ODOT BRIDGE UPDATES

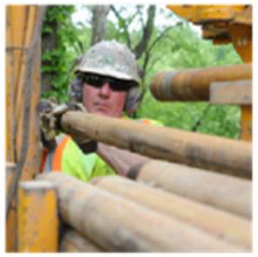












Sean Meddles – Administrator
Office of Structural Engineering

Ohio Department of Transportation

INTRODUCTION

- 1991 – 1992: ODOT D7 Summer Construction Intern

Department of Transportation

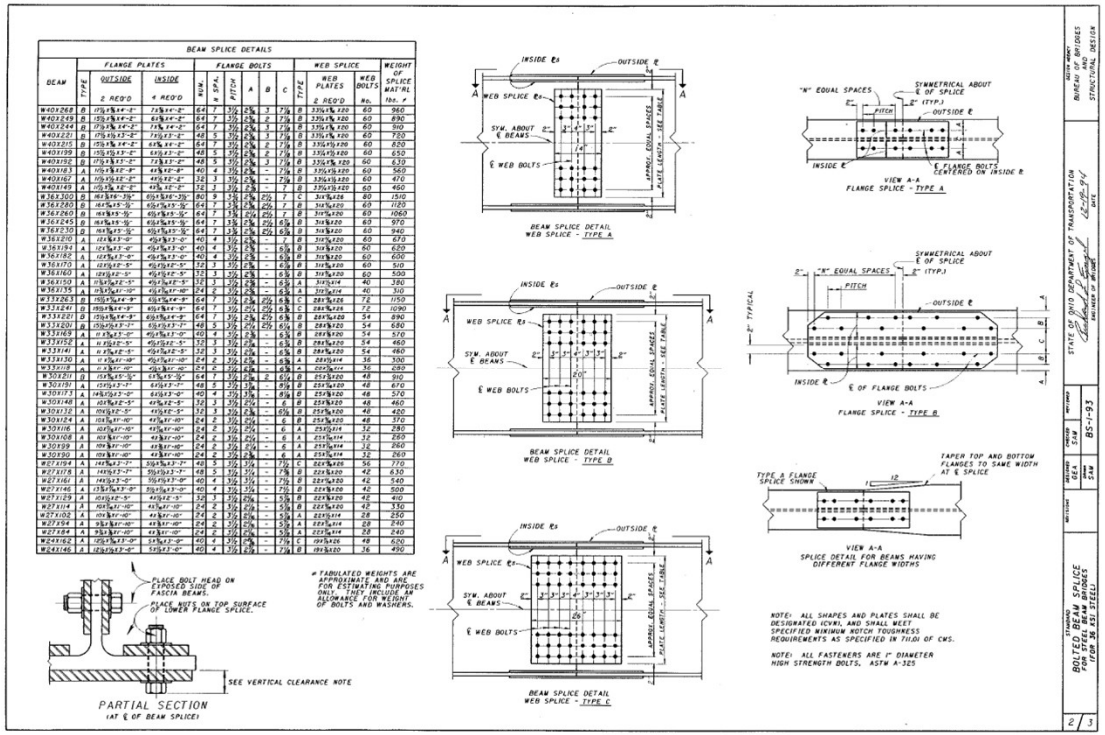
INTRODUCTION

- December 1992: Graduated tOSU
- January 1993: ODOT EIT

Department of Transportation

INTRODUCTION

- July 1993: ODOT Bridge Bureau – Design Squad



Department of Transportation

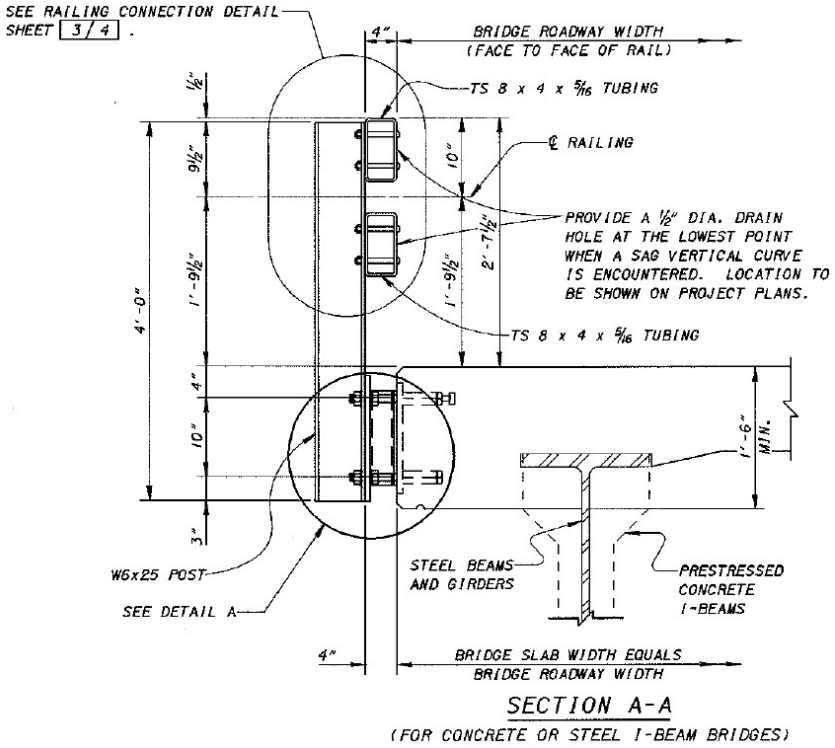
INTRODUCTION

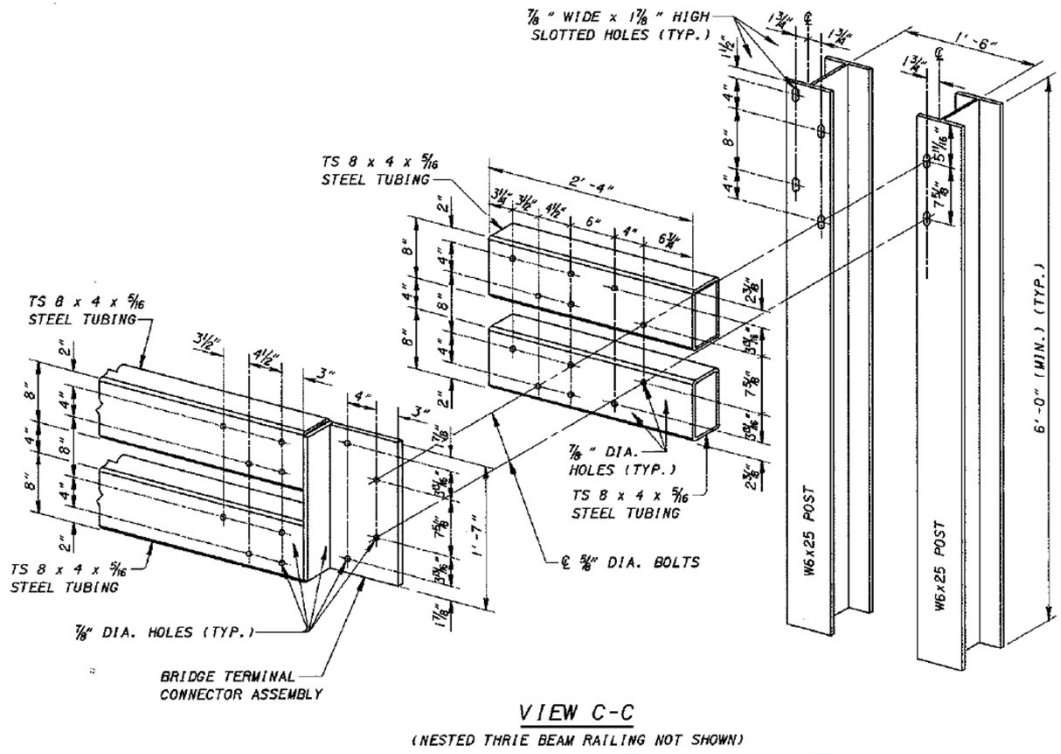
- 1995: ODOT Office of Production – Bridge Design

