

Bridge No. 00980B  
Interstate-84 TR 826 over Connecticut River  
Hartford



Inspected By:



Date: 11/19/2018



Personal 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: 

License No.: 27653

Date: 12-18-2018

**EXECUTIVE SUMMARY**  
**11-19-18**

Bridge No. 00980B carries Interstate-84 TR 826 (Interstate-84 Westbound to Interstate-91 Northbound) over the Connecticut River in Hartford, Connecticut. The two span bridge consists of steel multi-girder with a reinforced concrete deck and supported by a reinforced concrete abutment and piers. The bridge was built in 1964. The overall length of the bridge is 263', with curb-to-curb width of 26.5'. According to a load rating on file with the Connecticut Department of Transportation completed in 2000 using the Load Factor Method, the bridge has an AASHTO HS-20 Inventory Rating of 43.2 tons. Significant changes in deterioration were noted during this inspection. An updated load rating and a re-evaluation is recommended at this time.

A special inspection was performed on the superstructure.

The bridge was found to be in poor condition on this & the previous routine inspection with significant changes during this special inspection (Overall Rating = 4). The deficiencies found on the bridge are as follows:

**Superstructure:**

The superstructure is in poor condition. (Rating = 4).

**Bearings:**

Expansion sliding plate bearings at Abutment 1 and at Pier 1, Span 2:

- There is light to heavy surface rust with up to 3/16" thick pack rust between the sole and sliding plates.
- Girder G0 bearing at Pier 1 in Span 2 exhibits laminated rust with 1/8" deep section loss at masonry and sole plates. See photo 4.

Fixed bearings in Span 1 over Pier 1 and Span 2 over Pier 1 (Br. #00980A):

- The bearings in Span 1 over Pier 1 have random laminated rust with negligible section loss and up to 5/8" thick pack rust between the sole and masonry plates. See photo 5.

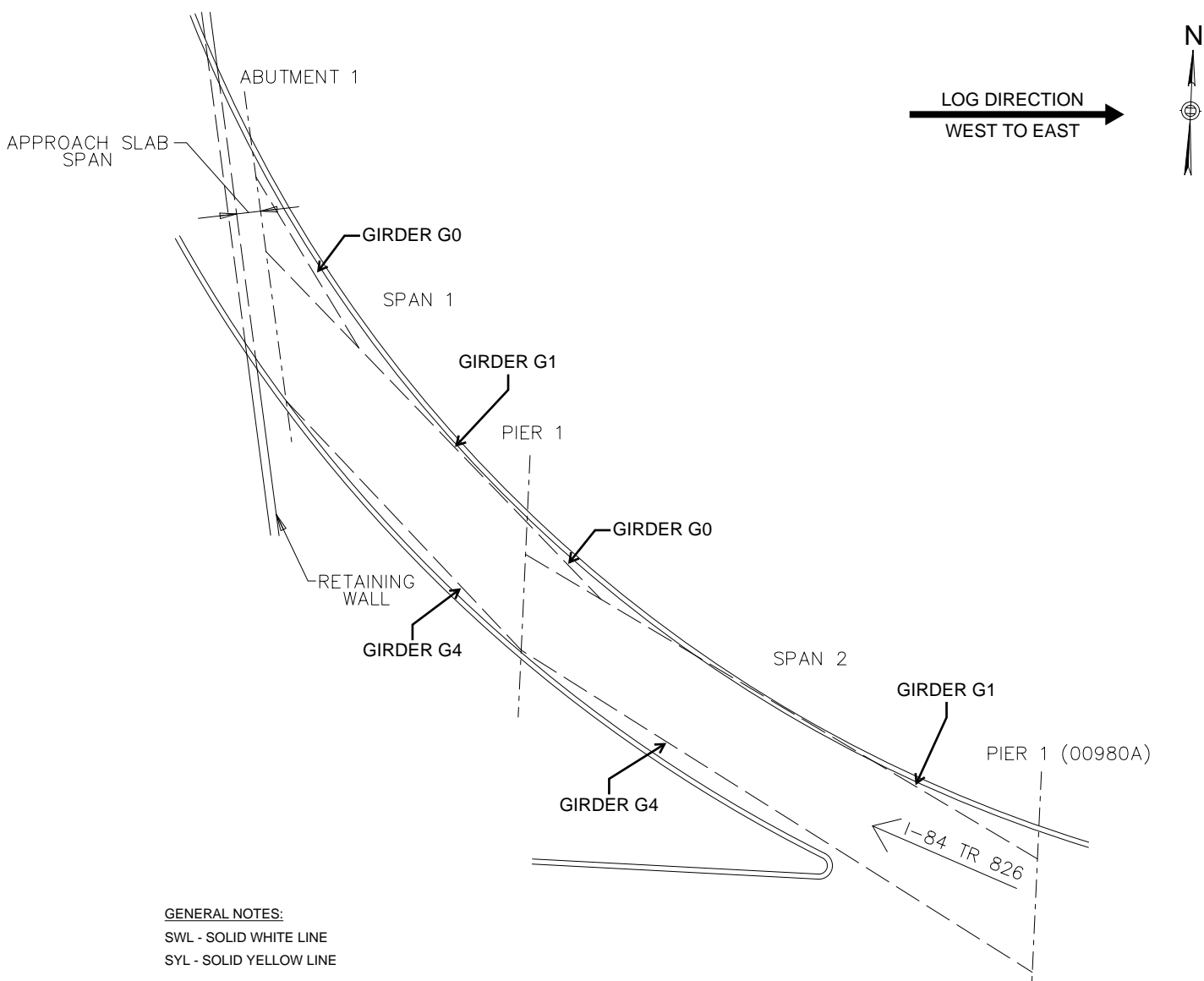
**Girders:**

Welded steel plate girders:

- The welded steel plate girders have areas of peeling paint and heavy surface rust throughout. There is significant new section loss noted since the last inspection at the following locations:
  - o Span 1, abutment 1, girders G0-G3.
  - o Span 1, pier 1, girder G1.
  - o Span 2, pier 1, girders G0 & G2-G4.
  - o Maximum shear loss: Span 2, girder G0 at Pier 1 exhibits 39" high x 6" wide x 7/32" deep section loss between stiffeners over bearing, resulting in up to 46.8% shear loss.
  - o Maximum bearing loss: Span 2, girder G0 at Pier 1 exhibits 5" high x 4.5" wide knife edging with a 2.5" rusted through hole and stiffeners with 1/8" remaining and rusted through holes, resulting in up to 38.2% bearing loss. See photos 4 & 6-7.
- Girder G1 bottom flanges at mid span of both spans have section loss up to 10' long x 7" high x 5/16" deep, resulting in up to 5% loss of cross sectional area. See photo 8.
- The end cross frames have laminated rust with typically up to 1/16" deep section loss. The

end cross frame at Girder G0 over Pier 1 in Span 2 has rust holes totaling 1' long x 3" wide. The channel web and bottom flange at this location have up to 50% section loss to the cross section, and connection plates exhibits up to 3/16" deep section loss and an isolated 2" x 1.5" rusted through hole at the lower connection plate. See photo 9. There is up to 3/8" thick pack rust between the top flange cross frames and the deck slab.

- Welds – Cracks: There is a 1-1/16" long crack with a stop hole and a bolt installed along the bottom of Girder G0 web cope at the connection to Girder G1 in Span 2 (no change this inspection). See photo 10. Girder G0 has a 3/8" overcut in the cope at the top of the web at the same connection to Girder G1. Neither condition has changed since the previous inspection.
- Member Alignment: The lower angle of end cross frame is bent up to 1/2" over 2' length in Span 2, Bay 1 over Pier 1.



**GENERAL NOTES:**

- SWL - SOLID WHITE LINE
- SYL - SOLID YELLOW LINE

KEY PLAN  
N.T.S.

