

## BRIDGE NO.04180

52980 - NEWTOWN  
INTERSTATE 84 WESTBOUND  
over  
HOUSATONIC RIVER

Fracture Critical and Routine Inspection

9/12/2018

Inspected by: Infrastructure



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## **Report Title Page**

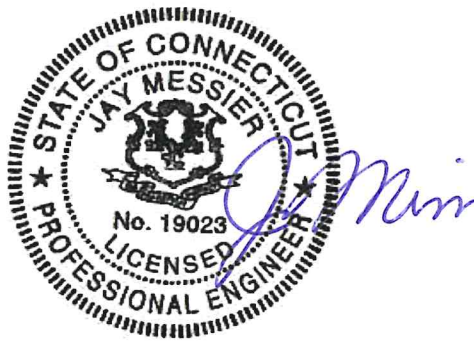
**Project No.:** 170-3413 (Routine Inspections – NHS)

**Structure:** 04180, Interstate 84 Westbound over Housatonic River, Newtown

**Inspected By:** Infrastructure Engineers, Inc. **Inspection Date:** 9/12/2018

### **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.

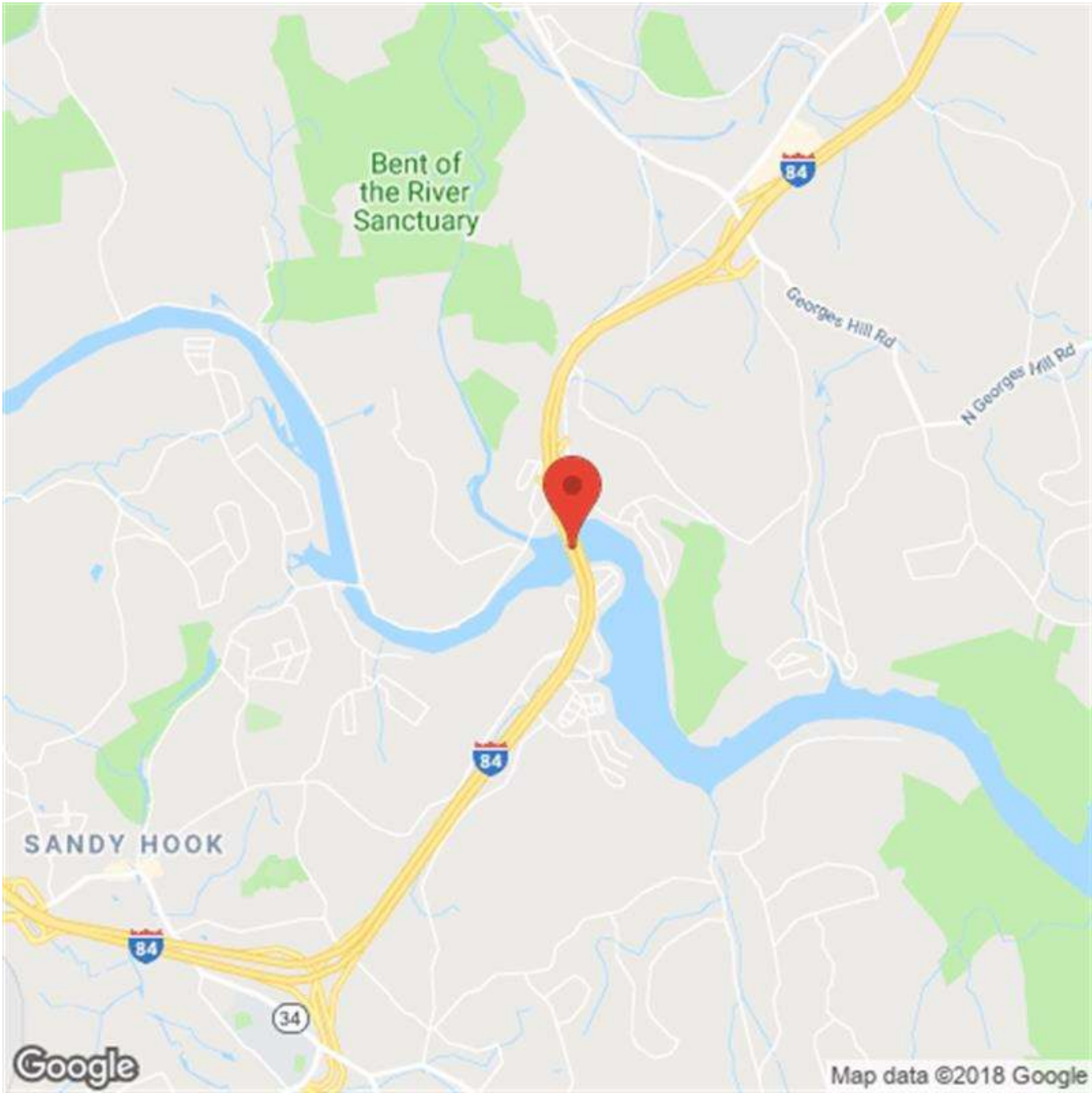


**Jay Messier, PE (Infrastructure Engineers, Inc.)**

***PM / QAQC: Jay Messier, PE***

***CT License No.: 19023***

***Date: 10/2/2018***



Location Map # 1

Form: BRI-19, Rev. 2/15

Inspection type: Fracture Critical,Routine

Inspection Date: 9/12/2018

Inspected by: Infrastructure Engineers

Bridge No: 04180

Town: NEWTOWN

Carried: INTERSTATE 84 WESTBOUND

Crossed: HOUSATONIC RIVER

Inventory Route: NHS

## STRUCTURE INVENTORY & APPRAISAL

### INSPECTION

Structurally Deficient  Functionally Obsolete

Sufficiency Rating

(90) Inspection Date  (91) Frequency

Indepth Insp  Proposed next Indepth Year

Deck Survey Date  Class

Access  Flagman

	Frequency	Date	Type
Fracture	<input type="text" value="24"/>	<input type="text" value="09/12/2018"/>	<input type="text" value="C Two Girder System, welded plate girders"/>
Underwater	<input type="text" value="24"/>	<input type="text"/>	<input type="text" value="B Underwater Only"/>
Special	<input type="text"/>	<input type="text"/>	<input type="text"/>

### IDENTIFICATION

Bridge Name

Town Code - Name

(5) Inventory Route

(A) Record Type

(B) Signing Prefix

(C) Level of Service

(D) Route Number.

(E) Dir Suffix

(6A) Featured Intersected

(6B) Critical Facility Indicator

(7) Facility Carried

(9) Location

(11) Mile Post  Miles

(16) Latitude  Deg.  Min.  Sec.

(17) Longitude  Deg.  Min.  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

B) Design Type

(44) Structure Type, Approach

A) Material

B) Design Type

(45) Number of Spans, Main Unit

(46) Number of Approach Spans

(107) Deck Structure Type

(108) Wearing Surface/Protection Systems

A) Type of Wearing Surface

B) Type of Membrane

C) Type of Deck Protection

Substructure

A) Material

B) Design Type

Paint

Type

Year

Comment

### GEOMETRIC DATA

(48) Length of Maximum Span  ft.

(49) Structure Length  ft.

(50) Curb or Sidewalk Widths

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

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

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

(32) Approach Roadway Width  ft.

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(33) Bridge Median

Deck Area  sq. ft.

(34) Skew Angle  deg.

(35) Structure Flared

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

(47) Inv. Rte. Total Horiz. Clr.  ft.  in.

Log Inv. Rte. Total Horiz. Clr.  ft.  in.

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

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

(54) Log-Min. Vert. Underclearance  ref.  ft.  in.

(55) Min. Lat Underclearance on Right  ref.  ft.  in.

(56) Min. Lat Underclearance on Left  ft.  in.

#### CONDITION

(58) Deck

(59) Superstructure

(60) Substructure

(61) Channel & Channel Protections

(62) Culverts

(36) Traffic Safety Features

A) Bridge Railings

B) Transitions

C) Approach Guardrail

D) Approach Guardrail Ends

#### WATERWAY

Drainage Basin Waterway

(38) Navigation Control

(39) Navigation Vertical Clearance  ft.

(40) Navigation Horiz. Clr.  ft.

(111) Pier/Abutment Navigation

(116) Vert-Lift Brg Nav Min  ft.  in.

#### AGE AND SERVICE

Year Built  (106) Year Reconstructed

(42) Type of Service

A) On

B) Under

(28) Number of Lanes

A) On  B) Under

(29) Average Daily Traffic

Is Above Half ADT?

(109) Percent Truck  %

(30) Years of ADT

(19) Bypass, Detour Length  Miles

#### APPRAISALS

(67) Structural Evaluation

(68) Deck Geometry

(69) Underclearances, Vert. & Horiz.

(71) Waterway Adequacy

(72) Approach Roadway Alignment

(113) Scour Critical

#### COMMENTS

Special inspection: Horizontal cracking along floorbeams & main girders.

#### CLASSIFICATION

(112) NBIS Bridge Length

(104) Highway System

(26) Functional Class

(100) Defense Highway

(101) Parallel Structure

(102) Direction of Traffic



**Form: BRI-19, Rev. 2/15**

**Inspection type:** Fracture Critical,Routine

**Inspection Date:** 9/12/2018

**Inspected by:** Infrastructure Engineers

**Bridge No: 04180**

**Town:** NEWTOWN

**Carried:** INTERSTATE 84 WESTBOUND

**Crossed:** HOUSATONIC RIVER

**Inventory Route:** NHS

(103) Temporary Structure	
(110) Designated National Network	1 - Inventory route on National Truck 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	Yes
Stand Pipes	No
Catwalks	Yes
Moveable Inspection System	No
Haunches Present over Roadway	NO
Utilities	N   No Utilities present

### PROPOSED IMPROVEMENTS

(75A) Type of Work Proposed	35 - Rehabilitation - Deterioration
(75B) Work Done By	1 - Work to be done by contract
(76) Length of Structure Improvement	
(94) Bridge Improvement Cost	\$
(95) Roadway Improvement Cost	\$
(96) Total Project Cost	\$ 30000
(97) Year of Improvement Estimate	2014
(114) Future ADT	59131
(115) Year of Future ADT	2038
DOT Bridge Program List No	27
Project No	0096-0201
Advertised Date	09/18/2019

### LOAD RATING & POSTING

(31) Design Load	5 - HS 20
(63) Operating Rating Type	1 - Load Factor (LF)
(64) Operating Rating	60
(65) Inventory Rating Type	1 - Load Factor (LF)
(66) Inventory Rating	36
Evaluation Code	L - Load Factor
Year of Evaluation	1995
(70) Bridge Posting	5 - Equal to or above legal loads
(41) Structure Status	A - Open

**Form: BRI-19, Rev. 2/15**

**Inspection type:** Fracture Critical,Routine

**Inspection Date:** 9/12/2018

**Inspected by:** Infrastructure Engineers

**Bridge No: 04180**

**Town:** NEWTOWN

**Carried:** INTERSTATE 84 WESTBOUND

**Crossed:** HOUSATONIC RIVER

**Inventory Route:** NHS

**INSPECTOR'S SIGNATURES:**

1) \_\_\_\_\_ Date: 10/01/2018

*Michael O'Hara*

2) \_\_\_\_\_ Date: 10/01/2018

*Macneufiguora*

3) \_\_\_\_\_ Date: 10/02/2018

*Matthew Rusek*

4) \_\_\_\_\_ Date: \_\_\_\_\_

P.E. SIGNATURE:

*J. Messin*

Date: 10/04/2018

P.E. #

Reviewed By:

*Amy Estab*

Date: 10/23/2018



**Form: BRI-18, Rev. 1/14****Inspection type:** Fracture Critical,Routine**Inspection Date:** 9/12/2018**Inspected by:** Infrastructure Engineers**Bridge No:** 04180**Town:** NEWTOWN**Carried:** INTERSTATE 84 WESTBOUND**Crossed:** HOUSATONIC RIVER**Inventory Route:** NHS

## FIELD INSPECTION REPORT

Location: 1.5 MI EAST OF EXIT 11  
 Main Material: 4 - Steel continuous  
 Main Design: 03 - Girder and Floorbeam

Year Built: 1977  
 Year Rebuilt:

Snooper Required: ☐Snooper Used: ☐**Inspectors:**

Lead Inspector: Matt Riesenber

Inspector: Task:

Area, 12 BSE - Manager

Liguore, Matt BSE - Inspector  
Rail - Inspector

O'hara, Mike BSE - Inspector

Riesenber, Matt BSE - Inspector

**Visits:**

Visit Date: Temp: Start Time: End Time:

09/12/2018 75 08:30 AM 03:30 PM

09/13/2018 70 08:00 AM 01:00 PM

**58. DECK:**

Reinforced Concrete Deck with Bituminous Concrete Overlay

Overall Rating: 5

**Rating**

Overlay: 5 Bituminous concrete overlay has the following deficiencies:

- Light wear with moderate wear near Abutment 1 and 2 Joints.
- Random short cracks open up to 1/8" wide.
- Up to 1/4" deep milled areas along old shifted lane lines.
- Bituminous patches in the shoulders up to 20' long x 5' wide.
- Paving seams open up to 3" wide worst case in Span 2.
- Span 1 adjacent to Abutment 1 has two (2) 20' long x 3' wide x open up to 1/2" wide areas of map cracks.
- Span 2 has multiple potholes / failed patches, mostly along the paving seams, up to 3' long x 10" wide x 3-1/2" deep, one isolated pothole has exposed deck.

(See Sketches 2 - 6 and Photos 7 - 9)

Deck - Str. Condition: 5 The underside of deck has the following deficiencies:

- Random areas of light scaling.
- Random hairline Transverse cracks with and without efflorescence.
- Hairline map cracks up to 100% of the bays with and without efflorescence.
- Areas of moisture throughout.
- Between Floor Beam 16 and 17 in Bay 1 - there is a 8' x 8' moderate scale with efflorescence and a 1' x 1' hollow area.
- Isolated hollow areas up to 2' long x 1' wide.
- Span 3 between Floor Beam 21 & 22 in Bay 4 has an isolated 6" diameter x 1/2" deep spall.

(See Sketches 7, 9, 10, 12 - 16, 18, 20 - 23, 25 &amp; 29 and Photos 10 &amp; 11)

Curbs: 7 Sloped granite curbs along both sides of the bridge have the following deficiencies:

- Minor scrapes with rust stains.
- Random spalls up to 3-1/2' long x 6" high x 1-1/2" deep.

Average Curb Reveal:

Left (West): 3-3/4"

Right (East): 3-1/4"

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**Inventory Route:** NHS

		<ul style="list-style-type: none"><li>• The approach curb at the southwest corner is laterally misaligned up to 6" over a 12' long section.</li></ul> <p>(See Sketches 2 - 6 and Photos 12 &amp; 13)</p>
Median:	N	
Sidewalks:	N	
Parapet:	6	<p>Reinforced concrete parapets have the following deficiencies:</p> <ul style="list-style-type: none"><li>• Random areas of scale up to 13' long x 1' wide x 1" deep.</li><li>• Spalls up to 18" long x 10" wide x 2" deep with and without exposed rebar. Some spalls undermine the railing post bases and have exposed anchor bolts.</li><li>• Random horizontal and full height vertical cracks open up to 1/8" wide.</li><li>• Random hollow areas up to 28" long x up to 1' wide.</li></ul> <p>(See Sketches 2 - 6 and Photos 13 - 15)</p>
Railing:	6	<p>Single aluminum railings on both parapets have the following deficiencies:</p> <ul style="list-style-type: none"><li>• Random collision scrapes.</li><li>• Random loose anchor bolt nuts.</li><li>• Right Railing in the South Approach has two rail posts (4th &amp; 6th) with (1) of (4) missing anchor bolt nut.</li><li>• Right Railing in the South Approach end angle cracked at 135 degree angle weld and at base plate weld.</li><li>• Left Railing in Span 3 has isolated posts with exposed anchor bolts due to parapet spalls or scaling.</li><li>• Left Railing in Span 4 has minor gouges from impact damage and (2) posts with up to (1) of (4) sheared off anchor bolts.</li><li>• Left Railing in Span 4 has a random bent base plate and (1) post has a 2-1/2" long crack in the stanchion due to previous impact damage (no change).</li></ul> <p>(See Sketches 2 - 6 and Photos 13, 16 - 18)</p>
Paint:	N	
Fence:	N	
Drains:	5	<p>Scupper grates and drains along both sides of the bridge have the following deficiencies:</p> <ul style="list-style-type: none"><li>• Grates are partially clogged up to 50% with sand and vegetation, but pipes are clear.</li><li>• There are random scupper supports with heavy laminar rust and u-bolts with up to 60% section loss.</li><li>• There is a depressed area in the Right Curb at Abutment 2 between the scupper grate and joint where water is ponding with leakage at the joint below.</li></ul> <p>PVC weep pipes at each floor beam along both overhangs have the following deficiencies:</p> <ul style="list-style-type: none"><li>• Weep pipes are mostly short but point away from the superstructure however, approximately 50% of all weep pipe locations show evidence of past drainage on the superstructure.</li><li>• Several weep drains are short and are leaking onto the floor beam below.</li><li>• Span 2, weep pipe between Stringers 7 &amp; 8 at south side of Floor Beam 15 is short and has heavy efflorescence. No evidence of leakage on to steel was noted.</li></ul> <p>(See Sketches 2 - 7, 9, 10, 12 - 16, 18, 20 - 23, 25 &amp; 29 and Photos 19 - 22)</p>
Lighting Standard:	6	<ul style="list-style-type: none"><li>• The electrical conduits for lighting standards are not capped.</li><li>• Junction box covers along the Left Parapet are missing up to (9) of (10) screws but are secure.</li></ul> <p>The attached sign on the Left Parapet in Span 2 has the following deficiency:</p> <ul style="list-style-type: none"><li>• Impact damage.</li></ul> <p>The navigation lights were not on at the time of inspection.</p>

(See Sketches 2 - 6 and Photo 23)

Overall Utility Condition Rating N - Not Applicable

Utility Type/Size

N | No Utilities present .

Construction Joints:	8	
Expansion Joint:	6	<p>Strip seal joints at both abutments have the following deficiencies:</p> <ul style="list-style-type: none"><li>• Light to heavy accumulation of sand and debris (60% of the length), mostly in shoulders.</li><li>• Concrete headers have random full length (about 15" long) transverse cracks spaced 2' to 3' apart.</li><li>• Active joint leakage at both abutments.</li><li>• There is leakage at the Abutment 2 joint at the Right Cantilever.</li><li>• Abutment 1 South Concrete Header has a 1" long x 1' wide crack / spall.</li><li>• Abutment 1 has a pin hole in the joint seal.</li><li>• Abutment 2 North Concrete Header has a 2" long x 6' wide area of deterioration and a 2" long x 3' wide x 2" deep adjacent spall.</li></ul> <p>The parapet steel joint plates have the following deficiencies:</p> <ul style="list-style-type: none"><li>• Left Parapet joint plate cover at Abutment 2 is misaligned up to 1" towards the roadway (See Photo 28).</li><li>• Left Parapet joint plate cover at Abutment 1 is missing (3) of (12) screws (See Photo 26).</li><li>• Right joint plate cover at Abutment 1 has loose screws.</li></ul> <p>(See Sketches 2, 3 &amp; 6 and Photos 24 - 28)</p>

Haunches Present over travelway? NO

APPROACH CONDITION:

Bituminous Approach Pavement Overall Rating: 6

Rating

Approach Slab:	6	<p>Not visible. Rating is based on the condition of the approach pavement.</p> <p>Refer to 'Approach Pavement' item below.</p>
Relief Joints:	N	
Approach Guide Rail:	6	<p>Metal beam approach guide rails have the following deficiencies:</p> <ul style="list-style-type: none"><li>• Minor scrapes and dents.</li><li>• Southeast approach metal beam guide rail at the 4th &amp; 5th posts from bridge is missing (3) of (4) splice connection bolts. The posts are missing connection bolts to the guide rail and one post is missing.</li></ul> <p>(See Sketches 3 &amp; 6 and Photos 29 - 31)</p>
Approach Pavement:	6	<p>Bituminous approach pavement has the following deficiencies:</p> <ul style="list-style-type: none"><li>• Minor wear.</li><li>• Paving seams are open up to 1/8" wide.</li><li>• South Approach adjacent to the Abutment 1 concrete header is an area of 1' long x 3' wide breaking up bituminous and a 3" diameter x 1" deep pothole.</li><li>• North Approach Pavement has full width cracks up to 1/8" wide and pavement around the joint header has heavy cracking.</li></ul> <p>(See Sketches 3 &amp; 6 and Photos 32 &amp; 33)</p>
Approach Embankment:	8	

Traffic Safety Features

Bridge Railings: 0	Less than 42" high solid concrete parapets on NHS.
Transitions: 0	Top of concrete parapet is 3" higher than approach rail.
Approach Guardrails: 1	R-B 350 compliant.
Approach Guardrail Ends: 1	Continuous.

59. SUPERSTRUCTURE:

Girders, Floor Beams and Stringers.	Overall Rating: 5
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Rating

Bearing Devices: 6	<p>Rocker Bearings at the Abutments, Pier 1 and Pier 3 have the following deficiencies:</p> <ul style="list-style-type: none"><li>• Areas of peeling paint with light to moderate rust.</li><li>• Light to heavy abrasion rust on pins.</li><li>• Up to 1/8" pack rust under the rockers</li><li>• Debris / sand accumulation between the masonry plates and rockers.</li></ul> <p>Fixed rocker bearings at Pier 2 have the following deficiencies:</p> <ul style="list-style-type: none"><li>• Areas of peeling paint with light rust.</li></ul> <p>Stringer plate / block bearings have the following deficiencies:</p> <ul style="list-style-type: none"><li>• Areas of peeling paint with light to moderate rust.</li><li>• Random bearings have shim plates.</li><li>• Up to 1/4" gaps between edges of bearing / shim plate and floorbeam top flange with or without pack rust.</li><li>• Abrasion rust and tilted anchor bolts.</li><li>• Moderate to heavy rust on anchor bolts.</li><li>• Random anchor bolts are slightly tilted to the south or north.</li><li>• Span 4 Stringer 8 Bearing at Floor Beam 25 - up to 1/4" deep section loss on bearing plate external faces.</li></ul> <p>(See BRI-15, Sketches 7, 9, 10, 12, - 16, 18, 20 - 23, 25 &amp; 29 and Photos 34 - 39)</p>
Stringers: 5	<p>Stringers have the following deficiencies:</p> <ul style="list-style-type: none"><li>• Areas of peeling paint with moderate rust.</li><li>• Isolated areas of heavy rust with and without minor section loss. Some locations are painted over.</li><li>• Areas of laminar rust on Stringer 1 and Stringer 8 at the floor beams with negligible section loss.</li><li>• Span 1, Stringer 7 between Floor Beam 4 &amp; Floor Beam 5 has a 3" long rolling defect (See Photo 41).</li><li>• Span 4, Stringer 8 at Floor Beam 25 - Left side of web at the bearing has a 4' long x 2" high x up to 3/16" deep section loss (&lt;5% section loss for shear &amp; 39.9% section loss for bearing). Bottom flange underside on both sides of bearing have +/- 1" long x full width x up to 1/4" deep section loss and 3' long x full width x up to 1/8" deep section loss. The top flange of the stringer has 2' long x 1/8" deep section loss (painted over). (See Photo 42 &amp; 43)</li></ul> <p>(See Sketches Sketches 7 - 29 and Photos 40 - 45)</p>
Girders: 5	<p>Girders have the following deficiencies:</p> <ul style="list-style-type: none"><li>• Isolated areas of peeling paint with moderate rust, mostly at top flanges due to past water leakage.</li><li>• Random areas of graffiti on the girder webs.</li><li>• Girder web at the floor beam knee brace connections (fascia) have random areas of section loss up to 6" high x 6" wide x 3/16" deep resulting in less than 5% web loss.</li><li>• Isolated web stiffeners have up to full width x 1/8" deep section loss at the base.</li><li>• Random bowed / warped webs.</li><li>• Bottom flanges have isolated areas pitting up to 25' long x up to 10" wide x 1/8" deep resulting less</li></ul>

than 1% flange loss.