Ohio Department of Transportation

INTRODUCTION

- 1998: ODOT OSE – Bridge Standards Engineer

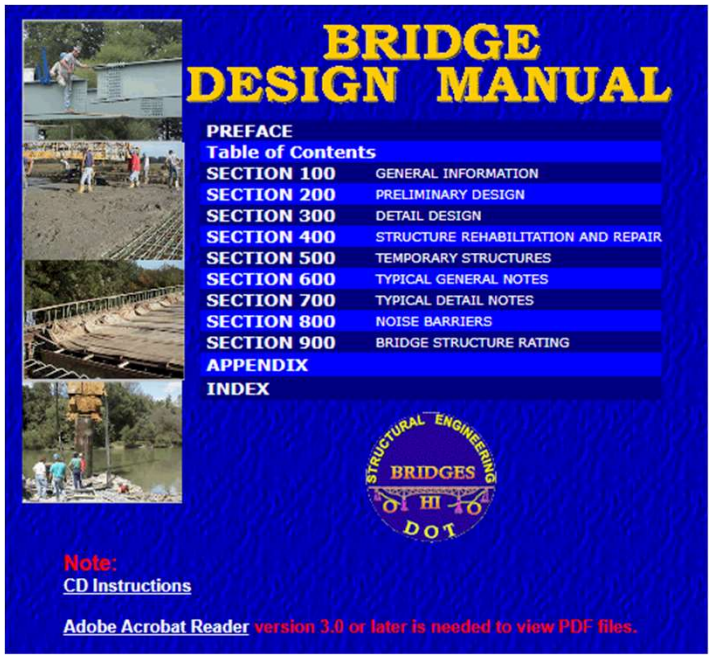


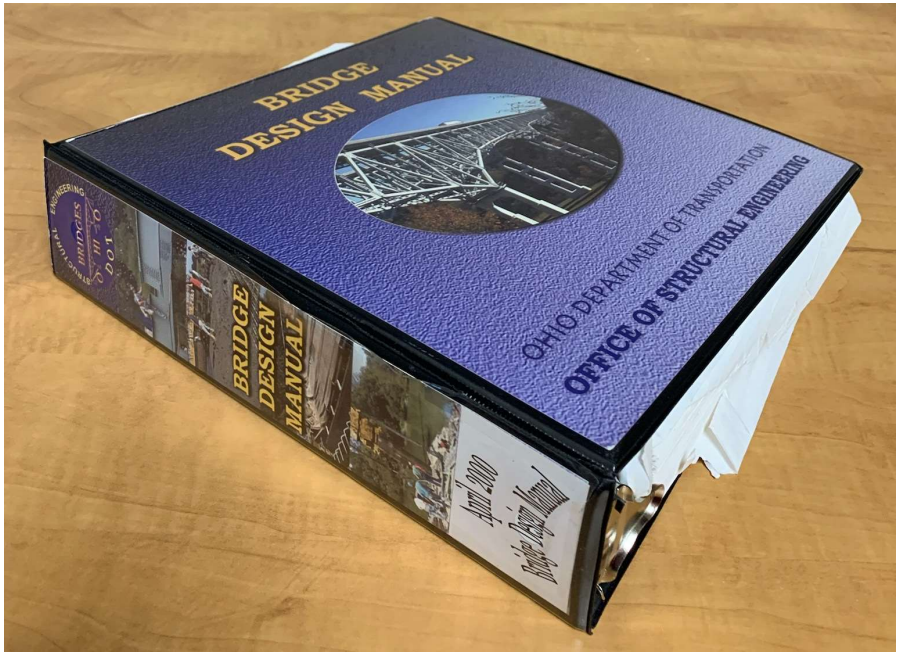


Department of Transportation

INTRODUCTION

- 2000 – ODOT BDM

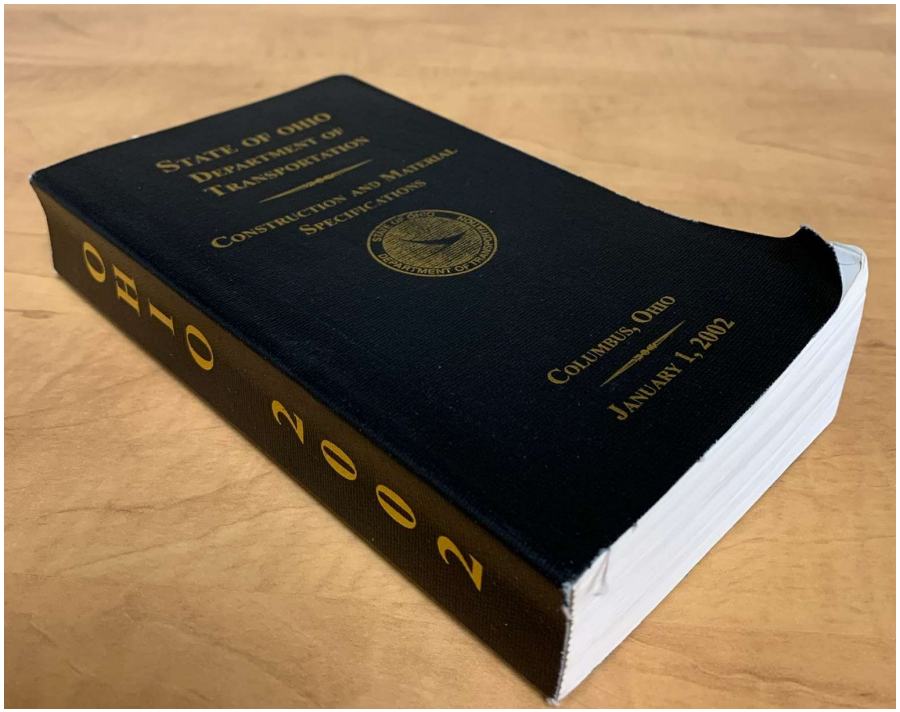




Department of Transportation

INTRODUCTION

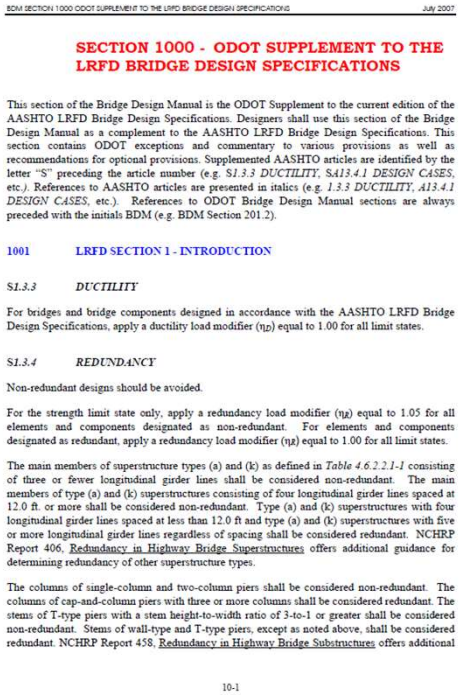
- 2001: Joined the C&MS Structures Committee



Department of Transportation

INTRODUCTION

- 2007: Implemented AASHTO LRFD Specifications



BDM SECTION 1000 ODOT SUPPLEMENT TO THE LRFD BRIDGE DESIGN SPECIFICATIONS July 2007

SECTION 1000 - ODOT SUPPLEMENT TO THE LRFD BRIDGE DESIGN SPECIFICATIONS

This section of the Bridge Design Manual is the ODOT Supplement to the current edition of the AASHTO LRFD Bridge Design Specifications. Designers shall use this section of the Bridge Design Manual as a complement to the AASHTO LRFD Bridge Design Specifications. This section contains ODOT exceptions and commentary to various provisions as well as recommendations for optional provisions. Supplemented AASHTO articles are identified by the letter "S" preceding the article number (e.g. *S1.3.3 DUCTILITY, SA13.4.1 DESIGN CASES*, etc.). References to AASHTO articles are presented in italics (e.g. *1.3.3 DUCTILITY, A13.4.1 DESIGN CASES*, etc.). References to ODOT Bridge Design Manual sections are always preceded with the initials BDM (e.g. BDM Section 201.2).

1001 LRFD SECTION 1 - INTRODUCTION

S1.3.3 *DUCTILITY*

For bridges and bridge components designed in accordance with the AASHTO LRFD Bridge Design Specifications, apply a ductility load modifier (η_D) equal to 1.00 for all limit states.

S1.3.4 *REDUNDANCY*

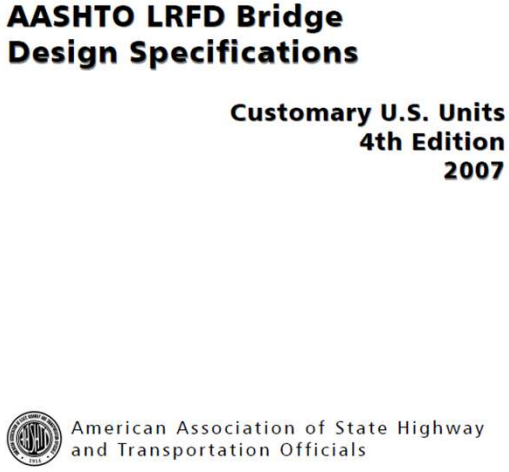
Non-redundant designs should be avoided.

For the strength limit state only, apply a redundancy load modifier (η_R) equal to 1.05 for all elements and components designated as non-redundant. For elements and components designated as redundant, apply a redundancy load modifier (η_R) equal to 1.00 for all limit states.

The main members of superstructure types (a) and (k) as defined in *Table 4.6.2.2.1-1* consisting of three or fewer longitudinal girder lines shall be considered non-redundant. The main members of type (a) and (k) superstructures consisting of four longitudinal girder lines spaced at 12.0 ft. or more shall be considered non-redundant. Type (a) and (k) superstructures with four longitudinal girder lines spaced at less than 12.0 ft and type (a) and (k) superstructures with five or more longitudinal girder lines regardless of spacing shall be considered redundant. NCHRP Report 406, Redundancy in Highway Bridge Superstructures offers additional guidance for determining redundancy of other superstructure types.

The columns of single-column and two-column piers shall be considered non-redundant. The columns of cap-and-column piers with three or more columns shall be considered redundant. The stems of T-type piers with a stem height-to-width ratio of 3-to-1 or greater shall be considered non-redundant. Stems of wall-type and T-type piers, except as noted above, shall be considered redundant. NCHRP Report 458, Redundancy in Highway Bridge Substructures offers additional

10-1



AASHTO LRFD Bridge Design Specifications

Customary U.S. Units
4th Edition
2007

American Association of State Highway and Transportation Officials

Department of Transportation

INTRODUCTION

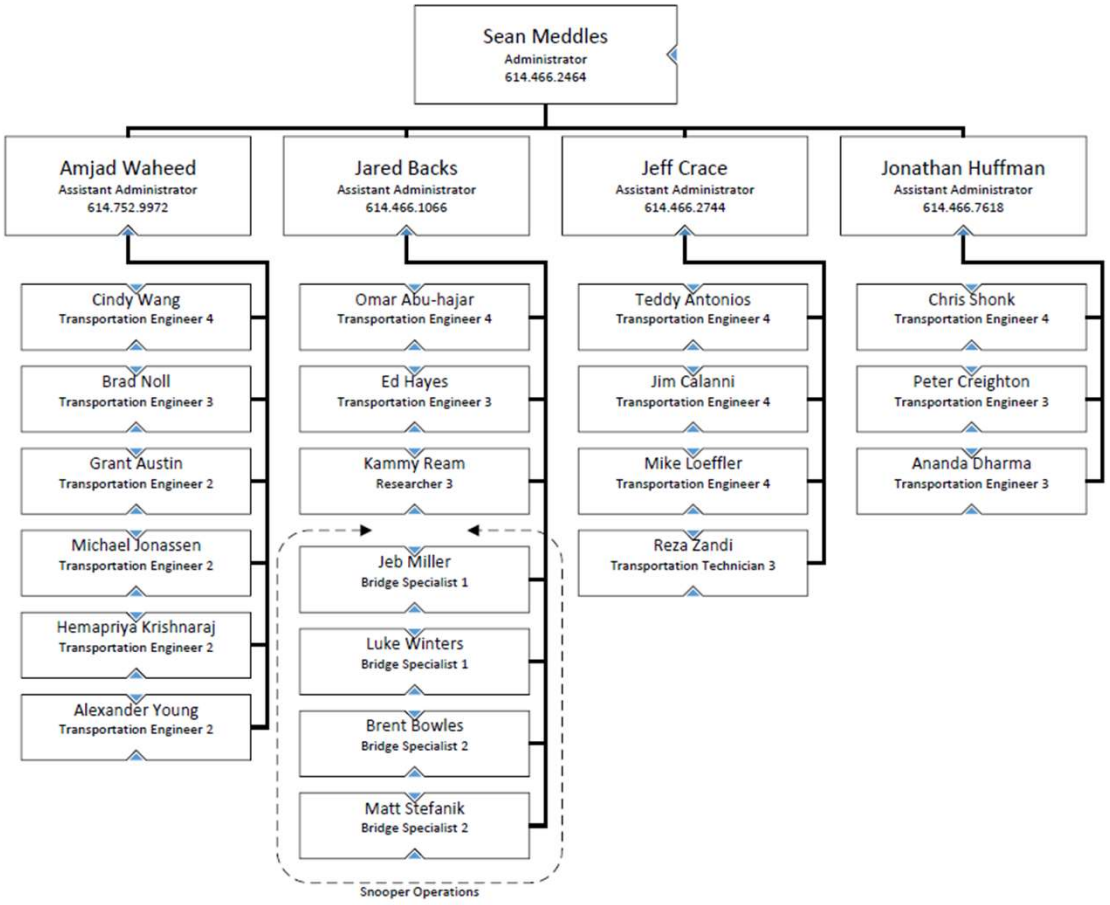
- 2011: Bridge Standards Section

INTRODUCTION

- April 2023: Hot Seat

Department of Transportation

OFFICE OF STRUCTURAL ENGINEERING



Department of Transportation

SNBI/NBIS UPDATE

NBIS requirements beginning: June 6, 2024

- Program manager needs 6 mo. inspection experience to also be a team leader
- NSTM (Fracture Critical) team leaders must have NSTM training
  - 3 girder superstructures no longer NSTMs
- Only 5 NHI courses will meet approved refresher training requirement
  - 3-day refresher, 2 week, 1 week for PEs, NSTM, UW
- Reduced/Extended inspection intervals
  - 72 mo./24 mo. UW, 12 mo. NSTM

SNBI/NBIS UPDATE

- March 15, 2024, through April 2024
  - Assetwise blackout to upgrade to SNBI version
  - Previous NBI and OBI data will be available
  - ODOT will prepopulate as much SNBI data as possible
- March 15, 2025
  - Last submittal using 1995 Coding Guide format
- March 15, 2026/2027
  - Submittals will be in SNBI format, but Coding Guide data can still be accepted through a translator
- March 15, 2028
  - All submitted bridge data must be in SNBI format

SNBI/NBIS UPDATE

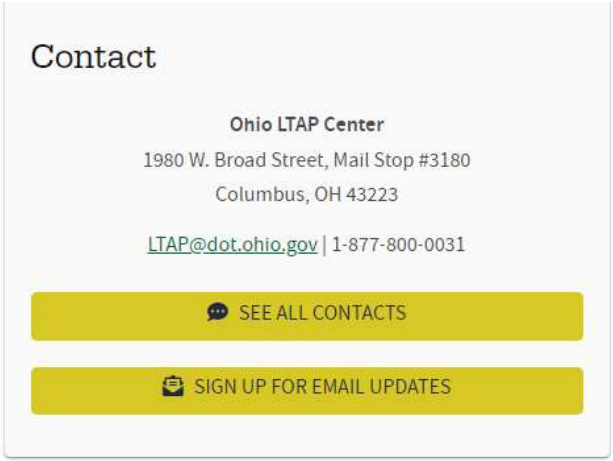
- Roughly 60% of SNBI fields can be transitioned from current data by ODOT
  - Includes 10’ – 20’ structures
- SNBI data collection already started with TEMP SNBI Form
  - Temp form values will be bulk imported to applicable fields
- Full SNBI data collection can start once Assetwise is updated
  - All NBIS bridges need SNBI data complete by March 2028

SNBI/NBIS

- All training advertisements will come from LTAP
- SUBSCRIBE TO LTAP EMAIL ALERTS!
  - www.transportation.ohio.gov/programs/ltap
  - Or google “LTAP Ohio”

OHIO LTAP | Local Technical Assistance Program

The mission of Ohio's Local Technical Assistance Program (LTAP) is to assist local governments in managing and maintaining a safe, cost-effective and environmentally sound transportation system by providing training and technical assistance in the areas of safety, workforce development, infrastructure management and organizational excellence.



