

# Jefferson Barracks and Koch Road Bridges

PRE-BID MEETING – OCTOBER 20, 2021



WJE

J6I3413 – Bridge No. A18503 and Bridge No A49364  
J6I3500 – Bridge No. A25902 and Bridge No. A25903

# Jefferson Barracks and Koch Road Bridges



# Koch Road Bridges



# Koch Road Bridges

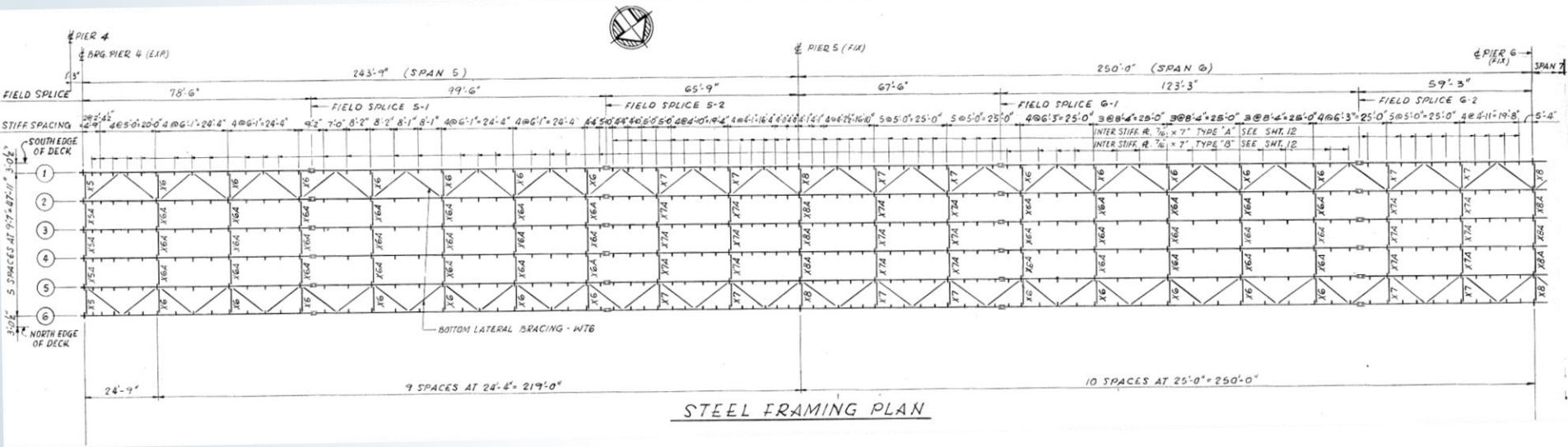
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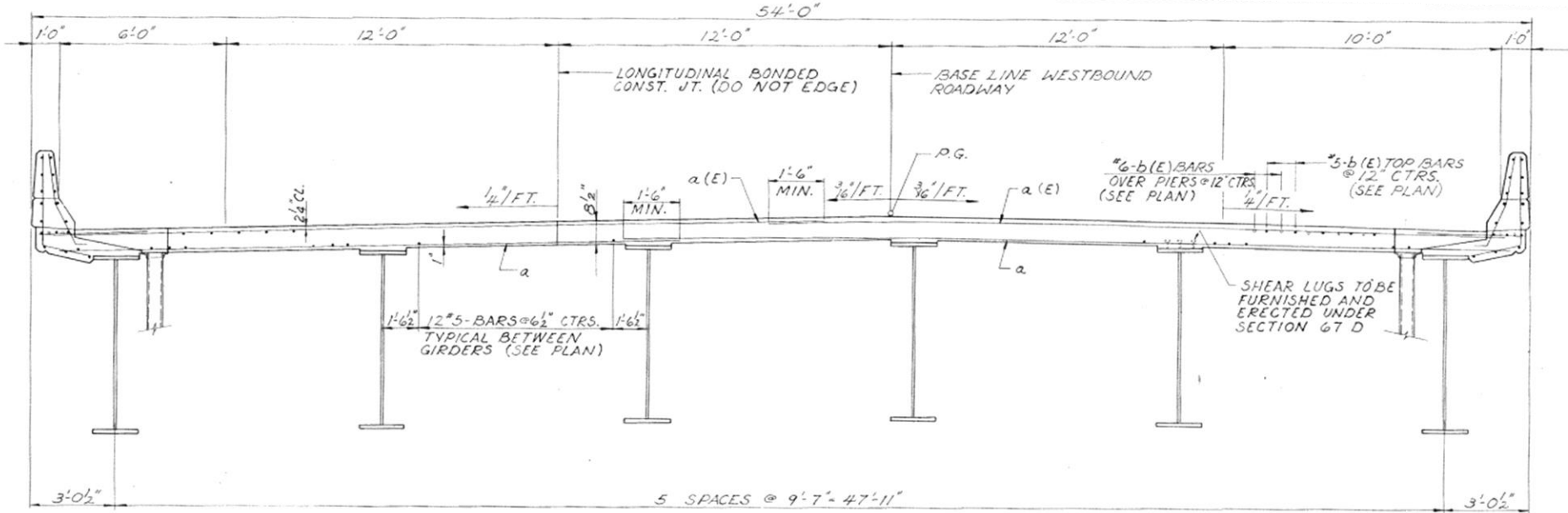
# Jefferson Barracks Bridges



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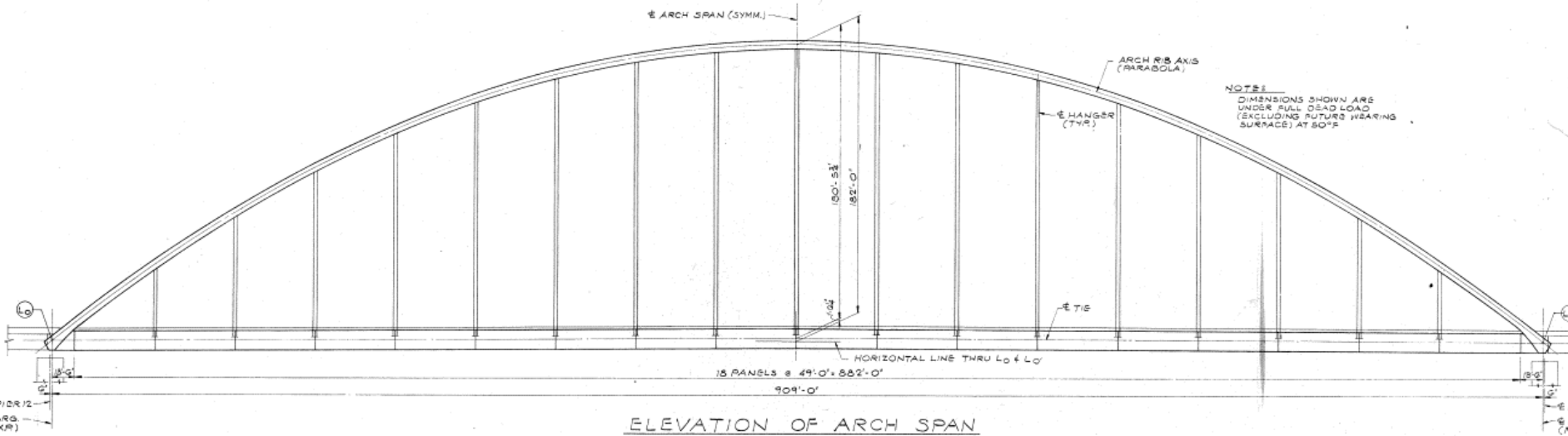
TYPICAL CROSS SECTION  
LOOKING WEST

