

2023 IN-DEPTH INSPECTION REPORT
BRIDGE NO: HAM-75-0022R, SFN 3108805
VAR-DISTRICT 8 Bridge Inspections
Brent Spence Approach Bridges



Cincinnati, Ohio

September 11th – September 19th, 2023

Michael Baker
INTERNATIONAL



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Introduction

Bridge Description

HAM-75-0022R (SFN 3108805) is a 14-span structure that carries three lanes of I-75 northbound traffic over West 3rd Street, a CSX railroad bridge, and US 50 and I-75 ramps (see Figure 1). The original structure was constructed in 1963 and consists of a variable-width reinforced concrete deck on continuous steel plate girders (five girders in Spans 16C to 26C and six girders in Spans 27C to 29C) supported by reinforced concrete substructure units. The substructure consists of nine multi-column pier bents, five hammerhead piers, and a cantilever abutment, all with concrete pile foundations. Steel cross frames are welded to the transverse stiffeners of the girders. The structure is 1187' long with a maximum span of 117'-0". Selected sheets from the design plans are attached in Appendix A.



Figure 1: Location Map

In 2000, the bridge was partially reconstructed, which included widening the east side of the bridge in Spans 21C through 29C to connect to a new offramp to West 5th Street. New steel beams, cross frames, and reinforced concrete piers were added, as well as a new fracture-critical steel box pier cap at Pier 25J. The original Pier 26C was replaced with a widened pier with a fracture-critical steel box pier cap.

The nomenclature for this bridge follows the convention set in the design plans with spans, substructure units, and cross frames labeled from south to north and original girders labeled A through F from west to east. The retrofit beams are labeled B1 through B4 from east to west. The original substructure units are numbered from Pier 15C to Abutment C, and the retrofit substructure units are labeled from Pier 22J to Pier 26C/J. Pier 26 is referred to as 26C/J, as it carries portions of both original girders and retrofit beams. Original spans are numbered from Span 16C to Span 29C, and retrofit spans are numbered Span 23J to Span 26J.

Recent Maintenance and Construction History

2000 Retrofit

- Widened the east side of the structure from Pier 21C to Pier 26C.
- Constructed one concrete hammerhead pier at Pier 22J.
- Constructed two concrete pier bents at Piers 23J and Pier 24J.
- Constructed two steel box pier caps at Pier 25J and Pier 26C/J.

2009 Rehabilitation

- Placed micro-silica concrete overlay to deck.

2017 Rehabilitation

- Concrete patching at piers and fiber-reinforced polymer (FRP) wrapping at Piers 15C, 18C, and 23C.
- Replacement of deck joints at Piers 15C, 18C, 23C, 26C, and Abutment C.
- Repaired drainage and downspouts.
- Replaced existing rocker bearings with elastomeric bearings at Piers 15C, 18C, 23C, and 26C.
- Replaced cross frames below expansion joints at Piers 15C, 18C, 23C, and 26C with jacking diaphragms.
- Spot painted steel box pier caps at Piers 25J and 26J.
- Cleaned and painted all steel members below the expansion joints at Piers 15C, 18C, 23C, and 26C.

Inspection Method

Michael Baker International, as a subconsultant to TransSystems Corporation, performed an in-depth element level and non-redundant steel tension member inspection of Bridge HAM-75-0022R between September 11, 2023 and September 14, 2023 and on September 19, 2023. The fracture-critical members consist of the steel box caps at Piers 25J and 26C/J. The interiors of caps were inspected in accordance with OSHA confined space regulations by a trained inspector on September 14. The pier cap hatches were opened with keys obtained from ODOT personnel and were locked after the inspection. The exterior portions of the caps over the I-75 SB Ramp to 2nd Street were inspected from a 135' lift during nighttime lane closures on September 14 and the remaining exterior portions were inspected with a 24' extension ladder.

The superstructure and piers were inspected using a 135' boom lift. Areas inaccessible from the boom lift were inspected from the ground. The wearing surface was visually inspected from the boom lift. The span over the railroad was inspected from both sides of the tracks without extending the boom lift over the railroad or otherwise fouling the tracks.

The inspections were performed in accordance with the Consultant Bridge Inspection Scope of Services.

In December of 2020, ODOT sounded the wearing surface and marked delaminations with white spray paint, and the results are included in Appendix B.

Photo dates were improperly setup and were recorded on photos with wrong month, Photos shown are from September not October.

The Team Leaders listed below have completed all FHWA requirements to be considered Team Leaders, including the FHWA Fracture Critical Inspection Techniques for Steel Bridges course as required by 23 CFR 650.309(b).

Inspection Team

Cory Larkin Team Leader, PE

Jeff Sams, Team Leader

Gustin Cleary, EIT

Condition Descriptions and Ratings

National Bridge Inspection Standards (NBIS) guidelines for evaluating the condition of bridges have been developed to promote uniformity of bridge inspections performed by different teams over time. Table 1 contains the bridge inspection rating matrix established by the Federal Highway Administration (FHWA). In this report, the Summary Items: General Appraisal, Deck, Superstructure, Substructure, Approach Summaries and Protective Coating System ratings will follow the NBIS system.

Table 1: Condition Rating Guidelines

Summary Items (NBIS)	Condition	Guidelines
9	Excellent	No Problems noted: no section loss, general deterioration.
8	Very Good	
7	Good	Some minor problems.
6	Satisfactory	Structural elements show some minor deterioration.
5	Fair	Structural elements show deterioration but are sound.
4	Poor	Advanced widespread deficiencies or a likely reduction in capacity. Usually, the load path appears to be affected for primary members or there are obvious structural changes since the as-built condition that are advanced.
3	Serious	Poor Condition <i>and</i> local failures possible.
2	Critical	Serious condition <i>and</i> unless closely monitored it may be necessary to close the bridge until corrective action is taken.
1	Imminent Failure	Critical <i>and</i> major deterioration is affecting stability. Bridge or lane(s) shall be closed to traffic, but corrective action may put bridge back into light service.
0	Failed	Imminent Failure <i>and</i> out of service, beyond corrective action.

BRIDGE CONDITION

(58) – Deck Summary

The deck is in **Satisfactory (6)** condition. The deck underside exhibits cracks with efflorescence, as well as isolated spalling, delaminations, and exposed rebar. The wearing surface has isolated hairline cracks throughout. Both railings exhibit typical hairline vertical and longitudinal cracks, as well as minor delaminations and spalls.

12 – Reinforced Concrete Deck

The reinforced concrete deck is in **Satisfactory (6)** condition. In all spans, the underside of the deck typically exhibits transverse hairline cracks with efflorescence spaced at 3' on average and isolated spalls with exposed rebar. There is one exposed rebar at the edge of a concrete patch in the deck underside at Beam E near Pier 17C. There are spalls with exposed rebar in Span 17C, Span 19C, Span 27C, Span 28C, and Span 29C. There is isolated map cracking throughout the deck, with heavier cracking and efflorescence in Span 18C. The underside of the deck above the railroad tracks is stained with a dark layer of soot. There are concrete patches adjacent to the deck drains and expansion joints, as well as other locations throughout the deck; the patches are in good condition. Several patches are covered with plywood formwork (See Photo 8).

Cracking with efflorescence and isolated spalls are typical throughout the deck overhang and fascia's. There is a 6' L x 2' W x 5" deep spall with exposed rebar on the east overhang near Pier 17C. A 6" diameter x 1" deep spall is present in the west overhang in Span 19C. A continuous set of spalls up to 1" deep are present in the east overhang of Span 19C. There are two 3' L x 1' W x 1 1/2" deep spalls with exposed rebar on the west overhangs at Span 23C and Span 24C (See Photo 9).



Photo 1- Bridge Deck, Typical Condition



Photo 2- Typical Underside, Span 15



Photo 3- Typical Underside, Span 16



Photo 4- Span 15 2SF Spall with Exposed Rebar



Photo 5- Span 16, Bay 4, 4SF Spall with Exposed Rebar



Photo 6- Span 23J, Sign Bumpout Detail



Photo 7- Span 23J, Typical Underside



Photo 8- Span 24, Bay 1, Form Remnants



Photo 9- Span 24, Overhang, Spall with Exposed Rebar



Photo 10- Span 29, 9SF Spall with Exposed Rebar



Photo 11- Span 29, Bay 1, 2SF Spall with Exposed Rebar



Photo 12- Span 29, Bay 1, 5SF Spall with Exposed Rebar

510 – Wearing Surface

The monolithic concrete deck wearing surface is in **Good (7)** condition. The wearing surface was inspected visually from the boom lift. Isolated hairline longitudinal and transverse cracks are present throughout the wearing surface in all spans. There are potholes patched with asphalt in Spans 19C and 21C. There are concrete patches in good condition in Span 18C and 27C. There are cracked concrete patches (each 3'x3') in Span 22C and 27C. The wearing surface was sounded by ODOT in December 2020, and multiple delaminated areas were found throughout the wearing surface (see Appendix B).



Photo 13- Typical Wearing Surface Conditions

300 – Strip Seal Expansion Joint

The expansion joints are in **Satisfactory (6)** condition. Expansion joints are located at Piers 15C, 18C, 23C, 26C and Abutment C. The expansion joints were visibly inspected from the boom lift. Loosely-packed debris was noted in the expansion joint at Pier 18C. A 3' long section of the joint seal has pulled out between Beams E and B3 at Pier 23C (See Photo 14) and water free flows on to the pier at this location. The joint opening measurements were not taken at deck level.



Photo 14- Joint Failure, Pier 23 near Girder E

331 – Reinforced Concrete Bridge Railing

The reinforced concrete bridge railings are in **Fair (5)** condition. Vertical and transverse hairline cracks with efflorescence as well as isolated small spalls are typical throughout the railings. A horizontal crack is present in the east railing near the light post in Span 20C. There is a map cracking in the top of the west railing near Pier 23C. There is a smashed attenuator on the guardrail near Exit 1C. (See Photo 15)



Photo 15- Deck, Smashed Attenuator on Guardrail near Exit 1C

815 – Drainage

The bridge deck drainage is in **Good (7)** condition. At the deck level, scuppers were visibly inspected from the boom lift and no indication of significant clogging or debris accumulation was observed. The drain at Pier 16C was leaking onto the substructure during inspection.



Photo 16- Drainage, Leaking on Substructure, Pier 16C

(59) – Superstructure

The superstructure is in **Satisfactory (6)** condition. There is surface corrosion throughout all girders with laminating corrosion and section loss in the fascia girders. The steel bearings typically exhibit surface corrosion, particularly on the fascia bearings, and several bearings have pack rust between the rockers and the masonry plates. The steel protective coating is substantially ineffective throughout much of the structure.

107 - Steel Open Beams/Girders

The steel beams and plate girders are in **Satisfactory (6)** condition. There is widespread freckling and minor surface corrosion throughout all original girders, most prominently on the fascia girders (See Photo 17-18). The top of the bottom flange of Girder A exhibits laminating corrosion with section loss up to ¼" deep, typically near the transverse stiffeners. The most significant area of section loss is Girder A in Span 17C at midspan with bottom flange section loss of 8"W x ¼" deep from an original section of 16"W x 1 3/8" deep (9% loss). Laminating corrosion and section loss is also present in Span 18C and Spans 19C through 23C. Girder A also exhibits isolated pitting in the web and transverse stiffeners (See Photo 21). Laminating corrosion is initiating in the bottom flanges of Girders A-F in Span 28C with negligible section loss at this time. There is evidence of fire and associated damages to the under the structure in Span 29, Bay 3, with soot over top half of girders and associated paint failure (See Photo 24).

The retrofit beams in Spans 23J through 26J are in good condition with isolated areas of freckling and minor surface corrosion.



Photo 17- Span 15, Girder A, Typical Paint Failure and Active Corrosion



Photo 18- Span 15, Girder A, Typical Paint Failure and Active Corrosion

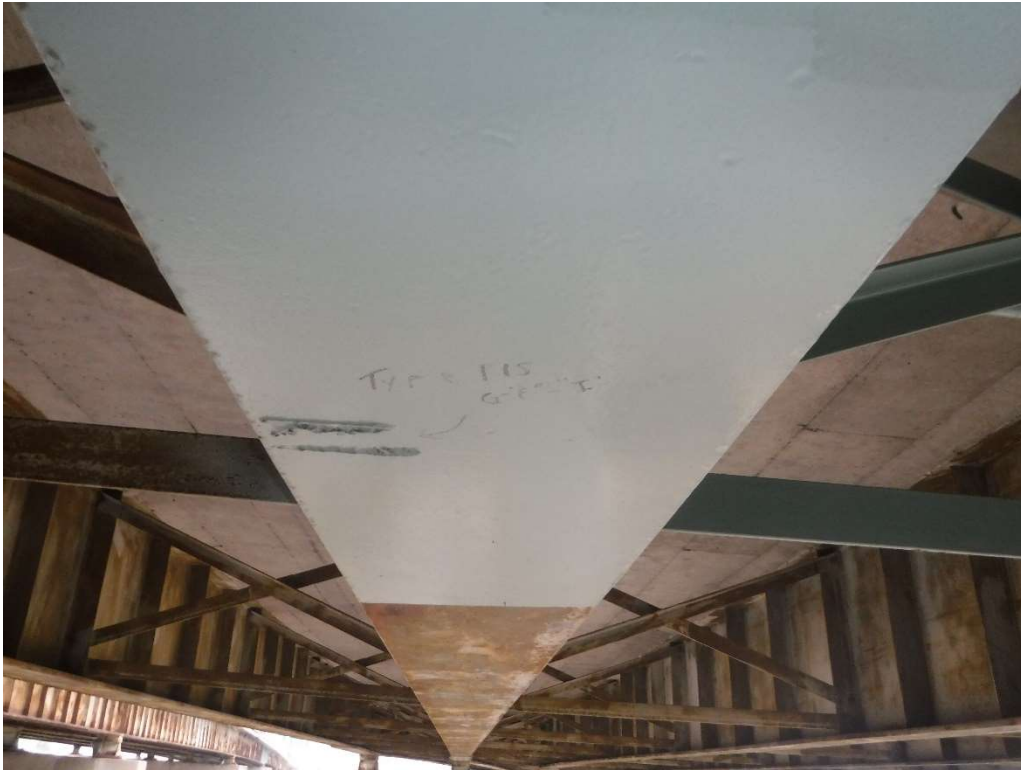


Photo 19- Girder F, Span 16, Typical Weld Remnants on Girders



Photo 20- Girder G, Span 16, Typical Weld Remnants on Girders



Photo 21- Girder A, Span 21C, Bottom Flange Section Loss, 1'x6"x1/8"



Photo 22- Span 23C, Cross Frames Poor Weld Quality to Girders



Photo 23- Typical Ground Wire, Span 23C, at Fascia Splices in Good Condition



Photo 24- Fire Damage under Structure, Bay 3, Span 29

310/311/313 - Bearings

The bearings overall are in **Satisfactory (6)** condition.

