Inspection Type: Routine

BRIDGE NO. 00848

77830 - UNION

ROUTE 89

over

INTERSTATE 84

Routine Inspection

10/10/2023

Inspected by: TranSystems

TABLE OF CONTENTS

Bridge No. 00848, Route 89 over Interstate-84, Union, CT

Inspected By: TranSystems Corporation Date: 10/13/2023

Professional Certification: I hereby certify that this report, including all of its contents, has been approved by me, and that I am a duly licensed professional engineer under the laws of the State of Connecticut.

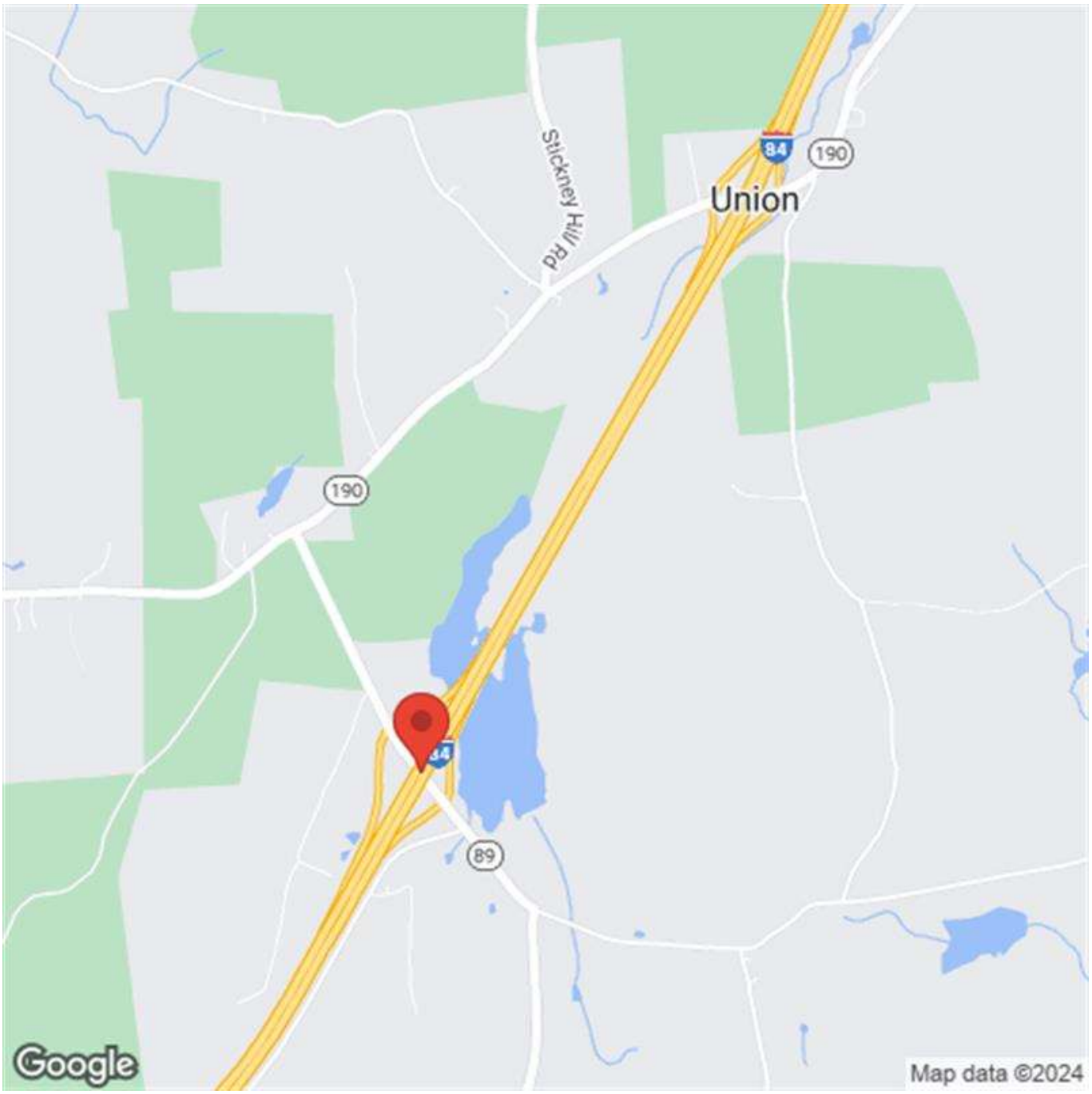
Signature: Richard C. Van Allen

License No.: 16495 *Date:* 11-3-2023

Form: Location
Inspection type: Routine
Inspection Date: 10/10/2023
Inspected by: TranSystems

:Bridge No 00848

Town: UNION
Carried: ROUTE 89
Crossed: INTERSTATE 84
Inventory Route: Non-NHS



Location Map # 1

In-Depth Components

Bridge: 00848

Town: 77830 - UNION

Carried: ROUTE 89

Crossed: INTERSTATE 84

In-Depth - 1

Component: Concrete Deck

Comments: Span 1 and 2 deck, deck overhangs and outside face of parapets over the roadway.
100% of suspect areas and 25% of areas over roadway showing no apparent deterioration.

Access Requirements: Traffic control and bucket truck is needed.

Last Inspected: 10/18/2021 Frequency: 120 Inspection Due Date: 10/18/2031

In-Depth - 2

Component: Steel Multi-Girders

Comments: Bottom base plates for previous OHSS 21635 welded to web of girder 1 in span 1 in tension zone (>4"L longitudinal welds; fatigue category E), otherwise not inspected hands-on over 120- month cycle.

Access Requirements: Traffic control and bucket truck is needed.

Last Inspected: 10/18/2021 Frequency: 120 Inspection Due Date: 10/18/2031

In-Depth - 3

Component: Steel Expansion Bearings

Comments: Measurements of all lines of steel expansion bearings for spans greater than 50 feet shall be taken and recorded on the appropriate sheet in Chapter 6 of the BIM.

Access Requirements: Traffic control and bucket truck is needed.

Last Inspected: 10/18/2021 Frequency: 120 Inspection Due Date: 10/18/2031

Form: BRI-19, Rev. 2/15
Inspection type: Routine
Inspection Date: 10/10/2023
Inspected by: TranSystems

:Bridge No 00848

Town: UNION
Carried: ROUTE 89
Crossed: INTERSTATE 84
Inventory Route: Non-NHS

STRUCTURE INVENTORY & APPRAISAL

INSPECTION

Structurally Deficient Y **Functionally Obsolete** N

Sufficiency Rating 52.7

(90) Inspection Date 10/10/2023 **(91) Frequency** 24

Indepth Insp No **Proposed next Indepth Year**

Deck Survey Date 1/4/1991 **Class** 02

Access 0 - None **Flagman** 0

	Frequency	Date	Type
Fracture			
Underwater			
Special			D Lateral movements of beams / supports

IDENTIFICATION

Bridge Name 00848

Town Code - Name 77830 - UNION

(5) Inventory Route

(A) Record Type 1: Route carried "on" the structure

(B) Signing Prefix 3 - STATE HIGHWAY

(C) Level of Service 1 - MAINLINE

(D) Route Number. 00089

(E) Dir Suffix 0 - NOT APPLICABLE

(6A) Featured Intersected INTERSTATE 84

(6B) Critical Facility Indicator

(7) Facility Carried ROUTE 89

(9) Location 0.57 MI SOUTH OF RTE 190

(11) Mile Post 15.68 Miles

(16) Latitude 41 Deg. 57 Min. 32.96 Sec.

(17) Longitude -72 Deg. 11 Min. 43.67 Sec.

(98) Border Bridge

(A) State Code (B) Percent Responsibility %

(C) Border Town Name

(99) Border Bridge Structure No.

STRUCTURE TYPE & MATERIALS

(43) Structure Type, Main

A) Material 4 - Steel continuous

B) Design Type 02 - Stringer/Multi-beam or Girder

(44) Structure Type, Approach

A) Material 0 - Other

B) Design Type 00 - Other

(45) Number of Spans, Main Unit 002

(46) Number of Approach Spans 0000

(107) Deck Structure Type 1 - Concrete Cast-in-Place

(108) Wearing Surface/Protection Systems

A) Type of Wearing Surface 6 - Bituminous

B) Type of Membrane 2 - Preformed Fabric

C) Type of Deck Protection 0 - None

Substructure

A) Material 2 - CONCRETE

B) Design Type 2 - STUB ABUTMENT

Paint

Type

Year

Comment

GEOMETRIC DATA

(48) Length of Maximum Span 96 ft.

(49) Structure Length 197 ft.

(50) Curb or Sidewalk Widths

A) Left 1 ft. 6 in. B) Right 1 ft. 6 in.

(51) Bridge Roadway Width Curb to Curb 38 ft. 0 in.

(52) Deck Width, Out to Out 43 ft. 8 in.

(32) Approach Roadway Width 38 ft.

Form: BRI-19, Rev. 2/15
Inspection type: Routine
Inspection Date: 10/10/2023
Inspected by: TranSystems

:Bridge No 00848

Town: UNION
Carried: ROUTE 89
Crossed: INTERSTATE 84
Inventory Route: Non-NHS

(33) Bridge Median: 0 - No median

Deck Area: 8620 sq. ft.

(34) Skew Angle: 22 deg.

(35) Structure Flared: 0 - No flare

(10) Inv. Rte. Min. Vert. Clearance: 99 ft. 99 in.

(47) Inv. Rte. Total Horiz. Clr.: 38 ft. 0 in.

Log Inv. Rte. Total Horiz. Clr.: 38 ft. 0 in.

RLog Inv. Rte. Total Horiz. Clr.: 0 ft. 0 in.

(53) Min. Vert. Clearance Over Bridge: 99 ft. 99 in.

(54) Log-Min. Vert. Underclearance: H ref. 14 ft. 11 in.

(55) Min. Lat Underclearance on Right: H ref. 15 ft. 0 in.

(56) Min. Lat Underclearance on Left: 23 ft. 1 in.

AGE AND SERVICE

Year Built: 1958 (106) Year Reconstructed:

(42) Type of Service

A) On: 1 - Highway

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

(28) Number of Lanes

A) On: 02 B) Under: 06

(29) Average Daily Traffic: 930

Is Above Half ADT?: No

(109) Precent Truck: 6 %

(30) Years of ADT: 2023

(19) Bypass, Detour Length: 10 Miles

CONDITION

(58) Deck: 5

(59) Superstructure: 4

(60) Substructure: 6

(61) Channel & Channel Protections: N

(62) Culverts: N

(36) Traffic Safety Features

A) Bridge Railings: 0

B) Transitions: 0

C) Approach Guardrail: 0

D) Approach Guardrail Ends: 0

APPRAISALS

(67) Structural Evaluation: 4

(68) Deck Geometry: 7

(69) Underclearances, Vert. & Horiz.: 3

(71) Waterway Adequacy: N

(72) Approach Roadway Alignment: 8

(113) Scour Critical: N

COMMENTS

- Items 29 & 30: Taken from CTDOT traffic monitoring website from 2020 adding 1% per year.

WATERWAY

Drainage Basin Waterway:

(38) Navigation Control: N - Not applicable, no waterway

(39) Navigation Vertical Clearance: 0 ft.

(40) Navigation Horiz. Clr.: 0 ft.

(111) Pier/Abutment Navigation:

(116) Vert-Lift Brg Nav Min: 0 ft. 0 In.

CLASSIFICATION

(112) NBIS Bridge Length: Yes

(104) Highway System: 0 - Structure/Route is NOT on NHS

(26) Functional Class: 07 - Rural - Major Collector

(100) Defense Highway: 0 - Not a STRAHNET route

(101) Parallel Structure: N - No parallel structure

(102) Direction of Traffic: 2 - 2-way traffic

Form: BRI-19, Rev. 2/15
Inspection type: Routine
Inspection Date: 10/10/2023
Inspected by: TranSystems

:Bridge No 00848

Town: UNION
Carried: ROUTE 89
Crossed: INTERSTATE 84
Inventory Route: Non-NHS

(103) Temporary Structure	
(110) Designated National Network	0 - Inventory route not on network
(20) Toll	3 - On Free Road
(21) Maintain	01 - State Highway Agency
(22) Owner	01 - State Highway Agency
Report Class	S - STATE
(37) Historical Significance	5 - Not eligible for National Register

POSTED SIGNS

Other Posted Sign 1	
Other Posted Sign 2	

	Actual	Recomended	
Posted Load Single Unit Truck			tons
Posted Load Semi-Trailer Truck			tons
Posted Load 4 Axle Truck			tons
Posted Load 3S2 Truck			tons
All Vehicles			tons

Posted Vert. Clearance on Bridge		ft.	in.
Posted Vert. Underclearance		ft.	in.
Posted Speed Limit on Bridge		m.p.h.	