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SNBI/NBIS

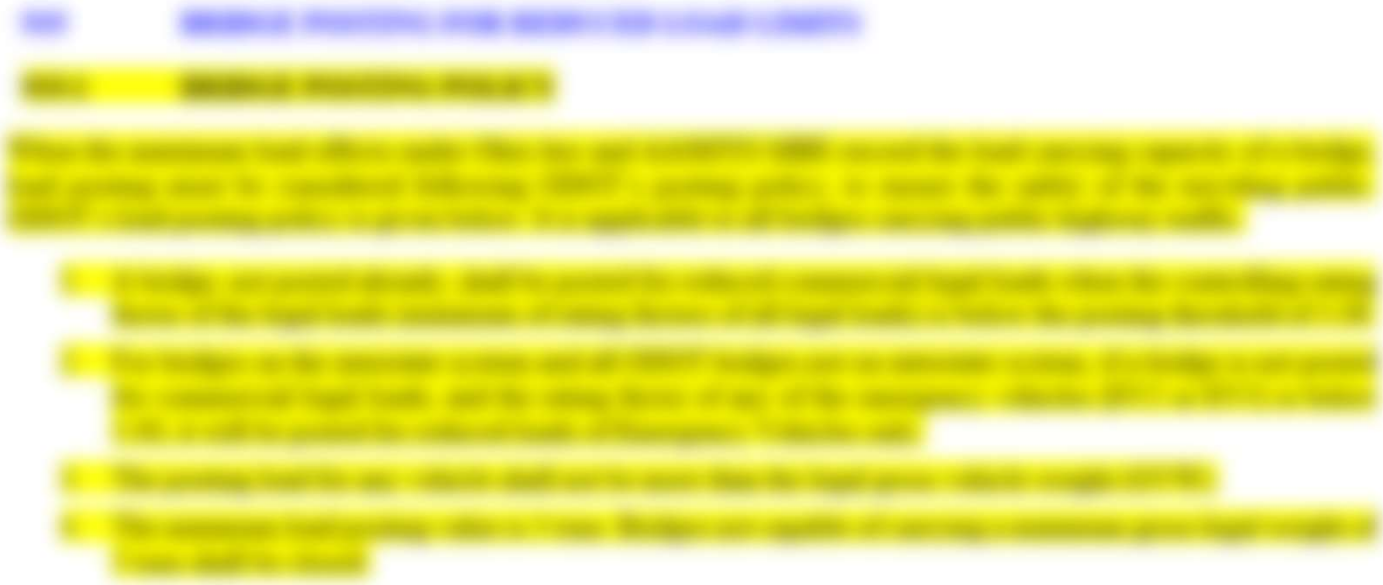
Send SNBI questions to the below email for official responses:

NBIS_SNBI_Questions@dot.gov

LOAD POSTING REVISION

January 19, 2024

BDM Section 900 Revision



Department of Transportation

LOAD POSTING REVISION

Ohio Revised Codes: 5577.042 & 5577.043

Applies to vehicles hauling:

- Coal, farm commodities, timber, solid waste, surface mining, hot mix asphalt material, concrete, manure, turf, sod, silage, chips, sawdust, mulch, bark, pulpwood, biomass and firewood

LOAD POSTING REVISION

- "…from the site where the material is first produced to the first place of delivery…"

- "…if any vehicles…do not exceed by more than 7.5% the gross vehicle weight provisions…and do not exceed the wheel or axle load limits by more than 7.5%, no penalty …shall be imposed"

LOAD POSTING REVISION

- "…do not apply to the operation of a vehicle…on either of the following:

  (1) A highway that is part of the interstate system

  (2) A highway, road or bridge that is subject to reduced maximum weights…"

LOAD POSTING REVISION

Ohio Revised Codes: 5577.044

"…a vehicle fueled solely by compressed natural gas or liquid natural gas or powered primarily by means of an electric battery may exceed by not more than 2000-lbs the gross vehicle weight…or the axle load limits…"

Note: **permitted on interstate system** but not highway, road or bridge with reduced limits

LOAD POSTING REVISION

"If Ohio's legal load models do not include the 7.5% allowance for non-Interstate, this posting policy will require load posting of bridges that have an RF in the range of 1.0 < RF < 1.075. I recommend you ask ODOT to clarify how they address this issue."

Lubin Gao, FHWA Senior Bridge Engineer - Load Rating

LOAD POSTING REVISION

Attempt #1:

ODOT concluded that Ohio's rating practice and bridge posting threshold are conservative enough to accommodate the sporadic over-weight allowance. No overall increase in legal loads for rating and posting across-the-board would be needed, because:

a) The changes in law impact only those vehicles which are transporting certain types of loads prescribed in the laws. Those vehicles are very few and doing short hauls (from the origination to the first point of delivery.)
b) ODOT's current load rating practice of multiple lanes loaded with the legal trucks is very conservative. The likelihood of presence of two or more vehicles carrying prescribed loads side-by-side on a bridge is extremely low.
c) When comparing AASHTO live load distribution factors for single versus multiple lanes, the single lane DF does not control.
d) AASHTO Manual of Bridge Evaluation recommends using lower load factors (1.30 vs 1.45; 11% lower) when ADTT is 1000 or less (Ref: Table 6A.4.4.2.3a-1), but ODOT uses more conservative load factor of 1.45 for all legal loads in rating analysis even though the number of trucks carrying loads prescribed in referred law are fewer.

LOAD POSTING REVISION

Response:

"…confirm that the LL factor 1.45 instead of 1.3 has been used for **all bridges in Ohio** and documented in (the) load rating policy manual."

Lubin Gao, FHWA Senior Bridge Engineer - Load Rating

In other words: All bridges in Ohio need to use the LRFR methodology.

LOAD POSTING REVISION – (SIDE STORY)

Ohio's Bridge Inventory:

- Total NBI Bridges = 28,806

  ODOT NBI Bridges = 10,579 (**≈ 5,000 not load rated***)

  Counties = 15,163 (**≈ 7,400 not load rated***)

  Muni's = 1,599

  Others = 1,465

* - Determined from AssetWise Rating Factors: SU5, SU6 & SU7

LOAD POSTING REVISION – (SIDE STORY)

2024 FHWA Plan of Corrective Action (PCA)

For non-compliance – NBI Metric #13 – Load Rating

Load ratings of all Specialized Hauling Vehicles (SHV's) for all NBI bridges in Ohio was not completed by: **December 31, 2022**

Goal:

Load rate all NBI, highway bridges for their safe load carrying capacities for all Ohio, AASHTO and emergency vehicle loads and complete the bridge postings, if needed by: **December 31, 2025**

LOAD POSTING REVISION – (SIDE STORY)

Penalty for non-compliance:

"…require the State to dedicate funds apportioned to the State under sections 119 and 133…to correct the noncompliance…"

23 USC §119 – National highway performance program

23 USC §133 – Surface transportation block grant program

Redirect programmed federal transportation funding to complete load rating

LOAD POSTING REVISION

Options available:

- LRFR methodology
  - Re-load rate entire inventory not already using LRFR
  - LRFR requires posting more often than LFR
- Add new vehicles
  - Dozens due to application of law to Gross Vehicle & Axle weight
  - Re-load rate **entire inventory**
- Change posting limit

LOAD POSTING REVISION

Solution: Change posting limit (BDM Section 919.1)

- A bridge, not posted already, shall be posted for reduced commercial legal loads when the **controlling rating factor** of the legal loads (minimum of rating factors of all legal loads) **is below 1.08**.
- Posted for not more than the legal GVW

BDM SECTION 401.4 – DESIGN EXCEPTIONS

Scope of Services – 4 types of bridge projects:

1. Load rating revision not required
2. Rigid Overlays
3. Superstructure Rehabilitation
4. Analysis of existing substructures & foundations

BDM SECTION 401.4 – DESIGN EXCEPTIONS

Scope Type 1: Load rating revision not required

914 WHEN LOAD RATING SHALL BE REVISED

The load rating of a bridge does not need to be revised when:

A_2. The change in the thickness of external wearing surface is less than 1/2-in.

B_2. The change in the dead load on a beam member is not more than 10-lbs/ft.

- Verify that the Load Rating for the bridge is current (i.e. contains RF's for: 2F1, 3F1, 5C1, Type 3, Type 3-3, Type 3S2, SU4, SU5, SU6, SU7, EV2, EV3, RPL 60T, & RPL 65T)
- BDM Section 201.1.2.2 – Proposed Structure Block: Live Load and FWS from previous Plan Set

BDM SECTION 401.4 – DESIGN EXCEPTIONS

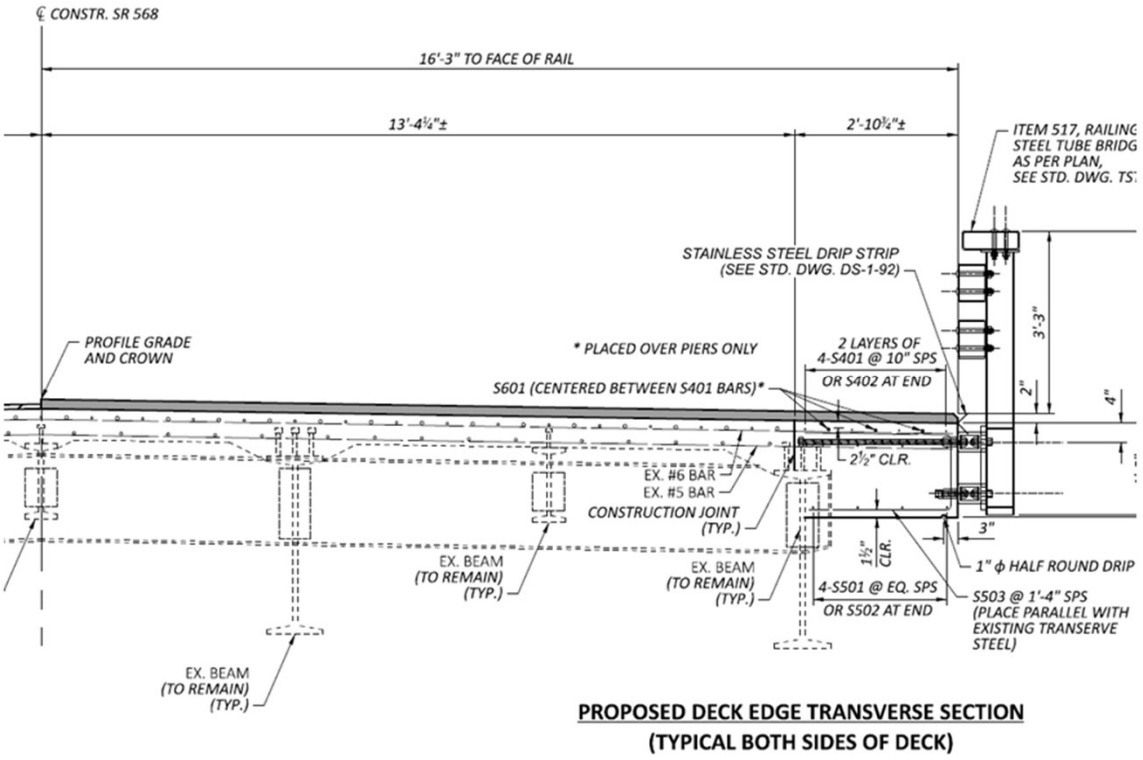
Scope Type 2: Rigid Overlay Project

- Design Exception required when:
  - Lowest operating level RF among Ohio commercial Legal Loads (2F1, 3F1, 5C1, Type 3, Type 3S2, Type 3-3, SU4, SU5, SU6 & SU7) < **1.08** or
  - Operating level RF for EV2 < **1.0** (EV3, HL-93 & HS-20 RF's excluded)
- RF's Based on highest result of LRFR/LFR methodology (Do not include an allowance for FWS)
- Proposed Structure Block: Live Load from previous Plan Set and FWS = 0-ksf