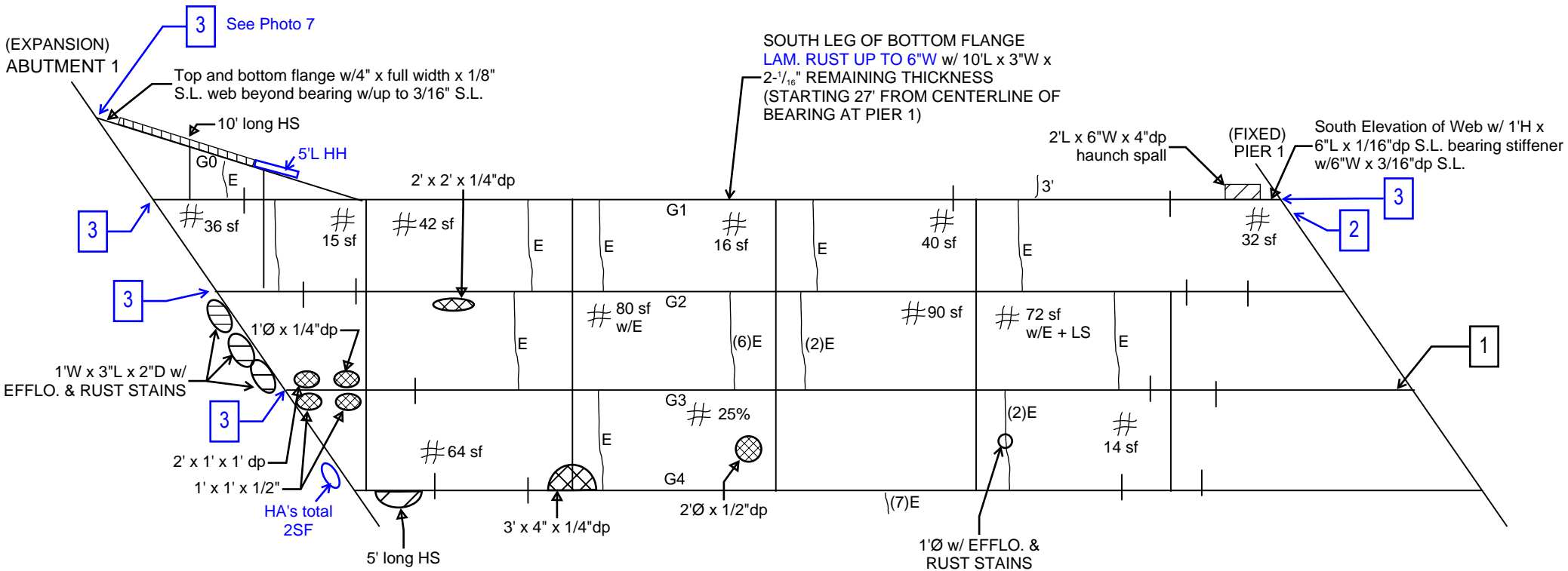
11/19/18 - AI Engineers, Inc. - CC, HP

9/20/18 - Prime AE Group, Inc. - CMR, NH, MP

**DETERIORATION NOTES:**

- [1] = Web with negligible section loss; both bearing stiffeners with FWx3"Hx1/8" dp SL.
- [2] = Full diaph. section along G1 w/ 50% SL; lower horiz. w/ 1.5"Ø hole; channel web w/ 3"Ø hole; 1 of 3 Conn. bolts & nuts @ G1 w/ 80% SL; Conn. PL's w/ 1/8"-3/16"dp SL.
- [3] = See Girder Detail Sketch.

LOG DIRECTION  
WEST TO EAST →



**GENERAL NOTES:**

- End diaphragms with heavy rust and 1/8" deep section losses.
- Bottom flanges near Abutment 1 (non-critical zone) with heavy rust and <1/16" deep section loss.
- Underside of the deck near Abutment 1 with light scale.
- Deck joint material hanging down at pier 1 at random locations.
- Fixed bearings with lam rust and up to 5/8" IR between plates.
- Pipe conduit rope tied to diaphragm and laying on abutment seat.

S.L. = Section Loss

**LEGEND**

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- HAIRLINE CRACKS
- MAP CRACKS
- HONEY COMB AREA
- SCALE AREA
- EFFLORESCENCE IS PRESENT

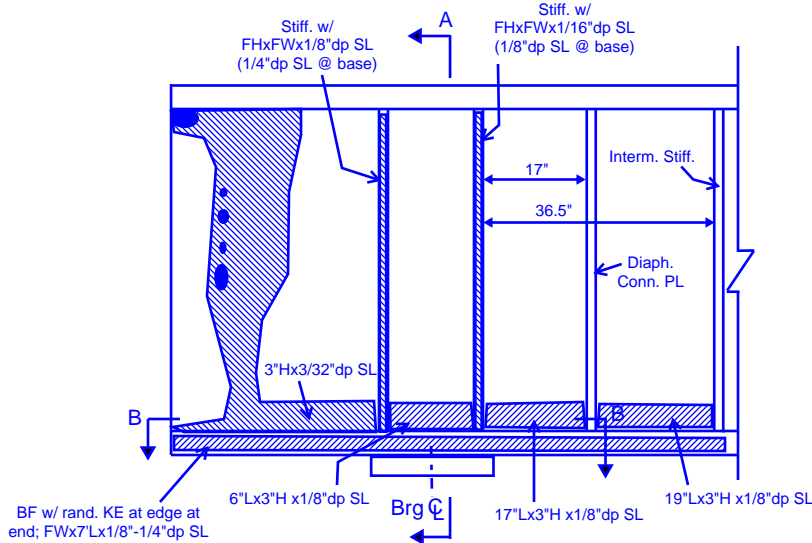
**UNDERSIDE OF DECK & FRAMING PLAN - SPAN 1**

N.T.S.

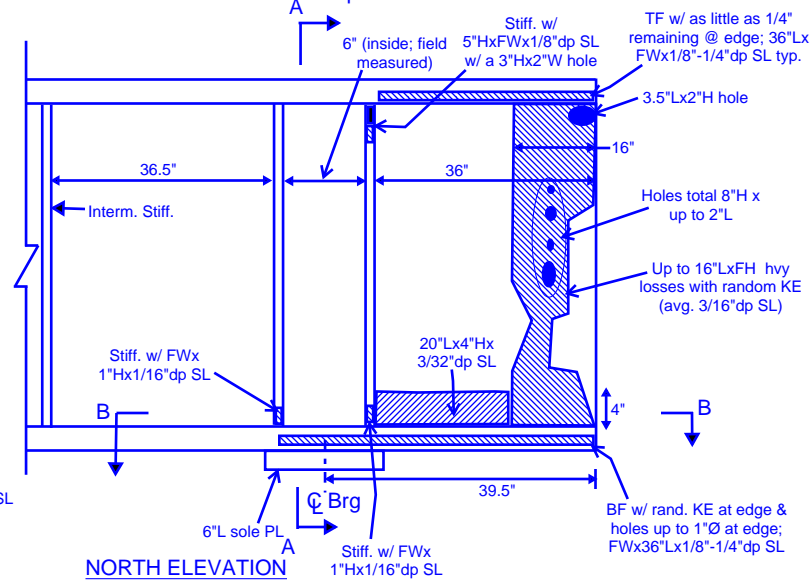
9/20/18 - Prime AE Group, Inc. - CMR, NH, MP

11/19/18 - AI Engineers, Inc. - CC, HP

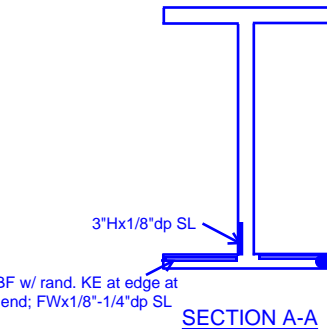
Section Properties PL Girder:  
 Web = 54" x 3/8"  
 Bott. Flange = 12" x 3/4"  
 Top Flange = 12" x 3/4"  
 Bearing Stiffener = 6" x 1/2" (spaced 3" off  $\bar{C}$  of brg)  
 Diaph. Conn. PL/ Intern. Stiff. = 5" x 3/8"



SOUTH ELEVATION



NORTH ELEVATION



SECTION A-A

SHEAR LOSS @ A-A:

Orig. Area =  $54 \times 3/8$   
 = 20.25 sq.in.

Area Loss =  $3 \times 1/8 = 0.375$  sq.in.

% Loss =  $0.375/20.25 = 1.9\%$

BEARING LOSS @ B-B:

Orig. Area =  $4 \times \text{Stiff's} + (7 + 2 \times 9 \times \text{tw})(\text{tw})$  (9tw=3.38)  
 =  $4 \times 6 \times 1/2 + (7 + 2 \times 9 \times 3/8)(3/8)$   
 = 17.16 sq.in.

Area Loss =  $7 \times 1/16 + 7 \times 1/16 + 7 \times 1/4 + 7 \times 1/8 + 6 \times 1/8$   
 +  $3.38 \times 1/8 + 3.38 \times 3/32 + 3.38 \times 3/32 = 5.31$  sq.in.

% Loss =  $5.31/17.16 = 30.9\%$

SHEAR LOSS @ PERFORATIONS:

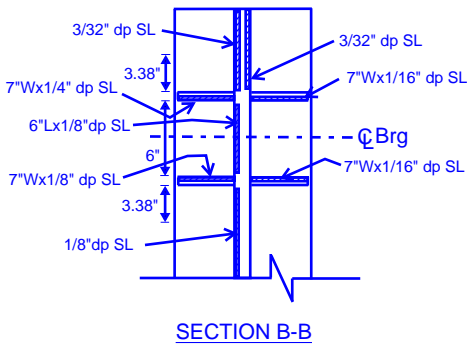
Orig. Area = 20.25 sq.in.

Area Loss =  $8 \times 3/8 + 44 \times 3/16 = 11.25$  sq.in.

% Loss =  $11.25/20.25 = 55.6\%$

GENERAL NOTES:

- All losses with laminated rust unless otherwise noted.