# Jefferson Barracks Bridges

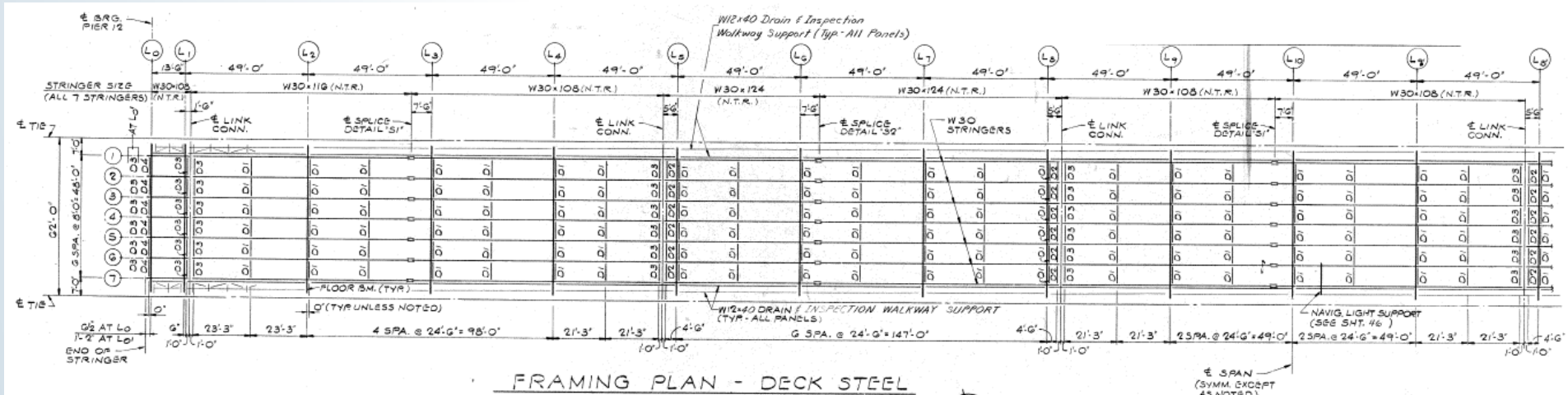




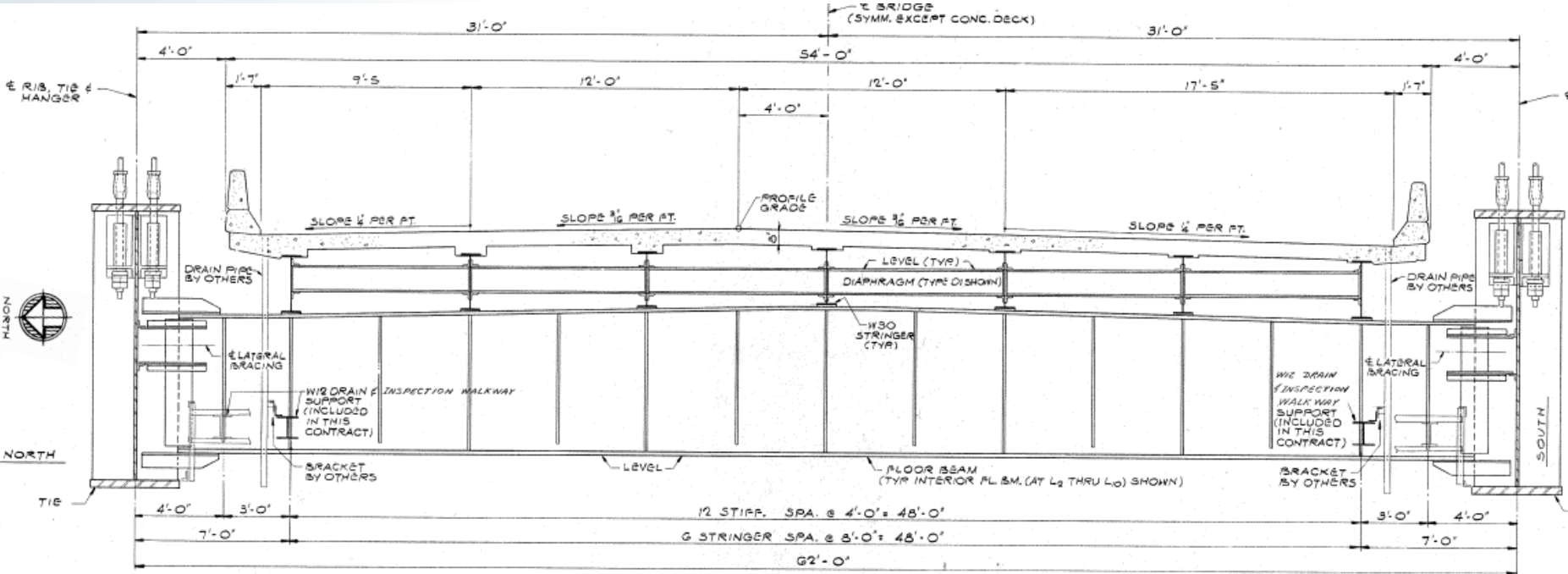
# Jefferson Barracks Bridges



# Jefferson Barracks Bridges



# Jefferson Barracks Bridges



TYPICAL CROSS SECTION

# Major Bridge Items

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**JEFFERSON BARRACKS BRIDGES**

# Bridge Construction

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- Order of Construction
  - April 1, 2022 to December 15, 2022
    - EB/SB A49364 Jefferson Barracks Bridge
    - EB/SB A25903 Koch Road Bridge
  - April 1, 2023 to December 1, 2023
    - WB/NB A18503 Jefferson Barracks Bridge
    - WB/NB A25902 Koch Road Bridge

# Jefferson Barracks Major Bridge Items

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- New PPC/LMC wearing surface
- New expansion joint systems using UHPC headers
- Clean and paint portions of approach and arch spans
- Inspect and repair tie girder welds
- Selected hanger cable replacement (A1850) and cable metallizing
- Miscellaneous steel repairs

# A4936 Bridge Deck – Approach Spans



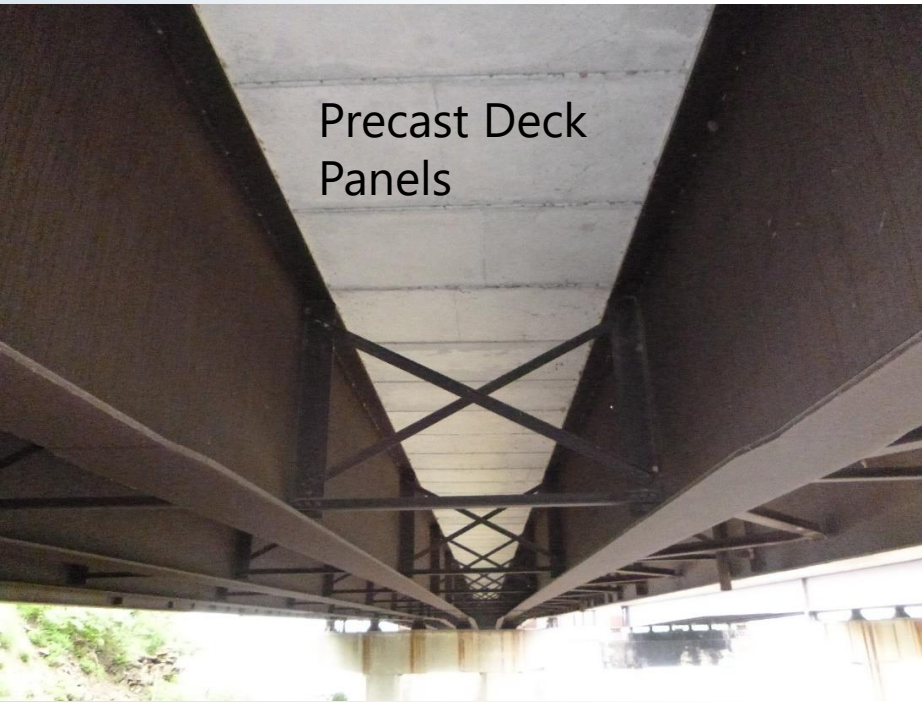
# A4936 Bridge Deck – Arch Span

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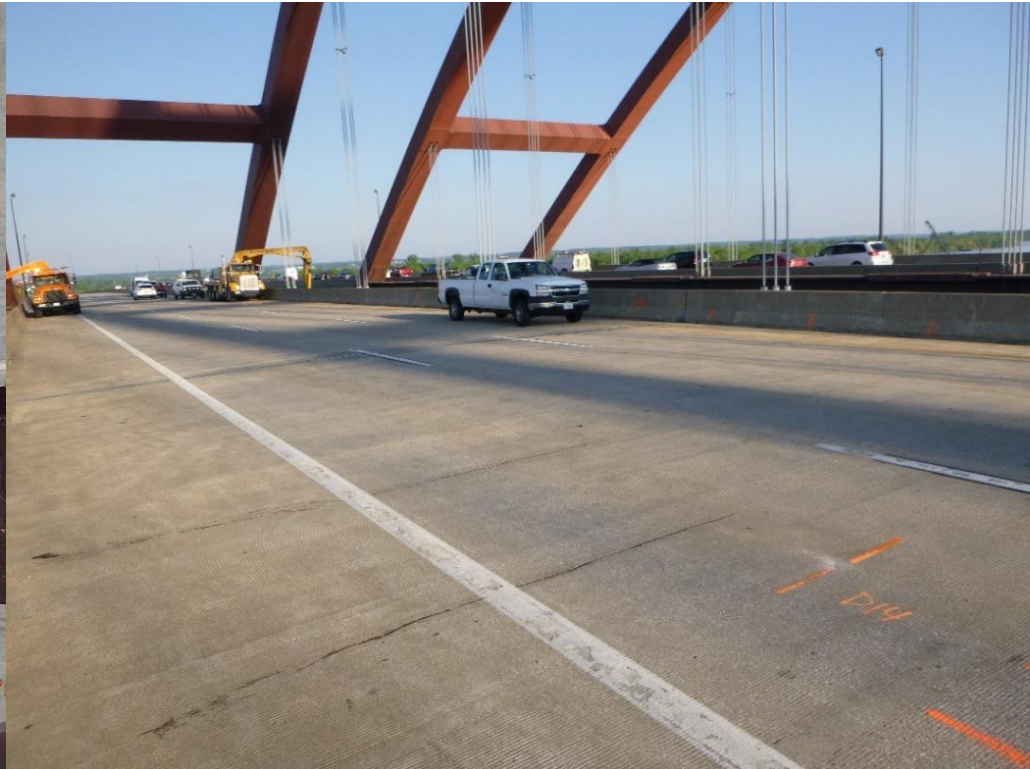


# A1850 Bridge Deck – Approach Spans

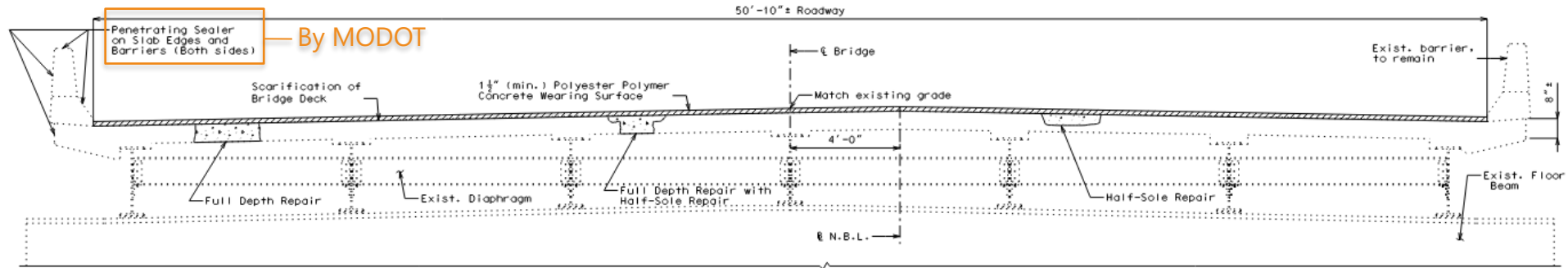


# A1850 Bridge Deck – Arch Span

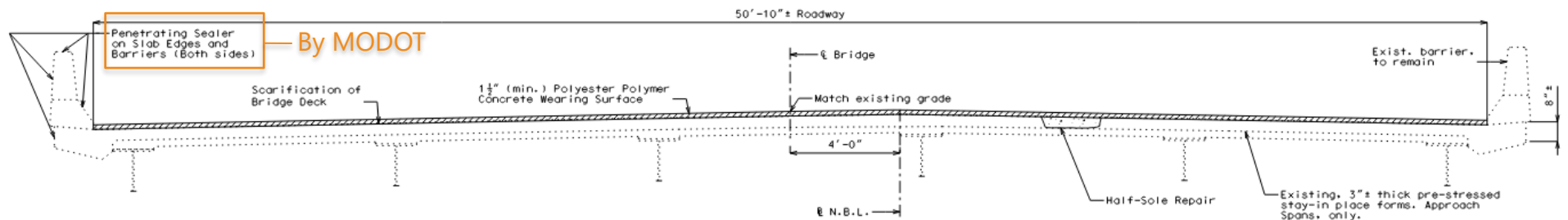
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# New Wearing Surface