OTHER FEATURES

Fence Required	No
Fence Present	No
Fence Type	Blank
Fence Height	
Fence Material	Blank
Fence Top Type	Blank
Barrel Ladders	No
Stand Pipes	No
Catwalks	No
Moveable Inspection System	No
Haunches Present over Roadway	NO

PROPOSED IMPROVEMENTS

(75A) Type of Work Proposed	
(75B) Work Done By	
(76) Length of Structure Improvement	ft.
(94) Bridge Improvement Cost	$
(95) Roadway Improvement Cost	$
(96) Total Project Cost	$
(97) Year of Improvement Estimate	
(114) Future ADT	1382
(115) Year of Future ADT	2043
DOT Bridge Program List No	
Project No	
Advertised Date	

LOAD RATING & POSTING

(31) Design Load	5 - HS 20
(63) Operating Rating Type	8 - Load and Resistance Factor (LRFR) rating reported by rating factor (RF) method using HL93 loading
(64) Operating Rating	0.88
(65) Inventory Rating Type	8 - Load and Resistance Factor (LRFR) rating reported by rating factor (RF) method using HL93 loading
(66) Inventory Rating	0.68
Evaluation Code	F - Load & Resistance Factor Rating
Year of Evaluation	2018
(70) Bridge Posting	5 - Equal to or above legal loads
(41) Structure Status	A - Open

Utilities	N | No Utilities present

Form: BRI-19, Rev. 2/15
Inspection type: Routine
Inspection Date: 10/10/2023
Inspected by: TranSystems

:Bridge No 00848

Town: UNION
Carried: ROUTE 89
Crossed: INTERSTATE 84
Inventory Route: Non-NHS

INSPECTOR'S SIGNATURES:

1) Date: 10/24/2023

2) Date: 10/27/2023

3) Date:

4) Date:

P.E. SIGNATURE: Date: 11/03/2023

P.E. # 0016495

Reviewed By: Baihai Wang Date: 12/19/2023

Form: BRI-25, Rev. 2/15
Inspection Type: Routine
Inspection Date: 10/10/2023
Inspected By: Vigliotti,Michael

Bridge No: **00848**

Town: 77830 - UNION
Carried: ROUTE 89
Crossed: INTERSTATE 84
Inventory Route: 0

INVENTORY ROUTE UNDER STRUCTURE

IDENTIFICATION

Description: Interstate 84
(5) Inventory Route:
(A) Record Type: 2: Single route goes "under" the structure
(B) Signing Prefix: 1 - INTERSTATE HIGHWAY
(C) Level of Service: 1 - MAINLINE
(D) Route No.: 00084
(E) Directional Suffix: 0 - NOT APPLICABLE
(11) Milepoint: 92.05

AGE AND SERVICE

(28B) Number Of Inventory Route Lanes: 6
(29) Average Daily Traffic: 51300
(109) Percent Truck: 16
(30) Year Of ADT: 2018
(41) Inv Route Operational Status: A - Open
(19) Bypass Detour Length: 0 Miles

GEOMETRIC DATA

(10) Inv. Rte. Min. Vert. Clearance: 16 ft. 1 in.
(47) Log Inv. Rte., Total Horiz. Clr.: 65.7 ft.
(Enter Largest Value of Log or Rlog from below)
Log Inv. Rte., Total Horiz. Clr.: 65.7 ft.
(Permit Purposes)
RLog Inv. Rte., Total Horiz. Clr.: 65.3 ft.
(Permit Purposes)
Log Min. Vert. Clr. Over Bridge Roadway: 14 ft. 11 in.
(Travelway Only Under Bridge)
RLog Min. Vert. Clr. Over Bridge Roadway: 15 ft. 0 in.
(Travelway Only Under Bridge)
(55) Min. Lat. Underclearance on Right: H ref. 15 ft. 0 in.
(56) Min. Lat Underclearance on Left: 23 ft. 1 in.

CLASSIFICATION & POSTED SIGN

(26) Functional Class: 01 - Rural - Principal Arterial - Interstate
(100) Defense Highway: 1 - Is on an Interstate STRAHNET route
(102) Direction of Traffic: 2 - 2-way traffic
(104) Highway System: 1 - Structure/Route is on NHS
(110) Designated National Network: 1 - Inventory route on National Truck Netwrok
Posted Vert. Clr. Under Bridge: ft. in.

COMMENTS

- Items 29 & 30: Taken from CTDOT 2018 Traffic Log

FIELD INSPECTION REPORT

Location:	0.57 MI SOUTH OF RTE 190	Year Built:	1958	Snooper Required:	☐
Main Material:	4 - Steel continuous	Year Rebuilt		Snooper Used:	☐
Main Design:	02 - Stringer/Multi-beam or				

Inspectors:

Lead Inspector:	Michael Vigliotti
Inspector:	Task:
Andes,Carson	BSE - Inspector
Schneider,Thomas	BSE - Inspector
Vigliotti,Michael	BSE - Inspector

Visits:

Visit Date:	Temp:	Start Time:	End Time:
10/10/2023	62	08:30 AM	01:30 PM
10/13/2023	65	08:30 AM	12:30 PM

58. DECK:

Overall Rating: 5

Rating

Overlay: 6

Bituminous concrete overlay:
- Transverse and longitudinal cracks up to 10' long x 1/8" wide.
- Paving seam up to 1/4" wide.
- Core sample holes have been drilled and patched.
- Southwest shoulder has a 4' wide x 3' long area of heaving.

- Rating decreased from '8' to '6'.

See Top of deck General Notes sketch, Top of Deck sketch and photo 8.

Deck - Str. Condition: 5

The underside of the concrete deck:
- Random spalls up to 2'-6" long x 4'-6" wide x 4" deep, some spalls have adjacent 6" wide hollow areas and/or concrete inside the spall is hollow (over road) and the spalls are typically coated but exposed rebar has some re-rusting (Photos 10 & 11).
- All deck haunches over the roadways have been previously removed (some hollow haunches over dirt).
- Random hairline cracking with and without efflorescence.
- Between the girder top flange and deck slab up to 1/2" gap at the locations with removed haunches.
- Random 4"ø x 1/4" deep popouts with random shallow rebar.

The following (intact) hollow areas were found over the roadway:
- Span 1, 2' long x 1' wide hollow area over right lane in bay 4, panel 2.
- Span 2, 2' long x 10" wide dull/hollow area over left lane in bay 3, panel 3 (Photo 10).
- Span 2, adjacent to the 5' long x 3' wide x 4-1/2" deep (coated) spall there are (2) hollow areas up to 6" away over the right lane/shoulder in bay 3, panel 4.
- Span 2, 1' diameter hollow area over the slope protection/right shoulder in bay 3, panel 5.
- Span 2, 1' long x 7" wide hollow area over center lane in bay 5, panel 3.

- Approximate deck deterioration percentage: 12.5%.

See Underside of Deck & Framing - General Notes sketch, Underside of Deck & Framing sketches and photos 9-11 & 30.

Curbs: 6

Concrete curbs are monolithic with the safety walks:
- Random longitudinal and transverse hairline cracking and areas of moderate scale.
- Interfaces with transition curbs have up to 1'-6" long x 4” high x 2” deep edge spalling.
- Previous repairs are deteriorating.
- Transition curbs are vertically misaligned/ lower up to 5".
- Average curb reveal: West curb: 7"; East curb: 6".

		- Northwest and southeast transition between concrete and approach curbs are missing up to 7" long. See Top of Deck General Notes sketch, Top of Deck sketch and photos 12-13.
Median:	N	
Sidewalks:	6	See Item “Curbs” above.
Parapet:	5	Reinforced concrete parapets: - Random hairline cracking with and without efflorescence. - Isolated spalls up to 2' wide x 6" high x 2" deep (Photo 14). - Previous repairs have random cracks and minor spalling, with isolated intact hollow areas on top and outside faces (over roadways). - In spans 1 & 2, there are hollow areas on the outside face up to 6' long x 1' high over the dirt. The following (intact) hollow areas were found over the roadway: - Span 1, west fascia parapet with (2) hollow areas on the outside face up to 3' long x 1' high over the right lane/shoulder near abutment 1 (Photo 15). - Span 2, east fascia parapet with hollow area on the outside face 6" long x 1' high over the right shoulder near abutment 2. See Top of Deck General Notes sketch, Top of Deck sketch, Underside of Deck & Framing General Notes sketch, Underside of Deck & Framing sketches and photos 12-15.
Railing:	7	Throughout single pipe extruded aluminum rail: - Random railing posts have up to 4/4 anchor bolt nuts loose (Photo 16). See Top of deck General Notes sketch and photos 12, 13 and 16.
Paint:	N	
Fence:	N	
Drains:	6	- Between weeps and support steel, clips are typically rusted out throughout. See Underside of Deck & Framing General Notes sketch.
Lighting Standard:	N	

Overall Utility Condition Rating: N - Not Applicable

Utility Type/Size

N | No Utilities present	

Construction Joints:	N	
Expansion Joint:	7	- Adhesion cracks up to full length x 3/4" wide at both abutments (Photos 17 and 18). See Top of Deck General Notes sketch and Top of Deck sketch and photos 17 and 18.

Haunches Present over travelway? NO

APPROACH CONDITION:

Overall Rating: 6

	Rating	
Approach Slab:	N	None per available plans.
Relief Joints:	N	
Approach Guide Rail:	6	Steel W-beam guide rail with weak posts: - Random areas up to 20' long with collisions damage and up to four (4) bent/disconnected posts (Photos 20 & 21). - The northwest guide rail has a 3/4" long tear.

		- All transitions has up to 2" gap between parapet and approach guide rail (Photo 19). See Top of Deck General Notes sketch and Top of Deck sketch.
Approach Pavement:	6	Bituminous approach pavement: - The northeast approach pavement has a 12' long x 3/4" wide transverse crack. - The southeast approach pavement has a 20' long x 3/4" wide transverse crack. - Rating decreased from '7' to '6'. See Top of Deck General Notes sketch, Top of Deck sketch and photos 4-5.
Approach Embankment:	8	

Trafic Safety Features

Bridge Railings:	0	Do not meet standards for Non-NHS structures (safety walk).
Transitions:	0	Do not meet R-B 350 standards (rub rails not attached to parapet).
Approach Guardrails:	0	Do not meet R-B 350 Standards (steel blockouts and weak posts).
Approach Guardrail Ends:	0	Do not meet R-B 350 Standards (transition to ground within clear zone).

59. SUPERSTRUCTURE:

Overall Rating: 4

Rating

Bearing Devices:	5	Expansion rocker bearings at both abutments: - Up to heavy laminated rust at components. - Up to 1/4" thick pack rust between the rockers and masonry plates. - Random anchor bolts are slightly tilted and/or have backed off nuts. - Bearings were in expansion or/neutral mode at 62° F (laminated rust affects some measurements). Fixed bearings at pier: - Light to moderate rust at plates; nuts and washers with laminated rust. - Pack rust up to 1/4" thick between the sole and masonry plates (worst at fascias). - Isolated sole plates overhang the masonry plates in span 2 up to 3/8" (<5% bearing contact area loss; as-built). - Random anchor bolts are short. - Isolated anchor bolt nuts are backed off up to 1/2”. See Underside of Deck & Framing General Notes sketch, Underside of Deck & Framing sketches and photos 22-23.
Stringers:	N	
Girders:	4	Two (2) spans with seven (7) steel girders: - Areas of peeling paint with laminated rust - All girders in span 2 have laminated rust and section losses to bottom flanges in critical zones up to 3' long x full width x 3/16" deep resulting in 17% section loss, (worst location girders 2-4 in span 2) (Photos 24 & 25). - Girder webs near midspan have section loss up to 8" high x 1/8" deep (non-critical). - Random webs over bearings have up to 6" high x 1/8" deep losses (< 10% web loss in bearing) (Photo 26). - Intermediate diaphragms have up to 2" thick pack rust between lower members that is pushing/rotating the members apart causing the connection welds to crack/break. - Span 2, bay 1, second diaphragm lower member at midspan with rusted through hole (Photo 27). - Span 1, Girder 2 near midspan web plate at base is misaligned at splice 3/8" x 2"H. Rating decreased from '5' to '4' due to section loss on the bottom flange in critical area. See Item 'Collision Damage' below.