The new elastomeric bearings installed at Piers 15C, 18C, 23C and 26C are in good (7) condition. (See Photo 28-29)

The newer steel bearings in Spans 22J-26J (installed during the 2000 retrofit) are also in good (7) condition.

The original steel fixed and rocker bearings are in Satisfactory (6) condition.

The Pier Cap 25J bearings are in Good (7) condition

The Pier Cap 26C/J bearings are in Fair (5) condition.

310 - Elastomeric Bearings

The 25C pier cap bearings consist of one elastomeric pad at each column and each pad is fixed with two anchor bolts connected with nuts on the pier cap interior. The bearings have no significant deficiencies observed on the pads or anchors. No issues were noted with the anchor rods. The cap appears stable with no excessive or unanticipated movements under live load.

The 26C/J pier cap bearings consist of one elastomeric pad at each column and each pad is fixed with two anchor bolts connected with nuts on the pier cap interior. The south anchor bolt at the west column bearing is broken (See Photo 25); no issues were noted with the remaining anchor bolts. The cap appears stable with no excessive or unanticipated movements under live load. A slight gap was observed with the elastomeric pads on the south end where the anchor bolt is broken, with a slight bulge on the opposite end (See Photos 26-27).

The new elastomeric bearings installed at Piers 15C, 18C, 23C and 26C have minor isolated surface corrosion on the steel bearing plates.



Photo 25- Pier 26J, West End, Bearing Anchor Bolt Removed



Photo 26- Pier 26J, West End, Bearing Slight Bulge at Opposite Location of Missing Bolt



Photo 27- Pier 26J, West End, Bearing Slight Gap under Bearing at Location of Missing Bolt



Photo 28- Bearing C, Pier 23J



Photo 29- Pier 25C, Bearings Typical

311 – Moveable Bearings

The movable bearings typically exhibit surface corrosion with minor section loss, corrosion is more prominent on the fascia bearings (See Photo 30). There is pack rust between the rocker and the masonry plate of Bearing A at Pier 17C, Bearing A and E at Pier 19C, Bearing E at Pier 21C, Bearings A and E at Pier 22C and Bearing E at Pier 25C with no indication of uplift. The bearing at Abutment C, Bearing A has been covered with fill. (See Photo 33)



Photo 30- Bearing G, Pier 23J



Photo 31- Pier 25C, Bearings Typical



Photo 32- Pier 25J, Bearings Typical



Photo 33- Abutment C, Bearing A, Covered in fill



Photo 34- Pier 28, Bearing A, Typical

313 - Fixed Bearings

The fixed bearings typically exhibit surface corrosion with no measurable section loss, corrosion is more prominent on the fascia bearings.



Photo 35- Pier 29, Bearing C, Typical

515 - Steel Protective Coating System (Item 59.01)

The steel protective coating is paint. Overall, the protective coating for the beams and girders is in **Serious (3)** condition. The paint on the retrofit beams is in good condition, with isolated areas of freckling and minor surface corrosion. The ends of the original girders near the expansion joints at Piers 15C, 18C, 23C and 26C were cleaned and painted in 2018; the paint in these areas is in good condition. Elsewhere, the paint on the original girders has failed or is of limited effectiveness. Exposed steel with surface corrosion is widespread throughout the structure, most significantly on the bottom flange and lower web of the fascia girders. Where the paint has not failed, there is widespread chalking with complete loss of pigment, dulling, peeling and flaking. Paint failures with surface corrosion are typical throughout the original steel bearings and are present in isolated areas on the retrofit bearings at Piers 22J-26J.

Alignment

Alignment is in **Good (7)** condition without any problems in vertical or horizontal alignment noted through visual inspection.

Cross Frames and Diaphragms

The cross frames and diaphragms are in **Good (7)** condition with minor surface corrosion and paint failure throughout the structure. Cross frame #6 in Span 19 is bent on the lower angle. (See Photo 36). Missing bolts is typical throughout the structure with welded retrofits at the connections. (See Photo 39).



Photo 36- Cross Frame #6, Span 19, Bent



Photo 37- Cross Frames, Pier 23J, Welded Retrofit for Joint Replacement Remnants



Photo 38- Span 23J, Bay 1, Cross Frame Retrofit



Photo 39- Span 26, Cross Frame, Missing Bolt Typical

Fatigue

The superstructure fatigue prone details are in **Good (7)** condition with no deficiencies noted.

(60) – Substructure

The substructure is in **Satisfactory (6)** condition. The substructure consists of ten reinforced concrete cap-and-column piers (Piers 15C, 21C-25C, 27C, 28C, 23J, 24J), five reinforced concrete hammerhead piers (Piers 16C-20C, 22J), two fracture critical steel box pier caps on reinforced concrete columns (Piers 25J, 26C/J), and a reinforced concrete cantilever abutment. Minor hairline vertical and map cracks are typical throughout the concrete piers.

For the purposes of this report,

Element 205 - Reinforced Concrete Column refers to cap-and- column piers

Element 210 - Reinforced Concrete Pier Wall refers to hammerhead piers.

As part of the 2017 rehabilitation, concrete patching and FRP wrapping were applied to spalls and delaminations on Piers 15C, 18C, and 23C.



Photo 40- Pier 15 Back Face



Photo 41- Pier 16 Back Face



Photo 42- Pier 22C, Front Face



Photo 43- Pier 23, Back Face



Photo 44- Pier 24J, Front Face

205 - Reinforced Concrete Column

The reinforced concrete pier columns are in **Satisfactory (6)** condition with minor isolated spalls and hairline cracking typical throughout. There is a 4'H x 1"D spall on the northeast corner of Column 2, Pier 21C due to vehicular impacts. There is a 2'H x 1'W x 2" deep spall with exposed rebar and a 2'H x 2'W delaminated area on Column 2 of Pier 23C near the downspout support (See Photo 45). The protective coating for the FRP on the columns of Pier 23C is peeling. Hairline map cracking is present on the columns of Piers 22C, 24C, 26C/J, and 27C (See Photo 46). There is a 16"H x 6" W x 1/2" deep spall on the corner of Column 1 of Pier 27C.



Photo 45- Pier 23C, Column 3, Spall with Exposed Rebar 3SF



Photo 46- Pier 26J, Column 3, Heavy Map Cracking

210 - Reinforced Concrete Pier Wall

The reinforced concrete pier walls are in **Satisfactory (6)** condition with hairline map cracking typical throughout. A shallow spall around the armored edge is present at Pier 16C. Vertical hairline cracks are present on the east face of Pier Wall 18C. Concrete patching and FRP wrap was applied to Pier Wall 18C as part of the 2017 rehabilitation. There is a 10" W x 4"H section of FRP that is peeling and cracking on the south face of Pier 18C. Several shallow spalls with exposed reinforcing bars are present on the south and west faces of Pier 19C wall due to shallow cover.

215 - Reinforced Concrete Abutment

The reinforced concrete abutment wall is in **Good (7)** condition with isolated hairline vertical cracks. There is map cracking in the Bay 4 backwall with efflorescence (See Photo 47). There is a 20"W x 24"H X 1" deep spall and delamination below Bearing E (See Photo 48). Use caution during future inspections, as several hypodermic needles were found near Abutment C (See Photo 49).



Photo 47- Abutment C, Bay 4, Crack in Backwall



Photo 48- Abutment C, Bearing D, Spall in Abutment



Photo 49- Span 29, Abutment C, Homeless Debris with Lots of Needles

231 – Steel Pier Cap

The fracture critical steel pier caps at Piers 25J and 26C/J are in **Good (7)** condition overall (See Photo 50).



Photo 50- Fracture critical steel box pier cap members looking north

Pier Cap 25J

The fracture critical steel box pier cap at Pier 25J is in **Good (7)** condition overall.

Pier Cap 25J Exterior

The pier cap exterior is in **Good (7)** condition. There are isolated areas of surface corrosion throughout the pier cap exterior, particularly on the top flange at the east end and along the edges of both flanges (See Photo 51). There are minor scrapes with surface corrosion in the bottom flange over the U.S. 50 ramp to 2nd Street. The bottom flange bearing plates at both columns exhibit surface corrosion.

The exterior steel protective coating is paint and is in **Satisfactory (6)** condition with isolated areas of surface corrosion and minor peeling. There is little to no paint remaining on the bearing plates over the columns.



Photo 51- Pier 25J, Top Flange, 2 SF Active Corrosion

Pier Cap 25J Interior

The pier cap interior is in **Good (7)** condition. Transverse diaphragms are numbered 1 to 7, from west to east. During the inspection, the interior of the pier cap was dry with no indications of moisture infiltration. There are minor deformations in the top flange backer bars on both webs (See Photo 52-54). There is freckling and minor surface corrosion on Diaphragms 1, 2, and 7, and at both hatch openings.

The protective coating on the interior of Pier Cap 25J is paint and is in **Good (7)** condition with isolated peeling of the top coat along the bottom of the web plates.



Photo 52- Pier 25J, North Face, East End, Deformed Backing Plate



Photo 53- Pier 25J, South Face, Deformed Backing Plate

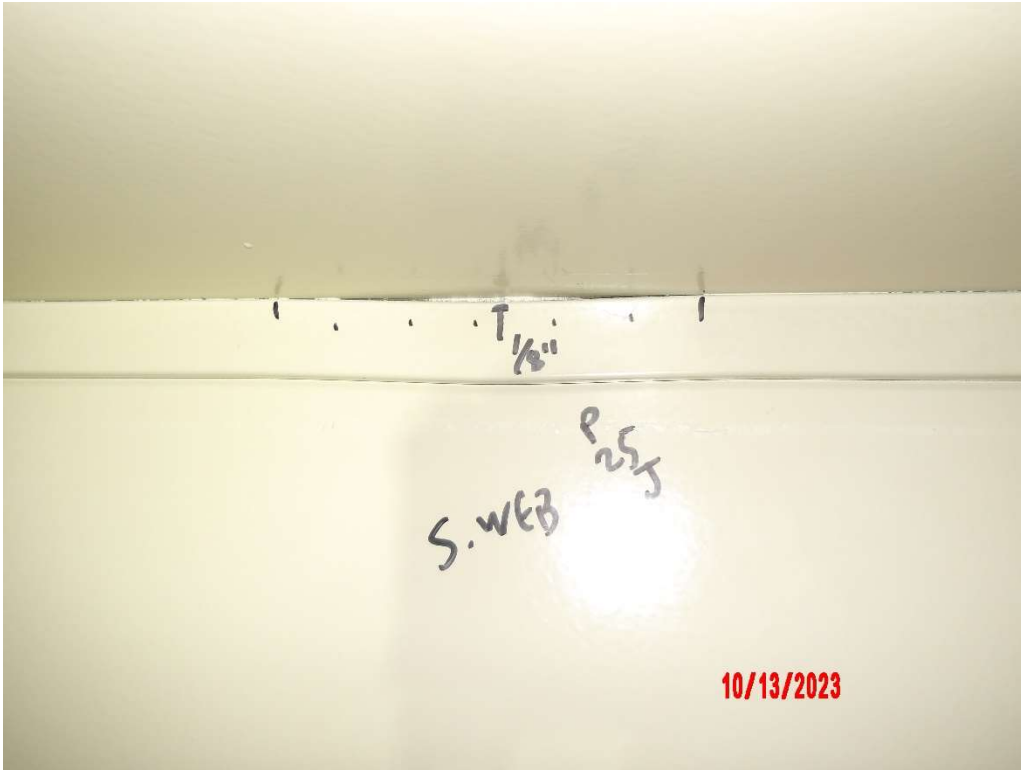


Photo 54- Pier 25J, South Face, Deformed Backing Plate, 6" L x 1/8" D



Photo 55 - Pier 25J, West End, Drill Holes in Top Flange

Pier Cap 25J Fatigue Prone Details

The fatigue prone details for Pier Cap 25J are in **Good (7)** condition with no significant deficiencies noted. The fatigue prone details present include fatigue category C' and E'.

Category C': Typical interior transverse diaphragm fillet weld connection to pier cap webs and flanges.

Category E: Steel bearing pedestal to top flange fillet weld connection with length $L > 4$ in. and a thickness $t \geq 1.0$ in. parallel or transverse to the direction of primary stress 4(See Photo 53).



Photo 56 - Category E fatigue detail - Steel bearing pedestal welded to top flange

Pier Cap 26C/J

The fracture critical steel box pier cap at Pier 26C/J is in **Satisfactory (5)** condition with surface corrosion and isolated areas of minor section loss. This pier cap also supports part of the adjacent Bridge HAM-75-0030.

Pier Cap 26C/J Exterior

The pier cap exterior is in **Satisfactory (5)** condition. There is minor surface corrosion throughout the exterior of the pier cap, particularly on the top flange at the ends, and along the edges of both flanges (See Photo 57-59). There is a 6" diameter area of surface corrosion with pitting up to 1/16" deep in the top flange at the west end. There is laminating corrosion with section loss less than 1/16" deep on the undersides of the bearing plates at all columns. On the bottom flange at the openings there is section loss up to 1/16" on the bottom flange. (See Photo 60)

The exterior steel protective coating is paint and is in **Satisfactory (5)** condition with isolated areas of peeling. There is little to no paint remaining on the bearing plates over the columns.