TYPICAL SECTION THRU EXISTING DECK (ARCH SPAN)  
(Looking West)



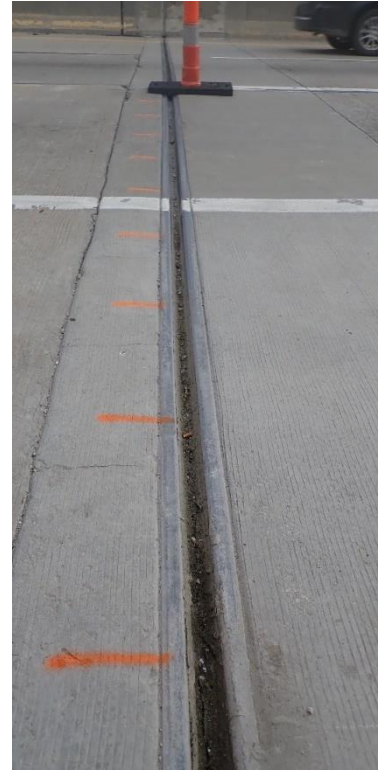
TYPICAL SECTION THRU EXISTING DECK (APPROACH SPANS)

# Deck Overlay

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- EB/SB A49364 Jefferson Barracks Bridge
  - Polyester Polymer Concrete Overlay
- WB/NB A18503 Jefferson Barracks Bridge
  - Polyester Polymer Concrete Overlay
  - OR
  - Latex Modified Concrete Overlay Alternate

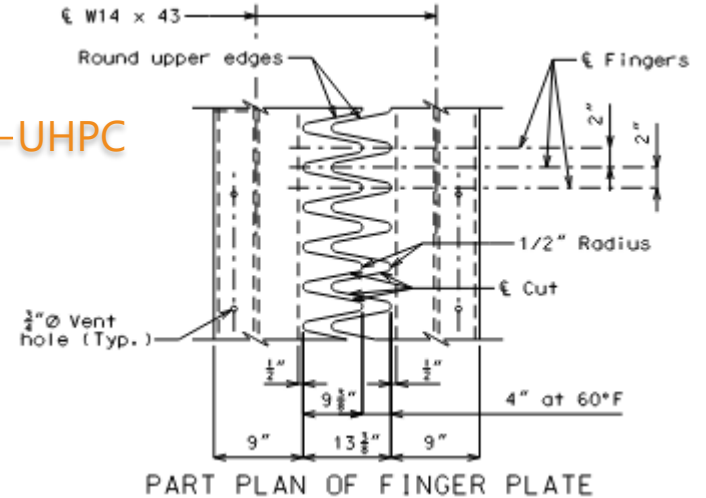
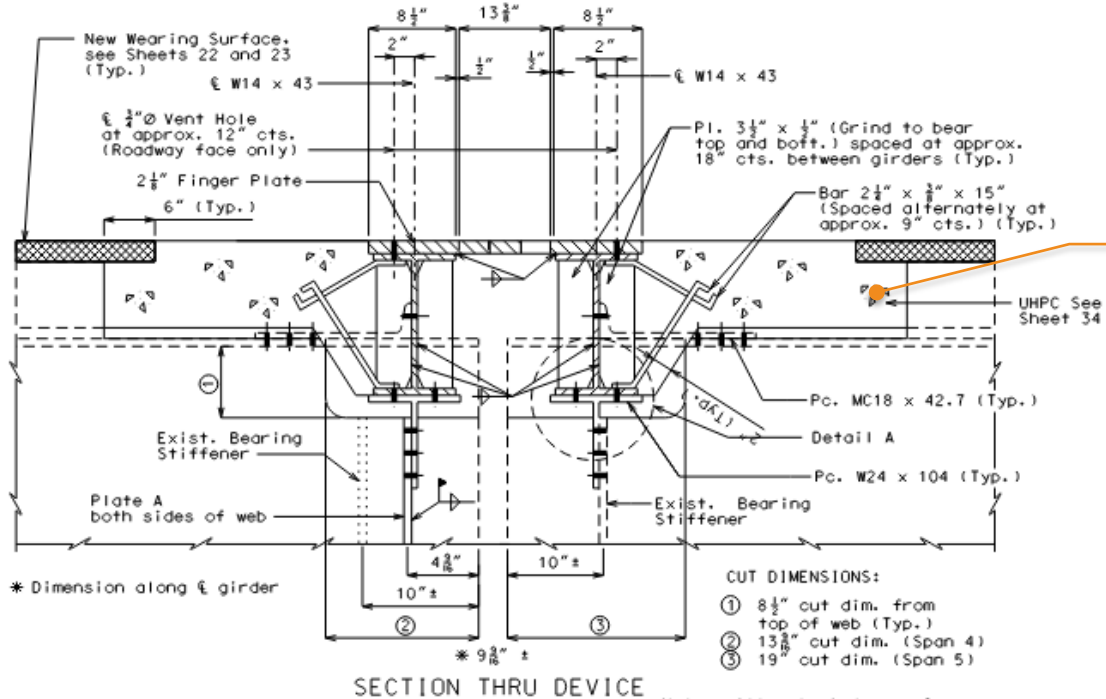
# A4936 Expansion Joint Replacement