BDM SECTION 401.4 – DESIGN EXCEPTIONS

Scope Type 2: Example

- Rigid Overlay/New Deck Edge/TST-2-21
- 5 – 70’-0” Spans
- 4 Continuous Girders
- Floor beams supporting:
- 3 Stringer lines
- **Governing RF’s < 1.0**
- Girder bottom flange unbraced length = 70-ft



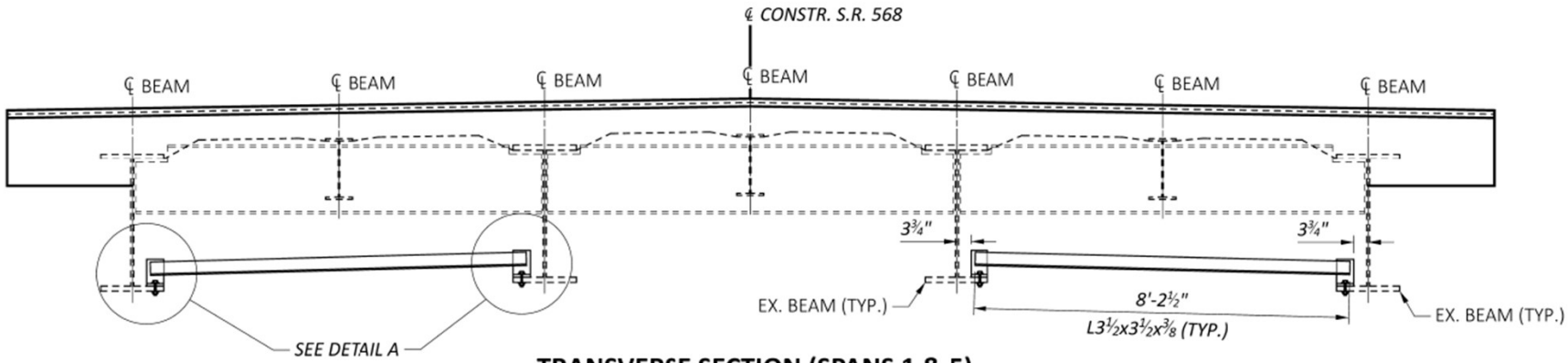
PROPOSED DECK EDGE TRANSVERSE SECTION
(TYPICAL BOTH SIDES OF DECK)

Department of Transportation

BDM SECTION 401.4 – DESIGN EXCEPTIONS

Scope Type 2: Example

- Solution: Bottom flange strut in outer girder bays
- Governing LRFR RF = 1.26 (SU7)
- No Design Exception Required



TRANSVERSE SECTION (SPANS 1 & 5)

Department of Transportation

BDM SECTION 401.4 – DESIGN EXCEPTIONS

Scope Type 3: Superstructure Rehabilitation

- Examples: Deck replacement, superstructure replacement & widenings
- Required when the LRFR **INVENTORY** level rating factor for HL-93 < 1.0
- Include allowance for FWS in Load Rating: 0.06-ksf for bridges carrying >45-mph NHS routes
  0.00-ksf for all others
- BDM Section 201.1.2.2 – Proposed Structure Block: Live Load and FWS from Approved Design Exception
- Examples: Live Load: 80% HL-93
  FWS: 0.0-ksf
- Note: 80% HL-93 = 80% of the load effects of the HL-93 notional loading
  Not 80% of design truck, 80% design tandem, 80% design lane, 80% multiple truck, etc.

BDM SECTION 401.4 – DESIGN EXCEPTIONS

Scope Type 3: Example

SPECIAL ASSUMPTIONS & COMMENTS	Ramp W-N Deck replacement of an existing five span continuous steel girder bridge. New composite reinforced deck made composite with existing 36 ksi girders. Loading: HL93 with 0.06 ksf Future Wearing Surface included. Controlling Girder: Exterior Girder 4 at 0.10 L Span 4. Limit State: Strength I Flexure Includes 2.0% section loss applied to the bottom flange thickness of each girder as per inspection report. Also includes bolt holes in bottom flange from lateral bracing retrofits in Span 3 in Bay 2 between Girder 2 and Girder 3.
	Please type or select on right using drop down arrow
LOAD RATING PURPOSE:	2 - Rehabilitation
GENERAL APPRAISAL (0-9):	5
LOAD RATING SOFTWARE:	3 - AASHTO BrR
SOFTWARE VERSION:	7.2.0.3001
ROUTINE PERMIT LOAD (RPL):	N - Agency doesnot issue routine permits
RATING SOURCE:	1 - Plan information available for load rating analysis
LOAD RATING METHOD:	LRFR - Load & Resistance Factor Rating (RF) - Code 8
DESIGN LOADING:	A - HL93

STRUCTURE RATING SUMMARY

OHIO & AASHTO LEGAL VEHICLES

Legal Load	GVW (Tons)	No of Axles	Rating Factor RF	Safe Weight (Tons)
2F1	15	2	3.027	15.00
3F1	23	3	2.047	23.00
5C1	40	5	1.834	40.00
Type 3	25	3	1.975	25.00
Type 3-3	40	6	1.818	40.00
Type 3S2	36	5	1.773	36.00
SPECIALIZED HAULING VEHICLES (SHV)				
SU4/4F1	27	4	1.791	27.00
SU5	31	5	1.610	31.00
SU6	34.75	6	1.518	34.75
SU7	38.75	7	1.443	38.75
EMERGENCY VEHICLES (EV) *Check box if rating for EV3* ☑				
EV2	28.75	2	1.676	28.75
EV3	43	3	1.226	43.00
Controlling Legal Load RF			145%	1.45

Design Inventory and Operating Ratings

Loading Type	Rating by RF: Inventory	Operating
HL93 Loading	0.778	1.008
Recommendation	No Load Posting is Recommended	
Sign Posting Recommendation:		

Permit Load (PL) Analysis (optional)

Loading Type	GVW (Tons)	No of	Rating Factor	Safe Load (Tons)
PL 60T	60	6	1.349	80.94
PL 65T	65	7	1.049	68.19
PL Analysis Method	Load & Resistance Factor Rating (LRFR)			

BDM SECTION 401.4 – DESIGN EXCEPTIONS

Scope Type 4: Foundation/Substructure analysis

- Required when the LRFD capacity-to-demand ratio < 1.0

$$\frac{C}{D} = \frac{\phi R_n}{\sum \eta_i \gamma_i Q_i}$$

- Include allowance for FWS: 0.06-ksf for bridges carrying >45-mph NHS routes
  0.00-ksf for all others
- BDM Section 201.1.2.2 – Proposed Structure Block: Live Load and FWS from Approved Design Exception
- Examples: Live Load: 80% HL-93
  FWS: 0.0-ksf
- Note: 80% HL-93 = 80% of the load effects of the HL-93 notional loading
  Not 80% of design truck, 80% design tandem, 80% design lane, 80% multiple truck, etc.

BDM SECTION 401.4 – DESIGN EXCEPTIONS

Scope Type 4: Example

Department of Transportation

BDM Section 305.3.5.8 – Battered Piles

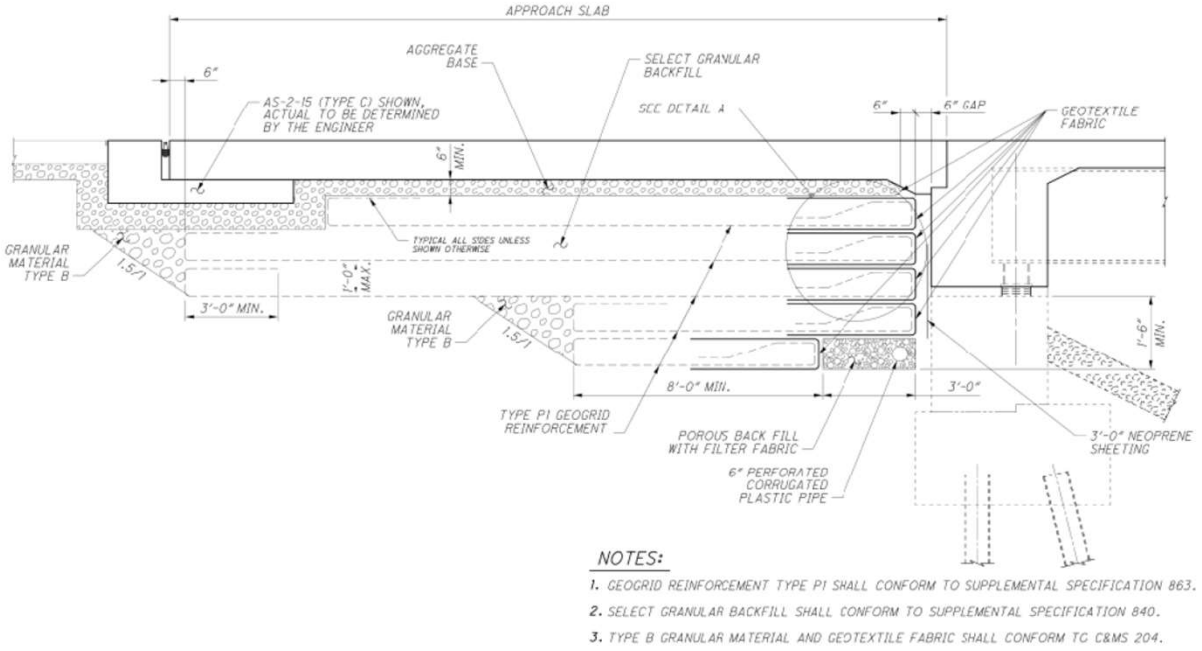
305.3.5.8 BATTERED PILES

Only use battered piles if a *p-y* analysis in accordance with BDM Section 305.1.2 predicts excessive deflection or inadequate fixity, such that the piles fail to meet the serviceability requirements of BDM Section 305.1.3.

C305.3.5.8

Battered piles are not preferred, as they are more expensive and difficult to construct than vertical deep foundation elements.

BDM Section 306.2.2.6.a – Semi-Integral Abutments with Reinforced Embankment



Department of Transportation

BDM Section 306.2.2.6.a – Semi-Integral Abutments with Reinforced Embankment

- Structure is dog-legged OR the curvature effects may be ignored in accordance with AASHTO 4.6.1.2.4b.
- The design utilizes a fixed pier.
- The superstructure shall also have an expansion length not greater than 265-ft. Determine the expansion length according to BDM Section 309.6.3.

Do not specify diaphragm guides (SICD-2-14) when utilizing a semi-integral abutment with reinforced embankment.

BDM Section 406.1 – Adhesive Anchors/Dowels

- Do not specify adhesive anchors/dowels for:

A. Deck edge replacement for deck on beam bridges:

   The preferred repair would be to reuse the existing transverse deck steel in the deck edge replacement.

B. Replacing a concrete railing on an existing deck

   The preferred repair would be to rebuild the deck edge and build the railing per the applicable standard.

BDM Section 406.1 – Adhesive Anchors/Dowels

- Do not specify adhesive anchors/dowels for:

C. Retrofitting an abutment with a diaphragm guide.

The preferred repair would be to remove the existing abutment concrete with a jack hammer while leaving the existing reinforcing and placing the diaphragm reinforcement around the existing reinforcement. Since SICD-2-14 utilizes a closed loop, solutions that use 2 U-shape bars or headed rebar may help with placing the new reinforcing around the existing reinforcing steel.