		See Underside of Deck & Framing General Notes sketch, Underside of Deck & Framing sketches, Section Loss Details sketches, Girder 1 Collision Damage Detail (Plan View) and photos 9 & 28.
Floor Beams:	N	
Trusses - General:	N	
Trusses - Portals:	N	
Trusses - Bracing:	N	
Paint:	5	- Less than 50% of the painted surfaces are rusting See Item 'Girders' above. See Underside of Deck and Framing - General Notes sketch.
Rust:	5	See Items 'Bearing Devices' and 'Girders' above.
Machinery Movable Span:	N	
Rivets & Bolts:	N	
Welds - Cracks:	4	- Web and bottom flange splice welds are not ground smooth and have some minor undercutting (Photo 29). - Numerous welds at intermediate diaphragm connections are cracked/broken due to pack rust (Photo 27). - Random missing overhead welds at stiffener to diaphragm connections (other welds in place). - Span 1, several intermediate cross frames have the welds broken at each connection to the girder for one of the two lower horizontal back to back angles due to pack rust. This angle is now only supported by two (2) 2" x 3/8" x 3" steel plates welded to the top of the angles. Cross frame 3 in bay 2 have 3/16" long cracks at these steel connection plates. CTDOT was notified via phone call and 10/11/23 email. - Span 2, multiple intermediate cross frames have the welds broken at one connection to the girder for one of the two lower horizontal back to back angles due to pack rust. - Bottom base plates for OHSS 21635 are welded to girder 1 web in span 1 (Fatigue Category E). Rating decreased from '5' to '4' due to broken welds on lower angles. See Underside of Deck & Framing General Notes sketch, Underside of Deck & Framing sketches and photos 27-29.
Timber Decay:	N	
Concrete Cracking:	N	
Collision Damage:	5	- Random minor dents/gouges in bottom flanges up to 1/16” deep (ground smooth) - Girder 3, span 2, west bottom flange leg near midspan, bent upwards up to 1/4”; no change (construction). Location of hit at Girder 1, 8th stiffener from Abutment 1 (14'-11" vertical clearance): - Bottom Flange, West side, bent up 1-5/16" for 20" L w/ numerous gouges up to 1/4" deep (Photos 32-33). - Bottom Flange, East side, bent down 3/8" over 4' for 12" long. - Girder out of plane to the North up to 3-1/2" over approximately 22'. - Top flange separated from the deck for approximately 22' long x up to 13/16" high (no shear studs) (Photo 30). - Hole through web has been repaired with a bolted repair plate. A laser aligned against the outside of the bottom flange above the bearing was used to determine how out of plane the girder is. Girder 2, West face: - 9th stiffener from Abutment 1 bent out of plane up to 5/8" over 2'. Stiffener twisted from original position on bottom flange. - Web with 10" diameter area with 1/8" to 3/16" deep dent. Adjacent to this area there is a 3" diameter x up to 5/16" deep dent/gouge (Photo 34).

		Decreased from '7' to '5'. See Underside of Deck & Framing General Notes sketch, Underside of Deck & Framing sketches, Girder 1 Collision Damage Detail (Plan View) and Photos 31 & 32.
Member Alignment:	5	- Random girder bottom flanges are wavy - Also, see Items "Bearing Devices" and "Collision Damage" above Rating decreased from '7' to '5'. See Underside of Deck & Framing General Notes sketch, Underside of Deck & Framing sketches and Photos 31-33.
Deflection Under Load:	N	(N) Normal; (E) Excessive
Vibration Under Load:	N	(N) Normal; (E) Excessive
Stand Pipes:	N	
Catwalks:	N	
Movable Inspection System:	N	
Barrel Ladders:	N	

Are Barrel Ladders OSHA Compliant? NA

60. SUBSTRUCTURE:

Overall Rating: 6

	Rating	
Abutments - Stem:	7	Reinforced concrete abutment stems: - Random hairline cracking with isolated efflorescence (some cracks extend across seats). - Random concrete patches with isolated hairline cracks. - Pedestals have random hairline cracks. - Abutment 2 has a spall 7" wide x 5" high x 1/4" deep. - Both abutments have areas of light scale, light honeycombing, and isolated popouts. See Abutment sketch and photos 35-36.
Abutments - Backwall:	7	Reinforced concrete abutment backwalls: - Random vertical hairline cracking and areas of hairline mapcracking with isolated efflorescence. - Random chipping along top. - Construction joints are open up to 1/4” wide; (no change). See Abutment sketch and photos 35-36.
Abutments - Footings:	N	Not visible.
Abutments - Settlement:	8	None noted.
Abutments - Wingwalls:	7	Reinforced concrete wingwalls - Isolated popouts/shallow rebar - The joint fill material is deteriorated/missing - Light to heavy vegetation growth along wingwalls - Wingwall 2B has a 4" diameter x 3/4" deep spall - Both abutments have areas of light scale, light honeycombing, and isolated popouts with random shallow rebar. See Abutment sketch and photos 37-38.
Piers/Bents - Caps:	6	Reinforced concrete pier cap: - Random hairline cracks with and without efflorescence. - Random spalls up to 4" long x 8" wide x 1-1/2" deep with exposed rebar. - Isolated hollow areas up to 16" x 18".

		- Concrete patches along 75% of cap length, some with shrinkage/hairline cracking. See Pier sketch and photo 39.
Piers/Bents - Pile Bent:	N	
Piers/Bents - Columns:	7	Reinforced concrete pier columns: - Column 1, south elevation has a 6'-0" high x 2'-0" wide area of hairline mapcracks . See Pier sketch and photo 39.
Piers/Bents - Footings:	N	Not visible.
Piers/Bents - Settlement:	8	None noted.
Erosion - Scour:	7	Concrete block abutment slope protection has cracks in the mortar joints and blocks up to 1" wide Scour = 'N'. See Abutment sketch and photo 35.
Concrete Crack - Spall:	6	See Item 'Piers/Bents - Caps' above.
Steel Corrosion:	N	
Paint:	N	
Timber Decay:	N	
Collision Damage:	8	
Debris:	7	- Light sand debris on the abutment seats See Abutment sketch.

61. CHANNEL AND CHANNEL PROTECTION:

Overall Rating: N

	Rating	
Channel - Scour:	N	
Embankment - Erosion:	N	
Debris:	N	
Vegetation:	N	
Channel Change:	N	
Fender - System:	N	
Spur Dikes and Jetties:	N	
Rip Rap:	N	

62. CULVERTS AND RETAINING WALLS:

Overall Rating: N

	Rating	
Barrel:	N	
Concrete:	N	
Steel:	N	
Timber:	N	
Headwall:	N	
Cutoff Wall:	N	
Debris:	N	
Retaining Wall System:	N	

Footing:	N	

LOAD POSTING:

Rating		
Single Unit (Tons):		
Semi Trailer (Tons):		
4 Axle (Tons):		
3S2 (Tons):		
All Vechicles:		
Advanced Warning:		
Warning At Bridge:		
Legibility:		
Visibility:		

VERTICAL CLEARANCE POSTING

Min. Vert Under Clearance:	14	Ft	11	In	See Clearance Diagram.
Posted Clearance Under Bridge:		Ft		In	
Posted Clearance On Bridge:		Ft		In	
Advanced Warning:					
Warning At Bridge:					
Legibility:					
Visibility:					

NOTES / COMMENTS:

Character of Traffic: Light to moderate volume and mixed weights.

Additional Notes:

Bridge ID is clear and legible (Photo 1).
Bridge is labeled from south to north and girders are numbered from west to east, which is consistent with the previous inspection report, log direction of Route 89, and the bridge plans.
Bridge was inspected using a 30’ lift truck with vendor provider single and double lane closures on I-84 and a state trooper.

Additional Comments:

There are three In-Depth components associated with this bridge.
There are three (3) new and five (5) outstanding Highway Maintenance Work Items associated with this bridge (00848-2019-0010, 00848-2019-0009, 00848-2019-0008, 00848-2019-0007, and 00848-2019-0006).
Work item 00848-2019-0010 has been updated to current conditions.

National Bridge Elements
Inspection type: Routine
Inspection Date: 10/10/2023
Inspected by: TranSystems

:Bridge No 00848

Town: UNION
Carried: ROUTE 89
Crossed: INTERSTATE 84
Inventory Route: Non-NHS

	Environment	Total Quantity	Units	Condition State 1	Condition State 2	Condition State 3	Condition State 4
12 - Reinforced Concrete Deck	Mod.	8620	sq. ft.	7542	997	81	0
1080 - Delamination/Spall/Patched Area		99		0	21	78	0
1090 - Exposed Rebar		17		0	14	3	0
1120 - Efflorescence/Rust Staining		842		0	842	0	0
1130 - Cracking (RC and Other)		120		0	120	0	0
510 - Wearing Surfaces		7486	sq. ft.	7462	24	0	0
3230 - Effectiveness (Wearing Surface)		24		0	24	0	0
107 - Steel Open Girder/Beam	Mod.	1351	ft.	794	411	117	29
1000 - Corrosion		517		0	405	83	29
7000 - Damage		40		0	6	34	0
515 - Steel Protective Coating		21886	sq. ft.	17506	0	0	4380
3440 - Effectiveness (Steel Protective Coatings)		4380		0	0	0	4380
205 - Reinforced Concrete Column	Mod.	3	each	2	1	0	0
1130 - Cracking (RC and Other)		1		0	1	0	0
215 - Reinforced Concrete Abutment	Mod.	128	ft.	96	32	0	0
1080 - Delamination/Spall/Patched Area		17		0	17	0	0
1120 - Efflorescence/Rust Staining		2		0	2	0	0
1130 - Cracking (RC and Other)		13		0	13	0	0
234 - Reinforced Concrete Pier Cap	Mod.	46	ft.	4	40	2	0
1080 - Delamination/Spall/Patched Area		37		0	35	2	0
1120 - Efflorescence/Rust Staining		3		0	3	0	0
1130 - Cracking (RC and Other)		2		0	2	0	0
306 - Other Joint	Mod.	82	ft.	9	73	0	0
2310 - Leakage		73		0	73	0	0
311 - Movable Bearing	Mod.	14	each	0	5	9	0
1000 - Corrosion		12		0	5	7	0
1020 - Connection		2		0	0	2	0
515 - Steel Protective Coating		14	sq. ft.	2	0	0	12
3440 - Effectiveness (Steel Protective Coatings)		12		0	0	0	12
313 - Fixed Bearing	Mod.	7	each	0	4	3	0
1000 - Corrosion		4		0	1	3	0
1020 - Connection		3		0	3	0	0
515 - Steel Protective Coating		7	sq. ft.	3	0	0	4
3440 - Effectiveness (Steel Protective Coatings)		4		0	0	0	4
330 - Metal Bridge Railing	Mod.	394	ft.	393	1	0	0
1020 - Connection		1		0	1	0	0
331 - Reinforced Concrete Bridge Railing	Mod.	394	ft.	177	215	2	0
1080 - Delamination/Spall/Patched Area		117		0	115	2	0
1120 - Efflorescence/Rust Staining		40		0	40	0	0
1130 - Cracking (RC and Other)		60		0	60	0	0

FIELD NOTES	BRIDGE NO.: 00848	DATE: 11/15/2021
	CREW: KG,NC (ADA)	SHEET: 1

ROCKER BEARING MEASUREMENTS

Form BRI-15, Rev. 9/97

Span No. : 1

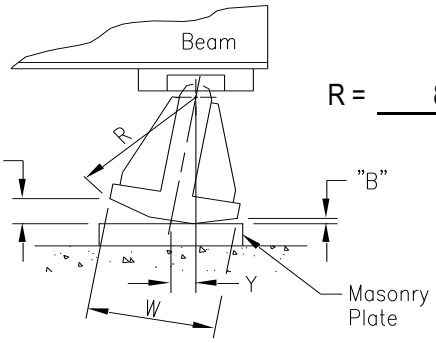
Substructure Unit = Abutment 1

Temp. = 47 °F

$\Theta = \text{Sin}^{-1}$ (F-B)/W

Y = R Tan Θ

The "Front" of the bearing is the side facing the fixed bearing.



R = 8 in

W = 8 in

NOTE:
"F" & "B" should be measured at the left side corners of the rocker or on the side closest to the front face of the substructure on skewed bridges.