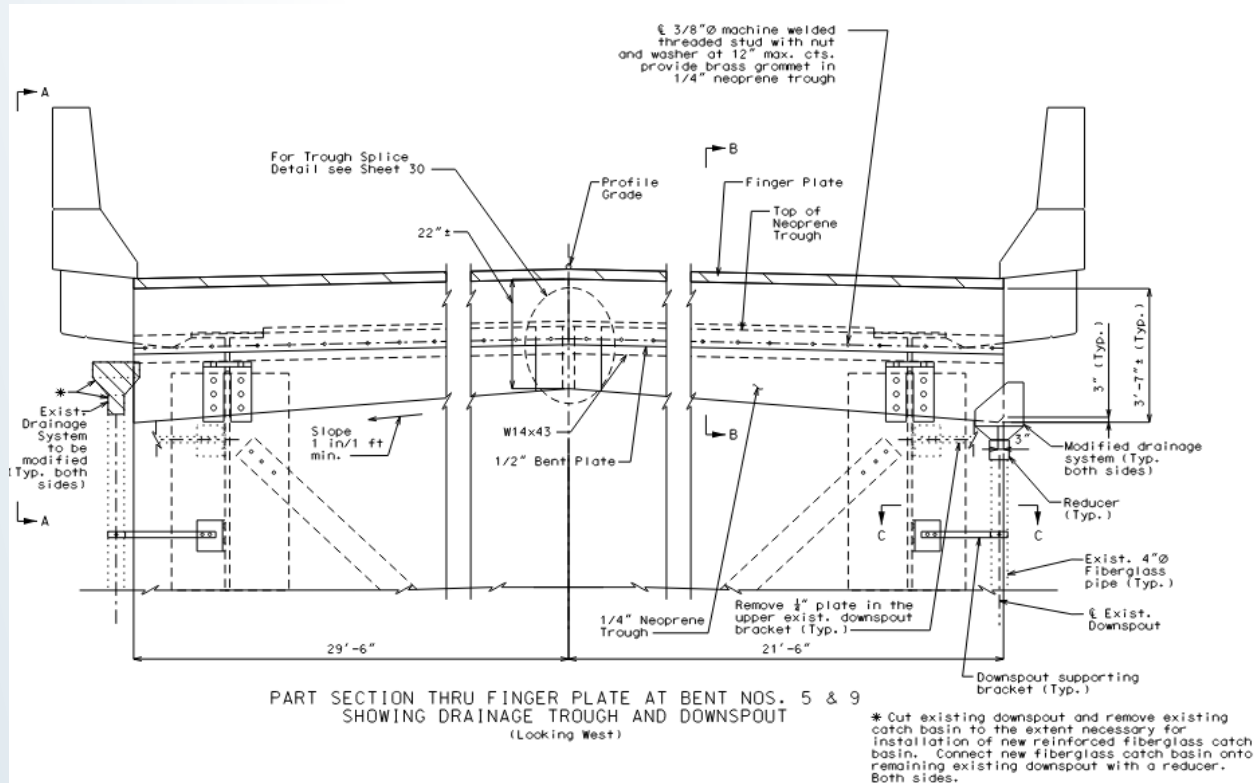
# A1850 Expansion Joint Replacement



# Finger Joint Expansion Device

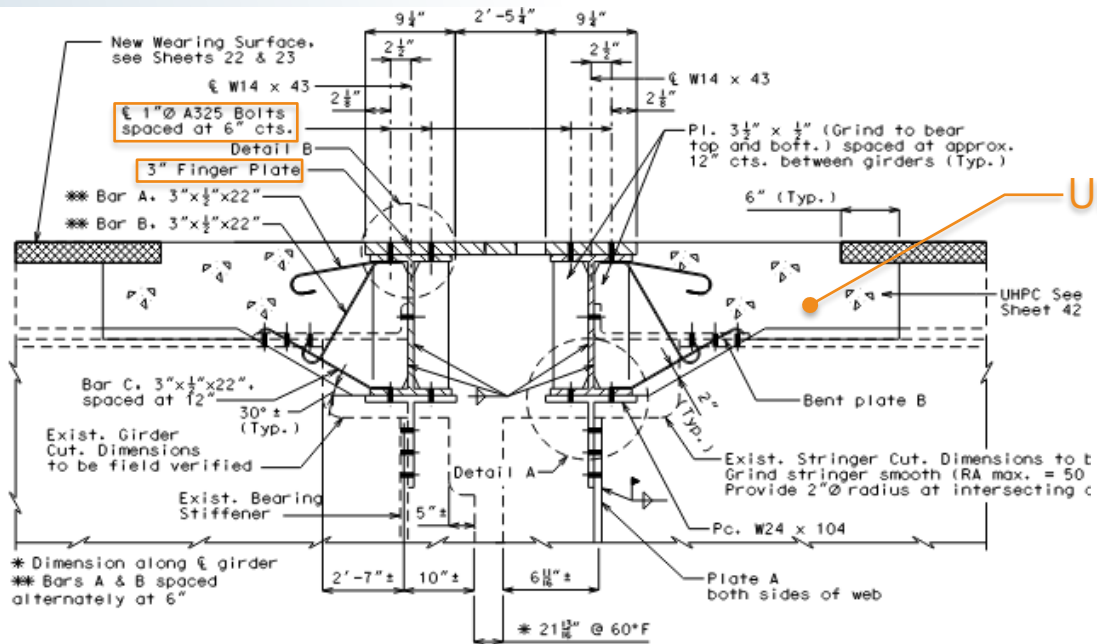


# Finger Joint Expansion Device

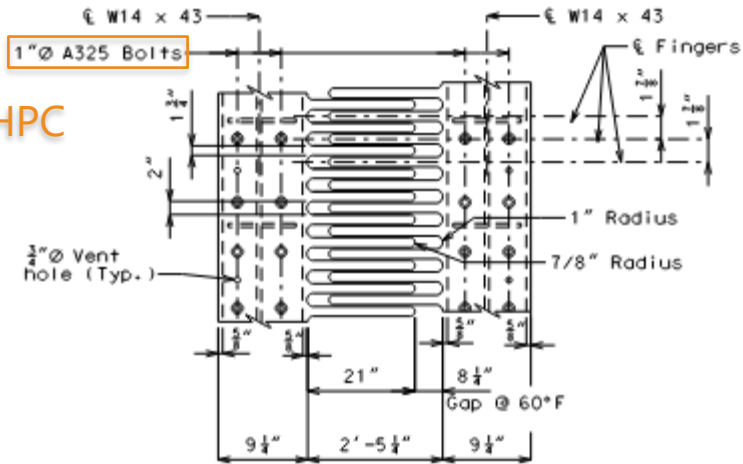




# Robust Finger Joint Expansion Device



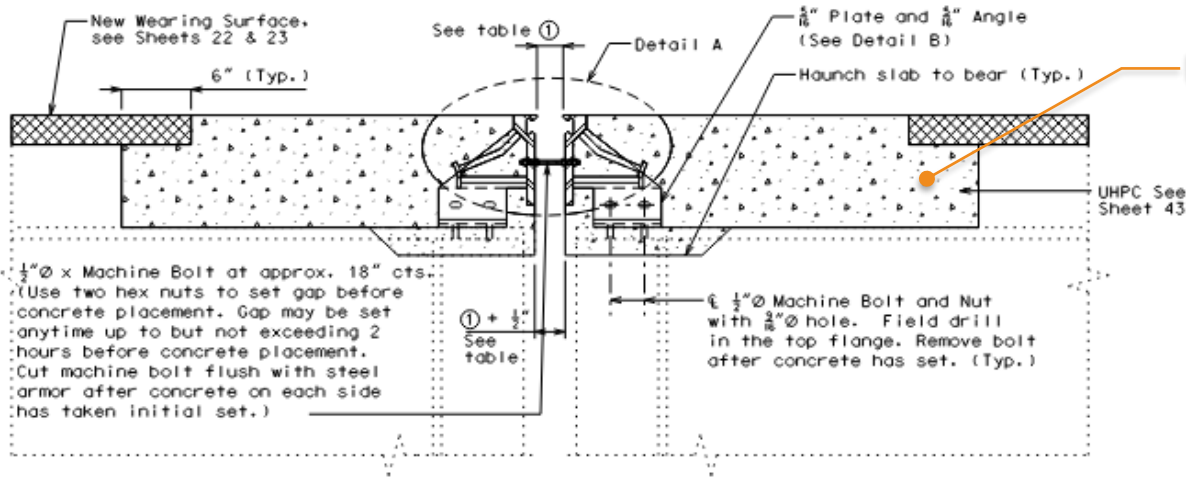
SECTION THRU DEVICE



PART PLAN OF FINGER PLATE

Note:  
Vent hole not shown, see part plan.

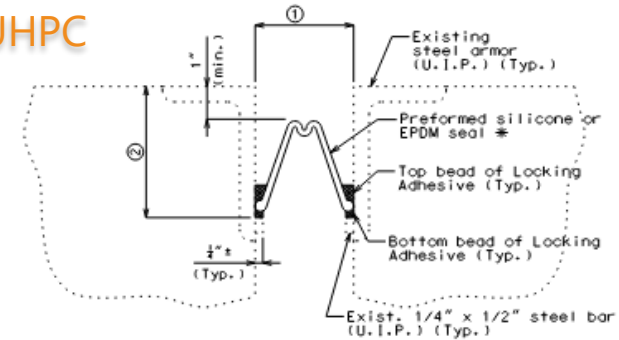
# Strip Seal Expansion Device



SECTION A-A

Note: Strip seal gland not shown for clarity.

UHPC



SECTION THRU JOINT AT LINK CONNECTIONS

# A4936 Approach Spans

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# A4936 Approach Spans

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# A4936 Arch Span

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# A4936 Arch Span

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# A1850 Approach Spans

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# A1850 Approach Spans

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# A1850 Arch Span

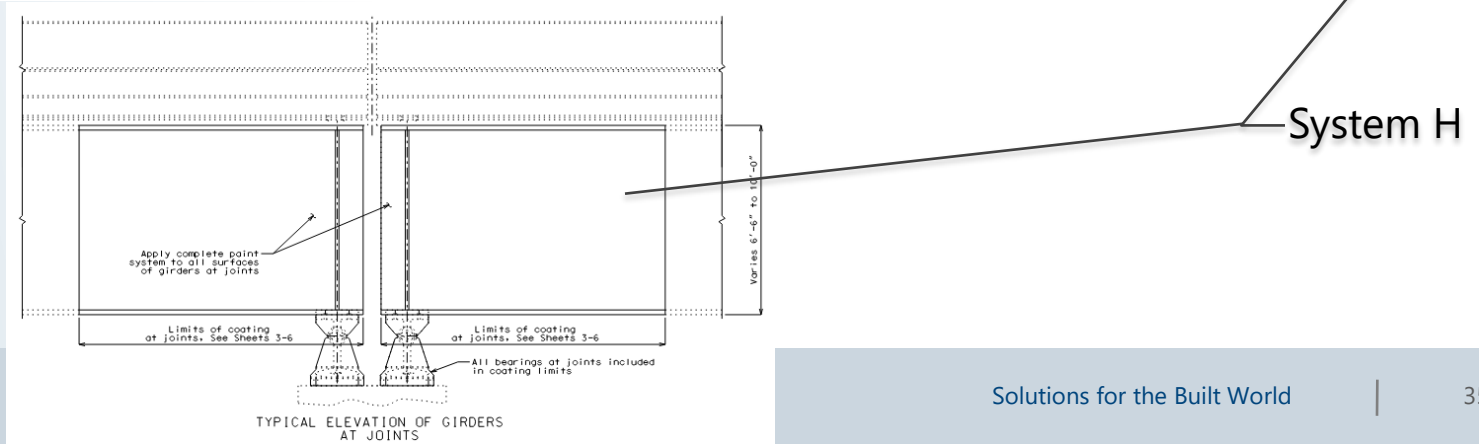
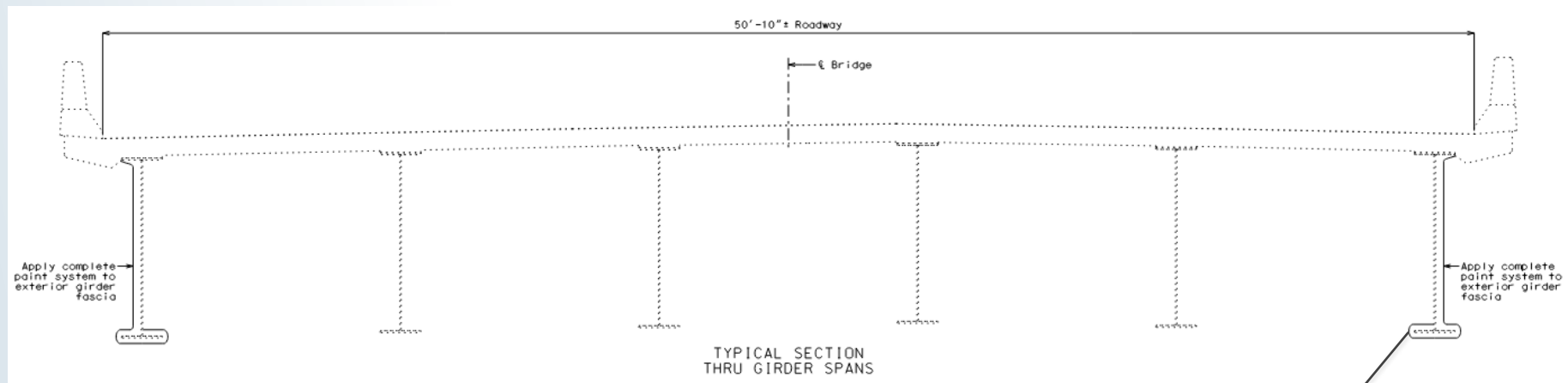


