

Stillwater Bridge, Old Town, Maine

Beam End Treatment



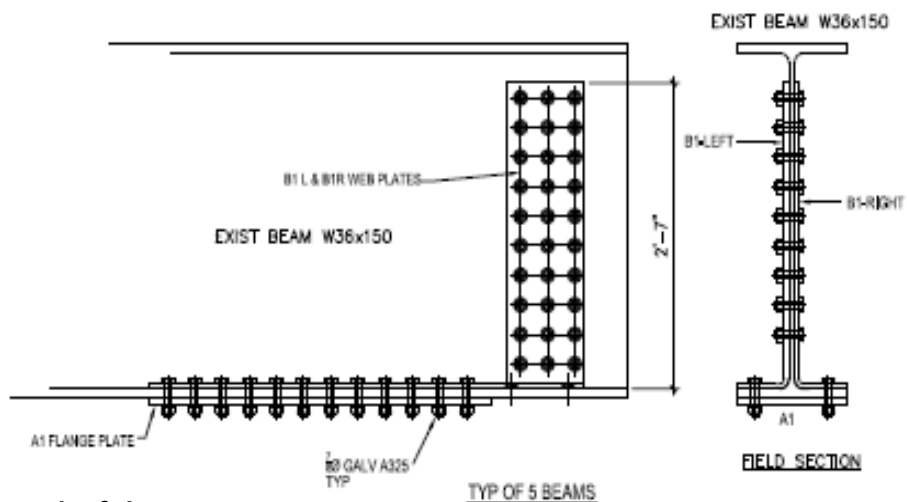
Topside the bridge appeared to have dropped $\frac{3}{4}$ ". Beam webs were deteriorated to point they were collapsing – or sliding past itself.



Nicknamed "The Clasp", a pair of boomerang shaped pieces with a leg bent 90 degrees, nestled nicely against the web & flange securing everything together.