Beam	"F"	"B"	Y	Cont. Or Exp.	Comments
G1	1 1/8	1 1/16	1/16	E	Heavy to LR on masonry PL & east AB nut
G4	1 1/2	1 1/2	0	N	W. side PL attached to sole PL w/ FH crack in vt front weld due to
G7	1 3/4	1 1/8	10/16	E	Mod to heavy rust; E. Ab nut backed off 1 1/2" H; LRon masonry PL up to 3/8" thick
MEV, TAS (TSC) 10/10/23 62ºF					
G1	1 1/8	1	2/16	E	Heavy to LR on masonry PL & east AB nut
G4	1 1/2	1 1/2	0	N	W. side PL attached to sole PL w/ FH crack in vt front weld due to IR. W. side missing keeper block at sole plate
G7	1 7/16	1 1/16	6/16	E	Mod to heavy rust; E. Ab nut backed off 1 1/2" H; LRon masonry PL up to 3/8" thick
					GENERAL NOTES:
					- Random ABs are slightly tilted, Random AB washers bent due to pack rust - Mod rust typical - Pack rust up to 1/4" thick between rocker and masonry PL's - All bearings show visible evidence of movement

FIELD NOTES

BRIDGE NO.:	00848	DATE:	11/15/2021
CREW:	KG,NC (ADA)	SHEET:	2

ROCKER BEARING MEASUREMENTS

Form BRI-15, Rev. 9/97

Span No. : 2

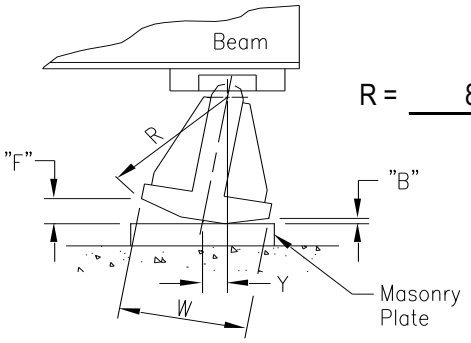
Substructure Unit = Abutment 2

Temp. = 47 °F

$\Theta = \text{Sin}^{-1}$ (F-B)/W

Y = R Tan Θ

The "Front" of the bearing is the side facing the fixed bearing.



R = 8 in

W = 8 in

NOTE:
"F" & "B" should be measured at the left side corners of the rocker or on the side closest to the front face of the substructure on skewed bridges.

Beam	"F"	"B"	Y	Cont. Or Exp.	Comments
G1	1 1/2	1 1/8	6/16	E	
G3	1 1/2	1 3/8	2/16	E	LR on masonry PL up to 5/8" thick
G5	1 5/8	1 3/8	4/16	E	LR on masonry PL up to 3/8" thick at back of the bearing
G7	1 9/16	1 1/4	5/16	E	
MEV, TAS (TSC) 10/10/23 62ºF					
G1	1 1/2	1 1/8	6/16	E	LR on masonry plate up to 1/2" thick
G3	1 9/16	1 1/4	5/16	E	LR on masonry PL up to 5/8" thick
G5	1 11/16	1 1/4	7/16	E	LR on masonry PL up to 3/8" thick at back of the bearing
G7	1 9/16	1 1/4	5/16	E	
					GENERAL NOTES:
					- Random AB washers bent/ rusted out due to pack rust
					- Light to mod rust typical; up to LR on mas. PL's (affects measurements)
					- Pack rust up to 1/4" thick between rocker and masonry PL's

FRACTURE CRITICAL MEMBERS / FRACTURE PRONE DETAILS

Inspectors:

Lead Inspector:	Michael Vigliotti
Inspector:	Task:
Andes,Carson	BSE - Inspector
Schneider,Thomas	BSE - Inspector
Vigliotti,Michael	BSE - Inspector

Visits:

Visit Date:	Temp:	Start Time:	End Time:
10/10/2023	62	08:30 AM	01:30 PM
10/13/2023	65	08:30 AM	12:30 PM

Fracture Critical Inspection Frequency: Months

Fracture Critical Type Code:

Structure Type: Highway Bridges **Year Built:** 1958 **ADT:** 930 **Year of ADT:** 2023 **% Truck:** 6

Access Equipment Needed: 40' Lift Truck

Traffic Control Required: Single right lane closure on I-84 EB.

Reference to Plans: Project No. 145-58

MEMBER/DETAIL TYPE # 1

Member/Details Type: H Highly fatique prone details in tension areas **Fracture Critical:** No

Fatigue Category: E **Steel Type:** A-36 **Fatigue Prone:** Yes

Description: Bottom base plates for OHSS 21635 are welded to the web of girder 1 in span 1 in tension zone (>4"L longitudinal weld).

Inspection Procedure: Hands-on

Condition Comments: No significant deficiencies.

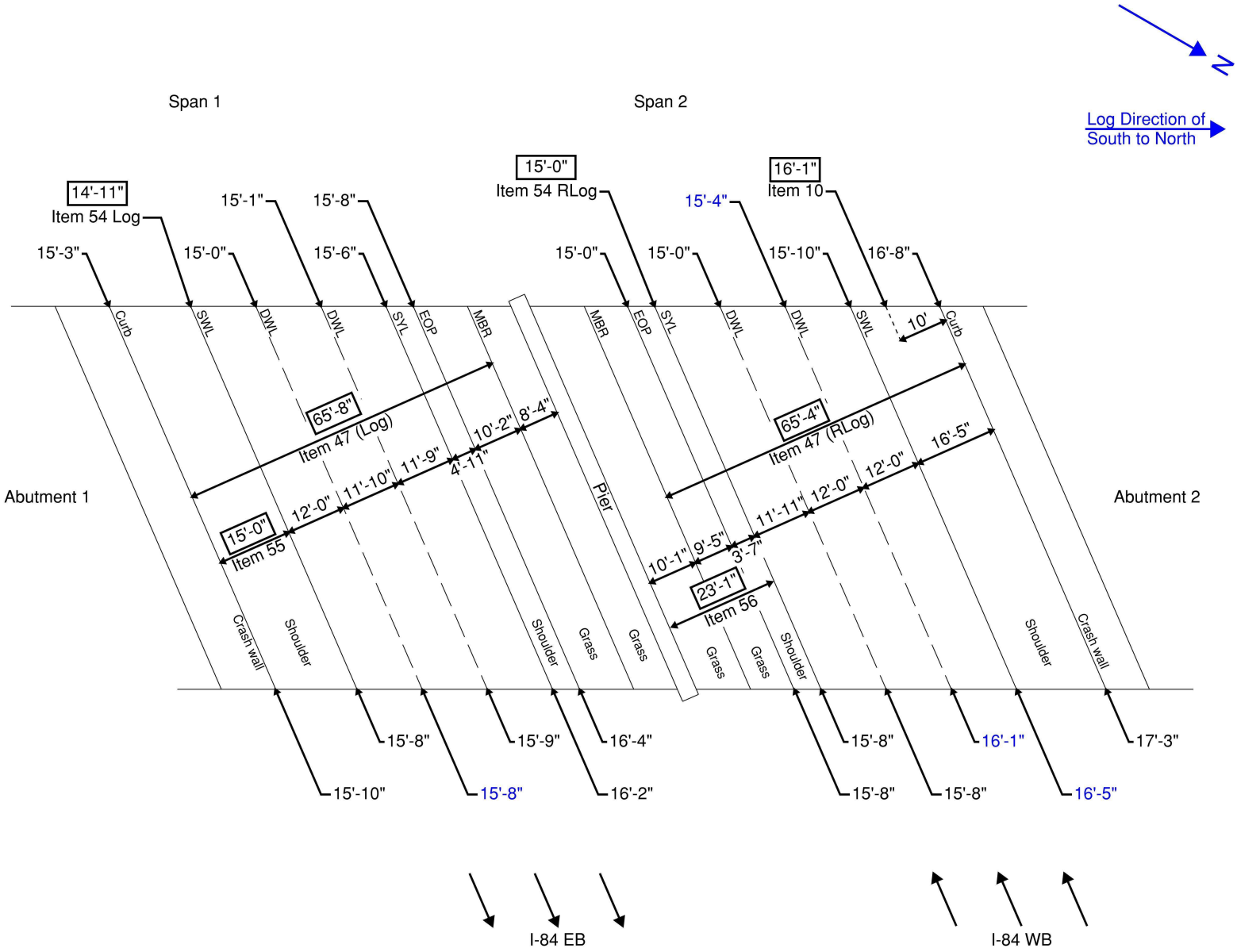
Procedure Followed This Inspection? Yes **If No please explain:**

Sketches
Inspection type: Routine
Inspection Date: 10/10/2023
Inspected by: TranSystems

:Bridge No 00848

Town: UNION
Carried: ROUTE 89
Crossed: INTERSTATE 84
Inventory Route: Non-NHS

CREW: KT, MRJ	DATE: 10/17/2017	BRIDGE NO.: 00848



Clearance Diagram
N.T.S.

REVISION 1	DATE: 10/3/2019	CREW: BF, TK (Baker)	REVISION 3	DATE: 10/13/23	CREW: MEV, TAS, CJA (TSC)
REVISION 2	DATE: 10/18/2021	CREW: KG, NC (ADA)	REVISION 4	DATE:	CREW:

CREW: MRJ, KT	DATE: 10/17/2017	BRIDGE NO.: 00848

Overlay:

- Transverse and longitudinal cracks up to 10'L x 1/8"W
- Paving seam up to 1/4"W
- Core sample holes have been drilled and patched

Curbs/Safety Walk:

- Concrete curbs are monolithic with safety walks
- Curbs/safety walk has random transverse and longitudinal hairline cracks and areas of moderate scale
- Past concrete repairs have cracks and are beginning to chip/spall
- Average curb reveal: West curb: 7"; East Curb: 6"
- Granite approach curbs have chipped edges and rust stains at random locations
- Transition curbs vertically misaligned up to 5" with bridge curbs

Parapet:

- Concrete parapets and end blocks have areas of scale up to 1/2"D, random vertical hairline cracks and areas of map cracking, both with random efflo
- Past concrete repairs have cracks and are beginning to chip/spall (worst along top of west parapet, above pier)

Railing (aluminum):

- Random railing posts have up to 4/4 anchor bolt nuts loose

Joints:

- Asphaltic plug joints at both abutments

Approach Guide Rail:

- Approach guide rails has minor impact damage, dents and scrapes
- All transitions has up to 2" gap between parapet and approach guardrail

Approach Pavement:

- Approach pavements have been repaved since the previous inspection
- Approaches have longitudinal and transverse cracks up to 20'L x 3/4"W

Jersey Barrier:

- Scattered spalls up to 2'L x 10'H x 2"D with exposed rebar

Top of Deck General Notes

REVISION 1	DATE: 10/3/2019	CREW: BF, TK (Baker)	REVISION 3	DATE: 10/10/23	CREW: MEV, TAS (TSC)
REVISION 2	DATE: 10/18/2021	CREW: KG, NC (ADA)	REVISION 4	DATE:	CREW:

Sketches
Inspection type: Routine
Inspection Date: 10/10/2023
Inspected by: TranSystems

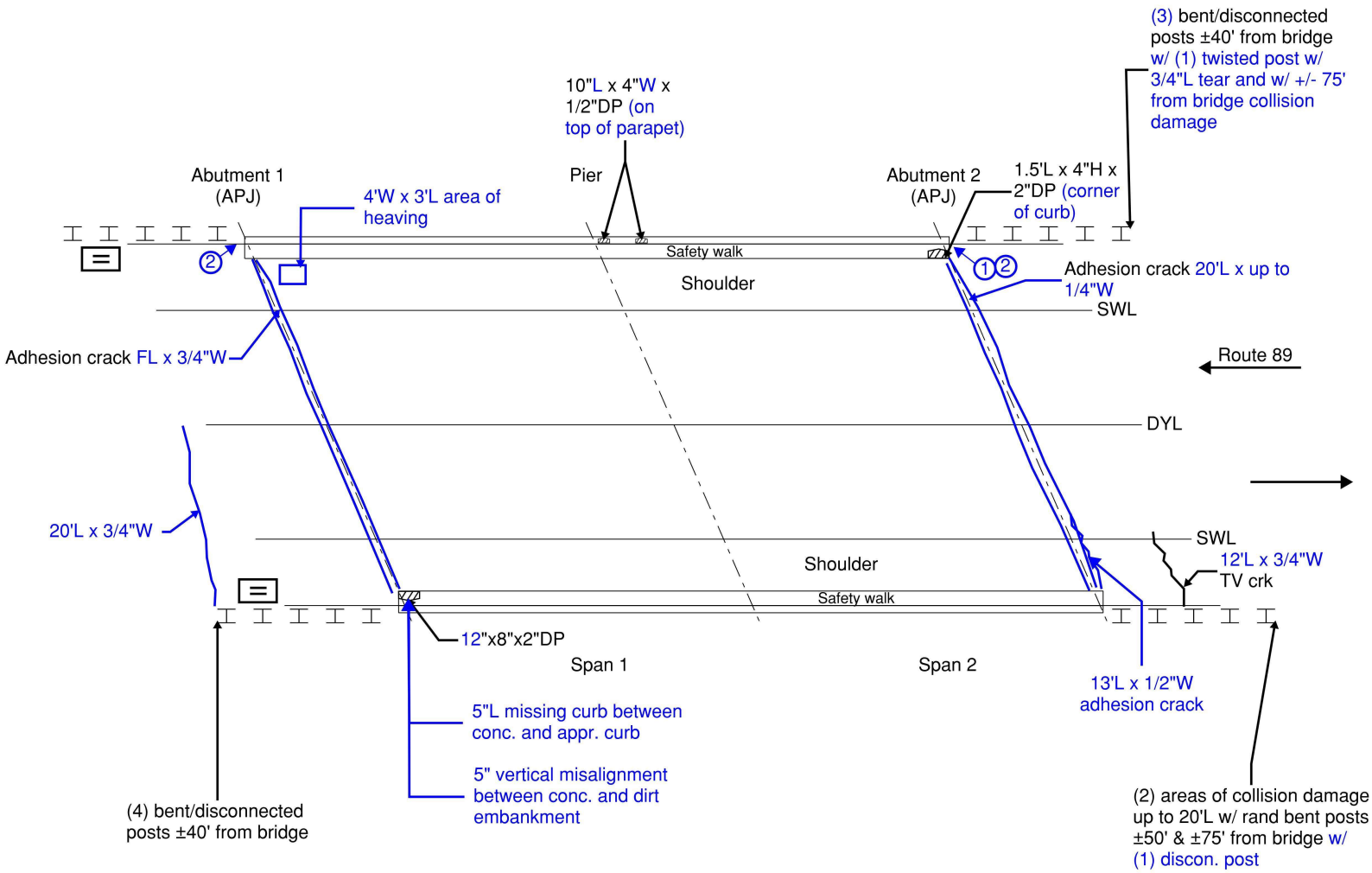
:Bridge No 00848

Town: UNION
Carried: ROUTE 89
Crossed: INTERSTATE 84
Inventory Route: Non-NHS

CREW: MRJ, KT	DATE: 10/17/2017	BRIDGE NO.: 00848

Detail Notes:
① NW curb missing 7"L between concrete and approach curb
② 4" vertical misalignment between concrete and dirt embankment

Log Direction of South to North



Legend + Full Legend:
Ⓐ - Adhesion cracking
⊟ - Catch basin
DYL - Dotted white line
SWL - Solid white line

General Notes:
-See top of deck general notes sheet

Top of Deck
N.T.S.