# A1850 Arch Span

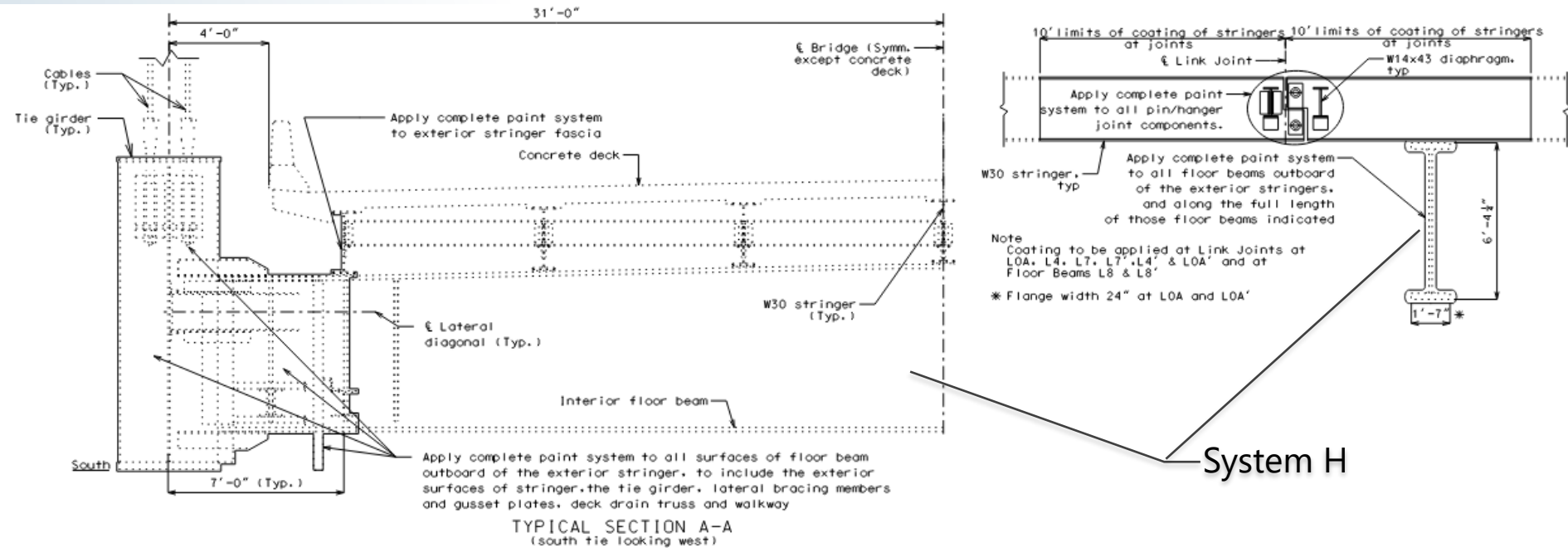
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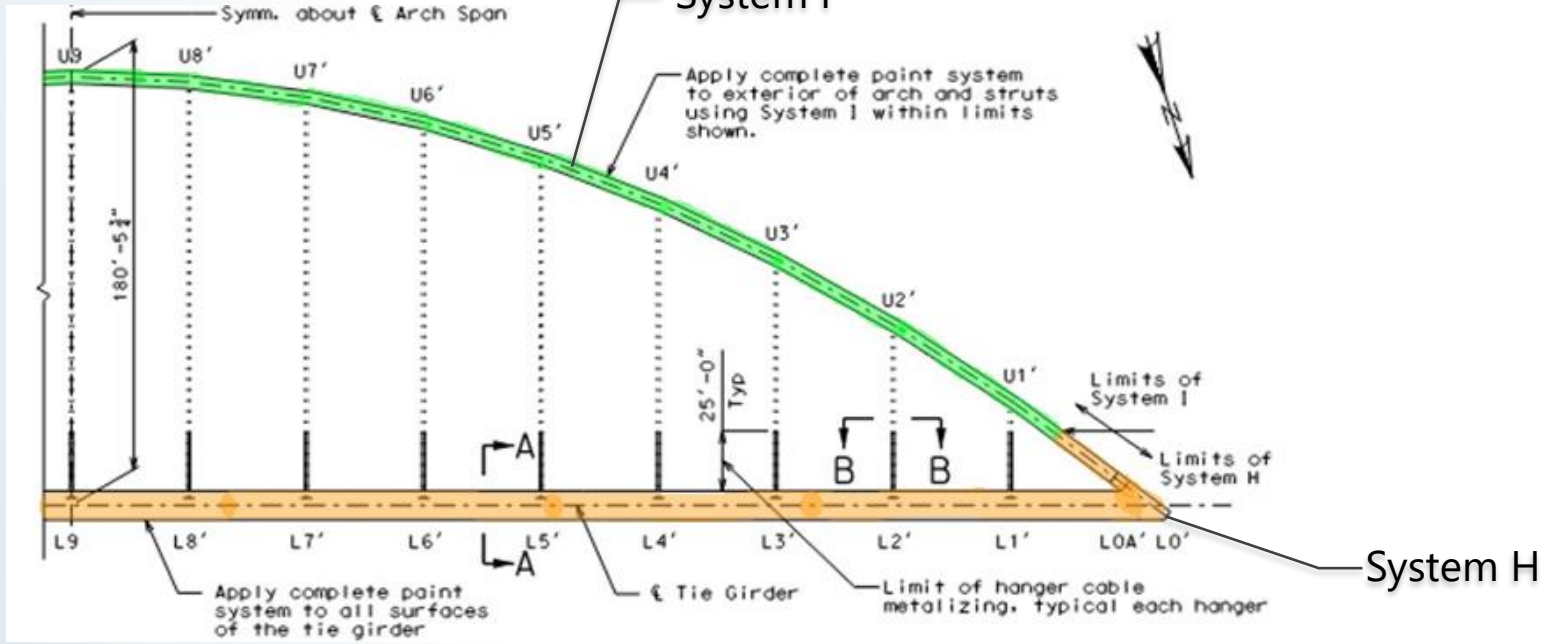
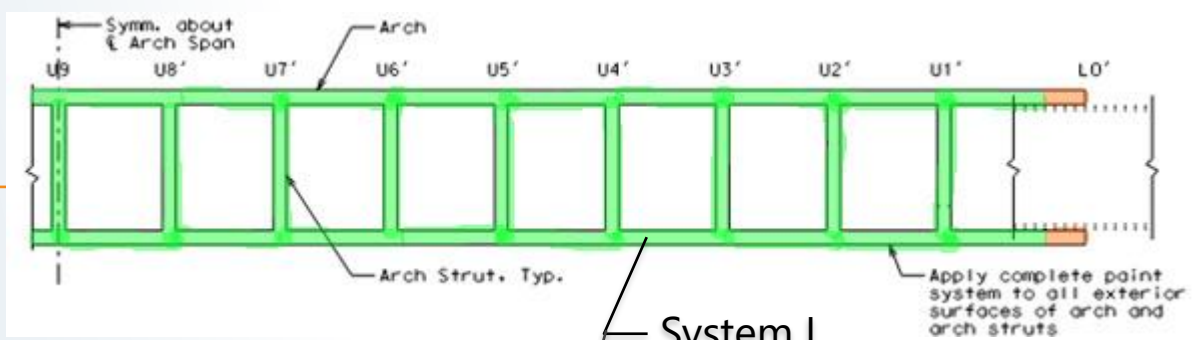