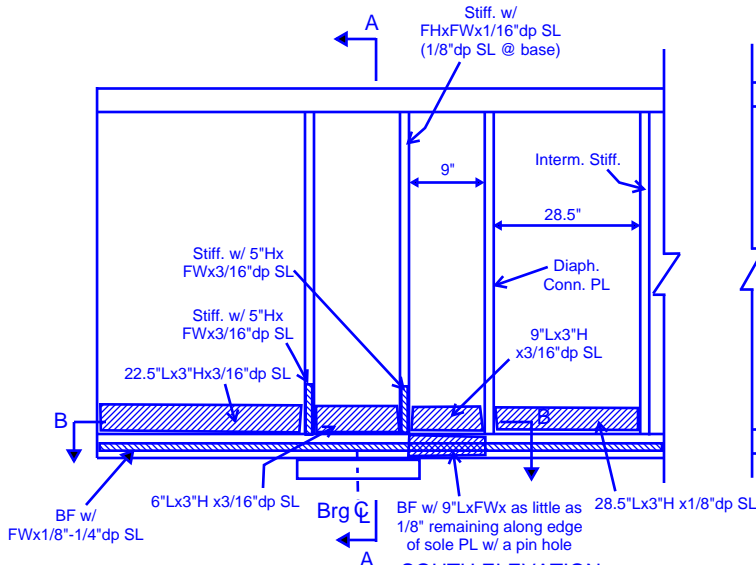


SECTION B-B

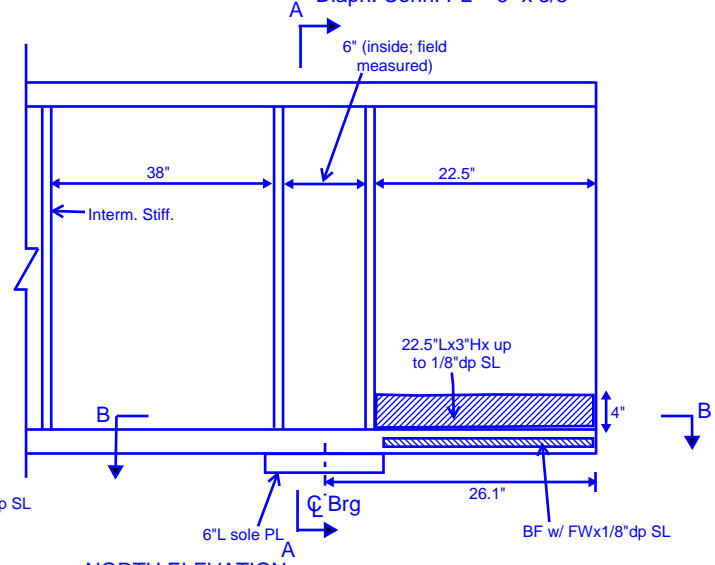
GIRDER G0, SPAN 1, ABUTMENT 1  
 (N.T.S.)

REVISION $\Delta$	DATE:	CREW:	REVISION $\Delta$	DATE:	CREW:
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Section Properties PL Girder:  
 Web = 60" x 3/8"  
 Bott. Flange = 14" x 3/4"  
 Top Flange = 14" x 3/4"  
 Bearing Stiffener = 7" x 5/8" (spaced 3" off  $\bar{C}$  of brg)  
 Diaph. Conn. PL = 6" x 3/8"



**SOUTH ELEVATION**



**NORTH ELEVATION**



**SECTION A-A**

**SHEAR LOSS @ A-A:**

Orig. Area =  $60 \times 3/8 = 22.5$  sq.in.  
 Area Loss =  $3 \times 3/16 = 0.563$  sq.in.  
 % Loss =  $0.563/22.5 = 2.5\%$

**BEARING LOSS @ B-B:**

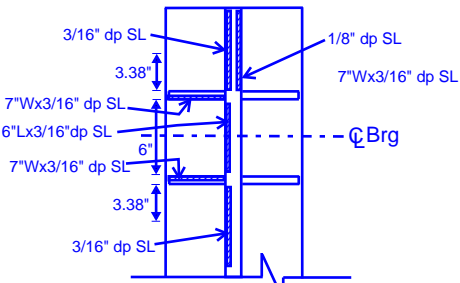
Orig. Area =  $4 \times \text{Stiff's} + (6 + 2 \times 9 \times \text{tw}) (\text{tw})$  (9tw=3.38)  
 $= 4 \times 7 \times 5/8 + (6 + 2 \times 9 \times 3/8)(3/8)$   
 $= 22.28$  sq.in.  
 Area Loss =  $7 \times 3/16 + 7 \times 3/16 + 6 \times 3/16 + 3.38 \times 3/16 + 3.38 \times 3/16 + 3.38 \times 1/8 = 5.44$  sq.in.  
 % Loss =  $5.44/22.28 = 24.4\%$

**SHEAR LOSS @ END:**

Orig. Area = 22.5 sq.in.  
 Area Loss =  $3 \times 3/16 + 3 \times 1/8 = 0.963$  sq.in.  
 % Loss =  $0.963/22.5 = 4.3\%$

**GENERAL NOTES:**

- All losses with laminated rust unless otherwise noted.

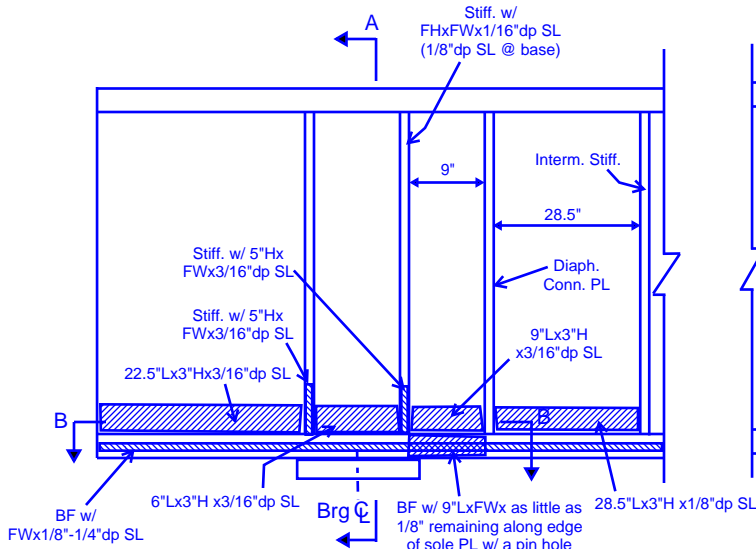


**SECTION B-B**

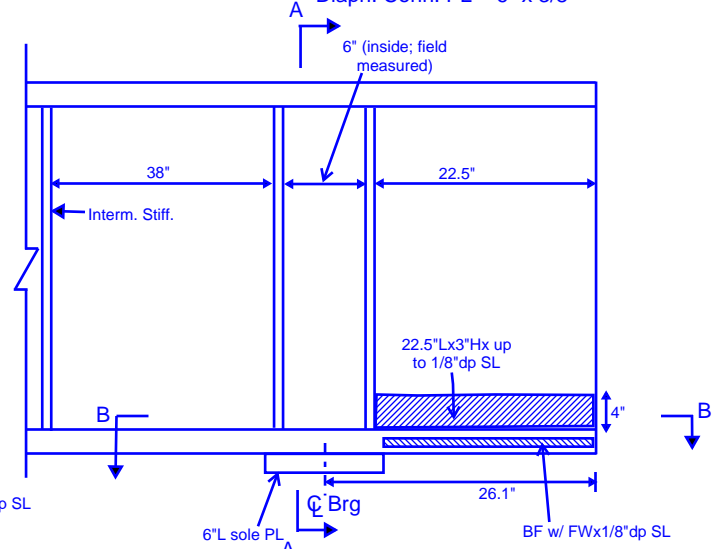
**GIRDER G1, SPAN 1, ABUTMENT 1**  
 (N.T.S.)