Photo 57- Pier 26C, Top Flange, 2' x 6" x 1/16" SL



Photo 58- Pier 26C, Top Flange, Active Corrosion



Photo 59- Pier 26C-Pier 26J, South Face, Scrapes and Active Corrosion



Photo 60- Pier 26J, West End, Up to 1/16" Section Loss Bottom Flange

Pier Cap 26C/J Interior

The pier cap interior is in **Satisfactory (5)** condition. Transverse diaphragms are numbered 1 to 18, from west to east. At the time of the inspection, there were signs of moisture inside the pier cap near the east and west hatches, due to inadequate hatch seals. The gasket on the west hatch is pulled away from the hatch, allowing moisture to enter the pier cap (See Photo 61). There are small rust spots on most diaphragms throughout the pier cap. There are multiple areas of corrosion and section loss within the pier cap, which are summarized in Table 2.



Photo 61- Pier 26J, East End, Moderate Corrosion to Bottom Flange with Paint Failure



Photo 62- Pier 26J, South Web, Stiffener 17, Moderate Corrosion,



Photo 63- Pier 26J, Stiffener 12, Drill Holes in Top Flange



Photo 64- Pier 26J, West End, Drill Holes in Top Flange



Photo 65- Pier 26J, West End, Moderate Corrosion to Bottom Flange with Paint Failure

Table 2: Loss of Section Summary

Location	Defect	Stress region
Between west hatch and Diaphragm 1	Bottom flange, lower 3" of webs and diaphragm: Surface corrosion, pitting less than 1/16" deep	N/A (outside bearing)
Diaphragm 1, NE Corner	Bottom flange: 5" diameter surface corrosion, pitting less than 1/16" deep	Tension
Diaphragm 17, SW Corner	Web: 2" diameter surface corrosion with pitting less than 1/16" deep Bottom flange: 4" diameter surface corrosion with pitting less than 1/16" deep	Tension
Diaphragm 17, NW Corner	Web: 2" diameter surface corrosion	Tension
Between east hatch and Diaphragm 18	Bottom flange, lower 3" of webs and diaphragm: Laminating corrosion with section loss up to 1/8" deep	N/A (outside bearing)

At the end of the previous inspection, inspectors applied silicone caulk to the west hatch to improve the seal and reduce moisture infiltration in the pier cap. Until the gasket is repaired, the west hatch should not be opened without reapplying the caulk.

The protective coating on the interior of Pier Cap 26C/J is paint and is in **Satisfactory (5)** condition with isolated areas of exposed steel, section loss, paint failure, and peeling.

Pier Cap 26C/J Fatigue Prone Details

The fatigue elements for Pier Cap 26C/J are in **Good (6)** condition with no significant deficiencies noted. The fatigue prone details present include C', D, and E' fatigue categories.

Category C': Typical interior transverse diaphragm fillet weld connection to pier cap webs and flanges(See Photo 64).

Category D: Hole in north web plate in Bay 17 filled with a non-high strength bolt.

Category E': Bearing plate to top flange fillet weld connection with length $L > 4$ in. and at thickness $t \geq 1.0$ in. parallel or transverse to the direction of primary stress.

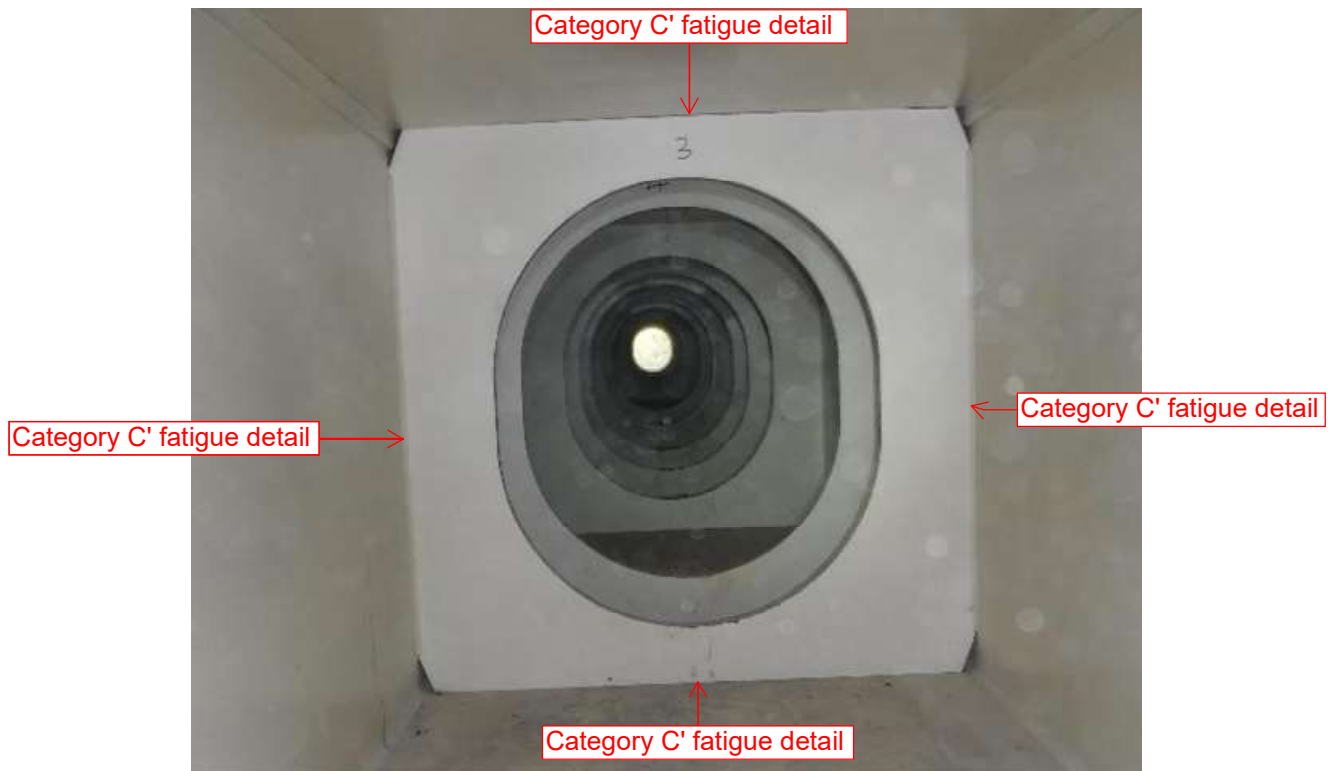


Photo 66 - Category C' fatigue detail- Diaphragm fillet welds to webs and flanges

234 - Reinforced Concrete Pier Cap

The reinforced concrete pier caps are in **Satisfactory (6)** condition. The original pier caps have horizontal hairline cracks near the top of most caps and vertical hairline cracks developing from the horizontal cracks. There is 16" H x 6" W x 1 1/2" deep spall on the south face of Pier Cap 18C. There is a small spall at the east end of Pier Cap 28C. On Pier Cap 21C, there is map cracking 5' W x 5' H on the south face of the east cantilever and map cracking 12' W x 3' H on the north face. There is map cracking and a minor spall on the west face of Pier Cap 23C. The protective coating for the FRP is cracking and peeling on the south face of Pier Cap 23C. Moisture was present on Pier 23C due to the leaking deck joint.

830 - Abutment Backwall

The Abutment C backwall is in **Good (7)** condition, with isolated hairline cracks and minor efflorescence.

Wingwalls

The wingwalls at Abutment C are in **Satisfactory (6)** condition. Diagonal hairline cracking is typical throughout the wingwalls. Cracking with delaminations is present at the bottom of the west wingwall with efflorescence.

Slope Protection

The slope protection at Abutment C is in **Good (7)** condition without any significant deficiencies noted.

Approach

The north approach is in **Fair (5)** condition. As the south end of this bridge connects to HAM-71- 0000R, there is no south approach for this structure.

321 - Reinforced Concrete Approach Slabs

The north approach slab is in **Fair (5)** condition and is covered with an asphalt wearing surface. Transverse and longitudinal cracks are present in the asphalt wearing surface. There are map cracks and potholes near the joint. Potholes and rutting are present in the west shoulder.

Approach Wearing Surface

The asphalt approach wearing surface is in **Fair (5)** condition, with longitudinal and transverse cracks. Asphalt patches are present in the center lane.

Approach Guardrail

The approach guardrail is in **Good (7)** condition with minor scrapes in isolated locations.

Embankment

The north approach embankment is **Good (7)** condition with no significant deficiencies noted.

Signs and Utility Items

Signs

There is one overhead sign support mounted to the railings near Pier 23C. The sign support is in **Good (7)** condition with no significant deficiencies noted for the support structure or the anchorage to the railings (See Photo 67).



Photo 67- Sign Support

Utilities

The structure-mounted utilities consist of an electrical conduit attached to Pier 27C and Girder F in Span 27C, as well as several light poles mounted to the railings at deck level. All utilities are in **Good (7)** condition, with no significant deficiencies noted.

General Appraisal

Based on the 2023 In-Depth Inspection, the HAM-75-0022R bridge is in **SATISFACTORY (6)** condition overall, or a 6 on the NBIS condition rating guidelines. The overall rating is based on the condition of both the superstructure and the substructure. The AssetWise Bridge Inspection Report is included in Appendix C.

Repair and Maintenance Recommendations

To properly maintain this structure, recommendations have been divided into four categories: Priority, Maintenance, Rehabilitation and Monitor. The repair and maintenance recommendations for the HAM-75-0022R bridge are shown below.

- Priority: Repairs that should be completed as soon as possible to address an immediate safety hazard.
- Maintenance: On-going maintenance items that can be accomplished by an ODOT maintenance crew.
- Rehabilitation: Are repairs that are not immediate concerns but should be addressed in the next rehabilitation contract.
- Monitor: Are items that should be investigated and documented in subsequent inspections.

Priority:

Superstructure:

- Remove pack rust from rocker bearings.
- Replace broken anchor bolt inside Pier Cap 26C/J at the west column bearing.

Substructure

- Replace hatch seals on Pier Cap 26C/J.

Schedule:

Deck:

- Repair spalls in the deck underside and overhangs.
- Repair the section of failed joint at Pier 23C.
- Repair spalls and delaminations in concrete wearing surface.
- Repair spalls and delaminations in railing and seal railing.

Superstructure:

- Clean and paint steel that has not been recently painted.

Substructure:

- Repair spalls and delaminations in substructure concrete.
- Clean and paint steel.

Program:

Deck:

- Clean debris from the expansion joints.

Approach:

- Seal cracks in north approach wearing surface.

Routine:

Prepared by:

Gustin Cleary, E.I.

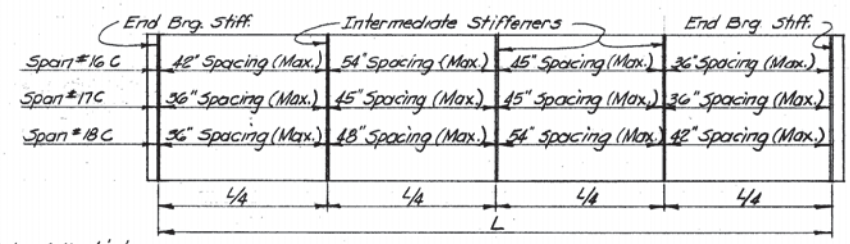
Reviewed by:

Cory Larkin, P.E.

Ohio P.E. # E-84081

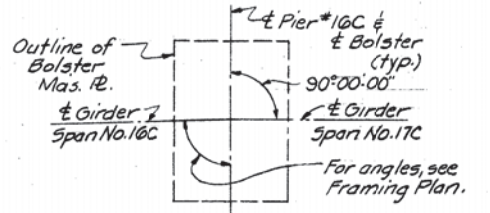
Appendix A – Selected Plan Sheets

HAM-25-0.04

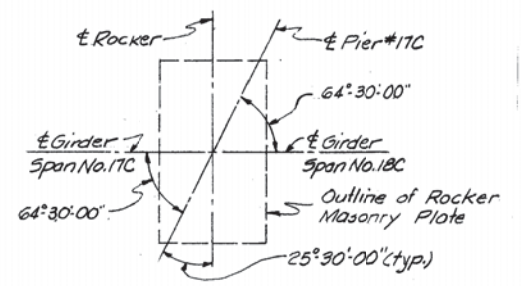


Note: Adjust intermediate stiffener spacing to conform to intermediate crossframe spacing

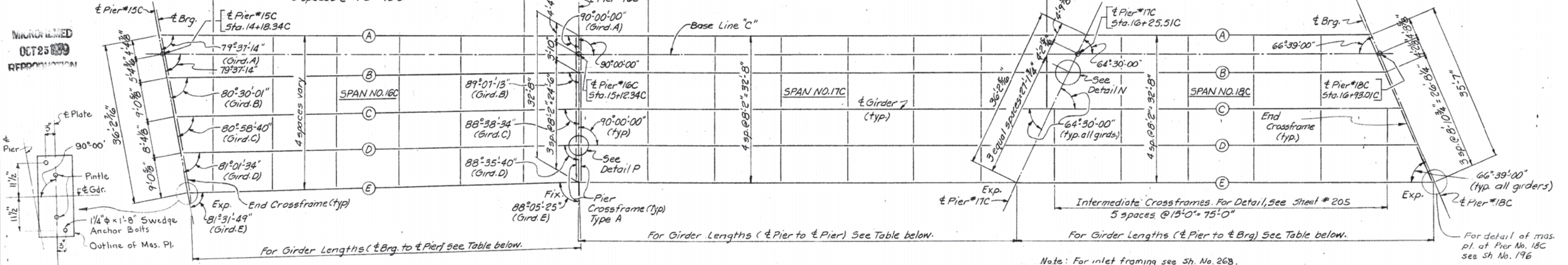
INTERMEDIATE STIFFENER SPACING



DETAIL P



DETAIL N



UNRECORDED
OCT 25 1959
REPRODUCTION

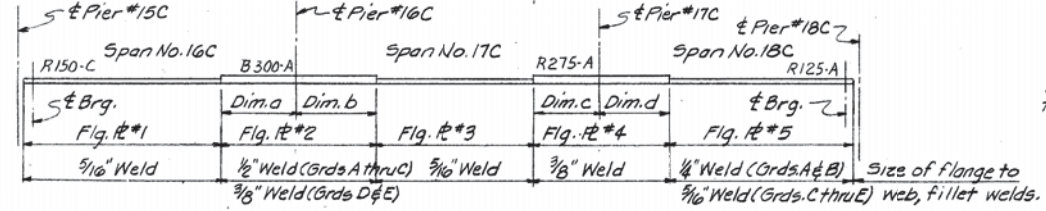
DETAIL OF MASONRY PLATE AT PIER 15C

Notes: All web plates are 5/8" x 3/8".
All intermediate stiffeners are 4" x 3/8".
End bearing stiffeners are as follows:
Piers #15C, 17C & 18C = 7 1/2" x 1/2" P's.
Pier #16C = 7 1/2" x 3/8" P's.