# Clean and Paint Portions of Approach Spans



# Clean and Paint Portions of Arch Span

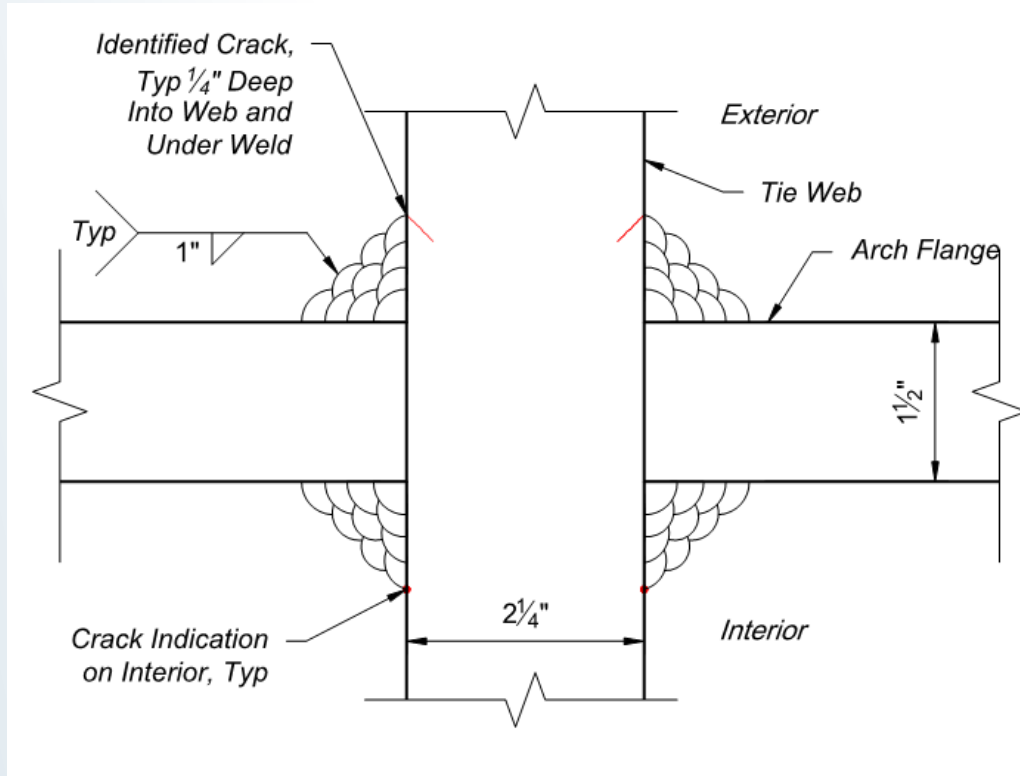




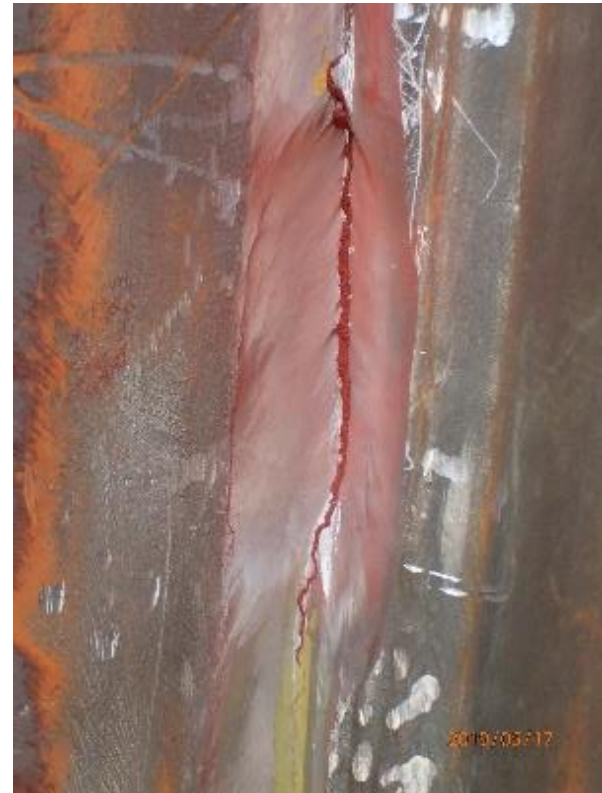
# Element Coating Schedule

Grouping	Element	Coating
Approach Spans	Fascia Girders	System H
	Interior Girders	Wash
	Joints	System H
Arch Span	Tie Girder	System H
	Arch below 25 ft	System H
	Arch interior to splice	System H
	Joints	System H
	Arch above 25 ft	System I
	Upper Bracing	System I

# 2019 Emergency Weld Crack Repairs – A1850



# 2019 Emergency Weld Crack Repairs – A1850





# 2019 Emergency Weld Crack Repairs – A1850



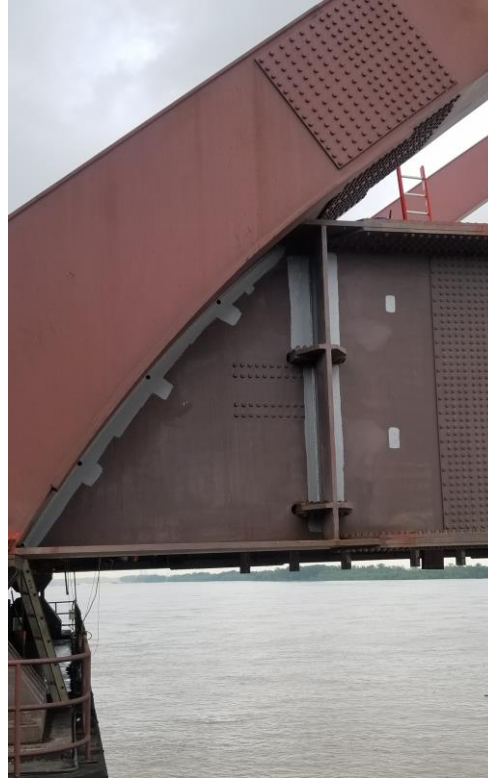
# 2019 Emergency Weld Crack Repairs – A1850



# 2019 Emergency Weld Crack Repairs – A1850



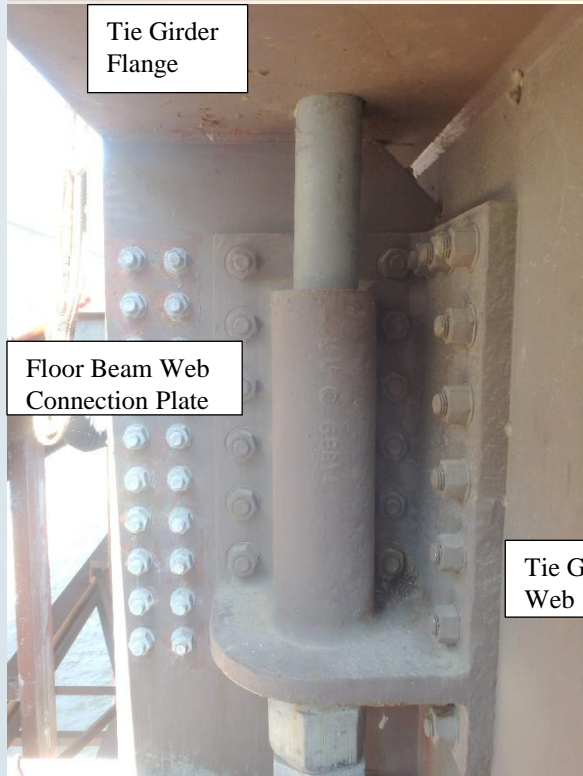
# 2019 Emergency Weld Crack Repairs – A1850



