridge Inspector's Reference Manual*, U.S. Department of Transportation, 2002 (rev 2012).
5. *Inspection of Fracture Critical Bridge Members*, U.S. Department of Transportation, 1986.
6. *National Bridge Inspection Standards*, U.S. Department of Transportation, 2004.
7. *Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges*, Federal Highway Administration, 1995 with Latest Revisions.
8. *Ohio Manual of Uniform Traffic Control Devices (OMUTCD)*, ODOT, 2005 (rev 2011).

INSPECTION SUMMARY

The CUY-480-0647 Bridge is in SATISFACTORY CONDITION [6-NBIS] overall. The individual item condition ratings are summarized as follows in **Table 1**:

Item	Rating	Westbound
Item 58 - Deck	6	Cracks and spalls in the reinforced concrete deck; failed patches and widespread deterioration of the wearing surface; vertical misalignments and deterioration of joint headers and armor at expansion joints; widespread cracks, delaminations, and spalls in the bridge railings
Item 59 - Superstructure	6	Isolated areas of cleaned and painted section loss on the steel floorbeams and previous cracks in the steel girders
Item 60 - Substructure	6	Moderate delaminations and spalls in the reinforced concrete
Item 61 - Channel	7	Good alignment, minor scour along columns in flood plain
Approach	6	Transverse and longitudinal cracks, wear, flushing, and potholes

Table 1 – Bridge condition summary ratings.

ITEM 58 – DECK SUMMARY

The deck is in SATISFACTORY CONDITION [6-NBIS] overall. The underside of the deck has hairline transverse cracks and map cracking and numerous minor to moderate delaminations and spalls. The deck underside and edges have more significant spalls noted along the hinge expansion joints. The wearing surface over the bridge has widespread transverse cracks and numerous potholes, some of which have failing patches, which has accelerated deterioration of the deck below. The expansion joints have vertical misalignments and isolated broken welds, and the abutment joints have widespread deterioration of the joint headers and armor. The reinforced concrete bridge railings and median barriers have widespread spalls with exposed, corroded, missing, and debonded reinforcement; vertical and horizontal cracks, and areas of map cracking. Deck scuppers are typically partially filled with dirt and debris, and drainage downspouts generally exhibit minor to moderate surface corrosion and signs of leakage.

ELEMENT 12 – REINFORCED CONCRETE DECK

The reinforced concrete deck is covered by a latex modified concrete overlay over its width and an additional microsilica overlay over the middle two lanes in each direction. The underside of deck has hairline transverse cracks (typically up to 0.020" wide) and areas of hairline map cracking spaced at approximately 12" **(See Photo 3)**. Numerous cracks exhibit light or isolated moderate efflorescence. There is one 0.016" wide transverse crack with light rust staining in the westbound structure deck underside between Stringers 10 and 11 between Floorbeams 46 and 47.

On the westbound structure, there are several locations of moisture staining and greater than typical efflorescence in the underside of deck; these areas are typically approximately 5' diameter and are located below patched areas in the wearing surface **(See Photo 4)**. There is one 30' long by 6' wide area of hairline map cracking with moisture staining and light efflorescence between Floorbeams 44 and 45 along the south side of Girder E.

Photo 3 – 0.020" wide transverse crack in the Span 4 underside of deck between Floorbeams 24 and 25 of the eastbound structure, looking south.

The deck overhangs typically have hairline transverse cracks with light efflorescence **(See Photo 5)**.

Photo 4 – Several areas of moisture staining and efflorescence in the deck underside between Girders E and F between Floorbeams 43 and 44, looking west. Note these locations are defects are typically located between failing patches in the wearing surface.

Photo 5 – Typical hairline transverse cracks with light efflorescence in the deck overhangs, looking east at the south overhang of the eastbound structure between Floorbeams 10 and 11, looking east.

The deck underside has isolated minor to moderate delaminations and spalls. The westbound structure deck underside has a 36" long by 42" wide by 5" deep spall with fully exposed and corroded (approximately 50% section loss) transverse and longitudinal bottom mat reinforcement along the south side of Stringer 11 at Floorbeam 42 **(See Photo 6)**. The deck forms near the joints have moderate to advanced corrosion in isolated locations with portions failed and moderate spalls with exposed reinforcement near the joints.

The deck underside of the eastbound structure along the west side of the Span 6 expansion joint has a 7' wide by up to 15" long by full depth (9") spall with two layers of debonded and corroded reinforcement at the end of the deck along the joint armor **(See Photo 7)**. Based on photographs, the width of this spall appears to have grown slightly since the previous inspection. Along this joint, the adjacent stay-in-place corrugated deck forms have advanced surface corrosion or have failed over the deck width, and the exposed concrete deck in these areas has widespread shallow spalls with exposed reinforcement. The deck underside of the westbound structure along the east side of the Span 4 expansion joint has an 18" long by 8" wide by full depth (9") spall with exposed and corroded reinforcement along the joint with an adjacent area of 5' long by 18" wide by 2" deep spalling with exposed and corroded reinforcement where the deck forms have failed **(See Photo 8)**.

Photo 6 – 36" long by 42" wide by 5" deep spall with debonded and corroded reinforcement along the south side of Stringer 11 at Floorbeam 42 on the westbound structure, looking northeast.

Photo 7 – 7' wide by up to 15" long by full depth spall with two layers of fully exposed and corroded reinforcement at the end of the eastbound structure deck along the Span 6 expansion joint armor, looking east.

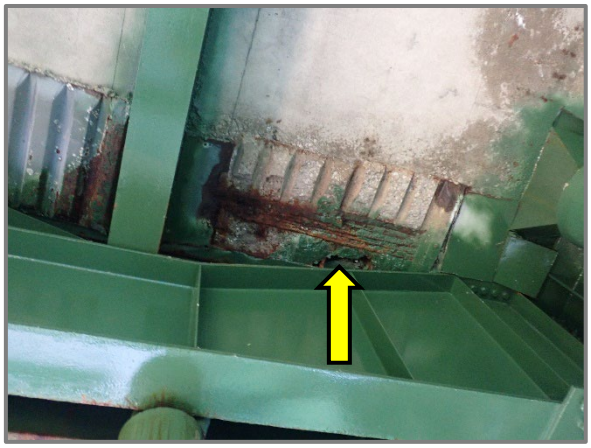


Photo 8 – 18" long by 8" wide by full depth spall with exposed and corroded reinforcement in the westbound structure deck underside along the Span 4 expansion joint, looking west.

The exterior deck edges and undersides at the hinge joints typically have large spalls with multiple layers of exposed and corroded reinforcement, worst along the south edges of the eastbound structure; these spalls also typically extend into the railings. At the Span 4 hinge joint, the deck/railing on the west side has a 20" long by 9" high by 4" deep spall along the south face and a 24" wide by 21" high by 6" deep on the east face, while the east side has a 24" long by 9" high by 3 1/2" deep spall on the south face and a 24" wide by 24" high by 6" deep spall on the west face **(See Photo 9)**. At the Span 6 hinge joint, the deck/railing on the west side has a 14" long by 9" high by 3" deep spall/delamination along the south face and a 24" wide by 16" high by 4" deep on the east face, while the east side has a 30" long by 20" high by 5" deep spall/delamination on the south face and a 24" wide by 24" high by 9" deep spall on the west face.

Photo 9 – Large spalls with multiple layers of exposed and corroded reinforcement in the south deck edge of the eastbound structure at the Span 4 expansion joint, looking northwest.

Photo 10 – Typical failing patch in the right lane of the westbound structure wearing surface in Span 5, looking south. Note additional broken up wearing surface material around the perimeter of the patch.

ELEMENT 510 – WEARING SURFACE

The bridge wearing surface consists of a latex modified concrete overlay over its full width (installed in 2002) and an additional microsilica overlay over the middle two lanes in each direction (installed in 2015), as well as a non-epoxy sealing treatment that was performed in 2017. Overall, the wearing surface has widespread minor cracks and potholes, typically worst in the shoulders and outside lanes where the deck did not receive the additional microsilica overlay in 2015. In these areas, up to 1/16" wide transverse cracks at 3' to 5' spacing are typical.

Numerous potholes, up to 3" deep, are present in the wearing surface. The majority of these potholes have been patched with microsilica concrete and/or asphalt; however, many of the patches are failing with additional spalled or broken up concrete and asphalt around their perimeter **(See Photo 10)**. Potholes and failing patches are most frequent in the westbound right lane and shoulder, particularly in Spans 4 through 6 where potholes are typically up to 5' diameter by 3" deep **(See Photo 11)**. The potholes and failed patches in the deck surface have caused accelerated deterioration of the concrete deck below with numerous areas of more concentrated cracking, moisture, and efflorescence in the underside of deck at these locations. See **ELEMENT 12 – REINFORCED CONCRETE DECK** for additional information. Numerous shallow potholes, roughly 6" diameter by 1" deep, are present in isolated locations throughout the deck wearing surface.

Photo 11 – Several potholes and failing patches in the right lane of the Span 6 wearing surface on the westbound structure, looking west.

Photo 12 – Typical potholes along the drainage scuppers, looking north at a drainage scupper in the westbound right shoulder in Span 4.

Potholes are typically present around the perimeter of the drainage scuppers for an approximately 20" width by 1 1/2" depth **(See Photo 12)**. Potholes are also common in the shoulders along the bases of the concrete bridge railings, worst on the westbound right shoulder **(See Photo 13)**. Moderate scaling in the exterior lanes and shoulders have worn away the transverse tines in the wearing surface; the transverse tines in the middle lanes are generally in good condition.

Lane reflectors are typically missing their reflective elements with isolated locations which have spalled out or have been patched.

Photo 13 – Large pothole in the right shoulder of the Span 8 wearing surface on the westbound structure at the base of the bridge railing, looking east.

ELEMENT 305 – ASSEMBLY JOINT WITHOUT SEAL

The expansion joints at the abutments and hinge joints consist of sliding plate assemblies with no joint seals.

At the eastbound Rear Abutment, the joint armor on the west (approach) side of the joint in both middle lanes is approximately 1/2" lower than the east side of the joint due to vertical misalignments transversely between armor sections. The joint in the 2nd lane (from left) bounces under live load truck traffic with abrasion dust and spalling of the adjacent joint header **(See Photo 14)**.

Photo 14 – 1/2" vertical misalignment at the Rear Abutment joint for the eastbound structure, looking north. Note the adjacent spalling to the joint header and that this joint bounces under live load traffic in the 2nd lane (from left).

At the westbound Rear Abutment, the joint armor on the west (approach) side of the joint in the 2nd lane (from left) is discontinuous and depressed approximately 1/2" over the full width of the lane **(See Photo 15)**. The joint armor on the west side of the joint is approximately 1/4" lower at the right lane line.

Photo 15 – Joint armor discontinuous and depressed approximately 1/2" at the westbound Rear Abutment joint in the 2nd lane (from left).

Photo 16 – Up to 1" vertical misalignment at the eastbound Forward Abutment joint in the right two lanes, looking north. Note the broken up joint header on the approach side with previous patches beginning to fail.

At the eastbound Forward Abutment, the joint armor on the east (approach) side of the joint is settled up to 7/8" and 1" in the third and fourth lanes (from left), respectively. The joint armor appears to be flush in the left two lanes. The asphalt on the east side of the joint header is broken up and spalled up to 20" long by 2 1/2" deep over the full width of the joint with patches that are beginning to fail **(See Photo 16)**.

At the westbound Forward Abutment, there is a 1/2" vertical misalignment in the middle two lanes and a 1/4" vertical misalignment in the right lane and moderate plow damage to the joint armor. The weld between the east joint armor sections in the right lane is broken, causing the section on the right to bounce under live load. The east joint armor sections have multiple breaks and transverse misalignments up to 1/2" over its width **(See Photo 17)**. The joint header on the approach side is spalled up to 15" long by 5" deep with exposed reinforcement in the right shoulder. The full width of the approach joint header is patched, but the asphalt is beginning to fail.

Photo 17 – Up to 1/2" vertical misalignment at the westbound Forward Abutment joint with moderate plow damage to the joint armor, looking south. Note the weld between the east joint armor sections in the right lane are broken, causing the section to bounce under live load.

Vertical misaligments up to 1/4" were also noted at the hinge joints in Spans 4 and 6 with isolated minor associated plow damage. See **Table 2** for measurements at each hinge joint locations.

Westbound / Eastbound	Location	Vertical Misalignment	Higher Side
Eastbound	Span 4 Hinge	1/8"	Rear
Westbound	Span 4 Hinge	1/4"	Rear
Eastbound	Span 6 Hinge	1/4"	Forward
Westbound	Span 6 Hinge	1/8"	Forward

Table 2 – Vertical misalignments at expansion joints over seated hinges.

The abutment joints are generally partially filled with loose dirt and granular debris over their length, worst in the shoulders.

Joint opening measurements were taken at each roadway joint and are presented in **Table 3** below. The measurements were taken from inside the lane closures in the right lanes near the shoulder.

Location	Eastbound		Westbound	
	Temperature	Joint Opening	Temperature	Joint Opening
Rear Abutment	71 °F	2 1/4"	59 °F	1 3/4"
Span 4 Hinge Joint	64 °F	1 1/2"	64 °F	1 1/4"
Span 6 Hinge Joint	64 °F	1 1/8"	69 °F	1 7/8"
Forward Abutment	64 °F	5/8"	74 °F	2 1/8"

Table 3 – Roadway expansion joint opening measurements.

ELEMENT 331 – REINFORCED CONCRETE BRIDGE RAILING

The reinforced concrete bridge railings have widespread spalls with exposed, corroded, missing, and debonded reinforcement; vertical and horizontal cracks, and areas of map cracking **(See Photo 18)**. The top edges of the exterior bridge railings are typically spalled over their full width by up to 6" deep with up to fully exposed reinforcement; these spalls commonly extend down onto the vertical faces up to 18" by 2" deep. In locations where spalls are not yet present, horizontal delamination cracks are typical on the interior faces of the exterior railings approximately 3" from the top; this condition is present for nearly the full length of the bridge railings.

Photo 18 – Typical full width spalls with exposed, corroded, missing, and debonded reinforcement along the top edges of the exterior bridge railings, looking west at the south railing in Span 5 of the eastbound structure. Note the missing bar laying at the base of the railing.

Photo 19 – 24" long by 24" high by full depth spall in the south bridge railing on the east side of the Span 6 joint on the eastbound structure, looking south. Note that spalls of this nature are typically present at the hinge joints.

The south bridge railing on the eastbound structure has large spalls with fully exposed and corroded reinforcement adjacent to the deck edge spalls along the expansion joints in Spans 4 and 6 **(See Photo 19)**. The upward turned ends of the joint armor is missing at each of these locations. See **ELEMENT 12 – REINFORCED CONCRETE DECK** for additional information.

The median barrier on the westbound structure has spalls which are generally up to 24" high by 5' long by 3" deep with exposed reinforcement in the previously repaired top portions; the eastbound structure has similar spalls typically 15" high by 8" wide by 3" deep. A 50' long section of the median railing on the eastbound structure has moderate spalls and delaminations exposing longitudinal and transverse reinforcement near Pier 4 **(See Photo 20)**. The longitudinal neoprene seal covering the opening between the median barriers is missing for over half of the bridge length.

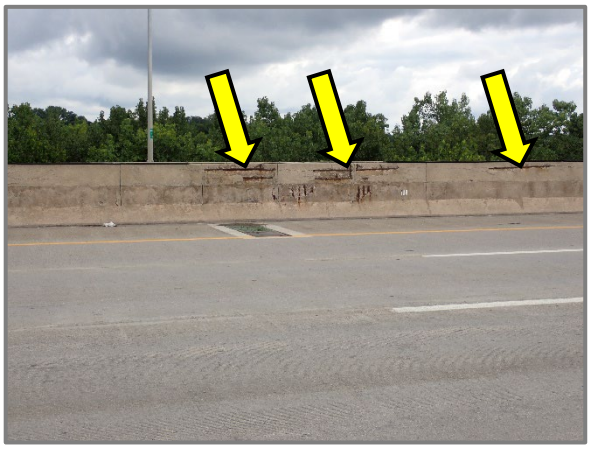


Photo 20 – Widespread spalling of the median barrier on the eastbound structure near Pier 4, looking south.

ELEMENT 815 – DRAINAGE

Drainage scuppers on the bridge deck are partially filled up to 85% with dirt, gravel, and debris with isolated vegetation growth **(See Photo 21)**. Dirt, gravel, and debris along the bases of the bridge railings limit flow for drainage slightly and contribute to further debris accumulation in the scuppers. Previous inspection reports noted that the deck is still clearing drainage adequately with only minor ponding noted; however, no evidence of water ponding was observed during this inspection. Multiple median scupper grates exhibit missing or broken metal bars, including the north and median scupper grates near Pier 4 of the westbound structure and the south scupper grate near the expansion joint in Span 6 of the eastbound structure **(See Photo 22)**.

Photo 21 – Typical partially clogged drainage scupper (approximately 85% clogged), looking south at the west end of the bridge on the eastbound structure.

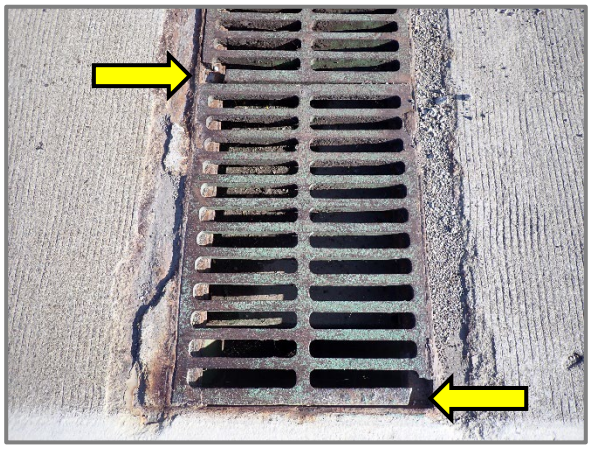


Photo 22 – Scupper grate near Pier 4 of the westbound structure with broken grate bars at the corners, looking north.

The drainage downspouts below the bridge exhibit minor to moderate surface corrosion throughout with isolated areas of minor section loss and signs of leakage **(See Photo 23)**. The 2020 inspection report noted a corrosion hole in the north downspout of the westbound structure near the hinge joint in Span 6; however, signs of leaking were still evident, but no hole could be found during the 2021 inspection following painting of the structure. At the time of this inspection, evidence of leaking in this area remains, but no corrosion holes were observed in the downspout **(See Photo 24)**. There is a 12" long hole in the drain trough below the Span 4 expansion joint of the westbound structure, causing minor dirt and granular debris to collect on the Girder E hinge seat below.

The downspout at Pier 7 for the eastbound bridge is fully clogged approximately 12' from the top, as detected using a drop line inside the pipe as no rain events occurred during the inspection **(See Photo 25)**. This downspout was noted to be clogged with water overflowing during rain events during the previous inspection.

Photo 23 – West elevation of Pier 5 of the westbound structure, looking northeast. Note minor to moderate corrosion of the downspouts and large rubble rip rap in place at the column bases.

Large diameter rip rap has previously been placed along the west bank of the river around Pier 6 to address undermined and washed out concrete paved gutters. This rip rap remains in good condition and appears to function as intended **(See Photo 23)**.

Photo 24 – Evidence of leakage in the north downspout near the hinge joint in Span 6 of the westbound structure, looking west. Note that corrosion holes were observed during the 2020 inspection but have not been noted since.

Photo 25 – Downspout at Pier 7 for the eastbound bridge fully clogged approximately 12' from the top, looking south.

ITEM 59 – SUPERSTRUCTURE SUMMARY

The superstructure is in SATISFACTORY CONDITION [6-NBIS] overall due to isolated areas of minor surface corrosion and cleaned and painted section loss below the expansion joints, primarily to floorbeams below the hinges in Spans 4 and 6. No significant fatigue distress was observed in the superstructure members, and previously implemented retrofits appear to be functioning as intended.

ELEMENT 107 – STEEL OPEN GIRDER/BEAM

The main girders have been recently cleaned and painted and exhibit only isolated areas of minor section loss. The carrier beam retrofits installed below the hinge seats at the Span 4 and 6 expansion joints are functioning as intended with no defects noted. See **ELEMENT 820 – STEEL SEATED-HINGE ASSEMBLY** for additional information. No cracks or other fatigue-related distress were observed on the main girders.

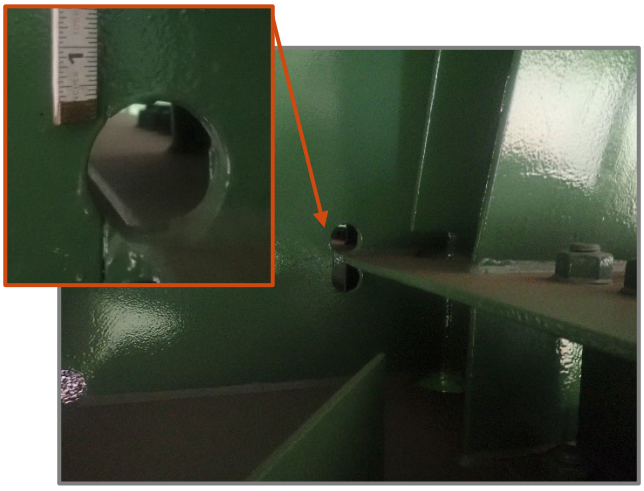


Photo 26 – Typical dogbone retrofit overcut in the girder web, looking north at Girder B at Floorbeam 4.

Dogbone retrofits consisting of drilled arrest holes with sawcuts between the holes have previously been installed in tension zones within the girder webs adjacent to floorbeam bottom flanges or lateral bracing connections. Numerous dogbone retrofits exhibit an overcut or areas that were not fully sawcut during the initial installation **(See Photo 26)**. Most of the overcuts are no longer visible due to the new paint system that was recently installed on the structure. Isolated arrest holes for the dogbone retrofits are misshapen (oblong). Refer to **Appendix D** for additional information on the dogbone retrofits. *Note that previously documented locations of overcuts were assumed to remain in areas that could not be confirmed due to the new paint system.*

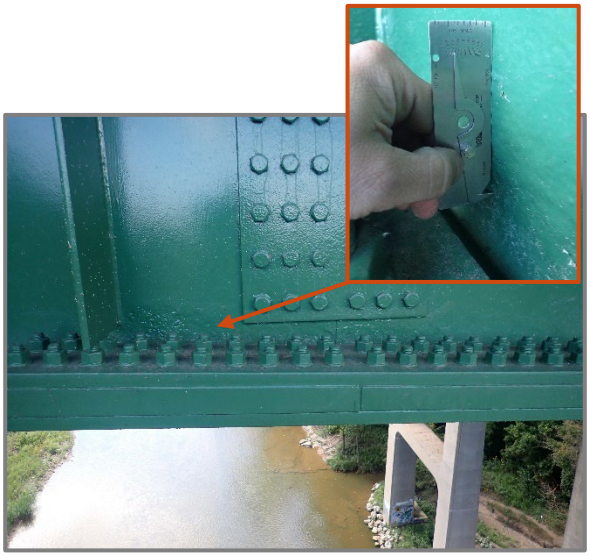


Photo 27 – Cleaned and painted pitting 1/8" deep on the bottom of the north face of the Girder F web along the bolted splice between Floorbeams 54 and 55, looking south.

Girder F in Span 7 has a 36" long by 4" high area of cleaned and painted 1/8" deep pitting on the bottom of the north face of the web along the bolted splice between Floorbeams 54 and 55 **(See Photo 27)**. The main girder flanges, webs, and hinge seat elements below the expansion joints have isolated areas of minor cleaned and painted pitting, typically up to 1/16" deep. There are isolated small areas of failed paint with minor surface corrosion along the edges of the girder flanges.

Isolated transverse stiffeners on the main girders have small impact deformations, likely due to construction. The first transverse stiffener west of Floorbeam 11 on the south face of Girder D has a 3" long painted over tear along its edge, likely from construction.

Knee brace connection retrofits have been previously installed along the bottom portions of the knee braces at the girder bottom flanges below each floorbeam. Multiple knee brace connection retrofit bolts in the girder bottom flanges are missing at isolated locations on the structure **(See Photo 28)**.

Photo 28 – 3 of 4 bottom flange bolts missing in the Girder F knee brace connection retrofit at Floorbeam 15, looking north.

The girder alignment is in good condition overall. No instances of girder misalignment or sagging were noted during this inspection.

ELEMENT 113 – STEEL STRINGER

The steel stringers are in good condition overall with only isolated areas of minor surface corrosion noted on the stringer ends along the edges of their flanges adjacent to expansion joints.

ELEMENT 152 – STEEL FLOORBEAM

The steel floorbeams have minor to moderate cleaned and painted section loss below the expansion joints in Span 4 (Floorbeams 26 and 27) and Span 6 (Floorbeams 50 and 51), worst between the floorbeam cantilevers below the median. Floorbeam top flanges have several areas of minor surface corrosion where stay-in-place forms have failed along the joints.