- Random areas of bent bottom flanges and top flanges +/- 1/4" (appear as-built) (no change).

Refer to 'Welds-Cracks' item below.

(See Sketches 7 - 29 and Photos 46 - 48)

Floor Beams: 5

Floor Beams and Floor Beam Cantilevers have the following deficiencies:

- Random areas of peeling paint with up to moderate rust.
- Random areas of painted over section loss have reactivating rust.
- Random bowed / warped webs up to 3/4". (See Photos 53, 56, 57, 62 & 65)
- Top flange of floor beams at cantilever ends have section loss up to full width x 1/8" deep resulting in up to 9% flange loss (See Photo 67).

Refer to 'Welds-Cracks' item below.

(See Sketches 7 - 31 and Photos 49 - 70)

Trusses - General: N

Trusses - Portals: N

Trusses - Bracing: N

Paint: 7

- Less than 10% of painted surfaces have deterioration.

Rust: 6

Refer to items above.

Machinery Movable Span: N

Rivets & Bolts: 6

Connection bolts throughout the bridge have the following deficiencies:

- Random areas of light to heavy rust.

Connection bolts at floor beam tie plates:

- Isolated floorbeam top flange tie plates have heavy rust with negligible section loss on the bolts.
- Floor Beam 19 top flange tie plate bolted connection at G1 and G2 in Span 3 each has 1 (of 64) loose bolt.

Girder and Stringer Bolted Field Splices:

- All bolted field splices were checked 100% hands-on.
- Span 2, Girder 1 top flange splice near Floor Beam 8 has (1) loose bolt.
- Span 3, Girder 1 bottom flange splice near Floor Beam 22 has (1) loose bolt.
- Stringer splices have isolated areas of pack rust up to 1/4" between the splice plates and the stringer webs / flanges. (See Photo 40)
- Stringer diaphragms at Floor Beam 29 have bottom two (2) bolts missing (See Photo 45).

(See Sketches 7 - 29 and Photos 40 & 45)

Welds - Cracks: 5

- There are poor quality welds with and without undercuts (+/-1/8" deep) throughout the structure.
- Girder flange transition welds were inspected 100% hands-on and have isolated light rust.

Girder Cracks:

- Span 1, south side of Floor Beam 4 at Girder 1, floor beam-to-girder connection plate weld at the top has a stop hole with a 1/2" long crack (no change).
- Span 4, east side of Girder 2 web at Floor Beam 25 below cope hole for floor beam tie plate has a 1/8" long vertical crack with a 3/4" diameter stop hole (no change).
- There is a 14" long broken weld between the top of the G1 top flange and diaphragm vertical tie plate at Abutment 1 (no change). (See Photo 51).
- Random girder flange splice plates are tack welded at the vertical edges with no evidence of cracking.

**Form: BRI-18, Rev. 1/14**

**Inspection type:** Fracture Critical,Routine

**Inspection Date:** 9/12/2018

**Inspected by:** Infrastructure Engineers

**Bridge No: 04180**

**Town:** NEWTOWN

**Carried:** INTERSTATE 84 WESTBOUND

**Crossed:** HOUSATONIC RIVER

**Inventory Route:** NHS

		<p>Floor Beam Cracks:</p> <ul style="list-style-type: none"><li>• Floor beam and floor beam cantilevers have numerous horizontal cracks in the toe of the fillet weld between the floor beam top flanges and webs. The floor beams are retrofitted with stop holes (typically 3/4" diameter) to prevent crack propagation and a portion of the girder-to-floor beam connection plates have been removed at a majority of crack locations. (See Photos 52, 54, 58 - 61, 64, 68 - 70)</li><li>• A majority of locations which were previously noted as cracks were either peeling/cracked paint with or without rust, or, undercutting along the welds. (Comment from 2016 Report)</li><li>• Isolated crack lengths have been changed since the previous inspection however, a majority of the crack lengths remain unchanged since the previous inspection. Maximum crack length found was at 17-1/2" long at Floor Beam 15 at Girder 1.</li><li>• Random floor beam top flange tie plates are tack welded to the girder webs at the cope holes and isolated floor beam web stiffeners are tack welded to the floor beam top flanges. Some of these tack welds are broken and have abrasion dust emanating from them. Broken tack welds were found at the following locations:<ul style="list-style-type: none"><li>- FB 3 north side web stiffener to top flange at S7.</li><li>- FB 4 top flange tie plate at G1.</li><li>- FB 5 top flange tie plate at G1.</li><li>- FB 7 south side web stiffener to top flange at S7.</li><li>- FB 19 top flange tie plate at G2.</li><li>- FB 21 south side web stiffener to top flange at S6.</li><li>- FB 21 south side web stiffener to top flange at S3.</li><li>- FB 26 top flange tie plate at G1.</li></ul></li><li>• At several locations, the horizontal face of the flame cut girder-to-floor beam connection plate is partially fused to the floor beam webs because of the flame cutting.</li></ul> <p>(See Sketches 7 - 29 and Photos 52, 54, 58 - 61, 64, 68, 69 &amp; 70)</p>
Timber Decay:	N	
Concrete Cracking:	N	
Collision Damage:	7	<ul style="list-style-type: none"><li>• Minor dents in the bottom flange of Stringer 8 between Floor Beam 14 and Floor Beam 15 (appear to be construction related).</li><li>• 4" x 1/2" x 5/16" deep dent in Stringer 8 between Floor Beam 26 and Floor Beam 27 (appear to be construction related). (See Photo 44)</li></ul>
Member Alignment:	5	<p>Floor beam and floor beam cantilevers frame into the girders perpendicularly with bolted connections. The girder-to-floor beam connection plates are welded to the girder webs and bolted to the floor beam webs.</p> <ul style="list-style-type: none"><li>• Several bolted connections between the girders and the floor beam have bowed / warped webs on the girders and floor beams up to full height of the floor beam web. The most severe bow was noted at the east side of Girder 1 bolted connection to Floor Beam 18 in Span 3. At this location, Floor Beam 18 Web is warped up to full height x +/-3/4" out of plane (no change since the last inspection). Close monitoring of these conditions is recommended.</li><li>• There are random gaps between the girder-to-floor beam connection plates and the floor beam webs up to 3/4"; worst at the top of the connection plates and tapering to 0" at the bottom of the connection plates.</li><li>• Several floor beam top flange tie plates are in contact with the girder webs at the cope hole. Random locations have abrasion rust. (See Photos 55 &amp; 63)</li><li>• There are isolated locations at the stringer bottom flanges that are vertically misaligned up to 3/16" with or without pack rust at the bolted field splices (no change this inspection) with isolated bent bottom flange splice plates at Stringer 6 near Floor Beam 19 (See Photo 40)</li></ul>
Deflection Under Load:	N	(N) - Normal; (E) - Excessive
Vibration Under Load:	N	(N) - Normal; (E) - Excessive



**Form: BRI-18, Rev. 1/14**

**Inspection type:** Fracture Critical,Routine

**Inspection Date:** 9/12/2018

**Inspected by:** Infrastructure Engineers

**Bridge No:** 04180

**Town:** NEWTOWN

**Carried:** INTERSTATE 84 WESTBOUND

**Crossed:** HOUSATONIC RIVER

**Inventory Route:** NHS

Stand Pipes: N

Catwalks: 6 • Catwalk between Stringer 4 & 5 has areas of peeling paint and light to moderate rust.

Movable Inspection System: N

Barrel Ladders: N

Are Barrel Ladders OSHA Compliant? NA

## 60. SUBSTRUCTURE:

Reinforced concrete abutments, wingwalls and piers.

Overall Rating: 6

### Rating

Abutments - Stem: 6 The abutment stems are significantly covered with fill material. The following deficiencies were noted.

- Girder 1 Pedestal at Abutment 1 has two (2) spalls up to 32" long x 3" wide x 2-1/2" deep.
- Girder 1 Pedestal at Abutment 2 has a 2' long x 4" wide x 3/4" deep spall.
- Abutment 1 Cheekwalls have spalls on the inside face up to 1' wide x full height x up to 2-1/2" deep with epoxy coated rebar.
- Abutment 1 Cheekwall adjacent to Girder 1 has a 1' high x 8" wide x 1-1/2" deep spall with adjacent 8" diameter hollow area.
- Abutment 2 Cheekwall adjacent to Girder 2 has a 1" high x 6" wide x 2" deep spall.
- Abutment 2 Cheekwall adjacent to Girder 1 has a 2-1/2' high x 8" wide x 2-1/2" deep chipped out area (as-built).

(See Sketches 32 & 33 and Photos 71 - 74)

Abutments - Backwall: 5 Abutment backwalls have the following deficiencies:

- Random areas of light to heavy graffiti.
- Random vertical hairline cracks up to 10' high with and without rust stains.
- Spalls up to 2' high x 10" wide x 1/2" deep with exposed rebar.
- Abutment 1 has moderate vine growth on cheekwalls.
- Abutment 1 Backwall has a 5" long x 23" high x 2" deep concrete cut out / spall.
- Abutment 2 Backwall has a 17" long x 18" high x up to 3-1/2" deep concrete cut out / spall with two (2) exposed rebar.
- Abutment 2 has an isolated 34" high x 19" wide hollow area.

(See Sketches 32 & 33 and Photos 71, 74 & 75)

Abutments - Footings: N Not visible.

Abutments - Settlement: 8 None noted.

Abutments - Wingwalls: 7 Wingwalls have the following deficiencies:

- Random small pop-outs.
- Moderate to heavy vegetation growth.
- Missing 100% of filler material at the joints.
- Wingwall 1B fence has a +/- 10' long section that is damaged / missing.
- Wingwall 2B has in isolated 1' diagonal crack.

(See Sketches 34 & 35 and Photo 76)

Piers/Bents - Caps: N

Piers/Bents - Pile Bent: N

Piers/Bents - Columns: 6 Solid concrete pier walls have the following deficiencies:

- Pedestals have hollow areas up to full length x 1' wide.
- Pop-outs up to 6" diameter x 1/2" deep.
- Random vertical hairline cracks up to 6' long with some extending to the across top of pier up to 6'.
- Pier 2 - Girder 1 Pedestal has two spalls up to 1' long x full width x full height (does not undermine the



bearing).

- Pier 2 - Girder 2 Pedestal has two spalls up to 1' long x full width x full height (does not undermine the bearing).
- Pier 3 - South Elevation has areas of hairline map cracks up to 2' high x 2' wide.

Per Underwater Inspection report by Infrastructure dated 07/18/2018:

- Pier 1 has a 5' high band of abrasion up to 1/4" deep extending 1' above to 4' below the water surface. There are cracks up to 1/2" wide along the cold joints above and below water and isolated vertical and horizontal cracks up to 1/16" wide on the south face of the pier.
- Pier 2 has a 5' high band of abrasion up to 1/4" deep extending from 1' above to 4' below the water surface. There are steel H-piles intermittently exposed along the stem located above the step footing (form work left in place from construction).
- Pier 3 has a 5' high band of abrasion up to 1/4" deep extending from 1' above the water surface to the channel bottom. The north face towards the upstream (west) nose of the pier has a 1.7' long vertical hairline crack below the construction joint.

(See Sketches 36 -38 and Photos 77 & 78)

Piers/Bents - Footings: 6 See item "Erosion-Scour" below.

Piers/Bents - Settlement: 8 None noted.

Erosion - Scour: 5 Erosion - Rating = 6.

- The embankment along Wingwall 1A has 10' long x 3' wide x up to 1' deep erosion (footing not exposed).
- Previously noted erosion along Wingwall 2A was not found.

Scour - Rating = 5.

Per Underwater Inspection report by Infrastructure dated 07/18/2018:

Pier 1:

- Step footing is exposed over its full length x up to full height (5.4' high) along both faces of the pier.
- The footing is exposed up to 5 and the footing has been exposed up to 3.9' vertically over a length of 37' on both faces of the pier (footing was exposed up to 3.9' high per the 2016 underwater inspection).
- Channel elevations have varied around the pier with an increase by up to 1.9', this is possibly due to the timber surrounding the pier.
- Along the north face of the pier, there is a 20' length of sheet pile exposure up to 6' high located 5' off the pier face.

Pier 2:

- The step footing is exposed over its full-length x up to full-height (5.0' high) on both faces of the pier.
- The footing has been exposed full length x up to full-height (5.5' high) on the south face and full length x up to 1.7' high (previously 0.2' high) on the north face of the pier with no undermining.
- The tremie seal has been exposed up to 1.0' long across the full-width of the Upstream (West) Nose and over 2' long x 0.5' high at the southwest corner of the pier.
- Random vertical hairline cracks up to 3' long with efflorescence on the footing.
- Isolated edge spalls on the footing up to 2' long x 4" wide x up to 4" deep.
- At the center of the Downstream (South) face of the step footing there is a spall 18" long x 1' wide x 4" deep.
- At the southwest corner of the footing/tremie interface there is a spall 2' long x 4" high x 3" deep.
- Channel elevations surrounding Pier 2 has had aggradation of up to 3.1' with isolated areas of degradation up to 3.0'.
- The Tremie Seal has been exposed up to 1.0' high (previously 0.9' high) across the full-width of the Upstream (West) Nose and over 2' long x 0.5' high at the southwest corner of the pier.

Pier 3:

- There is a section of sheet pile exposed up to 6" high along the south face of the pier approximately 12.5' off the pier face.
- Channel bottom elevations have remained relatively unchanged (less than 0.6' variations) except for scour up to 3.0' along the north face of the pier since 2016 Inspection.

**Form: BRI-18, Rev. 1/14****Inspection type:** Fracture Critical,Routine**Inspection Date:** 9/12/2018**Inspected by:** Infrastructure Engineers**Bridge No:** 04180**Town:** NEWTOWN**Carried:** INTERSTATE 84 WESTBOUND**Crossed:** HOUSATONIC RIVER**Inventory Route:** NHS

	(See 2018 Underwater Report, Sketch 34 & 35 and Photos 79 & 80)
Concrete Crack - Spall: 5	See items above.
Steel Corrosion: N	
Paint: N	
Timber Decay: N	
Collision Damage: 8	
Debris: 8	

**61. CHANNEL AND CHANNEL PROTECTION:**

Housatonic River

Overall Rating: 5

**Rating**

Channel - Scour: 5 Per Underwater Inspection report by Infrastructure dated 07/18/2018:

- Channel bottom elevations along the upstream and downstream fascias have random areas of mostly aggradation up to 4.0' since the 2016 Underwater Inspection.
- Channel bottom elevations at Pier 1 have varied around the pier with an increase by up to 1.9', this is possibly due to the timber surrounding the pier since the 2016 Underwater Inspection.
- Channel bottom elevations at Pier 2 show evidence of aggradation of up to 3.1' with isolated areas of degradation up to 3.0' since the 2016 Underwater Inspection.
- Channel bottom elevations at Pier 3 south face have remained relatively unchanged (less than 0.6' variations) as compared to the 2016 Underwater Inspections.
- Channel bottom elevations at Pier 3 show evidence of degradation of up to 3.0' along the north face of the pier most likely due to the sandbar that was noted in the previous 2016 Underwater Inspection.
- At Piers 1 and 2, the step footing and footing have been exposed due to scour.
- At Pier 1, the step footing is exposed over its full-length x up to full-height (5.4' high) along both faces of the pier, and the footing has been exposed up to 5.1' vertically (previously 5.0' high) over a length of 37' on both faces of the pier.
- At Pier 2, the step footing is exposed over its full-length x up to full-height (5.0' high) on both faces of the pier and the footing has been exposed over its full-length x up to full-height (5.5' high) on the south face and full length x up to 1.7' high (previously 0.2' high) on the north face of the pier.
- At Pier 2 the Tremie Seal has been exposed up to 1.0' high (previously 0.9') across the full-width of the upstream (west) nose and over 2' long x up to 0.5' high at the southwest corner of the pier.
- There is no exposure of the footings at Pier 3.

(See 2018 Underwater Inspection Report)

Embankment - Erosion: 7 • There is no significant erosion along the channel embankments.

(See 2018 Underwater Inspection Report)

Debris: 6 Per Underwater Inspection report by Infrastructure dated 07/18/2018:

- There is timber debris up to 1' diameter at the upstream (west) and downstream (east) noses of Pier 1.
- There is moderate timber debris up to 2' diameter along the north face of Pier 1.
- There is timber debris up to 1' diameter at the upstream (west) nose of Pier 2.

(See 2018 Underwater Inspection Report)

Vegetation: 7 • The channel embankments are well vegetated.

(See 2018 Underwater Inspection Report)

Channel Change: 6 Per Underwater Inspection report by Infrastructure dated 07/18/2018:

- There is no apparent change to the channel orientation.
- Bridge No. 01218 is located approximately 40' downstream (East) of the bridge.
- There is approximately a 150' long x 20' wide x 3' high sandbar/area of aggradation located north of

	Pier 3.
	(See 2018 Underwater Inspection Report)
Fender - System:	N • The navigation lights on Piers 1 and 2 and the west bridge fascia appear to be on timers and were not on at the time of inspection.
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 Vehicles:		
Advanced Warning:		
Warning At Bridge:		
Legibility:		
Visibility:		

VERTICAL CLEARANCE POSTING

Min. Vert Under Clearance:		Ft		In	
Posted Clearence Under Bridge:		Ft		In	
Posted Clearence On Bridge:		Ft		In	
Advanced Warning:					
Warning At Bridge:					
Legibility:					
Visibility:					

NOTES / COMMENTS:

Character of Traffic: Heavy volume of mixed weight traffic.

Additional Notes:

- Bridge Identification Number is clear and legible.

**Form: BRI-18, Rev. 1/14**

**Inspection type:** Fracture Critical,Routine

**Inspection Date:** 9/12/2018

**Inspected by:** Infrastructure Engineers

**Bridge No: 04180**

**Town:** NEWTOWN

**Carried:** INTERSTATE 84 WESTBOUND

**Crossed:** HOUSATONIC RIVER

**Inventory Route:** NHS

- Bridge is logged from west to east, but items are labeled south to north with Girder 1 and Stringer 1 at the Left (West) fascia which is consistent with previous reports and bridge plans.
- Bridge was inspected using catwalk, 60' snoopers, rope access, safety boat, trooper and shoulder closures on I-84 Eastbound.

Additional Comments:

**National Bridge Elements****Inspection type:** Fracture Critical,Routine**Inspection Date:** 9/12/2018**Inspected by:** Infrastructure Engineers**Bridge No:** 04180**Town:** NEWTOWN**Carried:** INTERSTATE 84 WESTBOUND**Crossed:** HOUSATONIC RIVER**Inventory Route:** NHS

	Environment	Total Quantity	Units	Condition State 1	Condition State 2	Condition State 3	Condition State 4
<b>12 - Reinforced Concrete Deck</b>	Mod.	50529	sq. ft.	45900	4623	6	0
1080 - Delamination/Spall/Patched Area		9		0	3	6	0
1090 - Exposed Rebar		2		0	2	0	0
1120 - Efflorescence/Rust Staining		2877		0	2877	0	0
1130 - Cracking (RC and Other)		1741		0	1741	0	0
510 - Wearing Surfaces		47520	sq. ft.	47367	10	143	0
3210 - Delamination/Spall/Patched Area/Pothole (Wearing Surfaces)		13		0	10	3	0
3220 - Crack (Wearing Surface)		140		0	0	140	0
<b>107 - Steel Open Girder/Beam</b>	Mod.	1584	ft.	1453	96	35	0
1000 - Corrosion		126		0	91	35	0
1900 - Distortion		5		0	5	0	0
515 - Steel Protective Coating		62656	sq. ft.	59531	2500	625	0
<b>113 - Steel Stringer</b>	Mod.	6336	ft.	5991	334	11	0
1000 - Corrosion		339		0	329	10	0
1900 - Distortion		5		0	5	0	0
7000 - Damage		1		0	0	1	0
515 - Steel Protective Coating		44352	sq. ft.	42852	1400	100	0
<b>152 - Steel Floor Beam</b>	Mod.	1850	ft.	1603	213	34	0
1000 - Corrosion		157		0	135	22	0
1010 - Cracking		79		0	67	12	0
1900 - Distortion		11		0	11	0	0
515 - Steel Protective Coating		28870	sq. ft.	28870	0	0	0
<b>210 - Reinforced Concrete Pier Wall</b>	Mod.	151	ft.	9	42	100	0
1080 - Delamination/Spall/Patched Area		16		0	16	0	0
1130 - Cracking (RC and Other)		26		0	26	0	0
6000 - Scour		100		0	0	100	0
<b>215 - Reinforced Concrete Abutment</b>	Mod.	128	ft.	116	0	12	0
1080 - Delamination/Spall/Patched Area		12		0	0	12	0
<b>300 - Strip Seal Expansion Joint</b>	Mod.	120	ft.	70	46	4	0
2310 - Leakage		1		0	0	1	0
2350 - Debris Impaction		24		0	24	0	0
2360 - Adjacent Deck or Header		25		0	22	3	0
<b>311 - Movable Bearing</b>	Mod.	8	each	2	6	0	0
1000 - Corrosion		6		0	6	0	0
515 - Steel Protective Coating		72	sq. ft.	72	0	0	0
<b>313 - Fixed Bearing</b>	Mod.	2	each	0	2	0	0
1000 - Corrosion		2		0	2	0	0
515 - Steel Protective Coating		18	sq. ft.	18	0	0	0
<b>330 - Metal Bridge Railing</b>	Mod.	1584	ft.	1573	8	3	0
1010 - Cracking		2		0	2	0	0

National Bridge Elements

Inspection type: Fracture Critical,Routine

Inspection Date: 9/12/2018

Inspected by: Infrastructure Engineers

Bridge No: 04180

Town: NEWTOWN

Carried: INTERSTATE 84 WESTBOUND

Crossed: HOUSATONIC RIVER

Inventory Route: NHS

1020 - Connection		3		0	0	3	0
7000 - Damage		6		0	6	0	0
<b>331 - Reinforced Concrete Bridge Railing</b>	Mod.	1584	ft.	1312	192	80	0
1080 - Delamination/Spall/Patched Area		94		0	14	80	0
1090 - Exposed Rebar		3		0	3	0	0
1130 - Cracking (RC and Other)		175		0	175	0	0

FRACTURE CRITICAL MEMBERS / FRACTURE PRONE DETAILS

Inspectors:		Visits:			
Lead Inspector:	Matt Riesenberg	Visit Date:	Temp:	Start Time:	End Time:
Inspector:	Task:	09/12/2018	75	08:30 AM	03:30 PM
Area, 12	BSE - Manager	09/13/2018	70	08:00 AM	01:00 PM
Liguore, Matt	BSE - Inspector Rail - Inspector				
O'hara, Mike	BSE - Inspector				
Riesenberg, Matt	BSE - Inspector				

Fracture Critical Inspection Frequency: 24 Months

Fracture Critical Type Code: C Two Girder System, welded plate girders

Structure Type: Highway Bridges    Year Built: 1977    ADT: 39795    Year of ADT: 2018    % Truck: 9

Access Equipment Needed: 60' snooper and Catwalk.

Traffic Control Required: Shoulder closure on I-84 Westbound.

Reference to Plans: Project No. 96-115 (1975)

MEMBER/DETAIL TYPE # 1

Member/Details Type: A One or two steel girder systems

Fracture Critical: Yes

Fatigue Category: E

Steel Type: A-588

Fatigue Prone: Yes

Description: Welded steel floorbeams and girders.

Inspection Procedure: 100% hands-on.

Condition Comments: See BRI-18.

Procedure Followed This Inspection? Yes    If No please explain:

MEMBER/DETAIL TYPE # 2

Member/Details Type: H Highly fatigue prone details in tension areas

Fracture Critical:

Fatigue Category: E

Steel Type: A-588

Fatigue Prone: Yes



Description:

Horizontal lateral bracing gusset plate welded connections to floorbeam bottom flanges and lower girder webs in tension zones.