FRAMING PLAN UNIT NO. 14
(Spans No. 16C thru 18C)

TABLE P (See Detail at right)

Girder	Dim. a	Dim. b	Dim. c	Dim. d
A	17'-9"	16'-3"	8'-6"	24'-0"
B	17'-9"	16'-3"	8'-6"	24'-0"
C	15'-6"	16'-0"	11'-3"	18'-6"
D	13'-0"	16'-6"	14'-0"	13'-0"
E	13'-0"	16'-6"	14'-0"	13'-0"



Notes: For flange plate sizes for P's #1 thru #5, see Table O, below.
For dimensions a thru d, see Table P, left.

DETAIL OF FLANGE PLATES AND WELDS

TABLE Q

Dim. to raise girders for welding

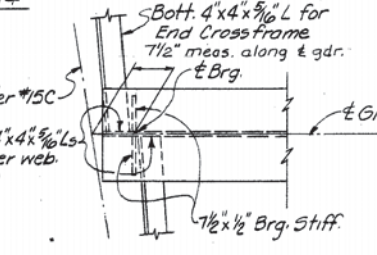
Girder	Span #16C	Span #18C
A	3 3/8"	1 3/4"
B	3"	1 1/8"
C	2 3/4"	2 1/8"
D	2 1/2"	2 1/4"
E	2 1/4"	2 3/8"

TABLE O (See Detail above)

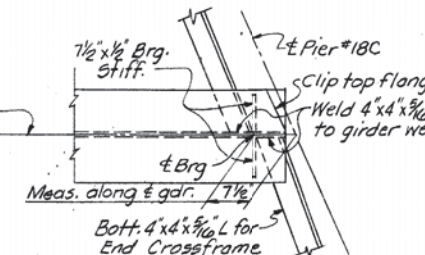
Girder	Flg. P#1	Flg. P#2	Flg. P#3	Flg. P#4	Flg. P#5
A	16" x 1 3/8"	16" x 2 3/8"	16" x 1 3/8"	16" x 1 3/4"	16" x 3/4"
B	do	do	16" x 1 3/8"	do	16" x 3/4"
C	do	16" x 2 3/8"	16" x 1 1/4"	16" x 1 3/4"	16" x 1"
D	do	16" x 2 1/8"	16" x 1 1/8"	16" x 1 1/8"	16" x 1 1/4"
E	16" x 1 3/8"	16" x 2 1/8"	16" x 1 1/8"	16" x 1 1/8"	16" x 1 1/4"

TABLE OF GIRDER LENGTHS

Girder	Span No. 16C	Span No. 17C	Span No. 18C
A	74'-2"	115'-2 3/16"	62'-11 1/4"
B	92'-5 1/16"	111'-4 1/8"	70'-4 1/16"
C	90'-9 1/16"	107'-5 3/8"	77'-9 3/8"
D	89'-3 3/8"	105'-6 3/8"	85'-2 3/8"
E	87'-8 3/8"	99'-7 1/8"	92'-1 1/16"



DETAIL OF END CROSSFRAME CONNECTION AT PIER #15C



DETAIL OF END CROSSFRAME CONNECTION AT PIER #18C

Note: Work these details with Plan of Expansion Joint, Sheet No. 215

Note: Convexity includes variations due to vertical curvature, superelevation and horizontal curvature.

DEFLECTION AND CAMBER

SPAN	SPAN NO. 16C					SPAN NO. 17C					SPAN NO. 18C				
	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E
LOCATION	1/4	1/2	3/4	1/2	3/4	1/4	1/2	3/4	1/2	3/4	1/4	1/2	3/4	1/2	3/4
Deflection due to weight of steel	1/8	1/8	1/16	1/8	1/8	1/8	1/8	1/16	1/8	1/8	1/8	1/8	1/16	1/8	1/8
Deflection due to remaining Dead Load	1/2	5/8	1/4	3/16	9/16	1/2	5/8	1/4	3/16	9/16	1/2	5/8	1/4	3/16	9/16
Convexity (See note above)	1"	1 1/8"	1"	1"	1 1/8"	1"	1 1/8"	1"	1"	1 1/8"	1"	1 1/8"	1"	1"	1 1/8"
Sum of deflection and convexity	1 1/8"	2 1/8"	1 1/8"	1 1/8"	2 1/8"	1 1/8"	2 1/8"	1 1/8"	1 1/8"	2 1/8"	1 1/8"	2 1/8"	1 1/8"	1 1/8"	2 1/8"
Required Camber	2 1/8"	2 1/8"	2 1/8"	2 1/8"	2 1/8"	3 3/8"	2 3/8"	2 5/8"	2 1/4"	2"	1"	1"	1 3/8"	1 3/4"	2 1/4"

Girder web plates shall be cut to a parabolic crown.

GIRDER SPLICE WELDING PROCEDURE

1. Raise the ends of girders of Span #16C at Pier #15C, and ends of girders of Span #18C at Pier #18C; the dimensions shown for each span in Table Q.
2. Butt-weld girder flanges and webs at Piers #16C & 17C, using the following welding sequence:
Make two passes on each flange, then two on the web; repeat using one pass at each location until welds are completed.
3. Weld all Pier Crossframes at Pier #16C into place.
4. Lower the girders of Spans #16C & 18C into final positions.

**HAM-75-0022R
SPANS 16C-18C**

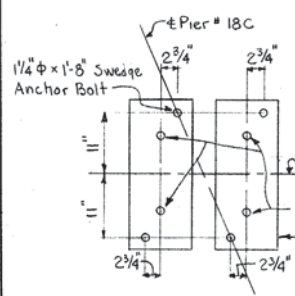
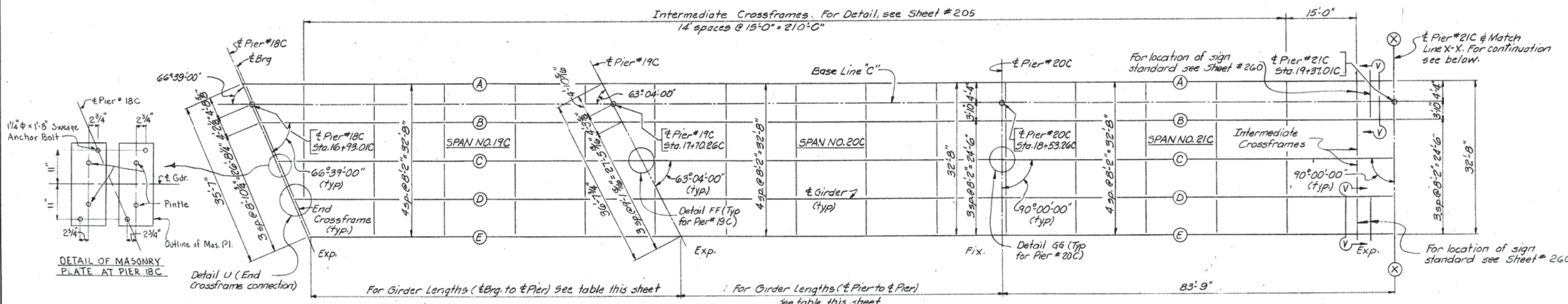
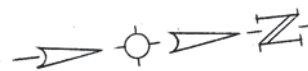
Notes:
For Details of End Crossframes see Sheet # 215
For Details of Pier Crossframes, see Sheet # 205
For Details of Intermediate & Bearing Stiffeners, see Sheet # 205
For Rocker & Bolster Details, see Sheet # 206
For Typical Girder Elevation, see Sheet # 205

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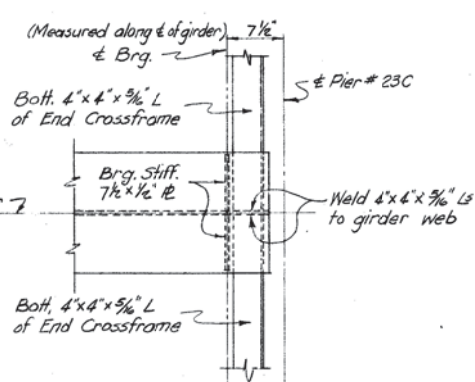
**STRUCTURAL STEEL DETAILS
UNIT NO. 14.**

DESIGNED	DRAWN	TRACED	CHECKED	REVISION DATE	REVISED
REL	REL	REL	JHO	10-14-60	

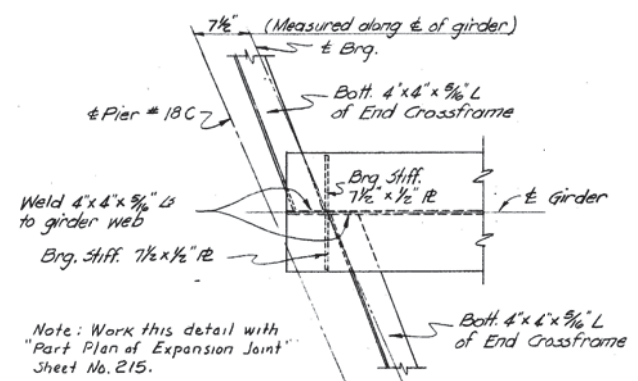
UNRECORDED
OCT 25 1960
REPRODUCTION



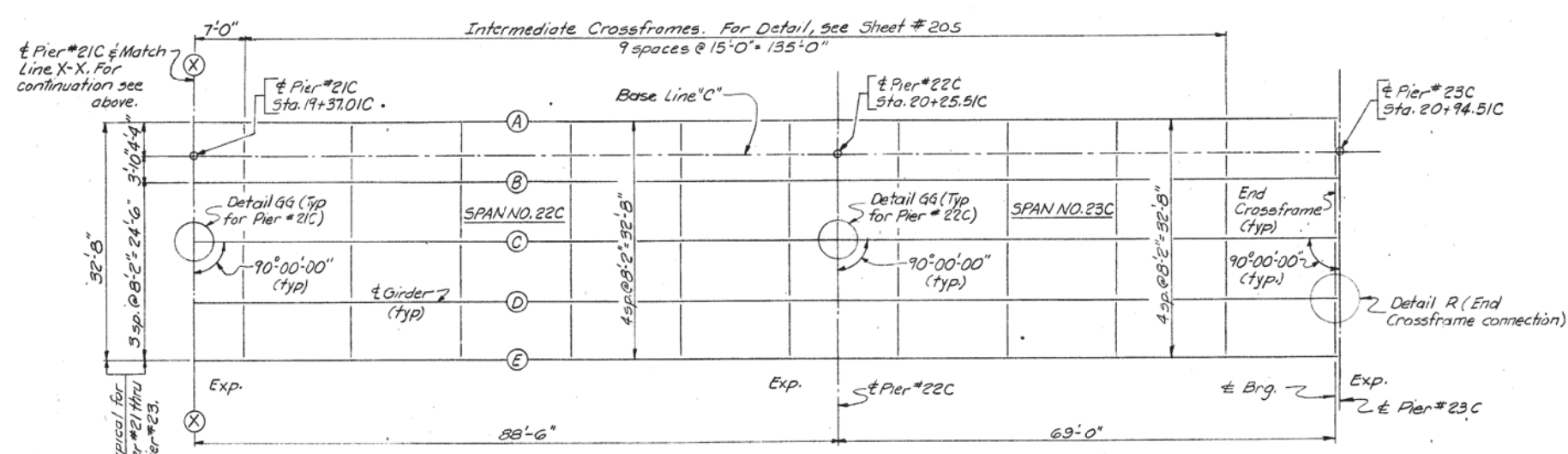
DETAIL U (End Crossframe connection)
@ Pier # 18C, Span # 19C



DETAIL R
(End Crossframe connection
@ Pier # 23C, Span 23C)



DETAIL U
(End Crossframe connection
@ Pier # 18C, Span # 19C)



Note: Web R 48"x3/8" For Fig. R's see table below
Brg. Stiff. 7/16"x1/2" R's. Intermediate Stiff. 6"x3/8" R's
For bearing details see Sheet No. 206
For Typical Girder Elevation see Sheet No. 205
For End Crossframe detail see Sheet No. 215
For Detail GG, See Sheet No. 197

FRAMING PLAN - UNIT NO. 15
(Spans No. 19C thru 23C)

Girder	Span #19C	Span #20C
A	76'-3 1/2"	85'-2 3/4"
B	76'-11"	81'-0 3/8"
C	77'-6 1/2"	76'-10 3/8"
D	78'-2"	72'-9"
E	78'-9 1/2"	68'-7 1/4"

Pier #	Span #	Flange Plate	Weld Size
Pier #18C	Span #19C	R125-E Gdr. A R125-F Gdr. B R125-G Gdrs. C & E R125-H Gdr. D 16"x1 1/4"	5/16" Weld
Pier #19C	Span #20C	R225-A 16"x1 1/2"	5/16" Weld
Pier #20C	Span #21C	B225-B 16"x1 3/8"	3/8" Weld
Pier #21C	Span #22C	R225-A 16"x1 1/2"	5/16" Weld
Pier #22C	Span #23C	R225-A 16"x1 1/2"	5/16" Weld
Pier #23C	Span #23C	R100-U Gdrs. A to D R100-V Gdr. E 16"x1"	5/16" Weld