# A1850 Weld Inspection



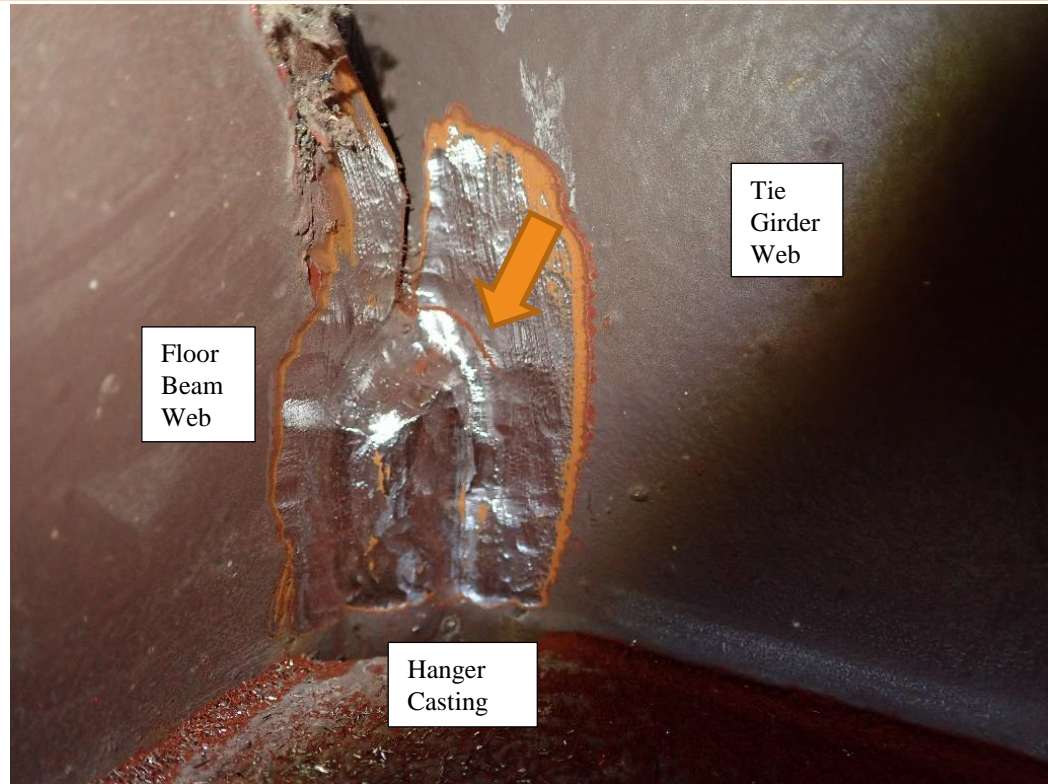
# 2019/2021 Inspections – A1850



Tie Girder Flange

Floor Beam Web Connection Plate

Tie Girder Web

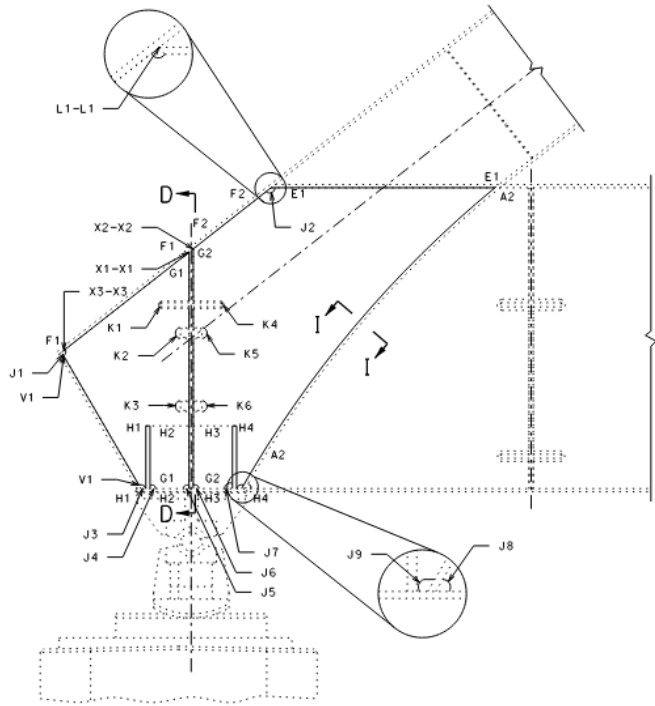


Tie Girder Web

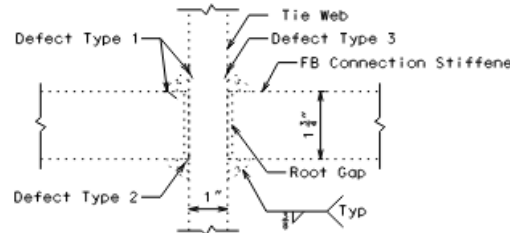
Floor Beam Web

Hanger Casting

# Inspect and Repair Tie Girder Welds

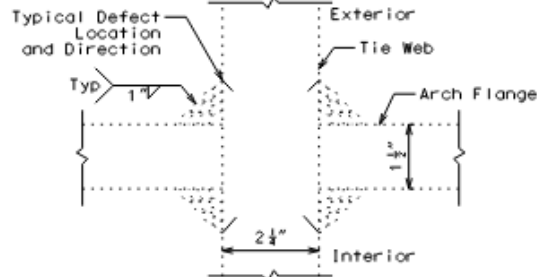


SECTION B-B ARCH INTERIOR CHAMBER AT TIE GIRDER WEB



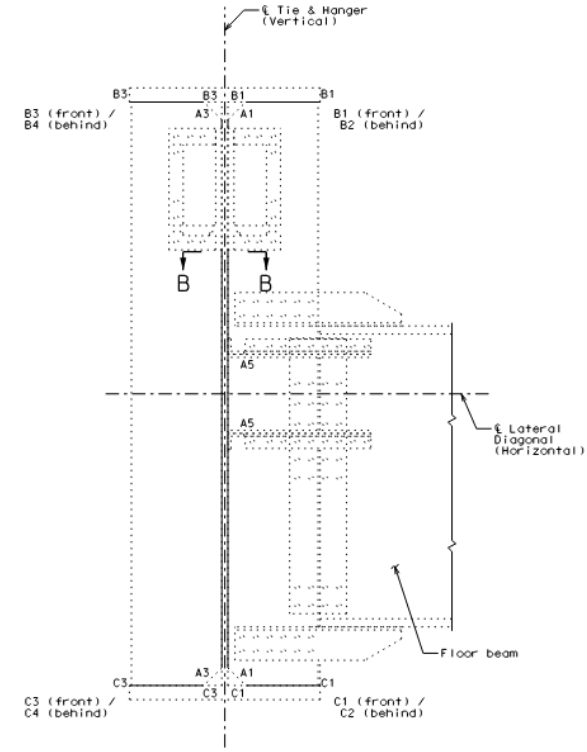
SECTION B-B  
(Typical Weld Profile at)

Note: Actual defects encountered may vary.



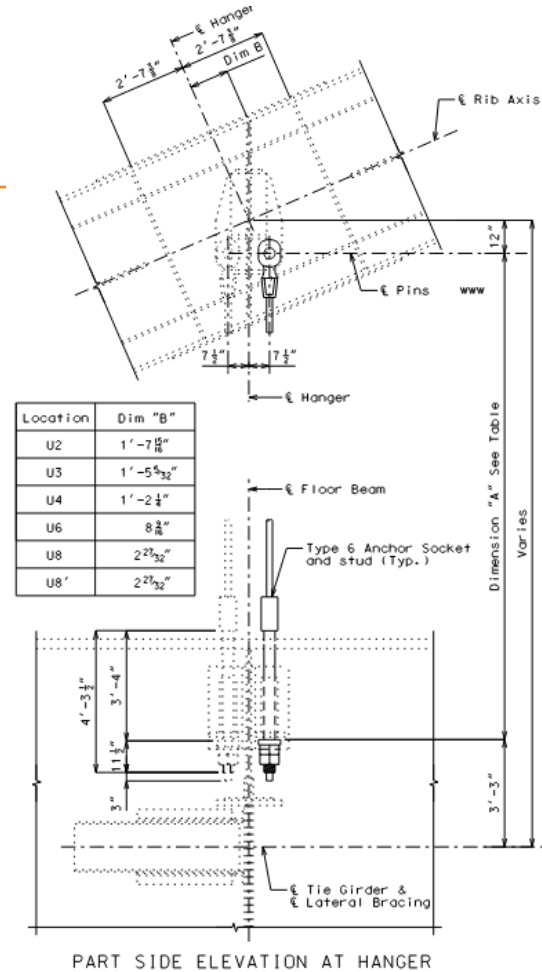
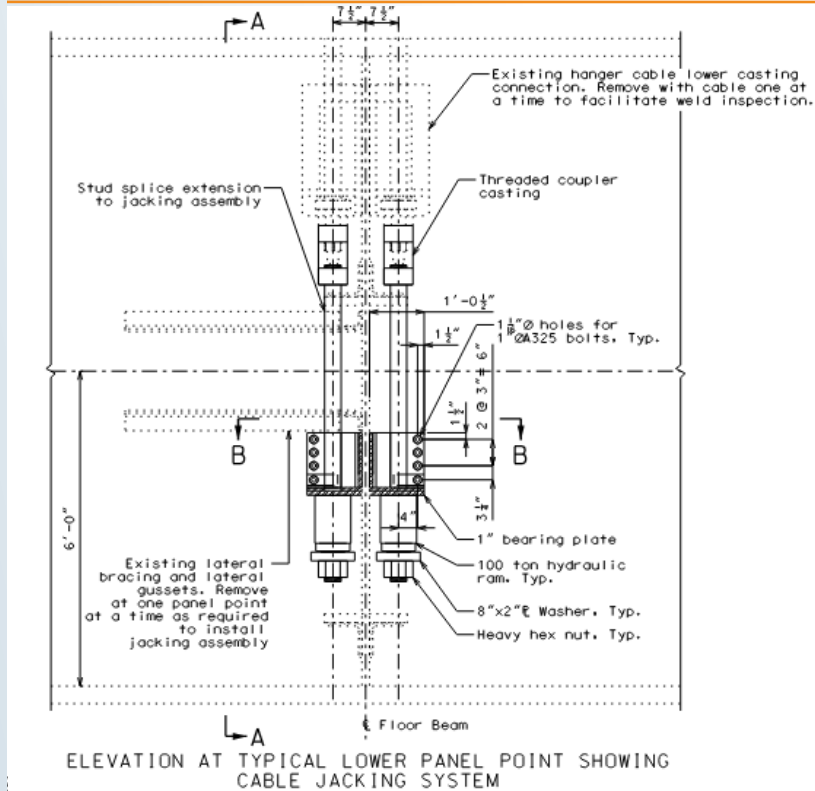
SECTION I-I  
(Typical Weld Profile at Arch to Tie Girder Weld)

Note:  
Actual defects or cracks encountered may vary.



SECTION A-A

# Replace Selected Hanger Cables





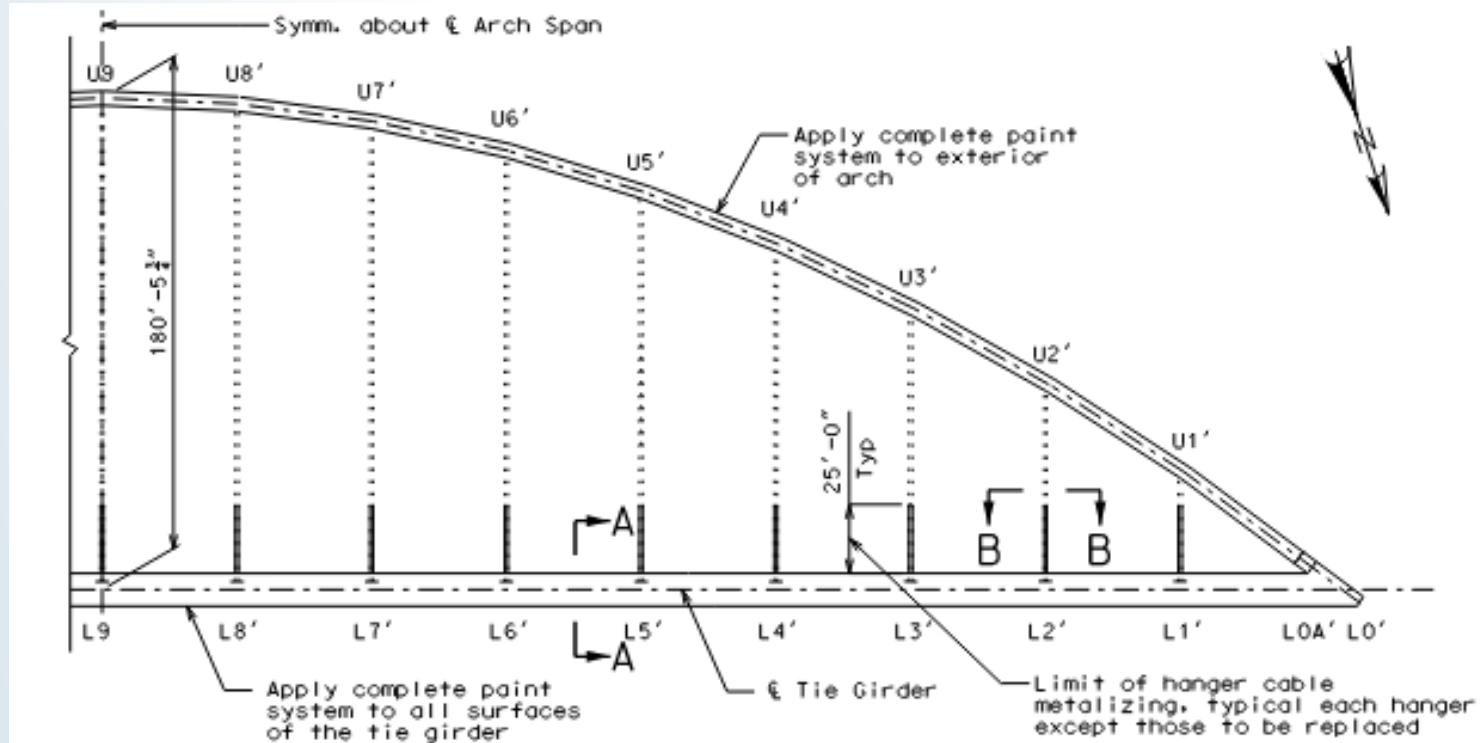
# A4936 Hanger Cables



# A1850 Hanger Cables



# Metalize Hanger Cables



# A1850 Miscellaneous Steel Repairs

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# 2019 NBI Inspection – A1850