Inspection Procedure:

100% hands-on.

Condition Comments:

No notable deficiencies.

Procedure Followed This Inspection?

Yes

If No please explain:

CREW: RV, ARM

DATE: 11/7/2016

BRIDGE No. 04180

**ROCKER BEARING MEASUREMENTS**

Form BRI - 15, Rev 9/97

Span No. = 1

Substructure

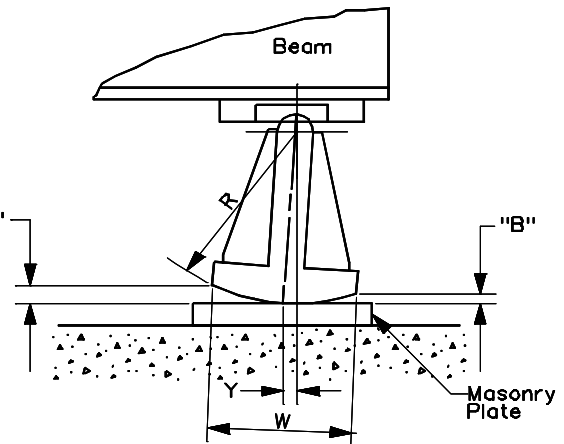
Unit = ABUTMENT 1

Temperature =  $\frac{75}{-52}$  °F

$$\theta = \sin^{-1} (F-B)/W$$

$$Y = R \tan \theta$$

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



R = 24 inch

W = 18 inch

**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	2 5/16	2	7/16	E	HVY LAM RUST ON MAS PL, HVY SAND ACCUM UNDER ROCKER
G2	2 8/16	2 3/16	7/16	E	HVY SAND ACCUM UNDER ROCKER
<b>2018 MEASUREMENTS - INFRASTRUCTURE</b>					
G1	2-5/8"	1-3/4"	1-11/64"	E	MODERATE RUST, HEAVY DEBRIS ACCUMULATION UNDER ROCKER
G2	2-3/4"	1-7/8"	1-11/64"	E	MODERATE SAND DEBRIS UNDER ROCKER

**General Notes:**

- Areas of peeling paint with moderate rust.
- Light abrasion rust at pins

CREW: RV, ARM

DATE: 12/21/2016

BRIDGE No. 04180

**ROCKER BEARING MEASUREMENTS**

Form BRI - 15, Rev 9/97

Span No. = 1/2

Substructure

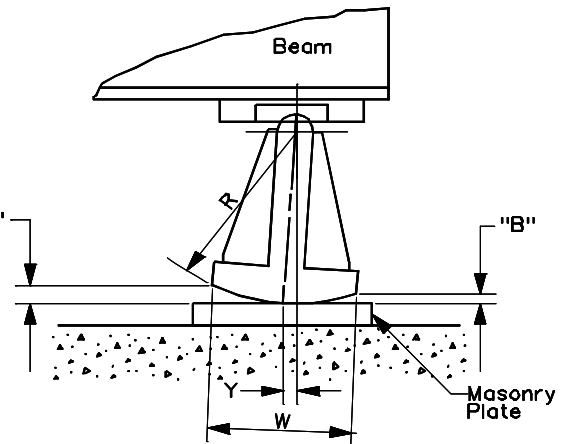
Unit = PIER 1

Temperature =  $\frac{70}{34}$  °F

$$\theta = \sin^{-1} (F-B)/W$$

$$Y = R \tan \theta$$

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



R = 36 inch

W = 30 inch

**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	3 10/16	4	- 7/16	C	MODERATE ABRASION RUST AT PIN
G2	3 8/16	4 1/16	- 11/16	C	HEAVY ABRASION RUST AT PIN

**2018 MEASUREMENTS - INFRASTRUCTURE**

G1	3-7/8"	3-7/8"		NEUTRAL	
G2	3-7/8"	3-7/8"		NEUTRAL	

**General Notes:**

- Areas of peeling paint with moderate rust.
- Minor rust and debris under rocker.
- Pack rust up to 1/8" under rocker.

CREW: RV, ARM

DATE: 11/8/2016

BRIDGE No. 04180

**ROCKER BEARING MEASUREMENTS**

Form BRI - 15, Rev 9/97

Span No. = 3/4

Substructure

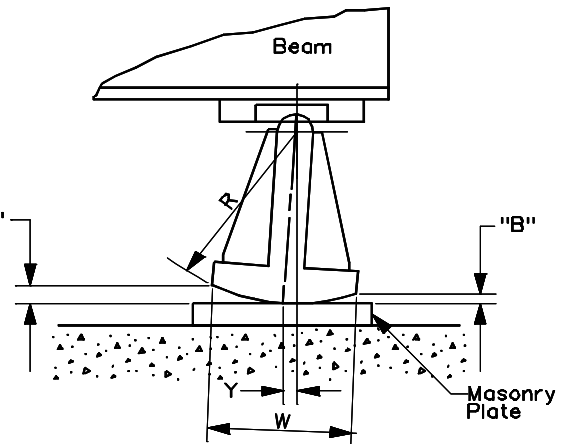
Unit = PIER 3

Temperature = ~~59~~<sup>75</sup> °F

$$\theta = \sin^{-1} (F-B)/W$$

$$Y = R \tan \theta$$

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



R = 36 inch

W = 30 inch

**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	3 10/16	3 15/16	- 6/16	C	LIGHT RUST AT PIN
G2	3 8/16	4	- 10/16	C	LIGHT RUST AT PIN

**2018 MEASUREMENTS - INFRASTRUCTURE**

G1	3-3/4"	3-3/4"		NEUTRAL	
G2	3-3/4"	3-15/16"	- 7/32"	C	

**General Notes:**

- Areas of peeling paint with moderate rust.
- Minor rust and debris under rocker.

CREW: RV, ARM

DATE: 11/7/2016

BRIDGE No. 04180

**ROCKER BEARING MEASUREMENTS**

Form BRI - 15, Rev 9/97

Span No. = 4

Substructure

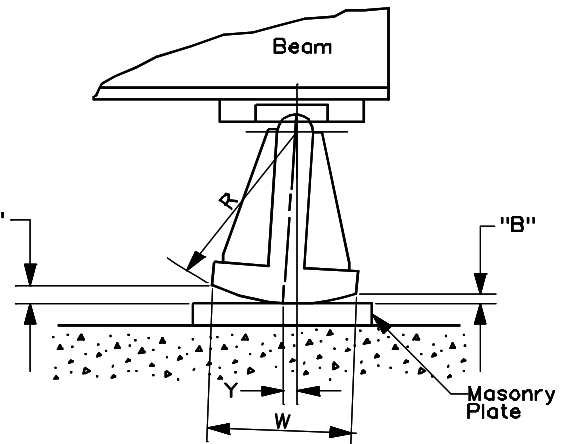
Unit = ABUTMENT 2

Temperature =  $\frac{75}{-52}$  °F

$$\theta = \sin^{-1} (F-B)/W$$

$$Y = R \tan \theta$$

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



R = 24 inch

W = 18 inch

**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	2 8/16	2	11/16	E	MOD ABRASION DUST AT PIN. LIGHT SAND UNDER ROCKER.
G2	2 8/16	1 15/16	12/16	E	MOD ABRASION DUST AT PIN

**2018 MEASUREMENTS - INFRASTRUCTURE**

G1	2-7/8"	1-7/8"	1-11/32"	E	
G2	2-3/4"	1-3/4"	1-11/32"	E	

**General Notes:**

- Areas of peeling paint with moderate rust.

Sketches

Inspection type: Fracture Critical,Routine

Inspection Date: 9/12/2018

Inspected by: Infrastructure Engineers

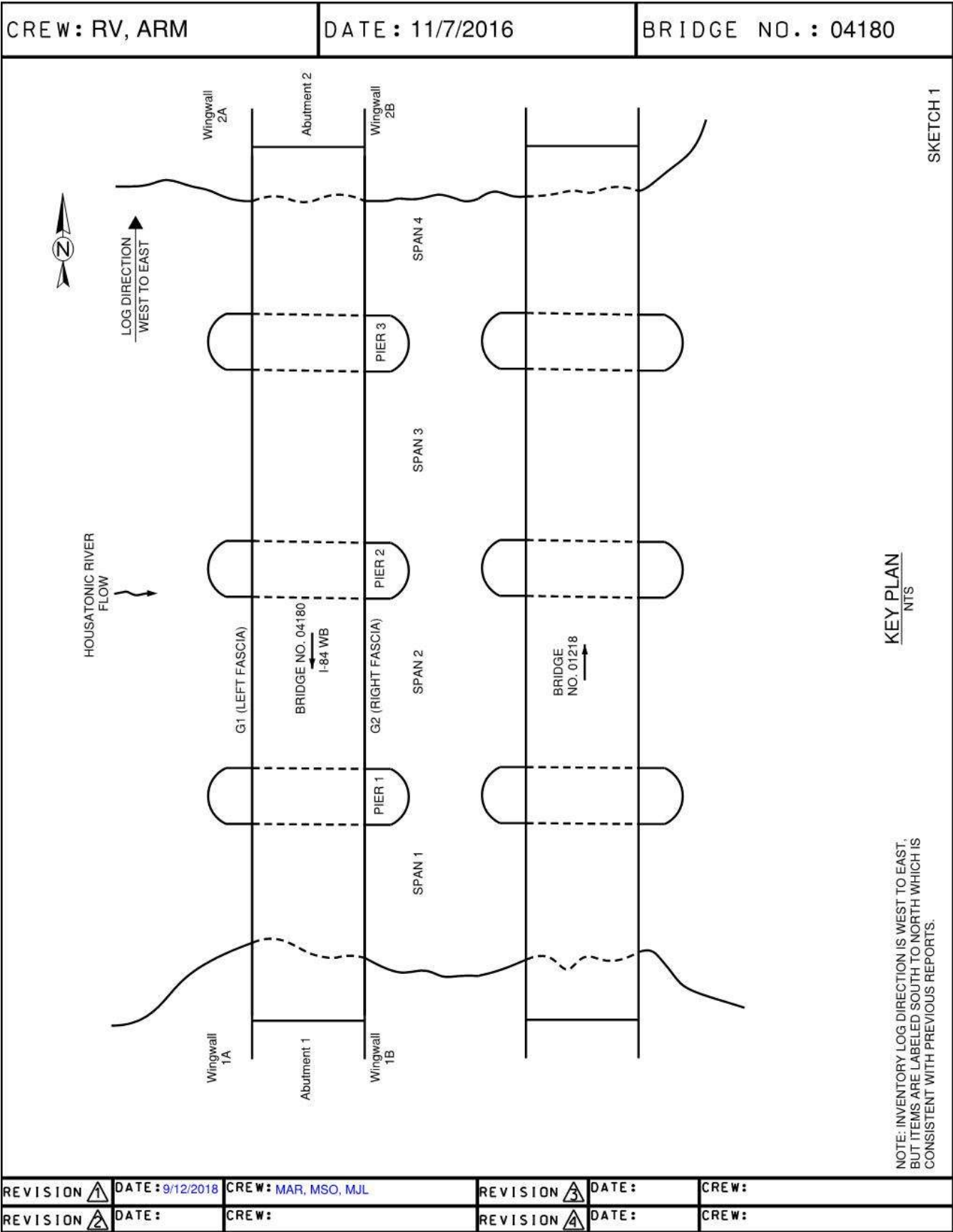
Bridge No: 04180













Town: NEWTOWN

Carried: INTERSTATE 84 WESTBOUND

Crossed: HOUSATONIC RIVER

Inventory Route: NHS



CREW : RV, ARM		DATE : 11/7/2016		BRIDGE NO. : 04180													
<div>TOP OF DECK GENERAL NOTES</div> <div><div><div>BITUMINOUS CONCRETE OVERLAY:</div><div><div>• LIGHT WEAR WITH MODERATE WEAR NEAR ABUTMENT 1 AND 2 JOINTS.</div><div>• RANDOM SHORT CRACKS OPEN UP TO 1/8" WIDE.</div><div>• UP TO 1/4" DEEP MILLED AREAS ALONG OLD SHIFTED LANE LINES.</div><div>• BITUMINOUS PATCHES IN THE SHOULDERS UP TO 20' LONG x 5' WIDE.</div><div>• PAVING SEAMS OPEN UP TO 3"W, WORST CASE IN SPAN 2.</div></div></div><div><div>SLOPED GRANITE CURBS:</div><div><div>• MINOR SCRAPES WITH RUST STAINS.</div><div>• RANDOM SPALLS UP TO 3-1/2' LONG x 6" HIGH x 1-1/2" DEEP.</div><div>AVERAGE CURB REVEAL:<div><div>LEFT (WEST) SIDE = 3-3/4"</div><div>RIGHT (EAST) SIDE = 3-1/4"</div></div></div></div></div><div><div>REINFORCED CONCRETE PARAPETS:</div><div><div>• RANDOM AREAS OF SCALING UP TO 13' LONG x 1' WIDE x 1" DEEP.</div><div>• SPALLS UP TO 18" LONG x 10" WIDE x 2" DEEP WITH AND WITHOUT EXPOSED REBAR. SOME SPALLS UNDERMINE THE RAILING POST BASES AND HAVE EXPOSED ANCHOR BOLTS.</div><div>• RANDOM HORIZONTAL AND FULL HEIGHT VERTICAL CRACKS OPEN UP TO 1/8" WIDE.</div><div>• RANDOM HOLLOW AREAS UP TO 28" LONG x UP TO 1' WIDE.</div></div></div><div><div>SINGLE PIPE ALUMINUM RAILING:</div><div><div>• RANDOM COLLISION SCRAPES.</div><div>• RANDOM LOOSE ANCHOR NUTS.</div></div></div><div><div>DRAINS:</div><div><div>• SCUPPER GRATES ARE PARTIALLY CLOGGED UP TO 50% WITH SAND AND VEGETATION, BUT PIPES ARE CLEAR.</div></div></div><div><div>STRIP SEAL EXPANSION JOINTS:</div><div><div>• LIGHT TO HEAVY ACCUMULATION OF SAND AND DEBRIS (60% OF THE LENGTH), MOSTLY IN THE SHOULDERS.</div><div>• CONCRETE HEADERS HAVE RANDOM FULL LENGTH TRANSVERSE CRACKS SPACED 2'-3'.</div><div>• ACTIVE JOINT LEAKAGE AT BOTH ABUTMENTS.</div></div></div><div><div>APPROACH GUIDE RAILS:</div><div><div>• MINOR SCRAPES AND DENTS.</div></div></div><div><div>APPROACH PAVEMENT:</div><div><div>• MINOR WEAR.</div><div>• PAVING SEAMS OPEN UP TO 1/8" WIDE.</div></div></div></div> <div>SKETCH 2</div> <table><tr><td>REVISION </td><td>DATE : 9/12/2018</td><td>CREW : MAR, MSO, MJL</td><td>REVISION </td><td>DATE :</td><td>CREW :</td></tr><tr><td>REVISION </td><td>DATE :</td><td>CREW :</td><td>REVISION </td><td>DATE :</td><td>CREW :</td></tr></table>						REVISION 	DATE : 9/12/2018	CREW : MAR, MSO, MJL	REVISION 	DATE :	CREW :	REVISION 	DATE :	CREW :	REVISION 	DATE :	CREW :
REVISION 	DATE : 9/12/2018	CREW : MAR, MSO, MJL	REVISION 	DATE :	CREW :												
REVISION 	DATE :	CREW :	REVISION 	DATE :	CREW :												

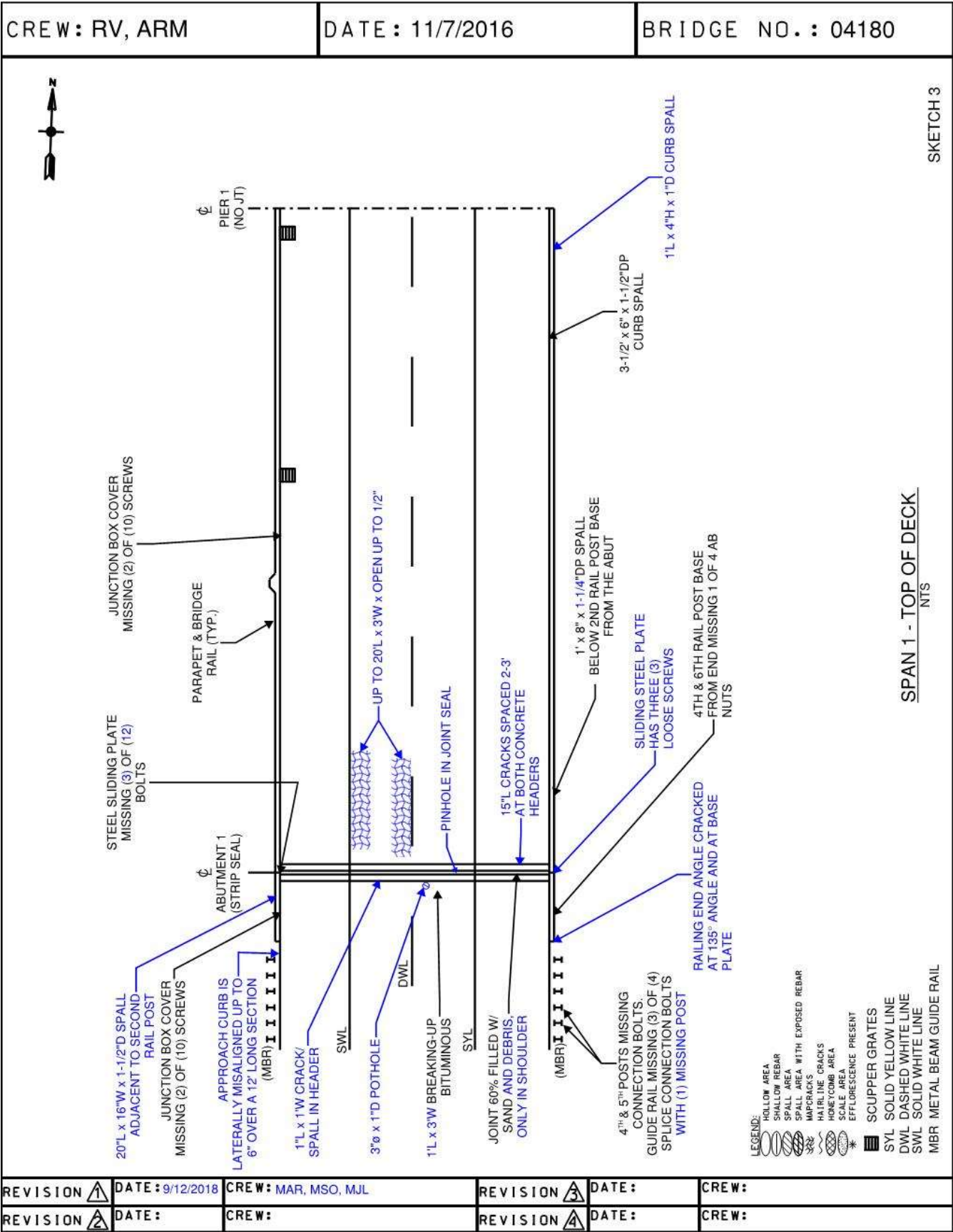


Sketches

Inspection type: Fracture Critical,Routine  
Inspection Date: 9/12/2018  
Inspected by: Infrastructure Engineers

Bridge No: 04180

Town: NEWTOWN  
Carried: INTERSTATE 84 WESTBOUND  
Crossed: HOUSATONIC RIVER  
Inventory Route: NHS



REVISION	DATE : 9/12/2018	CREW : MAR, MSO, MJL	REVISION	DATE :	CREW :
REVISION	DATE :	CREW :	REVISION	DATE :	CREW :

**Inspected by:** Infrastructure Engineers

**Inventory Route:** NHS

CREW: RV, ARM

DATE: 11/7/2016

BRIDGE: 04180

SKETCH 4

SPAN 2 - TOP OF DECK  
NTS

LEGEND:

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAPCRACKS
- HAIRLINE CRACKS
- HONEYCOMB AREA
- SCALE AREA
- EFFLUESCENCE PRESENT
- SCUPPER GRATES
- SYL SOLID YELLOW LINE
- DWL DASHED WHITE LINE
- SWL SOLID WHITE LINE
- MBR METAL BEAM GUIDE RAIL

REVISION DATE: 9/12/2018 CREW: MAR, MSO, MJL

REVISION DATE: CREW:

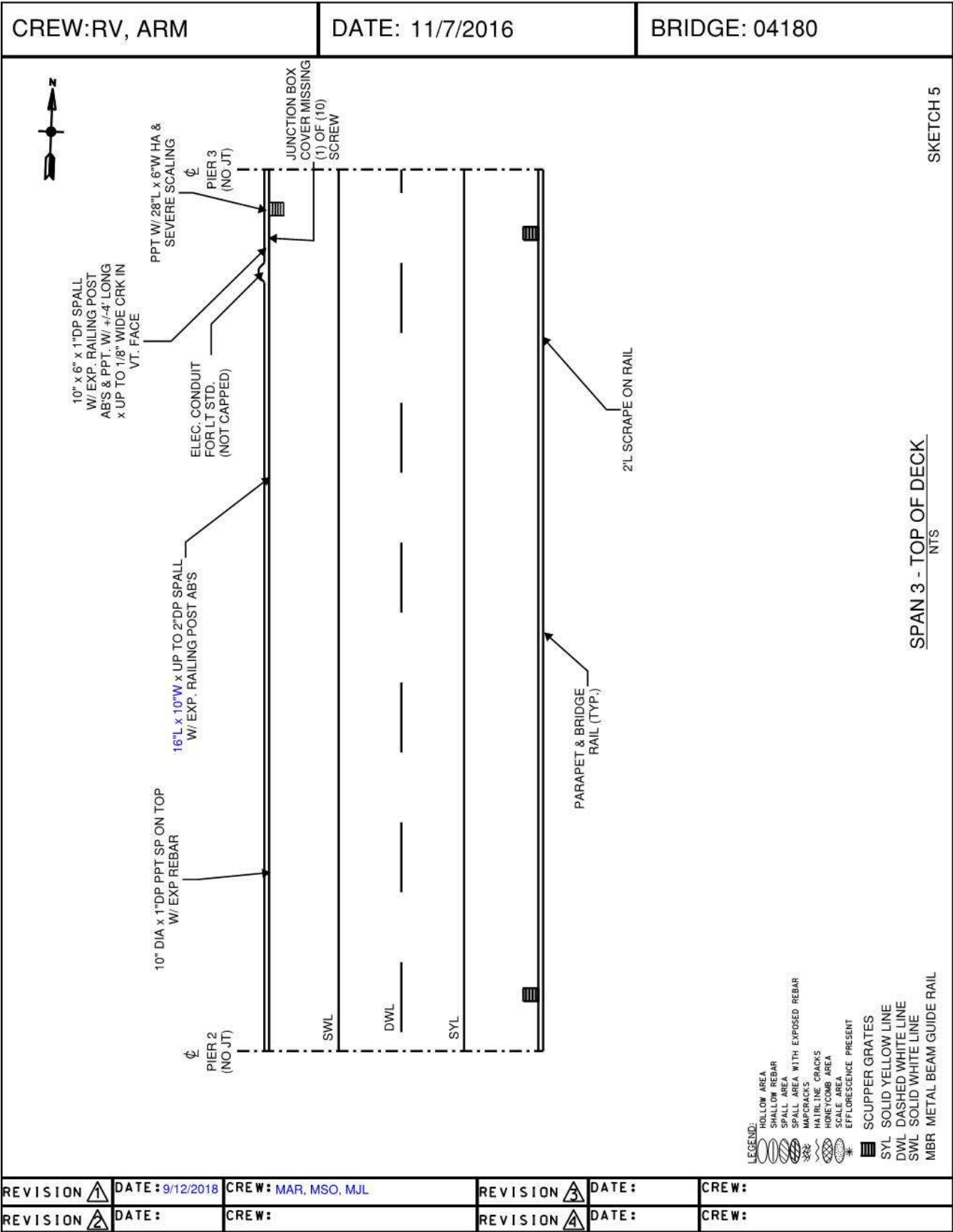
REVISION DATE: CREW:

Sketches

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Inspection Date: 9/12/2018  
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Bridge No: 04180

Town: NEWTOWN  
Carried: INTERSTATE 84 WESTBOUND  
Crossed: HOUSATONIC RIVER  
Inventory Route: NHS



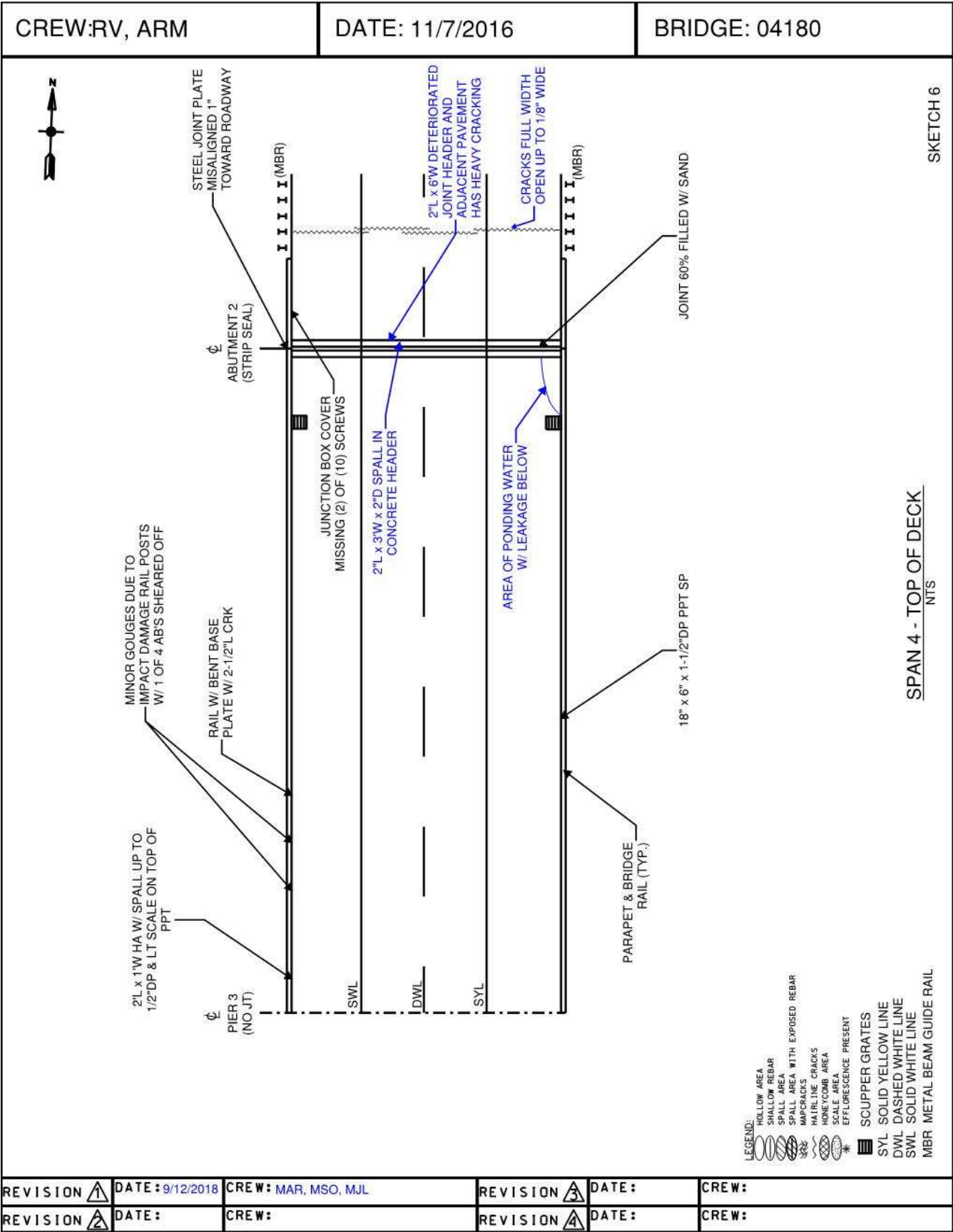
- LEGEND:
- HOLLOW AREA
  - SHALLOW REBAR
  - SPALL AREA
  - SPALL AREA WITH EXPOSED REBAR
  - MAP CRACKS
  - HAIRLINE CRACKS
  - HONEYCOMB AREA
  - SCALE AREA
  - EFFLUENCE PRESENT
  - SCUPPER GRATES
  - SYL SOLID YELLOW LINE
  - DWL DASHED WHITE LINE
  - SWL SOLID WHITE LINE
  - MBR METAL BEAM GUIDE RAIL

Sketches

Inspection type: Fracture Critical,Routine  
Inspection Date: 9/12/2018  
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Bridge No: 04180

Town: NEWTOWN  
Carried: INTERSTATE 84 WESTBOUND  
Crossed: HOUSATONIC RIVER  
Inventory Route: NHS





Sketches

Inspection type: Fracture Critical,Routine  
Inspection Date: 9/12/2018  
Inspected by: Infrastructure Engineers

Bridge No: 04180

Town: NEWTOWN  
Carried: INTERSTATE 84 WESTBOUND  
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Inventory Route: NHS

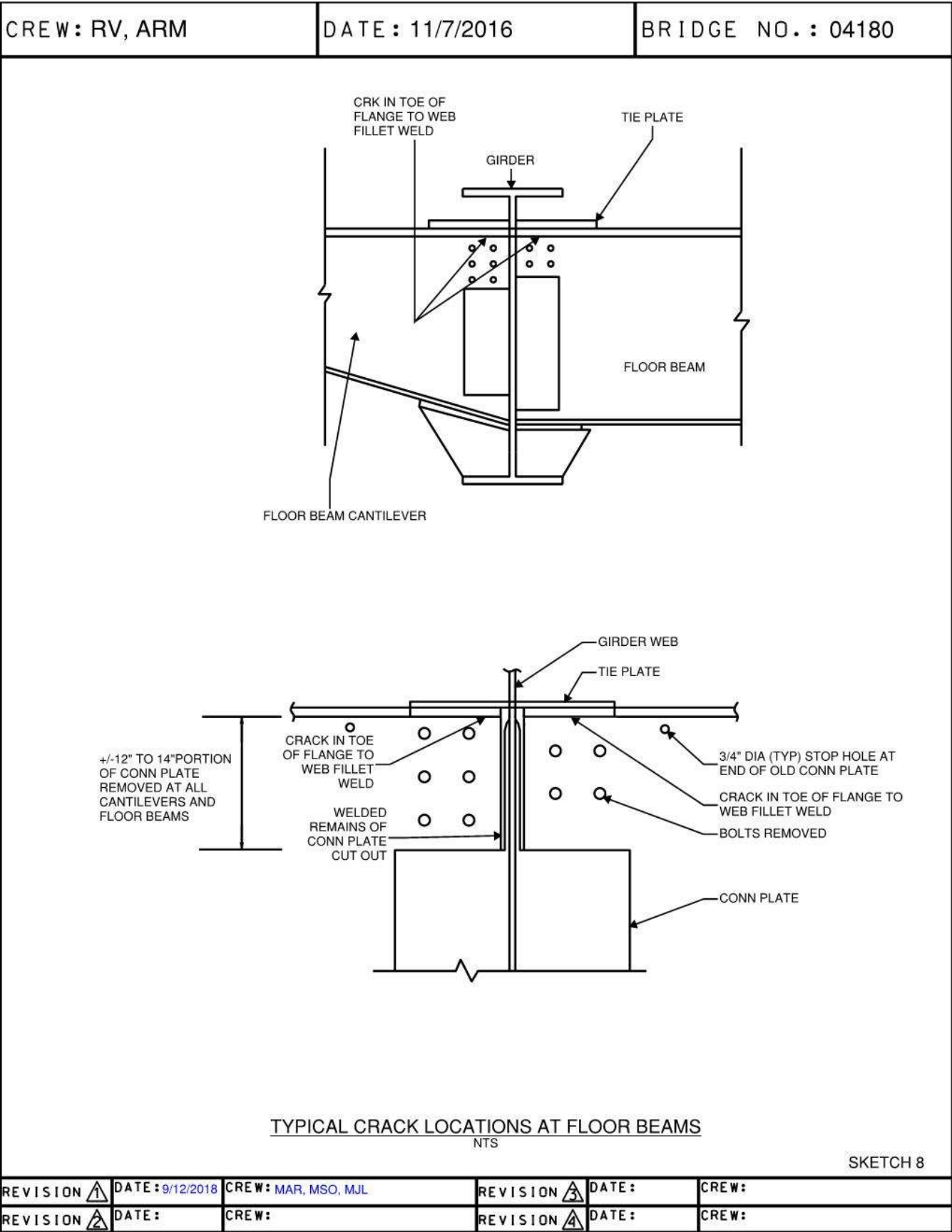
CREW : RV, ARM		DATE : 11/7/2016		BRIDGE NO. : 04180	
<div>DECK AND FRAMING PLAN - GENERAL NOTES</div> <div>UNDERSIDE OF DECK:<ul style="list-style-type: none"><li>RANDOM AREAS OF LIGHT SCALING.</li><li>RANDOM HAIRLINE TRANSVERSE CRACKS AND MAP CRACKS UP TO 100% OF THE BAY AREA WITH AND WITHOUT EFFLORESCENCE.</li><li>AREAS OF MOISTURE THROUGHOUT.</li></ul></div> <div>BEARING DEVICES:<ul style="list-style-type: none"><li>GIRDER ROCKER BEARINGS<ul style="list-style-type: none"><li>AREAS OF PEELING PAINT WITH AREAS OF LIGHT TO MODERATE RUST.</li><li>PINS HAVE MODERATE TO HEAVY ABRASION RUST.</li><li>PACK RUST/LAMINATED RUST UP TO 1/8" THICK BELOW ROCKERS.</li><li>ABUTMENT BEARINGS W/ MODERATE DEBRIS/SAND ACCUMULATION BETWEEN MASONRY PLATES AND ROCKERS (IMPEDES NORMAL MOVEMENT).</li></ul></li><li>FIXED ROCKER TYPE BEARINGS AT PIER 2 HAVE AREAS OF PEELING PAINT AND LIGHT RUST.</li><li>STRINGER BLOCK/PLATE BEARINGS:<ul style="list-style-type: none"><li>AREAS OF PEELING PAINT AND LIGHT TO MODERATE RUST.</li><li>RANDOM BEARINGS W/SHIM PLATES.</li><li>RANDOM GAPS (UP TO 1/4") GAPS BETWEEN EDGES OF BEARING/SHIM PLATE AND FLOOR BEAM TOP FLANGE W/ OR W/O PACK RUST.</li></ul></li></ul></div> <div>STRINGERS:<ul style="list-style-type: none"><li>AREAS OF PEELING PAINT AND MODERATE RUST.</li><li>ISOLATED AREAS W/ HEAVY RUST W/ &amp; W/O MINOR SECTION LOSS UNLESS OTHERWISE NOTED.</li></ul></div> <div>GIRDERS:<ul style="list-style-type: none"><li>ISOLATED AREAS OF PEELING PAINT WITH MODERATE RUST, MOSTLY AT TOP FLANGES DUE TO PAST WATER LEAKAGE.</li><li>RANDOM AREAS OF GRAFFITI ON GIRDER WEBS.</li><li>WEB AT FLOOR BEAM KNEE BRACE CONNECTIONS W/ RANDOM AREAS OF SECTION LOSS UP TO 6" HIGH x 6" WIDE x 3/16" DEEP RESULTING IN LESS THAN 5% SECTION LOSS.</li><li>ISOLATED WEB STIFFENERS HAVE UP TO FULL WIDTH x 1/8" DEEP SECTION LOSS AT THE BASE.</li><li>RANDOM BOWED / WARPED WEBS.</li><li>BOTTOM FLANGES HAVE ISOLATED AREAS OF PITTING UP TO 25' L X UP TO 10" W X 1/8" D RESULTING IN LESS THAN 1% SL.</li><li>RANDOM AREAS OF BENT BOTTOM FLANGES AND TOP FLANGES +/- 1/4" (APPEAR AS BUILT) (NO CHANGE SINCE 2016 INSPECTION)</li></ul></div> <div>FLOOR BEAMS:<ul style="list-style-type: none"><li>FLOOR BEAMS AND CANTILEVERS HAVE RANDOM AREAS OF PEELING PAINT WITH UP TO MODERATE RUST.</li><li>RANDOM GIRDERS AND FLOOR BEAMS HAVE BOWED/WARPED WEBS.</li></ul></div> <div>SKETCH 7</div>					
REVISION 1	DATE : 9/12/2018	CREW : MAR, MSO, MJL	REVISION 3	DATE :	CREW :
REVISION 2	DATE :	CREW :	REVISION 4	DATE :	CREW :

Sketches

Inspection type: Fracture Critical,Routine  
Inspection Date: 9/12/2018  
Inspected by: Infrastructure Engineers

Bridge No: 04180

Town: NEWTOWN  
Carried: INTERSTATE 84 WESTBOUND  
Crossed: HOUSATONIC RIVER  
Inventory Route: NHS



# Sketches

Inspection type: Fracture Critical,Routine

Inspection Date: 9/12/2018

Inspected by: Infrastructure Engineers

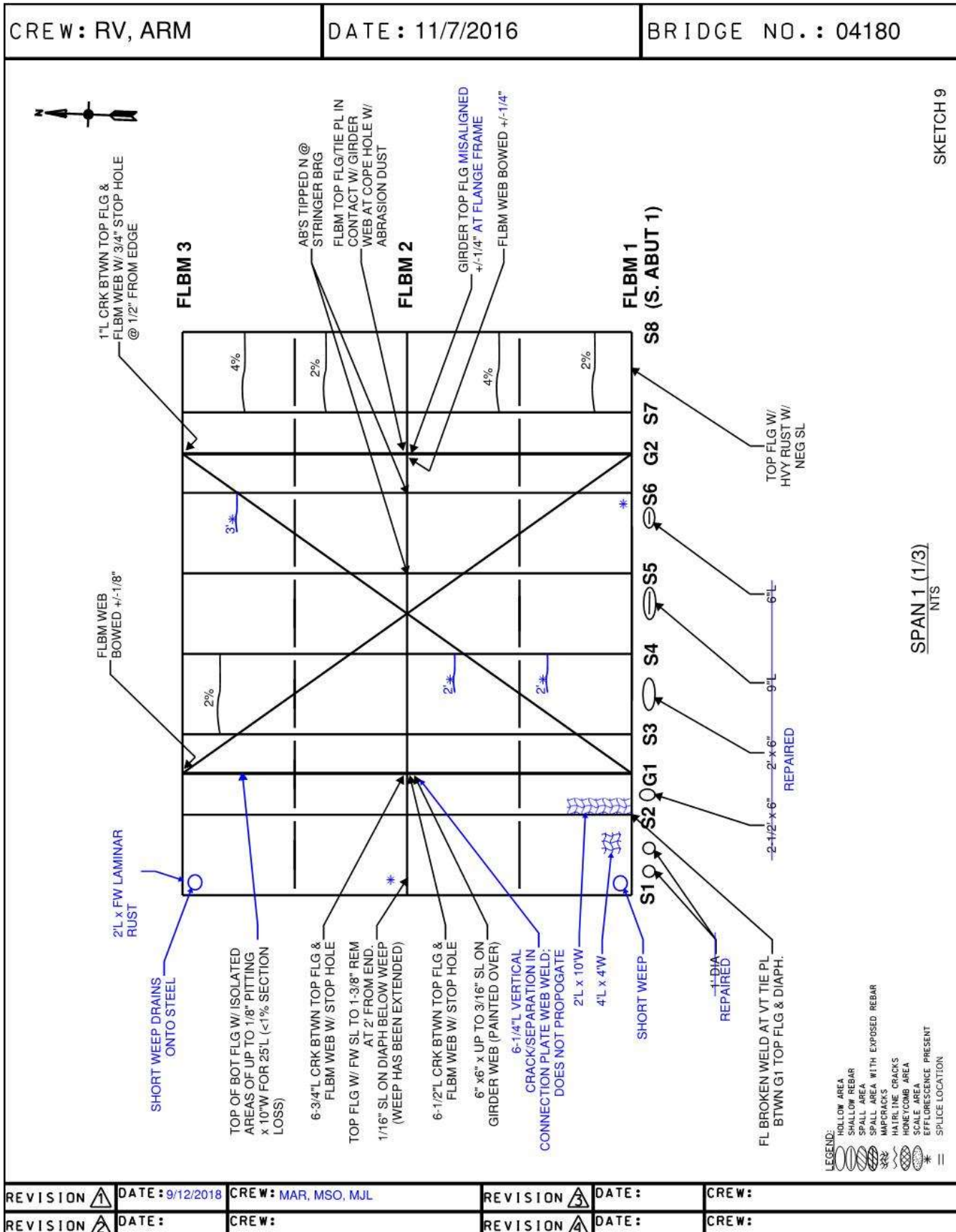
Bridge No: 04180

Town: NEWTOWN

Carried: INTERSTATE 84 WESTBOUND

Crossed: HOUSATONIC RIVER

Inventory Route: NHS



REVISION	DATE: 9/12/2018	CREW: MAR, MSO, MJL	REVISION	DATE:	CREW:
REVISION	DATE:	CREW:	REVISION	DATE:	CREW:



# Sketches

Inspection type: Fracture Critical, Routine

Inspection Date: 9/12/2018

Inspected by: Infrastructure Engineers

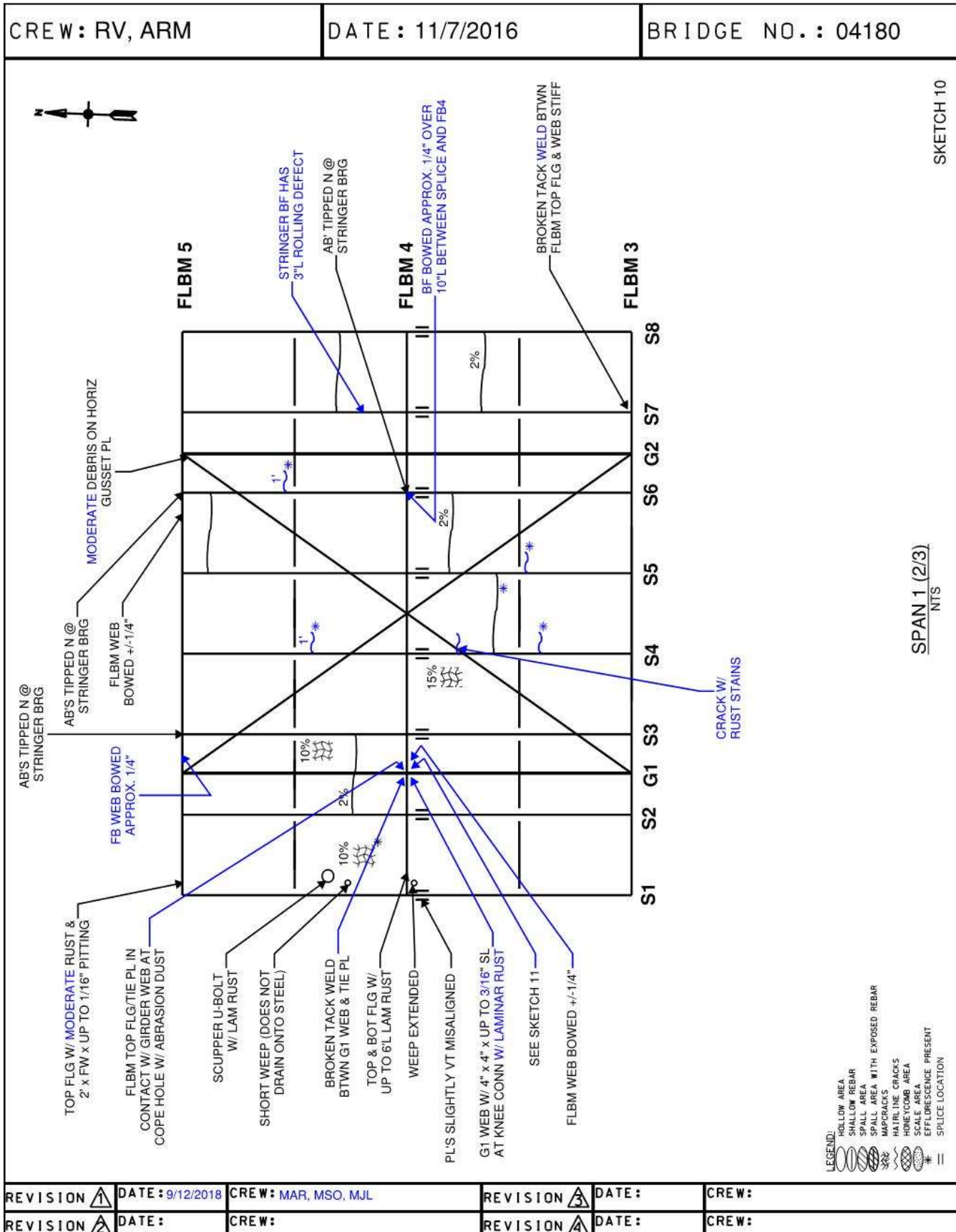
Bridge No: 04180

Town: NEWTOWN

Carried: INTERSTATE 84 WESTBOUND

Crossed: HOUSATONIC RIVER

Inventory Route: NHS



Sketches

Inspection type: Fracture Critical,Routine  
Inspection Date: 9/12/2018  
Inspected by: Infrastructure Engineers

Bridge No: 04180

Town: NEWTOWN  
Carried: INTERSTATE 84 WESTBOUND  
Crossed: HOUSATONIC RIVER  
Inventory Route: NHS

CREW: RV, ARM		DATE: 11/7/2016		BRIDGE NO.: 04180	
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SEVERAL LOCATIONS HAVE HORIZONTAL FLAME CUT CONNECTION PLATE BONDED TO CANTILEVER WEB RESULTING IN PARTIAL FUSION DUE TO HEAT AT TIME OF CUTTING. TYPICAL CONNECTION PLATE THICKNESS = 7/16"

FLOOR BEAM 4

CONNECTION PLATE

STOP HOLE

STOP HOLE 1/2" DOWN AT END OF CRACK (SEE BELOW)

CONNECTION PLATE

STOP HOLE

APPROX. 1/2" CRACK INSIDE OF STOP HOLE

FLOOR BEAM 4 AT G1  
SOUTH SIDE  
NTS

SKETCH 11

REVISION	DATE: 9/12/2018	CREW: MAR, MSO, MJL	REVISION	DATE:	CREW:
REVISION	DATE:	CREW:	REVISION	DATE:	CREW:

**Inspected by:** Infrastructure Engineers

**Bridge No: 04180**

**Inventory Route:** NHS

CREW: RV, ARM
DATE: 11/7/2016
BRIDGE NO.: 04180

SKETCH 12

**FLBM 7 (PIER 1)**  
 UP TO 3/8" GAP BTWN FLBM WEB & CONN PL  
 UP TO 7/16" GAP BTWN FLBM WEB & CONN PL  
 UP TO 9/16" GAP BTWN FLBM WEB & CONN PL  
 UP TO 3/8" GAP BTWN FLBM WEB & CONN PL

BROKEN TACK WELD BTWN WEB STIFF & FLBM TOP FLG & UP TO 3/4" GAP BTWN FLBM WEB & CONN PL

SCUPPER U-BOLT W/ HVY RUST & UP TO 50% SL

TOP FLG CONN BOLTS TO TIE PL W/ MODERATE RUST (TYP.)

BF SPLICE PLATE W/ MODERATE SURFACE RUST (TYP.)