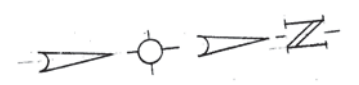
TABLE OF FLANGE PLATES AND WELD SIZE

HAM-75-0022R
SPANS 19C-23C

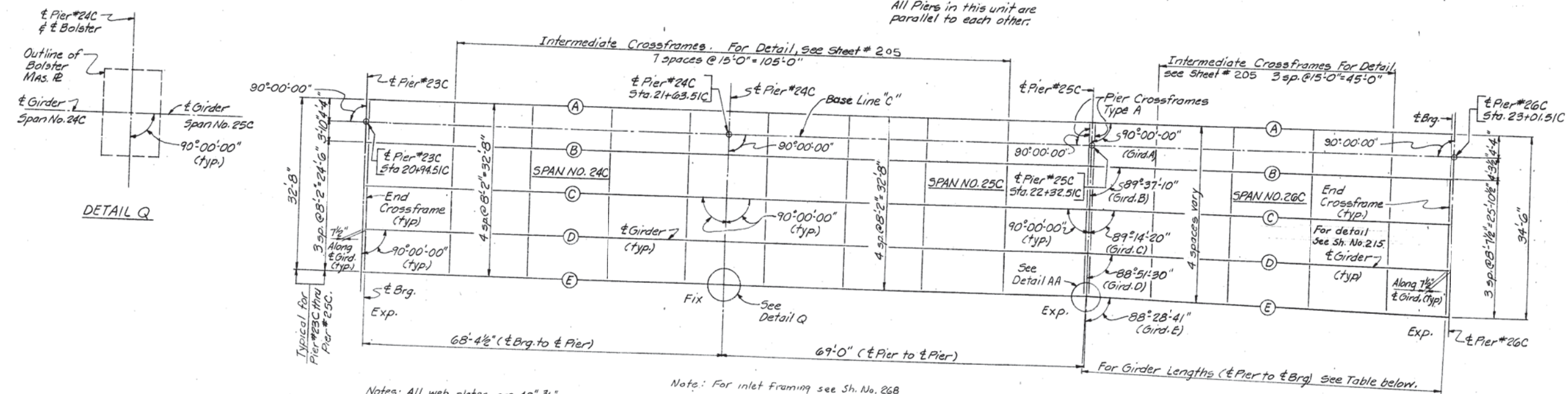
Work this sheet with Sheet No. 197
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STRUCTURAL STEEL DETAILS
UNIT NO. 15.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
RCF	REL		JHO 8/1/60	10-14-60	



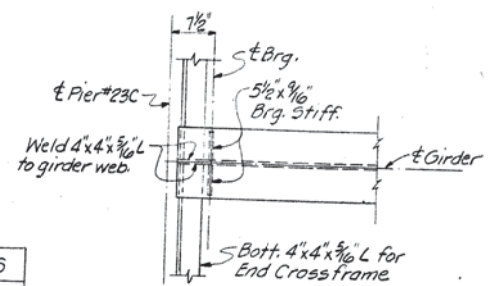
Note:
All Piers in this unit are parallel to each other.



Notes: All web plates are 48"x3/8".
All intermediate stiffeners are 4"x3/8".
All end bearing stiffeners are 5 1/2"x3/8".

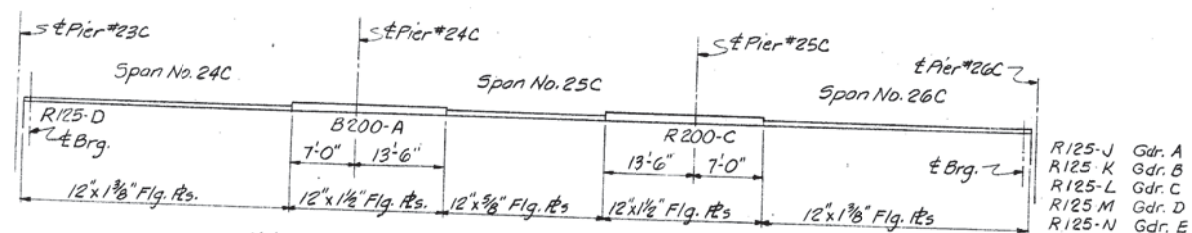
Note: For inlet framing see Sh. No. 26B

FRAMING PLAN - UNIT NO. 16
(Spans No. 24C thru 26C)

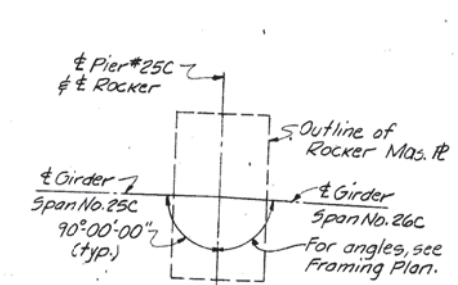


DETAIL OF END CROSSFRAME CONNECTION AT PIER #23C
Note: Work this detail with Part Plan of Expansion Joint, Sheet No. 215.

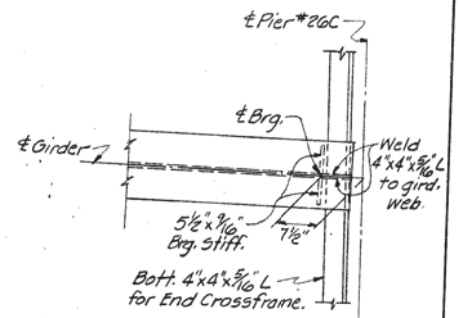
SPAN NO. 26C	
Girder	Length
A	68'-4 1/2"
B	68'-4 1/2"
C	68'-4 1/16"
D	68'-4 1/16"
E	68'-4 1/16"



Note: Flange to web welds are 5/16" fillet welds throughout.
DETAIL OF FLANGE PLATES AND DIMENSIONS



DETAIL A A



DETAIL OF END CROSSFRAME CONNECTION AT PIER #26C
Note: Work this detail with Part Plan of Expansion Joint, Sheet No. 215

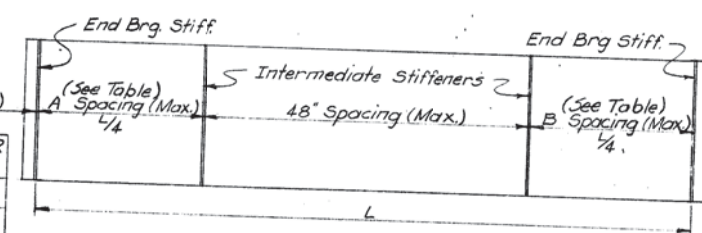
SPAN	SPAN NO. 24C			SPAN NO. 25C			SPAN NO. 26C		
	A thru E			A thru E			A thru E		
LOCATION	1/4	1/2	3/4	1/4	1/2	3/4	1/4	1/2	3/4
Deflection due to weight of steel	1/16	1/8	1/10	0	0	0	1/16	1/8	1/10
Deflection due to remaining Dead Load	5/16	5/16	3/16	1/16	1/8	1/16	3/16	5/16	5/16

Girders for Unit #16 shall not be cambered

GIRDER SPLICE WELDING PROCEDURE

- Raise the ends of girders of Span #26C at Pier #26C 1", and ends of girders of Span #24C at Pier #23C-1".
- Butt-weld girder flanges and webs at Piers #24C & 25C, using the following welding sequence:
Make two passes on each flange, then two on the web; repeat using one pass at each location until welds are completed.
- Weld all Pier Crossframes at Pier #25C into place.
- Lower the girders of Spans #24C & 26C into final positions.

Span	A	B
24C	42"	39"
25C	42"	42"
26C	39"	42"



Note: Adjust intermediate stiffener spacing to conform to intermediate crossframe spacing.

INTERMEDIATE STIFFENER SPACING

HAM-75-0022R
SPANS 24C-26C

Notes:
For Details of Crossframes, see Sheet # 205
For Details of Intermediate & Bearing Stiffeners, see Sheet # 205
For Rocker & Bolster Details, see Sheet # 206
For Typical Girder Elevations, see Sheet # 205
For Details of End Crossframes, see Sheet # 215

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STRUCTURAL STEEL DETAILS
UNIT NO. 16

Note: \pm Pier #27C, \pm Pier #28C & \pm Brg. N. Abut. arc parallel to each other.

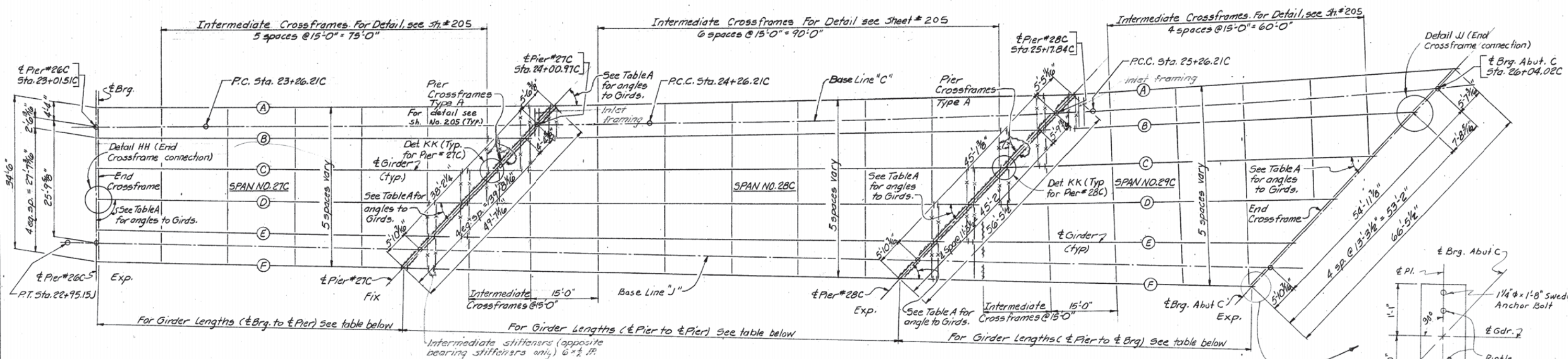


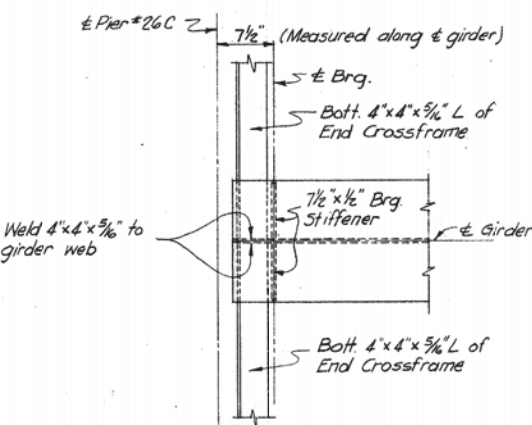
TABLE A (Angles from \pm Piers or \pm Brgs. to \pm Girders) See Plan.

Girder	Pier #27C		Pier #28C		Abut. C
	Span #27C	Span #28C	Span #28C	Span #29C	
A	89°56'20"	46°42'12"	45°30'38"	43°04'31"	Same as shown for Span #29C @ Pier #28C.
B	89°44'56"	46°53'29"	45°59'45"	43°59'49"	
C	89°31'59"	47°06'33"	46°29'18"	44°57'04"	
D	89°16'41"	47°21'40"	46°59'18"	45°56'15"	
E	88°58'52"	47°39'36"	47°29'36"	46°57'36"	
F	88°37'27"	48°01'02"	48°01'02"	48°01'02"	

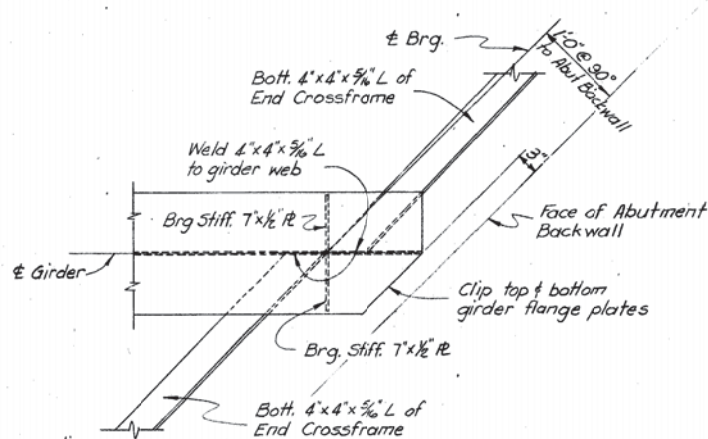
Note: For inlet framing see Sh. No. 268

FRAMING PLAN-UNIT NO. 17
(Spans No. 27C thru 29C)

Note: Web R 54"x $\frac{3}{8}$ ". For Flg. R's see table below
Brg. Stiff. 7 $\frac{1}{2}$ "x $\frac{1}{2}$ " R's. Intermediate Stiff. 6"x $\frac{3}{8}$ " R's
For bearing details see Sheet # 206
For detail of End Crossframe see Sheet No. 215
For Typical Girder Elevation see Sheet No. 205
For Detail KK, See Sheet # 200



DETAIL HH
(End Crossframe connection)
(at Pier #26C, Span 27C)



DETAIL JJ
(End Crossframe connection)
(at Abutment C)

	\pm Pier #26C	\pm Pier #27C	\pm Pier #28C	\pm Brg. Abut. C
Flg. R's Gdrs. A & B (Top & Bott.)	16" x 1 $\frac{3}{8}$ "	16" x 2 $\frac{1}{8}$ "	16" x 1 $\frac{3}{8}$ "	16" x 1 $\frac{1}{2}$ "
Flg. R's Gdrs. C & D	16" x 1 $\frac{3}{8}$ "	16" x 2"	16" x 1 $\frac{3}{8}$ "	16" x 1 $\frac{1}{4}$ "
Flg. R's Gdrs. E & F	16" x $\frac{3}{4}$ "	16" x 1 $\frac{3}{8}$ "	16" x 1 $\frac{3}{8}$ "	16" x 1 $\frac{1}{4}$ "
Flg. to Web Weld Size (Typ. all girders)	$\frac{5}{16}$ " weld	$\frac{3}{8}$ " weld	$\frac{5}{16}$ " weld	$\frac{3}{8}$ " weld

TABLE OF FLANGE PLATES AND WELD SIZES

Girder	GIRDER LENGTHS		
	Span #27C	Span #28C	Span #29C
A	102'-7 $\frac{3}{8}$ "	116'-9 $\frac{3}{8}$ "	86'-3 $\frac{3}{8}$ "
B	95'-9 $\frac{3}{8}$ "	115'-10 $\frac{3}{8}$ "	84'-9 $\frac{3}{8}$ "
C	89'-0 $\frac{3}{8}$ "	114'-10 $\frac{3}{8}$ "	83'-4 $\frac{3}{8}$ "
D	82'-2 $\frac{3}{8}$ "	113'-11 $\frac{3}{8}$ "	81'-11 $\frac{3}{8}$ "
E	75'-4 $\frac{3}{8}$ "	113'-0 $\frac{3}{8}$ "	80'-7 $\frac{1}{4}$ "
F	68'-7 $\frac{3}{8}$ "	112'-1 $\frac{3}{8}$ "	79'-3 $\frac{3}{8}$ "