REVISION $\Delta$	DATE:	CREW:	REVISION $\Delta$	DATE:	CREW:
REVISION $\Delta$	DATE:	CREW:	REVISION $\Delta$	DATE:	CREW:

Section Properties PL Girder:  
 Web = 60" x 3/8"  
 Bott. Flange = 14" x 3/4"  
 Top Flange = 14" x 3/4"  
 Bearing Stiffener = 7" x 5/8" (spaced 3" off  $\bar{C}$  of brg)  
 Diaph. Conn. PL = 6" x 3/8"



SOUTH ELEVATION



NORTH ELEVATION



SECTION A-A

SHEAR LOSS @ A-A:

Orig. Area =  $60 \times 3/8 = 22.5$  sq.in.  
 Area Loss =  $3 \times 3/16 = 0.563$  sq.in.  
 % Loss =  $0.563/22.5 = 2.5\%$

BEARING LOSS @ B-B:

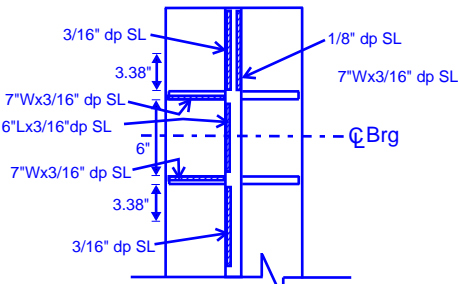
Orig. Area =  $4 \times \text{Stiff's} + (6 + 2 \times 9 \times \text{tw}) (\text{tw})$  (9tw=3.38)  
 $= 4 \times 7 \times 5/8 + (6 + 2 \times 9 \times 3/8)(3/8)$   
 $= 22.28$  sq.in.  
 Area Loss =  $7 \times 3/16 + 7 \times 3/16 + 6 \times 3/16 + 3.38 \times 3/16 + 3.38 \times 3/16 + 3.38 \times 1/8 = 5.44$  sq.in.  
 % Loss =  $5.44/22.28 = 24.4\%$

SHEAR LOSS @ END:

Orig. Area = 22.5 sq.in.  
 Area Loss =  $3 \times 3/16 + 3 \times 1/8 = 0.963$  sq.in.  
 % Loss =  $0.963/22.5 = 4.3\%$

GENERAL NOTES:

- All losses with laminated rust unless otherwise noted.



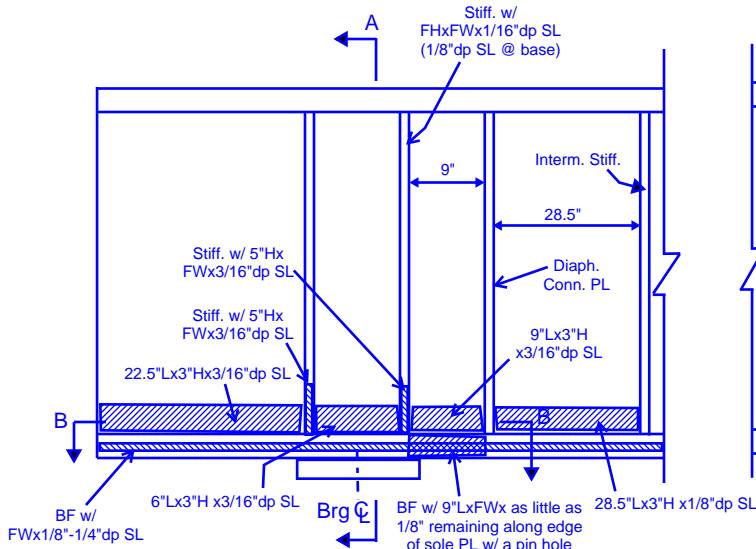
SECTION B-B

GIRDER G2, SPAN 1, ABUTMENT 1  
 (N.T.S.)

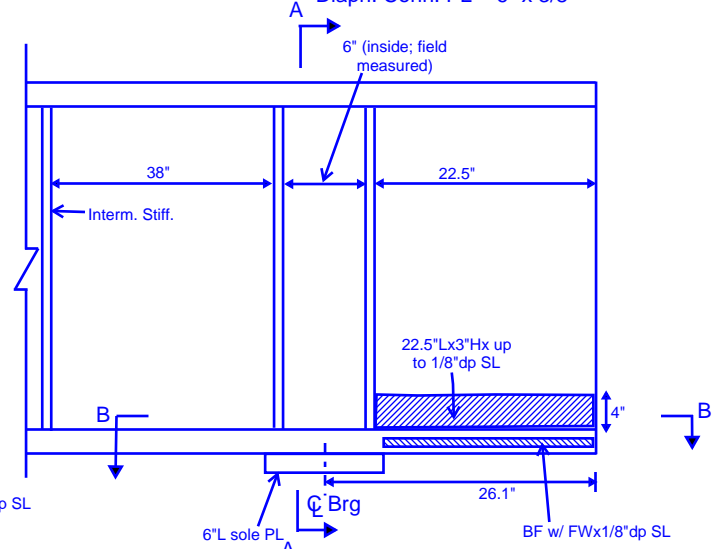
REVISION $\Delta$	DATE:	CREW:	REVISION $\Delta$	DATE:	CREW:
REVISION $\Delta$	DATE:	CREW:	REVISION $\Delta$	DATE:	CREW:



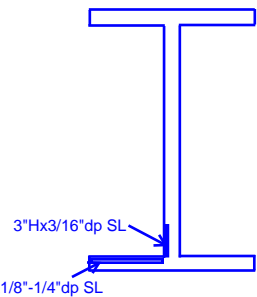
Section Properties PL Girder:  
 Web = 60" x 3/8"  
 Bott. Flange = 14" x 3/4"  
 Top Flange = 14" x 3/4"  
 Bearing Stiffener = 7" x 5/8" (spaced 3" off  $\bar{C}$  of brg)  
 Diaph. Conn. PL = 6" x 3/8"



SOUTH ELEVATION



NORTH ELEVATION



SECTION A-A

SHEAR LOSS @ A-A:

Orig. Area =  $60 \times 3/8 = 22.5$  sq.in.

Area Loss =  $3 \times 3/16 = 0.563$  sq.in.

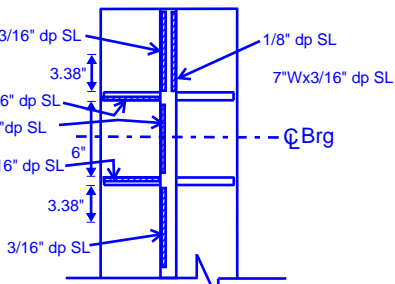
% Loss =  $0.563/22.5 = 2.5\%$

BEARING LOSS @ B-B:

Orig. Area =  $4 \times \text{Stiff's} + (6 + 2 \times 9 \times \text{tw}) (\text{tw})$  (9tw=3.38)  
 $= 4 \times 7 \times 5/8 + (6 + 2 \times 9 \times 3/8)(3/8)$   
 $= 22.28$  sq.in.

Area Loss =  $7 \times 3/16 + 7 \times 3/16 + 6 \times 3/16 + 3.38 \times 3/16 + 3.38 \times 3/16 + 3.38 \times 1/8 = 5.44$  sq.in.

% Loss =  $5.44/22.28 = 24.4\%$



SECTION B-B

SHEAR LOSS @ END:

Orig. Area = 22.5 sq.in.

Area Loss =  $3 \times 3/16 + 3 \times 1/8 = 0.963$  sq.in.

% Loss =  $0.963/22.5 = 4.3\%$

GENERAL NOTES:

- All losses with laminated rust unless otherwise noted.

GIRDER G3, SPAN 1, ABUTMENT 1  
 (N.T.S.)

REVISION $\Delta$	DATE:	CREW:	REVISION $\Delta$	DATE:	CREW:
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## Section Properties PL Girder:

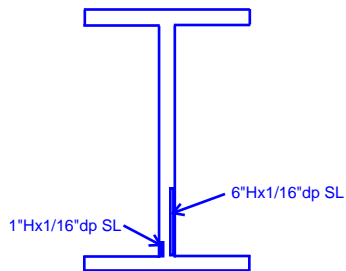
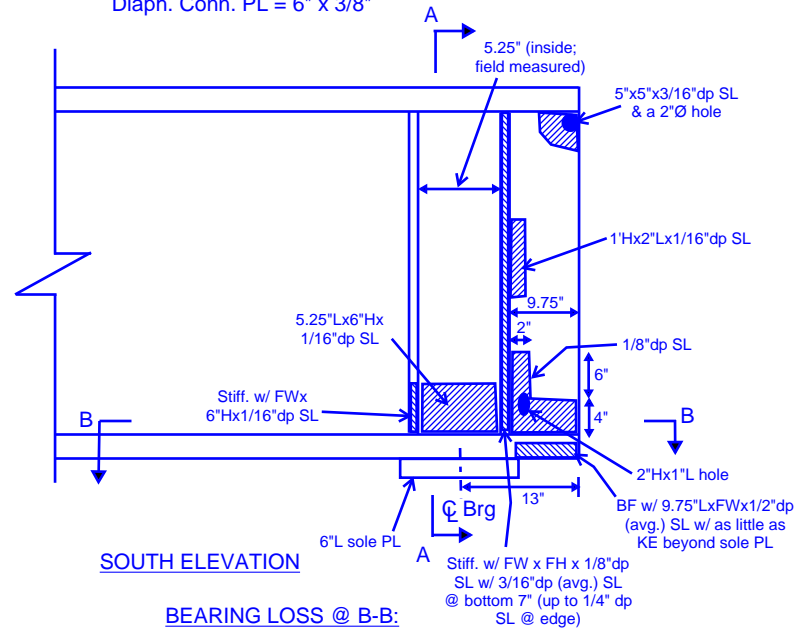
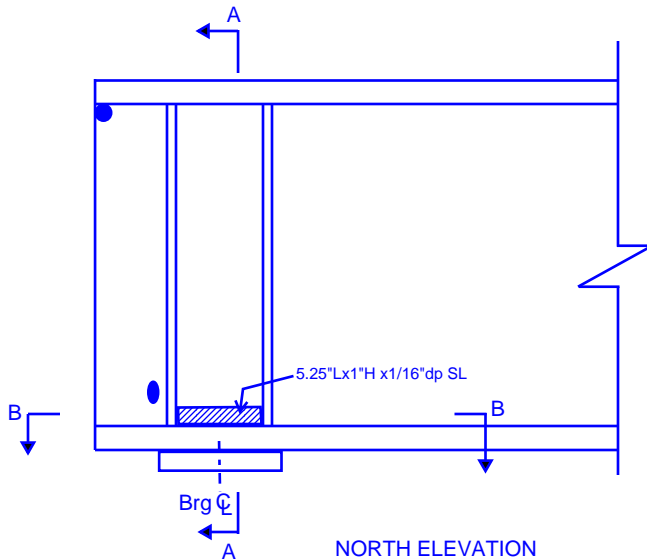
Web = 60" x 3/8"