BROKEN TACK WELD BTWN G1 WEB @ CUT-OUT & TIE PL

4 SF  
 25%  
 2  
 (3)  
 (3)  
 (2)

FLBM 6  
 FLBM 5

S8  
 S7  
 S6  
 S5  
 S4  
 S3  
 S2  
 S1

G2  
 G1

FLBM WEB BOWED +/- 1/4"  
 FLBM TOP FLG/TIE PL IN CONTACT W/ GIRDER WEB AT GOPE HOLE W/ ABRASION DUST N.F.

**LEGEND:**  
 HOLLOW AREA  
 SHALLOW REBAR  
 SPALL AREA  
 SPALL AREA WITH EXPOSED REBAR  
 MAP CRACKS  
 HAIRLINE CRACKS  
 HONEYCOMB AREA  
 SCALE AREA  
 EFFLUORESCENCE PRESENT  
 SPLICE LOCATION

**REVISION** **DATE:** 9/12/2018 **CREW:** MAR, MSO, MJL

**REVISION** **DATE:** **CREW:**

**REVISION** **DATE:** **CREW:**

**REVISION** **DATE:** **CREW:**

SPAN 1 (3/3)  
 NTS

BOTTOM FLANGE TRANSITION  
 X

# Sketches

Inspection type: Fracture Critical, Routine

Inspection Date: 9/12/2018

Inspected by: Infrastructure Engineers

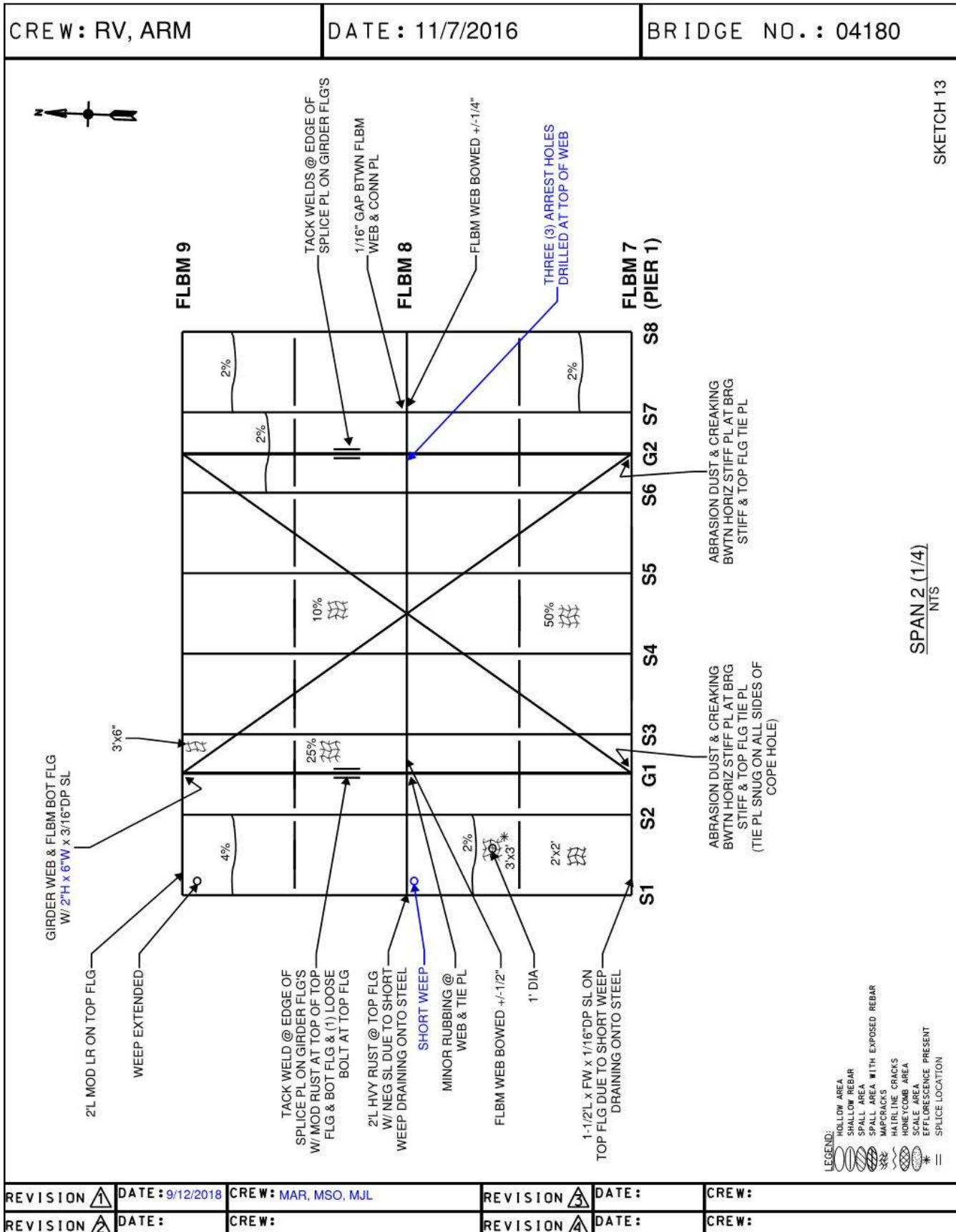
Bridge No: 04180

Town: NEWTOWN

Carried: INTERSTATE 84 WESTBOUND

Crossed: HOUSATONIC RIVER

Inventory Route: NHS





**Inspected by:** Infrastructure Engineers

**Bridge No: 04180**

**Inventory Route:** NHS

CREW: RV, ARM

DATE: 11/7/2016

BRIDGE NO.: 04180

SKETCH 14

SPAN 2 (2/4)  
NTS

BOTTOM FLANGE TRANSITION

REVISION

REVISION

DATE: 9/12/2018

DATE:

CREW: MAR, MSO, MJL

CREW:

REVISION

REVISION

DATE:

DATE:

CREW:

CREW:

**LEGEND:**

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS
- HAIRLINE CRACKS
- SCALE AREA
- EFFLUENCE PRESENT
- SPLICE LOCATION

**Annotations:**

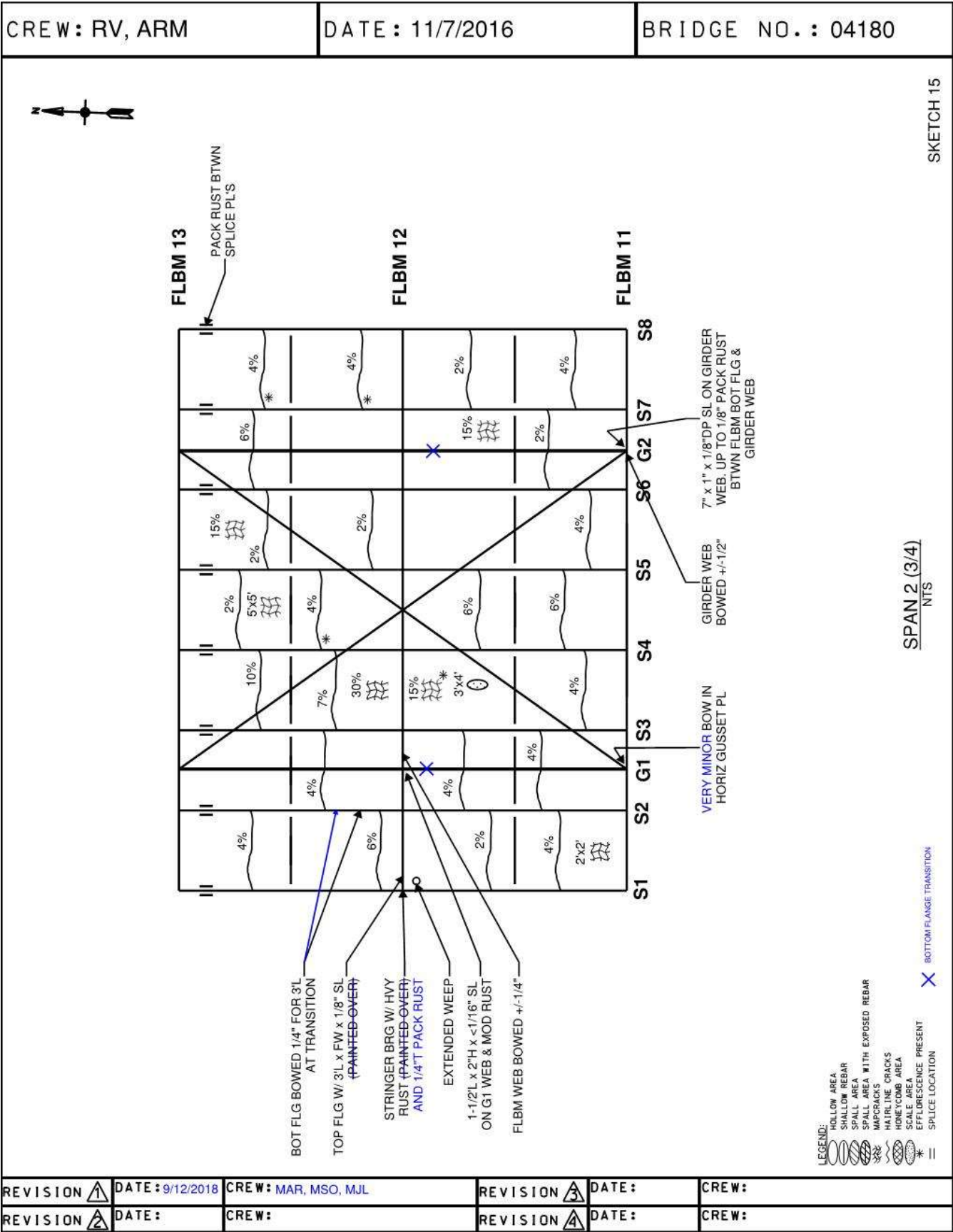
- FLBM TOP FLG/TIE PL IN CONTACT W/ GIRDER WEB AT COPE HOLE
- 1/16" GAP BTWN CONN PL & FLBM WEB. SLIGHT BOW IN CONN PL
- TOP FLG W/ 4'L x 2"W x UP TO 1/16" SL & HVY RUST
- SHORT WEEP DRAINS ONTO STEEL
- SCUPPER PIPE U-BOLT W/ HVY LAM RUST W/ UP TO 50% SL
- SHORT WEEP (DOES NOT DRAIN ONTO STEEL)
- FLBM 11
- FLBM 10
- FLBM 9
- G1 WEB BASE CONN W/ 3"H x 6"W x UP TO 3/16" DP SL
- 1/8" GAP BTWN CONN PL & FLBM WEB
- FLBM WEB BOWED +/- 5/8"
- 3"L x 3"W HVY RUST ON TOP FLG
- SHORT WEEP DRAINS ONTO STEEL
- 1/8" GAP BTWN CONN PL & FLBM WEB
- FLBM WEB BOWED +/- 1/4"
- 12SF

Sketches

Inspection type: Fracture Critical,Routine  
Inspection Date: 9/12/2018  
Inspected by: Infrastructure Engineers

Bridge No: 04180

Town: NEWTOWN  
Carried: INTERSTATE 84 WESTBOUND  
Crossed: HOUSATONIC RIVER  
Inventory Route: NHS



# Sketches

Inspection type: Fracture Critical, Routine

Inspection Date: 9/12/2018

Inspected by: Infrastructure Engineers

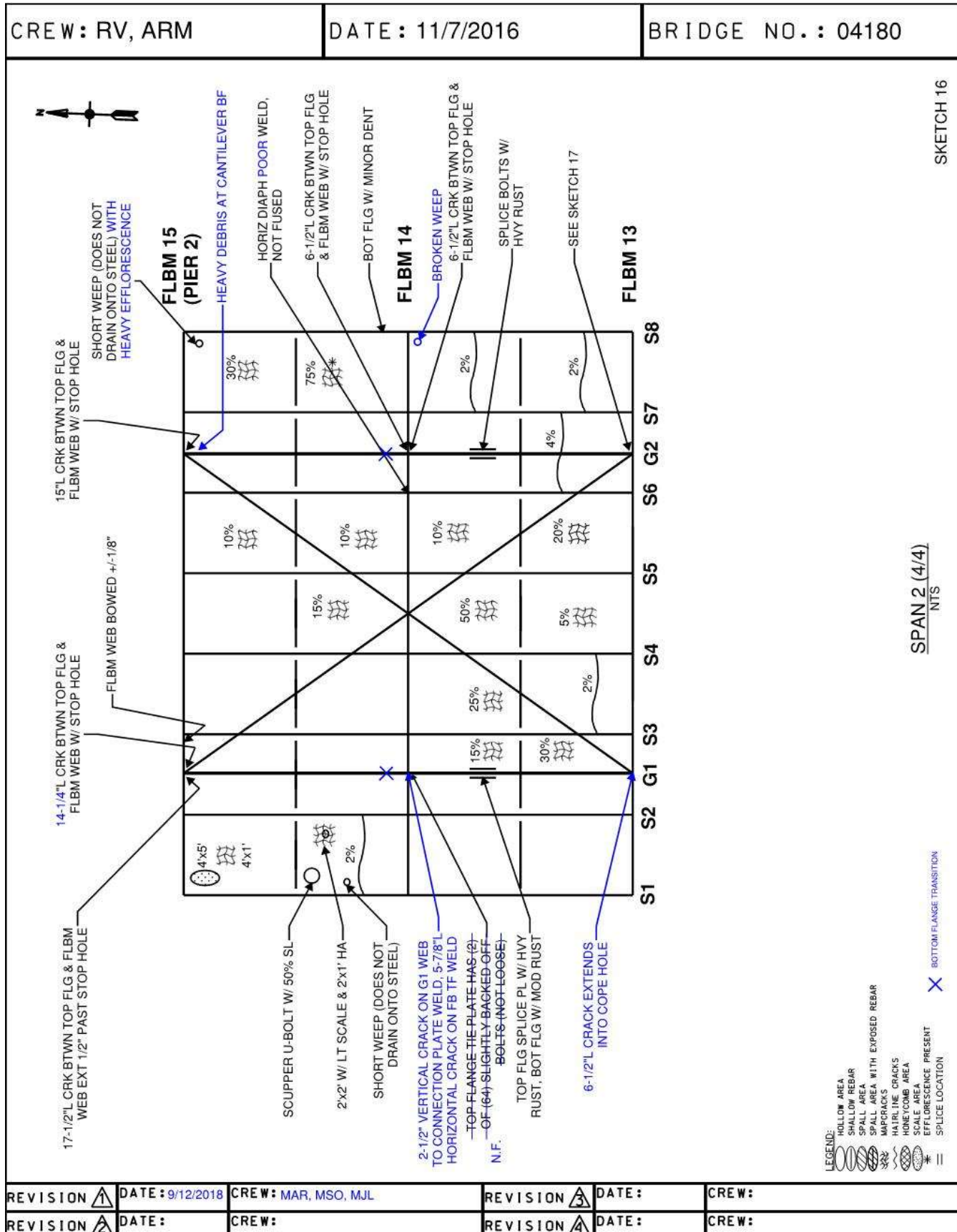
Bridge No: 04180

Town: NEWTOWN

Carried: INTERSTATE 84 WESTBOUND

Crossed: HOUSATONIC RIVER

Inventory Route: NHS

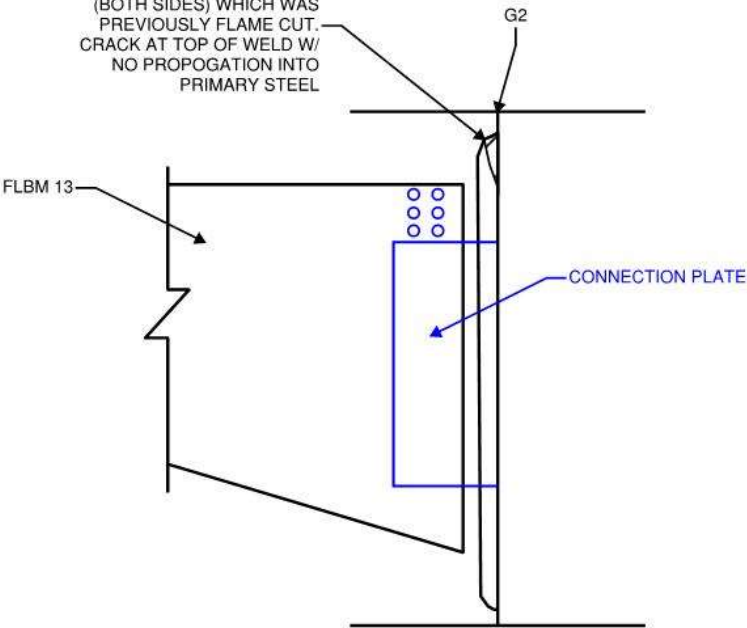






Sketches

Inspection type: Fracture Critical,Routine  
Inspection Date: 9/12/2018  
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Bridge No: 04180

Town: NEWTOWN  
Carried: INTERSTATE 84 WESTBOUND  
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Inventory Route: NHS

CREW : RV, ARM		DATE : 11/7/2016		BRIDGE NO. : 04180	
<div><p>2-3/4" CRACK IN VERTICAL WELD OF WEB OF FLBM 13 (BOTH SIDES) WHICH WAS PREVIOUSLY FLAME CUT. CRACK AT TOP OF WELD W/ NO PROPOGATION INTO PRIMARY STEEL</p><p>FLBM 13</p><p>G2</p><p>CONNECTION PLATE</p><p><u>FLOOR BEAM 13 EAST CANTILEVER</u> <u>NORTH ELEVATION</u> NTS</p></div>					
SKETCH 17					
REVISION 	DATE : 9/12/2018	CREW : MAR, MSO, MJL	REVISION 	DATE :	CREW :
REVISION 	DATE :	CREW :	REVISION 	DATE :	CREW :



# Sketches

Inspection type: Fracture Critical, Routine

Inspection Date: 9/12/2018

Inspected by: Infrastructure Engineers

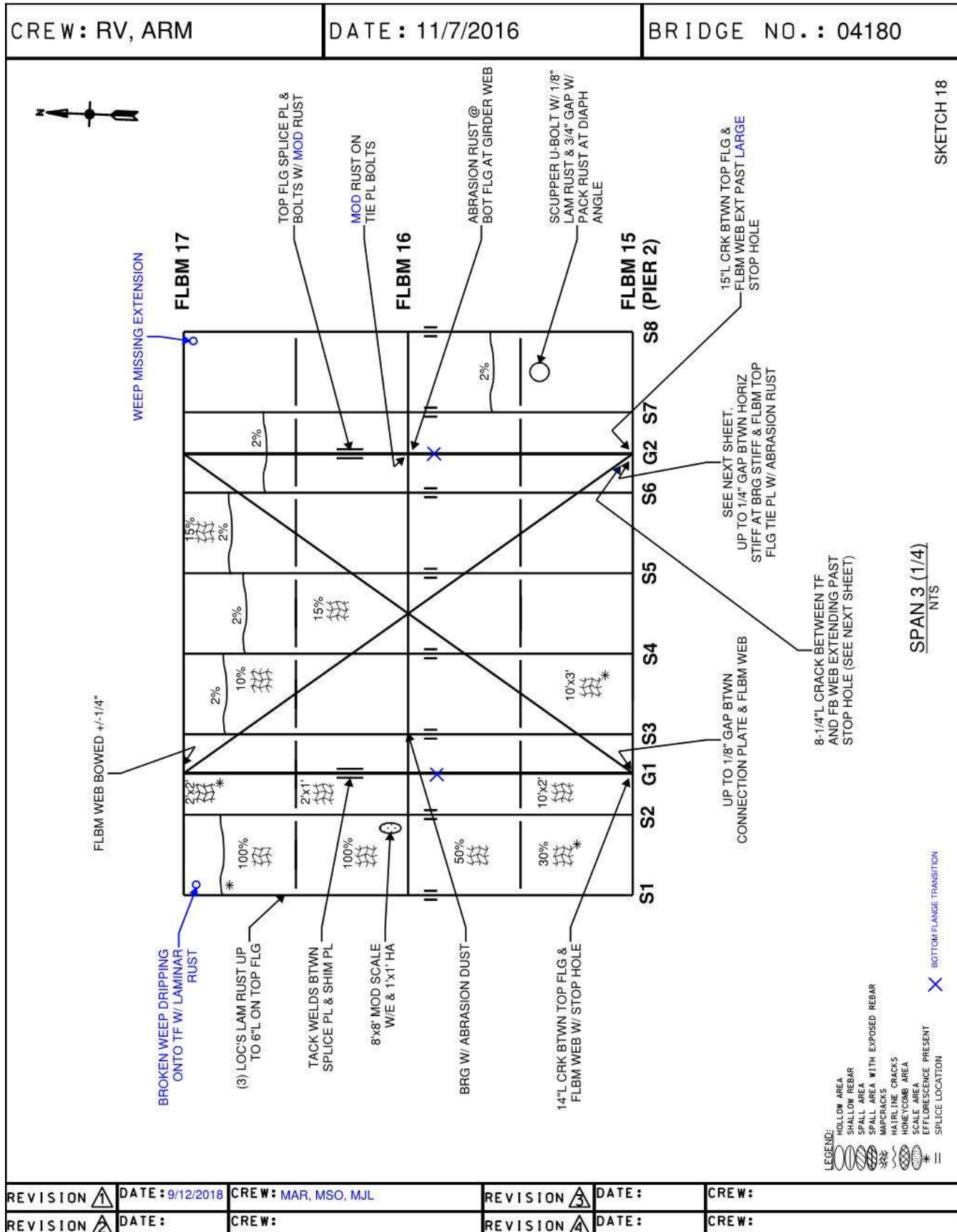
Bridge No: 04180

Town: NEWTOWN

Carried: INTERSTATE 84 WESTBOUND

Crossed: HOUSATONIC RIVER

Inventory Route: NHS



Sketches

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Bridge No: 04180

Town: NEWTOWN  
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Crossed: HOUSATONIC RIVER  
Inventory Route: NHS

CREW : RV, ARM		DATE : 11/7/2016		BRIDGE NO. : 04180	
<div></div>					
FLOOR BEAM 15 AT G2 NORTH ELEVATION NTS					
SKETCH 19					
REVISION	DATE : 9/12/2018	CREW : MAR, MSO, MJL	REVISION	DATE :	CREW :
REVISION	DATE :	CREW :	REVISION	DATE :	CREW :

**Inspected by:** Infrastructure Engineers

**Bridge No: 04180**

**Inventory Route:** NHS

CREW: RV, ARM
DATE: 11/7/2016
BRIDGE NO.: 04180

SKETCH 20

**LEGEND:**

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS
- HAIRLINE CRACKS
- HONEYCOMB AREA
- SCALE AREA
- EFFLORESCE PRESENT
- SPLICE LOCATION

REVISION	DATE: 9/12/2018	CREW: MAR, MSO, MJL	REVISION	DATE:	CREW:
REVISION	DATE:	CREW:	REVISION	DATE:	CREW:

# Sketches

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Inspection Date: 9/12/2018

Inspected by: Infrastructure Engineers

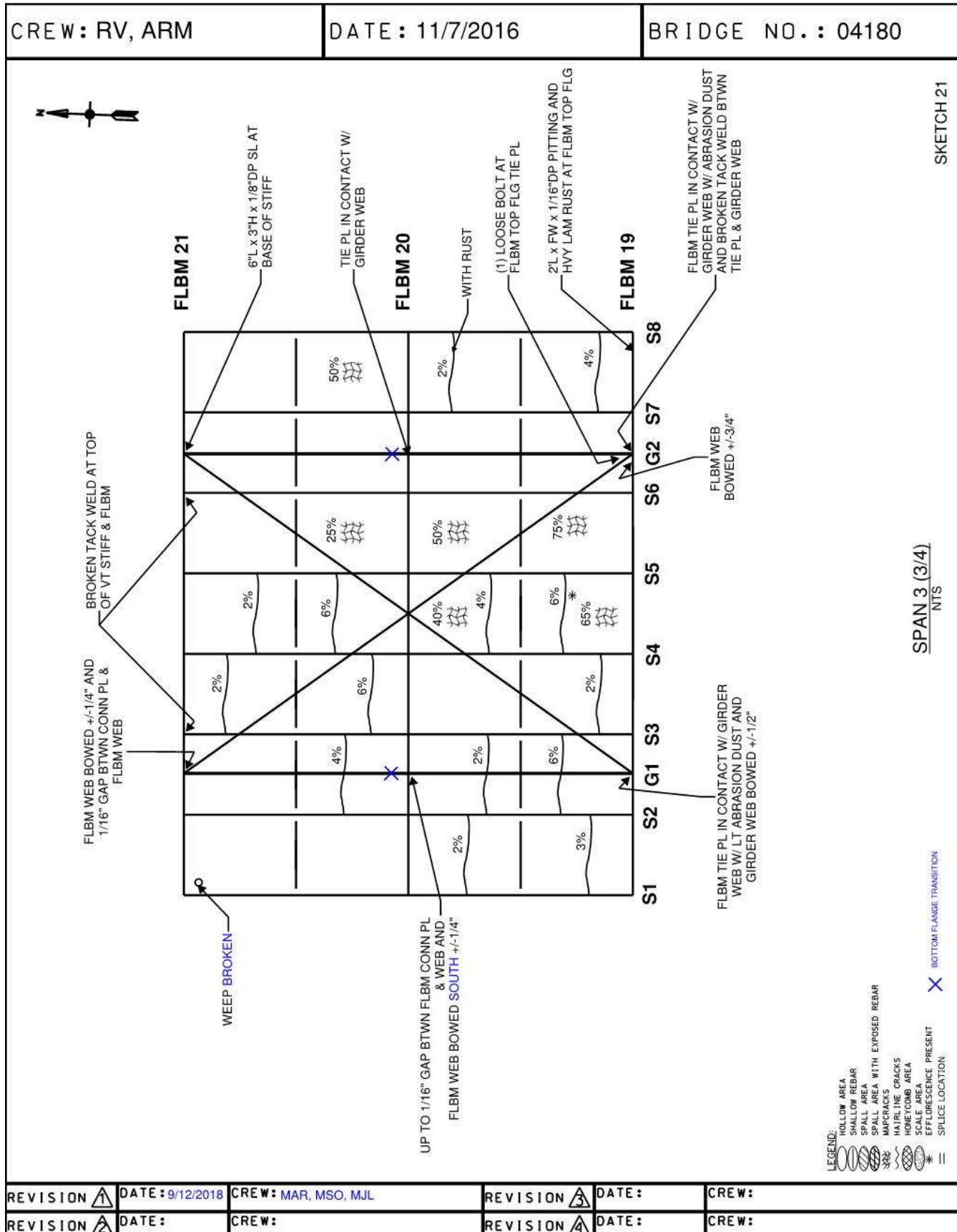
Bridge No: 04180

Town: NEWTOWN

Carried: INTERSTATE 84 WESTBOUND

Crossed: HOUSATONIC RIVER

Inventory Route: NHS



REVISION	DATE: 9/12/2018	CREW: MAR, MSO, MJL	REVISION	DATE:	CREW:
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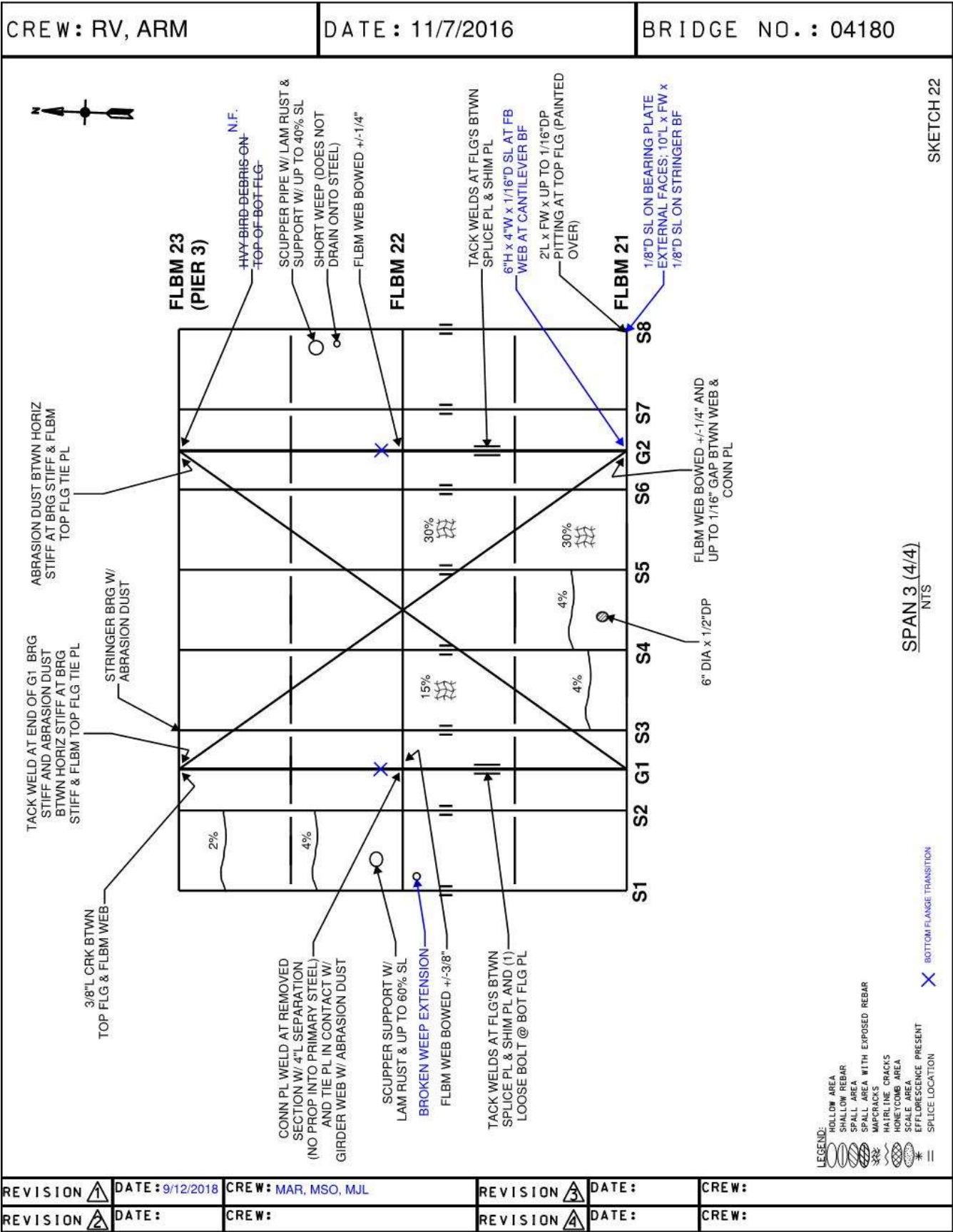


Sketches

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Inspection Date: 9/12/2018  
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Bridge No: 04180

Town: NEWTOWN  
Carried: INTERSTATE 84 WESTBOUND  
Crossed: HOUSATONIC RIVER  
Inventory Route: NHS




**Inspected by:** Infrastructure Engineers

**Bridge No: 04180**

**Inventory Route:** NHS

CREW: RV, ARM
DATE: 11/7/2016
BRIDGE NO.: 04180



SKETCH 23

UP TO 1/4\"

7\"

INDENT IN BF TO WEB  
WELD ON GIRDER

FLBM WEB BOWED  
+/-1/2\" AT TOP

CONN PL WELD AT REMOVED  
SECTION W/ 4\"

(MISSING) EXTENDED WEEP

2-3/4\"

TOP FLG & FLBM WEB AND  
3/16\"

S1 S2 S3 S4 S5 S6 S7 S8

G1 G2

CONN PL NOT CUT OUT. (4)  
TOP BOLTS REMOVED. 1/4\"  
GAP BTWN TOP OF CONN PL  
AND FLBM WEB

CONN PL NOT CUT OUT. (6)  
TOP BOLTS REMOVED W/  
ABRASION DUST

LEGEND:

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAPIRACKS
- HAIRLINE CRACKS
- HONEYCOMB AREA
- SCALE AREA
- EFFLUORESCENCE PRESENT
- SPLICE LOCATION

REVISION DATE: 9/12/2018 CREW: MAR, MSO, MJL

REVISION DATE: CREW:

REVISION DATE: CREW:

REVISION DATE: CREW:

# Sketches

Inspection type: Fracture Critical,Routine

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Inspected by: Infrastructure Engineers

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Inventory Route: NHS

CREW : RV, ARM

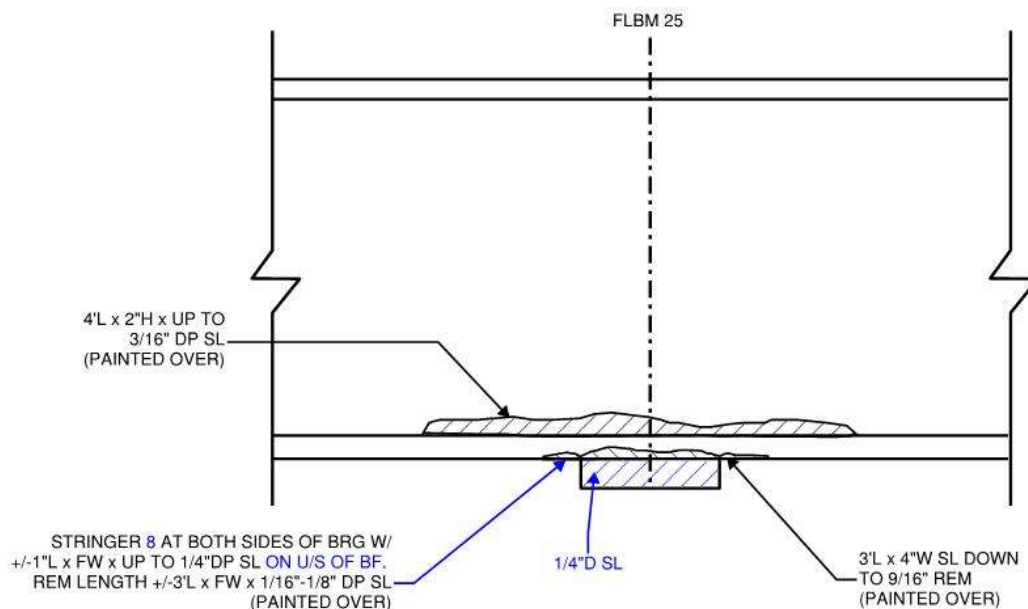
DATE : 11/7/2016

BRIDGE NO. : 04180

STRINGER SECTION: WF 24 x 84

OVERALL DEPTH,  $D = 24.1$  in ; THICKNESS OF FLANGE,  $t_f = 0.77$  in ; WIDTH OF FLANGE,  $W_f = 9.02$  in

DEPTH OF WEB,  $d_w = 22.56$  in; THICKNESS OF WEB,  $t_w = 0.47$  in



SPAN 4, STRINGER S8 AT FLOOR BEAM 25

WEST ELEVATION

NTS

WEB LOSS FOR SHEAR:

ORIGINAL AREA =  $22.56 \times 0.47 = 10.6$  sq. in.

% SECTION LOSS =  $\frac{2 \times 0.1875}{10.6} \times 100 = 3.5\%$

FLANGE LOSS:

ORIGINAL AREA =  $9.02 \times 0.77 = 6.75$  sq. in.

% SECTION LOSS =  $\frac{4 \times 0.1875}{6.95} \times 100 = 10.8\%$





~~WEB LOSS FOR BEARING (OVER BEARING):~~

~~% SECTION LOSS (AT MIN. REM) =  $\frac{(0.47 - .5625)}{0.47} \times 100 = 39.9\%$~~

WEB LOSS FOR BEARING (OVER BEARING):

% SECTION LOSS (AT MIN. REM) =  $\frac{(3/16)}{0.47} \times 100 = 39.9\%$

SKETCH 24

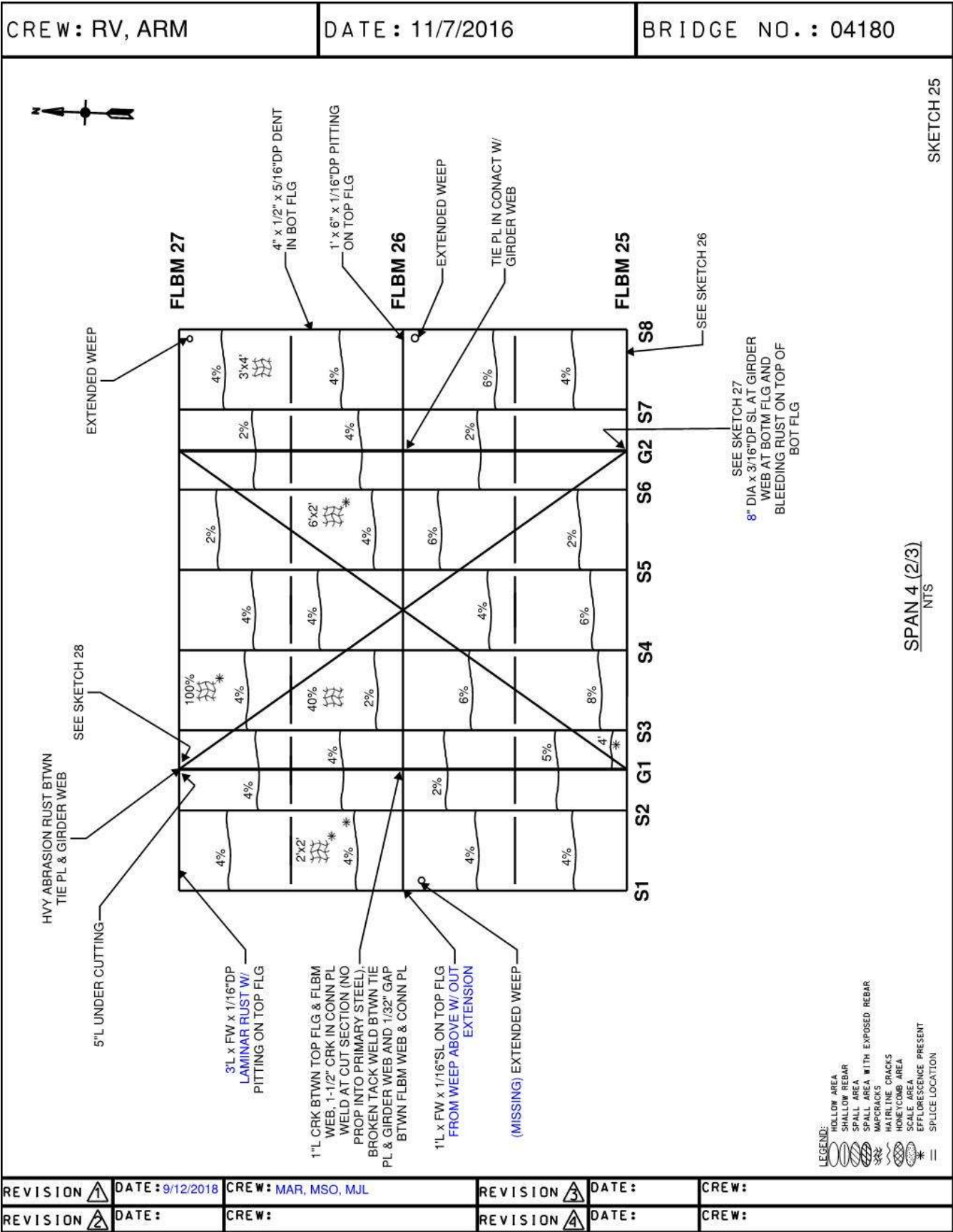
REVISION 	DATE : 9/12/2018	CREW : MAR, MSO, MJL	REVISION 	DATE :	CREW :
REVISION 	DATE :	CREW :	REVISION 	DATE :	CREW :

Sketches

Inspection type: Fracture Critical,Routine  
Inspection Date: 9/12/2018  
Inspected by: Infrastructure Engineers

Bridge No: 04180

Town: NEWTOWN  
Carried: INTERSTATE 84 WESTBOUND  
Crossed: HOUSATONIC RIVER  
Inventory Route: NHS



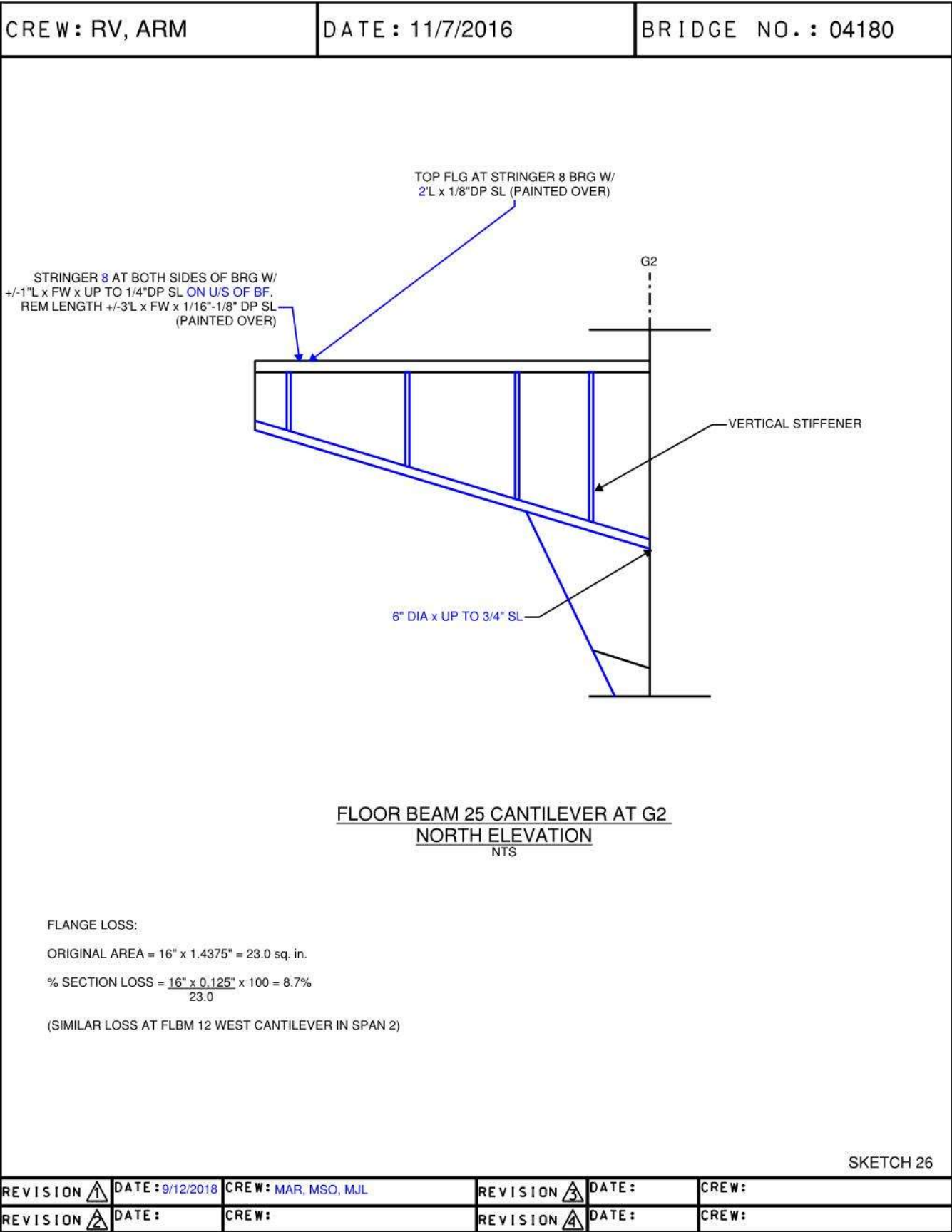


Sketches

Inspection type: Fracture Critical,Routine  
Inspection Date: 9/12/2018  
Inspected by: Infrastructure Engineers

Bridge No: 04180

Town: NEWTOWN  
Carried: INTERSTATE 84 WESTBOUND  
Crossed: HOUSATONIC RIVER  
Inventory Route: NHS

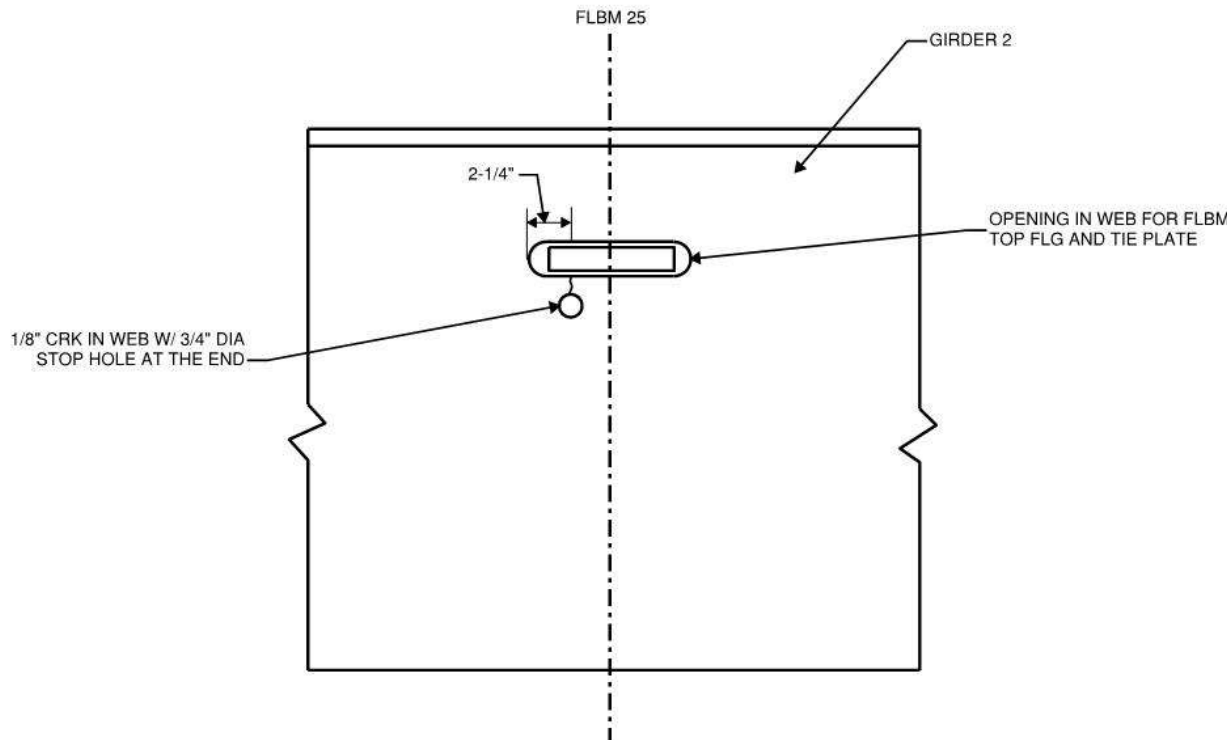






Sketches

Inspection type: Fracture Critical,Routine  
Inspection Date: 9/12/2018  
Inspected by: Infrastructure Engineers

Bridge No: 04180

Town: NEWTOWN  
Carried: INTERSTATE 84 WESTBOUND  
Crossed: HOUSATONIC RIVER  
Inventory Route: NHS