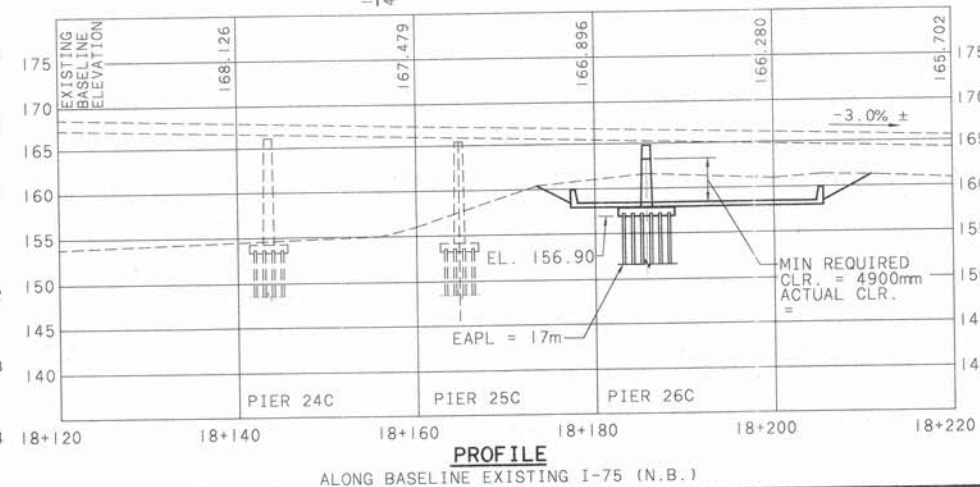
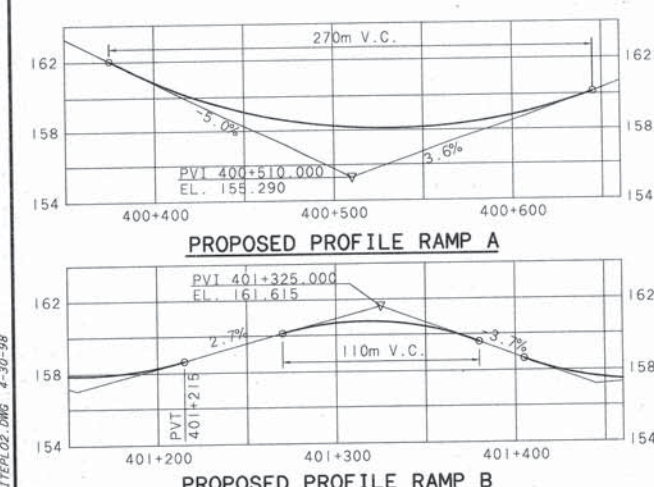
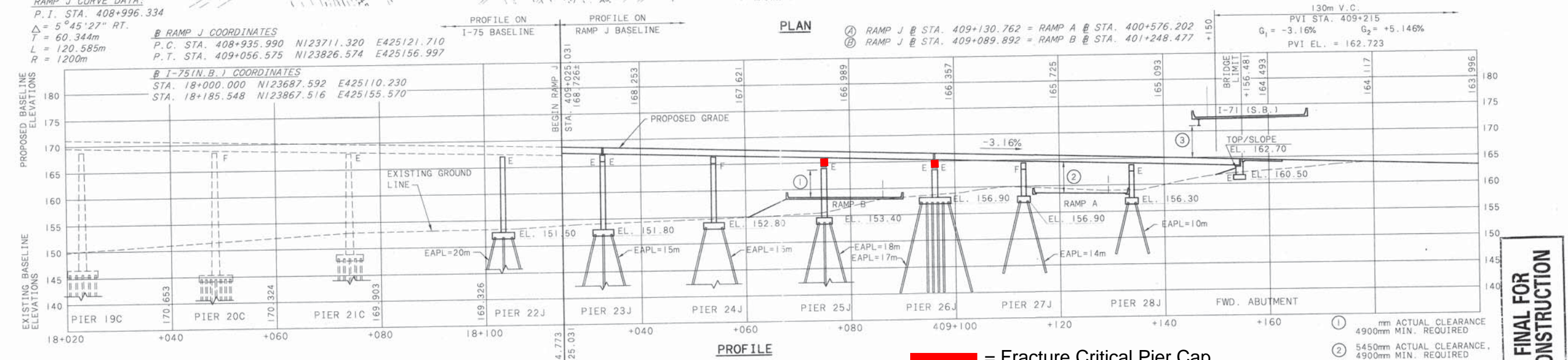
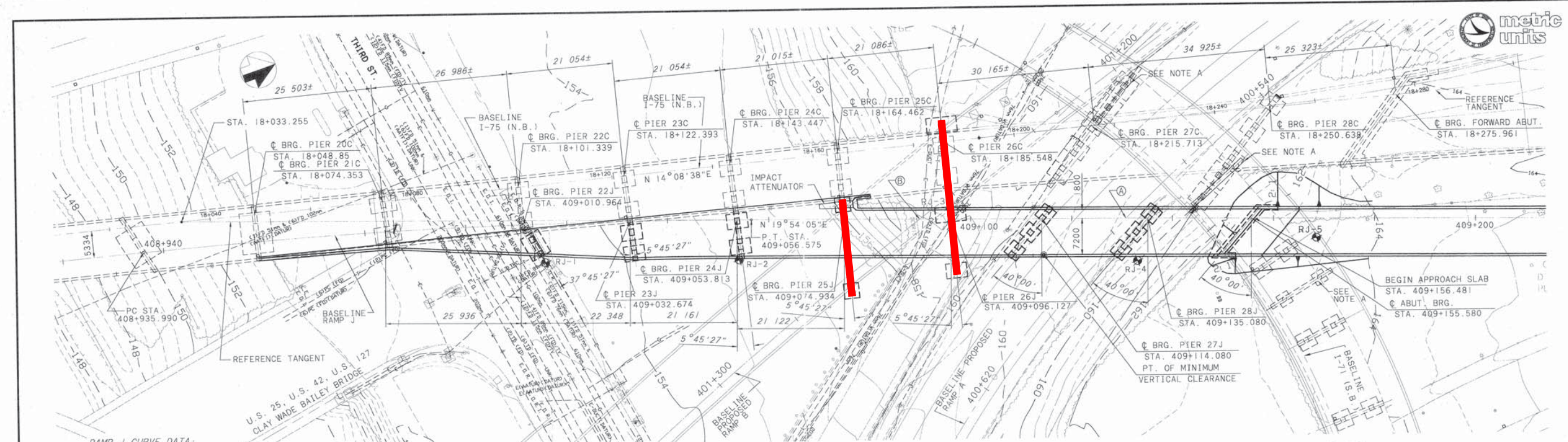
HAM-75-0022R
SPANS 27C-29C

Work this sheet with Sheet # 200

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STRUCTURAL STEEL DETAILS
UNIT NO. 17.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVIEWED
RCF	REL/JC 7/13/60		JHO 8/11/60	M.A.B. 10-14-60	5-61



NOTE A: FUTURE PROPOSED PIERS ALONG PROPOSED WIDENING OF I-71 (S.B.). UNDER SEPARATE CONTRACT.

EAPL DENOTES ESTIMATED AVERAGE PILE LENGTH

⊗ DENOTES BORING LOCATION

EARTHWORK LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS SECTIONS.

PROPOSED STRUCTURE (RAMP J)

TYPE: COMPOSITE CONTINUOUS STEEL BEAM WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE

SPANS: 25 936, 22 348, 21 161, 21 122, 21 193, 17 953, 21 000, 20 500 c/c PIERS ALONG REFERENCE LINE

ROADWAY: 9000 TOE/TOE PARAPET SKEW: VARIES

DESIGN LOADING: HS20-44 (CASE II) AND ALT. MILITARY

WEARING SURFACE: CONCRETE

CROWN: 0.016 (ONE-WAY)

APPROACH ALIGNMENT:

CURRENT ALIGNMENT:

DESIGN YEAR:

DESIGN YEAR:

LATITUDE:

LONGITUDE:

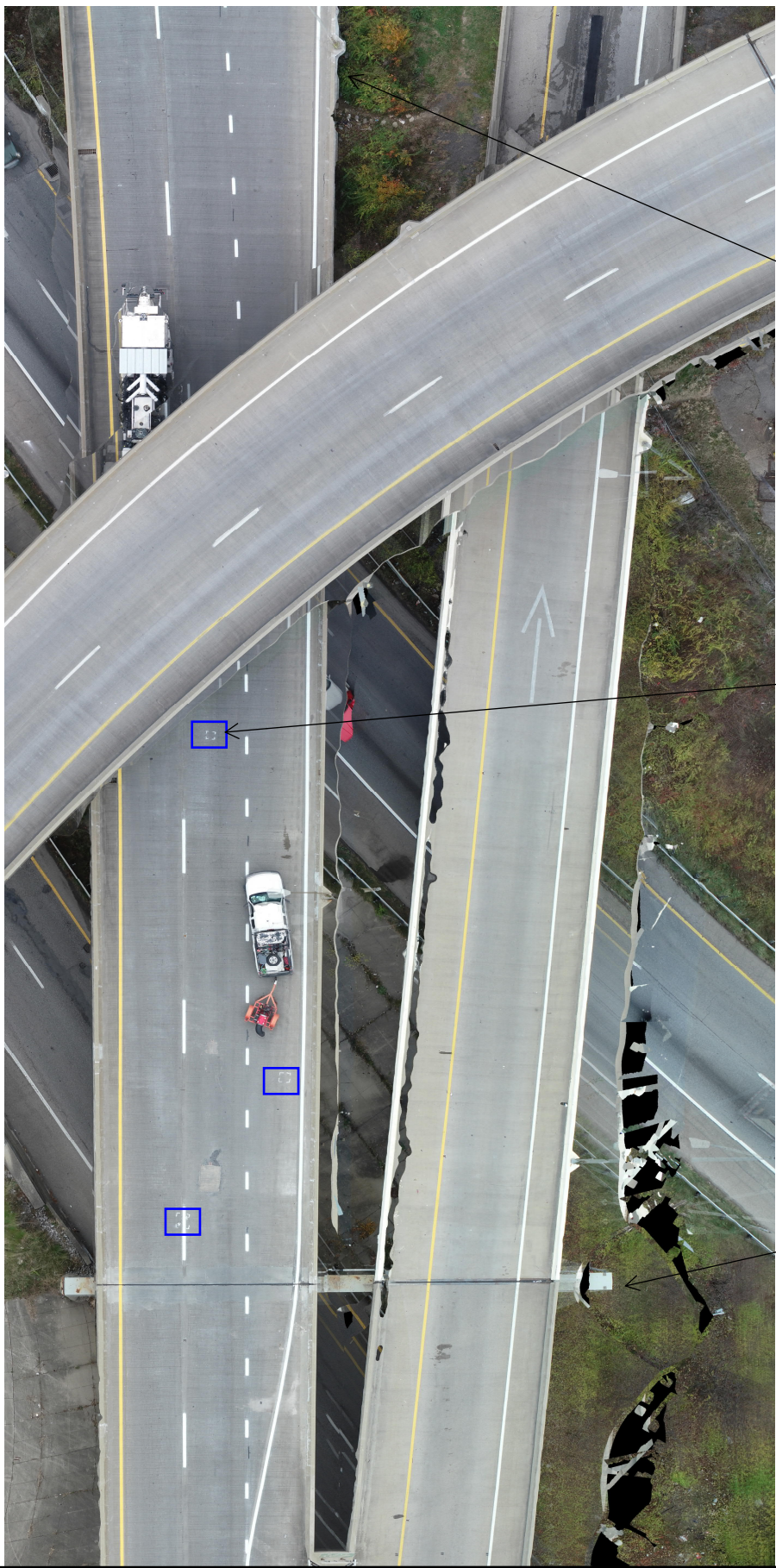
HAM-75-0022R

SPANS 22J-26J

FINAL FOR CONSTRUCTION

Appendix B – ODOT Concrete Wearing Surface Delamination Identification

Wearing Surface Delaminations Identified by ODOT
December, 2020



Abutment C

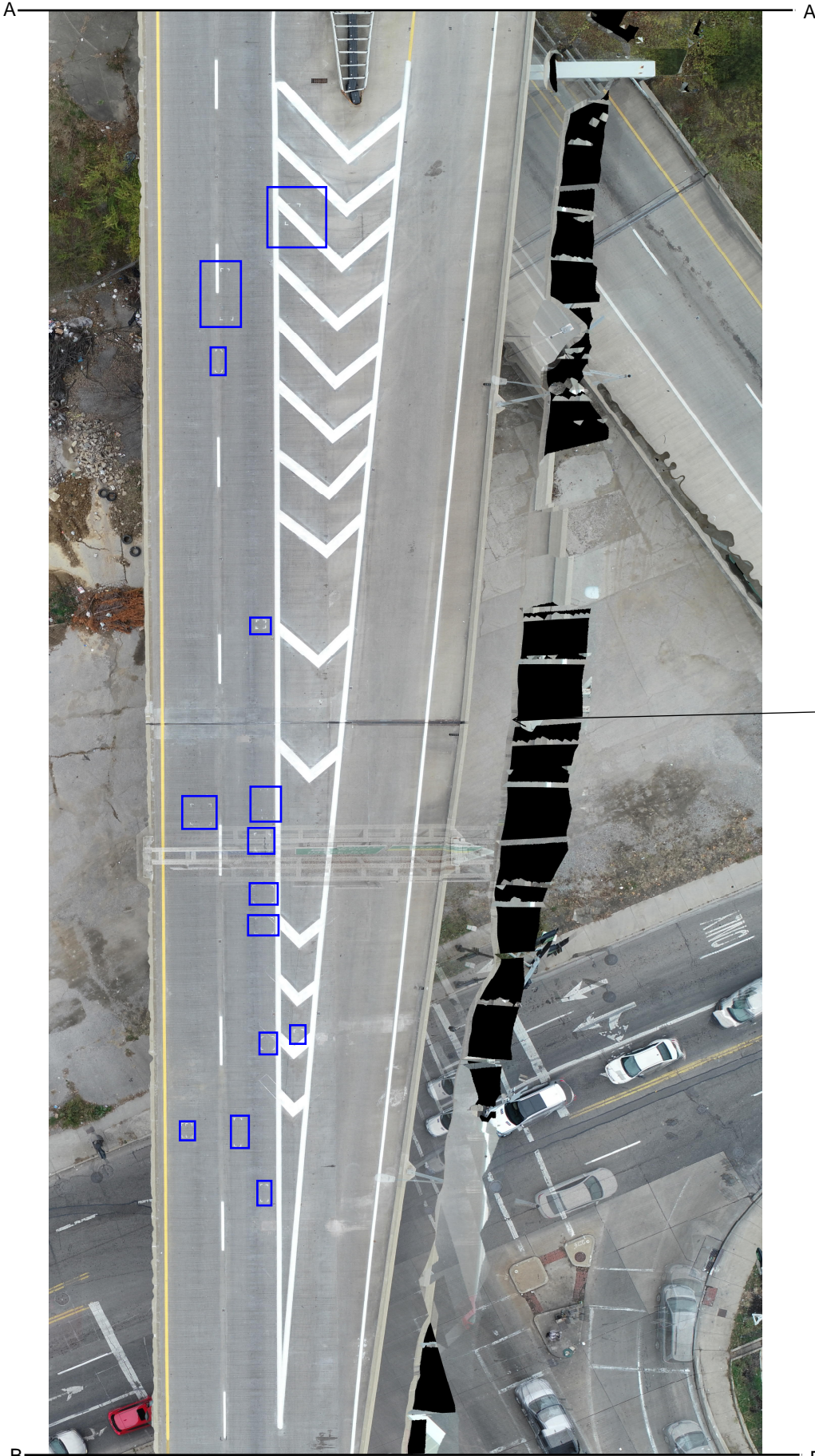
White painted rectangles denote delaminated areas