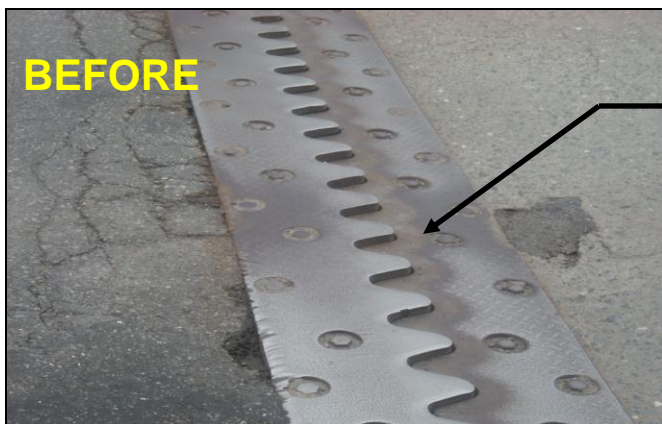
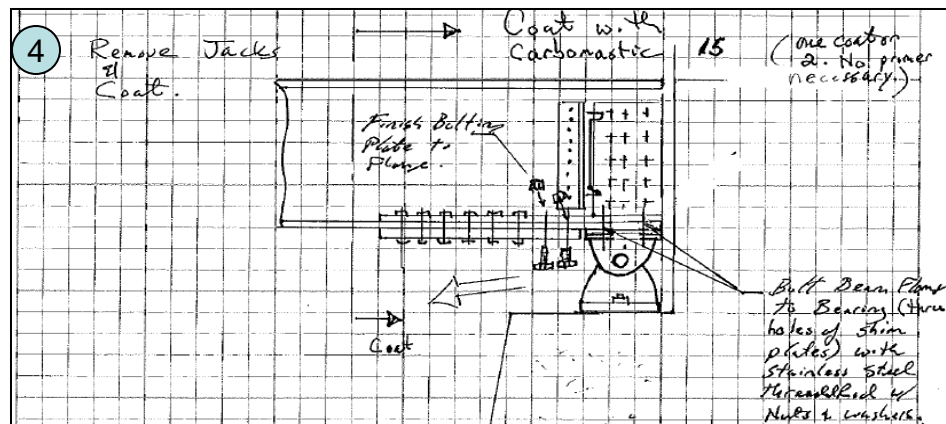
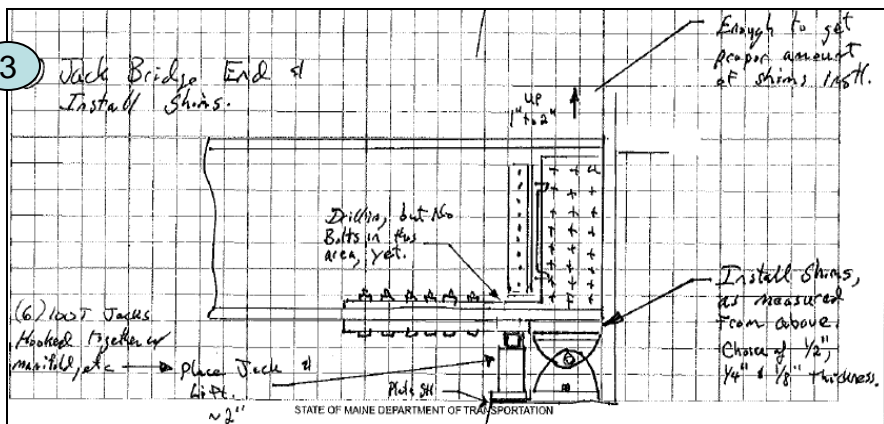
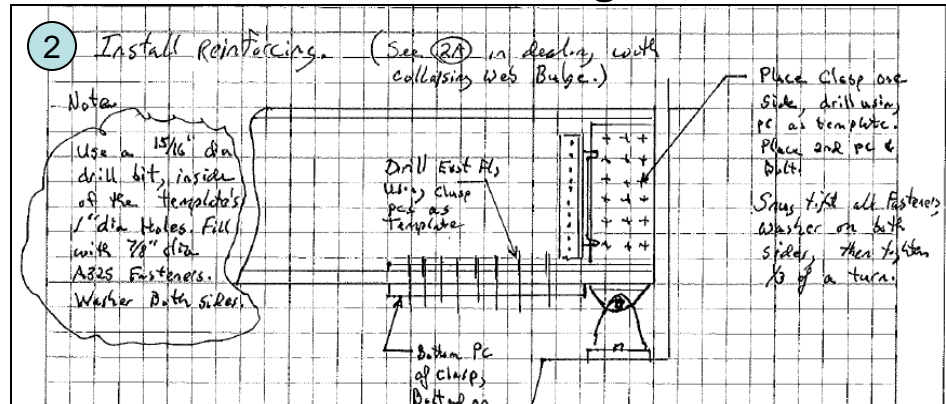
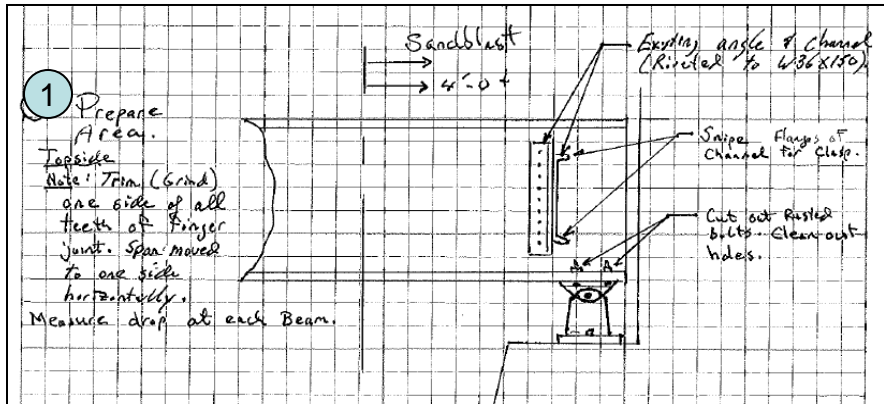
After strengthening all 6 beams ends, the last 15 feet, including the bearings, were blasted and coated.