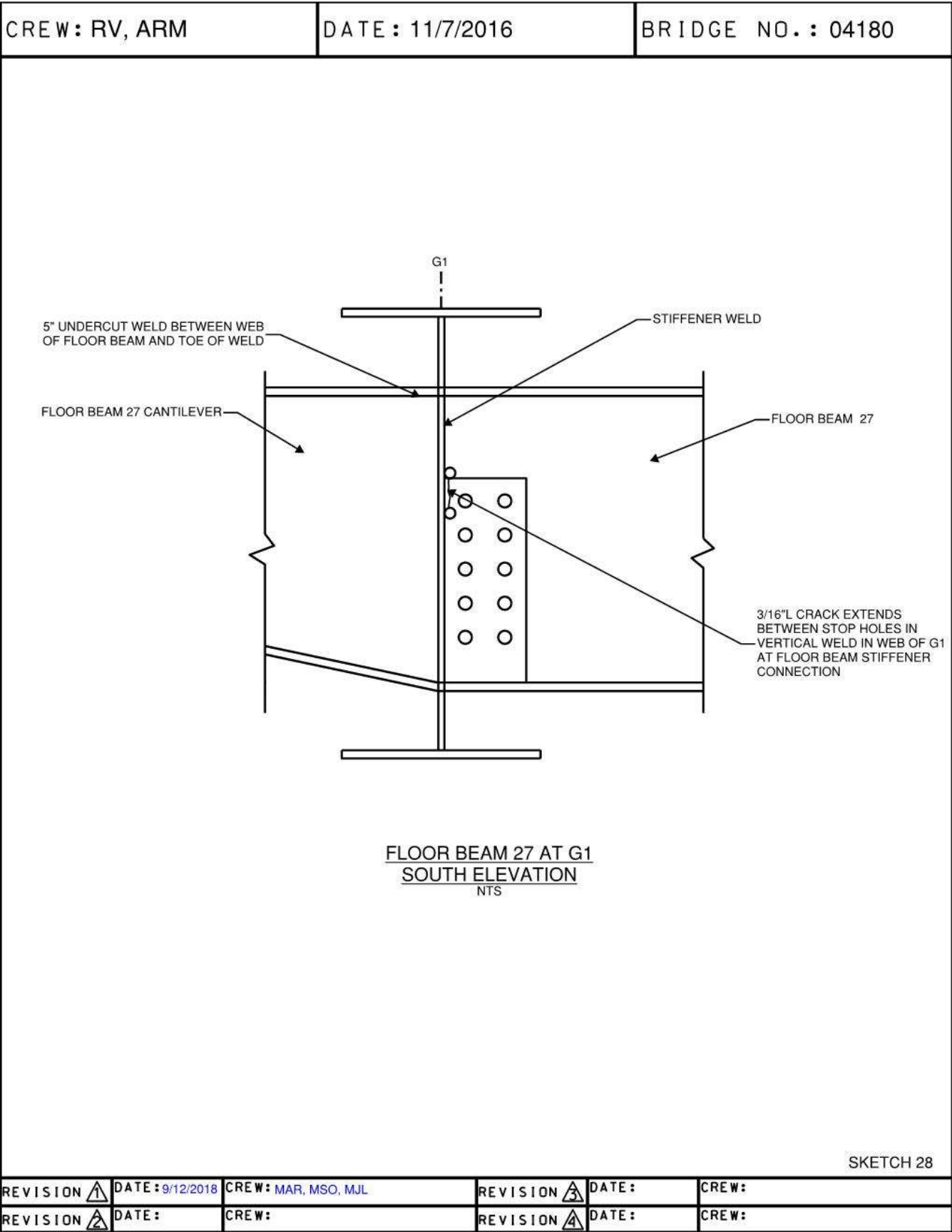
CREW : RV, ARM		DATE : 11/7/2016		BRIDGE NO. : 04180	
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SKETCH 27					
REVISION 	DATE : 9/12/2018	CREW : MAR, MSO, MJL	REVISION 	DATE :	CREW :
REVISION 	DATE :	CREW :	REVISION 	DATE :	CREW :

Sketches

Inspection type: Fracture Critical,Routine  
Inspection Date: 9/12/2018  
Inspected by: Infrastructure Engineers

Bridge No: 04180

Town: NEWTOWN  
Carried: INTERSTATE 84 WESTBOUND  
Crossed: HOUSATONIC RIVER  
Inventory Route: NHS



**Inspected by:** Infrastructure Engineers

**Inventory Route:** NHS



**Sketches****Inspection type:** Fracture Critical,Routine**Inspection Date:** 9/12/2018**Inspected by:** Infrastructure Engineers**Bridge No:** 04180**Town:** NEWTOWN**Carried:** INTERSTATE 84 WESTBOUND**Crossed:** HOUSATONIC RIVER**Inventory Route:** NHS

CREW : RV, ARM

DATE : 11/7/2016

BRIDGE NO. : 04180

FLOOR BEAM CRACK TABLE

ALL CRACKS BELOW HAVE A STOP HOLE IN PLACE UNLESS OTHERWISE NOTED.

SEVERAL CRACKS HAVE BLEEDING RUST OR ABRASION RUST EMANATING FROM THE CRACK.

SPAN 1:

1. FLOOR BEAM 1, SOUTH ELEVATION AT G1 HAS A 14" LONG CRACK IN THE WELD BETWEEN THE TOP FLANGE OF G1 AND THE DIAPHRAGM VERTICAL TIE PLATE.
2. FLOOR BEAM 2, NORTH ELEVATION AT WEST CANTILEVER HAS A 6-3/4" (PREVIOUSLY 8-1/2") LONG HORIZONTAL CRACK IN THE TOE OF THE FILLET WELD BETWEEN THE TOP FLANGE AND THE WEB OF THE FLOOR BEAM.
3. FLOOR BEAM 2, SOUTH ELEVATION AT WEST CANTILEVER HAS A 6-1/2" (PREVIOUSLY 7-1/4") LONG HORIZONTAL CRACK IN THE TOE OF THE FILLET WELD BETWEEN THE TOP FLANGE AND THE WEB OF THE FLOOR BEAM.
4. FLOORBEA 3, NORTH ELEVATION AT EAST CANTILEVER HAS A 1" LONG BROKEN TACK WELD BETWEEN THE TOP FLANGE OF THE FLOOR BEAM AND THE WEB STIFFENER.
5. FLOOR BEAM 3, SOUTH ELEVATION AT EAST CANTILEVER HAS A 1" LONG HORIZONTAL CRACK IN THE TOE OF THE FILLET WELD BETWEEN THE TOP FLANGE AND THE WEB OF THE FLOOR BEAM.
6. FLOOR BEAM 4, SOUTH ELEVATION AT G1 HAS A 1/2" LONG CRACK THAT EXTENDS INTO THE STOP HOLE IN THE FLOOR BEAM-TO-GIRDER CONNECTION PLATE WELD. A 1/2" LONG CRACK IS VISIBLE ON THE ROOF OF THE DRILLED STOP HOLE.
7. FLOOR BEAM 4, NORTH ELEVATION AT WEST CANTILEVER HAS A BROKEN TACK WELD BETWEEN THE GIRDER WEB AND THE FLOOR BEAM TOP FLANGE TIE PLATE.
8. FLOOR BEAM 5, NORTH ELEVATION AT WEST CANTILEVER HAS A BROKEN TACK WELD BETWEEN THE GIRDER WEB AND THE FLOOR BEAM TOP FLANGE TIE PLATE.
9. FLOOR BEAM 7, SOUTH ELEVATION AT EAST CANTILEVER HAS A BROKEN TACK WELD BETWEEN THE TOP FLANGE OF THE FLOOR BEAM AND THE WEB STIFFENER.

SPAN 2:

9A. FLOOR BEAM 13, SOUTH ELEVATION AT WEST CANTILEVER HAS 2-3/4" VERTICAL CRACK ON THE GIRDER 2 WEB TO CONNECTION PLATE WELD.

10. FLOOR BEAM 14, SOUTH ELEVATION AT EAST CANTILEVER HAS A 6-1/2" LONG (PREVIOUSLY 7") HORIZONTAL CRACK IN THE TOE OF THE FILLET WELD BETWEEN THE TOP FLANGE AND THE WEB OF THE FLOOR BEAM.

11. FLOOR BEAM 14, NORTH ELEVATION AT EAST CANTILEVER HAS A 6-1/2" LONG (PREVIOUSLY 6-1/2") HORIZONTAL CRACK IN THE TOE OF THE FILLET WELD BETWEEN THE TOP FLANGE AND THE WEB OF THE FLOOR BEAM.





11A. FLOOR BEAM 14, SOUTH ELEVATION AT WEST CANTILEVER 5-7/8" LONG HORIZONTAL CRACK ON FLOOR BEAM TOP FLANGE WELD.

11B. FLOOR BEAM 14, NORTH ELEVATION AT WEST CANTILEVER HAS A 6-1/2" CRACK THAT EXTENDS INTO COPE HOLE.

12. FLOOR BEAM 15, SOUTH ELEVATION AT G1 HAS A 14-1/4" LONG (PREVIOUSLY 13") HORIZONTAL CRACK IN THE TOE OF THE FILLET WELD BETWEEN THE TOP FLANGE AND THE WEB OF THE FLOOR BEAM AND UP TO 1/8" LATERAL DISPLACEMENT OF THE WEB ALONG THE CRACK.

13. FLOOR BEAM 15, SOUTH ELEVATION AT EAST CANTILEVER HAS A 15" LONG (PREVIOUSLY 13-3/4") HORIZONTAL CRACK IN THE TOE OF THE FILLET WELD BETWEEN THE TOP FLANGE AND THE WEB OF THE FLOOR BEAM.

SKETCH 30

REVISION 	DATE : 9/12/2018	CREW : MAR, MSO, MJL	REVISION 	DATE :	CREW :
REVISION 	DATE :	CREW :	REVISION 	DATE :	CREW :



**Sketches****Inspection type:** Fracture Critical,Routine**Inspection Date:** 9/12/2018**Inspected by:** Infrastructure Engineers**Bridge No:** 04180**Town:** NEWTOWN**Carried:** INTERSTATE 84 WESTBOUND**Crossed:** HOUSATONIC RIVER**Inventory Route:** NHS**CREW:** RV, ARM**DATE:** 11/7/2016**BRIDGE NO.:** 04180**FLOOR BEAM CRACK TABLE****SPAN 3:**

14. FLOOR BEAM 15, SOUTH ELEVATION AT WEST CANTILEVER HAS A 17-1/2" LONG HORIZONTAL CRACK IN THE TOE OF THE FILLET WELD BETWEEN THE TOP FLANGE AND THE WEB OF THE FLOOR BEAM (1/2" PAST STOP HOLE).

15. FLOOR BEAM 15, NORTH ELEVATION AT G1 HAS A 14" (PREVIOUSLY 17-3/4") LONG HORIZONTAL CRACK IN THE TOE OF THE FILLET WELD BETWEEN THE TOP FLANGE AND THE WEB OF THE FLOOR BEAM (1/2" PAST STOP HOLE).

16. FLOOR BEAM 15, NORTH ELEVATION AT G2 HAS A 8-1/4" LONG HORIZONTAL CRACK IN THE TOE OF THE FILLET WELD BETWEEN THE TOP FLANGE AND THE WEB OF THE FLOOR BEAM.

17. FLOOR BEAM 15, NORTH ELEVATION AT EAST CANTILEVER HAS A 15" LONG (PREVIOUSLY 15-1/4") HORIZONTAL CRACK IN THE TOE OF THE FILLET WELD BETWEEN THE TOP FLANGE AND THE WEB OF THE FLOOR BEAM.

18. FLOOR BEAM 17, BOTH ELEVATIONS AT EAST CANTILEVER HAVE A 7" LONG HORIZONTAL CRACK IN THE TOE OF THE FILLET WELD BETWEEN THE TOP FLANGE AND THE WEB OF THE FLOOR BEAM.

19. FLOOR BEAM 19, SOUTH ELEVATION AT G2 HAS A BROKEN TACK WELD BETWEEN THE FLOOR BEAM TOP FLANGE TIE PLATE AND THE GIRDER WEB AT THE COPE.

20. FLOOR BEAM 21, SOUTH ELEVATION AT G1 HAS A BROKEN TACK WELD BETWEEN THE TOP FLANGE OF THE FLOOR BEAM AND THE WEB STIFFENER.

20A. FLOOR BEAM 21, SOUTH ELEVATION WEB STIFFENER TO TOP FLANGE AT STRINGER 6 HAS A BROKEN TACK WELD.

21. FLOOR BEAM 22, NORTH ELEVATION AT WEST CANTILEVER HAS A 4" LONG VERTICAL SEPARATION/CRACK AT THE TOP PORTION OF THE CUT CONNECTION PLATE WITH NO PROPAGATION.

22. FLOOR BEAM 23, SOUTH ELEVATION AT WEST CANTILEVER HAS A 3/8" LONG (PREVIOUSLY 2-3/4") HORIZONTAL CRACK IN THE TOE OF THE FILLET WELD BETWEEN THE TOP FLANGE AND THE WEB OF THE FLOOR BEAM.

**SPAN 4:**

23. FLOOR BEAM 23, NORTH ELEVATION AT WEST CANTILEVER HAS A 2-3/4" LONG HORIZONTAL CRACK IN THE TOE OF THE FILLET WELD BETWEEN THE TOP FLANGE AND THE WEB OF THE FLOOR BEAM.

24. FLOOR BEAM 24, NORTH ELEVATION AT WEST CANTILEVER HAS A 4" LONG VERTICAL CRACK AT THE TOP PORTION OF THE CUT CONNECTION PLATE WITH NO PROPAGATION.

25. FLOOR BEAM 25, NORTH ELEVATION AT EAST CANTILEVER HAS A 1/8" LONG VERTICAL CRACK IN THE G2 WEB FROM COPE TO A 3/4" DIAMETER STOP HOLE.

26. FLOOR BEAM 26, BOTH ELEVATIONS AT WEST CANTILEVER HAVE A 1" LONG HORIZONTAL CRACK IN THE TOE OF THE FILLET WELD BETWEEN THE TOP FLANGE AND THE WEB OF THE FLOOR BEAM.

27. FLOOR BEAM 26, NORTH ELEVATION AT WEST CANTILEVER HAS A 1-1/2" LONG VERTICAL SEPARATION/CRACK AT THE TOP PORTION OF THE CUT CONNECTION PLATE WITH NO PROPAGATION.

28. FLOOR BEAM 26, NORTH ELEVATION AT WEST CANTILEVER HAS A BROKEN TACK WELD BETWEEN THE FLOOR BEAM TOP FLANGE TIE PLATE AND THE GIRDER WEB.

29. FLOOR BEAM 27, SOUTH ELEVATION AT WEST CANTILEVER HAS A 3/16" LONG HORIZONTAL CRACK IN THE TOE OF THE FILLET WELD BETWEEN THE WEB OF THE FLOOR BEAM AND CONNECTION PLATE (TWO STOP HOLES AT THIS LOCATION).

30. FLOOR BEAM 28, BOTH ELEVATIONS AT WEST CANTILEVER HAVE A 7" LONG HORIZONTAL CRACK IN THE TOE OF THE FILLET WELD BETWEEN THE TOP FLANGE AND THE WEB OF THE FLOOR BEAM.





31. FLOOR BEAM 28, SOUTH ELEVATION AT EAST CANTILEVER HAS A 6" LONG HORIZONTAL CRACK IN THE TOE OF THE FILLET WELD BETWEEN THE TOP FLANGE AND THE WEB OF THE FLOOR BEAM.

32. FLOOR BEAM 28, NORTH ELEVATION AT EAST CANTILEVER HAS A 6-1/2" LONG HORIZONTAL CRACK IN THE TOE OF THE FILLET WELD BETWEEN THE TOP FLANGE AND THE WEB OF THE FLOOR BEAM.

33. FLOOR BEAM 29, SOUTH ELEVATION AT WEST CANTILEVER HAS A 9" LONG HORIZONTAL CRACK IN THE TOE OF THE FILLET WELD BETWEEN THE TOP FLANGE AND THE WEB OF THE FLOOR BEAM.

34. FLOOR BEAM 29, NORTH ELEVATION AT G1 HAS A 3-3/8" LONG HORIZONTAL CRACK IN THE TOE OF THE FILLET WELD BETWEEN THE TOP FLANGE AND THE WEB OF THE FLOOR BEAM.

SKETCH 31

REVISION 	DATE: 9/12/2018	CREW: MAR, MSO, MJL	REVISION 	DATE:	CREW:
REVISION 	DATE:	CREW:	REVISION 	DATE:	CREW:

# Sketches

Inspection type: Fracture Critical,Routine

Inspection Date: 9/12/2018

Inspected by: Infrastructure Engineers

Bridge No: 04180

Town: NEWTOWN

Carried: INTERSTATE 84 WESTBOUND

Crossed: HOUSATONIC RIVER

Inventory Route: NHS

CREW: RV, ARM		DATE: 11/7/2016		BRIDGE NO.: 04180	
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SKETCH 32

ABUTMENT 1  
NTS

**GENERAL NOTES:**

- RANDOM AREAS OF LIGHT TO HEAVY GRAFFITI.
- EVIDENCE OF PAST ACTIVE DECK JOINT LEAKAGE WITH SILT STAINS.

**LEGEND:**

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

REVISION <span style="border: 1px solid black; padding: 0 2px;">1</span>	DATE: 9/12/2018	CREW: MAR, MSO, MJL	REVISION <span style="border: 1px solid black; padding: 0 2px;">3</span>	DATE:	CREW:
REVISION <span style="border: 1px solid black; padding: 0 2px;">2</span>	DATE:	CREW:	REVISION <span style="border: 1px solid black; padding: 0 2px;">4</span>	DATE:	CREW:

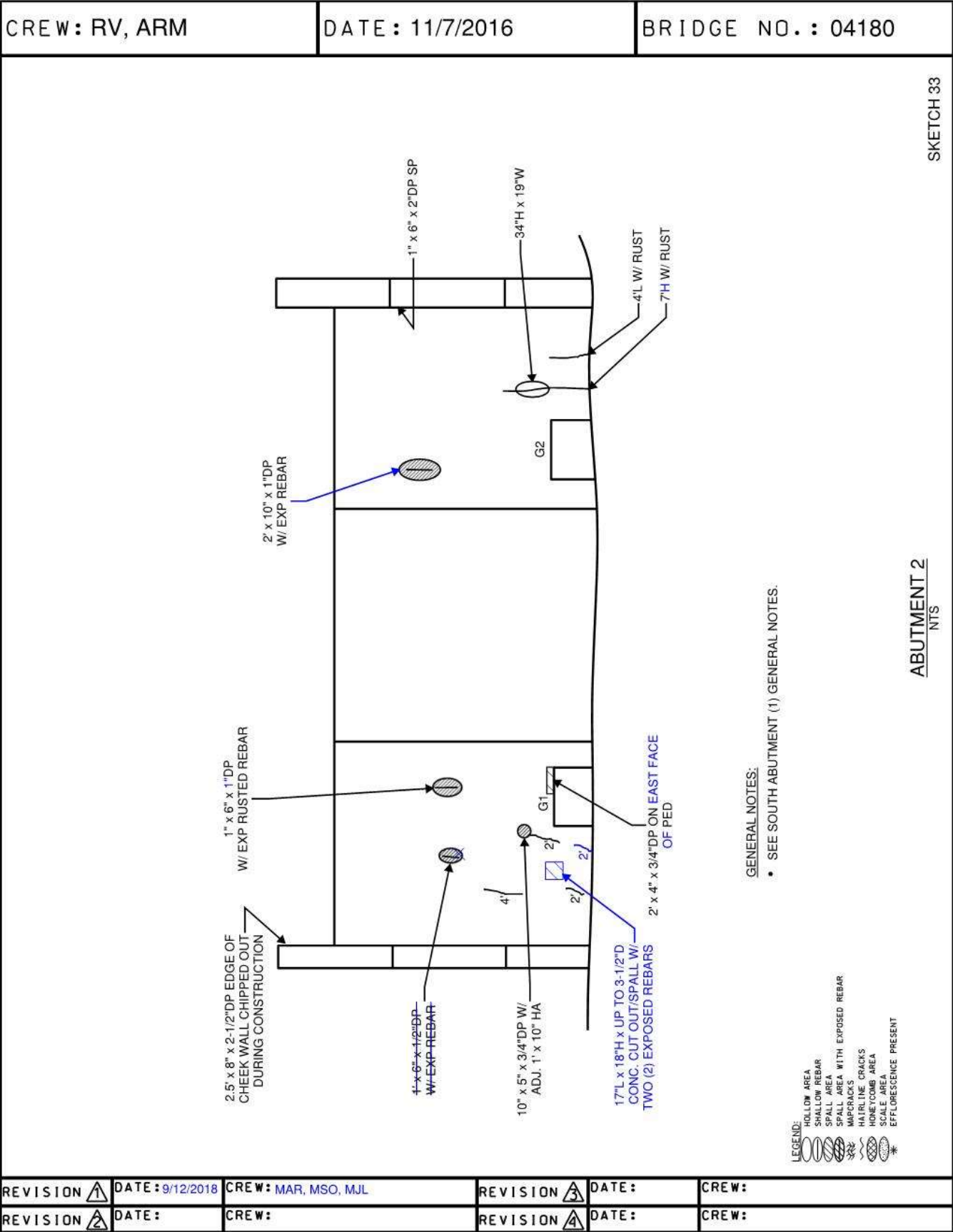


Sketches

Inspection type: Fracture Critical,Routine  
Inspection Date: 9/12/2018  
Inspected by: Infrastructure Engineers

Bridge No: 04180

Town: NEWTOWN  
Carried: INTERSTATE 84 WESTBOUND  
Crossed: HOUSATONIC RIVER  
Inventory Route: NHS



## Sketches

**Inspection type:** Fracture Critical,Routine

**Inspection Date:** 9/12/2018

**Inspected by:** Infrastructure Engineers

**Bridge No:** 04180

**Town:** NEWTOWN

**Carried:** INTERSTATE 84 WESTBOUND

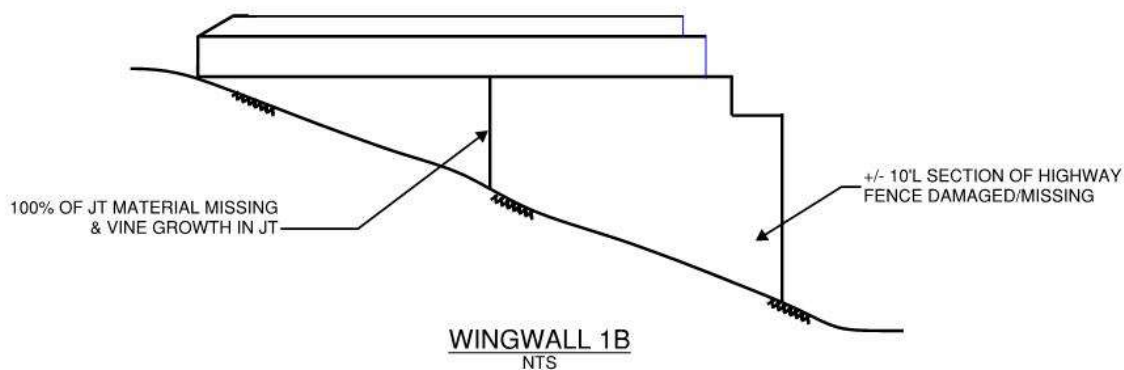
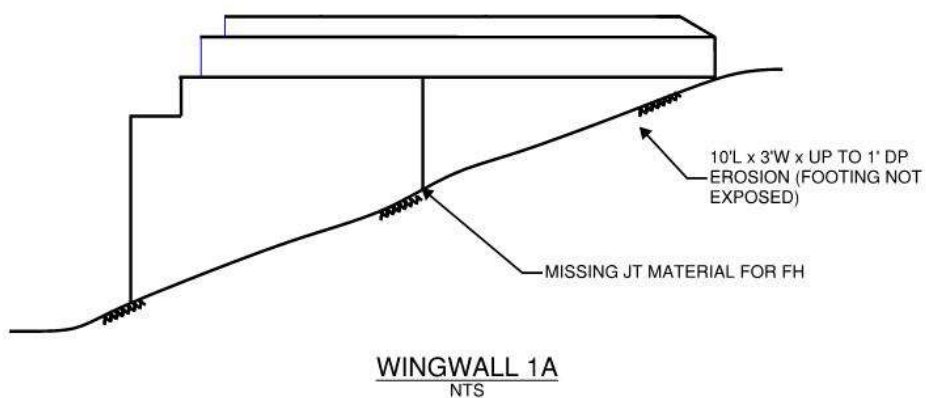
**Crossed:** HOUSATONIC RIVER

**Inventory Route:** NHS

CREW : RV, ARM

DATE : 11/7/2016

BRIDGE NO. : 04180







### LEGEND:

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

### GENERAL NOTES:

- RANDOM SMALL POP-OUTS.
- AREAS OF MODEATE TO HEAVY VEGETATION GROWTH.