Pier 26J

A MATCHLINE A

Wearing Surface Delaminations Identified by ODOT December, 2020

MATCHLINE

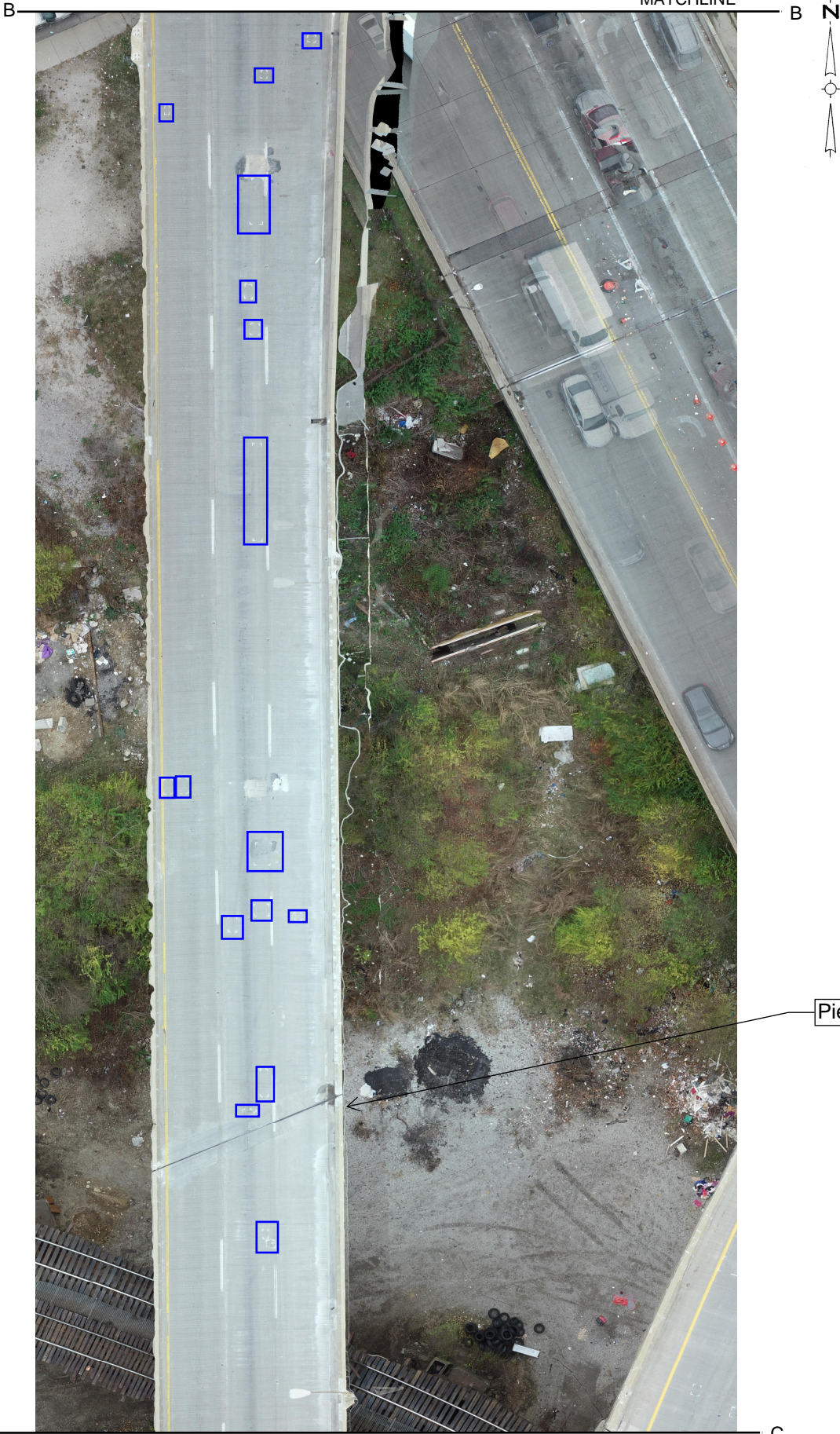


Pier 23J

MATCHLINE

Wearing Surface Delaminations Identified by ODOT December, 2020

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Pier 17C

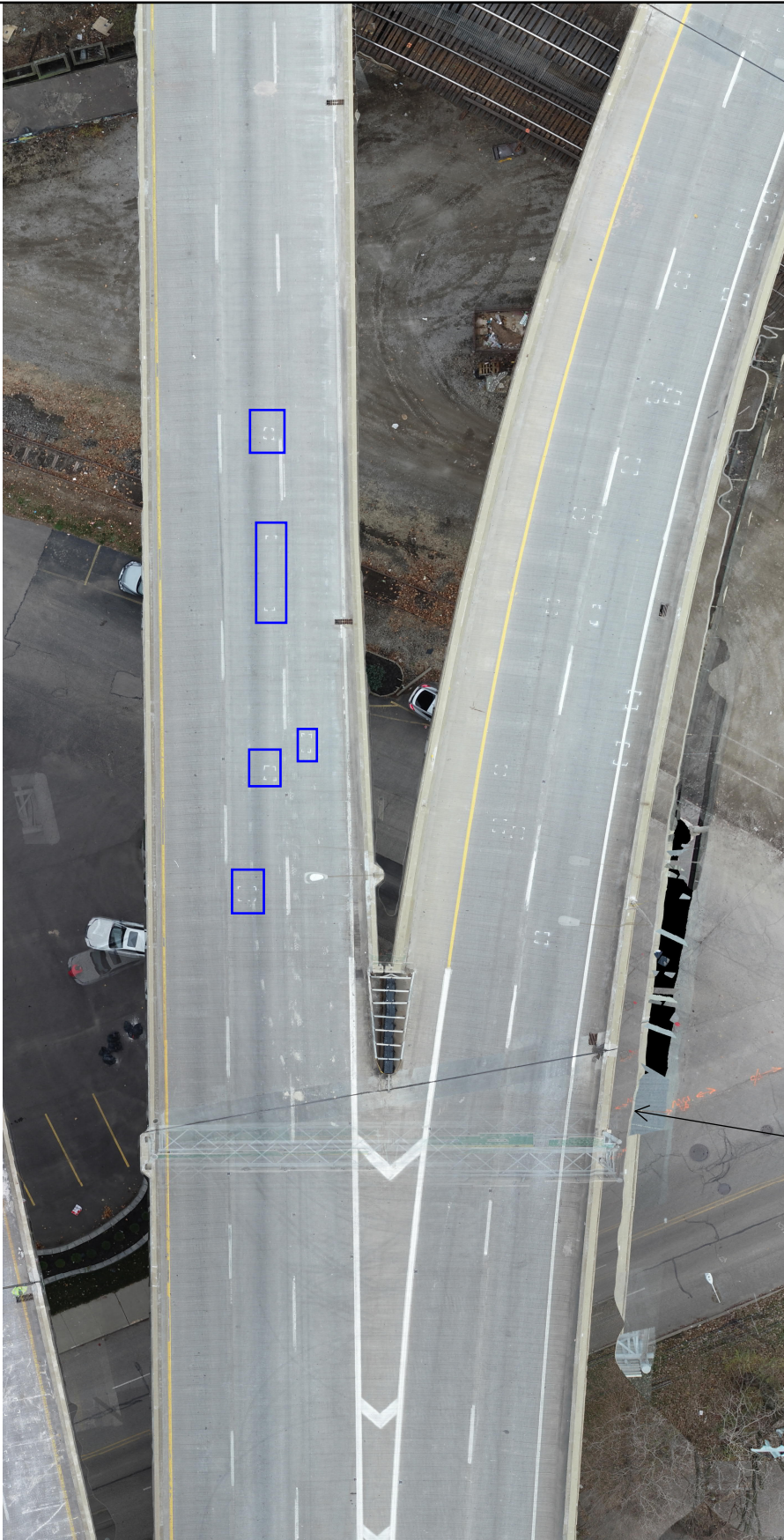
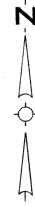
MATCHLINE

**Wearing Surface Delaminations Identified by ODOT
December, 2020**

MATCHLINE

C

C



Pier 15C

Appendix C – AssetWise Bridge Inspection Report

Inspector: Larkin,Cory
 Inspection Date: 09/11/2023

Structure Number: 3108805
 Facility Carried: NB IR 75

Ohio Bridge Inspection Summary Report

HAM-00075-0022R (3108805)

2: District 15000 - CINCINNATI (HAM county)
 District 08

5A: Inventory Route 1 00075

21: Major Maint A/B 01 - State Highway Agency /
 225 Routine Main A/B 01 - State Highway Agency /
 221 Inspection A/B 01 - State Highway Agency /
 220: Inv. Location DISTRICT 08

7: Facility On NB IR 75
 6: Feature Ints 2RR;TH ST*E;US42D;US50*E
 9: Location .2 MI N OF OH-KY LINE
 Lat, Lon 39.096002116605405 , -84.52204538424165

Condition	Structure Type
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58: Deck **6 - Satisfactory Condition**
 58.01 Wearing Surface 7 - Good (1% distress)
 58.02 Joint 6- Satisfactory (isolated leaking)
59: Superstructure **6 - Satisfactory Condition**
 59.01 Paint & PCS 3 - Serious PCS (20-30% corr.)
60: Substructure **6 - Satisfactory Condition**
61: Channel **N**
61.01 Scour **N - Not Applicable**
62: Culverts **N - Not Applicable**

43: Bridge Type 4 - Steel continuous
 02 - Stringer/Multi-beam or Girder
 N- Not Applicable
 45: Spans Main / Approach 14 / 0
 107: Deck Type 1 - Concrete Cast-in-Place
 408: Composite Deck U - Unknown
 414A Joint Type 1 8 - Elastomeric Strip Seal
 414B: Joint Type 2 N - None
 108A: Wearing Surface 2 - Integral Concrete (separate non-modified layer of concrete added to structural deck)
 1 - Super Plasticized

67.01 GA 6

Appraisal

Sufficiency Rating 73.0 SD/FO 2 - FO
 36: Rail, Tr, Gd, Term Std 1 1 1 1
 72: Approach Alignment 8 - Equal to present desirable criteria
 113: Scour Critical N - Not over waterway
 71: Waterway Adequacy N - Not Applicable

422: WS Date 07/01/2007
 423: WS Thick (in) 2.8
 482: Protective Coating 4 - Paint System B
 483: PCS Date 01/01/1977
 453: Bearing Type 1 2 - Rockers & Bolsters
 455: Bearing Type 2 C - Elastomeric (laminated)
 528: Foundn: Abut Fwd 2 - Cast-in-Place Reinforced Concrete Piles (Other diameter)
 533: Foundn: Abut Rear N - None (such as most Culverts)
 536: Foundn: Pier 1 2 - Cast-in-Place Reinforced Concrete Piles (Other diameter)
 539: Foundn: Pier 2 A - Cast-in-Place Reinforced Concrete Piles (12" diameter)

Geometric

48: Max Span Length (ft) 117.0
 49: Structure Length (ft) 1187.0
 52: Deck Width, Out-To-Out (ft) 36.0
 424: Deck Area (sf) 42732
 32: Appr Roadway Width (ft) 30.0
 51: Road Width, Curb-Curb (ft) 33.0
 50A: Curb/SW Width: Left (ft) 0
 50A: Curb/SW Width: Right (ft) 0
 34: Skew (deg) 48
 33: Bridge Median 0 - No median
 54B: Min Vert Underclearance (ft) 14.5
 336A: Min Vert Clrnce IR Cardinal (ft) 15.833
 336B: Min V Clr IR Non-Cardinal (ft) 0
 578: Culvert Length (ft) 0

Age and Service

27: Year Built/ 106 Rehab 1963 / 0000
 42A: Service On 1 - Highway
 42B: Service Under 4 - Highway - railroad
 28A: Lanes on 03
 28B: Lanes Under 06
 19: Bypass Length 0
 29: ADT 40554
 109: % Trucks (%) 16

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 (%) 100
 704: Analysis Date 07/01/2013
 63: Analysis Method 6 - Load Factor (LF) rating reported by rating factor (RF) method using MS18

Inspections

	<i>Months</i>	
90: Routine Insp.	12	09/11/2023
92A: FCM Insp. Y	12	10/01/2021
92B: Dive Insp. N	0	
92C: Special Insp. N	0	
92D: UBIT Insp. N	0	
92E: Drone Insp. N	0	

Inspector Larkin,Cory

Inspector: Larkin,Cory
Inspection Date: 09/11/2023
loading.