# A4936 Miscellaneous Steel Repairs

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# A4936 Miscellaneous Steel Repairs

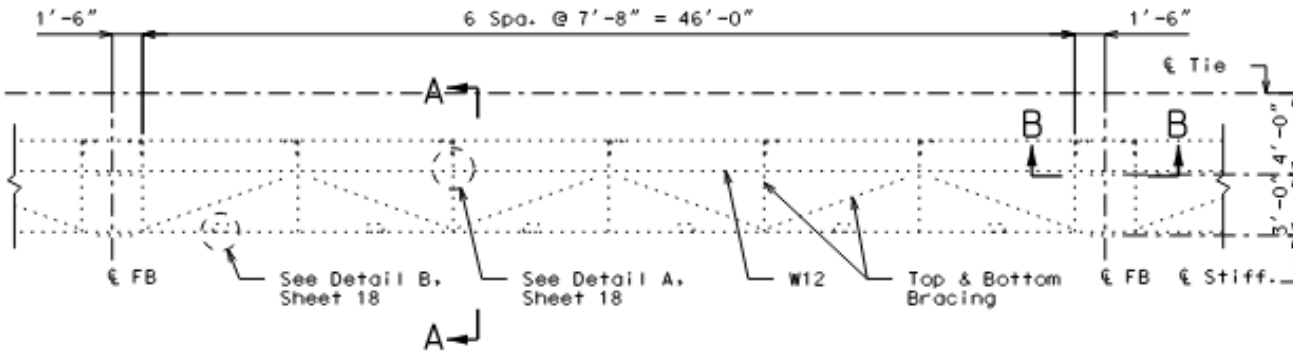


# A4936 Miscellaneous Steel Repairs

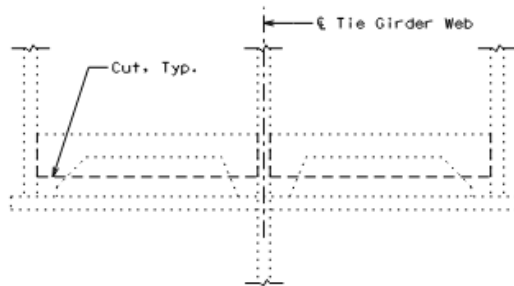
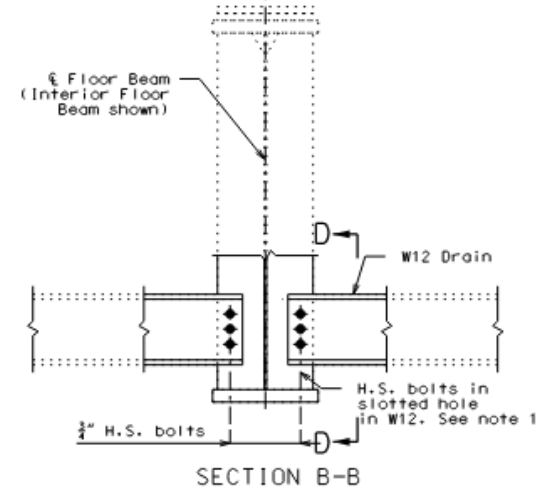




# Miscellaneous Steel Repairs



PARTIAL FRAMING PLAN OF DRAIN & INSPECTION WALKWAY SUPPORT  
See Sheet 18 for Detail A, Detail B, Section A-A and B-B



SECTION E-E THRU STEPS AT LO CHAMBERS

# Questions

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**JEFFERSON BARRACKS BRIDGE**

# JSPs

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**JEFFERSON BARRACKS BRIDGES**

# Job Special Provisions

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- E. Alternate Wearing Surface
- F. Special Consideration of Change Order and VE
- L. Weld Inspection and Repair
- M. Hanger Testing, Jacking, Tension Adjmt, and Cable Rplmt.
- O. Polyester Polymer Concrete Wearing Surface
- R. Metallizing Hanger Cables
- S. Floor Beam to Tie Girder Weld Inspection at Hanger Cable Castings
- T. MoDOT Access for Bridge Inspections and Barrier Sealing

## E. Alternate Wearing Surface

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- Contractor can select either PPC or LMC overlay for Bridge No. A18503.
- Contractor to bid only one alternative wearing surface.

# F. Special Consideration of Change Order & VE

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- Pay Item 502-99.07 Furnish Polyester Polymer Concrete Materials and
- Pay Item 505-99.05 Place Polyester Polymer Concrete Wearing Surface for Bridge No. A49364 cannot be substituted through value engineering.

# L. Weld Inspection and Repair

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- Pay Item 712-99.03 Weld Inspection – per linear foot
- Requires Certified NDE Inspectors and equipment (Submittal)
  - ASNT SNT-TC-1A NDE Certification
  - Level II or higher for Magnetic Particle Testing (MT)
  - Level II or higher for Ultrasonic Testing (UT) or Phase Array Ultrasonic Testing (PAUT)
  - Level III for MT and UT/PAUT for development of NDE test procedures

# L. Weld Inspection and Repair

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- Pay Item 712-99.03 Weld Inspection – per linear foot
  - Welds to be inspected are listed in drawings Sheets 13-16
  - Requires removal of paint prior to inspection
  - Requires use of grinders to verify the presence of a crack
  - Require MT to locate crack
  - Cracks to be marked and recorded in weld inspection drawings
  - Provide Weld Inspection Report (Submittal)



# L. Weld Inspection and Repair

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- Pay Item 712-99.03 Crack Removal – Grinding – per linear foot
  - Removal of cracks identified from Weld Inspection
  - Grind cracks using die grinder with carbide burr
  - Verify removal with NDE
  - NDE verification included with Crack Removal – Grinding
  - Cracks deeper than 3/16 inch to be paid as Weld Repair
  - Provide information of all cracks deeper than 3/16 inch (Submittal)

# L. Weld Inspection and Repair

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- Pay Item 712-99.03 Weld Repair – per linear foot
  - Provide welding plan and procedures (Submittal)
  - Removal of cracks that are deeper than 3/16 inch
  - Grind cracks using die grinder with carbide burr or cut-off wheel with carborundum wheel
  - Verify removal with NDE
  - NDE verification included with Weld Repair

# L. Weld Inspection and Repair

---

- Pay Item 712-99.03 Weld Repair – per linear foot
  - Provide welding plan and procedures (Submittal)
  - Removal of cracks that are deeper than 3/16 inch
  - Grind cracks using die grinder with carbide burr or cut-off wheel with carborundum wheel
  - Verify removal with NDE
  - NDE verification included with Weld Repair

# L. Weld Inspection and Repair

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- Pay Item 712-99.03 Weld Repair – per linear foot
  - Welding to be completed by AWS Certified Welder
  - Weld cracks
  - Preheat and post-heat welds
  - Protect welding consumables and unfinished welds
  - Provide NDE at completion and after weld is at ambient
  - As-built details of all defects removed (Submittal)

# M. Hanger Test., Jack., Ten. Adjmt, & Cable Rplmt.

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- Pay Item 712-99.02 Cable Tension Measurement
  - Prior to overlay work, the tension on all cables on the bridge are to be measured
  - Various NDE methods available to determine tensions
  - Complete re-measurement after overlay installed
  - Total of two (2) measurements per bridge with this pay item
  - Pay item does not include interim measurements associated with hanger replacement or hanger tension adjustments

# M. Hanger Test., Jack., Ten. Adjmt, & Cable Rplmt.

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- Pay Item 712-99.02 Cable Shoring System Installation, Cable Tension Adjustment
  - Where cables are designated in drawings to be removed, where Engineer requests adjustment in cable tension, or where weld indications are detected behind cable bracket
  - Includes design of temporary shoring system by Professional Engineer
  - 2 additional shoring installations have been included

# M. Hanger Test., Jack., Ten. Adjmt, & Cable Rplmt.

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- Pay Item 712-99.02 Cable Shoring System Installation, Cable Tension Adjustment
  - New cables specified for 6 hangers (24 cables total)
  - Long lead time item approaching one year
  - Cable to be removed will be spooled and saved

# O. PPC Wearing Surface

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- Pay Item 502-99.07 Furnish Polyester Polymer Concrete Material
  - Measured as actual volume of material completed in-place
- Pay Item 502-99.05 Place Polyester Polymer Concrete Wearing Surface
  - Measured as square yards to prepare, place and finish PPC



# R. Metallizing Hanger Cables

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- Pay Item 712-99.03 Metallizing Hanger Cables
  - Requires certified metallizing contractor
  - Requires certified inspector
  - Numerous mock-up requirements to verify that A) cable is not being damaged, B) cable surface is appropriately prepared, C) effectiveness of various abrasives, and D) metallized coating is applied to achieve durable results
  - Mock-up requires special test plates and comparable cable segment

# S. FB-TG Weld Inspect at Hanger Cable Castings

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- Complete the weld inspection (Pay Item 712-99.03 Weld Inspection) of the floor beam to tie girder welds on Bridge No. A1850 prior to shifting traffic to that structure.
- Includes all inspection and reporting requirements for Weld Inspection
- Purpose is to identify any weld cracks that travel behind hanger cable brackets.
- Other welds in Bridge No. A1850 can be inspected later.

# T. MoDOT Access Bridge Inspect. & Barrier Sealing

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- While each bridge is closed and prior to reopening, MoDOT will complete NBI and fracture critical bridge inspections
- Prior to reopening each bridge to traffic, MoDOT will complete the barrier sealing

# Questions?

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**JEFFERSON BARRACKS BRIDGES**