BDM QUARTERLY UPDATES

BDM Section 406.1 – Adhesive Anchors/Dowels

- Design adhesive anchor/dowel systems in accordance with AASHTO LRFD 5.13.
- Do not use for constant tension if factored load exceeds 15% anchor's capacity
- Do not use for shear if factored load exceeds 30% anchor's capacity

BDM QUARTERLY UPDATES

BDM Section 406.1 – Adhesive Anchors/Dowels

- Do not use adhesive anchors for backwall replacements when the height exceeds 5-ft.
- Specify anchor systems accepted under ICCES AC308
- Use galvanized or uncoated steel reinforcement for anchoring

BDM QUARTERLY UPDATES

BDM Section 406.1 – Adhesive Anchors/Dowels

- List a minimum of two adhesive systems in the Plans
- Provide factored tensile and shear loads in the Plans

BDM QUARTERLY UPDATES

Standard Bridge Drawing Updates

- A-1-20
- BR-2-15
- CPA-1-08
- CS-1-24
- DS-1-92
- EXJ-4-87
- EXJ-5-93
- EXJ-6-17
- GSD-1-19
- ICD-1-20
- ICD-2-18
- SB-1-24
- SICD-1-21

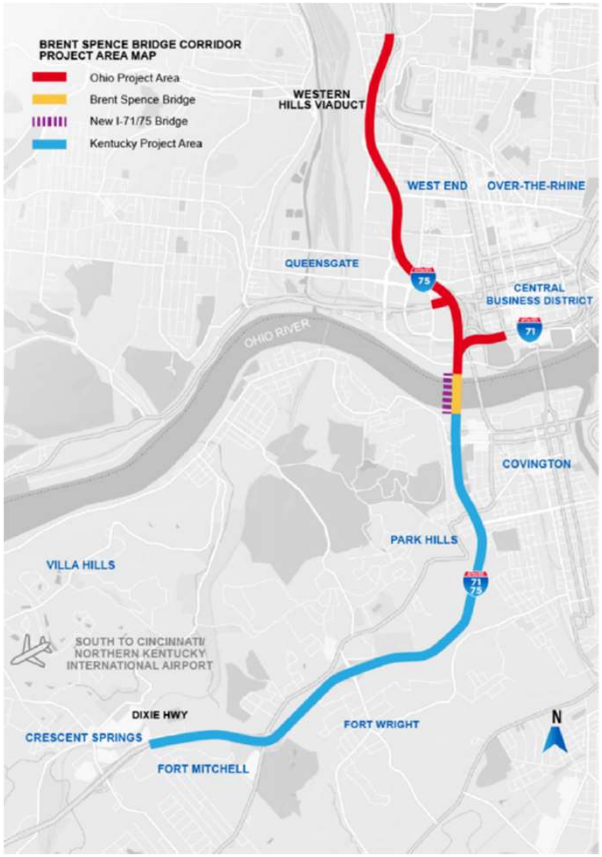
BDM QUARTERLY UPDATES

Standard Bridge Drawing Updates - Highlights

- Removed battered pile details
- Added TST-2-21 details
- Thickened slab edges for TST-2-21
- Updated concrete bridge railing details

PROJECTS AROUND OHIO – BRENT SPENCE BRIDGE

- Estimate: $2B (Ohio); $1.6B (KYTC)
- Federal Grant: $1.635B
- Interstate 71/75 will utilize new bridge
- Local traffic will utilize existing bridge
- Walsh/Kokosing Joint Venture
- 63 total bridges (43 in Ohio)
- 2030 Completion



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PROJECTS AROUND OHIO – BRENT SPENCE BRIDGE

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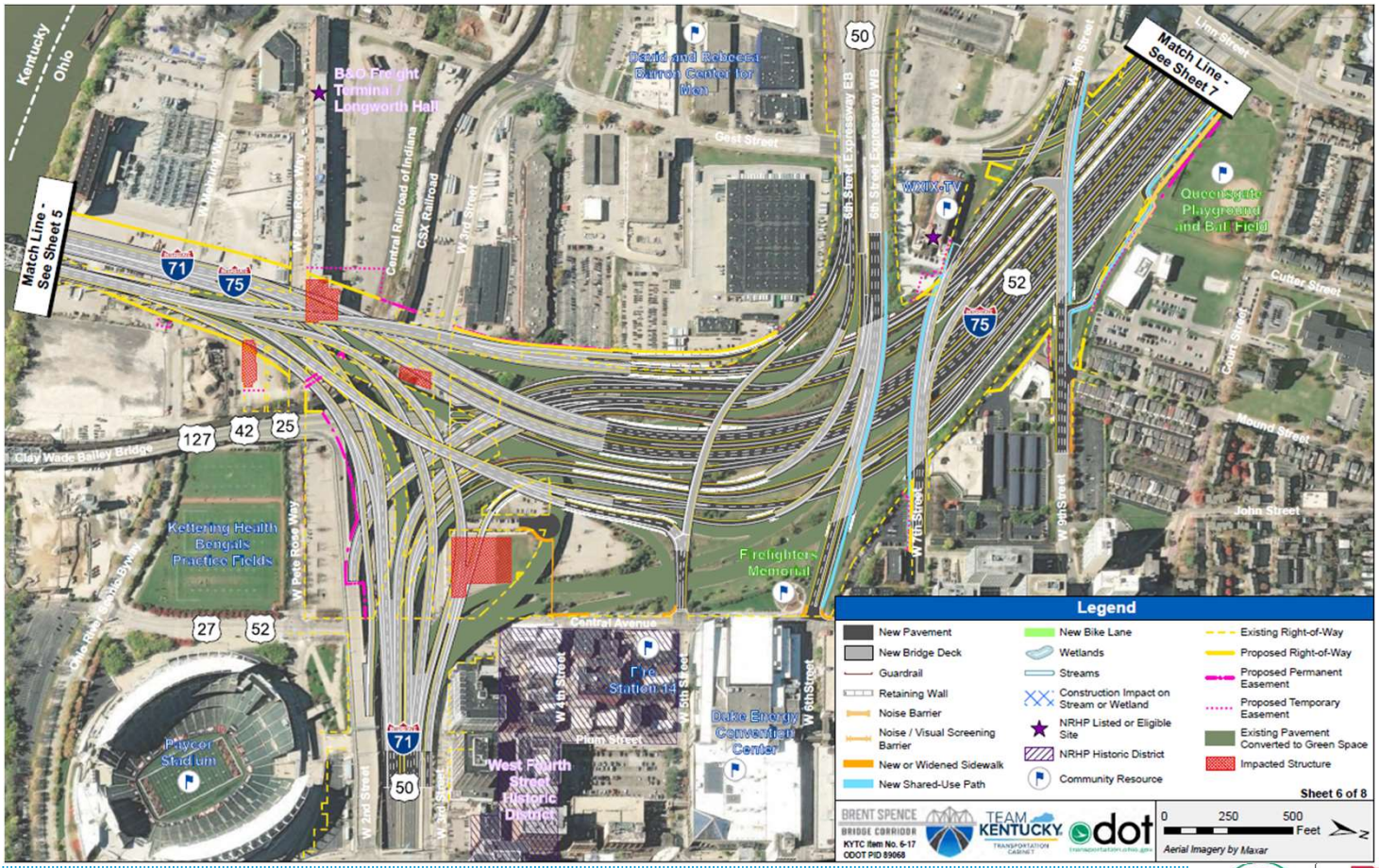
PROJECTS AROUND OHIO – BRENT SPENCE BRIDGE



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PROJECTS AROUND OHIO – BRENT SPENCE BRIDGE

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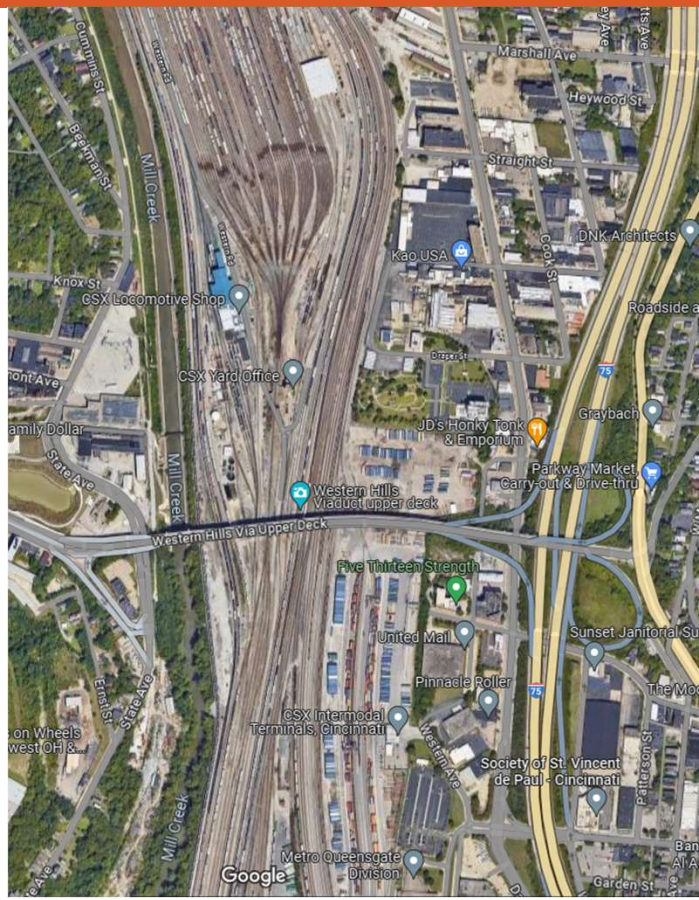
PROJECTS AROUND OHIO – WESTERN HILLS VIADUCT

- Estimate: $398M
- Construction Manager at Risk (CMAR)
- Walsh/Kokosing Joint Venture
- TY Lin (Designer)
- Kelly McNutt Consulting (ICE)
- 2030 Completion
- 55,000 vpd



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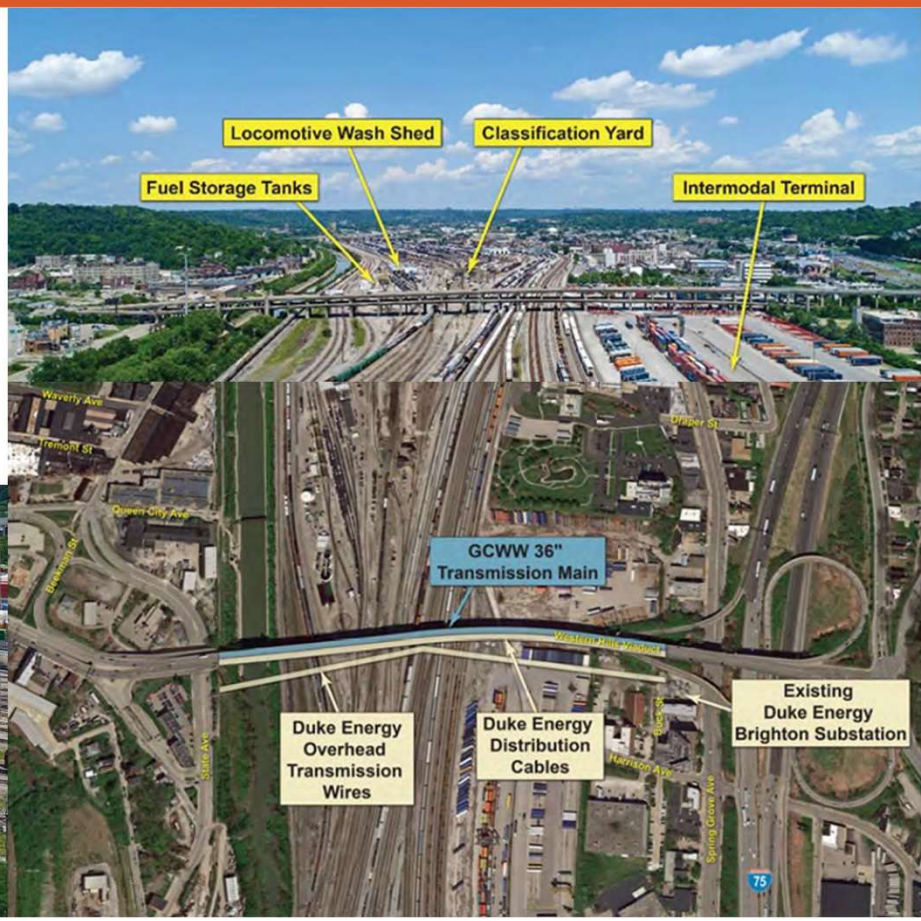
PROJECTS AROUND OHIO – WESTERN HILLS VIADUCT