There are 3" long by 1" high corrosion holes in the tops of the Floorbeam 26 and 27 webs at the ends of the north cantilevers of the eastbound structure below the median **(See Photo 29)**; similar corrosion holes up to 1" diameter are present at the ends of other floorbeam cantilevers below the expansion joints. The floorbeam webs and flanges typically have up to 1/8" deep cleaned and painted pitting on the faces directly below the expansion joints. The Floorbeam 26 south cantilever on the westbound structure has one area of cleaned and painted section loss with down to 1/8" remaining thickness (3/4" original thickness) on the east edge of the bottom flange which tapers to 1/8" deep pitting at the web **(See Photo 30)**.

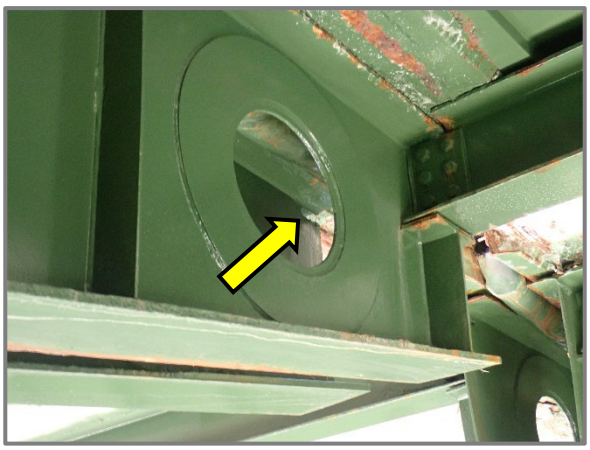


Photo 29 – 3" long by 1" high corrosion hole at the top of the Floorbeam 26 north cantilever on the eastbound structure at its end, looking northwest. Note that Floorbeam 27 is similar.

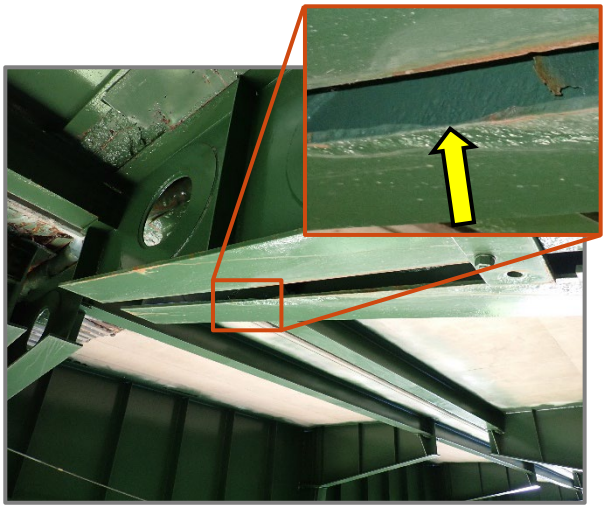


Photo 30 – Floorbeam 26 south cantilever on the westbound structure with one area of cleaned and painted pitting down to 1/8" remaining thickness, looking southwest.

Floorbeam 26 of the eastbound structure has one transverse stiffener exhibiting a 3" diameter area of 100% section loss at the base in the north cantilever, and Floorbeam 26 of the westbound structure has a 2" high area of 100% section loss at the base in the south cantilever **(See Photo 31)**. Several other transverse stiffeners below the expansion joints exhibit up to 1/8" deep cleaned and painted section loss.

The floorbeams away from the expansion joints are typically in good condition overall with no significant defects noted.

Photo 31– South cantilever of Floorbeam 26 on the westbound structure with 100% section loss at the base of a transverse stiffener near the base, looking south.

ELEMENT 311 – MOVABLE BEARING

The rocker bearings at the Forward Abutment had slight differential movement at the time of inspection (73 °F), with the exterior girders (Girders A and F) expanded 6.0° and 6.5°, respectively, while the interior girders were expanded between 1.5° and 4.0°. At the Rear Abutment, all rocker bearings were approximately neutral or slightly expanded at the time of inspection (76 °F). Rocker bearing expansion measurements at the abutments are presented in **Table 4**.

Girder	Rocker Bearing Position	
	Rear Abut. (76 °F)	Forward Abut. (73 °F)
A	1.0° Exp.	6.0° Exp.
B	1.5° Exp.	1.5° Exp.
C	1.0° Exp.	2.0° Exp.
D	0.5° Exp.	2.5° Exp.
E	Neutral	4.0° Exp.
F	1.0° Exp.	6.5° Exp.

Table 4 – Rocker bearing measurements at the abutments ("Exp." = expansion, "Con." = contraction).

A 36" long by 12" high by 2" deep spall in the west face of the Girder F seat pedestal at the Forward Abutment has undermined the masonry plate up to 3/4" deep over its full width **(See Photo 32)**.

Photo 32 – Spall in the west face of the Girder F seat pedestal at the Forward Abutment undermining the bearing masonry plate up to 3/4" deep, looking east.

ELEMENT 313 – FIXED BEARING

The fixed bearing for Girder F at Pier 7 has up to 1/4" deep cleaned and painted pitting on the bearing assembly and masonry plate; minor active corrosion with pack rust up to 1/8" thick is also present between the masonry plate and the lead leveling sheet at this location **(See Photo 33)**. Fixed bearings at other locations have isolated cleaned and painted minor pitting. The southeast anchor bolt nut at the Girder A bearing at Pier 5 is backed off 5/8".

Photo 33 – Up to 1/4" deep cleaned and painted pitting on the bearing assembly and masonry plate for Girder F at Pier 7, looking south.

Photo 34 – New stamp denoting the recently applied OZEU protective coating system, looking northwest at Girder A at the Rear Abutment.

ELEMENT 515 – STEEL PROTECTIVE COATING

A new protective coating system was applied to the steel superstructure members prior to the 2021 inspection **(See Photo 34)**. The protective coating system is in good condition overall with isolated areas of missing paint with minor surface corrosion along the edges of the girder flanges and locations of paint failure with minor surface corrosion at floorbeams and stringer ends adjacent to the hinge expansion joints.

ELEMENT 820 – STEEL SEATED-HINGE ASSEMBLY

As noted in the **BRIDGE DESCRIPTION**, the westbound bridge was closed in 2000 due to a crack being found at the seated hinge in Span 4 at Girder D. As a result, the bridge was closed until carrier beam retrofits could be installed at all twelve hinge locations across both structures. The carrier beam retrofits installed below the hinge seats are functioning as intended with no defects noted **(See Photo 35)**. The girders and hinge seat elements below the expansion joints have isolated areas of minor cleaned and painted pitting, typically up to 1/16" deep.

Photo 35 – Typical carrier beam retrofit installed below the seated hinge joints, looking north at Girder A at the Span 4 expansion joint.

DIAPHRAGMS /CROSSFRAMES (No Associated Element)

Crossframes are present between interior stringers between the main girders. Minor cleaned and painted pitting was noted on the end crossframes at the abutments and adjacent to the hinge expansion joints. No other significant defects were noted in the crossframes.

LATERAL BRACING (No Associated Element)

Lateral bracing is present in the exterior bays between Girders A and B and between Girders E and F. Isolated lateral bracing members exhibit minor dents and deformations from erection damage. There is a 1 1/2" outward impact deformation over an 8" long by 6" high area of the stem of the lateral bracing member on the west side of Floorbeam 14 near Girder B. Isolated lateral bracing erection bolts are loose or missing **(See Photo 36)**.

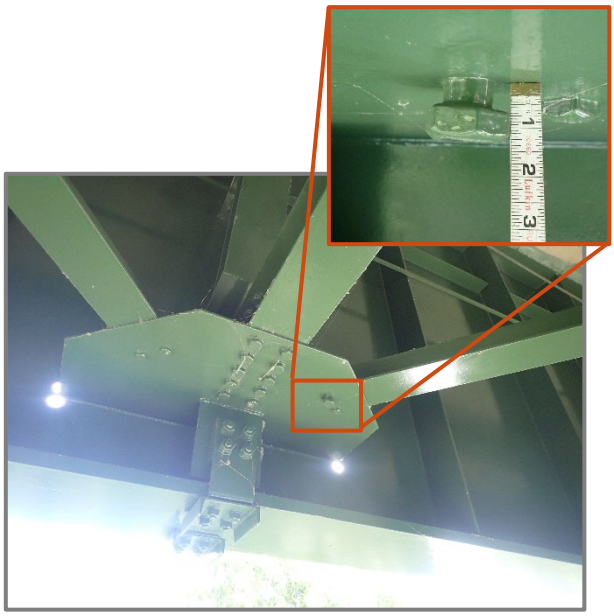


Photo 36 – Backed off (loose) erection bolt in the lateral bracing connection plate at Floorbeam 47 at Girder A, looking southwest.

SWAY BRACING (No Associated Element)

Lower sway bracing struts are present between the girders of each structure at each floorbeam, and intermediate sway bracing vertical members are present below the crossframes in exterior bays. No significant defects were noted in the sway bracing members.

ITEM 60 – SUBSTRUCTURE SUMMARY

The substructure is in SATISFACTORY CONDITION [6-NBIS] overall due to minor to moderate spalls and delaminations with exposed and corroded reinforcement in the pier columns and caps **(See Photo 37)**. Corner spalls and delaminations are present in the abutment girder seat pedestals, and the abutment backwalls have widespread delaminated areas. The wingwalls have cracks, spalls, and patches, including multiple cracks up to 1/8" wide with efflorescence and rust staining in the interior wingwall at the Rear Abutment. Installation of new slope protection has been completed since the previous inspection.

Photo 37 – Numerous delaminations and spalls with exposed reinforcement throughout the north column at Pier 3 of the eastbound structure, looking southwest.

ELEMENT 205 – REINFORCED CONCRETE COLUMN

The reinforced concrete pier columns exhibit widespread minor to moderate delaminations and spalls, some with exposed and corroded reinforcement **(See Photo 38)**. Corner spalls and delaminations are present up to 30' high, typically worst near the bases of the columns. Deterioration is also common on the columns along leaking drainage downspouts. Isolated pier columns have hairline vertical cracks with light efflorescence.

At Pier 6, the columns for the westbound structure have moderate to heavy scaling near their base, and the columns for the eastbound structure have minor scaling of the bottom 18". Previously placed large diameter rip rap remains in place around the bases of these columns. Up to 2' deep localized scour pockets are present around the bases of the Pier columns 5 for both structures **(See Photo 39)**.

Photo 38 – Numerous spalls with exposed reinforcement on the south column at Pier 2 of the westbound structure, looking northeast.

Photo 39 – Minor localized scour along the base of Pier 5 columns, looking south at the south column on the westbound structure.

ELEMENT 215 – REINFORCED CONCRETE ABUTMENT

Visible portions of the abutments consist of the girder seat pedestals at each end of the structure. The girder seat pedestals at the Forward Abutment have minor to moderate spalls and delaminations, some with exposed reinforcement. A 36" long by 12" high by 2" deep spall in the west face of the Girder F seat Pedestal at the Forward Abutment has undermined the masonry plate up to 3/4" deep over its full width **(See Photo 32)**. Corner delaminations are also present on the seat pedestals for Girders A, B, D, and E; however, these delaminations do not undermine the girder masonry plates. A 20" high by 30" wide by 1" deep top corner spall/delamination is present on the west face of the Girder A seat pedestal with no undermining to the masonry plate noted. No significant defects were noted in the girder seat pedestals at the Rear Abutment.

ELEMENT 234 – REINFORCED CONCRETE PIER CAP

The reinforced concrete pier caps have minor to moderate spalls and delaminations, some with exposed reinforcement. The west face of the Pier 2 cap for the westbound structure has a 72" high by 42" wide by 2" deep spall with exposed and corroded reinforcement on the west face over the west column behind the drainage downspout **(See Photo 40)**; there is a 24" diameter by 1" deep spall with exposed and corroded reinforcement adjacent to this location on the west face and an 18" high by 9" wide by 2" deep spall on the east face. The west face of the Pier 2 cap for the eastbound structure has numerous spalls with reinforcement (up to 21" wide by 15" high by 2" deep) and delaminations (up to 3' diameter) over the west column behind the drainage downspout. The west face of the Pier 7 cap for the westbound structure has a 72" high by 60" wide by 2" deep spalled and delaminated area over the west column behind the downspout.

Photo 40 – 72" high by 42" wide by 2" deep spall with exposed and corroded reinforcement behind the downspout on the west face of the Pier 2 cap for the westbound structure, looking east.

There are moderate top corner spalls in the center pedestals of Pier 3 on the eastbound structure and Pier 4 on the westbound structure; no undermining was noted to either girder bearing. The pier caps have minor to moderate top corner spalls in isolated locations.

ELEMENT 830 – ABUTMENT BACKWALL

The abutment backwalls have widespread large delaminations, primarily behind the girder ends. There are V-shaped delaminations, up 7' wide by full height, in the Forward Abutment backwall behind Girders A, B, D, E, and F. The Rear Abutment backwall has widespread delaminations, typically up to 7' wide by 6' high, behind the girder ends, and smaller delaminations in isolated locations between the girders. The Rear Abutment backwall has an 8' wide by 4' high delamination with a 27" wide by 21" high by 2" deep spall along the south edge of the delamination behind Girder F **(See Photo 41)**. The Forward Abutment backwall for the eastbound structure has a 12" diameter by 3" deep spall near the top adjacent to the median.

Photo 41 – 8' wide by 4' delamination with an adjacent spall in the Rear Abutment backwall behind Girder F, looking west.

The south end of the Rear Abutment backwall for the westbound structure is undermined 5" high by up to 12" deep over an approximately 6.5' length from the Girder D pedestal to the interior wingwall. The south end of the Forward Abutment backwall for the eastbound structure is undermined up to 4" high by 30" deep over a 40" length **(See Photo 42)**.

Photo 42 – Forward Abutment backwall and wingwall for the eastbound structure undermined up to 30" deep/long at its south end, looking east.

WINGWALLS (No Associated Element)

The wingwalls have isolated minor cracks, patches, and spalls. The wingwalls typically exhibit full height vertical cracks up to 1/16" wide along the backwall connections. The south wingwall at the Forward Abutment has a full height by 12" wide patch which is cracking and beginning to fail along the backwall connection **(See Photo 43)**. The north wingwall at the Forward Abutment has a 12" diameter by 1" deep spall with exposed reinforcement along the full height crack at the backwall connection. The south wingwall at the Forward Abutment is undermined 4" high by up to full depth over a 30" length at the backwall interface **(See Photo 42)**.

The interior wingwall at the Rear Abutment has one 1/8" wide vertical/diagonal crack with moderate efflorescence and light rust staining near the bottom approximately 10' from the backwall of the westbound structure **(See Photo 44)**. This wingwall has two additional 1/16" wide vertical cracks with moderate efflorescence and light rust staining near the bottom and one hairline horizontal crack near the backwall connection for the westbound structure.

Photo 43 – 12" wide patch beginning to fail in the south wingwall at the along the Forward Abutment connection, looking north.

Photo 44 – 1/8" wide vertical/diagonal crack with moderate efflorescence and light rust staining in the interior wingwall at the Rear Abutment, looking northwest.

SLOPE PROTECTION (No Associated Element)

Installation of new slope protection which was in progress during the previous inspection has since been completed. Previously noted erosion channels along the west and east sides of the structure has been filled with large stone rip rap, and the faces of the slope protection on both sides have been covered with aggregate stone. This slope protection on the west side extends from the Rear Abutment to where Valley Parkway crosses below the bridge in Span 3, and from the Forward Abutment to the river edge on the east side **(See Photos 45 and 46)**.

Photo 45 – Recently installed slope protection in front of the Rear Abutment, looking west.

Photo 46 – Recently installed slope protection in front of the Forward Abutment, looking east.

The prior erosion channel at the east side of the structure runs north to south. The erosion channel is even on the north end and transitions to a 30' high near-vertical slope at the south end **(See Photo 47)**. This slope profile remains, but the new slope protection is in place and performing adequately.

Photo 47 – Erosion channel in front of the Forward Abutment, looking east. Note that new slope protection should mitigate further erosion.

ITEM 61 – CHANNEL SUMMARY

The channel, which flows in a straight alignment below Span 7, is in GOOD CONDITION [7-NBIS] overall. Up to 2' deep localized scour pockets are present around the bases of the Pier columns 5 for both structures. Previously placed large diameter rip rap remains in place around the bases of the columns at Pier 6 for both structures. No significant scour was noted at any of the remaining piers within the flood plain.

The waterway adequacy of the structure is very good, as the bridge superstructure is located approximately 100' above the river.

APPROACH SUMMARY

The approaches are in satisfactory condition overall due to moderate transverse and longitudinal cracks, wear, flushing, and isolated potholes in the east approach asphalt pavement and numerous defects related to the approach guardrails and concrete railings. Approach embankment from behind the Forward Abutment backwalls is spilling out through the median joint. Resurfacing of the rear approach has been completed since the previous inspection **(See Photo 48)**.

Photo 48 – Rear approach roadway resurfaced since the previous inspection, looking southwest.

ELEMENT 321 – REINFORCED CONCRETE APPROACH SLAB

The reinforced concrete approach slabs are covered with asphalt at both ends of the bridge. Asphalt along the Forward Abutment joint headers is breaking up, revealing edge spalls in the approach slabs below over the length of the joints. The asphalt over the forward approach slabs has moderate transverse and longitudinal cracks with map cracking and flushing in the wheel lines and isolated potholes up to 12" diameter by full depth.

The forward approach slab joint header for the westbound structure is spalled up to 15" long by 5" deep with exposed reinforcement in the shoulder. The full width of the approach joint header is patched, but the asphalt is beginning to fail.

The asphalt pavement covering the rear approach slabs is in good condition with minor wear noted in the eastbound pavement only.

APPROACH ROADWAY SURFACE (no associated element)

The asphalt roadway pavement on the forward approach has moderate transverse and longitudinal cracks, minor wear and flushing, and isolated potholes. The forward approach pavement for the westbound structure has up to 1/8" wide transverse cracks spaced at approximately 20' and up to 1/8" wide longitudinal cracks, while the forward approach pavement for the eastbound structure has up to 1/4" wide transverse cracks spaced at approximately 10' and up to 1/4" wide longitudinal cracks **(See Photo 49)**. Some of these cracks have been sealed.

Photo 49 – Typical transverse and longitudinal cracks in the forward approach roadway surface, looking southeast at the end of the westbound structure.

The forward approach roadways exhibit minor wear and flushing in the wheel lines. There is a 5' long by 1' wide pothole in the forward approach roadway for the westbound structure along the lane line between the center lanes approximately 75' from the bridge. There is an approximately 30' long by 6" wide pothole along the lane line between the center lane of the forward approach roadway for the westbound structure at the end of the guardrail.

The rear approach roadways have been resurfaced since the previous inspection and are in good condition with minor wear noted in the eastbound pavement only.

EMBANKMENT (No Associated Element)

At the Forward Abutment, embankment fill behind the backwalls below the approach slabs (abutment spans) is spilling out from the median joint, resulting in an approximately up to 8' tall by 15' wide by 30' deep void behind the backwalls **(See Photo 50)**. Runoff erosion at the southeast bridge corner has resulted in minor undermining at the backwall interface with the southeast wingwall. The corner embankments along the wingwalls are generally well vegetated.

Photo 50 – Embankment fill spilling out from behind the Forward Abutment backwall through the median joint, looking north. Note the 8' tall by 15' wide by 30' deep void that has resulted below the approach slabs.

APPROACH GUARDRAIL (No Associated Element)

The approach guardrail is in fair condition overall with minor to moderate impact damage to the metal flexbeam, isolated split or damaged posts and blockouts, and deterioration of the approach concrete median barriers and exterior railings.

Photo 51 – Damaged timber posts and plastic blockouts on Posts 3 through 6 from the bridge end in the southeast corner approach guardfence, looking east.

The southeast corner approach guardrail has moderate damage and impact scrapes. There is heavy damage to the timber posts and blockouts on Posts 3 through 6 and Post 10 from the bridge end, and the blockouts are typically rotated **(See Photo 51)**. Isolated timber guardrail posts have minor to moderate decay and splits. The southwest corner approach guardrail has isolated minor impact damage and scrapes. Post 10 from the bridge end has a broken plastic blockout, and the third post from the end terminal is broken. The northeast corner approach guardrail has minor impact damage, and the guardrail posts in the northeast and northwest corner approach guardrails have isolated minor splits.

The approach concrete median barriers have widespread moderate spalls with exposed and corroded reinforcement. At the rear approach, the median barrier has widespread spalls with exposed and corroded reinforcement, approximately 24" high by 2" deep, in the vertical faces. At the forward approach, the median barrier has isolated moderate spalls 8' long by up to full height by 3" deep with exposed reinforcement. Median barriers typically have moderate vertical and horizontal cracks throughout. The north exterior concrete approach railings typically have deep spalls with exposed reinforcement along the joints.

SIGN/UTILITY ITEMS SUMMARY

SIGNS

The signs on the bridge are in good condition overall with no significant deficiencies noted.

SIGN SUPPORTS

“Corporation Limit” signs are mounted on each side of the bridge in Span 4. The bolts for the brackets attaching these signs to the exterior bridge railings are broken; however, the signs remain attached to the floorbeams at their bases.

UTILITIES

Access hatches for the electrical panels below light poles are typically missing with exposed wiring, dirt and granular debris, and vegetation growth inside **(See Photo 52)**. Most of the light post bases are missing bolt caps.

The majority of the grounding cables are broken at the pier caps **(See Photo 53)**. Previous inspection reports noted that these grounding cables were likely broken during the recent repainting of the superstructure.

Photo 52 – Typical missing electrical panel access hatch below the light poles, looking north at Pier 7. Note exposed wiring, dirt, granular debris, and vegetation growth inside the panel.

Photo 53 – Typical broken grounding cable at the pier caps, looking west at Pier 7 adjacent to Girder F.

ITEM 41 – OPERATIONAL STATUS

The bridge remains OPEN WITH NO RESTRICTIONS [A-NBIS].

CONCLUSIONS AND RECOMMENDATIONS

Based upon the results of the 2022 inspection, the CUY-480-0647 Bridge is in SATISFACTORY CONDITION [6-NBIS] overall due to cracks and spalls in the reinforced concrete deck; failed patches and widespread deterioration of the wearing surface; widespread cracks, delaminations, and spalls in the reinforced concrete bridge railings; isolated areas of cleaned and painted section loss on the steel floorbeams and previous cracks in the steel girders; and moderate delaminations and spalls in the reinforced concrete substructure. Previously installed retrofits on the steel superstructure are in good condition and appear to be performing as intended. Recent work completed on the structure includes cleaning and repainting of the steel superstructure, slope protection installation at the west and east slopes, and resurfacing of the rear approach roadways.

Strinteg has provided rehabilitation and maintenance recommendations below in order to extend the usable life of the structure. We present our recommendations in the following three priority categories:

- High Priority Repairs: (Within 6 Month Period) — Work which should be performed as soon as possible to address deficiencies which affect the load carrying capacity of the structure or public safety.
- Medium Priority Repairs: (Within 1 to 2 Year Period) — Recommendations for deficiencies which currently do not significantly affect the load carrying capacity of the structure or public safety but will require corrective action if deterioration continues.
- Low Priority Repairs: (As Scheduled) — Recommendations for deficiencies that are minor in nature and won't affect the capacity of the structure or public safety or rehabilitation level repairs that are not immediately time sensitive. Recommendations for minor preventative repairs or routine maintenance may also be listed.

High Priority Repairs: None.

Medium Priority Repairs: Replace or patch the bridge wearing surface to prevent further deterioration to the concrete deck.

Patch spalls with exposed reinforcement in the underside of deck and deck edges.

Repair or replace the deteriorated abutment joints and adjacent headers.

Clean all gutters, drainage scuppers, and downspouts to restore proper function of the drainage system.

Repair or replace broken scupper grate bars.

Repair or replace the deteriorated concrete bridge railings and median barriers.

Clean and patch spalls and delaminations in the substructure units.

Low Priority Repairs: Replace missing access hatches for electrical panels below the light poles.

Backfill loss of embankment and undermining of the abutment backwalls and wingwalls and provide countermeasures to prevent further loss of fill.

Seal cracks and patch potholes in the forward approach roadways.