MaineDOT maintenance crews completed this repair without disrupting traffic in less than 3 weeks, just ahead of the deadline of students returning to University of Maine, Orono.

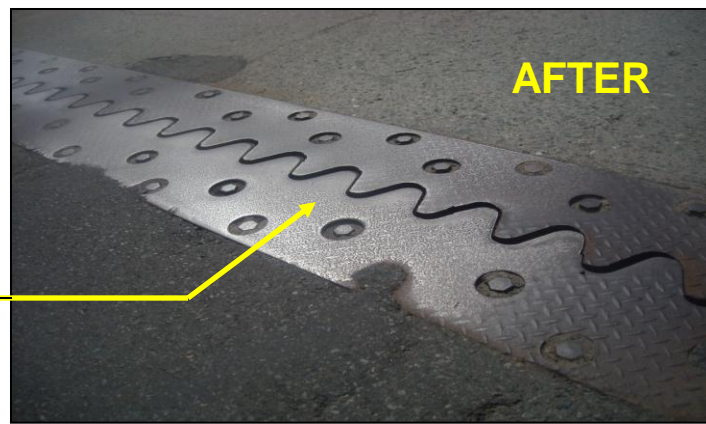
In order to accomplish a smooth ride over the roadway finger joint, six - 100 ton hydraulic jacks were used to precisely lift each beam in order for shim plates to be placed between the bearing plate and the girder.

Procedure for Structural Beam End Treatment – Stillwater Bridge



A 3/4" drop from collapsing webs.

A smooth ride after shimming up beneath rocker plates.