CMAR Scope

- Build new bridge
- Demolish existing bridge
- Coordinate with RR's/Utilities



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PROJECTS AROUND OHIO – WESTERN HILLS VIADUCT

Railroad impacts

- CSX Queensgate Railyard: 5-mile long; 70-miles track; one of the largest rail facilities in North America
- Hump yard; locomotive shop; car shop; CSX Intermodal Yard; CSX regional engineering;
- NS owns track in yard
- Only Thanksgiving & Christmas available for whole railyard closure

PROJECTS AROUND OHIO – WESTERN HILLS VIADUCT

Structure Type – Extradosed

- Single deck
- Eight travel lanes; 4 each direction
- Multi-use path (South side)
- Sidewalk (North Side)
- Two sets of cable-stay towers
- Four piers in railyard
- 560-ft main span

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PROJECTS AROUND OHIO – WESTERN HILLS VIADUCT

Structure Type – Extradosed

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PROJECTS AROUND OHIO – SUM-8-0199 L/R

- Award: $157.6M (04/24/2023)
- Ruhlin-Great Lakes Joint Venture
- MS Consultants/HNTB (Designer)
- 2028 Completion
- 6 Span, Composite Hybrid Steel Girder
- 260’-333.5’-340’-240’-230’-196’
- Over Little Cuyahoga River Valley
- Construction Method - Launching

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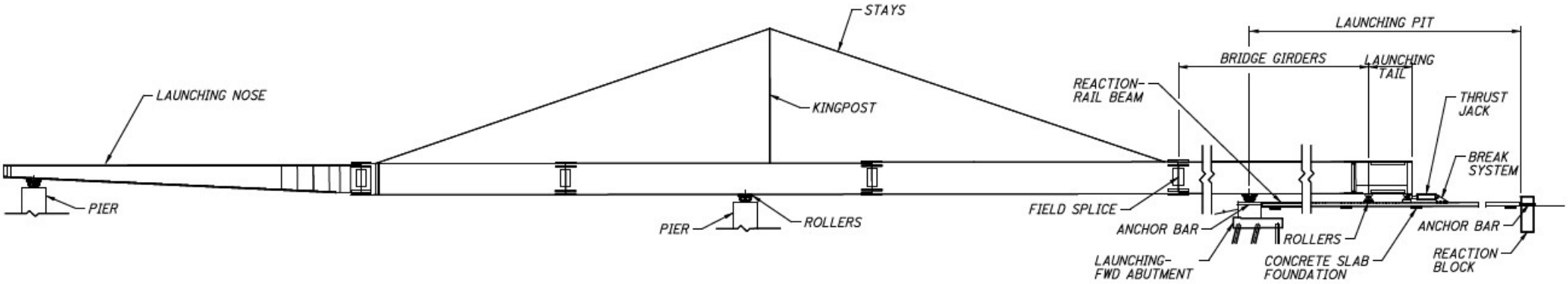
PROJECTS AROUND OHIO – SUM-8-0199 L/R

- Launching System:



LAUNCHING SYSTEM - SCHEMATIC PROFILE

LAUNCHING TAIL ASSEMBLY

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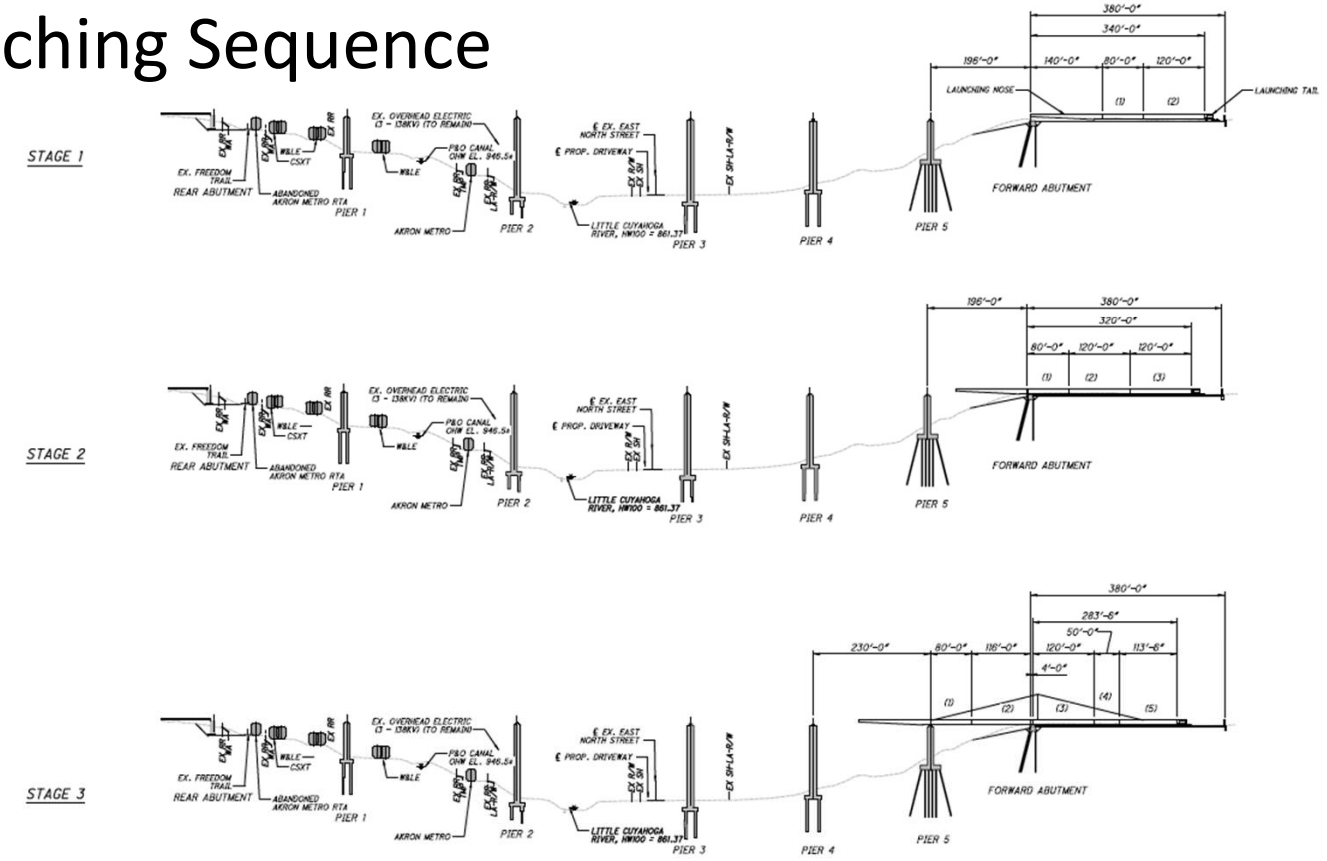
PROJECTS AROUND OHIO – SUM-8-0199 L/R

- Launching Sequence



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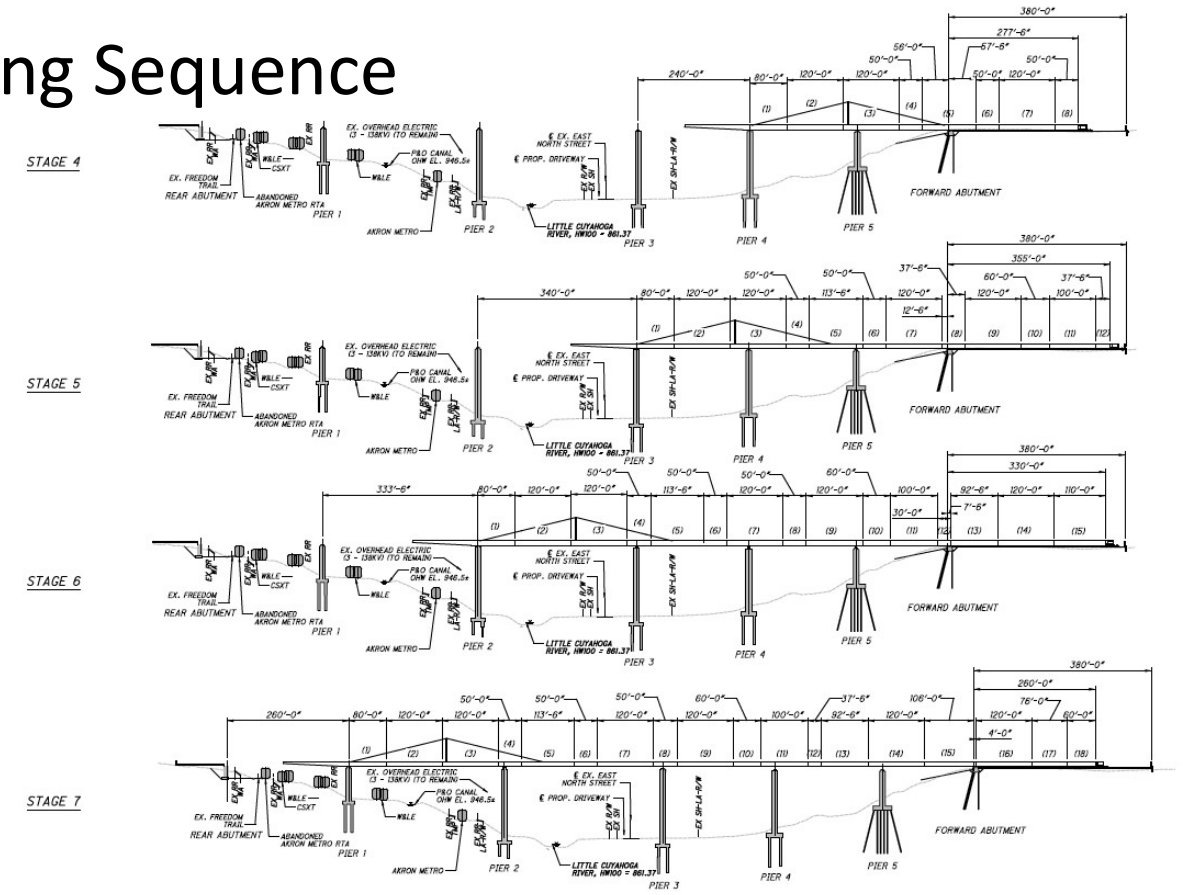
PROJECTS AROUND OHIO – SUM-8-0199 L/R