Bott. Flange = 14" x 3/4"

Top Flange = 14" x 3/4"

Bearing Stiffener = 7" x 5/8" (spaced 3" off  $\bar{C}$  of brg)

Diaph. Conn. PL = 6" x 3/8"



## SHEAR LOSS @ A-A:

$$\text{Orig. Area} = 60 \times 3/8 = 22.5 \text{ sq.in.}$$

$$\text{Area Loss} = 6 \times 1/16 + 1 \times 1/16 = 0.438 \text{ sq.in.}$$

$$\% \text{ Loss} = 0.438/22.5 = \boxed{1.9\%}$$

## BEARING LOSS @ B-B:

$$\begin{aligned} \text{Orig. Area} &= 4 \times \text{Stiff's} + (6 + 2 \times 9 \text{tw})(\text{tw}) && (9 \text{tw} = 3.38) \\ &= 4 \times 7 \times 5/8 + (6 + 2 \times 9 \times 3/8)(3/8) \\ &= 22.28 \text{ sq.in.} \end{aligned}$$

$$\text{Area Loss} = 7 \times 1/16 + 7 \times 3/16 + 5.25 \times 1/16 + 5.25 \times 1/16 + 2.38 \times 1/8 + 1 \times 3/8 = 3.08 \text{ sq.in.}$$

$$\% \text{ Loss} = 3.08/22.28 = \boxed{13.8\%}$$

## SHEAR LOSS @ PERFORATION:

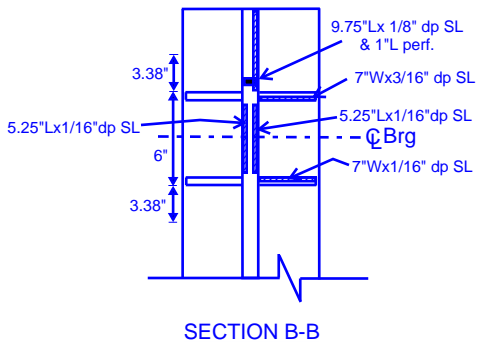
$$\text{Orig. Area} = 22.5 \text{ sq.in.}$$

$$\text{Area Loss} = 12 \times 1/16 + 8 \times 1/8 + 2 \times 3/8 = 2.5 \text{ sq.in.}$$

$$\% \text{ Loss} = 2.5/22.5 = \boxed{11.1\%}$$

## GENERAL NOTES:

- All losses with laminated rust unless otherwise noted.

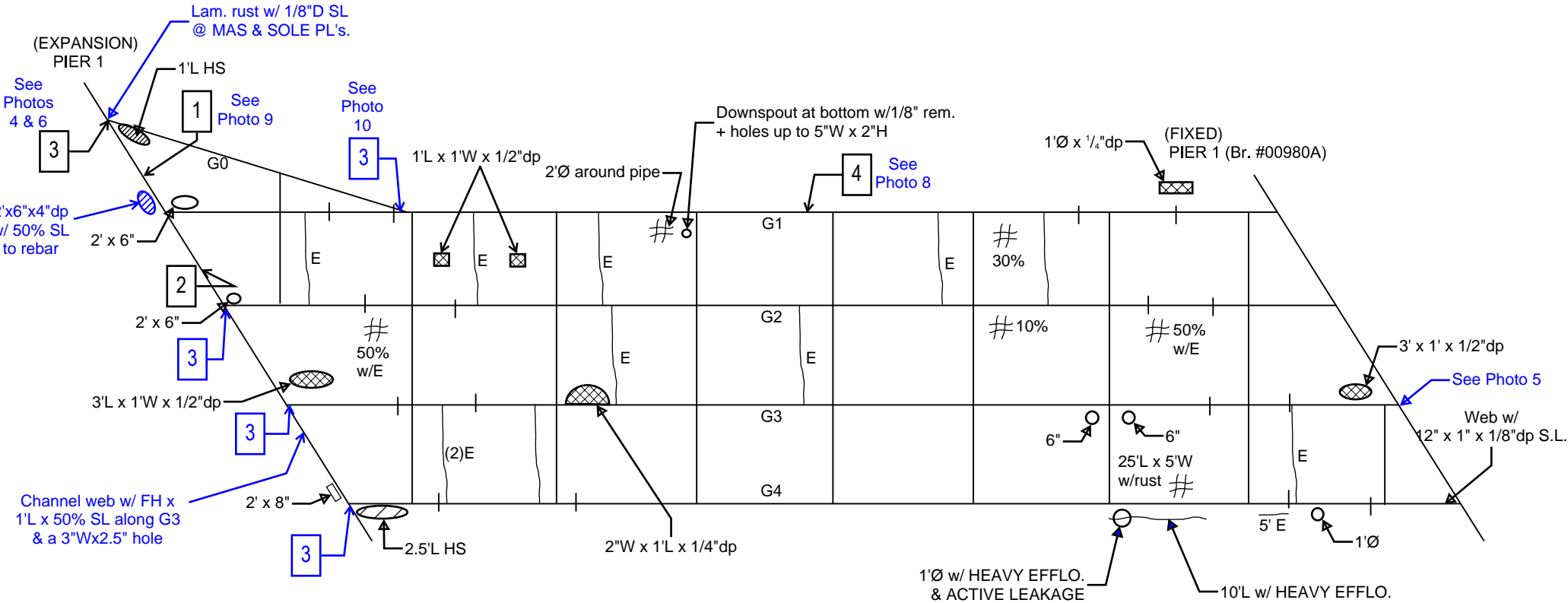


GIRDER G1, SPAN 1, PIER 1  
(N.T.S.)

REVISION $\Delta$	DATE:	CREW:	REVISION $\Delta$	DATE:	CREW:
REVISION $\Delta$	DATE:	CREW:	REVISION $\Delta$	DATE:	CREW:

**DETERIORATION NOTES:**

- 1 = Horizontal leg of lower structural angle with 1/8" remaining x full width with 1-1/2"L x 7/8"W perforation in lower middle Conn. PL; Diagonal member with 1/8" dp SL thru-out and is short & only partially welded to Conn. PL @ G0; upper channel web has holes totaling 1' L x up to 3" H; channel web & BF have up to 50% SL to cross section; Conn. PL's w/ 1/8"-3/16" dp SL & isolated 2" x 1.5" hole at lower Conn. PL @ G0.
- 2 = Structural angle bent up to 1/2" over 2'.
- 3 = See girder detail sketch.
- 4 = Bottom flange at mid-span with 10' x 7" x 5/16" dp section loss (20" x 2-1/4" orig.) (5% loss); bottom web w/laminated rust + negligible losses; bottom of web stiffeners w/laminated + S.L. up to full width x 6" x 3/16"D remaining.



**GENERAL NOTES:**

- Underside of deck with concrete patches.
- Underside of deck with isolated areas of honeycombing up to 1'Ø x 1" dp.
- Fixed bearings w/light rust.
- Girders with peeling paint and heavy rust.
- Heavy rust on end diaphragms with up to 1/16" dp S.L.
- Isolated areas of pigeon waste on BF's.
- Up to 3/8" impact rust between end diaphragms and deck.
- Girder end with spotty lam rust and neg. section losses.
- End diaph's @ pier 1 with laminated rust with areas of 1/8" dp SL (U.O.N.).