APPENDIX A

Bridge Inspection Field Report

Inspector:	Cartwright,Donald	**Structure Number:**	1812831
Inspection Date:	09/09/2022	**Facility Carried:**	IR 480

Bridge Inspection Report

Ohio Bridge Inspection Summary Report

CUY-00480-0647 (1812831)

2: District	District 12 26446 - FAIRVIEW PARK (CUY county)	5A: Inventory Route	1 00480
21: Major Maint A/B	01 - State Highway Agency /	7: Facility On	IR 480
225 Routine Main A/B	01 - State Highway Agency /	6: Feature Ints	ROCKY RIVER
221 Inspection A/B	01 - State Highway Agency /	9: Location	2.07 MI. W. OF JCT. I-71
220: Inv. Location	DISTRICT 12	Lat, Lon	41.424461018037384 ,-81.8577877386747

Condition

58: Deck	**6 - Satisfactory Condition**
58.01 Wearing Surface	6 - Satisfactory (1-10% distress)
58.02 Joint	6- Satisfactory (isolated leaking)
59: Superstructure	**6 - Satisfactory Condition**
59.01 Paint & PCS	8 - Very Good (up to 1% corr.)
60: Substructure	**6 - Satisfactory Condition**
61: Channel	**7**
61.01 Scour	**7 - Good**
62: Culverts	**N - Not Applicable**
67.01 GA	**6**

Appraisal

Sufficiency Rating	61.8 SD/FO 0 - ND
36: Rail, Tr, Gd, Term Std	1 1 1 1
72: Approach Alignment	8 - Equal to present desirable criteria
113: Scour Critical	8 - Stable for scour conditions
71: Waterway Adequacy	8 - Bridge Above Approaches

Geometric

48: Max Span Length (ft)	200.0
49: Structure Length (ft)	1571.0
52: Deck Width, Out-To-Out (ft)	144.0
424: Deck Area (sf)	226224
32: Appr Roadway Width (ft)	103.0
51: Road Width, Curb-Curb (ft)	142.0
50A: Curb/SW Width: Left (ft)	0
50A: Curb/SW Width: Right (ft)	0
34: Skew (deg)	0
33: Bridge Median	0 - No median
54B: Min Vert Underclearance (ft)	99
336A: Min Vert Clrnce IR Cardinal (ft)	99
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 (%)	130
704: Analysis Date	06/12/2019

Structure Type

43: Bridge Type	3 - Steel 03 - Girder and Floorbeam System N- Not Applicable
45: Spans Main / Approach	9 / 0
107: Deck Type	1 - Concrete Cast-in-Place
408: Composite Deck	N - Non-composite Construction
414A Joint Type 1	2 - Sliding Metal Plate Angle
414B: Joint Type 2	N - None
108A: Wearing Surface	3 - Latex Concrete or similar additive N- Not Applicable
422: WS Date	09/30/2005
423: WS Thick (in)	1.2
482: Protective Coating	5 - Paint System OZEU
483: PCS Date	01/01/1991
453: Bearing Type 1	2 - Rockers & Bolsters
455: Bearing Type 2	N - None
528: Foundn: Abut Fwd	6 - Rock (including Spread Footing on Rock)
533: Foundn: Abut Rear	6 - Rock (Including Spread Footing on Rock)
536: Foundn: Pier 1	6 - Rock (including Spread Footing on Rock)
539: Foundn: Pier 2	0 - Other

Age and Service

27: Year Built/ 106 Rehab	1970 / 0000
42A: Service On	1 - Highway
42B: Service Under	6 - Highway - waterway
28A: Lanes on	08
28B: Lanes Under	02
19: Bypass Length	1
29: ADT	109150
109: % Trucks (%)	5

Inspections

		Months	
90: Routine Insp.		12	09/09/2022
92A: FCM Insp.	Y	24	09/09/2022
92B: Dive Insp.	N	0	
92C: Special Insp.	N	0	
92D: UBIT Insp.	Y	12	09/09/2022
92E: Drone Insp.	N	0	

Inspector Cartwright,Donald

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Bridge Inspection Report

63: Analysis Method	6 - Load Factor (LF) rating reported by rating factor (RF) method using MS18 loading.

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Bridge Inspection Report

	Environment	Total Quantity	Units	Condition State 1	Condition State 2	Condition State 3	Condition State 4
12-Reinforced Concrete Deck	3 - Mod.	216432	sq. ft.	200376	15086	970	0
	CS2 - Hairline transverse cracks and map cracking, some with light efflorescence. Isolated minor delaminations. CS3 - Cracks with moderate efflorescence, moisture staining, or light rust staining. Spalls with exposed and corroded reinforcement. Large spalls with debonded reinforcement in underside of deck and at deck edges along expansion joints.						
1080-Delamination/Spall/Patched Area		358		0	20	338	0
1090-Exposed Rebar		85		0	0	85	0
1120-Efflorescence/Rust Staining		2597		0	2230	367	0
1130-Cracking (RC and Other)		13016		0	12836	180	0
510-Wearing Surfaces		206663	sq. ft.	183573	20669	2421	0
	CS1 - Generally in middle two lanes in each direction where the 2015 MSMC concrete overlay was placed. CS2 - In the outside lanes in each direction and in the shoulders where the 2002 LMC concrete overlay was placed. CS3 - Areas with potholes and/or failing asphalt patches. Generally located in the shoulders, near the expansion joints, along scuppers, and at the interface between the new and old overlays. Worst on westbound bridge in Spans 4 through 6.						
3210-Delamination/Spall/Patched Area/Pothole (Wearing Surfaces)		2421		0	0	2421	0
3220-Crack (Wearing Surface)		20669		0	20669	0	0
107-Steel Open Girder/Beam	3 - Mod.	8944	ft.	8789	145	10	0
	CS2 - Isolated locations with minor surface corrosion near girder ends at abutments and below hinge seat expansion joints. (Dogbone retrofit overcuts not included as defects in Element Level Condition States; see 2022 Physical Condition report for additional information). CS3 - Isolated locations of cleaned and painted minor pitting (2 LF of 1/16" deep pitting to Girder E in Span 6, 3 LF of 1/8" deep pitting to Girder F in Span 7, and 5 LF 1/16" deep pitting in Girder A in Span 4).						
1000-Corrosion		155		0	145	10	0
515-Steel Protective Coating		317516	sq. ft.	316936	0	580	0
3440-Effectiveness (Steel Protective Coatings)		580		0	0	580	0
113-Steel Stringer	3 - Mod.	17880	ft.	17736	144	0	0
	CS2 - Isolated locations with minor surface corrosion near stringer ends at abutments and below hinge seat expansion joints.						
1000-Corrosion		144		0	144	0	0
515-Steel Protective Coating		101921	sq. ft.	101777	0	144	0
3440-Effectiveness (Steel Protective Coatings)		144		0	0	144	0
152-Steel Floor Beam	3 - Mod.	9918	ft.	9506	3	409	0
	CS2 - 3 LF active corrosion in Floorbeam 50 on westbound structure CS3 - Minor to moderate cleaned and painted section loss in floorbeams below hinge seat expansion joints with areas of reactivating surface corrosion. Up to 3" by 1" high corrosion holes in tops of webs at cantilever ends below median. Cleaned and painted pitting (down to 1/8" remaining) in eastbound Floorbeam 26 north cantilever bottom flange below median.						

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Bridge Inspection Report

	Environment	Total Quantity	Units	Condition State 1	Condition State 2	Condition State 3	Condition State 4
1000-Corrosion		412		0	3	409	0
515-Steel Protective Coating		111086	sq. ft.	110262	0	824	0
3440-Effectiveness (Steel Protective Coatings)		824		0	0	824	0
205-Reinforced Concrete Column	3 - Mod.	32	each	9	7	16	0
	CS2 - Minor to moderate delaminations, typically along the corners. 1 CS2 Abrasion/Wear due to scaling at the base of westbound Pier 6. 1 CS2 Scour due to localized scour pockets up to 2' deep at base of Pier 5 column. CS3 - Minor to moderate spalls with exposed and corroded reinforcement. Corner spalls/delaminations up to 30' high, worst near the bases. Deterioration is common along leaking drainage downspouts.						
1080-Delamination/Spall/Patched Area		21		0	5	16	0
1190-Abrasion/Wear (PSC/RC)		1		0	1	0	0
6000-Scour		1		0	1	0	0
215-Reinforced Concrete Abutment	3 - Mod.	92	ft.	56	24	12	0
	CS2 - Corner delaminations on girder seat pedestals for Girders A, B, D, and E at the Forward Abutment. CS3 - Minor to moderate spalls and delaminations, some with exposed reinforcement, at the girder seat pedestals at the Forward Abutment. Spall in the west face of the Girder F seat pedestal undermining the Girder F masonry plate up to 3/4" deep over its full width.						
1080-Delamination/Spall/Patched Area		36		0	24	12	0
234-Reinforced Concrete Pier Cap	3 - Mod.	960	ft.	924	8	28	0
	CS2 - Delaminations and minor top corner spalls on pier caps. CS3 - Minor to moderate delaminations and spalls with exposed reinforcement, worst behind downspouts. Larger spalls with exposed reinforcement noted on westbound Pier 2 cap, eastbound Pier 2 cap, and westbound Pier 4 cap. Moderate top corner spall in center pedestals of eastbound Pier 3 cap and westbound Pier 4 cap.						
1080-Delamination/Spall/Patched Area		36		0	8	28	0
305-Assembly Joint without Seal	3 - Mod.	552	ft.	166	279	107	0
	CS2 - Expansion joints with rusted joint armor and minor deterioration to adjacent headers. Isolated plow damage on joint armor. CS3 - EB Rear Abutment joint is sunken in middle two lanes and joint in 2nd lane bounces under live load traffic. WB Rear Abutment joint is discontinuous and depressed over full width of 2nd lane. EB Forward Abutment joint is settled up to 1" in 3rd and 4th lanes, and asphalt on east side of joint is broken up and spalled with failing patches. WB Forward Abutment joint has vertical misalignments and moderate plow damage to joint armor, and weld between east joint armor sections is broken in the right lane.						
2360-Adjacent Deck or Header		386		0	279	107	0
311-Movable Bearing	3 - Mod.	24	each	22	2	0	0
	CS2 - Slight differential movement between bearings at Forward Abutment (exterior girders expanded more relative to interior girders).						
2220-Alignment		2		0	2	0	0
313-Fixed Bearing	3 - Mod.	36	each	35	0	1	0
	CS3 - Up to 1/4" deep cleaned and painted pitting on bearing assembly and masonry plate for Girder F at Pier 7.						
1000-Corrosion		1		0	0	1	0

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Bridge Inspection Report

	Environment	Total Quantity	Units	Condition State 1	Condition State 2	Condition State 3	Condition State 4
321-Reinforced Concrete Approach Slab	3 - Mod.	4842	sq. ft.	4404	64	374	0
	Rear abutment approach slabs have been paved over since the previous inspection. CS2 - Isolated CS2 cracks in eastbound Forward Abutment approach slab. CS3 - Edge spalls along Forward Abutment joints, typically moderate cracking throughout approach slab, and potholes in asphalt over approach slab.						
1080-Delamination/Spall/Patched Area		170		0	0	170	0
1130-Cracking (RC and Other)		268		0	64	204	0
331-Reinforced Concrete Bridge Railing	3 - Mod.	6210	ft.	0	3901	2309	0
	CS2 - Widespread vertical and horizontal cracks, areas of map cracking, and horizontal delamination cracks along the interior faces of railings near the top. CS3 - Widespread spalls with exposed, corroded, missing, or debonded reinforcement. Top edges of railings typically spalled over their full width by up to 6" deep with fully exposed reinforcement, commonly extending down vertical faces of railings. Large spalls at bases adjacent to expansion joints.						
1080-Delamination/Spall/Patched Area		4262		0	1953	2309	0
1130-Cracking (RC and Other)		1948		0	1948	0	0
815-Drainage	3 - Mod.	24	each	0	23	1	0
	CS2 - Drain scuppers partially filled (up to 85%) with dirt, gravel, debris, and isolated vegetation growth. Deck conveys flow but is slightly limited. CS3 - Fully clogged downspout on Pier 7 for the eastbound bridge.						
820-Steel Seated-Hinge Assembly	3 - Mod.	12	each	11	1	0	0
	The hinges are in good condition. No significant deficiencies noted on the hinge components. As noted under the Bridge Description, the seated hinge in Span 4 at Girder 3 had previously cracked and the bridge was closed until the seated hinge could get retrofitted. The repair appears to be in good condition with no changes since installed; this location is rated CS2. The other 11 hinges were also retrofitted with carrier beams installed below the structure to add redundancy.						
830-Abutment Backwall	3 - Mod.	288	ft.	146	85	57	0
	CS2 - Widespread minor to moderate delaminations in abutment backwalls behind girder ends and isolated areas between girders. CS3 - Up to 7' wide by full height V-shaped delaminations in Forward Abutment backwall behind girders. Up to 7' wide by 6' high delaminations in Rear Abutment backwall behind girders, and one 8' wide by 4' high delamination/spall behind Girder F. 12" diameter by 3" deep spall in Forward Abutment backwall near median. Previous spalls are based no longer visible due to recently placed stone.						

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Bridge Inspection Report

CUY-00480-0647 _(1812831)

ODOT District:	District 12					Date Built:	07/01/1970
Major Maint:	01 - State Highway Agency	Facility Carried:	IR 480	Traffic On:	1 - Highway	Rehab Date:	
Routine Maint:	01 - State Highway Agency	Feature Inters:	ROCKY RIVER	Traffic Under:	6 - Highway - waterway	Insp. Resp A:	01 - State Highway Agency
FIPS Code:	26446 - FAIRVIEW PARK (CUY county)	Location:	DISTRICT 12	2.07 MI. W. OF JCT. I-71		Insp Resp B:	
Inspector	Cartwright,Donald	Inspection Date	09/09/2022	Reviewer	Not Approved		

Inspector Comments - Deck and Approach

Deck

Reference the 2022 Inspection Physical Condition Report for additional information and photographs.

Floor/Slab (SF)

The underside of deck has hairline transverse cracks and hairline map cracking spaced at approximately 12". Numerous cracks exhibit light or isolated moderate efflorescence, and the westbound structure has one transverse crack with light rust staining. On the westbound structure, there are several locations of moisture staining and greater than typical efflorescence in the underside of deck; these areas are typically approximately 5' diameter and are located below patched areas in the wearing surface. The deck overhangs typically have hairline transverse cracks with light efflorescence. The deck underside has isolated minor to moderate delaminations and spalls. The westbound structure deck underside has a 36" long by 42" wide by 5" deep spall with fully exposed and corroded (approximately 50% section loss) transverse and longitudinal bottom mat reinforcement along the south side of Stringer 11 at Floorbeam 42. The deck forms near the joints have moderate to advanced corrosion in isolated locations with portions failed and moderate spalls with exposed reinforcement near the joints. The deck underside of the eastbound structure along the west side of the Span 6 expansion joint has a 7' wide by up to 15" long by full depth (9") spall with two layers of debonded and corroded reinforcement at the end of the deck along the joint armor. The deck underside of the westbound structure along the east side of the Span 4 expansion joint has an 18" long by 8" wide by full depth (9") spall with exposed and corroded reinforcement along the joint with an adjacent area of 5' long by 18" wide by 2" deep spalling with exposed and corroded reinforcement where the deck forms have failed. The exterior deck edges and undersides at the hinge joints typically have large spalls with multiple layers of exposed and corroded reinforcement, worst along the south edges of the eastbound structure; these spalls also typically extend into the railings.

Bridge Wearing Surface (SF)

The wearing surface has widespread minor cracks and potholes, typically worst in the shoulders and outside lanes where the deck did not receive the additional microsilica overlay in 2015. In these areas, up to 1/16" wide transverse cracks at 3' to 5' spacing are typical. Numerous potholes, up to 3" deep, are present in the wearing surface. The majority of these potholes have been patched with microsilica concrete and/or asphalt; however, many of the patches are failing with additional spalled or broken up concrete and asphalt around their perimeter. Potholes and failing patches are most frequent in the westbound right lane and shoulder, particularly in Spans 4 through 6 where potholes are typically up to 5' diameter by 3" deep. Potholes are typically present around the perimeter of the drainage scuppers and in the shoulders along the bases of the concrete bridge railings.

Bridge Railing (LF)

The reinforced concrete bridge railings have widespread spalls with exposed, corroded, missing, and debonded reinforcement; vertical and horizontal cracks, and areas of map cracking. The top edges of the exterior bridge railings are typically spalled over their full width by up to 6" deep with up to fully exposed reinforcement; these spalls commonly extend down onto the vertical faces up to 18" by 2" deep. Horizontal delamination cracks are typical on the interior faces of the exterior railings approximately 3" from the top for nearly the full length of the bridge railings.

The median barriers have spalls with exposed reinforcement up to 24" high by 5' long by 3" deep in the previously repaired top portions. A 50' long section of the median railing on the eastbound structure has moderate spalls and delaminations exposing longitudinal and transverse reinforcement near Pier 4. The longitudinal neoprene seal covering the opening between the median barriers is missing for over half of the bridge length.

Deck Drainage (EA)

Drainage scuppers on the bridge deck are partially filled up to 85% with dirt, gravel, and debris with isolated vegetation growth. Dirt, gravel, and debris along the bases of the bridge railings limit flow for drainage slightly and contribute to further debris accumulation in the scuppers. Multiple median scupper grates exhibit missing or broken metal bars.

The drainage downspouts below the bridge exhibit minor to moderate surface corrosion throughout with isolated areas of minor section loss and signs of leakage. There is a 12" long hole in the drain trough below the Span 4 expansion joint of the westbound structure, causing minor dirt and granular debris to collect on the Girder E hinge seat below.

Large diameter rip rap has previously been placed along the west bank of the river around Pier 6 to address undermined and washed out concrete paved gutters.

Expansion Joint (LF)

The expansion joints are leaking allow moisture and debris to reach the superstructure in a isolated locations. At the eastbound Rear Abutment, the joint armor on the west (approach) side of the joint in both middle lanes is approximately 1/2" lower than the east side of the joint due to vertical misalignments transversely between armor sections. The joint in the 2nd lane (from left) bounces under live load truck traffic with abrasion dust and spalling of the adjacent joint header. At the westbound Rear Abutment, the joint armor on the west (approach) side of the joint in the 2nd lane (from left) is discontinuous and depressed approximately 1/2" over the full width of the lane.

At the eastbound Forward Abutment, the joint armor on the east (approach) side of the joint is settled up to 7/8" and 1" in the third and fourth lanes (from left), respectively. The asphalt on the east side of the joint header is broken up and spalled over the full width of the joint failing patches. At the westbound Forward Abutment, there is a 1/2" vertical misalignment in the middle two lanes and a 1/4" vertical misalignment in the right lane and moderate plow damage to the joint armor. The weld between the east joint armor sections in the right lane is broken, causing the section on the right to bounce under live load. The east joint armor sections have multiple breaks and transverse misalignments up to 1/2" over its width.

Signs (EA)

The signs on the bridge are in good condition overall with no significant deficiencies noted.

Sign Supports (EA)

The bolts for the brackets attaching the "Corporation Limit" signs to the exterior bridge railings are broken; however, the signs remain attached to the floorbeams at their bases.

Utilities (LF)

Access hatches for the electrical panels below light poles are typically missing with exposed wiring, dirt and granular debris, and vegetation growth inside. Most of the light post bases are missing bolt caps.

The majority of the grounding cables are broken at the pier caps. Previous inspection reports noted that these grounding cables were likely broken during the recent repainting of the superstructure.

Approach

Approach Wearing Surface (EA)

The forward approach roadway surface is asphalt with regularly spaced full width transverse cracks and isolated longitudinal cracks, up to 1/4" wide, that have generally been sealed and with isolated locations of map cracks. The forward approach roadways minor wear and flushing in the wheel lines and several potholes.

The rear approach roadways have been resurfaced since the previous inspection and are in good condition with minor wear noted.

Approach Slab (SF)

The reinforced concrete approach slabs are covered with asphalt at both ends of the bridge. Asphalt along the Forward Abutment joint headers is breaking up, revealing edge spalls in the approach slabs below over the length of the joints. The asphalt over the forward approach slabs has moderate transverse and longitudinal cracks with map cracking and flushing in the wheel lines and isolated potholes up to 12" diameter by full depth.

The asphalt pavement covering the rear approach slabs is in good condition with minor wear noted in the eastbound pavement.

Approach Embankment (EA)

At the Forward Abutment, embankment fill behind the backwalls below the approach slabs is spilling out from the median joint, resulting in an approximately up to 8' tall by 15' wide by 30' deep void behind the backwalls. Runoff erosion at the southeast bridge corner has resulted in minor undermining at the backwall interface with the southeast wingwall.

Approach Guardrail (EA)

The approach guardrail is in fair condition overall with minor to moderate impact damage to the metal flexbeam, isolated split or damaged posts and blockouts, and deterioration of the approach concrete median barriers and exterior railings. The southeast corner guardrail has moderate damage and impact scrapes, and several damaged posts and blockouts. The southwest and northeast corner guardrails have minor impact damage and damaged posts.

The approach concrete median barriers have widespread moderate spalls with exposed and corroded reinforcement. Median barriers typically have moderate vertical and horizontal cracks throughout.

Inspector Comments - General Appraisal

Superstructure

Superstructure Alignment

The girder alignment is in good condition overall. No instances of girder misalignment or sagging were noted during this inspection.

Beams/Girders (LF)

The main girders have been recently cleaned and painted and exhibit only isolated areas of minor section loss.

The carrier beam retrofits installed below the hinge seats at the Span 4 and 6 expansion joints are functioning as intended with no defects noted. Numerous "dogbone" retrofits exhibit an overcut or areas that were not fully sawcut during the initial installation; most of the overcuts are no longer visible due to the new paint system that was recently installed on the structure (see formal report for locations). Isolated transverse stiffeners on the main girders have small impact deformations, likely due to construction.

Stringers (LF)

The steel stringers are in good condition overall with only isolated areas of minor surface corrosion noted on the stringer ends.

Floorbeams (LF)

The steel floorbeams have minor to moderate cleaned and painted section loss below the expansion joints in Span 4 (Floorbeams 26 and 27) and Span 6 (Floorbeams 50 and 51), worst between the floorbeam cantilevers below the median. Floorbeam top flanges have several areas of minor surface corrosion where stay-in-place forms have failed along the joints.

Bearing Devices (EA)

The rocker bearings at the Forward Abutment have slight differential movement with exterior girders expanded more relative to interior girders. A spall in the west face of the Girder F seat pedestal at the Forward Abutment has undermined the masonry plate up to 3/4" deep over its full width.

The fixed bearing for Girder F at Pier 7 has up to 1/4" deep cleaned and painted pitting on the bearing assembly and masonry plate; minor active corrosion with pack rust up to 1/8" thick is also present at the masonry plate. Fixed bearings at other locations have isolated cleaned and painted minor pitting.

Diaphragms and Crossframes (EA)

Minor cleaned and painted pitting was noted on the end crossframes at the abutments and adjacent to the hinge expansion joints.

Lateral Bracing (EA)

Isolated lateral bracing members exhibit minor dents and deformations from erection damage. Isolated lateral bracing erection bolts are loose or missing.

Sway Bracing (EA)

No significant defects were noted in the sway bracing members.

Protective Coating System (LF)

A new protective coating system was applied to the steel superstructure members prior to the 2021 inspection. The protective coating system is in good condition overall with isolated areas of missing paint with minor surface corrosion at member ends below joints.

Pins/Hangers/Hinges (EA)

No deterioration or other significant deficiencies were noted on the hinge components. The seated hinge in Span 4 at Girder D had previously cracked and the bridge was closed until the seated hinge could get retrofitted. The repair appears to be in good condition with no changes since installed – this location is rated CS2. The other 11 hinges were also retrofitted and carrier beams installed below the structure to add redundancy.

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Bridge Inspection Report

Substructure

Abutment Walls (LF)

The girder seat pedestals at the Forward Abutment have minor to moderate spalls and delaminations, some with exposed reinforcement. A 36" long by 12" high by 2" deep spall in the west face of the Girder F seat Pedestal at the Forward Abutment has undermined the masonry plate up to 3/4" deep over its full width. Corner delaminations are also present on the seat pedestals for Girders A, B, D, and E; however, these delaminations do not undermine the girder masonry plates.

Pier Caps (LF)

The reinforced concrete pier caps have minor to moderate spalls and delaminations, some with exposed reinforcement. The west face of the Pier 2 cap has numerous moderate spalls with exposed reinforcement behind the downspout near Girder F. The caps for Pier 2 of the eastbound structure and Pier 7 of the westbound structure also have moderate spalls with exposed reinforcement at downspouts. Pier caps have isolated minor to moderate top corner spalls.

Pier Columns/Bents (EA)

The reinforced concrete pier columns exhibit widespread minor to moderate delaminations and spalls, some with exposed and corroded reinforcement. Corner spalls and delaminations are present up to 30' high, typically worst near the bases of the columns. Deterioration is also common on the columns along leaking drainage downspouts. Isolated pier columns have hairline vertical cracks with light efflorescence.

The Pier 6 columns have scaling near the base with previously placed rip rap still in place. Up to 2' deep localized scour pockets are present at the Pier 5 columns.

Backwalls (LF)

The abutment backwalls have widespread large delaminations, primarily behind the girder ends. There are V-shaped delaminations, up 7' wide by full height, in the Forward Abutment backwall behind Girders A, B, D, E, and F. The Rear Abutment backwall has widespread delaminations, typically up to 7' wide by 6' high, behind the girder ends, and smaller delaminations in isolated locations between the girders. The south end of the Rear Abutment backwall for the westbound structure is undermined up to 12" deep. The south end of the Forward Abutment backwall for the eastbound structure is undermined up to 30" deep.

Wingwalls (EA)

The wingwalls have isolated minor cracks, patches, and spalls. The wingwalls typically exhibit full height vertical cracks up to 1/16" wide along the backwall connections. The interior wingwall at the Rear Abutment has multiple full height vertical/diagonal cracks up to 1/8" wide with moderate efflorescence and isolated rust staining.