- Launching Sequence



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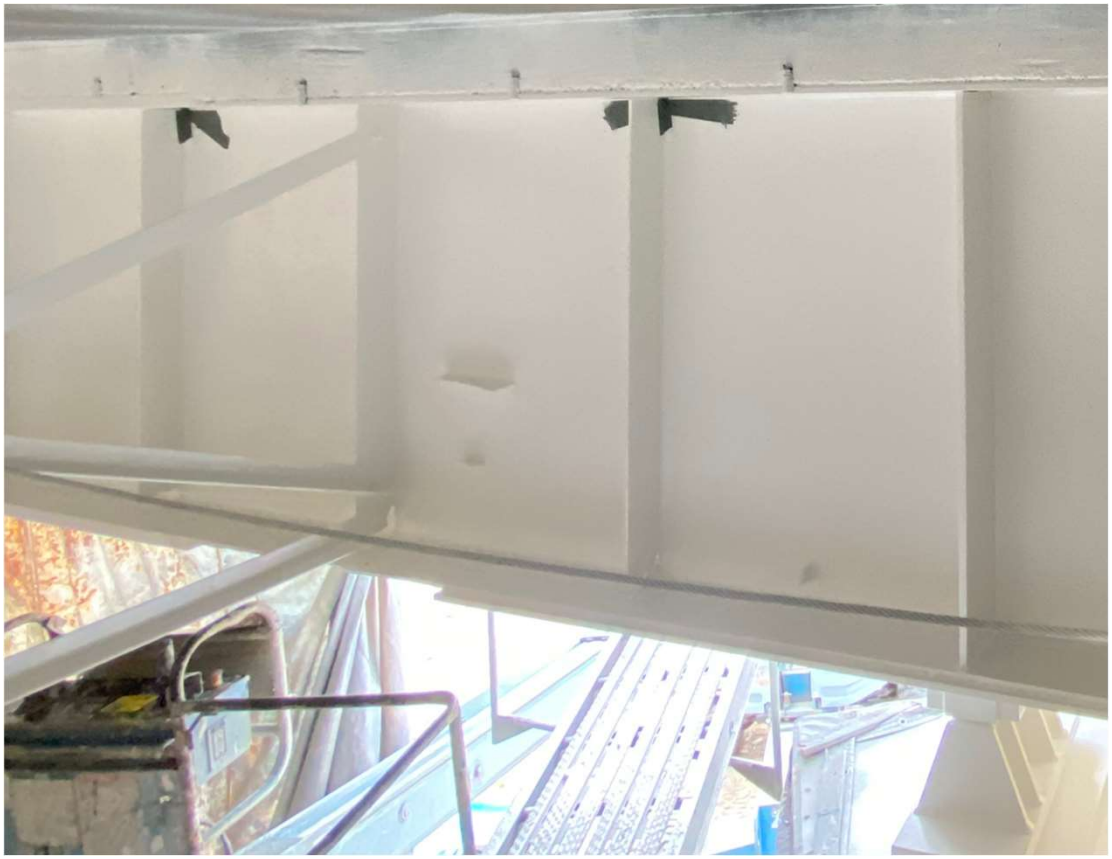
BRIDGE DAMAGE AROUND OHIO – STA-77-0912

- Award: $56.2M (06/27/19)
- Beaver Excavating Co.
- Gannet Fleming (Designer)
- Replace Hinges/Re-deck/New pier caps/FRP column wraps/Fatigue retrofit
- Cracks discovered at top of stiffeners

BRIDGE DAMAGE AROUND OHIO – STA-77-0912



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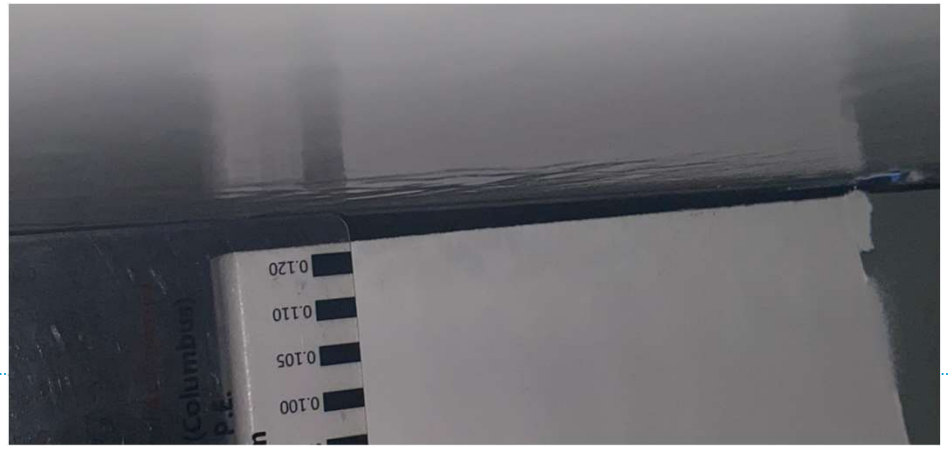
BRIDGE DAMAGE AROUND OHIO – STA-77-0912



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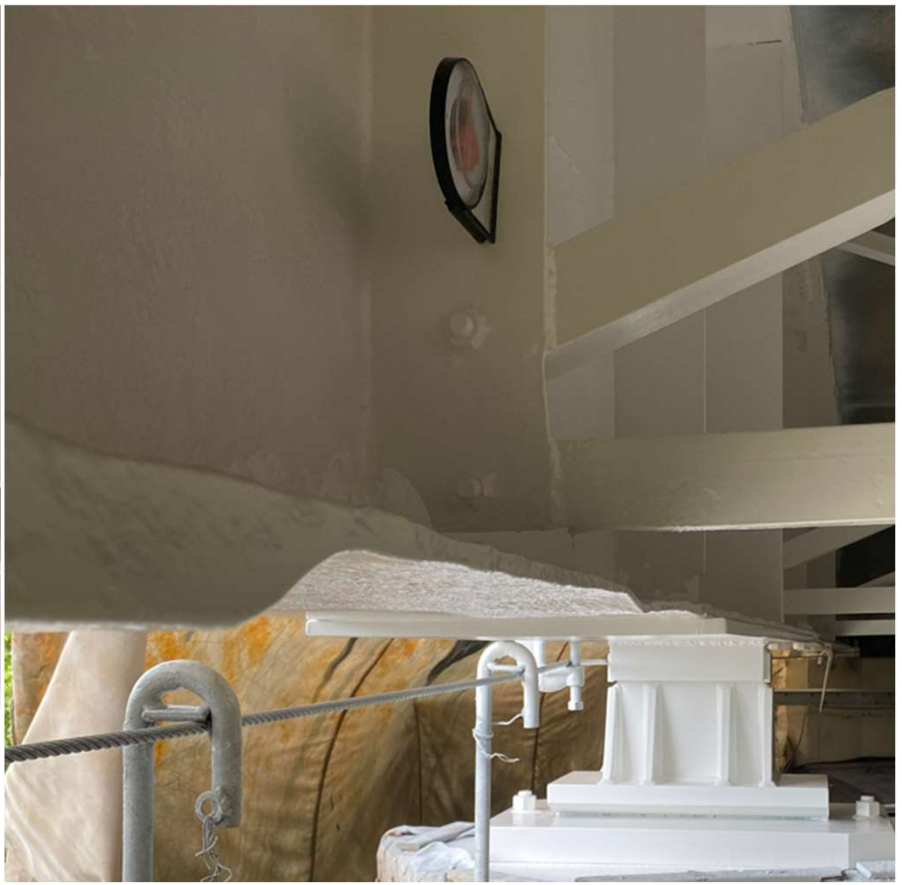
BRIDGE DAMAGE AROUND OHIO – STA-77-0912



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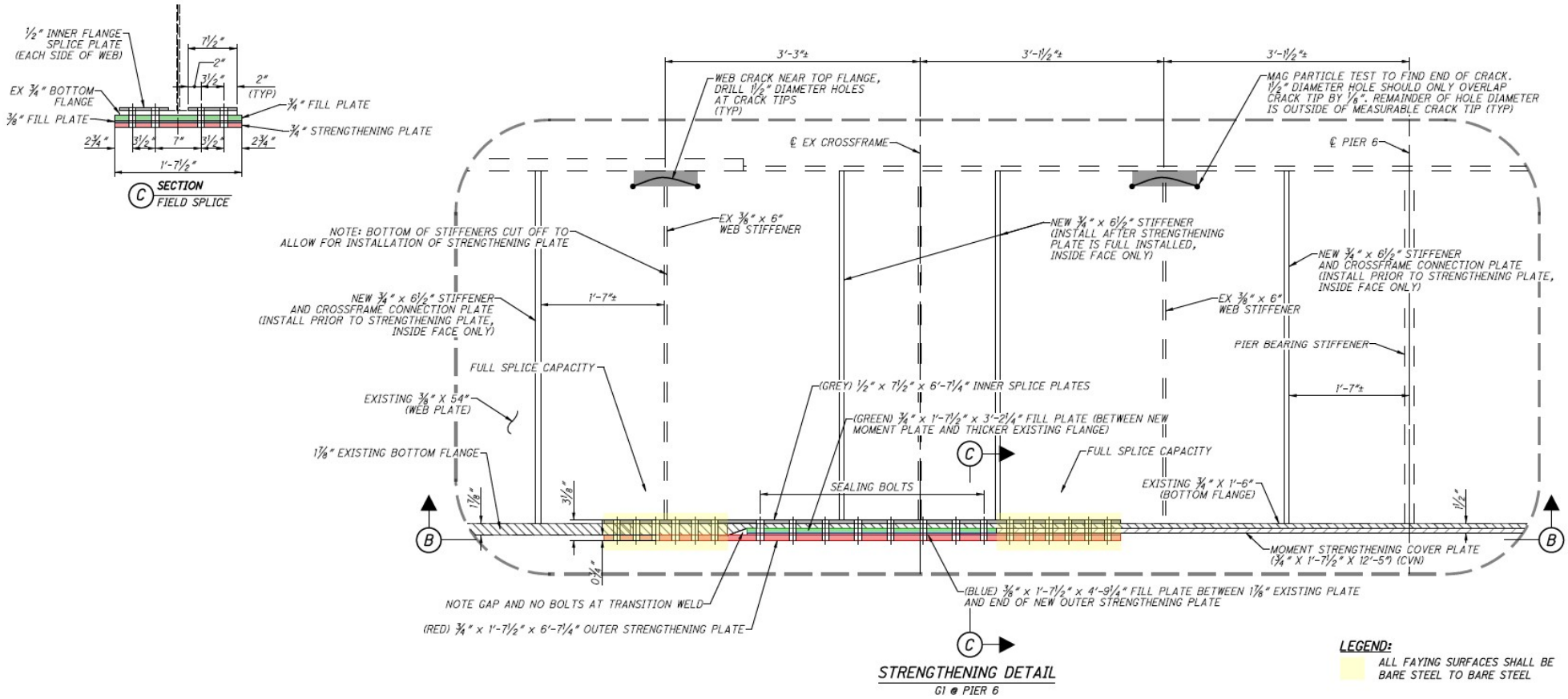
BRIDGE DAMAGE AROUND OHIO – STA-77-0912



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BRIDGE DAMAGE AROUND OHIO – WOO-75-2993

- Award: $7.2M (11/17/23) Design-Build
- Beaver Excavating Co.
- Bridge Rehabilitation: Re-deck/Bearing reset/Semi-integral conversion/widening
- Completion: 05/31/25
- Collision Damage

BRIDGE DAMAGE AROUND OHIO – WOO-75-2993

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BRIDGE DAMAGE AROUND OHIO – WOO-75-2993

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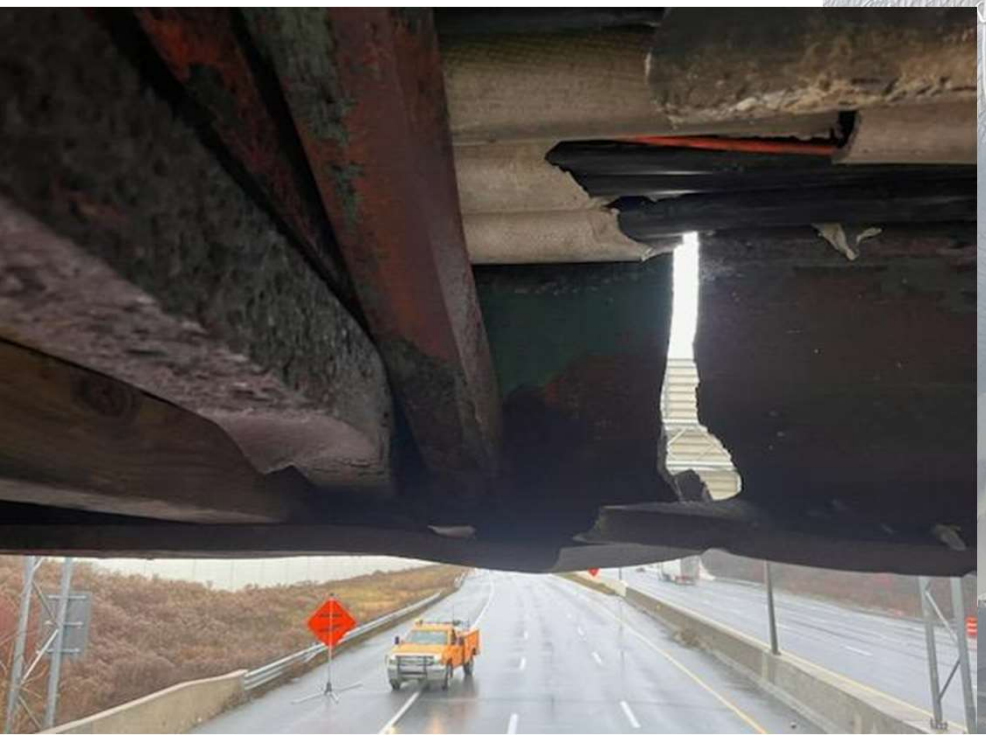
BRIDGE DAMAGE AROUND OHIO – FRA-70-4TH STREET