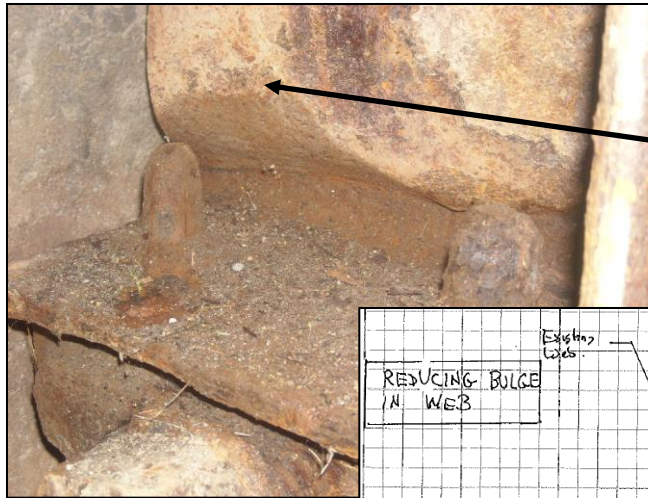


Shop Drawing Material

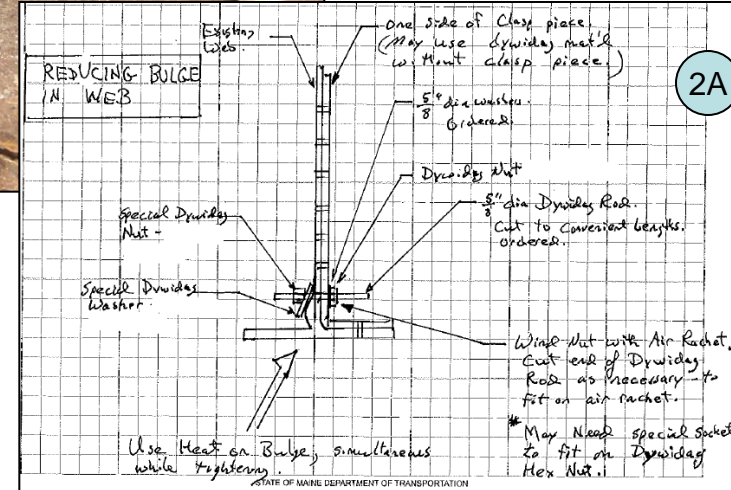
Miscellaneous

MATERIAL SCHEDULE

MARK	NO. PCS.	SJM ASSEM.	SHAPE	LENGTH		REMARKS	WT.
				FT.	IN.		
A1	5		PL 3/4 x 12 1/8	3	1 3/4	A572 GR50	97.3sq 497
B1-R	5		PL 1/2 x 35 3/4	4	0	A572 GR50 BEND SHAPE	73.1sq 360
B1-L	5		PL 1/2 x 35 3/4	4	0	A572 GR50 BEND SHAPE	73.1sq 360
C1	18		PL 1/2 x 10	0	10 1/4	A572 GR50	14.3sq 256
D1	18		PL 1/4 x 10	0	10 1/4	A572 GR50	7.3sq 129
F1	12		PL 1/8 x 10	0	10 1/4	A569	3.8sq 43
G1	25		PL 1/4 x 3	0	3	A572 GR50	.83sq 18
H1	12		PL 1/2 x 9	1	0	A572 GR50	15.3sq 184
TOTAL WT:							1830



Bulge & collapse of web(s).



2A

Tightening against web.

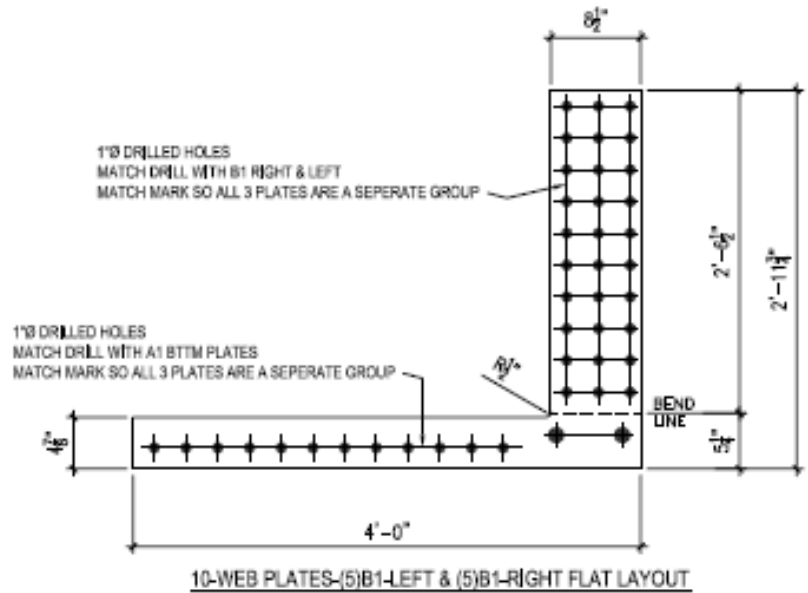
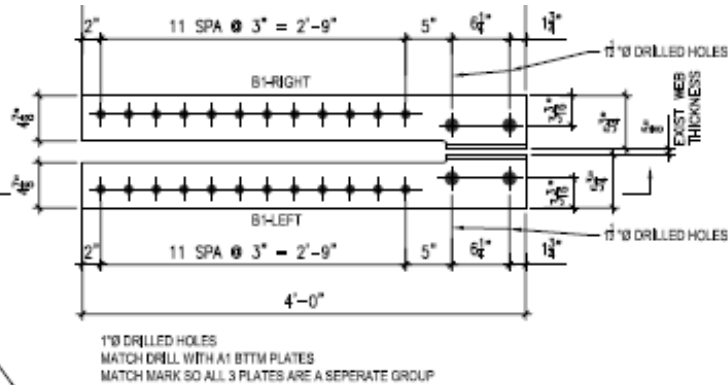
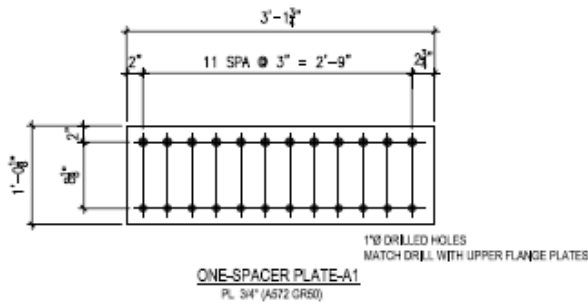