REVISION 1	DATE: 10/3/2019	CREW: BF, TK (Baker)	REVISION 3	DATE: 10/10/23	CREW: MEV, TAS (TSC)
REVISION 2	DATE: 10/18/2021	CREW: KG, NC (ADA)	REVISION 4	DATE:	CREW:

CREW: MRJ, KT	DATE: 10/17/2017	BRIDGE NO.: 00848

Underside of Deck

- All haunches over roadway have been removed and some haunches over dirt were removed/spalled
- Between the girder top flange and deck slab there is up to 1/2" gap/PR at the locations with previously removed haunches
- Random hollow haunches over dirt
- Random 4"ø x 1/4" deep popouts with and without rebar
- Deck underside at fascias with hairline cracks with random efflorescence
- Approximately 12.5% total deck deterioration.

Drains

- Steel support clips attached to the bottom of the weep pipes have areas of moderate to heavy rust; rusted out at weeps
- Weeps extend below bottom flanges U.O.N.

Fixed Bearings

- Bearings at the pier has light to moderate rust and impacted rust up to 1/4" thick between sole and masonry plates
- Isolated sole plates overhang the masonry plates in span 2 by up to 3/8"; as-built
- Random anchor bolts are short up to 2 threads and anchor bolt nuts are backed off up to 1/2" at isolated locations
- AB nuts and washers w/ heavy LR

Girders

- Girders have areas of peeling paint with up to heavy laminated rust at random locations (negligible section loss U.O.N.)
- Areas of painted over section loss FW x up to 1/16" deep in the girder bottom flanges and lower webs at random locations (<5% bottom flange loss)
- At random web stiffeners, the adjacent bottom flanges have up to 5"W x 1/8" deep section loss
- Webs at these locations have up to 3" high x 1/8" deep loses (away from bearings)
- Bottom flange section losses are <5% in critical zones; U.O.N.
- Girder bottom flanges are wavy (worst in span 1 at G6); as-built
- Dents/gouges in girder bottom flanges up to 1/16" deep (ground smooth)
- At removed/spalled deck haunches, the exposed edges of the girder top flanges show heavy rust with less than 1/16" section loss
- Cross-frames has random areas of light to moderate rust and areas of laminated rust with up to 1/8" deep section loss at some locations
- Less than 50% paint surface rusting

Debris

- Light accumulation of concrete debris, pigeon waste and bird nests on top of girder bottom flanges at random locations

Welds/Cracks

- Cross frame welds are typically sloppy throughout
- Random missing horizontal overhead welds at stiffener to diaphragm angle connections (connections secure)
- Random cross frame bottom angles are rotated due to pack rust at locations with broken/missing horizontal welds
- Web and bottom flange splice welds are not ground smooth

Underside of Deck & Framing - General Notes

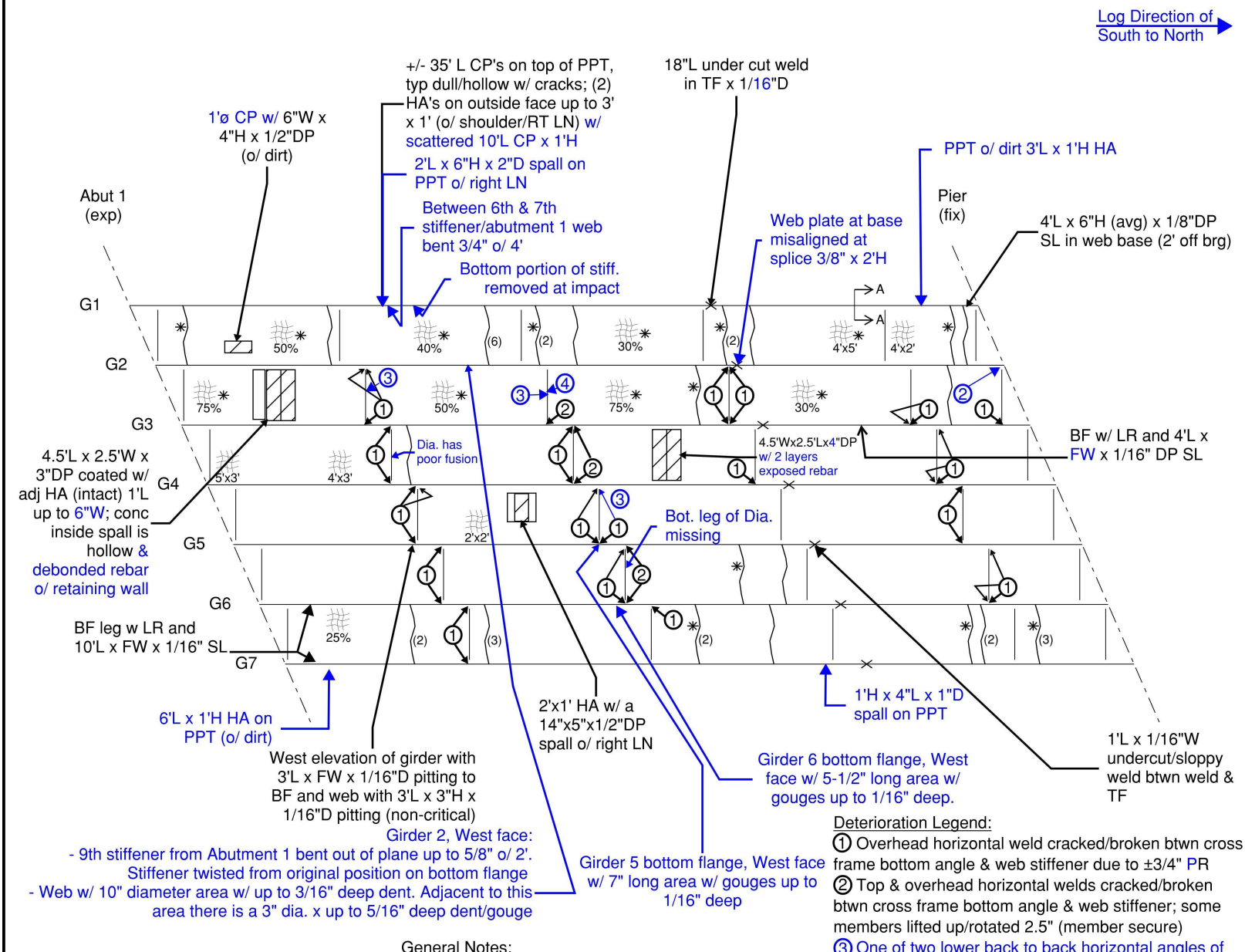
REVISION 1	DATE: 10/3/2019	CREW: TK, BF (Baker)	REVISION 3	DATE: 10/13/23	CREW: MEV, TAS, CJA (TSC)
REVISION 2	DATE: 10/18/2021	CREW: KG, NC (ADA)	REVISION 4	DATE:	CREW:

Sketches
Inspection type: Routine
Inspection Date: 10/10/2023
Inspected by: TranSystems

:Bridge No 00848

Town: UNION
Carried: ROUTE 89
Crossed: INTERSTATE 84
Inventory Route: Non-NHS

CREW: MRJ, KT	DATE: 10/17/2017	BRIDGE NO.: 00848



Deterioration Legend:
① Overhead horizontal weld cracked/broken btwn cross frame bottom angle & web stiffener due to ±3/4" PR
② Top & overhead horizontal welds cracked/broken btwn cross frame bottom angle & web stiffener; some members lifted up/rotated 2.5" (member secure)
③ One of two lower back to back horizontal angles of cross frame only supported by square steel plates welded to top of angles
④ The 2" x 3/8" x 3" steel connection plates on top of lower horizontal angles of cross frame have 3/16" long crack

General Notes:
-See framing general notes sheets
- Random scrapes at girder 1 BF (paint only)

LEGEND:
- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAPCRACKS
- HAIRLINE CRACKS
- HONEYCOMB AREA
- SCALE AREA
- EFFLORESCENCE PRESENT
- WEEP PIPE (not noted unless deficient)
- WELDED FIELD SPLICE; (NOT GROUND SMOOTH)

Underside of Deck & Framing - Span 1

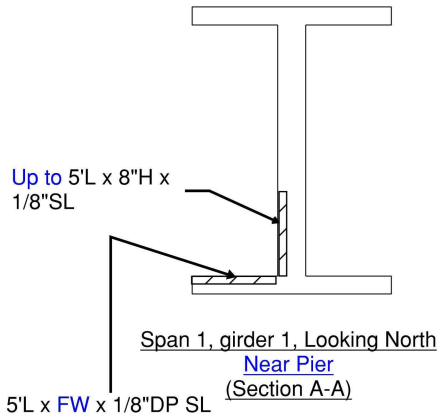
N.T.S.

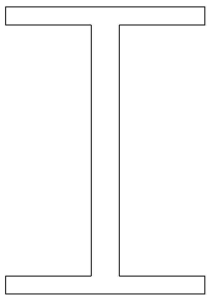
REVISION 1	DATE: 10/3/2019	CREW: TK, BF (Baker)	REVISION 3	DATE: 10/10/23	CREW: MEV, TAS, CJA (TSC)
REVISION 2	DATE: 10/18/2021	CREW: KG, NC (ADA)	REVISION 4	DATE:	CREW:

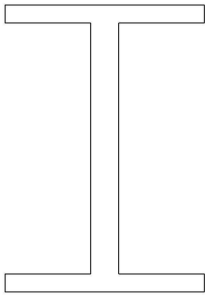
CREW: MRJ, BF	DATE: 10/3/2019	BRIDGE NO.: 00848

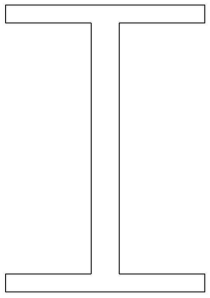
Bottom FL SL Calculation:
SL = (8.8")(1/8") = 1.1 in^2
Orig = (18")(1")=18 in^2
(1.1 / 18)(100) = 6.11%

flange width = 18"
flange thickness = 1"
web thickness = 0.375"









Note:
All losses have laminated rust

Section Loss Details - Span 1
N.T.S.