Collision Damage – 01/06/24



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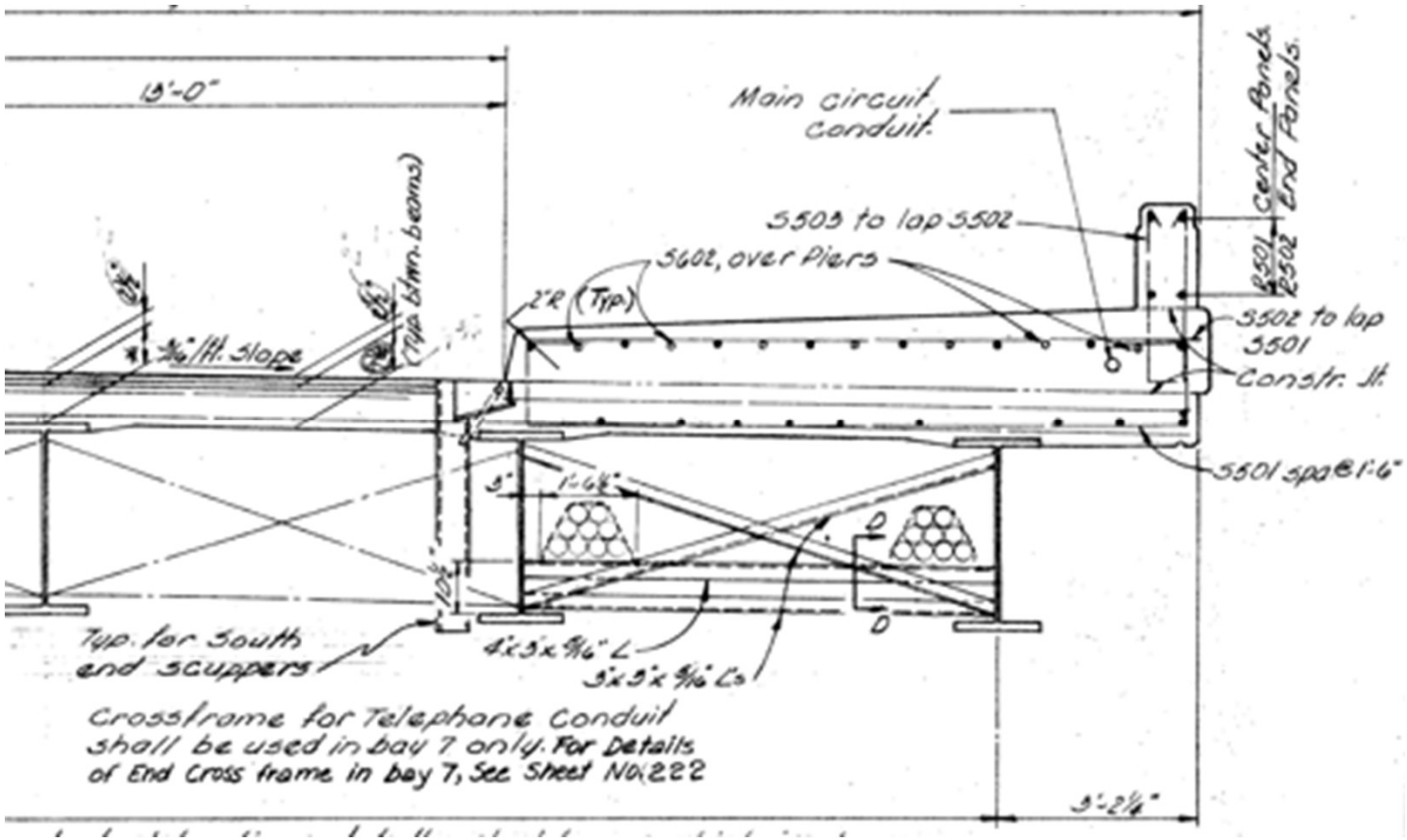
BRIDGE DAMAGE AROUND OHIO – FRA-70-4TH STREET



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BRIDGE DAMAGE AROUND OHIO – FRA-70-4TH STREET

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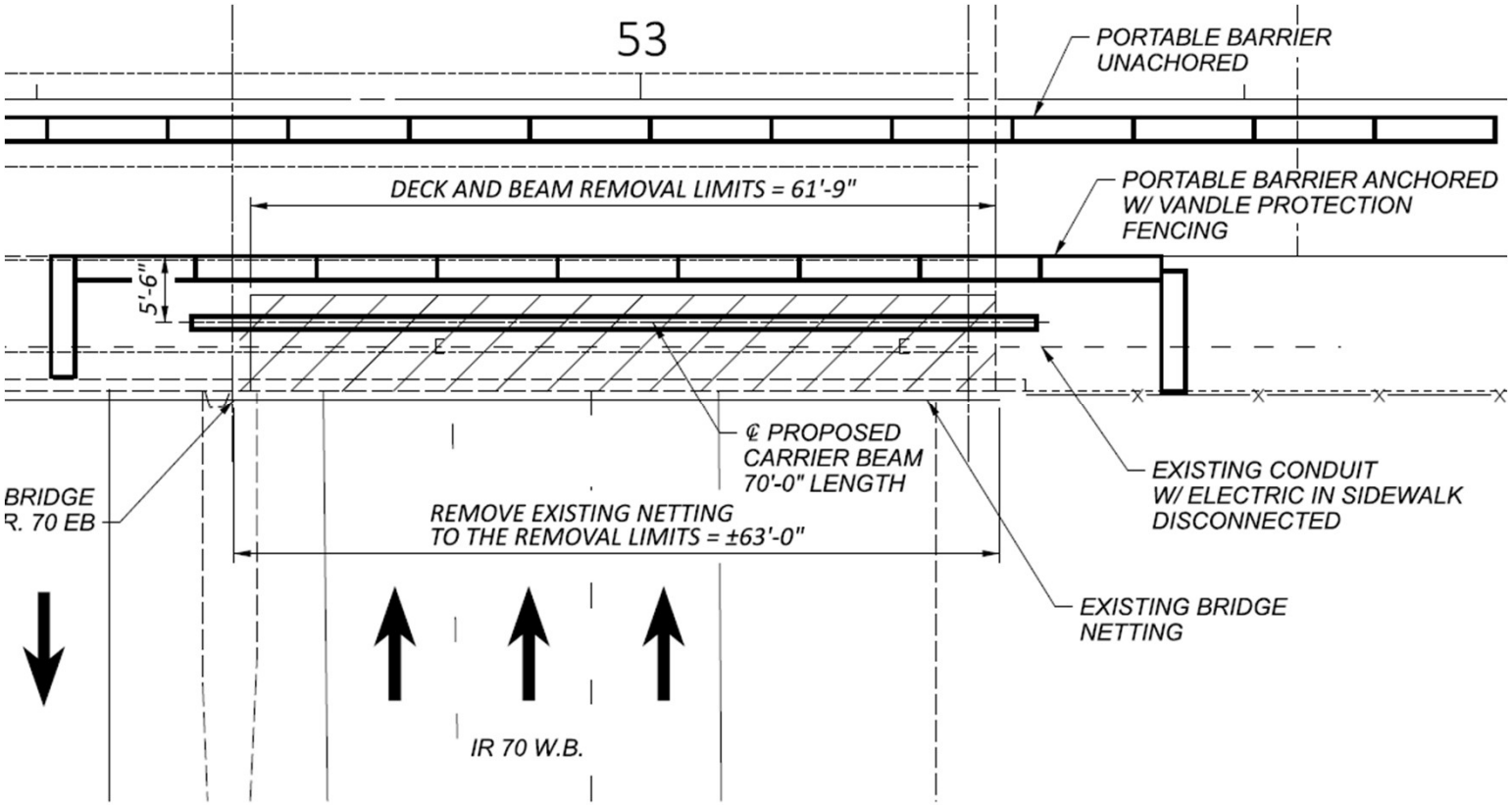
BRIDGE DAMAGE AROUND OHIO – FRA-70-4TH STREET



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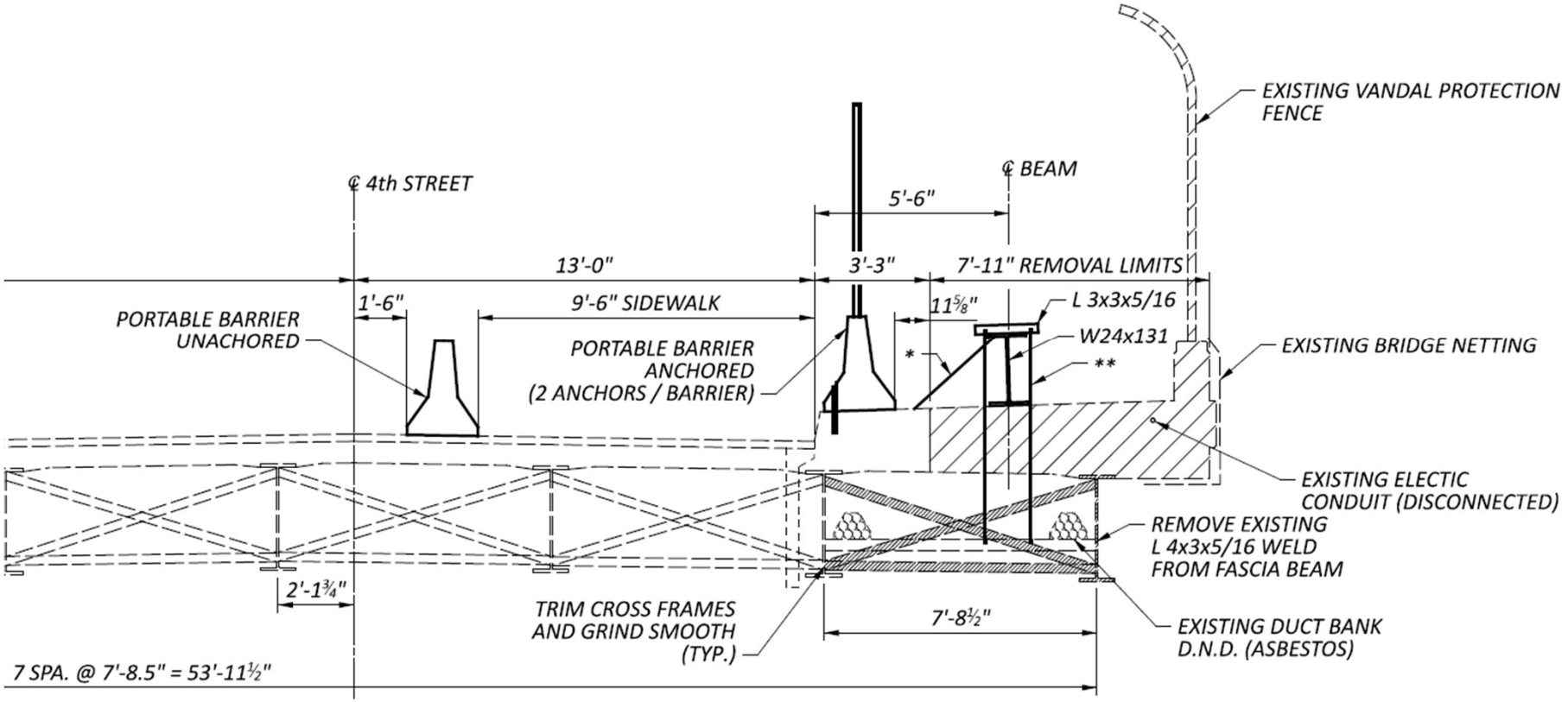
BRIDGE DAMAGE AROUND OHIO – FRA-70-4TH STREET



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THANK YOU