Slope Protection (EA)

Installation of new slope protection which was in progress during the previous inspection has since been completed. Previously noted erosion channels along the west and east sides of the structure has been filled with large stone rip rap, and the faces of the slope protection on both sides have been covered with aggregate stone.

Culvert

Inspector Comments - Waterway

Waterway Adequacy

Channel Hydraulic Opening (EA)

The waterway adequacy of the structure is very good, as the bridge superstructure is located approximately 100' above the river.

Channel

Channel Alignment (LF)

The channel is perpendicular to the bridge and the waterway opening is adequate.

Channel Protection (LF)

The pier footings near the river are founded in rock and unexposed. Previously placed large diameter rip rap remains in place around the bases of the columns at Pier 6 for both structures.

Scour Critical

APPENDIX B

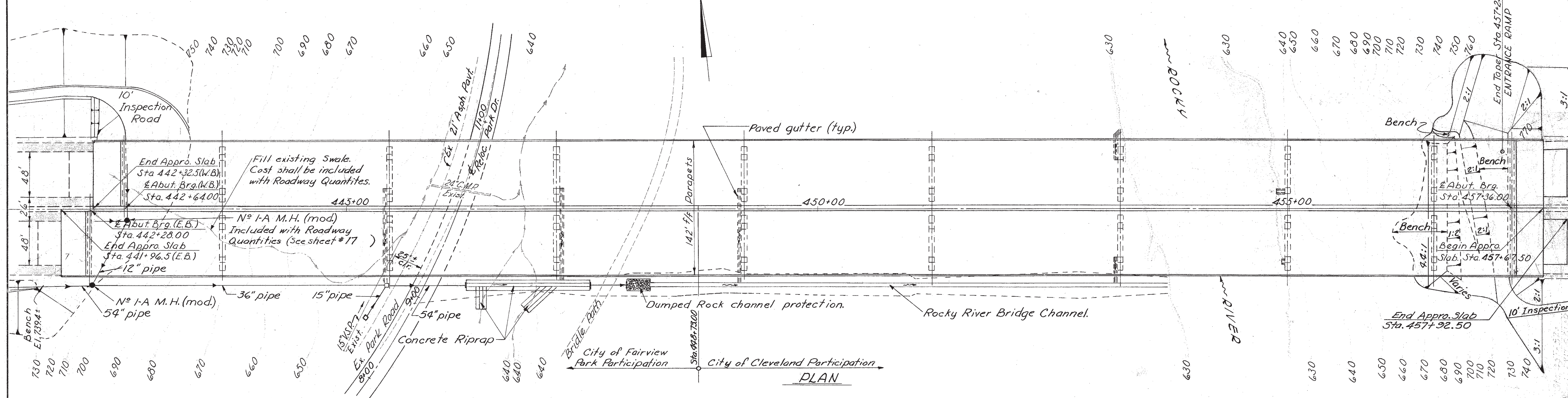
Existing Bridge Plans

T-2

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO	I-480-4(16)161	

60/120

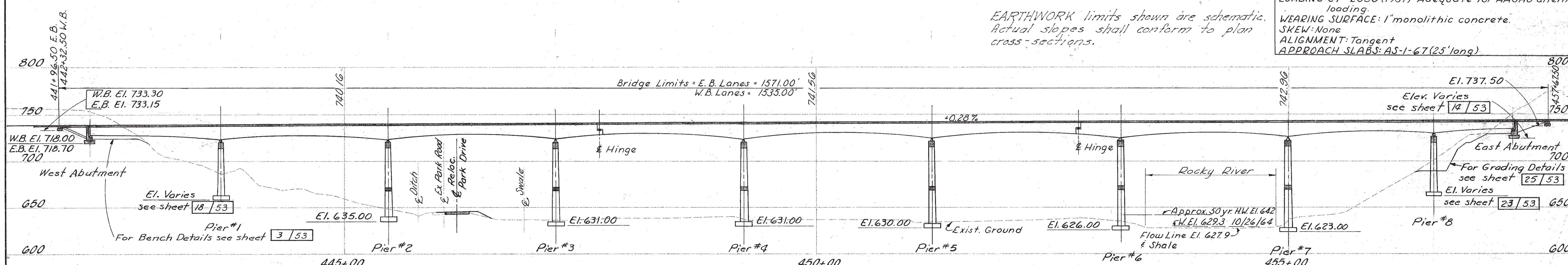
CUYAHOGA COUNTY
CUY-480-6.48



PROPOSED STRUCTURE

TYPE: Continuous haunched steel girder with transverse floorbeams, longitudinal stringers, concrete deck and concrete substructure.
SPANS: E.B. Lanes 139'-8", 2@177'-4", 3@199'-6", 177'-4", 155'-2", 82'-8" c/c Brgs.
W.B. Lanes 103'-8", 2@177'-4", 3@199'-6", 177'-4", 155'-2", 82'-8" c/c Brgs.
ROADWAY: 142 f/f parapets, with Type "2" Railing, including 26'-0" median and 10'-0" shoulders.
LOADING: CF-2000 (1957)-Adequate for AASHO alternate loading.
WEARING SURFACE: 1" monolithic concrete.
SKEW: None
ALIGNMENT: Tangent
APPROACH SLABS: AS-1-67 (25' long)

EARTHWORK limits shown are schematic. Actual slopes shall conform to plan cross-sections.



PROFILE on ℄ I-80
SHOWING STRUCTURE for E.B. RDWY.

HYDRAULIC DATA
Drainage Area = 283 sq. mi.
Q_{50} = 24,600 c.f.s.
V_{50} = 5.1 ft./sec. (includes overbank)
V_{50} = 10.4 ft./sec. (Main channel)

TRAFFIC DATA
DHV-(1975) = 4600 (1150 per lane)
DDHV-(1987) = 6520 (1630 per lane)

Note: For Drainage Quantities, see sheets Nº 17 & 18

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ALDEN E. STILSON & ASSOCIATES, LIMITED
CONSULTING ENGINEERS
COLUMBUS, OHIO

1/53

SITE PLAN

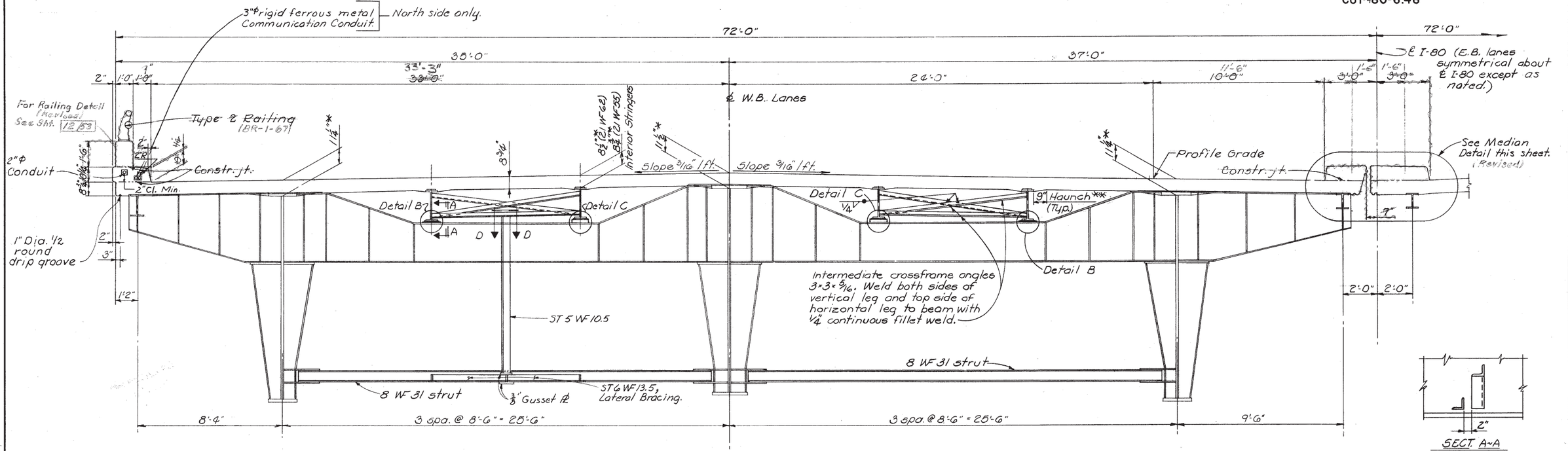
BRIDGE No. CUY-480-0648
OUTERBELT SOUTH over ROCKY RIVER
CUYAHOGA COUNTY
STA. 441+96.50 E.B.
STA. 457+67.50

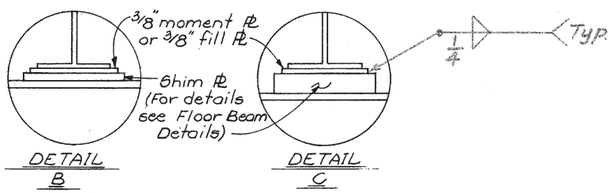
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
J.E.V.	J.E.V.		GEA RWE	JEV	2/23/68	

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

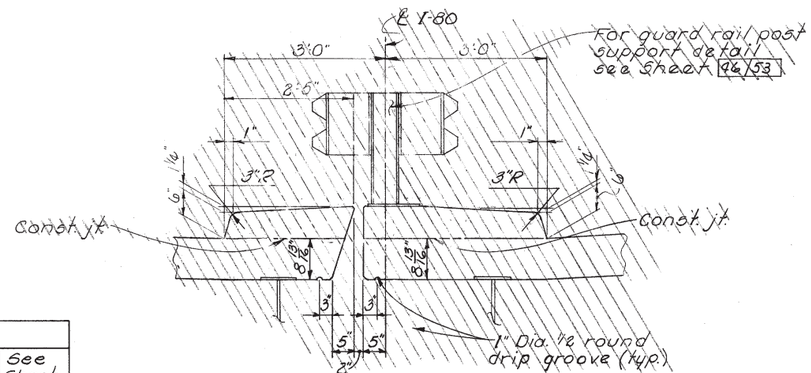
88/120

CUYAHOGA COUNTY
CUY-480-6.48

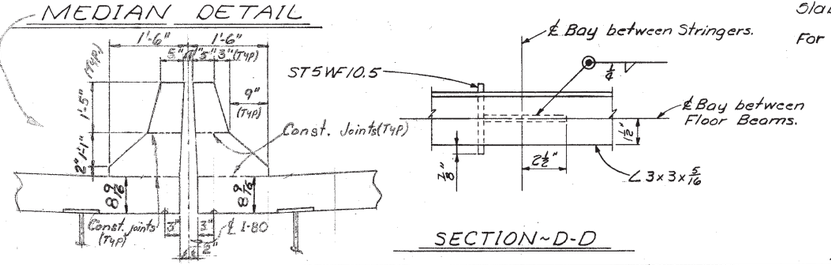




TRANSVERSE SECTION ~(Near Mid-Span)



MEDIAN DETAIL



SECTION ~ D-D

INDEX OF DETAILS

NOTES

* This is the nominal dimension. The quantity of deck concrete to be paid for shall be based upon this dimension, even though deviation from it may be necessary because the top flange of the girder or beam may not have the exact camber or conformation required to place it parallel to the finished grade. Deduction shall be made for volume of encased steel plates as per Sec. 511.19 of the Construction and Material Specifications.

Field Welded Attachments: No attachments shall be made by welding to the top flanges of the beams or girders, within a distance of 0.10 of the span length on either side of the interior supports. Welding for attachments to the top flanges at other parts of the spans shall be kept at least 2" from edge of flange.

** A typical haunch width of 9" shall be used for computing quantity of concrete. However, the haunch width may vary between 6" and 12" provided that the slope shall be not more than 1:4 for a haunch less than 9" wide.

~~Concrete parapet shall be included with Item 519 for payment.~~

Slab thickness includes 1" monolithic wearing surface.

For superstructure reinforcing see sheet 43/53

ALDEN E. STILSON & ASSOCIATES, LIMITED
CONSULTING ENGINEERS
COLUMBUS, OHIO
29/53

SUPERSTRUCTURE DETAILS

BRIDGE No. CUY-480-0648
OUTERBELT SOUTH over ROCKY RIVER
CUYAHOGA COUNTY STA. 441+96.50 E.B.
STA. 457+67.50

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
GEA	C.K.		RWE	J.E.V.	2/23/68	3-5-71

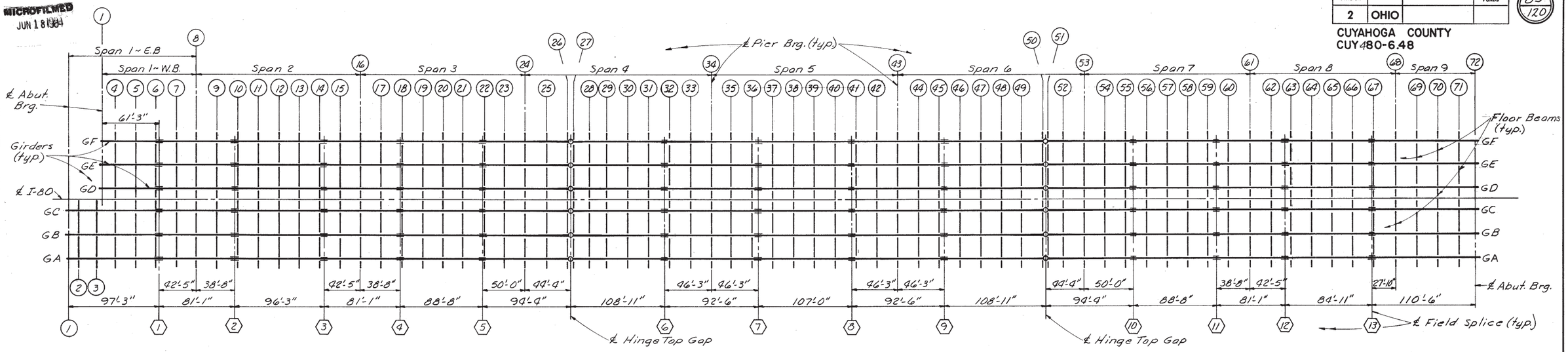
Rev. 10-22-70

Rev. 1-11-72

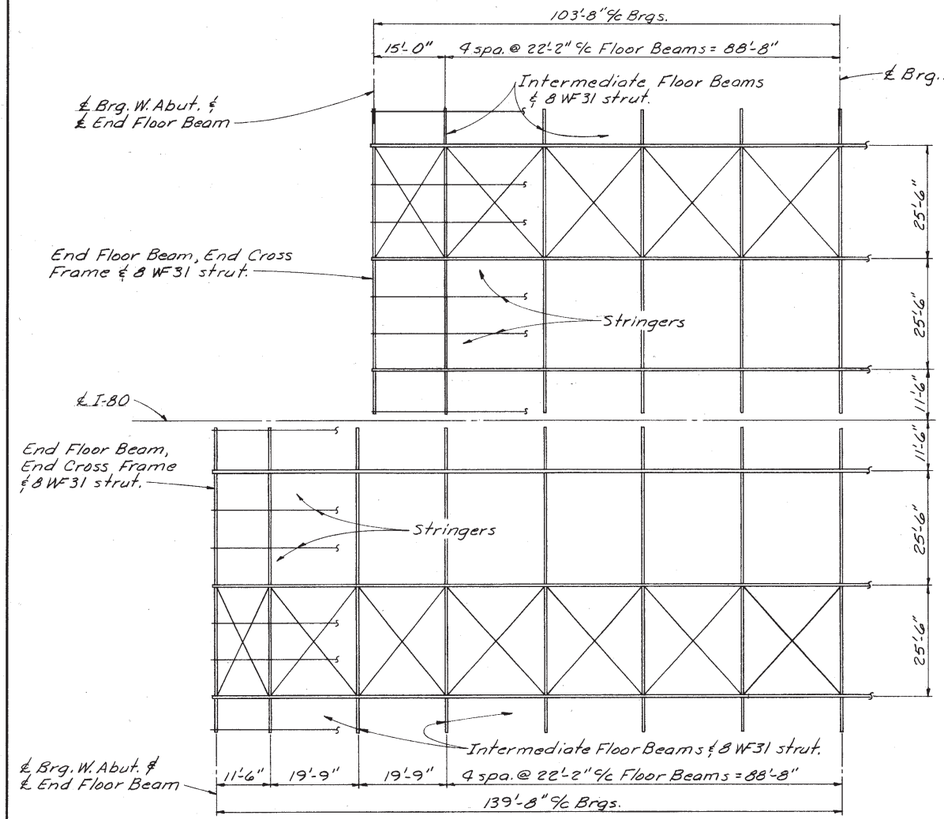
FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

89/120

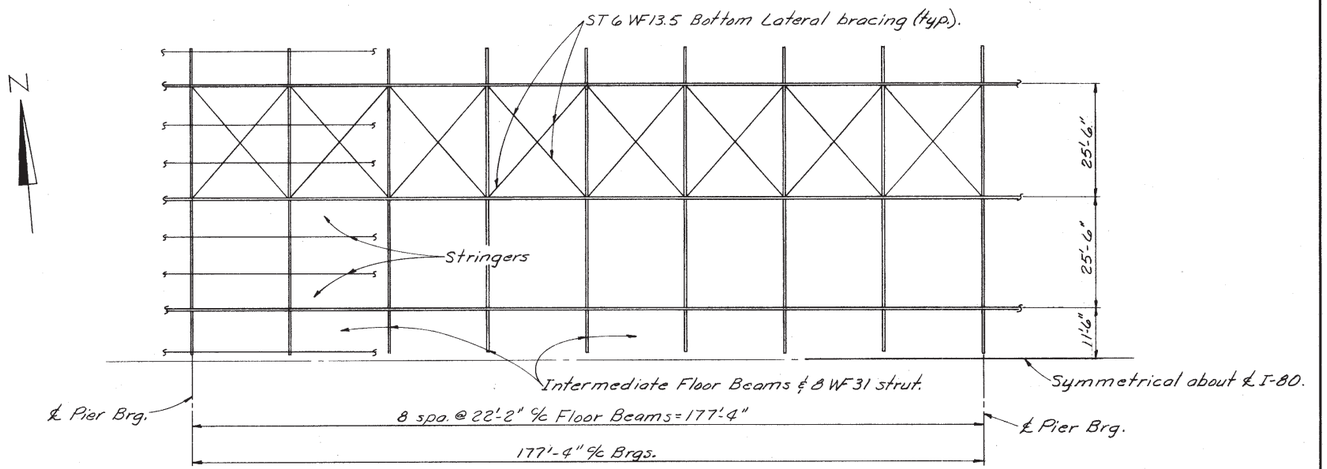
CUYAHOGA COUNTY
CUY480-6.48



GENERAL FRAMING PLAN
(Stringers & Lateral system not shown.)



SPAN 1 FRAMING PLAN
(Stringer intermediate crossframes not shown.)



SPANS 2, 3 & 7 FRAMING PLAN
(Stringer intermediate crossframes not shown.)

BEARING UNITS	
Location (℄ Bearing)	Unit
W. Abutment ~ All Girders	R-425
Pier 1 ~ " "	R-1125
Piers 2 & 7 ~ " "	B-1125
Piers 3 thru 6 ~ " "	B-1250
Pier 8 ~ " "	R-850
E. Abutment ~ " "	R-300

For details of Bearing Units, see sheets 40 & 41/53

Rev. 10-22-70

ALDEN E. STILSON & ASSOCIATES, LIMITED
CONSULTING ENGINEERS
COLUMBUS, OHIO
30/53

FRAMING PLAN

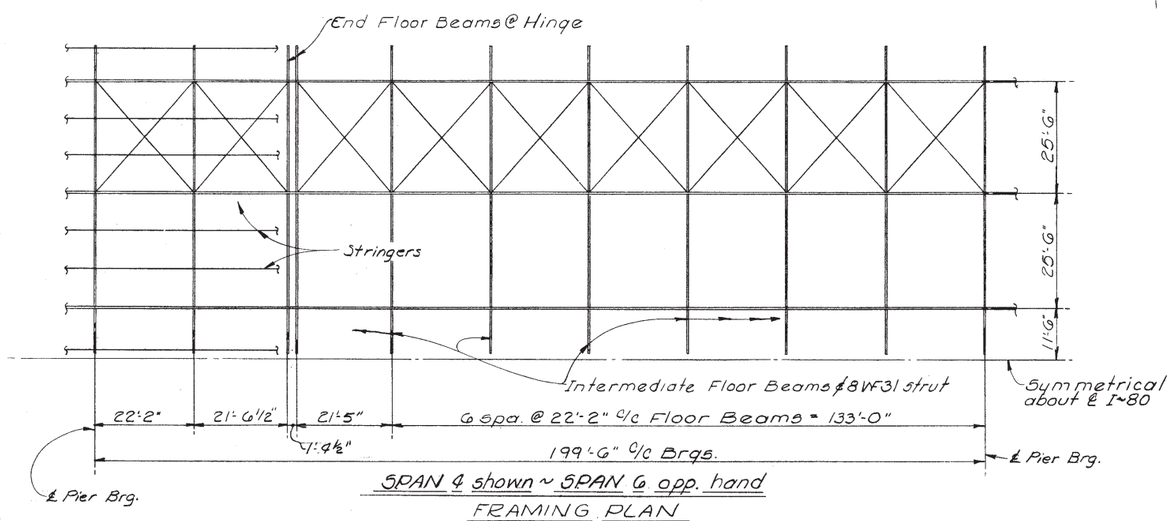
BRIDGE No. CUY480-0648
OUTERBELT SOUTH over ROCKY RIVER
CUYAHOGA COUNTY
STA. 441+96.50 E.B.
STA. 457+67.50

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
GEA	JCK	DW	RWE	J.E.N.	2/23/68	

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

CUYAHOGA COUNTY
CUY 480-6.48

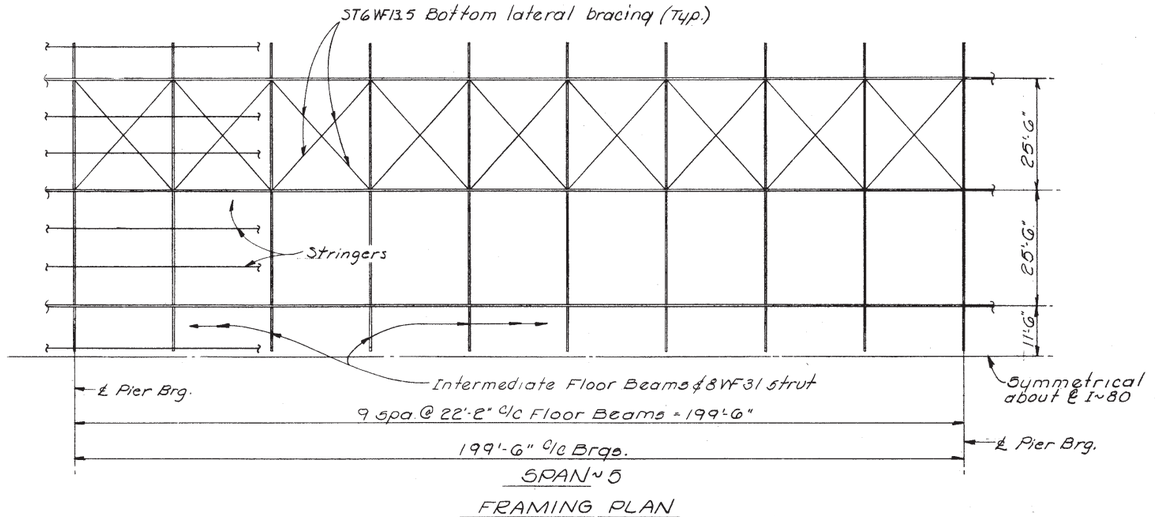
90/120



SPAN 4 shown ~ SPAN 6 opp. hand

FRAMING PLAN

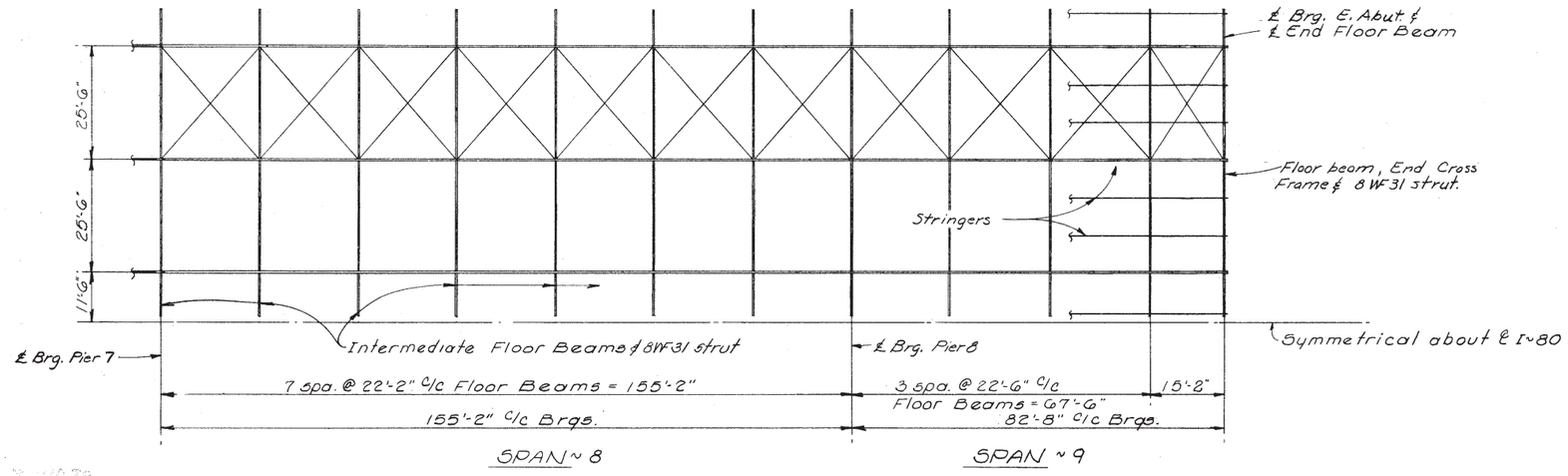
(Stringer intermediate crossframes not shown.)