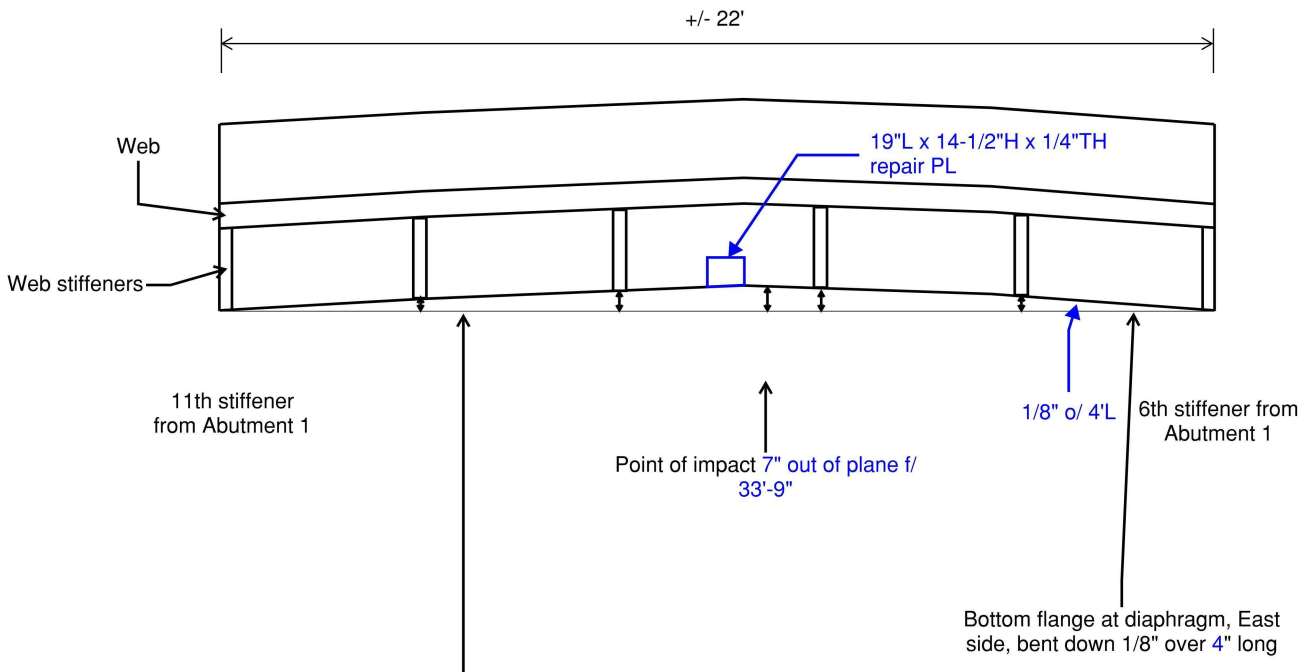
REVISION 1	DATE: 10/18/2021	CREW: KG, NC (ADA)	REVISION 3	DATE:	CREW:
REVISION 2	DATE: 10/10/23	CREW: MEV, TAS (TSC)	REVISION 4	DATE:	CREW:

Sketches
Inspection type: Routine
Inspection Date: 10/10/2023
Inspected by: TranSystems

:Bridge No 00848

Town: UNION
Carried: ROUTE 89
Crossed: INTERSTATE 84
Inventory Route: Non-NHS

CREW: Team 17	DATE: 10/20/2022	BRIDGE NO.: 00848



Location of hit at 8th stiffener from Abutment 1 (14'-11" vertical clearance):
- Bottom Flange, West side, bent up 1-5/16" for 20" L w/ numerous gouges up to 1/4" deep.
- Bottom Flange, East side, bent down 3/8" o/ 4' for 12" long.
- Girder out of plane to the North up to 3-1/2" over approximately 22'.
- Top flange separated from the deck for approximately 22' long x up to 13/16" high (no shear studs)

Girder 1 Collision Damage Detail (Plan View)
NTS

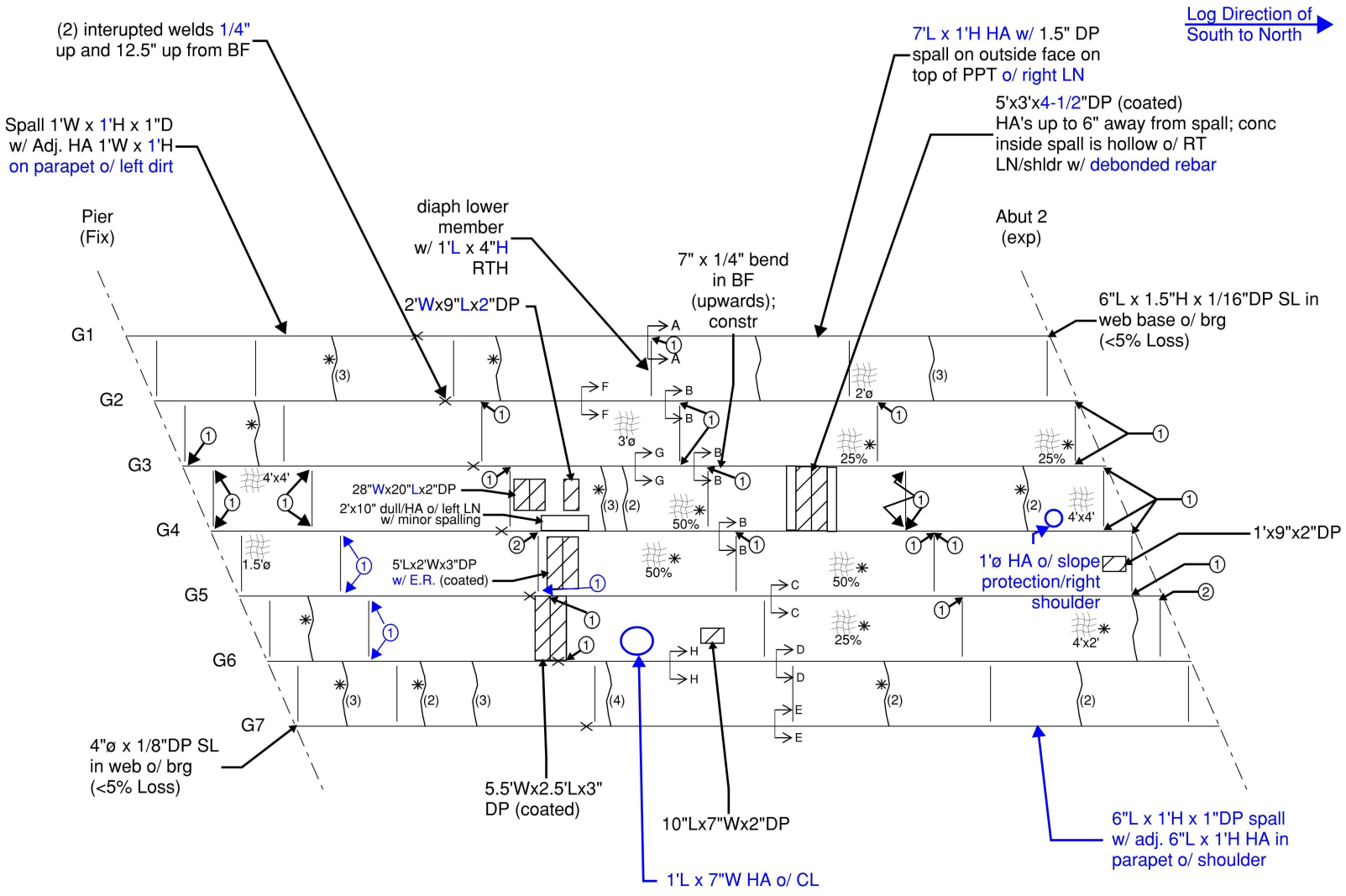
REVISION 1	DATE: 10/10/23	CREW: MEV, TAS, CJA (TSC)	REVISION 3	DATE:	CREW:
REVISION 2	DATE:	CREW:	REVISION 4	DATE:	CREW:

Sketches
Inspection type: Routine
Inspection Date: 10/10/2023
Inspected by: TranSystems

:Bridge No 00848

Town: UNION
Carried: ROUTE 89
Crossed: INTERSTATE 84
Inventory Route: Non-NHS

CREW: MRJ, KT	DATE: 10/17/2017	BRIDGE NO.: 00848



General Notes:
-See framing general notes sheets

Deterioration Legend:
① Overhead horizontal weld cracked/broken btwn cross frame bottom angle & web stiffener due to ±3/4" PR
② Top & overhead horizontal welds cracked/broken btwn cross frame bottom angle & web stiffener

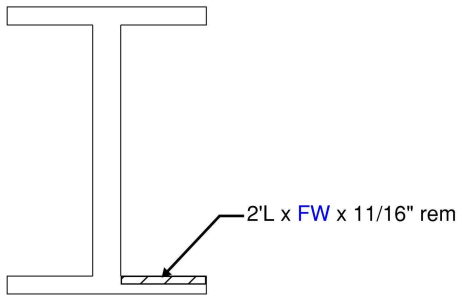
LEGEND:
- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAPCRACKS
- HAIRLINE CRACKS
- HONEYCOMB AREA
- SCALE AREA
- EFFLORESCENCE PRESENT
- WEEP PIPE (not noted unless deficient)
- WELDED FIELD SPLICE

Underside of Deck & Framing - Span 2
N.T.S.

REVISION 1	DATE: 10/3/2019	CREW: TK, BF (Baker)	REVISION 3	DATE: 10/10/23	CREW: MEV, TAS, CJA (TSC)
REVISION 2	DATE: 10/18/2021	CREW: KG, NC (ADA)	REVISION 4	DATE:	CREW:

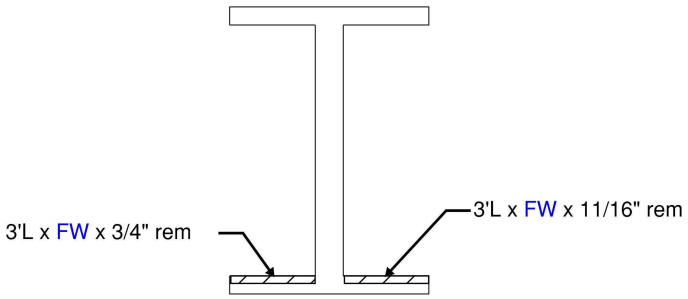
CREW: MRJ, KT	DATE: 10/17/2017	BRIDGE NO.: 00848

Bottom FL SL Calculation:
SL = (8.8")(3/16") = 1.65 in²
Orig = (18")(7/8")=15.75 in²
(1.65 / 15.75)(100) = 10%



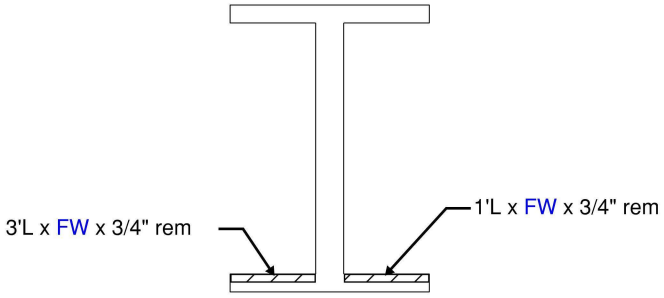
Span 2, girder 1, Looking North
(Section A-A)

Bottom FL SL Calculation:
SL = (8.8")(3/16") + (8.8)(1/8) = 2.75 in²
Orig = (18")(7/8")=15.75 in²
(2.75 / 15.75)(100) = 17%



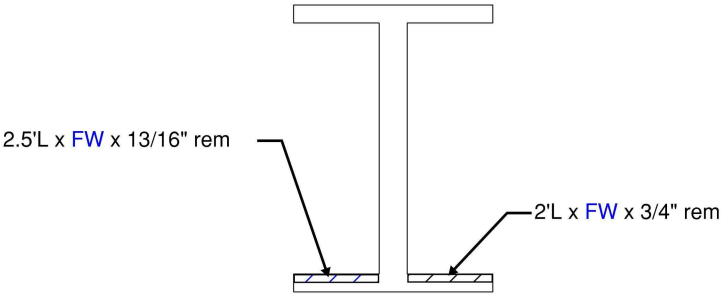
Span 2, girders 2-4, Looking North
(Section B-B)

Bottom FL SL Calculation:
SL = (8.8")(1/8") + (8.8)(1/8)= 2.2 in²
Orig = (18")(7/8")=15.75 in²
(2.2/15.75)(100) = 13.9%



Span 2, girders 5, Looking North
(Section C-C)

Bottom FL SL Calculation:
SL = (8.8")(1/8") + (8.8)(1/16) = 1.65 in²
Orig = (18")(7/8")=15.75 in²
(1.65 / 15.75)(100) = 10%



Span 2, girder 6, Looking North
(Section D-D)

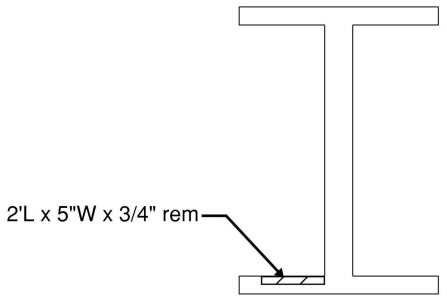
Note:
All losses have laminated rust

Section Loss Details - Span 2 Looking North
N.T.S.