SKETCH 34

REVISION 	DATE : 9/12/2018	CREW : MAR, MSO, MJL	REVISION 	DATE :	CREW :
REVISION 	DATE :	CREW :	REVISION 	DATE :	CREW :

Sketches

Inspection type: Fracture Critical,Routine  
Inspection Date: 9/12/2018  
Inspected by: Infrastructure Engineers

Bridge No: 04180

Town: NEWTOWN  
Carried: INTERSTATE 84 WESTBOUND  
Crossed: HOUSATONIC RIVER  
Inventory Route: NHS

CREW : RV, ARM		DATE : 11/7/2016		BRIDGE NO. : 04180	
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WINGWALL 2B  
NTS

WINGWALL 2A  
NTS

LEGEND:

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS
- HAIRLINE CRACKS
- HONEYCOMB AREA
- SCALE AREA
- EFFLORESCENCE PRESENT

GENERAL NOTES:

-SEE SOUTH WINGWALL GENERAL NOTES.

SKETCH 35

REVISION	DATE : 9/12/2018	CREW : MAR, MSO, MJL	REVISION	DATE :	CREW :
REVISION	DATE :	CREW :	REVISION	DATE :	CREW :

Sketches

Inspection type: Fracture Critical,Routine  
Inspection Date: 9/12/2018  
Inspected by: Infrastructure Engineers

Bridge No: 04180

Town: NEWTOWN  
Carried: INTERSTATE 84 WESTBOUND  
Crossed: HOUSATONIC RIVER  
Inventory Route: NHS

CREW : RV, ARM		DATE : 11/7/2016		BRIDGE NO. : 04180	
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PIER 1 - SOUTH ELEVATION  
NTS

PIER 1 - NORTH ELEVATION  
NTS

GENERAL NOTES:

- AREAS OF LIGHT TO MODERATE SCALE ALONG THE WATER LINE.

LEGEND:

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

SKETCH 36

REVISION 1	DATE : 9/12/2018	CREW : MAR, MSO, MJL	REVISION 3	DATE :	CREW :
REVISION 2	DATE :	CREW :	REVISION 4	DATE :	CREW :

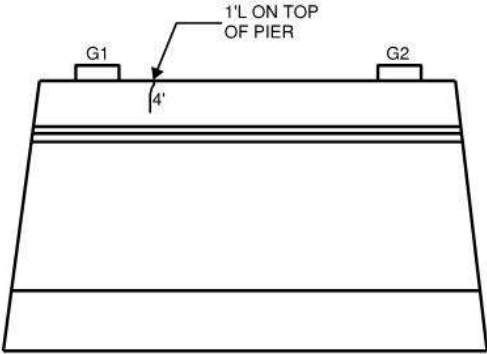
Sketches

Inspection type: Fracture Critical,Routine  
Inspection Date: 9/12/2018  
Inspected by: Infrastructure Engineers

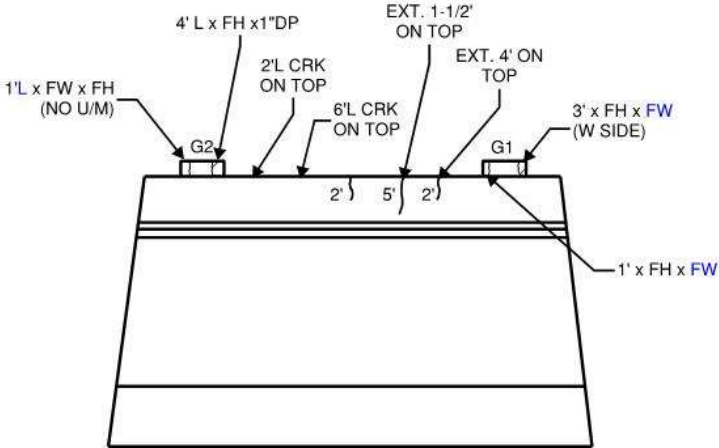
Bridge No: 04180

Town: NEWTOWN  
Carried: INTERSTATE 84 WESTBOUND  
Crossed: HOUSATONIC RIVER  
Inventory Route: NHS

CREW : RV, ARM	DATE : 11/7/2016	BRIDGE NO. : 04180
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PIER 2 - SOUTH ELEVATION  
NTS



PIER 2 - NORTH ELEVATION  
NTS

GENERAL NOTES:  
• SEE PIER 1 GENERAL NOTES.

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

SKETCH 37

REVISION	DATE : 9/12/2018	CREW : MAR, MSO, MJL	REVISION	DATE :	CREW :
REVISION	DATE :	CREW :	REVISION	DATE :	CREW :

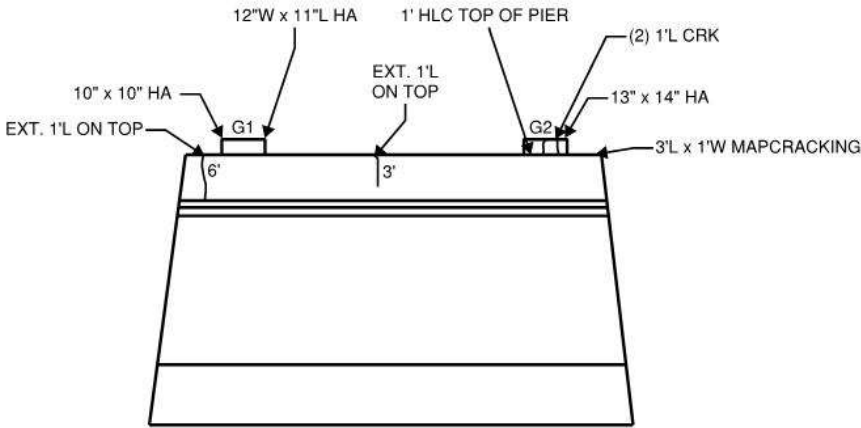
Sketches

Inspection type: Fracture Critical,Routine  
Inspection Date: 9/12/2018  
Inspected by: Infrastructure Engineers

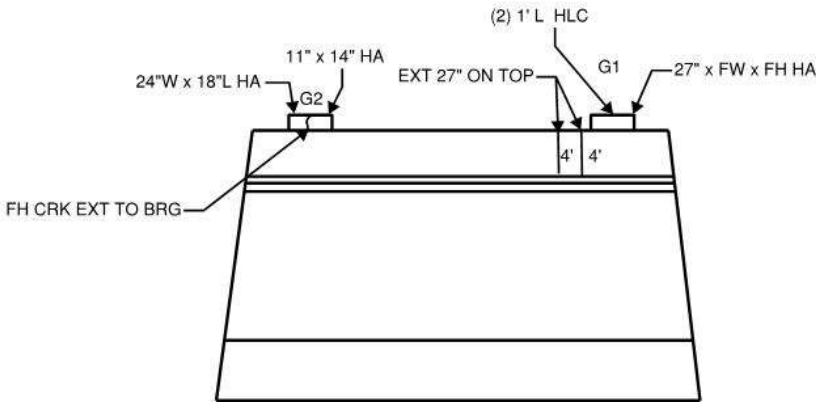
Bridge No: 04180

Town: NEWTOWN  
Carried: INTERSTATE 84 WESTBOUND  
Crossed: HOUSATONIC RIVER  
Inventory Route: NHS

CREW : RV, ARM	DATE : 11/7/2016	BRIDGE NO. : 04180
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PIER 3 - SOUTH ELEVATION  
NTS



PIER 3 - NORTH ELEVATION  
NTS

GENERAL NOTES:  
• SEE PIER 1 GENERAL NOTES.

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

SKETCH 38

REVISION	DATE : 9/12/2018	CREW : MAR, MSO, MJL	REVISION	DATE :	CREW :
REVISION	DATE :	CREW :	REVISION	DATE :	CREW :





Photo Number: 1

Bridge Identification Number

Photo Taken: 09/12/2018



Photo Number: 2

Right Elevation

Photo Taken: 09/11/2018





Photo Number: 3

Photo Taken: 09/11/2018

Left Elevation



Photo Number: 4

Photo Taken: 09/12/2018

South Approach From Bridge



Photo Number: 5

Photo Taken: 09/12/2018

Bridge From South Approach



Photo Number: 6

Photo Taken: 09/12/2018

Bridge From North Approach

**Form: Asset Photos**

**Inspection type:** Fracture Critical,Routine

**Inspection Date:** 9/12/2018

**Inspected by:** Infrastructure Engineers

**Bridge No:** 04180

**Town:** NEWTOWN

**Carried:** INTERSTATE 84 WESTBOUND

**Crossed:** HOUSATONIC RIVER

**Inventory Route:** NHS



Photo Number: 7

Photo Taken: 09/12/2018

Bituminous Concrete Overlay in Span 2

Note: Failing patch with 2" deep pothole.



Photo Number: 8

Photo Taken: 09/12/2018

Bituminous Concrete Overlay in Span 2

Note: 3" deep pothole along paving seam with exposed concrete deck.



**Form: Asset Photos**

**Inspection type:** Fracture Critical,Routine

**Inspection Date:** 9/12/2018

**Inspected by:** Infrastructure Engineers

**Bridge No:** 04180

**Town:** NEWTOWN

**Carried:** INTERSTATE 84 WESTBOUND

**Crossed:** HOUSATONIC RIVER

**Inventory Route:** NHS



Photo Number: 9

Photo Taken: 09/12/2018

Bituminous Concrete Overlay in Span 2

Note: Failed patch along paving seam with potholes up to 2" deep.



Photo Number: 10

Photo Taken: 09/11/2018

Span 4 Underside of Deck

**Form: Asset Photos**

**Inspection type:** Fracture Critical,Routine

**Inspection Date:** 9/12/2018

**Inspected by:** Infrastructure Engineers

**Bridge No:** 04180

**Town:** NEWTOWN

**Carried:** INTERSTATE 84 WESTBOUND

**Crossed:** HOUSATONIC RIVER

**Inventory Route:** NHS



Photo Number: 11

Photo Taken: 09/12/2018

Span 1 Underside of Deck

Note: Moisture.



Photo Number: 12

Photo Taken: 09/12/2018

Right Curb / Parapet

Note: Spall in the granite curb.



**Form: Asset Photos**

**Inspection type:** Fracture Critical,Routine

**Inspection Date:** 9/12/2018

**Inspected by:** Infrastructure Engineers

**Bridge No:** 04180

**Town:** NEWTOWN

**Carried:** INTERSTATE 84 WESTBOUND

**Crossed:** HOUSATONIC RIVER

**Inventory Route:** NHS



Photo Number: 13

Photo Taken: 09/12/2018

Right Bridge Rail



Photo Number: 14

Photo Taken: 09/12/2018

Left Parapet in Span 2

Note: 10' long section with (4) spalls up to 1" deep and scaling.



**Form: Asset Photos**

**Inspection type:** Fracture Critical,Routine

**Inspection Date:** 9/12/2018

**Inspected by:** Infrastructure Engineers

**Bridge No:** 04180

**Town:** NEWTOWN

**Carried:** INTERSTATE 84 WESTBOUND

**Crossed:** HOUSATONIC RIVER

**Inventory Route:** NHS



Photo Number: 15

Photo Taken: 09/12/2018

Left Parapet

Note: Heavy scale on top face of parapet.



Photo Number: 16

Photo Taken: 09/12/2018

Southeast Approach Railing

Note: Two (2) cracks at end termination.

**Form: Asset Photos**

**Inspection type:** Fracture Critical,Routine

**Inspection Date:** 9/12/2018

**Inspected by:** Infrastructure Engineers

**Bridge No:** 04180

**Town:** NEWTOWN

**Carried:** INTERSTATE 84 WESTBOUND

**Crossed:** HOUSATONIC RIVER

**Inventory Route:** NHS



Photo Number: 17

Photo Taken: 09/12/2018

Metal Bridge Rail Post

Note: Typical crack.



Photo Number: 18

Photo Taken: 09/12/2018

Span 4 Metal Bridge Rail

Note: Sheared anchor bolt.



**Form: Asset Photos**

**Inspection type:** Fracture Critical,Routine

**Inspection Date:** 9/12/2018

**Inspected by:** Infrastructure Engineers

**Bridge No:** 04180

**Town:** NEWTOWN

**Carried:** INTERSTATE 84 WESTBOUND

**Crossed:** HOUSATONIC RIVER

**Inventory Route:** NHS



Photo Number: 19

Photo Taken: 09/12/2018

Deck Drain (Typical)

Note: Debris.



Photo Number: 20

Photo Taken: 09/13/2018

Right Shoulder at Abutment 2

Note: Ponding water.

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Photo Number: 21

Photo Taken: 09/12/2018

Scupper Pipe (Typical)

Note: Laminar rust on inside of pipe, u-bolt and connection diaphragm.



Photo Number: 22

Photo Taken: 09/13/2018

Weep Drain Adjacent to Floor Beam 2 and Stringer 1

Note: Laminar rust with 1/16" SL on diaphragm below.



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Photo Number: 23

Photo Taken: 09/12/2018

Pier 2 Navigation Light (Typical)

Note: Not on during inspection.



Photo Number: 24

Photo Taken: 09/12/2018

Abutment 1 Strip Seal Joint

**Form: Asset Photos**

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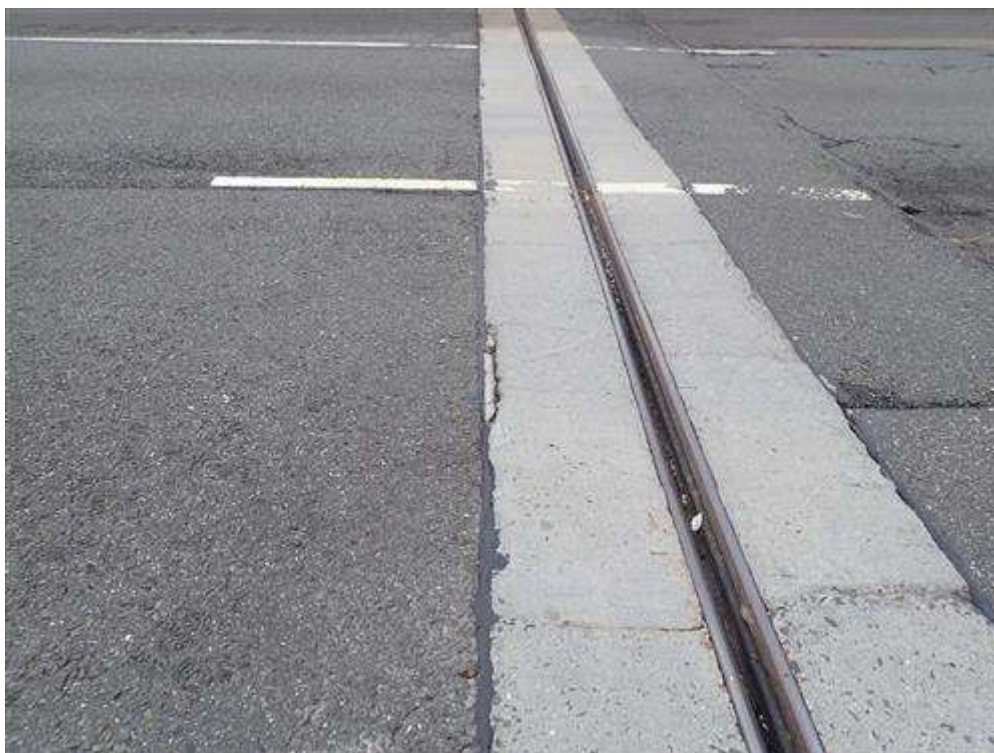


Photo Number: 25

Photo Taken: 09/12/2018

Abutment 1 Header

Note: Crack and potential spall.



Photo Number: 26

Photo Taken: 09/12/2018

Left Parapet at Abutment 1

Note: Joint sliding plate missing 3 of 12 screws.



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Photo Number: 27

Photo Taken: 09/12/2018

Abutment 2 Joint



Photo Number: 28

Photo Taken: 09/12/2018

Left Parapet Sliding Metal Plate at Abutment 2

Note: Offset 1" from parapet.

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Photo Number: 29

Photo Taken: 09/12/2018

Northeast Approach Guide Rail



Photo Number: 30

Photo Taken: 09/12/2018

Southeast Approach Guide Rail

Note: Disconnected post.



**Form: Asset Photos**

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Photo Number: 31

Photo Taken: 09/12/2018

Southeast Approach Guide Rail

Note: Missing splice bolt.



Photo Number: 32

Photo Taken: 09/12/2018

North Approach Pavement

**Form: Asset Photos**

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Photo Number: 33

Photo Taken: 09/12/2018

North Approach Pavement

Note: Cracking



Photo Number: 34

Photo Taken: 09/11/2018

Girder 1 Rocker Bearing at Abutment 2



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Photo Number: 35

Photo Taken: 09/13/2018

Girder 1 Rocker Bearing at Pier 1



Photo Number: 36

Photo Taken: 09/12/2018

Girder 1 Bearing at Pier 3

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Photo Number: 37

Photo Taken: 09/11/2018

Girder 1 Rocker Bearing at Abutment 1



Photo Number: 38

Photo Taken: 09/12/2018

Girder 2 Fixed Bearing at Pier 2



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Photo Number: 39

Photo Taken: 09/12/2018

Stringer Bearing

Note: Typical tipped anchor bolt.



Photo Number: 40

Photo Taken: 09/12/2018

Stringer Field Splice (Typical)

Note: Up to 1/4" pack rust between bottom flange and bottom splice plate.

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Photo Number: 41

Photo Taken: 09/13/2018

Stringer 7 Bottom Flange Between FB4 FB



Photo Number: 42

Photo Taken: 09/12/2018

Stringer 8 Bottom of Bottom Flange at Floor Beam 25

Note: 3'L x 4" W section loss down to 9/16" remaining.

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Photo Number: 43

Photo Taken: 09/12/2018

Stringer 8 Left Face at Floor Beam 25

Note: 4' long x up to 2" high x up to 3/16" deep pitting on web.



Photo Number: 44

Photo Taken: 09/12/2018

Stringer 8 Between FB 26 and FB 27

Note: 4" long x 1/2" wide x 5/16" deep dent.



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Photo Number: 45

Photo Taken: 09/13/2018

Stringer Connection to Floor Beam 29

Note: S3 - S6 bottom two bolts are missing with holes plug welded.



Photo Number: 46

Photo Taken: 09/11/2018

Girder Inside Face (Typical)



Photo Number: 47

Girder Bottom Flange Transition (Typical)

Photo Taken: 09/12/2018



Photo Number: 48

Girder 1 Top Flange Transition at Floor Beam 2 (Typical)

Photo Taken: 09/12/2018

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Photo Number: 49

Photo Taken: 09/11/2018

Floor Beam (Typical)



Photo Number: 50

Photo Taken: 09/12/2018

Floor Beam 25 Cantilever at Girder 2 (Typical)



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Photo Number: 51

Photo Taken: 09/13/2018

Floor Beam 1 at Girder 1

Note: Full length broken weld at vertical tie plate between girder 1 top flange and diaphragm.



Photo Number: 52

Photo Taken: 09/13/2018

Floor Beam 2 North Face at Girder 1

Note: 6-3/4" crack between top flange and floor beam web.

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Photo Number: 53

Photo Taken: 09/12/2018

Floor Beam 2 at Girder 2

Note: Floor Beam web bowed 1/4".



Photo Number: 54

Photo Taken: 09/12/2018

Floor Beam 4 at Girder 1 (Inside Face)

Note: 1/2" long crack ends in stopper hole.

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Photo Number: 55

Photo Taken: 09/13/2018

Floor Beam 5 at Girder 1

Note: Broken tack weld between girder web at cut out and tie plate.



Photo Number: 56

Photo Taken: 09/12/2018

Floor Beam 7 Web at Girder 1

Note: 9/16" gap between connection plate at web.



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Photo Number: 57

Photo Taken: 09/12/2018

Floor Beam 7 Web at Girder 2

Note: 3/8" gap between connection plate at web.



Photo Number: 58

Photo Taken: 09/12/2018

Floor Beam 14 Cantilever at Girder 1

Note: 2-1/2" vertical crack on connection plate weld and 5-7/8" horizontal crack on floor beam to top flange weld.

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Photo Number: 59

Photo Taken: 09/12/2018

Floor Beam 15 South Face at Girder 1

Note: 14-1/4" long crack between top flange and floor beam web with stop hole.



Photo Number: 60

Photo Taken: 09/12/2018

Floor Beam 15 at Girder 2 North Face

Note: 8-1/4" long crack between top flange and floor beam web.



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Photo Number: 61

Photo Taken: 09/12/2018

Floor Beam 15 Right Cantilever at Girder 2

Note: 15" long crack between top flange and floor beam web.



Photo Number: 62

Photo Taken: 09/12/2018

Floor Beam 18 at Inside of Girder 1

Note: 1/16" gap between floor beam web and connection plate and floor beam web is bowed 3/4".

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Photo Number: 63

Photo Taken: 09/12/2018

Floor Beam 19 Top Flange Tie Plate at Girder 1

Note: Loose bolt with moderate rust and floor beam web is bowed 1/2".



Photo Number: 64

Photo Taken: 09/12/2018

Floor Beam 22 Left Cantilever at Girder 1

Note: Connection plate weld at removed section has a 4" long vertical separation / crack that does not propagate into web.

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Photo Number: 65

Photo Taken: 09/12/2018

Floor Beam 25 at Girder 1

Note: Web bowed 1/2" at top.



Photo Number: 66

Photo Taken: 09/12/2018

Floor Beam 25 Cantilever Bottom Flange at Girder 2

Note: Girder 2 has 8" diameter x 3/16" deep section loss.



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Photo Number: 67

Photo Taken: 09/12/2018

Floor Beam 27 Left Overhang

Note: 3' long laminar rust with up to 1/16" deep pitting.



Photo Number: 68

Photo Taken: 09/13/2018

Floor Beam 28 Cantilever at Girder 1

Note: 7" long crack between top flange and floor beam web with stop hole.



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Photo Number: 69

Photo Taken: 09/12/2018

Floor Beam 28 Cantilever at Girder 2

Note: 6" crack in fillet weld between web and top flange with rust.



Photo Number: 70

Photo Taken: 09/13/2018

Floor Beam 29 North Face at Girder 1

Note: 3-3/8" crack in fillet weld between web and top flange.

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Photo Number: 71

Photo Taken: 09/11/2018

Abutment 1 Elevation



Photo Number: 72

Photo Taken: 09/12/2018

Girder 1 Pedestal at Abutment 1

Note: Spall.



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Photo Number: 73

Photo Taken: 09/12/2018

Abutment 1 Right Cheekwall

Note: Spall.



Photo Number: 74

Photo Taken: 09/11/2018

Abutment 2

**Form: Asset Photos**

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Photo Number: 75

Photo Taken: 09/13/2018

Abutment 2 Near Girder 1 Pedestal

Note: 17" long x 18" high x up to 3-1/2" deep cut out / spall.



Photo Number: 76

Photo Taken: 09/11/2018

Wingwall 2A Elevation





Photo Number: 77

Photo Taken: 09/11/2018

Pier 1 North Face



Photo Number: 78

Photo Taken: 09/11/2018

Pier 3 North Face



Photo Number: 79

Photo Taken: 09/12/2018

Channel Looking Upstream



Photo Number: 80

Photo Taken: 09/12/2018

Channel Looking Downstream