Structure Number: 3108805
Facility Carried: NB IR 75

Inspector: Larkin,Cory
Inspection Date: 09/11/2023

Structure Number: 3108805
Facility Carried: NB IR 75

	Environment	Total Quantity	Units	Condition State 1	Condition State 2	Condition State 3	Condition State 4
12-Reinforced Concrete Deck	3 - Mod.	51206	sq. ft.	24615	25715	872	4
<p>CS2: -There are hairline transverse cracks with efflorescence spaced at approximately 36" in underside of deck. -There is hairline map cracking throughout, with heavier cracking and efflorescence in Span 18C. -There are patches covered with plywood in several locations.</p> <p>CS3: -There are multiple isolated spalls up to 1 1/2" deep with exposed rebar throughout. -There is a 2'x1'x2" spall with exposed rebar and a 2'x2'x3" spall with exposed rebar in span 15C. -There is a 6' long x 2' wide x up to 5" deep spall with 5 transverse, 2 longitudinal, and 3 railing bars exposed at the east overhang on Span 17C. -A continuous set of spalls up to 1" deep are present in the east overhang of Span 19C. -There are spalls with exposed rebar up to 3'L x 2'W x 3" in the west overhangs of Span 23C - 24C. -There are 4' x 4' full depth patches at drainage downspout locations that are partially delaminated and have exposed reinforcement. -There are four spalls, 2" deep with exposed rebar, totaling 16SF in Span 29C.</p> <p>CS4: -There is 4'L x 2'W delaminated concrete in west overhang of Span 27C.</p>							
510-Wearing Surfaces		41661	sq. ft.	28859	12498	300	4
<p>CS2: -There are isolated hairline longitudinal and transverse cracks throughout the wearing surface in all spans. -There are potholes patched with asphalt in Spans 19C, 20C, 21C, and 27C. -There are concrete patches in good condition in Spans 18C, 19C, 20C, and 27C. -The wearing surface was sounded by ODOT in December 2020, and multiple delaminated areas were found.</p> <p>CS3: -There is 3'x3' cracked concrete patch in Span 27C.</p> <p>CS4: -There is a failed 2'x2' patch in the center lane of Span 22C which has developed into a 3" deep pothole.</p>							
107-Steel Open Girder/Beam	3 - Mod.	7238	ft.	1235	5560	443	0
<p>CS2: -There is isolated freckling and minor surface corrosion on the retrofit beams in Spans 23J-26J. -There is widespread freckling and minor surface corrosion throughout all original girders, most prominently on the fascia girders. -There is initiation of laminating corrosions in the bottom flanges of Girders A-F in Span 28C with negligible section loss. -There is evidence of fire and associated soot and damages to the beams in Span 29, bay 3.</p> <p>CS3: -The top of the bottom flange of Girder A in Spans 17C through 23C exhibits laminating corrosion with section loss up to 1/4" deep, typically near the transverse stiffeners. -In the bottom flange of Girder A, Span 17C near midspan, there is section loss 8"W x 1/4" (9% flange loss). -There are painted-over gouges up to 5" long and 1/8" deep on the bottom flange of Girder D in Span 16C near Pier 15C. -There is painted-over pitting on the web and stiffeners behind the bearings of the girders at Pier 18C. -There is isolated pitting in the web and transverse stiffeners of Girder A.</p>							

Inspector: Larkin,Cory
 Inspection Date: 09/11/2023

Structure Number: 3108805
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	Environment	Total Quantity	Units	Condition State 1	Condition State 2	Condition State 3	Condition State 4
515-Steel Protective Coating		88957	sq. ft.	20760	31580	22684	13933
CS2: -The paint on the original girders is peeling, chalking and flaking throughout except the 10' of the girder ends near the expansion joints at Pier 15C, 18C, 23C and 26C which were cleaned and painted in 2018. -The paint on the retrofit beams has isolated areas of freckling and minor surface corrosion. CS3: -There is widespread exposure of the primer coat throughout the original girders. Paint on the original girders is either ineffective or of limited effectiveness. CS4: -There are widespread areas of paint failure, exposed bare metal, and surface corrosion throughout the original girders. -There is evidence of fire and paint damage to the beams in Span 29, Bay 3.							
205-Reinforced Concrete Column	3 - Mod.	29	each	19	5	5	0
CS2: -There are minor isolated spalls and hairline cracking throughout. -There is a 6" diameter shallow spall on the corner of Column 1 of Pier 23J. -There are concrete patches wrapped in FRP on the columns of Piers 15C, 18C, and 23C. CS3: -There is a 4'H x 1"D spall on the northeast corner of Column 2, Pier 21C due to vehicular impacts. -There is a 2'H x 1'W x 2" deep spall with exposed rebar on Column 2 of Pier 23C. -There is 2'H x 2'W delaminated area on Column 2 of Pier 23C near the downspout support. -There is a 16"H x 6" W x 1/2" deep spall on the corner of Column 1 of Pier 27C.							
210-Reinforced Concrete Pier Wall	3 - Mod.	66	ft.	48	15	3	0
CS2: -There is hairline cracking throughout the pier walls. -There are concrete patches wrapped in FRP on Pier Wall 18C. -There are several shallow spalls with exposed reinforcing bars present on the south and west faces of Pier 19C due to shallow cover. -There is a shallow spall around the armored edge at Pier 16C. CS3: -The protective coating for the FRP on the south face of Pier 18C is peeling and cracking.							
215-Reinforced Concrete Abutment	3 - Mod.	74	ft.	72	0	2	0
CS3: -There is a 20"W x 24"H X 1" deep spall and delamination below Bearing E.							
231-Steel Pier Cap	3 - Mod.	156	ft.	123	30	3	0

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Environment	Total Quantity	Units	Condition State 1	Condition State 2	Condition State 3	Condition State 4	
Pier Cap 25J: CS2: -There are isolated areas of surface corrosion throughout the pier cap exterior, particularly on the top flange at the east end and along the edges of both flanges. -There are minor scrapes with surface corrosion in the bottom flange over the U.S. 50 ramp to 2nd Street (Pier Cap 25J). -The bottom flange bearing plates at both columns exhibit surface corrosion (Pier Cap 25J). -There are minor deformations in the top flange backer bars at both webs (Pier Cap 25J -2021 Inspection). -There are minor rust spots on diaphragms 1,2, and 7, and both hatch openings (Pier Cap 25J). Pier Cap 26C/J: CS2: -There are areas of moderate corrosion with pitting less than 1/16" to bottom of web and bottom flange at diaphragms 1 and 17 (Pier Cap 26C/J). -There are small rust spots on most diaphragms (Pier Cap 26C/J). -There is surface corrosion with pitting less than 1/16" deep in the west end bay (Pier Cap 26C/J). -There is laminating corrosion with section loss less than 1/16" deep on the undersides of the bearing plates at all columns (Pier Cap 26C/J). CS3: -There is a 6" diameter area of surface corrosion with pitting up to 1/16" deep in the top flange at the west end (Pier Cap 26C/J). -The south anchor bolt at the west column bearing is broken inside the cap (Pier Cap 26C/J Bearing). -There is laminating corrosion with section loss up to 1/16" in the bottom flange, webs and diaphragms in the east end bay (Pier Cap 26C).							
515-Steel Protective Coating	4347	sq. ft.	4193	44	88	22	
CS2: -Surface dulling and localized light rust is present throughout the caps. CS3: -There are isolated areas of surface corrosion and minor peeling. CS4: -There is little to no paint remaining on the bearing plates over the columns.							
234-Reinforced Concrete Pier Cap	3 - Mod.	656	ft.	465	189	2	0
CS2: -The original pier caps have horizontal hairline cracks near the top of most caps and vertical hairline cracks developing from the horizontal cracks. -There is a small spall at the east end of Pier Cap 28C. -There is map cracking- 5'W x 5'H on the south face and 12'W x 3'H on the north face of the east cantilever at Pier Cap 21C. -There is map cracking and a minor spall on the west face of Pier Cap 23C. -The FRP is cracking and peeling on the south face of Pier Cap 23C. CS3: -There is a 16"H x 6"W x 1.5"D spall on the south face of Pier Cap 18A.							
300-Strip Seal Expansion Joint	3 - Mod.	288	ft.	254	30	0	4
CS2: -Loosely-packed debris was noted in the expansion joint at Pier 18C. CS4: -A 4' long section of the joint seal has pulled out between Beams E and B3 at Pier 23C and water free flows on to the pier at this location.							
310-Elastomeric Bearing	3 - Mod.	41	each	35	5	1	0
CS2: -The restraining rods of the Span 18C bearings at Pier 18C are slightly bent. CS3: -The south anchor bolt at the west column bearing for Pier 26J/C is broken. A slight gap was observed with the elastomeric pads on the south end where the anchor bolt is broken, with a slight bulge on the opposite end.							

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311-Movable Bearing	3 - Mod.	50	each	0	41	9	0
CS2: -The newer steel rocker bearings in Spans 22J-26J (installed during the 2000 retrofit) have isolated surface corrosion and minor abrasion dust. -The original steel rocker bearings exhibit surface corrosion with no measurable section loss, particularly on the fascia bearings. CS3: -There is active pack rust between the rocker and the masonry plate of Bearing A at Pier 17C, Bearing A and E at Pier 19C, Bearing E at 20C, Bearing E at Pier 21C, Bearing A and E at Pier 22C and Bearing E at Pier 25C with no indication of uplift. -Bearing A at Abutment C has been covered with fill.							
515-Steel Protective Coating		50	sq. ft.	0	19	26	5
CS2: -The paint on the rocker bearings is dulling. -Light freckled rust is present throughout the bearings. CS3: -There is loss of pigment throughout the bearings. CS4: -There is paint failure with surface corrosion and exposed bare metal on fascia bearings.							
313-Fixed Bearing	3 - Mod.	25	each	0	25	0	0
CS2: -The newer steel bearings in Spans 22J-26J have isolated surface corrosion and minor abrasion dust. -The original steel fixed bearings exhibit surface corrosion with no measurable section loss, particularly on the fascia bearings.							
515-Steel Protective Coating		25	sq. ft.	0	19	3	3
CS2: -The paint on the fixed bearings is dulling. -Light and initiated freckled rust is present throughout the bearings. CS3: -There is loss of pigment on several bearings. CS4: -There is paint failure with surface corrosion and exposed bare metal on several fascia bearings.							
321-Reinforced Concrete Approach Slab	3 - Mod.	1539	sq. ft.	1539	0	0	0
The North approach is covered with an asphalt wearing surface.							
331-Reinforced Concrete Bridge Railing	3 - Mod.	2490	ft.	0	2470	20	0
CS2: -There are vertical and transverse hairline cracks with efflorescence throughout. -A horizontal crack is present in the east railing near the light post in Span 20C. -There is a map cracking in the top of the west railing near Pier 23C. CS3: -There are isolated spalls throughout.							
815-Drainage	3 - Mod.	15	each	14	0	1	0
CS3: The drain at Pier 16C was leaking onto the substructure at the cap.							
830-Abutment Backwall	3 - Mod.	74	ft.	52	19	3	0
CS2: -There are isolated hairline cracks throughout. -There is map cracking in Bay 4 with efflorescence.							

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Facility Carried: NB IR 75

ODOT District: District 08

HAM-00075-0022R_(3108805)

Date Built: 07/01/1963

Major Maint: 01 - State Highway Agency

Facility Carried: NB IR 75

Traffic On: 1 - Highway

Rehab Date:

Routine Maint: 01 - State Highway Agency

Feature Inters: 2RR;TH ST*E;US42D;US50*E

Traffic Under: 4 - Highway - railroad

Insp. Resp A: 01 - State Highway Agency

FIPS Code: 15000 - CINCINNATI (HAM county)

Location: DISTRICT 08

.2 MI N OF OH-KY LINE

Insp

Inspector

Larkin,Cory

Inspection Date 09/11/2023

Reviewer Not Approved

Resp B:

Inspector Comments - Deck and Approach

Deck

Bridge Wearing Surface

Bridge wearing surface was visually inspected from the boom lift.

Bridge Railing

Bridge railings were visually inspected from the boom lift.

Expansion Joint

The expansion joints were inspected visually from the boom lift.

Approach

Approach Wearing Surface

The north approach wearing surface was repaved in 2022.

Approach Embankment

No significant problems were noted.

Approach Guardrail

Surface rust and minor scrapes were noted in isolated locations on approach guardrail.

Inspector Comments - General Appraisal

Superstructure

Diaphragm/X-Frames

Minor surface corrosion, freckled rust and paint failures typical throughout original crossframe members. Crossframe 6 between girders C and D in Span 21C and Crossframe 1 between Girders A and B over Pier 28C exhibit up to 1 1/2" downward deformation of bottom strut angle. Crossframes at expansion joint locations were replaced with jacking frames.

Bearing Devices

Original steel rocker bearings were replaced with elastomeric bearings at Piers 15C, 18C, 23C, and on the original structure portion of Pier cap 26J.

Fatigue

No deficiencies noted.

Signs

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There is one overhead sign support mounted to the railings near Pier 23C. No significant deficiencies noted for the support structure or the anchorage to the railings. Complete inspection of overhead sign structure was outside the scope of this inspection.

Utilities

The structure-mounted utilities consist of an electrical conduit attached to Pier 27C and Girder F in Span 27C, as well as several light poles mounted to the railings at deck level.

Substructure

Reinforced Concrete Abutment Walls

Use caution during future inspections, as several needles were found Abutment C.

Reinforced Concrete Pier Caps

The protective coating for the FRP is cracking and peeling on the south face of Pier Cap 23C.

Reinforced Concrete Pier Columns/Bents

The protective coating for the FRP on the columns of Piers 23C is peeling.

Wingwalls

Diagonal hairline cracking is typical throughout the wingwalls. Cracking with efflorescence and delaminations are present at the bottom of the west wingwall.

Slope Protection

No significant problems noted.

Culvert

N/A

Inspector Comments - Waterway

Waterway Adequacy

N/A

Channel

N/A

Scour Critical

N/A