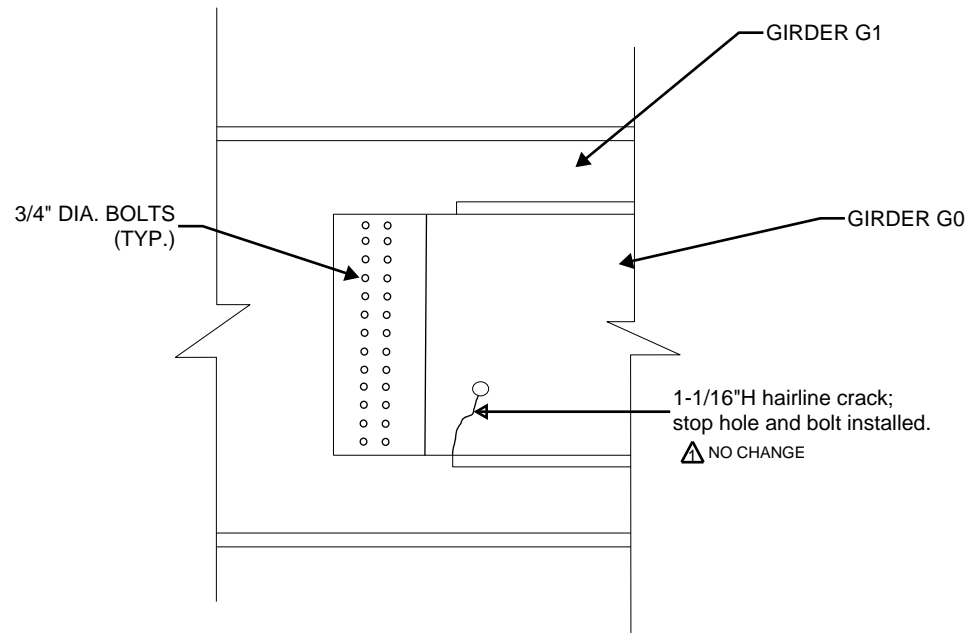
S.L. = Section Loss  
HS = Heavy Scale

- LEGEND**
- HOLLOW AREA
  - SHALLOW REBAR
  - SPALL AREA
  - SPALL AREA WITH EXPOSED REBAR
  - HAIRLINE CRACKS
  - MAP CRACKS
  - HONEY COMB AREA
  - SCALE AREA
  - EFFLORESCENCE IS PRESENT

**UNDERSIDE OF DECK & FRAMING PLAN - SPAN 2**










N.T.S.

9/20/18 - Prime AE Group, Inc. - CMR, NH, MP  
11/19/18 & 12/10/18 - AI Engineers, Inc. - CC, HP & EJC, HP



SPAN 2, GIRDER G0 AND GIRDER G1 CONNECTION , NORTH ELEVATION

**LEGEND**

-  HOLLOW AREA
-  SHALLOW REBAR
-  SPALL AREA
-  SPALL AREA WITH EXPOSED REBAR
-  HAIRLINE CRACKS
-  MAP CRACKS
-  HONEY COMB AREA
-  SCALE AREA
-  EFFLORESCENCE IS PRESENT

**SHEAR LOSS @ A-A:**

Orig. Area =  $54 \times 3/8$   
 = 20.25 sq.in.

Area Loss =  $15 \times 1/16 + 39 \times 7/32 = 9.47$  sq.in.

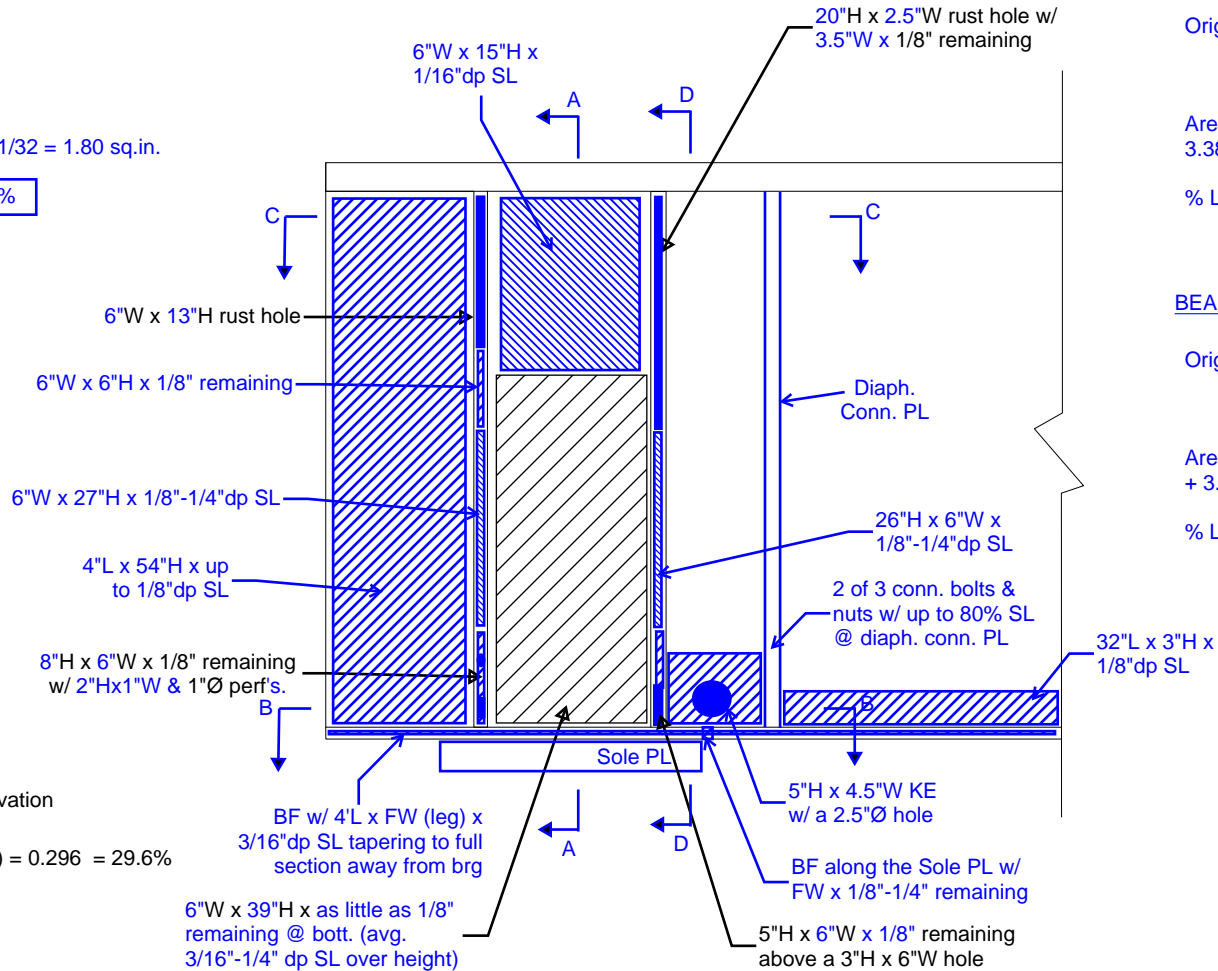
% Loss =  $9.47/20.25 = 46.8\%$

**SHEAR LOSS @ D-D:**

Orig. Area = 20.25 sq.in.

Area Loss =  $2.5 \times 3/8 + 2.5 \times 11/32 = 1.80$  sq.in.

% Loss =  $1.80/20.25 = 8.9\%$



SPAN 2, GIRDER 0 AT PIER 1, SOUTH ELEVATION

Shear Loss - No loss noted on N.elevation

$1 - ((54 \times 3/8) - (48" \times 1/8")) / (54" \times 3/8) = 0.296 = 29.6\%$

Section Properties PL Girder:  
 Web = 54" x 3/8"  
 Bott. Flange = 12" x 3/4"  
 Top Flange = 12" x 3/4"  
 Bearing Stiffener = 6" x 1/2" (spaced 3" off of brg)  
 Diaph. Conn. PL/ Interm. Stiff. = 5" x 3/8"  $\phi$

**BEARING LOSS @ B-B:**

(9tw=3.38)

Orig. Area =  $4 \times \text{Stiff's} + (6 + 2 \times 9 \text{tw})(\text{tw})$   
 =  $4 \times 7 \times 5/8 + (6 + 2 \times 9 \times 3/8)(3/8)$   
 = 22.28 sq.in.

Area Loss =  $1 \times 1/2 + 5 \times 3/8 + 6 \times 1/2 + 6 \times 1/4 + 3.38 \times 1/8 + 2.5 \times 3/8 + 0.83 \times 11/32 = 3.08$  sq.in.

% Loss =  $3.08/22.28 = 38.2\%$

**BEARING LOSS @ C-C:**

(9tw=3.38)

Orig. Area =  $4 \times \text{Stiff's} + (6 + 2 \times 9 \text{tw})(\text{tw})$   
 =  $4 \times 7 \times 5/8 + (6 + 2 \times 9 \times 3/8)(3/8)$   
 = 22.28 sq.in.

Area Loss =  $6 \times 1/2 + 2.5 \times 1/2 + 3.5 \times 3/8 + 6 \times 1/16 + 3.38 \times 1/8 = 6.36$  sq.in.