REVISION 1	DATE: 10/3/2019	CREW: TK, BF (Baker)	REVISION 3	DATE: 10/10/23	CREW: MEV, TAS, CJA (TSC)
REVISION 2	DATE: 10/18/2021	CREW: KG, NC (ADA)	REVISION 4	DATE:	CREW:

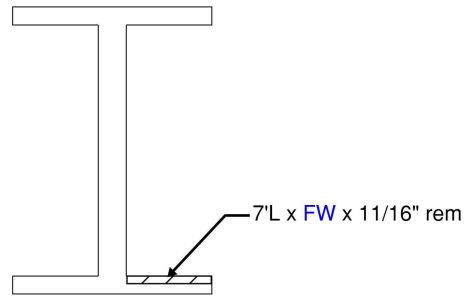
CREW: MRJ, KT	DATE: 10/17/2017	BRIDGE NO.: 00848

Bottom FL SL Calculation:
SL = (5")(1/8") = 0.625 in²
Orig = (18")(7/8")=15.75 in²
(0.625 / 15.75) (100) = 4%



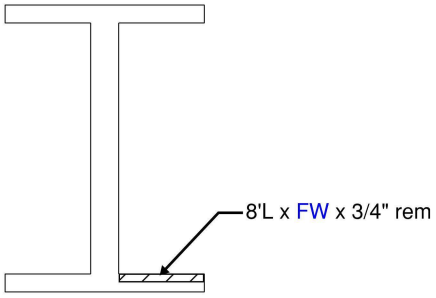
Span 2, girder 7, Looking North
(Section E-E)

Bottom FL SL Calculation:
SL = (8.8")(3/16") = 1.65 in²
Orig = (18")(7/8")=15.75 in²
(1.65 / 15.75) (100) = 10%



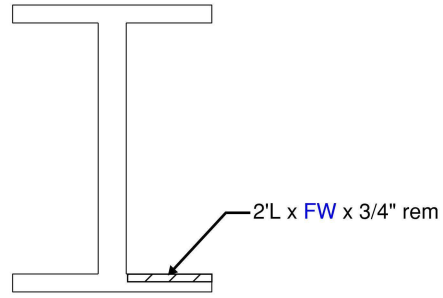
Span 2, girder 2, Looking North
(Section F-F)

Bottom FL SL Calculation:
SL = (7.5") * (1/8") = 0.938 in²
Orig = (18")*(7/8")=15.75 in²
0.938 / 15.75 * (100) = 6%



Span 2, girder 3, Looking North
(Section G-G)
(three closely spaced locations
within 8'L area)

Bottom FL SL Calculation:
SL = (8.8")(1/8") = 1.1 in²
Orig = (18")(7/8")=15.75 in²
(1.1 / 15.75) (100) = 7%



Span 2, girder 6, Looking North
(Section H-H)

Note:
All losses have laminated rust

Section Loss Details - Span 2 Looking North

N.T.S.

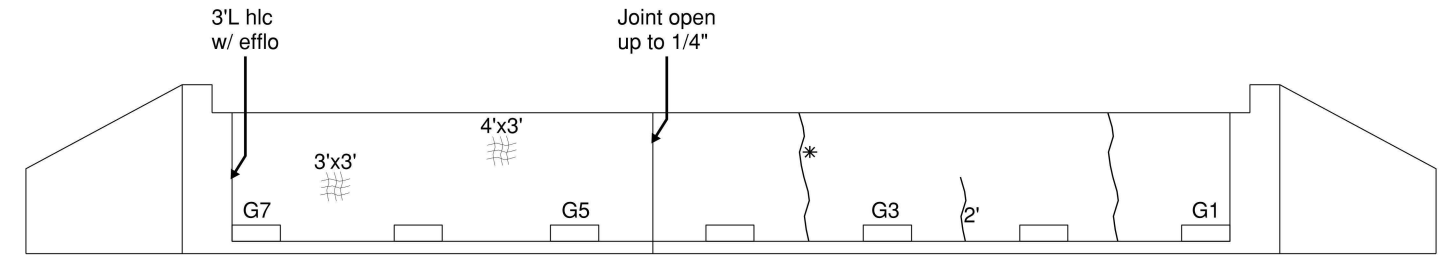
REVISION 1	DATE: 10/3/2019	CREW: TK, BF (Baker)	REVISION 3	DATE: 10/10/23	CREW: MEV, TAS, CJA (TSC)
REVISION 2	DATE: 10/18/2021	CREW: KG, NC (ADA)	REVISION 4	DATE:	CREW:

Sketches
Inspection type: Routine
Inspection Date: 10/10/2023
Inspected by: TranSystems

:Bridge No 00848

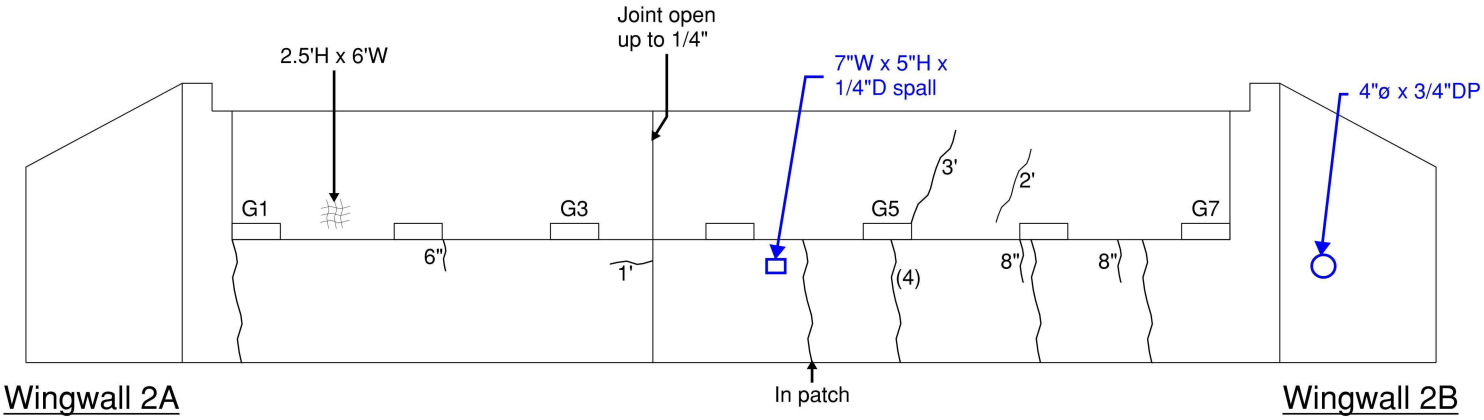
Town: UNION
Carried: ROUTE 89
Crossed: INTERSTATE 84
Inventory Route: Non-NHS

CREW: KT, MRJ	DATE: 10/17/2017	BRIDGE NO.: 00848



Wingwall 1B — Wingwall 1A

Abutment 1
N.T.S.



Wingwall 2A — Wingwall 2B

Abutment 2
N.T.S.

General Notes (Abutment):
- Random hairline cracks in pedestals
- Random cracks in stem and backwall extend across seat
- Random concrete patches (+/-10%)
- Areas of light scale, light honeycombing and isolated popouts
- Random spotty chipping along top of backwall
- Past water leakage stains on backwall
- Light sand debris on abutment seat
- Random cracks in concrete slope protection along mortar joints and in blocks, up to 1" wide

General Notes (Wingwalls):
- Areas of light scale, light honeycoming and isolated popouts with random shallow rebar
- Joint fill material deteriorated/missing
- Light to heavy vegetation growth along wingwalls
- Hairline cracks in the concrete retaining walls

LEGEND:
- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAPCRACKS
- HAIRLINE CRACKS
- HONEYCOMB AREA
- SCALE AREA
- EFFLORESCENCE PRESENT

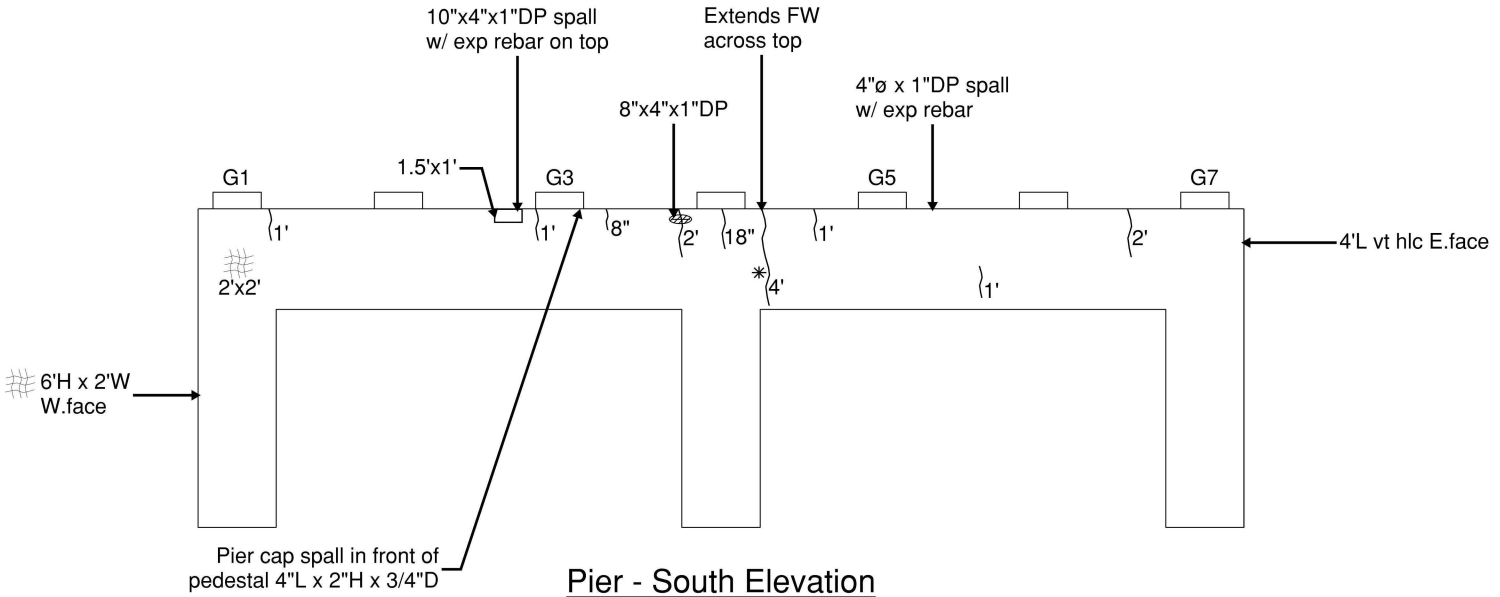
REVISION 1	DATE: 10/3/2019	CREW: BF, TK (Baker)	REVISION 3	DATE: 10/10/23	CREW: MEV, TAS (TSC)
REVISION 2	DATE: 10/18/2021	CREW: KG, NC (ADA)	REVISION 4	DATE:	CREW:

Sketches
Inspection type: Routine
Inspection Date: 10/10/2023
Inspected by: TranSystems

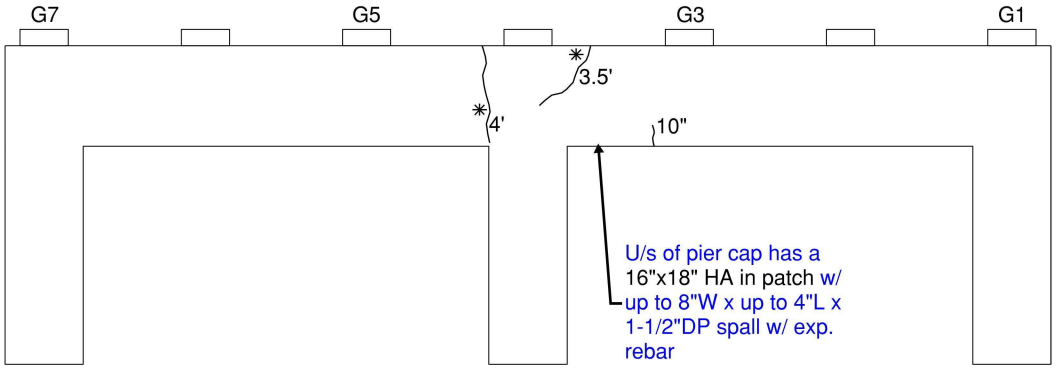
:Bridge No 00848

Town: UNION
Carried: ROUTE 89
Crossed: INTERSTATE 84
Inventory Route: Non-NHS

CREW: KT, MRJ	DATE: 10/17/2017	BRIDGE NO.: 00848



Pier - South Elevation
N.T.S.



Pier - North Elevation
N.T.S.

LEGEND:
- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAPCRACKS
- HAIRLINE CRACKS
- HONEYCOMB AREA
- SCALE AREA
- EFFLORESCENCE PRESENT

General Notes:

- Random concrete patches with shrinkage cracks (75% of length; specific notes removed)
- Areas of light scale, light honeycombing and isolated popouts

REVISION 1	DATE: 10/3/2019	CREW: BF, TK (Baker)	REVISION 3	DATE: 10/13/23	CREW: MEV, CJA (TSC)
REVISION 2	DATE: 10/18/2021	CREW: KG, NC (ADA)	REVISION 4	DATE:	CREW:

Photo Number: 1 Photo Taken: 10/10/2023

Bridge ID.