SPAN ~ 5

FRAMING PLAN

(Stringer intermediate crossframes not shown.)



SPAN ~ 8 SPAN ~ 9

FRAMING PLAN

(Stringer intermediate crossframes not shown.)

NOTE

For Bearing Units, see sheets 41 42 53

Rev. 10-22-70

ALDEN E. STILSON & ASSOCIATES, LIMITED
CONSULTING ENGINEERS
COLUMBUS, OHIO

31/53

FRAMING PLAN

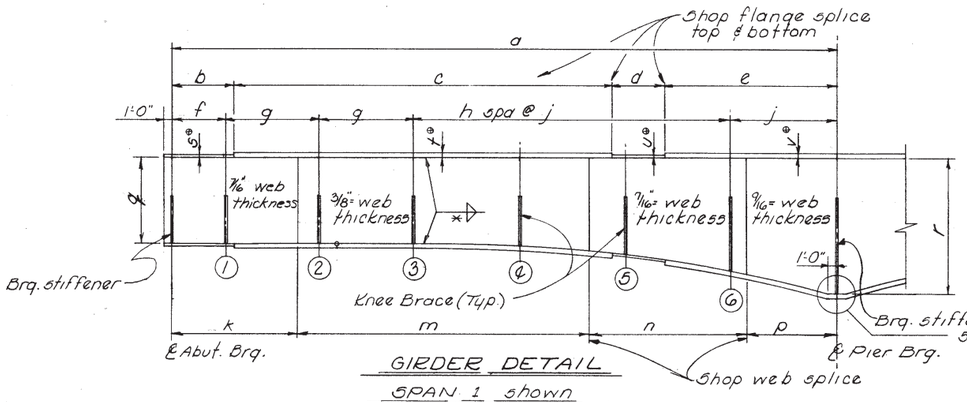
BRIDGE No. CUY480-0648
OUTERBELT SOUTH over ROCKY RIVER
CUYAHOGA COUNTY STA. 441+96.50 E.B.
STA. 457+67.50

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
GEA	EK		RWE	J.E.V.	2/23/68	

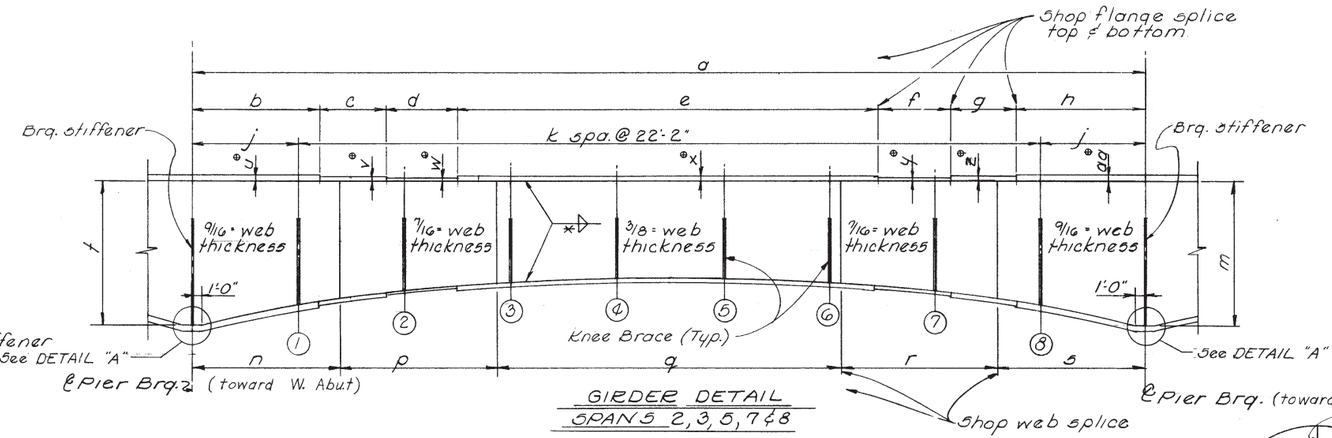
FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

91/120

CUYAHOGA COUNTY
CUY 480-6.48



GIRDER DETAIL
SPAN 1 shown
SPAN 9 opp. hand



GIRDER DETAIL
SPANS 2, 3, 5, 7 & 8

SPAN	a	b	c	d	e	f	g	h	j	k	m	n	p	q	r
1-E.B.	139-8	13-0	79-8	14-0	33-0	11-6	19-9	3	22-2	33-0	49-8	33-0	24-0	9-0	14-0
1-W.B.	103-8	56-8	-	-	47-0	15-0	-	3	22-2	25-6	35-9	25-5	17-0	9-0	14-0
9	82-8	47-8	-	-	35-0	15-2	-	2	22-6	20-8	26-0	24-0	12-0	8-0	12-0

~ GIRDER DETAIL DIMENSIONS ~

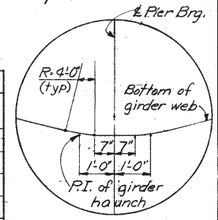
SPAN	GIRDERS-GA,GC,GD & GF				GIRDERS-GB & GE				~ WEB DEPTH @ KNEE BRACE ~					
	s	t	u	v	s	t	u	v	1	2	3	4	5	6
1-E.B.	1⅛ x20	1⅞ x20	1¼ x20	2 x20	1¼ x24	2⅛ x24	1⅜ x24	2⅛ x24	9-0	9-0	9-0 3/4	9-5 3/8	10-4 1/16	11-10 5/16
1-W.B.	1 x20	-	-	1⅜ x20	1⅜ x24	-	-	1⅞ x24	9-0	-	-	9-0 1/2	9-7 3/8	11-2 15/16
9	⅞ x20	-	-	1⅜ x20	1⅜ x24	-	-	1⅜ x24	8-0	-	-	-	8-1 15/16	9-4 7/16

~ GIRDER FLANGE PL's ~ ~ WEB DEPTH @ KNEE BRACE ~

* Weld size for flange to web

Flange thickness	Size of fillet weld
7/8	5/16
1	5/16
1 1/4	5/16
1 3/8	5/16
1 1/2	5/16
1 5/8	3/8
1 3/4	3/8
1 7/8	3/8
2	3/8
2 1/8	3/8
2 1/4	3/8
2 3/8	1/2
2 1/2	1/2

SPAN	a	b	c	d	e	f	g	h	j	k	m	n	p	q	r	s	t
2 **	177-4	29-0	19-0	-	81-4	-	14-0	34-0	22-2	6	15-6	32-0	36-0	41-4	43-0	25-0	14-0
3	177-4	31-0	17-0	-	-	-	-	129-4	22-2	6	15-6	38-8	30-0	70-8	37-0	31-0	15-6
5	199-6	29-0	12-0	15-0	87-6	15-0	12-0	29-0	22-2	7	15-6	31-0	44-0	49-6	44-0	31-0	15-6
7	177-4	132-4	-	-	-	-	14-0	31-0	22-2	6	15-6	31-0	37-0	40-8	30-0	38-8	15-6
8	155-2	48-0	-	-	71-2	-	23-0	13-0	22-2	5	12-0	25-0	28-0	49-2	29-0	24-0	15-6
2 ***	177-4	25-0	18-0	-	84-4	-	15-0	35-0	22-2	6	15-6	32-0	36-0	41-4	43-0	25-0	14-0



DETAIL "A"

~ GIRDER FLANGE PL's ~ ~ WEB DEPTH @ KNEE BRACE ~

SPAN	GIRDERS-GA,GC,GD & GF								GIRDERS-GB & GE								1	2	3	4	5	6	7	8
	U	V	W	X	Y	Z	aa		U	V	W	X	Y	Z	aa									
2 **	2 x20	1 x20	-	1¾ x20	-	1¼ x20	1 1/16 x20		2⅛ x24	1¼ x24	-	2 x24	-	1⅜ x24	2 x24		11-9 11/16	10-3 3/16	9-7 3/4	-	9-6	9-8 5/16	10-7 1/16	12-6 1/16
3	1 7/8 x20	1 x20	-	-	-	-	2 3/8 x20		2 x24	1½ x24	-	-	-	-	2½ x24		12-9 1/16	11-0	10-2 1/8	-	10-0	10-2 1/8	11-0	12-9 1/16
5	2½ x20	1 3/4 x20	1¼ x20	1¾ x20	1⅛ x20	1¾ x20	2½ x20		2½ x24	2⅛ x24	1⅜ x24	2⅛ x24	1⅜ x24	2⅛ x24	2½ x24		13-0 1/8	11-3 9/16	10-4 5/16	10-0 1/4	10-0 1/4	10-4 5/16	11-3 9/16	13-0 1/8
7	2 3/8 x20	-	-	-	-	1 x20	1 5/8 x20		2½ x24	-	-	-	-	1½ x24	1¾ x24		12-9 1/16	11-0	10-2 1/8	-	10-0	10-2 1/8	11-0	12-9 1/16
8	1 5/8 x20	-	-	1 3/8 x20	-	1 x20	1 3/8 x20		1¾ x24	-	-	1⅝ x24	-	1 x24	1⅜ x24		11-10 3/16	9-9 5/8	9-0 5/8	-	-	9-0 5/16	9-4 7/16	10-4 5/16
2 ***	1⅝ x20	1 x20	-	2 x20	-	1 3/4 x20	1 7/8 x20		1⅞ x24	1 x24	-	2⅛ x24	-	1 3/16 x24	2 x24		11-9 1/16	10-3 3/16	9-7 3/4	-	9-6	9-8 5/16	10-7 1/16	12-6 1/16

~ WEB DEPTH @ KNEE BRACE ~

NOTES

For Knee Brace & Brg. stiffener details see Sheet 35/53

For field splice locations see General Framing Plan, sheets 30/53 31/53

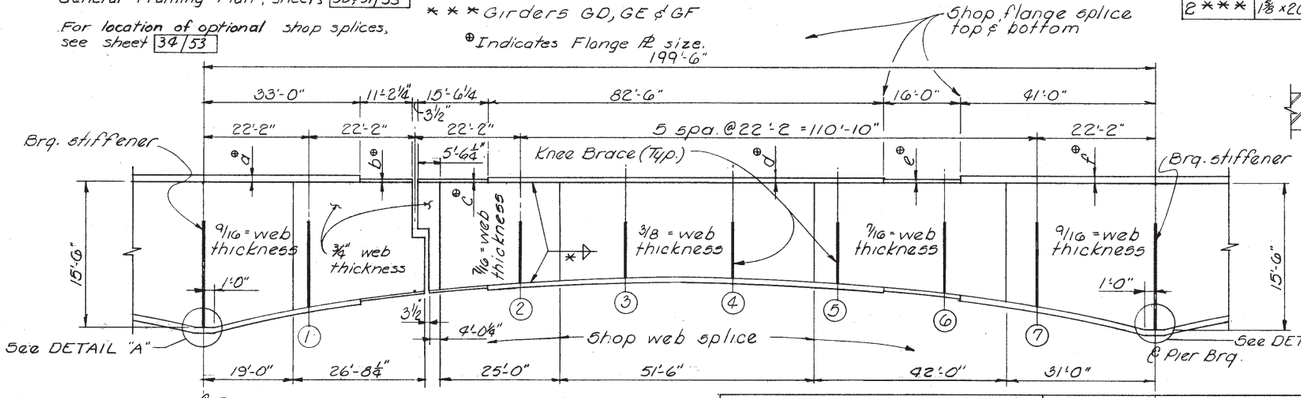
For location of optional shop splices, see sheet 34/53

For Girder designations, see General Framing Plan, sheet 30/53

** Girders GA, GB & GC

*** Girders GD, GE & GF

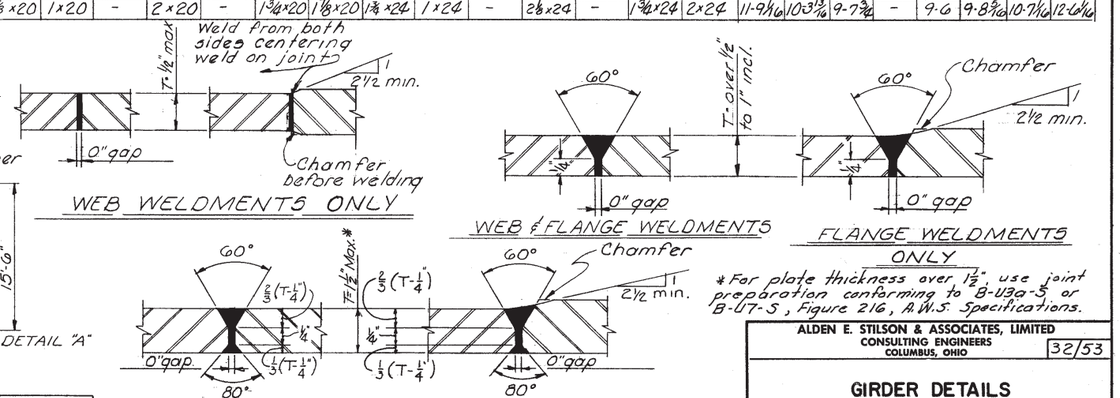
℄ Indicates Flange Pl size. 199'-6"



GIRDER DETAIL
SPAN 4 shown
SPAN 6 opp. hand

GIRDERS-GA,GC,GD & GF (Flange)						GIRDERS-GB & GE (Flange)					
a	b	c	d	e	f	a	b	c	d	e	f
2⅜ x20	1 x20	1 x20	1⅜ x20	1 x20	2½ x20	2½ x24	1 x24	1 x24	2⅛ x24	1¾ x24	2½ x24

~ WEB DEPTH @ KNEE BRACE ~						
1	2	3	4	5	6	7
13-0 1/8	10-4 5/16	10-0 1/4	10-0 1/4	10-4 5/16	11-3 9/16	13-0 1/8



* For plate thickness over 1½", use joint preparation conforming to B-U3a-3 or B-U7-3, Figure 216, A.W.S. Specifications.

All of the above full penetration welds shall be back-gouged and welded after welding for side

Butt welds on girder flange plates shall be ground flush, the finish grinding being parallel to the direction of stress.

Rev. 10-22-70

ALDEN E. STILSON & ASSOCIATES, LIMITED
CONSULTING ENGINEERS
COLUMBUS, OHIO

32/53

GIRDER DETAILS

BRIDGE No. CUY480-0648
OUTERBELT SOUTH over ROCKY RIVER
CUYAHOGA COUNTY
STA. 441+96.50 E.B.
STA. 457+67.50

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
GEA	DEK		RWE	J.E.V.	2/23/72	

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

98/120

CUYAHOGA COUNTY
CUY 480-6.48

Floor beam overhang @ beam №32 modified to accomodate Corporation Limit sign support. For details see Detail "Z" of this sheet.

℄ Stringer S12, for splice details see sheet 40/53

℄ Stringer S7, for splice details see sheet 40/53

69'-10"

℄ Field splice | 8'-10" | ℄ Field splice | 25'-6" | ℄ Field splice | 25'-6" | ℄ Field splice | 10'-0"

Optional shop web splice 5'-0" | 10'-6" | Optional shop web splice 10'-6" | 5'-0"

Web dims.

6" | 3 spa. @ 2'-2" = 6'-6" | 6"

1'-0" | 1'-0" | 2'-6" | 2'-6" | 2'-5" | 2'-5" | 1'-2" | 1'-2" | 2'-5" | 2'-5" | 2'-6" | 2'-6" | 1'-0" | 1'-0" | 3'-1" | 2'-7" | 2'-0"

Detail C ℜ 10 x 3/8

Shop web & flange splice

℄ Shim ℜ 11¼ x ½ x 0'-5"

℄ Shim ℜ 11¼ x 2⅜ x 0'-5"

℄ Shim ℜ 11¼ x 2⅜ x 0'-5"

℄ Shim ℜ 11¼ x ½ x 0'-5"

Shop web & flange splice

top flange ¾ x 10 (Typ.)

ℜ 8 x ⅜

Detail B

Detail A

27 WF 84

27 WF 84

All web depths shown are from work line.

Work line (Horiz.) see detail A

ℜ 6½ x ⅜

Bra. stiffener ℜ 4½ x 7/16 - one each side (typ).

⅜" web thickness (Typ.) except @ 27 WF 84

Intermediate Stiffener ℜ 4½ x 5/16 one each side (typ).

bottom flange ¾ x 10 (Typ.) except as noted. See FIELD SPLICE DETAIL below

Typ. 3/16

℄ GIRDER GF

℄ GIRDER GE

℄ GIRDER GD

45°

FLOOR BEAM ELEVATION

West Bound Structure shown ~ East Bound opposite hand.

Floor Beam

ℜ 10 x ⅜

DETAIL C

8'-10" | 6" | 3'-3" | 3'-3" | 1'-10"

See FLOOR BEAM ELEVATION above

2-⅞ ℄ (typ.) (one each side)

Typ. 3/16

1'-0 Dia. Access Opening

2'-5½" | 2'-0"

2'-1½" | 3'-3"

GIRDER GF
GIRDER GA opposite hand
FLOOR BEAM № (26), (27), (50) & (51)

weld from both sides centering weld on joint

2½ min.

0" gap Typ.

WEB WELDMENTS ONLY

27 WF 84

1½R

⅛ Flange Opening

Grind smooth all around.

G/60

DETAIL A
FLANGE WELDMENTS ONLY

G/60

⅛ (Flange Opening)

1½" R

27 WF 84

DETAIL B

JOINT PREPARATION for SUBMERGED ARC WELDMENTS

All full penetration welds (joint preparations shown) shall be back-gouged and welded after welding far side.

NOTES

* Top splice ℜ ¾ x 10 not required on Girders GA, GC, GD & GF see VIEW ~ A

All bolts shown shall be 1" ℄ high strength.

1⅜" | 5 spa @ 1'-0½" = 3"=1'-3" | Floor Beam top flange | Beveled fill.

VIEW ~ A

For details not shown see FIELD SPLICE DETAILS below

10'-0"

1'-10" | 3'-10" | 3'-10" | 6"

1'-0 Dia. Access Opening

3/16 Typ

⅜ ℜ (Typ.)

2'-5½" | 2'-0"

3'-10" | 2'-5"

GIRDER GD
GIRDER GC opposite hand
FLOOR BEAM № (26), (27), (50) & (51)

℄ Field splice ℄ Girder

45°

top & bott. flanges

5" | 2½" | 10"

2½"

℄ Floor Beam

1¾" | 5 spa @ 3" = 1'-3" | a * | a * | 5 spa. @ 3" = 1'-3" | 1¾"

* ℜ ¾ x 10" top only

1/4" gap | 1½"

Variable fill 0" to 1⅜" - Girder GB, GE

Variable beveled fill ⅛ x ⅜ to 1¾ x 2 - Girder GA, GC, GD, GF

¾" (Typ.)

1¾" | 3" | 3" | 2" | 3" | 3"

1¾" | 6 spa @ 4½" = 2'-3"

ℜ 9¾ x ⅝ one side

top plate of Knee Brace see Sheet 35/53

5 spa @ 3" = 1'-3" | 5 spa @ 3" = 1'-3"

2½" | 2½"

FIELD SPLICE					
GIRDER	a	b	c	d	e
GA, GC, GD & GF	-	8	3-0	2 3/16	2¾
GB & GE	1-2¼	9	3-4½	1 15/16	2½

FLOOR BEAM FIELD SPLICE DETAIL

℄ Field Splice

See Floor Beam Elevation Above

11'-4"

3'-0" | 8'-4"

1'-8" | 1'-4" | 3 spa. @ 2'-2" = 6'-6" | 1'-0"

℄ 8 WF 24, Post supporting Corp. Limit Sign. For Details see Highway Plans sheet №56

Detail C

ℜ 10 x ⅜

ℜ 6½ x ⅜

ℜ 10 x ¾

A

9"

1'-2"

Web ⅜" thick

3'-8 5/16"

1'-8 5/16"

Work line (Horiz.)

(Weight of structural steel for Corp. Limit sign support is included in Bridge Quantities)

1'-10"

℄ Girder GF
Girder GA Opp. Hand

Weld details & Stiff. details same as shown in Floor Beam Elev.

DETAIL "Z" - FLOOR BEAM № (32)

Rev. 10-22-70

ALDEN E. STILSON & ASSOCIATES, LIMITED
CONSULTING ENGINEERS
COLUMBUS, OHIO

39/53

FLOOR BEAM DETAILS

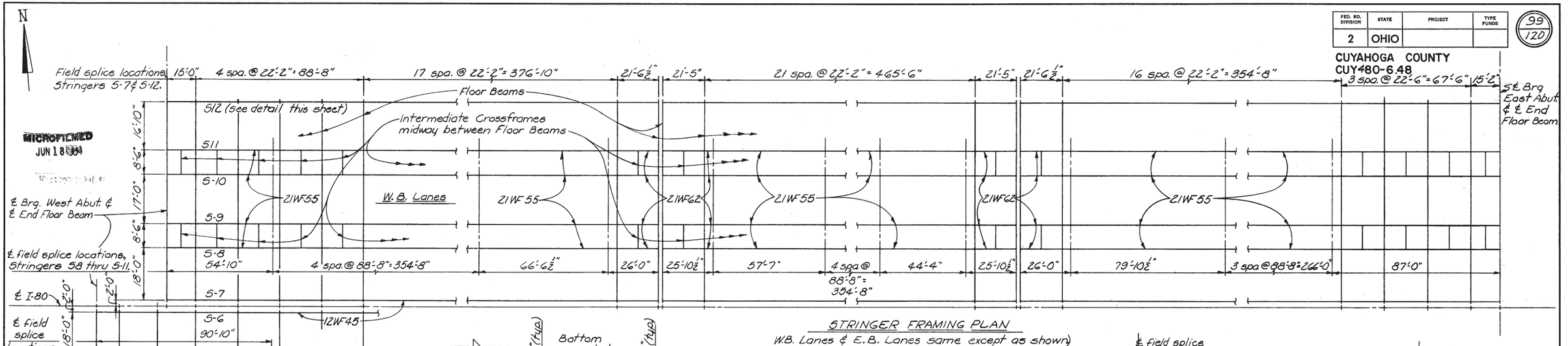
BRIDGE No. CUY480-0648
OUTERBELT SOUTH over ROCKY RIVER
CUYAHOGA COUNTY
STA. 441+96.50 E.B.
STA. 457+67.50

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
GEA	EK		RWE	J.E.V.	2/23/68	

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

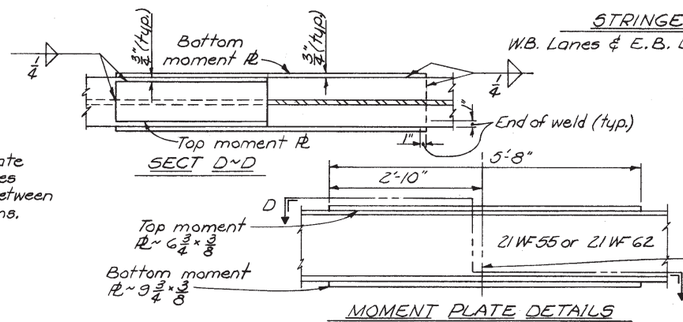
99
120

CUYAHOGA COUNTY
CUY480-6.48

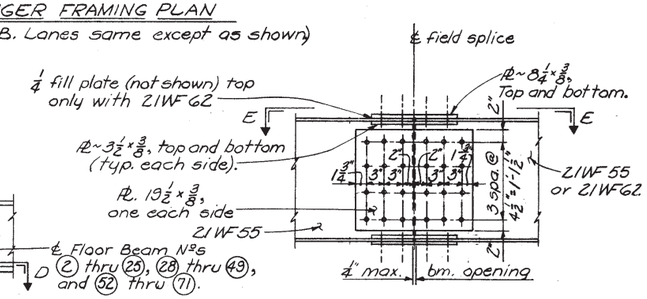


STRINGER FRAMING PLAN

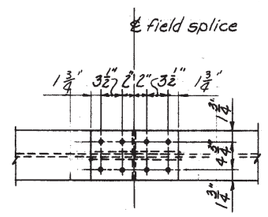
W.B. Lanes & E.B. Lanes same except as shown)



MOMENT PLATE DETAILS

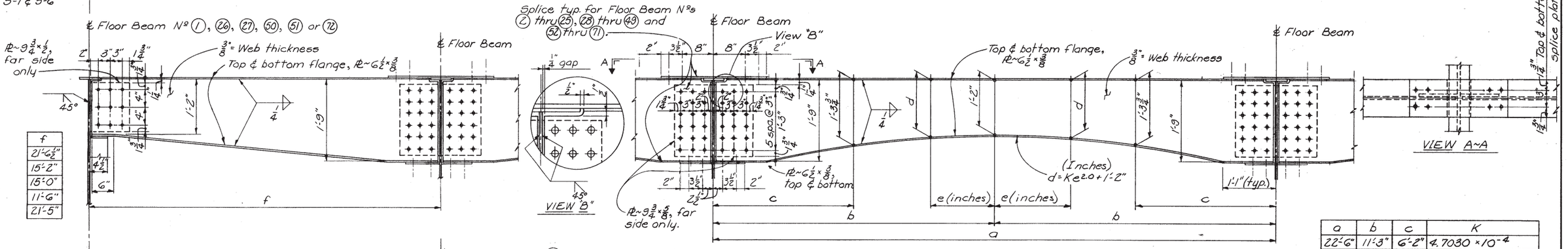


SPLICE DETAIL



VIEW E-E

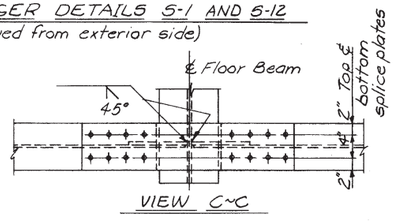
STRINGER DETAILS S-2 THRU S-5, AND S-8 THRU S-11

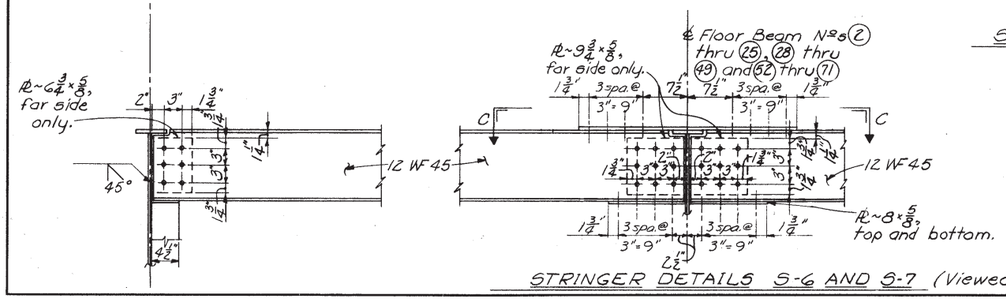


a	b	c	K
22'-6"	11'-3"	6'-2"	4.7030×10^{-4}
22'-2"	11'-1"	6-1	4.8611×10^{-4}
19'-9"	9'-10½"	5'-5¾"	6.2893×10^{-4}

STRINGER DETAILS S-1 AND S-12

(Viewed from exterior side)





STRINGER DETAILS S-6 AND S-7 (Viewed from ℄ I-80)

NOTE

All bolts shown shall be 1" dia. high strength bolts. Bolt heads shall be placed on fascia side of Stringers S-1 & S-12 and on bottom surface of all bottom splice plates.