Installation over bearing.

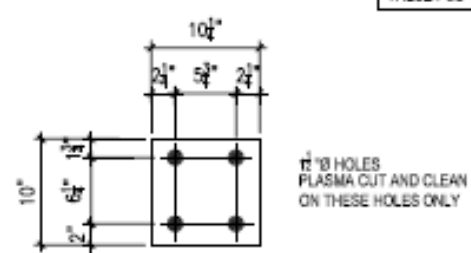


AWS CODE: AWS D1.5		SPEC. AISC	
MATERIAL: A572 GR50 UNO		HOLES: 13/16# UNO	
BOLTS: AS NOTED		ELECTRODE: E71T-1	
SURFACE PREP: SP-6 COMMERCIAL BLAST		REF. DWG: DUKAS DWGS 1-4 (7-21-10)	
PRIMER: NONE			
FINISH: NONE			

Shop Drawing for Repair Parts



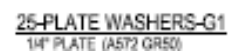
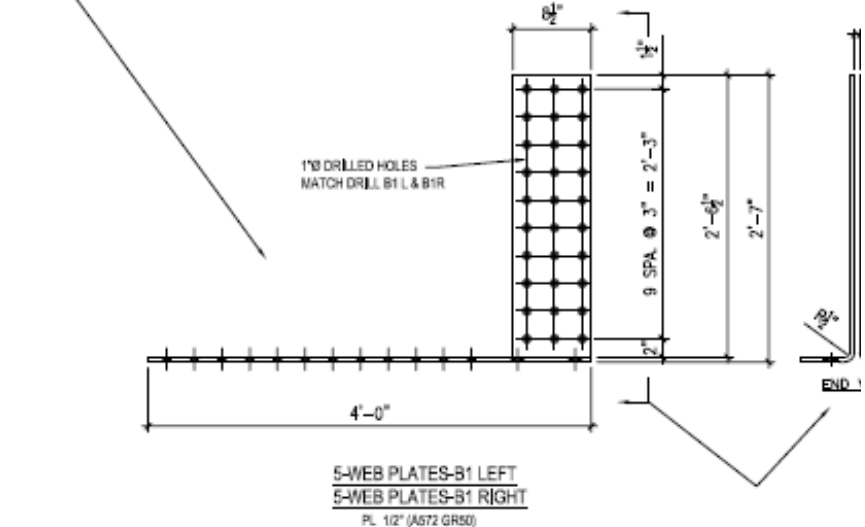
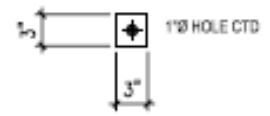
SHOP NOTE:
MAKE SURE GRANN IS IN THE CORRECT
DIRECTION BEFORE CUTTING & BENDING
THESE PCS



SHIM PLATE LIST

PC MK	QTY	THICKNESS
C1	18	1/2" PLATE
D1	18	1/4" PLATE
F1	12	1/8" PLATE

SHOP NOTES:
1. SP-6 BLAST FINISH
2. D1.5 WELD CODE
3. MDOT SECTION 504



Hollis, Maine – Deteriorated Gusset Plate



[Redacted]

[Redacted] SE

1525

Hollis

[Redacted]