Photo Number: 2 Photo Taken: 10/13/2023

West elevation of the bridge.

Photo Number: 3 Photo Taken: 10/13/2023

East elevation of the bridge.

Photo Number: 4 Photo Taken: 10/10/2023

Bridge from south approach.

Photo Number: 5 Photo Taken: 10/10/2023

Bridge from north approach.

Photo Number: 6 Photo Taken: 10/10/2023

South approach from bridge.

Photo Number: 7 Photo Taken: 10/10/2023

North approach from bridge.

Photo Number: 8 Photo Taken: 10/10/2023

Typical top of deck. Note transverse and longitudinal cracks up to 10' long x 1/8" wide.

Photo Number: 9 Photo Taken: 10/10/2023

Typical underside of deck and framing, span 1.

Photo Number: 10 Photo Taken: 10/13/2023

Span 2, bay 3, panel 3. Note spalls with exposed rebar and adjacent hollow areas.

Photo Number: 11 Photo Taken: 10/10/2023

Span 2, bay 3, panel 2. Note spall with debonded rebar.

Photo Number: 12 Photo Taken: 10/17/2023

West parapet, bridge railing, safety walk, and jersey barrier.

Photo Number: 13 Photo Taken: 10/17/2023

East parapet, bridge railing, and safety walk.

Photo Number: 14 Photo Taken: 10/17/2023

West parapet over the pier. Note the spall around the post.

Photo Number: 15 Photo Taken: 10/10/2023

Span 1, west parapet near abutment 1 with hollow area.

Photo Number: 16 Photo Taken: 10/10/2023

East parapet railing post 13 with loose anchor bolt nuts.

Photo Number: 17 Photo Taken: 10/10/2023

Asphaltic plug joint at abutment 1, looking east. Note the adhesion crack.

Photo Number: 18 Photo Taken: 10/10/2023

Asphaltic plug joint at abutment 2, looking west. Note the adhesion crack.

Photo Number: 19 Photo Taken: 10/10/2023

Northeast transition with a gap, typical.

Photo Number: 20 Photo Taken: 10/10/2023

Northeast approach guide rail, looking north. Note the collision damage.

Photo Number: 21 Photo Taken: 10/10/2023

Northwest approach guide rail, looking north. Note the collision damage and disconnected posts

Photo Number: 22 Photo Taken: 10/10/2023

Span 1, girder 7 at abutment 1. Note rocker bearing with laminated rust.

Photo Number: 23 Photo Taken: 10/10/2023

Span 1, girder 4 at abutment 1. Note rocker bearing with laminated rust and missing keeper block on the west elevation.

Photo Number: 24 Photo Taken: 10/13/2023

Span 2, girder 4, west elevation near midspan. Note laminated rust and section loss at bottom flange.

Photo Number: 25 Photo Taken: 10/13/2023

Span 2, girder 2, east elevation near panel 4. Note laminated rust and section loss at bottom flange.

Photo Number: 26 Photo Taken: 10/13/2023

Span 1, girder 1 west elevation near pier. Laminated rust and section loss in the web and bottom flange.

Photo Number: 27 Photo Taken: 10/17/2023

Span 1, bay 2, first intermediate diaphragm. Note deformed/bent lower members and broken overhead welds due to pack rust.

Photo Number: 28 Photo Taken: 10/17/2023

Span 2, bay 1, second diaphragm with a rusted through hole in the lower angle.

Photo Number: 29 Photo Taken: 10/17/2023

Span 1, girder 1, looking west. Note the web and bottom flange splice welds not ground smooth, typical.

Photo Number: 30 Photo Taken: 10/17/2023

Span 1, girder 1, west elevation above collision damage. Note the gap between girder top flange and deck.

Photo Number: 31 Photo Taken: 10/17/2023

Span 1, girder 1 west elevation web with repair plate at the collision damage.

Photo Number: 32 Photo Taken: 10/17/2023

Span 1, girder 1 bottom flange west elevation bent up and to the east.

Photo Number: 33 Photo Taken: 10/17/2023

Span 1, girder 1 underside of bottom flange at the collision damage.

Photo Number: 34 Photo Taken: 10/10/2023

Span 1, girder 2, west elevation over right lane. Note the bent stiffener and dent with adjacent gouge in the web.

Photo Number: 35 Photo Taken: 10/17/2023

Abutment 1.

Photo Number: 36 Photo Taken: 10/17/2023

Abutment 2.

Photo Number: 37 Photo Taken: 10/17/2023

Wingwall 2B.

Photo Number: 38 Photo Taken: 10/17/2023

Wingwall 1B

Form: Asset Photos
Inspection type: Routine
Inspection Date: 10/10/2023
Inspected by: TranSystems

:Bridge No 00848

Town: UNION
Carried: ROUTE 89
Crossed: INTERSTATE 84
Inventory Route: Non-NHS

Photo Number: 39 Photo Taken: 10/17/2023

Pier, looking south.

Form: Maintenance
Carried: ROUTE 89
Crossed: INTERSTATE 84

:Bridge No 00848

Town: UNION
Inventory Route: Non-NHS

Status: Bridge Maintenance Garage
Assigned To: District_1 Bridge
Work Item ID: 00848-2023-0017
Date Issued: 11/09/2023
Priority: Routine Repair
Deficiency: Deck Joint
Structural Component: Deck
Comments: Adhesion cracks up to full length x 3/4" wide at both abutments.

Date Completed:
Actual Quantity:

Asphaltic plug joint at abutment 1, looking east. Note the adhesion crack.

Form: Maintenance
Carried: ROUTE 89
Crossed: INTERSTATE 84

:Bridge No 00848

Town: UNION
Inventory Route: Non-NHS

Status: Bridge Maintenance Garage
Assigned To: District_1 Bridge
Work Item ID: 00848-2023-0016
Date Issued: 11/09/2023
Priority: Priority Repair
Deficiency: Hollow Concrete
Structural Component: Deck
Comments: - Isolated (intact) hollow areas. These locations are as follows:

- Span 1, west fascia parapet with (2) hollow areas on the outside face up to 3' long x 1' high over the right lane/shoulder near abutment 1.
- Span 2, east fascia parapet with hollow area on the outside face 6" long x 1' high over the right shoulder near abutment 2.

Date Completed:
Actual Quantity:

Span 1, west parapet near abutment 1 with hollow area.

Form: Maintenance **Town:** UNION

Carried: ROUTE 89 **:Bridge No 00848**

Crossed: INTERSTATE 84 **Inventory Route:** Non-NHS

Status:	Bridge Maintenance Garage	**Assigned To:**	District_1 Bridge	**Work Item ID:**	00848-2023-0015
Date Issued:	11/09/2023	**Priority:**	Priority Repair		

Deficiency: Hollow Concrete

Structural Component: Deck

Comments: Isolated intact hollow areas up to 2' x 1' with minor spalling over road. These locations are as follows:

- Span 1, 2' long x 1' wide hollow area over right lane in bay 4, panel 2.
- Span 2, 2' long x 10" wide dull/hollow area over left lane in bay 3, panel 3.
- Span 2 , adjacent to the 5' long x 3' wide x 4-1/2" deep (coated) spall there are (2) hollow areas up to 6" away over the right lane/shoulder in bay 3, panel 4.
- Span 2, 1' diameter hollow area over the slope protection/right shoulder in bay 3, panel 5.
- Span 2, 1' long x 7" wide hollow area over center lane in bay 5, panel 3.

Date Completed: **Actual Quantity:**

Span 2, bay 3, panel 3. Note spalls with exposed rebar and adjacent hollow areas.

Form: Maintenance **Town:** UNION

Carried: ROUTE 89 **:Bridge No 00848**

Crossed: INTERSTATE 84 **Inventory Route:** Non-NHS

Status: Bridge Maintenance Garage **Assigned To:** District_1 Bridge **Work Item ID:** 00848-2019-0010

Date Issued: 12/31/2019 **Priority:** Priority Repair

Deficiency: Welds/ Cracks

Structural Component: Superstructure

Comments: Top and overhead horizontal welds are cracks/broken between cross frame bottom angles and web stiffeners; some members are lifted up/rotated up to 2.5". One of two lower horizontal angles of cross frames supported by two square steel plates welded to the top of the angles. These locations are as follows:

Span 1:
- Bay 2, diaphragms 2, 3 & 6
- Bay 3, diaphragm 3
- Bay 4, diaphragm 3
- Bay 5, diaphragm 3

Span 2:
- Bay 4, diaphragm 3
- Bay 5, diaphragm 6

Repair broken cross frames ,clean and paint.

Date Completed: **Actual Quantity:**

Span 1, bay 5, third intermediate diaphragm: Deformed/bent lower members and broken overhead welds due to impacted rust (rust removed).

Form: Maintenance **Town:** UNION

Carried: ROUTE 89 **:Bridge No 00848**

Crossed: INTERSTATE 84 **Inventory Route:** Non-NHS

Status:	Bridge Maintenance Garage	**Assigned To:**	District_1 Bridge	**Work Item ID:**	00848-2019-0009
Date Issued:	12/31/2019	**Priority:**	Routine Repair		

Deficiency: Steel Corrosion

Structural Component: Superstructure

Comments: Span 2, bay 1, diaphragm 4 has a 1' x 4" rusted through hole in the lower angle. Replace/repair the rusted-out diaphragm angle.

Date Completed: **Actual Quantity:**

Span 2, bay 1, 4th diaphragm with a rusted through hole in the lower angle.

Form: Maintenance **Town:** UNION

Carried: ROUTE 89 **:Bridge No 00848**

Crossed: INTERSTATE 84 **Inventory Route:** Non-NHS

Status:	Bridge Maintenance Garage	**Assigned To:**	District_1 Bridge	**Work Item ID:**	00848-2019-0008
Date Issued:	12/31/2019	**Priority:**	Routine Repair		

Deficiency: Welds/ Cracks

Structural Component: Superstructure

Comments: Overhead horizontal welds are cracked/broken between cross frame bottom angles and web stiffeners due to up to 3/4" impacted rust at the following locations:

Span 1:
- Bay 2, diaphragms 2, 4, 5 and 6
- Bay 3, diaphragms 2, 3, 4 and 5
- Bay 4, diaphragms 2, 3 and 5
- Bay 5, diaphragms 2, 3 and 5
- Bay 6, diaphragms 2 and 3

Span 2:
- Bay 1, diaphragm 4
- Bay 2, diaphragms 1, 3, 4, 5 and 6
- Bay 3, diaphragms 1, 2, 3, 4, 5 and 6
- Bay 4, diaphragms 4, 5 and 6
- Bay 5, diaphragms 3 and 5

Repair /clean and paint.

Date Completed: **Actual Quantity:**

Typical impacted rust between lower intermediate diaphragm members. Also, note and broken overhead weld (typical condition).

Form: Maintenance **Town:** UNION

Carried: ROUTE 89 **:Bridge No 00848**

Crossed: INTERSTATE 84 **Inventory Route:** Non-NHS

Status:	Bridge Maintenance Garage	**Assigned To:**	District_1 Bridge	**Work Item ID:**	00848-2019-0007
Date Issued:	12/31/2019	**Priority:**	Routine Repair		

Deficiency: Steel Corrosion

Structural Component: Superstructure

Comments: The following locations along the superstructure has laminated rust and section losses:

Span 1:
- Girders 1 & 3, panel 5, bottom flange
- Girders 6 & 7, panel 2, bottom flange
- Girder 1 web end at pier

Span 2:
- Girders 1-7, random locations near mid-span, bottom flanges
- Girder 1 web end at abutment 2
- Girder 7 web end at pier

Clean and paint the affected areas.

Date Completed: **Actual Quantity:**

Span 2, girder 2, east elevation at panel 4: Laminated rust and section loss at bottom flange.

Form: Maintenance
Carried: ROUTE 89
Crossed: INTERSTATE 84

:Bridge No 00848

Town: UNION
Inventory Route: Non-NHS

Status: Bridge Maintenance Garage
Assigned To: District_1 Bridge
Work Item ID: 00848-2019-0006
Date Issued: 10/03/2019
Priority: Priority Repair
Deficiency: Steel Corrosion
Structural Component: Superstructure
Comments: There is up to +/-2" thick impacted rust between the back to back angles of the lower members at the intermediate diaphragms (this condition is typical throughout both spans). Large areas of rust will fall into the roadway from these locations. Baker crew removed some of these areas, but not all (see attached photos).

Date Completed:
Actual Quantity:

Typical impacted rust between the components of the lower intermediate diaphragm member.