% Loss =  $6.36/22.28 = 28.5\%$

**LEGEND**

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- HAIRLINE CRACKS
- MAP CRACKS
- HONEY COMB AREA
- SCALE AREA
- EFFLORESCENCE IS PRESENT

9/20/18 - Prime AE Group, Inc. - CMR, NH, MP

11/19/18 - AI Engineers, Inc. - CC, HP

Section Properties PL Girder:

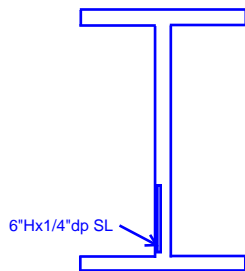
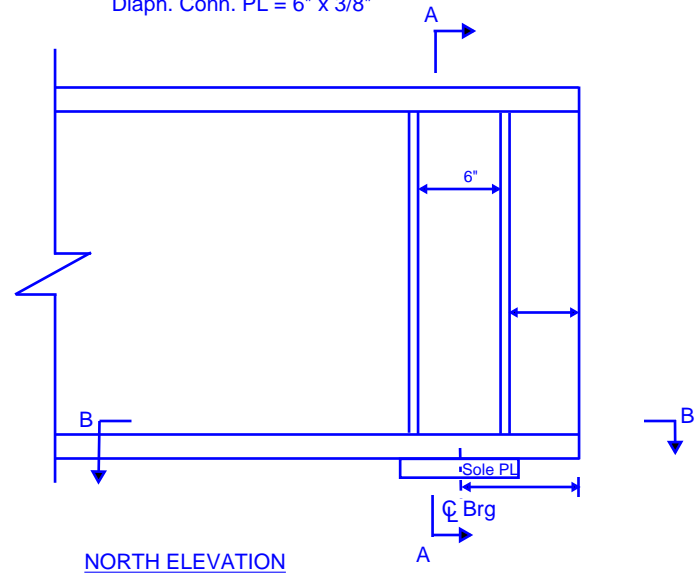
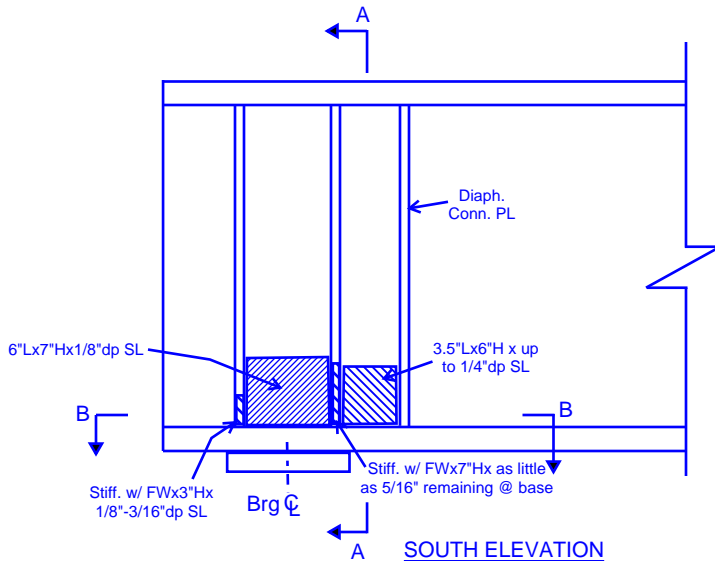
Web = 60" x 3/8"

Bott. Flange = 20" x 1"

Top Flange = 20" x 1"

Bearing Stiffener = 9" x 5/8" (spaced 3" off  $\bar{C}$  of brg)

Diaph. Conn. PL = 6" x 3/8"

**SHEAR LOSS @ A-A:**

$$\text{Orig. Area} = 60 \times 3/8 = 22.5 \text{ sq.in.}$$

$$\text{Area Loss} = 6 \times 1/4 = 1.5 \text{ sq.in.}$$

$$\% \text{ Loss} = 1.5/22.5 = \boxed{6.7\%}$$

**BEARING LOSS @ B-B:**

$$\begin{aligned} \text{Orig. Area} &= 4 \times \text{Stiff's} + (6 + 2 \times 9 \text{tw})(\text{tw}) && (9 \text{tw} = 3.38) \\ &= 4 \times 9 \times 5/8 + (6 + 2 \times 9 \times 3/8)(3/8) \\ &= 23.53 \text{ sq.in.} \end{aligned}$$

$$\text{Area Loss} = 9 \times 5/16 + 9 \times 5/32 + 6 \times 1/8 + 3.38 \times 1/4 = 5.81 \text{ sq.in.}$$

$$\% \text{ Loss} = 5.81/23.53 = \boxed{24.7\%}$$

**SHEAR LOSS @ OVER BEARING:**

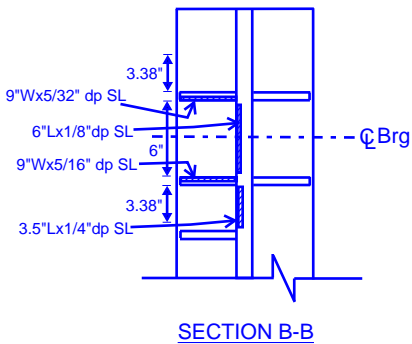
$$\text{Orig. Area} = 22.5 \text{ sq.in.}$$

$$\text{Area Loss} = 7 \times 1/8 = 0.88 \text{ sq.in.}$$

$$\% \text{ Loss} = 0.88/22.5 = \boxed{3.9\%}$$

**GENERAL NOTES:**

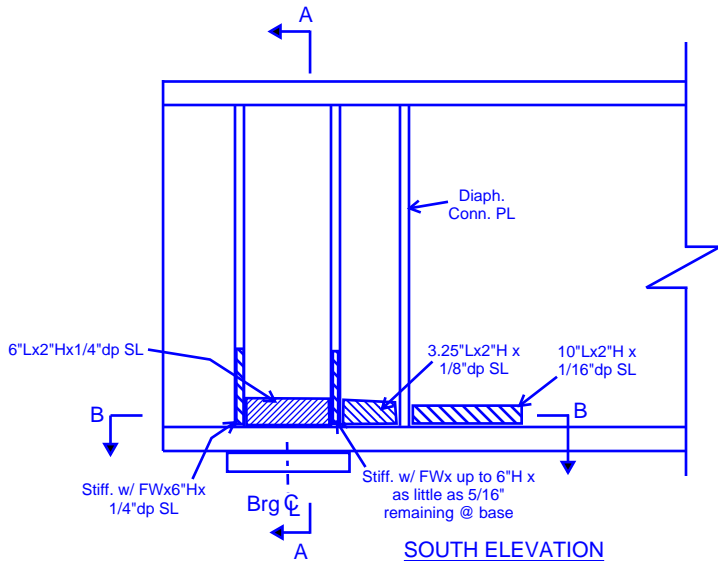
- All losses with laminated rust unless otherwise noted.



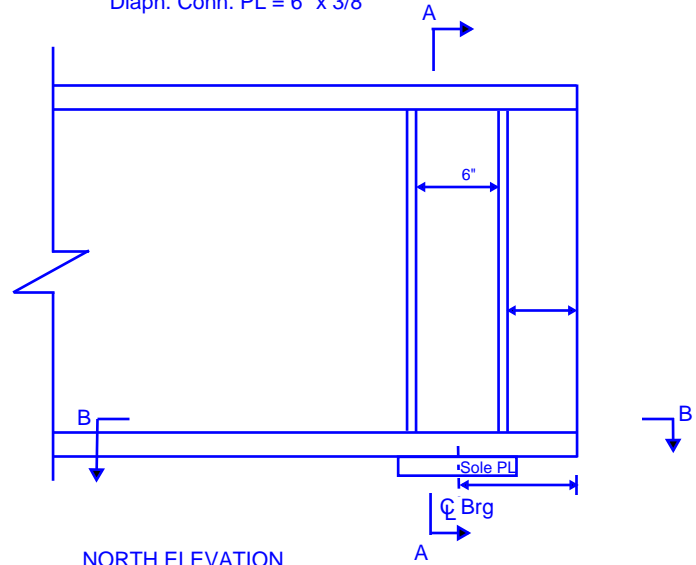
**GIRDER G2, SPAN 2, PIER 1**  
(N.T.S.)

REVISION $\Delta$	DATE:	CREW:	REVISION $\Delta$	DATE:	CREW:
REVISION $\Delta$	DATE:	CREW:	REVISION $\Delta$	DATE:	CREW:

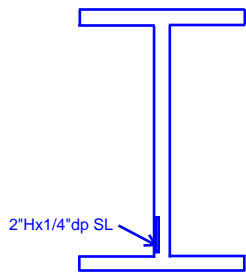
Section Properties PL Girder:  
 Web = 60" x 3/8"  
 Bott. Flange = 20" x 1"  
 Top Flange = 20" x 1"  
 Bearing Stiffener = 9" x 5/8" (spaced 3" off  $\bar{C}$  of brg)  
 Diaph. Conn. PL = 6" x 3/8"



**SOUTH ELEVATION**



**NORTH ELEVATION**



**SECTION A-A**

**SHEAR LOSS @ A-A:**

Orig. Area = 60 x 3/8  
 = 22.5 sq.in.

Area Loss = 2x1/4 = 0.5 sq.in.