Rev. 10-22-70

ALDEN E. STILSON & ASSOCIATES, LIMITED
CONSULTING ENGINEERS
COLUMBUS, OHIO
40/53

STRINGER FRAMING PLAN and DETAILS

BRIDGE No. CUY480-0648
OUTERBELT SOUTH over ROCKY RIVER
CUYAHOGA COUNTY
STA. 441+96.50 E.B.
STA. 457+67.50

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
GEA	G.T.R.		RWE	J.E.V.	2/23/68	

APPENDIX C

Fracture Critical Plan and Fatigue Prone Details

Fracture Critical Member (FCM) Inspection Procedure

Reference: ODOT Manual of Bridge Inspection, Chapter 4

Inspection Responsibility:	ODOT District 12
County-Route-SLM:	CUY-480-0647
Structural File Number:	1812831
Inspection Frequency:	24 Months
Fatigue Life Study:	Year of Study: Not Calculated Remaining Fatigue Life: Not Calculated
Load Path Redundant:	Main Spans: No, Each structure is a three-girder system at 25'-6" spacing, and floorbeam spacing exceeds 14'. Approach Spans: None.
Structurally Redundant:	No, Girders are continuous spans.
Internally Redundant:	No, Tension members consist of welded built-up plate girders and built-up/rolled I-section members.
System Redundant:	No rigorous analysis performed (i.e. finite element, 3-D modeling)

Figure 1 – CUY-480-0647 south elevation, looking northwest.

Location: The CUY-480-0647 Bridge **(see Figure 1)** spans the Rocky River Valley north of Cleveland Hopkins International Airport **(see Figure 2)**. The bridge carries traffic on Interstate 480 between the cities of Fairview Park and Cleveland, Ohio.

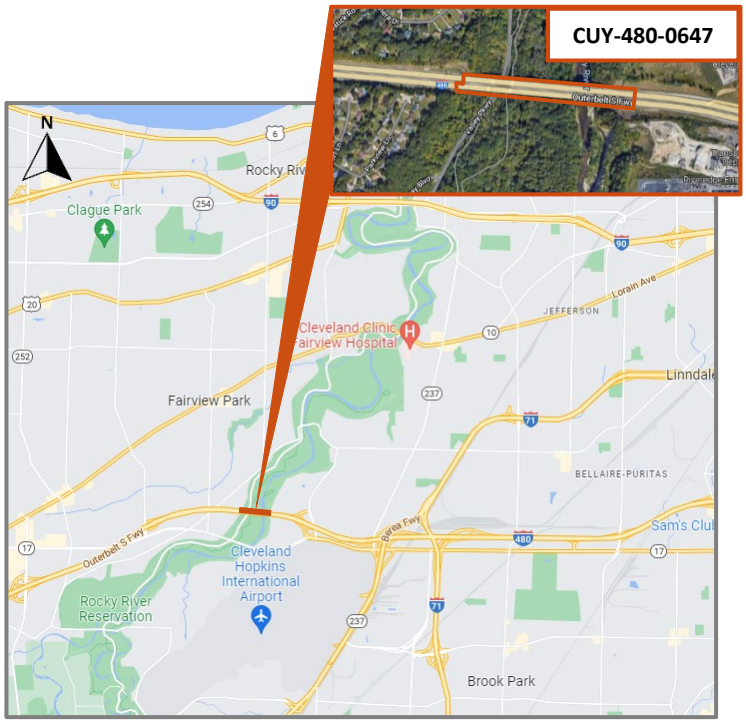


Figure 2 – CUY-480-0647 location map.

Structure Description: Each structure consists of a nine-span superstructure divided into three continuous units by seated hinges present in Spans 4 and 6. Originally constructed in 1970, the existing eastbound structure is approximately 1,571' long, and the existing westbound structure is approximately 1,535' long. Each structure carries four lanes of traffic with wide shoulders along each railing with approximate roadway widths of 69'-0". Span 1 for the eastbound and westbound structures are 139'-8" long and 103'-8" long, respectively, while the remaining spans are the same across both bridges: Spans 2 and 3 are each 177'-4" long, Spans 4, 5, and 6 are each 199'-6" long, Span 7 is 177'-4" long, Span 8 is 155'-2" long, and Span 9 is 82'-8" long.

The deck for each structure is supported by six steel stringers: the interior stringers consist of rolled 21WF55 or 21WF62 sections, stringers along the median (Stringers 6 and 7) consist of rolled 12WF45 sections, and exterior stringers (Stringers 1 and 12) consist of small welded haunched I-sections. The steel floorbeams, which have spacing that varies from 11'-6" to 22'-2" on-center, consist of built-up I-sections of varying height comprised of both rolled wide flange beams and built-up plate sections with transverse stiffeners. The main girders, spaced at 25'-6" on-center, are comprised of haunched, welded plate girders that vary from 12'-0" to 15'-0" in height.

The westbound bridge was closed in 2000 due to a crack being found on the support side of the seated hinge in Span 4 at Girder D. Shortly thereafter, the bridge was repaired by jacking each seated hinge and installing carrier beam retrofits at all twelve hinge locations to provide redundancy. The structure has undergone several additional minor modifications and rehabilitations since its original construction.

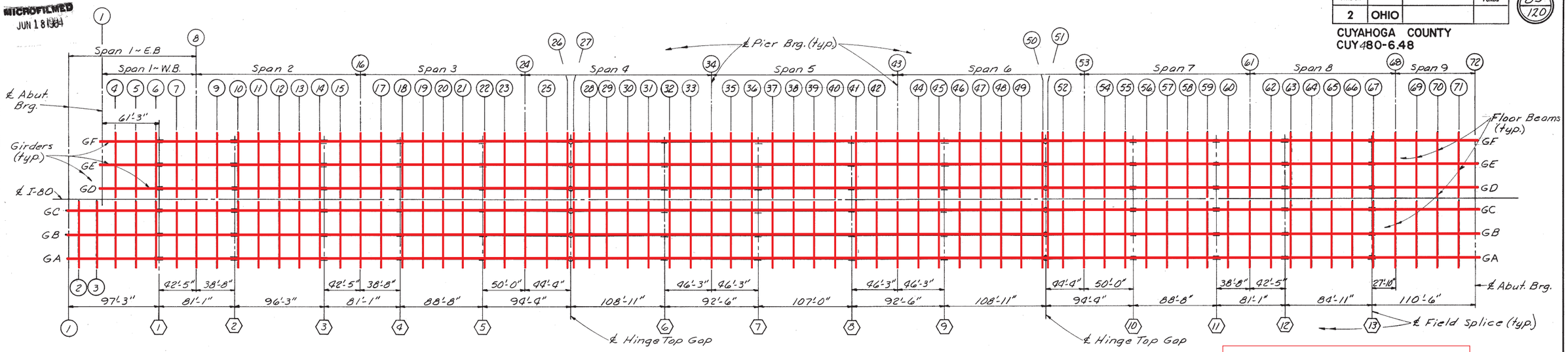
The fracture critical members on this structure include all main girders (Girders A through F) and all floorbeams (Floorbeams 1 through 72).

Figure 3 – CUY-480-0647 superstructure underside, looking west in Span 7.

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

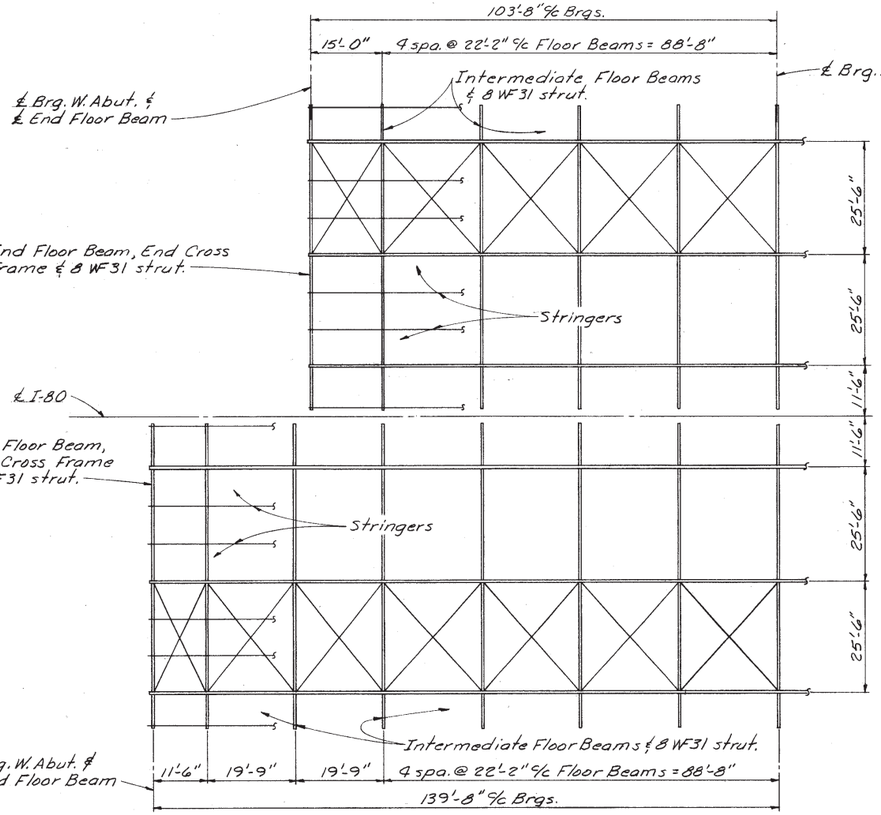
CUYAHOGA COUNTY
CUY480-6.48

89
120

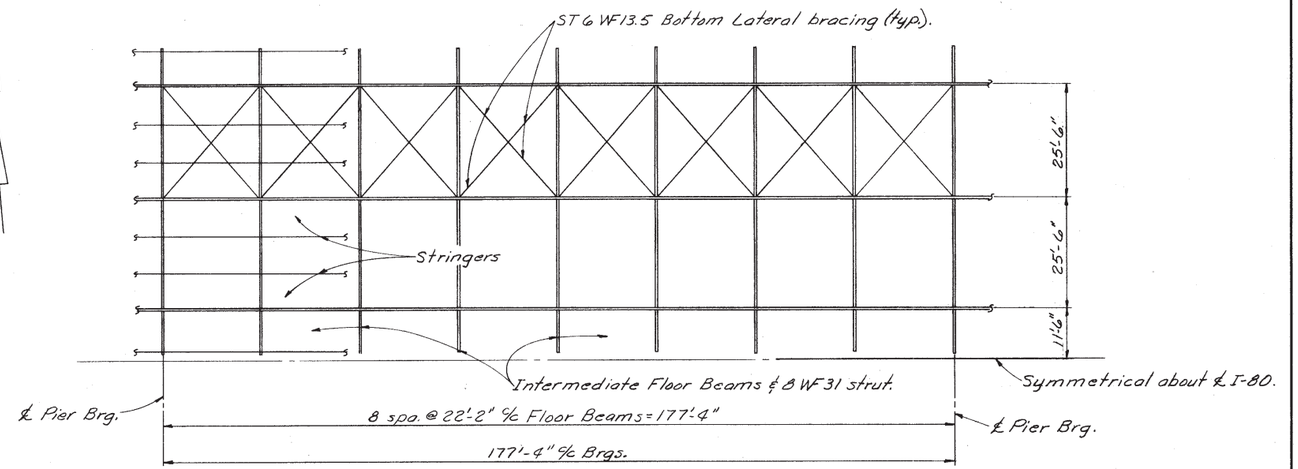


GENERAL FRAMING PLAN
(Stringers & Lateral system not shown.)

Girders and floor beams are fracture critical members



SPAN 1 FRAMING PLAN
(Stringer intermediate crossframes not shown.)



SPANS 2, 3 & 7 FRAMING PLAN
(Stringer intermediate crossframes not shown.)

BEARING UNITS	
Location (℄ Bearing)	Unit
W. Abutment ~ All Girders	R-425
Pier 1 ~ " "	R-1125
Piers 2 & 7 ~ " "	B-1125
Piers 3 thru 6 ~ " "	B-1250
Pier 8 ~ " "	R-850
E. Abutment ~ " "	R-300

For details of Bearing Units, see sheets 40 & 41 & 53

Rev. 10-22-70

ALDEN E. STILSON & ASSOCIATES, LIMITED
CONSULTING ENGINEERS
COLUMBUS, OHIO
30/53

FRAMING PLAN

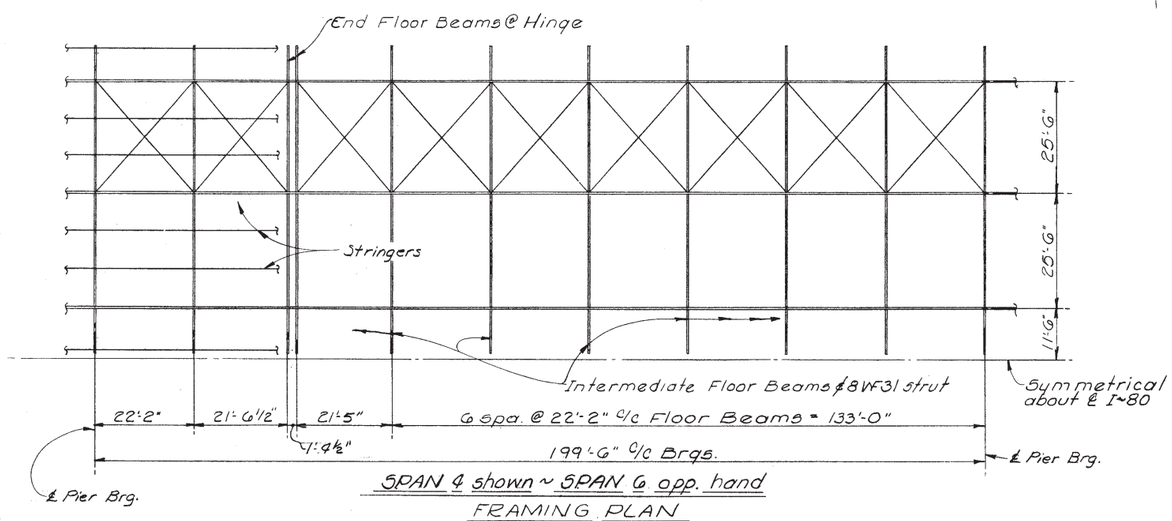
BRIDGE No. CUY480-0648
OUTERBELT SOUTH over ROCKY RIVER
CUYAHOGA COUNTY
STA. 441+96.50 E.B.
STA. 457+67.50

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
GEA	JCK	DW	RWE	J.E.N.	2/23/68	

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

CUYAHOGA COUNTY
CUY 480-6.48

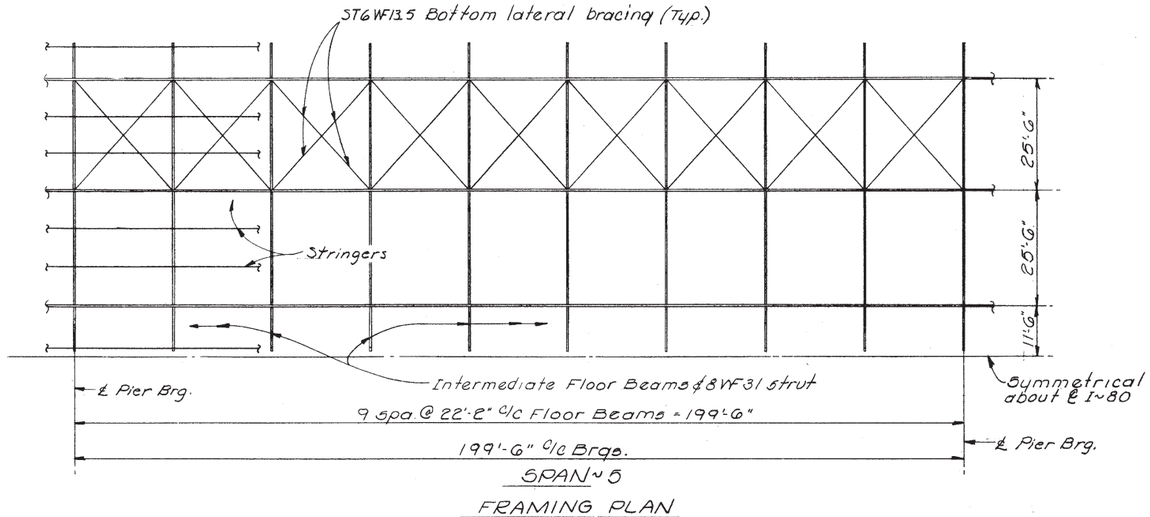
90/120



SPAN 4 shown ~ SPAN 6 opp. hand

FRAMING PLAN

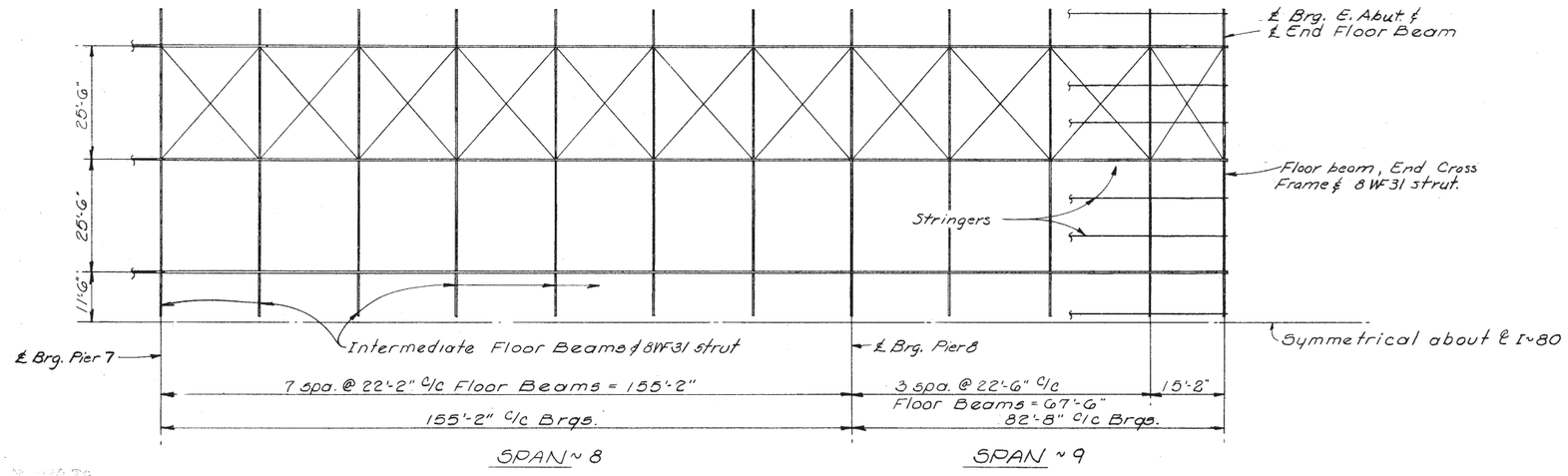
(Stringer intermediate crossframes not shown.)



SPAN ~ 5

FRAMING PLAN

(Stringer intermediate crossframes not shown.)



SPAN ~ 8 SPAN ~ 9

FRAMING PLAN

(Stringer intermediate crossframes not shown.)

NOTE

For Bearing Units, see sheets 41 42 53

Rev. 10-22-70

ALDEN E. STILSON & ASSOCIATES, LIMITED
CONSULTING ENGINEERS
COLUMBUS, OHIO

31/53

FRAMING PLAN

BRIDGE No. CUY480-0648
OUTERBELT SOUTH over ROCKY RIVER
CUYAHOGA COUNTY STA. 441+96.50 E.B.
STA. 457+67.50

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
GEA	EK		RWE	J.E.V.	2/23/68	

Inspection Risk Factors

Inspection Procedure and Inspector Access Risk Factors: A combination of aerial lift equipment, 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 accessed with a 62' under-bridge inspection unit (snooper) and using protected climbing and rope access techniques utilizing the installed safety cables along the girders.

- Inspection Methods
    - Main girders: Inspect the bottom flange and bottom half of the web in positive moment regions, the top flange and top half of the web in negative moment regions, and the full height of the web in primary shear regions. Inspect each member for its full length, particularly for distress at fatigue prone details and at prior retrofit locations.
    - Floorbeams: Inspect the bottom flange and bottom half of the web in positive moment regions, the top flange and top half of the web in negative moment regions, and the full height of the web in primary shear regions, especially at the copes for cracks and for distress at fatigue prone details.
- Access
    - Under-bridge inspection unit: Used to gain hands-on access to the main girders and floorbeams which are within reach from the outside lane and shoulder of each structure
    - Protected climbing and rope access: Used to gain hands-on access to the interior faces of girders below the median and floorbeam cantilevers not within reach of the snooper. Girders are accessed from the bridge ends using installed safety cables.
- Maintenance of Traffic
    - Single right lane and shoulder closures in each direction of I-480 are required during snooper work.
- Inspector Risks
    - Work at heights
    - Traffic on the bridge
    - Working over water
    - Cold/hot extreme temperatures
    - Biological/wildlife hazards

Inspection Risk Factors			
Risk Factor	**Location**	**Description**	**Photo**
Fracture Critical Structure	Superstructure	Main girder or floorbeam failure would cause partial or complete collapse of the structure.	-
Fatigue Prone Detail – Category E	Girder web	Base metal at the end termination of longitudinal stiffener to web welds with no transition radius (Category E)	1
Fatigue Prone Detail – Category E	Girder web	Base metal at lateral bracing connection plate to web welds (Category E)	2
Fatigue Prone Detail – Category E	Girder web	Base metal at abandoned channel bracket to web welds (Category E)	3
Fatigue Prone Detail – Category E'	Girders at hinge seats	Base metal at the termination of longitudinal seat plates welds to floorbeam webs (thickness > 0.8") (Category E')	4
Fatigue Prone Detail – Category E	Floorbeam webs	Base metal at all-around access hole reinforcing plate welds to webs of floorbeam cantilevers (Category E)	5
Fatigue Prone Detail – Category E	Stringer bottom flanges	Base metal at the termination of partial length welded cover plates with welds across the ends (flange thickness ≤ 0.8") (Category E)	6
Previous Cracking and Repairs	Girder webs along lateral bracing connections and floorbeam flange	Overcuts, misshapen arrest holes, or areas that were not fully sawcut during installation.	7
Previous Cracking and Repairs	Girders at hinge seats in Spans 4 and 6s	Installed carrier beam retrofits at all 12 hinge locations in response to previous cracking noted in Girder D in Span 4.	8
High ADTT	All primary truss members and floorbeams	Average daily traffic is 120,850 vehicles with average truck traffic of 7,240.	-

Category Reference: AASHTO LRFD Bridge Design Specs Table 6.6.1.2.3-1

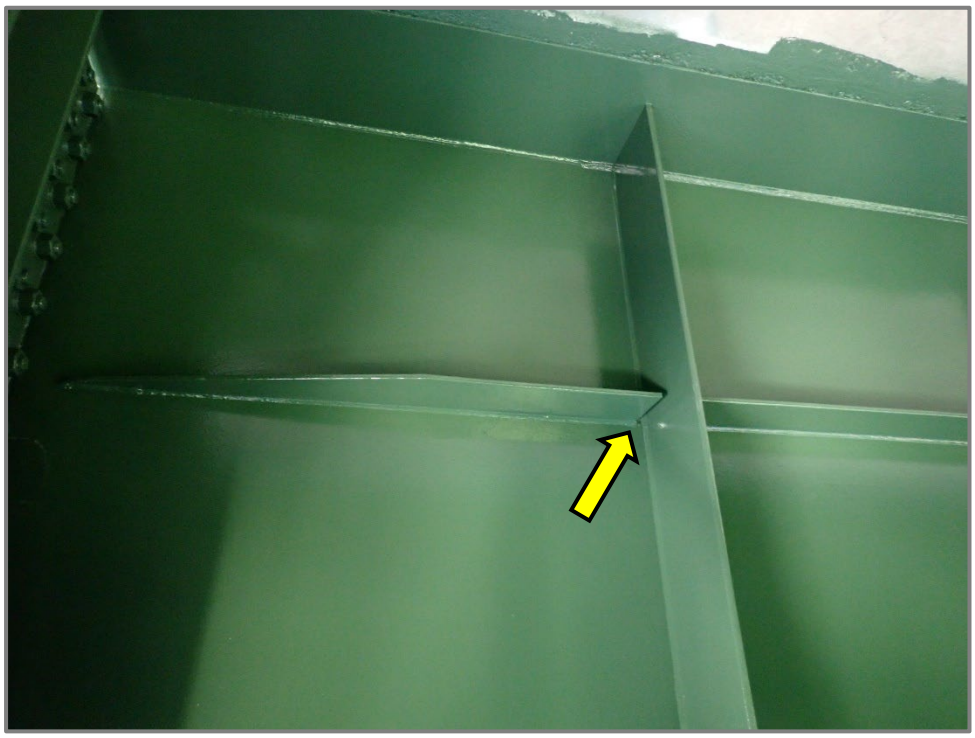


Photo 1 – Base metal at the end termination of longitudinal stiffener to girder web welds with no transition radius (Category E). Girder E at Floorbeam 18 shown, looking northeast.

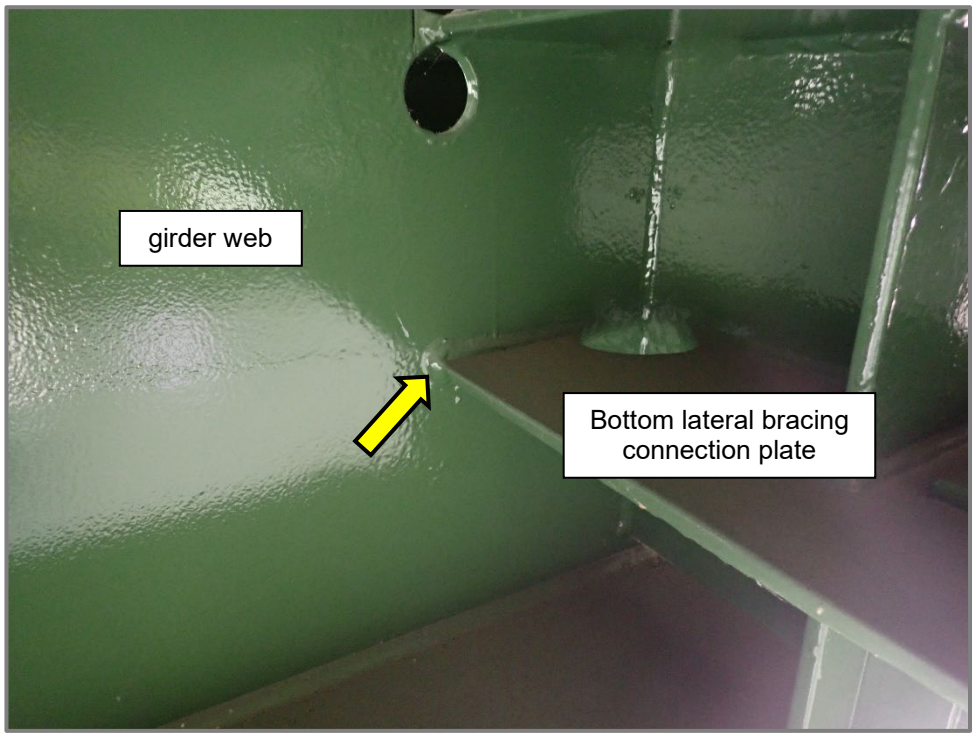


Photo 2 – Base metal at lateral bracing connection plate to girder web welds (Category E). Girder F at Floorbeam 37 shown, looking south.

Photo 3 – Base metal at abandoned channel bracket to girder web welds (Category E). Girder C between Floorbeams 52 and 53 shown, looking northwest.

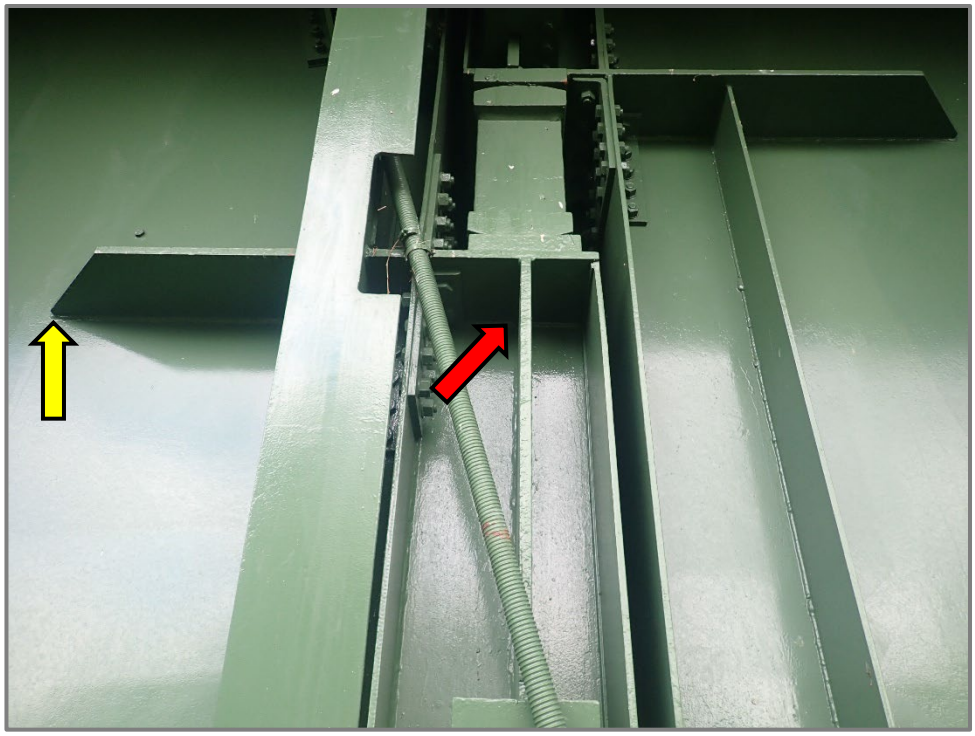


Photo 4 – Base metal at the termination of longitudinal seat plates welds to floorbeam webs (thickness > 0.8") (Category E'). Girder A at the Span 4 hinge shown, looking north. Note triaxial constraint below hinge.

Photo 5 – Base metal at all-around access hole reinforcing plate welds to webs of floorbeam cantilevers (Category E). Floorbeam 26 north cantilever at Girder C shown, looking east.

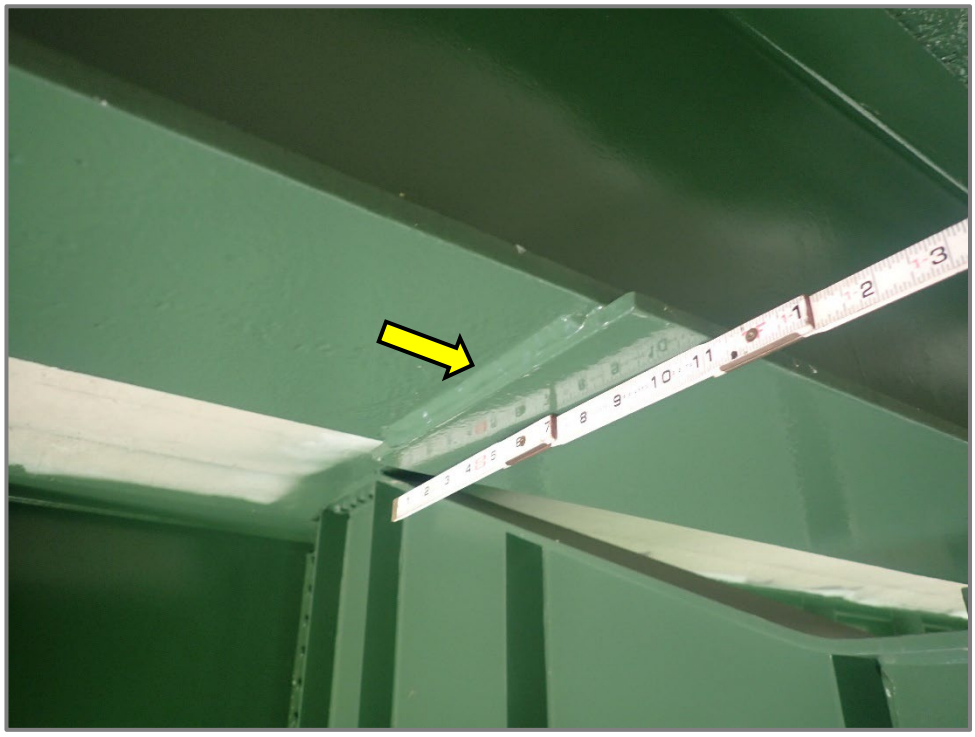


Photo 6 – Base metal at the termination of partial length welded cover plates with welds across the ends (flange thickness ≤ 0.8") (Category E). Stringer 3 on the west side of Floorbeam 20 shown, looking northeast.

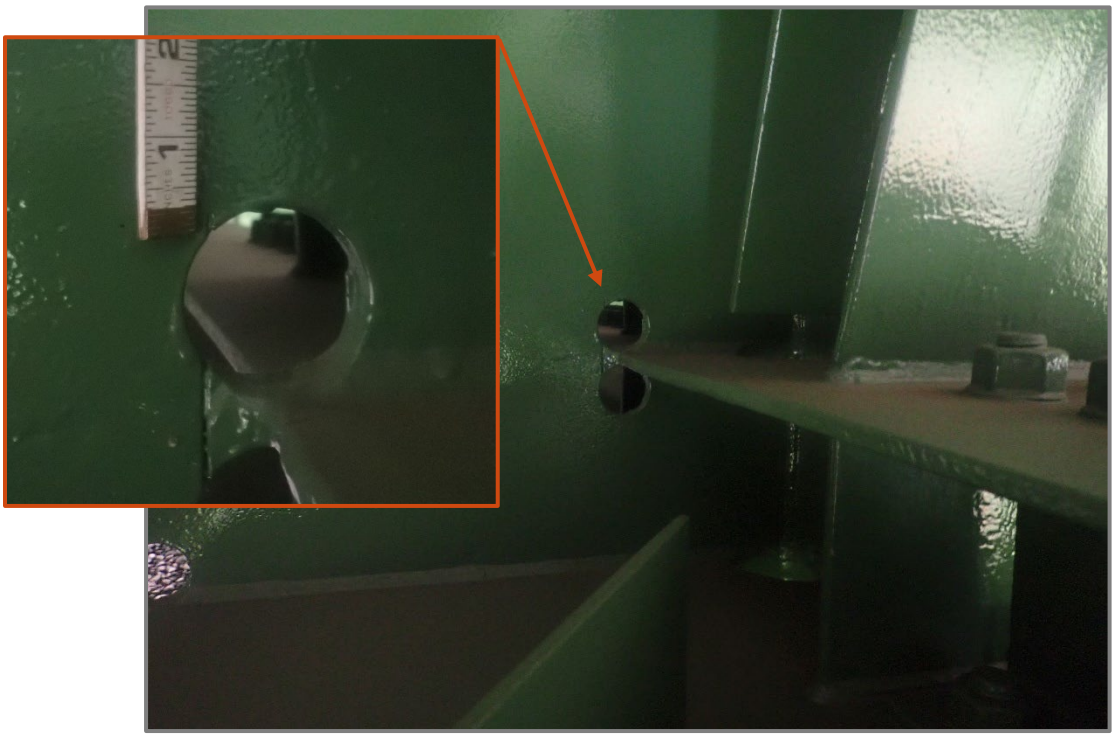


Photo 7 – Typical dogbone retrofit overcut in the girder web, looking north at Girder B at Floorbeam 4. Note that some overcut locations are not visible due to the new paint system.

Photo 8 – Typical carrier beam retrofit installed below the seated hinge joints, looking north at Girder A at the Span 4 expansion joint.

APPENDIX D

Dogbone Retrofit Tables

Appendix D: Dogbone Retrofit Defect Locations							
Bridge	**Span**	**Girder**	**Face**	**Floorbeam**	**Side of FB**	**Location***	**Additional Notes**
Right	1E	B	South	2	West	Bottom	
	1E	A	North	3	East	Bottom	
	1E	B	South	4	West	Top	
	1E	B	South	5	West	Bottom	Additional (3rd) drilled arrest hole adjacent to top hole
	1E	C	South	5	West	Bottom	
	1E	**C**	**South**	**5**	**West**	**Top**	
	1E	B	South	6	West	Top	
	1E	C	-	7	East	FB	No sawcut between holes
	1E	C	-	7	West	FB	No sawcut between holes
	2E	A	North	13	West	Top	
	2E	C	South	14	East	Top	
	2E	B	South	15	West	FB	
	4E	A	North	25	West	Bottom	
	4E	A	North	29	East	Bottom	
	4E	B	South	29	East	Top	
	4E	B	North	30	East	Bottom	
	5E	C	-	35	West	FB	Incomplete sawcut between holes
	5E	C	South	38	East	Top	
	5E	C	North	40	West	Top	
	6E	B	South	46	West	Top	
	6E	C	South	48	West	Bottom	
	6E	C	South	53	East	FB	
	6E	C	South	53	West	FB	
	7E	B	South	56	East	Top	
	7E	C	South	56	East	Bottom	
	7E	C	South	59	East	Bottom	
	7E	C	South	59	West	Bottom	
	8E	B	South	66	East	Bottom	
	8E	B	South	66	East	Top	

Denotes newly documented or changed condition since the previous inspection

*** Location Definitions:**

FB	Dogbone retrofit located adjacent to the floorbeam bottom flange
Bottom	Bottom set of dogbone retrofits located adjacent to the lateral bracing connection plate
Top	Top set of dogbone retrofits located adjacent to the lateral bracing connection plate

Appendix D: Dogbone Retrofit Defect Locations							
Bridge	**Span**	**Girder**	**Face**	**Floorbeam**	**Side of FB**	**Location***	**Additional Notes**
Left	**1W**	**F**	**North**	**4**	**East**	**FB**	
	1W	F	North	5	West	Top	
	1W	F	South	8	West	FB	
	2W	E	North	12	West	Bottom	Overlapping holes
	2W	E	North	13	East	Bottom	
	3W	F	North	17	West	FB	
	3W	F	South	19	West	Top	
	3W	**F**	**South**	**19**	**West**	**Bottom**	
	3W	F	South	21	East	Bottom	
	3W	F	South	23	West	FB	
	4W	F	South	31	East	Bottom	
	4W	F	North	33	West	FB	
	5W	D	North	37	East	Bottom	
	7W	**D**	**North**	**55**	**West**	**Top**	
	7W	E	North	55	West	FB	
	7W	F	South	56	East	Bottom	
	7W	D	North	60	West	FB	
	7W	F	South	60	West	FB	
	8W	**D**	**Both**	**66**	**West**	**Bottom**	
	8W	F	South	66	West	Bottom	
	8W	D	North	67	East	FB	
	9W	**F**	**South**	**70**	**West**	**Bottom**	
	9W	F	North	71	West	Bottom	

Denotes newly documented or changed condition since the previous inspection

*** Location Definitions:**

FB	Dogbone retrofit located adjacent to the floorbeam bottom flange
Bottom	Bottom set of dogbone retrofits located adjacent to the lateral bracing connection plate
Top	Top set of dogbone retrofits located adjacent to the lateral bracing connection plate

APPENDIX E

Element Level Inspection Data

Deck Summary				Condition State			
NBI	Defect	Description	QTY.	1	2	3	4
12		**Reinforced Concrete Deck (SF)**	**216432**	**200376**	**15086**	**970**	**0**
	1080	Delamination/Spall/Patched Area		0	20	338	0
	1090	Exposed Rebar		0	0	85	0
	1120	Efflorescence/Rust Staining		0	2230	367	0
	1130	Cracking (RC and Other)		0	12836	180	0
	510	**Wearing Surface (SF)**	**206663**	**183573**	**20669**	**2421**	**0**
	3210	Delam/Spall/Patch/Pothole		0	0	2421	0
	3220	Crack (Wearing Surface)		0	20669	0	0
305		**Assembly Joint without Seal (LF)**	**552**	**166**	**279**	**107**	**0**
	2360	Adjacent Deck or Header		0	279	107	0
331		**Reinforced Concrete Bridge Railing (LF)**	**6210**	**0**	**3901**	**2309**	**0**
	1080	Delamination/Spall/Patched Area		0	1953	2309	0
	1130	Cracking (RC and Other)		0	1948	0	0
815		**Drainage (EA)**	**24**	**0**	**23**	**1**	**0**

Westbound Deck Unit 1			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
12		**Reinforced Concrete Deck (SF)**	**36660**	**34372**	**2253**	**35**	**0**
	1080	Delamination/Spall/Patched Area		0	20	35	0
	1090	Exposed Rebar		0	0	0	0
	1120	Efflorescence/Rust Staining		0	400	0	0
	1130	Cracking (RC and Other)		0	1833	0	0
	510	**Wearing Surface (SF)**	**35005**	**31153**	**3501**	**351**	**0**
	3210	Delam/Spall/Patch/Pothole		0	0	351	0
	3220	Crack (Wearing Surface)		0	3501	0	0
305		**Assembly Joint without Seal (LF)**	**69**	**0**	**47**	**22**	**0**
	2360	Adjacent Deck or Header		0	47	22	0
331		**Reinforced Concrete Bridge Railing (LF)**	**1068**	**0**	**343**	**725**	**0**
	1080	Delamination/Spall/Patched Area		0	172	725	0
	1130	Cracking (RC and Other)		0	171	0	0
815		**Drainage (EA)**	**4**	**0**	**4**	**0**	**0**

Westbound Deck Unit 2			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
12		**Reinforced Concrete Deck (SF)**	**36708**	**31700**	**4351**	**657**	**0**
	1080	Delamination/Spall/Patched Area		0	0	60	0
	1090	Exposed Rebar		0	0	50	0
	1120	Efflorescence/Rust Staining		0	680	367	0
	1130	Cracking (RC and Other)		0	3671	180	0
	510	**Wearing Surface (SF)**	**35051**	**30843**	**3506**	**702**	**0**
	3210	Delam/Spall/Patch/Pothole		0	0	702	0
	3220	Crack (Wearing Surface)		0	3506	0	0
305		**Assembly Joint without Seal (LF)**	**69**	**59**	**10**	**0**	**0**
	2360	Adjacent Deck or Header		0	10	0	0
331		**Reinforced Concrete Bridge Railing (LF)**	**1019**	**0**	**768**	**251**	**0**
	1080	Delamination/Spall/Patched Area		0	384	251	0
	1130	Cracking (RC and Other)		0	384	0	0
815		**Drainage (EA)**	**4**	**0**	**4**	**0**	**0**

Westbound Deck Unit 3			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
12		**Reinforced Concrete Deck (SF)**	**33552**	**31461**	**2033**	**58**	**0**
	1080	Delamination/Spall/Patched Area		0	0	58	0
	1120	Efflorescence/Rust Staining		0	200	0	0
	1130	Cracking (RC and Other)		0	1833	0	0
	510	**Wearing Surface (SF)**	**32038**	**28513**	**3204**	**321**	**0**
	3210	Delam/Spall/Patch/Pothole		0	0	321	0
	3220	Crack (Wearing Surface)		0	3204	0	0
305		**Assembly Joint without Seal (LF)**	**138**	**0**	**108**	**30**	**0**
	2360	Adjacent Deck or Header		0	108	30	0
331		**Reinforced Concrete Bridge Railing (LF)**	**982**	**0**	**581**	**401**	**0**
	1080	Delamination/Spall/Patched Area		0	291	401	0
	1130	Cracking (RC and Other)		0	290	0	0
815		**Drainage (EA)**	**4**	**0**	**4**	**0**	**0**

Eastbound Deck Unit 1			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
12		**Reinforced Concrete Deck (SF)**	**39252**	**37079**	**2133**	**40**	**0**
	1080	Delamination/Spall/Patched Area		0	0	40	0
	1120	Efflorescence/Rust Staining		0	300	0	0
	1130	Cracking (RC and Other)		0	1833	0	0
	510	**Wearing Surface (SF)**	**37480**	**33357**	**3748**	**375**	**0**
	3210	Delam/Spall/Patch/Pothole		0	0	375	0
	3220	Crack (Wearing Surface)		0	3748	0	0
305		**Assembly Joint without Seal (LF)**	**69**	**48**	**0**	**21**	**0**
	2360	Adjacent Deck or Header		0	0	21	0
331		**Reinforced Concrete Bridge Railing (LF)**	**1140**	**0**	**779**	**361**	**0**
	1080	Delamination/Spall/Patched Area		0	390	361	0
	1130	Cracking (RC and Other)		0	389	0	0
815		**Drainage (EA)**	**4**	**0**	**4**	**0**	**0**

Eastbound Deck Unit 2			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
12		**Reinforced Concrete Deck (SF)**	**36708**	**34235**	**2333**	**140**	**0**
	1080	Delamination/Spall/Patched Area		0	0	105	0
	1090	Exposed Rebar		0	0	35	0
	1120	Efflorescence/Rust Staining		0	500	0	0
	1130	Cracking (RC and Other)		0	1833	0	0
	510	**Wearing Surface (SF)**	**35051**	**31194**	**3506**	**351**	**0**
	3210	Delam/Spall/Patch/Pothole		0	0	351	0
	3220	Crack (Wearing Surface)		0	3506	0	0
305		**Assembly Joint without Seal (LF)**	**69**	**59**	**10**	**0**	**0**
	2360	Adjacent Deck or Header		0	10	0	0
331		**Reinforced Concrete Bridge Railing (LF)**	**1019**	**0**	**619**	**400**	**0**
	1080	Delamination/Spall/Patched Area		0	310	400	0
	1130	Cracking (RC and Other)		0	309	0	0
815		**Drainage (EA)**	**4**	**0**	**4**	**0**	**0**

Eastbound Deck Unit 3			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
12		**Reinforced Concrete Deck (SF)**	**33552**	**31529**	**1983**	**40**	**0**
	1080	Delamination/Spall/Patched Area		0	0	40	0
	1120	Efflorescence/Rust Staining		0	150	0	0
	1130	Cracking (RC and Other)		0	1833	0	0
	510	**Wearing Surface (SF)**	**32038**	**28513**	**3204**	**321**	**0**
	3210	Delam/Spall/Patch/Pothole		0	0	321	0
	3220	Crack (Wearing Surface)		0	3204	0	0
305		**Assembly Joint without Seal (LF)**	**138**	**0**	**104**	**34**	**0**
	2360	Adjacent Deck or Header		0	104	34	0
331		**Reinforced Concrete Bridge Railing (LF)**	**982**	**0**	**811**	**171**	**0**
	1080	Delamination/Spall/Patched Area		0	406	171	0
	1130	Cracking (RC and Other)		0	405	0	0
815		**Drainage (EA)**	**4**	**0**	**3**	**1**	**0**