% Loss = 0.5/22.5 = **2.2%**

**BEARING LOSS @ B-B:**

Orig. Area = 4xStiff's + (6+2x9tw)(tw) (9tw=3.38)  
 = 4x9x5/8 + (6 + 2x9x3/8)(3/8)  
 = 23.53 sq.in.

Area Loss = 9x5/16 + 9x1/4 + 6x1/4 + 3.25x1/8 = 6.97 sq.in.

% Loss = 6.97/23.53 = **29.6%**

**SHEAR LOSS IN FRONT OF BEARING:**

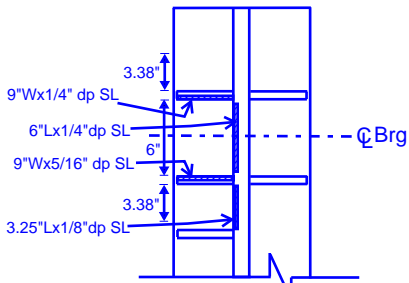
Orig. Area = 22.5 sq.in.

Area Loss = 2x1/8 = 0.25 sq.in.

% Loss = 0.25/22.5 = **1.1%**

**GENERAL NOTES:**

- All losses with laminated rust unless otherwise noted.

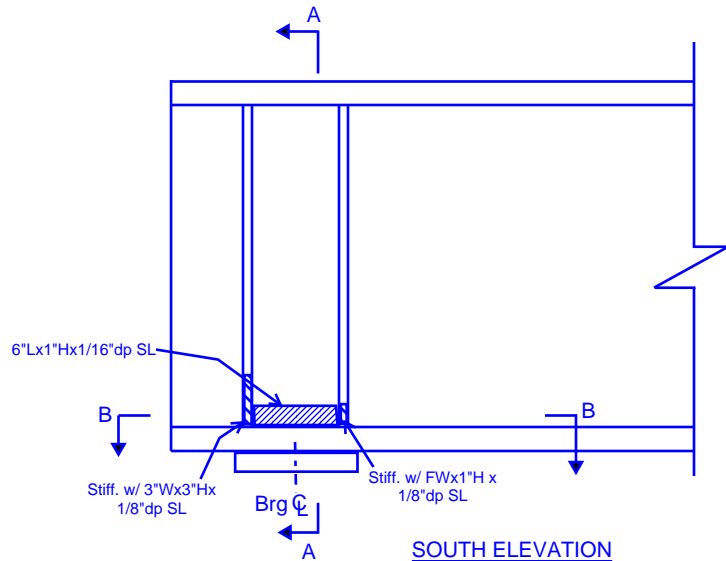


**SECTION B-B**

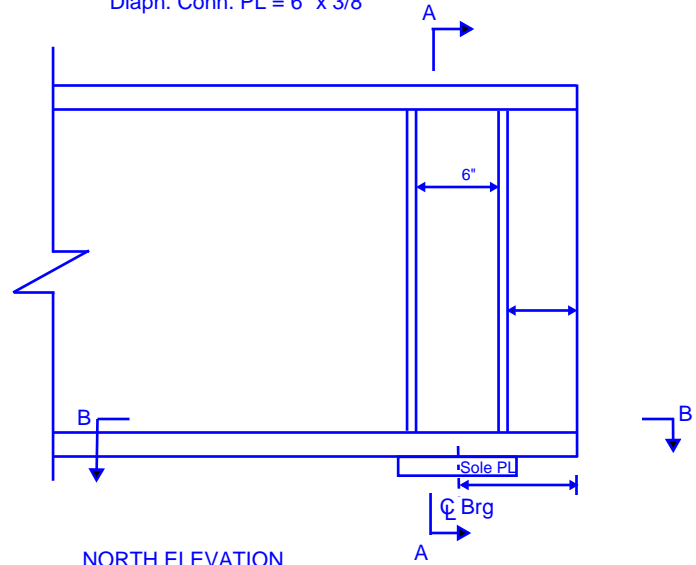
**GIRDER G3, SPAN 2, PIER 1**  
 (N.T.S.)

REVISION $\Delta$	DATE:	CREW:	REVISION $\Delta$	DATE:	CREW:
REVISION $\Delta$	DATE:	CREW:	REVISION $\Delta$	DATE:	CREW:

Section Properties PL Girder:  
 Web = 60" x 3/8"  
 Bott. Flange = 20" x 1"  
 Top Flange = 20" x 1"  
 Bearing Stiffener = 9" x 5/8" (spaced 3" off  $\bar{C}$  of brg)  
 Diaph. Conn. PL = 6" x 3/8"



SOUTH ELEVATION



NORTH ELEVATION



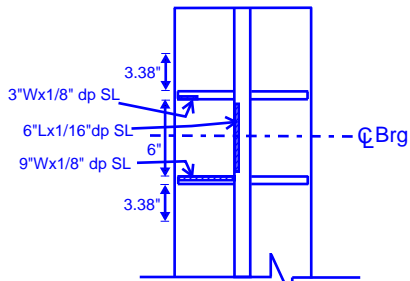
SECTION A-A

SHEAR LOSS @ A-A:

Orig. Area =  $60 \times 3/8 = 22.5$  sq.in.  
 Area Loss =  $1 \times 1/16 = 0.06$  sq.in.  
 % Loss =  $0.06/22.5 = 0.3\%$

BEARING LOSS @ B-B:

Orig. Area =  $4 \times \text{Stiff's} + (6 + 2 \times 9 \times \text{tw})(\text{tw})$  (9tw=3.38)  
 $= 4 \times 9 \times 5/8 + (6 + 2 \times 9 \times 3/8)(3/8)$   
 $= 23.53$  sq.in.  
 Area Loss =  $9 \times 1/8 + 3 \times 1/8 + 6 \times 1/16 = 1.88$  sq.in.  
 % Loss =  $1.88/23.53 = 8.0\%$



SECTION B-B

GENERAL NOTES:

- All losses with laminated rust unless otherwise noted.

GIRDER G4, SPAN 2, PIER 1  
 (N.T.S.)

REVISION $\Delta$	DATE:	CREW:	REVISION $\Delta$	DATE:	CREW:
REVISION $\Delta$	DATE:	CREW:	REVISION $\Delta$	DATE:	CREW:





**BRIDGE IDENTIFICATION:** 00980B

**FEATURE CARRIED:** I-84 TR 826

**DATE:** 11/19/2018

**FEATURE CROSSED:** Connecticut River

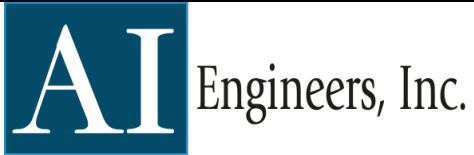
**JOB NO.:** 63-712

**LOCATION:** Hartford



**Photo # 1:** North elevation of Span 1.

**Photo # 2:** North elevation of Span 2 at Pier 1.



**BRIDGE IDENTIFICATION:** 00980B  
**FEATURE CARRIED:** I-84 TR 826  
**FEATURE CROSSED:** Connecticut River  
**LOCATION:** Hartford

**DATE:** 11/19/2018

**JOB NO.:** 63-712



**Photo # 3:** North elevation of Span 2 at Pier 1 (Br. #00980A).

**Photo # 4:** Girder G0 expansion sliding plate bearing at Pier 1 in span 2 exhibits laminated rust with section loss at masonry and sole plates. Note rusted through hole in girder web, north elevation.



Engineers, Inc.

**BRIDGE IDENTIFICATION:** 00980B

**FEATURE CARRIED:** I-84 TR 826

**DATE:** 11/19/2018

**FEATURE CROSSED:** Connecticut River

**JOB NO.:** 63-712

**LOCATION:** Hartford



**Photo # 5:** Girder G3 fixed bearing at Pier 1 (Br. #00980A) in Span 2.

**Photo # 6:** Girder G0, south elevation, at Pier 1 in Span 2 exhibits laminated rust with section loss at web, stiffeners and bottom flange.

**BRIDGE IDENTIFICATION:** 00980B  
**FEATURE CARRIED:** I-84 TR 826  
**FEATURE CROSSED:** Connecticut River  
**LOCATION:** Hartford

**DATE:** 11/19/2018

**JOB NO.:** 63-712



**Photo # 7:** Girder G0, north elevation, at Abutment 1 in Span 1, exhibits laminated rust with section loss at web and bottom flange. Note rusted through holes in web.

**Photo # 8:** Girder G1, north elevation, at mid-span in Span 2 exhibits laminated rust with section loss at base of web, stiffeners and bottom flange.

**BRIDGE IDENTIFICATION:** 00980B  
**FEATURE CARRIED:** I-84 TR 826  
**FEATURE CROSSED:** Connecticut River  
**LOCATION:** Hartford

**DATE:** 11/19/2018

**JOB NO.:** 63-712



**Photo # 9:** End diaphragm in bay 0 at Pier 1 in Span 2 exhibits laminated rust with section loss and rusted through holes.



**Photo # 10:** Girder G0 web cope connection to girder G1 in Span 2 exhibits crack with stop hole and a bolt installed previously.