Superstructure Summary			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
107		**Steel Open Girder/Beam (LF)**	**8944**	**8789**	**145**	**10**	**0**
	1000	Corrosion		0	145	10	0
	515	**Steel Protective Coating (SF)**	**317516**	**316936**	**0**	**580**	**0**
	3440	Effectiveness		0	0	580	0
113		**Steel Stringer (LF)**	**17880**	**17736**	**144**	**0**	**0**
	1000	Corrosion		0	144	0	0
	515	**Steel Protective Coating (SF)**	**101921**	**101777**	**0**	**144**	**0**
	3440	Effectiveness		0	0	144	0
152		**Steel Floorbeam (LF)**	**9918**	**9506**	**3**	**409**	**0**
	1000	Corrosion		0	3	409	0
	515	**Steel Protective Coating (SF)**	**111086**	**110262**	**0**	**824**	**0**
	3440	Effectiveness		**0**	**0**	824	**0**
311		**Movable Bearing (EA)**	**24**	**22**	**2**	**0**	**0**
	2220	Alignment		0	2	0	0
313		**Fixed Bearing (EA)**	**36**	**35**	**0**	**1**	**0**
	1000	Corrosion		0	0	1	0
820		**Steel Seated-Hinge Assembly (EA)**	**12**	**11**	**1**	**0**	**0**

Westbound Superstructure Span 1			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
107		**Steel Open Girder/Beam (LF)**	**311**	**299**	**12**	**0**	**0**
	1000	Corrosion		0	12	0	0
	515	**Steel Protective Coating (SF)**	**11041**	**10993**	**0**	**48**	**0**
	3440	Effectiveness		0	0	48	0
113		**Steel Stringer (LF)**	**622**	**610**	**12**	**0**	**0**
	1000	Corrosion		0	12	0	0
	515	**Steel Protective Coating (SF)**	**3546**	**3534**	**0**	**12**	**0**
	3440	Effectiveness		0	0	12	0
152		**Steel Floor Beam (LF)**	**349**	**349**	**0**	**0**	**0**
	515	**Steel Protective Coating (SF)**	**3909**	**3909**	**0**	**0**	**0**
311		**Movable Bearing (EA)**	**3**	**3**	**0**	**0**	**0**

Westbound Superstructure Span 2			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
107		**Steel Open Girder/Beam (LF)**	**532**	**532**	**0**	**0**	**0**
	515	**Steel Protective Coating (SF)**	**18886**	**18886**	**0**	**0**	**0**
113		**Steel Stringer (LF)**	**1064**	**1064**	**0**	**0**	**0**
	515	**Steel Protective Coating (SF)**	**6065**	**6065**	**0**	**0**	**0**
152		**Steel Floor Beam (LF)**	**559**	**559**	**0**	**0**	**0**
	515	**Steel Protective Coating (SF)**	**6261**	**6261**	**0**	**0**	**0**
311		**Movable Bearing (EA)**	**3**	**3**	**0**	**0**	**0**

Westbound Superstructure Span 3			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
107		**Steel Open Girder/Beam (LF)**	**532**	**532**	**0**	**0**	**0**
	515	**Steel Protective Coating (SF)**	**18886**	**18886**	**0**	**0**	**0**
113		**Steel Stringer (LF)**	**1064**	**1064**	**0**	**0**	**0**
	515	**Steel Protective Coating (SF)**	**6065**	**6065**	**0**	**0**	**0**
152		**Steel Floor Beam (LF)**	**559**	**559**	**0**	**0**	**0**
	515	**Steel Protective Coating (SF)**	**6261**	**6261**	**0**	**0**	**0**
313		**Fixed Bearing (EA)**	**3**	**3**	**0**	**0**	**0**

Westbound Superstructure Span 4			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
107		**Steel Open Girder/Beam (LF)**	**599**	**574**	**25**	0	0
	1000	Corrosion		0	25	0	0
	515	**Steel Protective Coating (SF)**	**21265**	**21165**	**0**	**100**	**0**
	3440	Effectiveness		0	0	100	0
113		**Steel Stringer (LF)**	**1197**	**1173**	**24**	**0**	**0**
	1000	Corrosion		0	24	0	0
	515	**Steel Protective Coating (SF)**	**6823**	**6799**	**0**	**24**	**0**
	3440	Effectiveness		0	0	24	0
152		**Steel Floor Beam (LF)**	**698**	**572**	**0**	**126**	**0**
	1000	Corrosion		0	0	126	0
	515	**Steel Protective Coating (SF)**	**7818**	**7566**	**0**	**252**	**0**
	3440	Effectiveness		0	0	252	0
313		**Fixed Bearing (EA)**	**3**	**3**	**0**	**0**	**0**
820		**Steel Seated-Hinge Assembly (EA)**	**3**	**2**	**1**	**0**	**0**

Westbound Superstructure Span 5			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
107		**Steel Open Girder/Beam (LF)**	**599**	**599**	**0**	**0**	**0**
	515	**Steel Protective Coating (SF)**	**21265**	**21265**	**0**	**0**	**0**
113		**Steel Stringer (LF)**	**1197**	**1197**	**0**	**0**	**0**
	515	**Steel Protective Coating (SF)**	**6823**	**6823**	**0**	**0**	**0**
152		**Steel Floor Beam (LF)**	**629**	**629**	**0**	**0**	**0**
	515	**Steel Protective Coating (SF)**	**7045**	**7045**	**0**	**0**	**0**
313		**Fixed Bearing (EA)**	**3**	**3**	**0**	**0**	**0**

Westbound Superstructure Span 6			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
107		**Steel Open Girder/Beam (LF)**	**599**	**573**	**24**	**2**	**0**
	1000	Corrosion		0	24	2	0
	515	**Steel Protective Coating (SF)**	**21265**	**21169**	**0**	**96**	**0**
	3440	Effectiveness		0	0	96	0
113		**Steel Stringer (LF)**	**1197**	**1173**	**24**	**0**	**0**
	1000	Corrosion		0	24	0	0
	515	**Steel Protective Coating (SF)**	**6823**	**6799**	**0**	**24**	**0**
	3440	Effectiveness		0	0	24	0
152		**Steel Floor Beam (LF)**	**698**	**664**	**3**	**31**	**0**
	1000	Corrosion		0	3	31	0
	515	**Steel Protective Coating (SF)**	**7818**	**7750**	**0**	**68**	**0**
	3440	Effectiveness		0	0	68	0
313		**Fixed Bearing (EA)**	**3**	**3**	**0**	**0**	**0**
820		**Steel Seated-Hinge Assembly (EA)**	**3**	**3**	**0**	**0**	**0**

Westbound Superstructure Span 7			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
107		**Steel Open Girder/Beam (LF)**	**532**	**529**	**0**	**3**	**0**
	1000	Corrosion		0	0	3	0
	515	**Steel Protective Coating (SF)**	**18886**	**18886**	**0**	**0**	**0**
113		**Steel Stringer (LF)**	**1064**	**1064**	**0**	**0**	**0**
	515	**Steel Protective Coating (SF)**	**6065**	**6065**	**0**	**0**	**0**
152		**Steel Floor Beam (LF)**	**559**	**559**	**0**	**0**	**0**
	515	**Steel Protective Coating (SF)**	**6261**	**6261**	**0**	**0**	**0**
313		**Fixed Bearing (EA)**	**3**	**2**	**0**	**1**	**0**
	1000	Corrosion	3	0	0	1	0

Westbound Superstructure Span 8			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
107		**Steel Open Girder/Beam (LF)**	**466**	**466**	**0**	**0**	**0**
	515	**Steel Protective Coating (SF)**	**16543**	**16543**	**0**	**0**	**0**
113		**Steel Stringer (LF)**	**931**	**931**	**0**	**0**	**0**
	515	**Steel Protective Coating (SF)**	**5307**	**5307**	**0**	**0**	**0**
152		**Steel Floor Beam (LF)**	**489**	**489**	**0**	**0**	**0**
	515	**Steel Protective Coating (SF)**	**5477**	**5477**	**0**	**0**	**0**
313		**Fixed Bearing (EA)**	**3**	**3**	**0**	**0**	**0**

Westbound Superstructure Span 9			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
107		**Steel Open Girder/Beam (LF)**	**248**	**236**	**12**	**0**	**0**
	1000	Corrosion		0	12	0	0
	515	**Steel Protective Coating (SF)**	**8804**	**8756**	**0**	**48**	**0**
	3440	Effectiveness		0	0	48	0
113		**Steel Stringer (LF)**	**496**	**484**	**12**	**0**	**0**
	1000	Corrosion		0	12	0	0
	515	**Steel Protective Coating (SF)**	**2828**	**2816**	**0**	**12**	**0**
	3440	Effectiveness		0	0	12	0
152		**Steel Floor Beam (LF)**	**349**	**349**	**0**	**0**	**0**
	515	**Steel Protective Coating (SF)**	**3909**	**3909**	**0**	**0**	**0**
311		**Movable Bearing (EA)**	**6**	**6**	**0**	**0**	**0**

Eastbound Superstructure Span 1			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
107		**Steel Open Girder/Beam (LF)**	**419**	**407**	**12**	**0**	**0**
	1000	Corrosion		0	12	0	0
	515	**Steel Protective Coating (SF)**	**14875**	**14827**	**0**	**48**	**0**
	3440	Effectiveness		0	0	48	0
113		**Steel Stringer (LF)**	**838**	**826**	**12**	**0**	**0**
	1000	Corrosion		0	12	0	0
	515	**Steel Protective Coating (SF)**	**4777**	**4765**	**0**	**12**	**0**
	3440	Effectiveness		0	0	12	0
152		**Steel Floor Beam (LF)**	**489**	**489**	**0**	**0**	**0**
	515	**Steel Protective Coating (SF)**	**5477**	**5477**	**0**	**0**	**0**
311		**Movable Bearing (EA)**	**3**	**3**	**0**	**0**	**0**

Eastbound Superstructure Span 2			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
107		**Steel Open Girder/Beam (LF)**	**532**	**532**	**0**	**0**	**0**
	515	**Steel Protective Coating (SF)**	**18886**	**18886**	**0**	**0**	**0**
113		**Steel Stringer (LF)**	**1064**	**1064**	**0**	**0**	**0**
	515	**Steel Protective Coating (SF)**	**6065**	**6065**	**0**	**0**	**0**
152		**Steel Floor Beam (LF)**	**559**	**559**	**0**	**0**	**0**
	515	**Steel Protective Coating (SF)**	**6261**	**6261**	**0**	**0**	**0**
311		**Movable Bearing (EA)**	**3**	**3**	**0**	**0**	**0**

Eastbound Superstructure Span 3			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
107		**Steel Open Girder/Beam (LF)**	**532**	**532**	**0**	**0**	**0**
	515	**Steel Protective Coating (SF)**	**18886**	**18886**	**0**	**0**	**0**
113		**Steel Stringer (LF)**	**1064**	**1064**	**0**	**0**	**0**
	515	**Steel Protective Coating (SF)**	**6065**	**6065**	**0**	**0**	**0**
152		**Steel Floor Beam (LF)**	**559**	**559**	**0**	**0**	**0**
	515	**Steel Protective Coating (SF)**	**6261**	**6261**	**0**	**0**	**0**
313		**Fixed Bearing (EA)**	**3**	**3**	**0**	**0**	**0**

Eastbound Superstructure Span 4			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
107		**Steel Open Girder/Beam (LF)**	**599**	**570**	**24**	**5**	**0**
	1000	Corrosion		0	24	5	0
	515	**Steel Protective Coating (SF)**	**21265**	**21169**	**0**	**96**	**0**
	3440	Effectiveness		0	0	96	0
113		**Steel Stringer (LF)**	**1197**	**1173**	**24**	**0**	**0**
	1000	Corrosion		0	24	0	0
	515	**Steel Protective Coating (SF)**	**6823**	**6799**	**0**	**24**	**0**
	3440	Effectiveness		0	0	24	0
152		**Steel Floor Beam (LF)**	**698**	**572**	**0**	**126**	**0**
	1000	Corrosion		0	0	126	0
	515	**Steel Protective Coating (SF)**	**7818**	**7566**	**0**	**252**	**0**
	3440	Effectiveness		0	0	252	0
313		**Fixed Bearing (EA)**	**3**	**3**	**0**	**0**	**0**
820		**Steel Seated-Hinge Assembly (EA)**	**3**	**3**	**0**	**0**	

Eastbound Superstructure Span 5			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
107		**Steel Open Girder/Beam (LF)**	**599**	**599**	**0**	**0**	**0**
	515	**Steel Protective Coating (SF)**	**21265**	**21265**	**0**	**0**	**0**
113		**Steel Stringer (LF)**	**1197**	**1197**	**0**	**0**	**0**
	515	**Steel Protective Coating (SF)**	**6823**	**6823**	**0**	**0**	**0**
152		**Steel Floorbeam (LF)**	**629**	**629**	**0**	**0**	**0**
	515	**Steel Protective Coating (SF)**	**7045**	**7045**	**0**	**0**	**0**
313		**Fixed Bearing (EA)**	**3**	**3**	**0**	**0**	**0**

Eastbound Superstructure Span 6			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
107		**Steel Open Girder/Beam (LF)**	**599**	**575**	**24**	**0**	**0**
	1000	Corrosion		0	24	0	0
	515	**Steel Protective Coating (SF)**	**21265**	**21169**	**0**	**96**	**0**
	3440	Effectiveness		0	0	96	0
113		**Steel Stringer (LF)**	**1197**	**1173**	**24**	**0**	**0**
	1000	Corrosion		0	24	0	0
	515	**Steel Protective Coating (SF)**	**6823**	**6799**	**0**	**24**	**0**
	3440	Effectiveness		0	0	24	0
152		**Steel Floorbeam (LF)**	**698**	**572**	**0**	**126**	**0**
	1000	Corrosion		0	0	126	0
	515	**Steel Protective Coating (SF)**	**7818**	**7566**	**0**	**252**	**0**
	3440	Effectiveness		0	0	252	0
313		**Fixed Bearing (EA)**	**3**	**3**	**0**	**0**	**0**
820		**Steel Seated-Hinge Assembly (EA)**	**3**	**3**	**0**	**0**	**0**

Eastbound Superstructure Span 7			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
107		Steel Open Girder/Beam (LF)	532	532	0	0	0
515		Steel Protective Coating (SF)	18886	18886	0	0	0
113		Steel Stringer (LF)	1064	1064	0	0	0
	515	Steel Protective Coating (SF)	6065	6065	0	0	0
152		Steel Floorbeam (LF)	559	559	0	0	0
	515	Steel Protective Coating (SF)	6261	6261	0	0	0
313		Fixed Bearing (EA)	3	3	0	0	0

Eastbound Superstructure Span 8			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
107		Steel Open Girder/Beam (LF)	466	466	0	0	0
	515	Steel Protective Coating (SF)	16543	16543	0	0	0
113		Steel Stringer (LF)	931	931	0	0	0
	515	Steel Protective Coating (SF)	5307	5307	0	0	0
152		Steel Floorbeam (LF)	489	489	0	0	0
	515	Steel Protective Coating (SF)	5477	5477	0	0	0
313		Fixed Bearing (EA)	3	3	0	0	0

Eastbound Superstructure Span 9			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
107		**Steel Open Girder/Beam (LF)**	**248**	**236**	**12**	**0**	**0**
	1000	Corrosion		0	12	0	0
	515	**Steel Protective Coating (SF)**	**8804**	**8756**	**0**	**48**	**0**
	3440	Effectiveness		0	0	48	0
113		**Steel Stringer (LF)**	**496**	**484**	**12**	**0**	**0**
	1000	Corrosion		0	12	0	0
	515	**Steel Protective Coating (SF)**	**2828**	**2816**	**0**	**12**	**0**
	3440	Effectiveness		0	0	12	0
152		**Steel Floorbeam (LF)**	**349**	**349**	**0**	**0**	**0**
	515	**Steel Protective Coating (SF)**	**3909**	**3909**	**0**	**0**	**0**
311		**Movable Bearing (EA)**	**6**	**4**	**2**	**0**	**0**
	2220	Alignment		0	2	0	0

Substructure Summary			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
205		**Reinforced Concrete Column (EA)**	**32**	**9**	**7**	**16**	**0**
	1080	Delamination/Spall/Patched Area		0	5	16	0
	1190	Abrasion/Wear		0	1	0	0
	6000	Scour		0	1	0	0
215		**Reinforced Concrete Abutment (LF)**	**92**	**56**	**24**	**12**	**0**
	1080	Delamination/Spall/Patched Area		0	24	12	0
234		**Reinforced Concrete Pier Cap (LF)**	**960**	**924**	**8**	**28**	**0**
	1080	Delamination/Spall/Patched Area		0	8	28	0
830		**Abutment Backwall (LF)**	**288**	**146**	**85**	**57**	**0**

Westbound Rear Abutment			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
215		**Reinforced Concrete Abutment (LF)**	**22**	**18**	**4**	**0**	**0**
	1080	Delamination/Spall/Patched Area		0	4	0	0
830		**Abutment Backwall (LF)**	**72**	**41**	**29**	**2**	**0**

Westbound Pier 1			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
205		**Reinforced Concrete Column (EA)**	**2**	**1**	**1**	**0**	**0**
	1080	Delamination/Spall/Patched Area		0	1	0	0
234		**Reinforced Concrete Pier Cap (LF)**	**60**	**60**	**0**	**0**	**0**

Westbound Pier 2			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
205		**Reinforced Concrete Column (EA)**	**2**	**0**	**1**	**1**	**0**
	1080	Delamination/Spall/Patched Area		0	1	1	0
234		**Reinforced Concrete Pier Cap (LF)**	**60**	**55**	**0**	**5**	**0**
	1080	Delamination/Spall/Patched Area		0	0	5	0

Westbound Pier 3			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
205		**Reinforced Concrete Column (EA)**	**2**	**2**	**0**	**0**	**0**
	1080	Delamination/Spall/Patched Area		0	0	0	0
234		**Reinforced Concrete Pier Cap (LF)**	**60**	**56**	**1**	**3**	**0**
	1080	Delamination/Spall/Patched Area		0	1	3	0

Westbound Pier 4			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
205		**Reinforced Concrete Column (EA)**	**2**	**0**	**0**	**2**	**0**
	1080	Delamination/Spall/Patched Area		0	0	2	0
234		**Reinforced Concrete Pier Cap (LF)**	**60**	**58**	**0**	**2**	**0**
	1080	Delamination/Spall/Patched Area		0	0	2	0

Westbound Pier 5			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
205		**Reinforced Concrete Column (EA)**	**2**	**1**	**1**	**0**	**0**
	6000	Scour		0	1	0	0
234		**Reinforced Concrete Pier Cap (LF)**	**60**	**59**	**1**	**0**	**0**
	1080	Delamination/Spall/Patched Area		0	1	0	0

Westbound Pier 6			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
215		**Reinforced Concrete Column (EA)**	**2**	**0**	**0**	**2**	**0**
	1080	Delamination/Spall/Patched Area		0	0	2	0
234		**Reinforced Concrete Pier Cap (LF)**	**60**	**58**	**2**	**0**	**0**
	1080	Delamination/Spall/Patched Area		0	2	0	0

Westbound Pier 7			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
205		**Reinforced Concrete Column (EA)**	**2**	**0**	**0**	**2**	**0**
	1080	Delamination/Spall/Patched Area		0	0	2	0
234		**Reinforced Concrete Pier Cap (LF)**	**60**	**52**	**0**	**8**	**0**
	1080	Delamination/Spall/Patched Area		0	0	8	0

Westbound Pier 8			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
205		**Reinforced Concrete Column (EA)**	**2**	**2**	**0**	**0**	**0**
234		**Reinforced Concrete Pier Cap (LF)**	**60**	**60**	**0**	**0**	**0**

Westbound Forward Abutment			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
215		**Reinforced Concrete Abutment (LF)**	**24**	**8**	**10**	**6**	**0**
	1080	Delamination/Spall/Patched Area		0	10	6	0
830		**Abutment Backwall (LF)**	**72**	**37**	**14**	**21**	**0**

Eastbound Rear Abutment			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
215		**Reinforced Concrete Abutment (LF)**	**22**	**21**	**1**	**0**	**0**
	1080	Delamination/Spall/Patched Area		0	1	0	0
830		**Abutment Backwall (LF)**	**72**	**39**	**28**	**5**	**0**

Eastbound Pier 1			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
205		**Reinforced Concrete Column (EA)**	**2**	**1**	**0**	**1**	**0**
	1080	Delamination/Spall/Patched Area		0	0	1	0
234		**Reinforced Concrete Pier Cap (LF)**	**60**	**60**	**0**	**0**	**0**
	1080	Delamination/Spall/Patched Area		0	0	0	0

Eastbound Pier 2			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
205		**Reinforced Concrete Column (EA)**	**2**	**0**	**0**	**2**	**0**
	1080	Delamination/Spall/Patched Area		0	0	2	0
234		**Reinforced Concrete Pier Cap (LF)**	**60**	**51**	**3**	**6**	**0**
	1080	Delamination/Spall/Patched Area		0	3	6	0

Eastbound Pier 3			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
205		**Reinforced Concrete Column (EA)**	**2**	**1**	**0**	**1**	**0**
	1080	Delamination/Spall/Patched Area		0	0	1	0
234		**Reinforced Concrete Pier Cap (LF)**	**60**	**58**	**0**	**2**	**0**
	1080	Delamination/Spall/Patched Area		0	0	2	0

Eastbound Pier 4			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
205		**Reinforced Concrete Column (EA)**	**2**	**1**	**0**	**1**	**0**
	1080	Delamination/Spall/Patched Area		0	0	1	0
234		**Reinforced Concrete Pier Cap (LF)**	**60**	**60**	**0**	**0**	**0**

Eastbound Pier 5				Condition State			
NBI	Defect	Description	QTY.	1	2	3	4
205		**Reinforced Concrete Column (EA)**	**2**	**0**	**2**	**0**	**0**
	1080	Delamination/Spall/Patched Area		0	2	0	0
234		**Reinforced Concrete Pier Cap (LF)**	**60**	**58**	**0**	**2**	**0**
	1080	Delamination/Spall/Patched Area		0	0	2	0

Eastbound Pier 6				Condition State			
NBI	Defect	Description	QTY.	1	2	3	4
205		**Reinforced Concrete Column (EA)**	**2**	**0**	**1**	**1**	**0**
	1080	Delamination/Spall/Patched Area		0	0	1	0
	1190	Abrasion/Wear		0	1	0	0
234		**Reinforced Concrete Pier Cap (LF)**	**60**	**59**	**1**	**0**	**0**
	1080	Delamination/Spall/Patched Area		0	1	0	0

Eastbound Pier 7				Condition State			
NBI	Defect	Description	QTY.	1	2	3	4
205		**Reinforced Concrete Column (EA)**	**2**	**0**	**0**	**2**	**0**
	1080	Delamination/Spall/Patched Area		0	0	2	0
234		**Reinforced Concrete Pier Cap (LF)**	**60**	**60**	**0**	**0**	**0**
	1080	Delamination/Spall/Patched Area		0	0	0	0

Eastbound Pier 8				Condition State			
NBI	Defect	Description	QTY.	1	2	3	4
205		**Reinforced Concrete Column (EA)**	**2**	**0**	**1**	**1**	**0**
	1080	Delamination/Spall/Patched Area		0	1	1	0
234		**Reinforced Concrete Pier Cap (LF)**	**60**	**60**	**0**	**0**	**0**

Eastbound Forward Abutment				Condition State			
NBI	Defect	Description	QTY.	1	2	3	4
215		**Reinforced Concrete Abutment (LF)**	**24**	**9**	**9**	**6**	**0**
	1080	Delamination/Spall/Patched Area		0	9	6	0
830		**Abutment Backwall (LF)**	**72**	**29**	**14**	**29**	**0**

Approach Summary			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
321		**Reinforced Concrete Approach Slab (SF)**	**4842**	**4404**	**64**	**374**	**0**
	1080	Delamination/Spall/Patched Area		0	0	170	0
	1130	Cracking (RC and Other)		0	64	204	0

Westbound Rear (West) Approach			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
321		**Reinforced Concrete Approach Slab (SF)**	**1200**	**1200**	**0**	**0**	**0**

Westbound Forward (East) Approach			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
321		**Reinforced Concrete Approach Slab (SF)**	**1242**	**1018**	**0**	**224**	**0**
	1080	Delamination/Spall/Patched Area		0	0	20	0
	1130	Cracking (RC and Other)		0	0	204	0

Eastbound Rear (West) Approach			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
321		**Reinforced Concrete Approach Slab (SF)**	**1200**	**1200**	**0**	**0**	**0**

Eastbound Forward (East) Approach			Condition State				
NBI	Defect	Description	QTY.	1	2	3	4
321		**Reinforced Concrete Approach Slab (SF)**	**1200**	**986**	**64**	**150**	**0**
	1080	Delamination/Spall/Patched Area		0	0	150	0
	1130	Cracking (RC and Other)		0	64	0	0