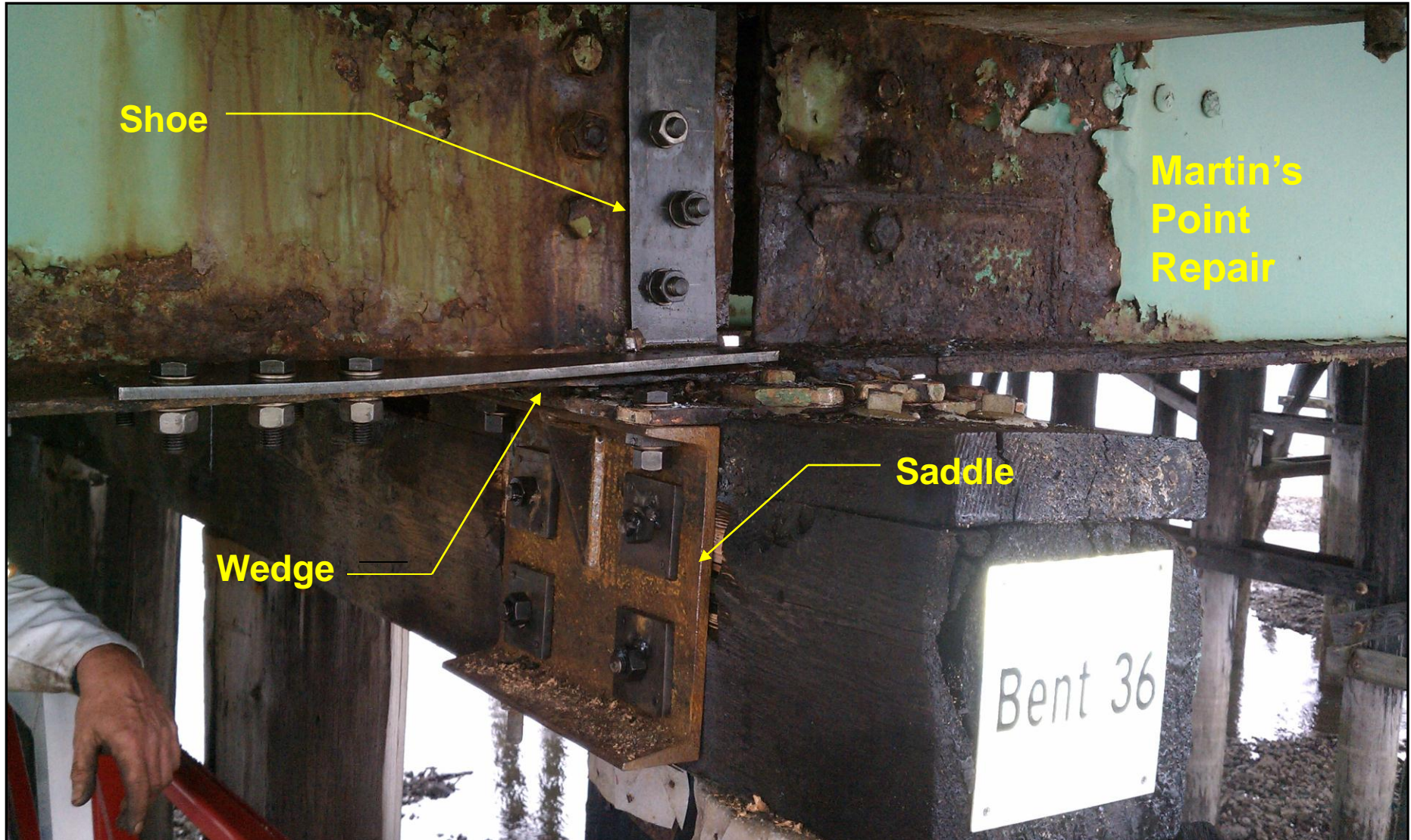
The “Iron Boot” – a series of steel plates configured to tie the chord, gusset and diagonal together.



Martin's Point Falmouth Maine - Deteriorated & Collapsing Beam Webs

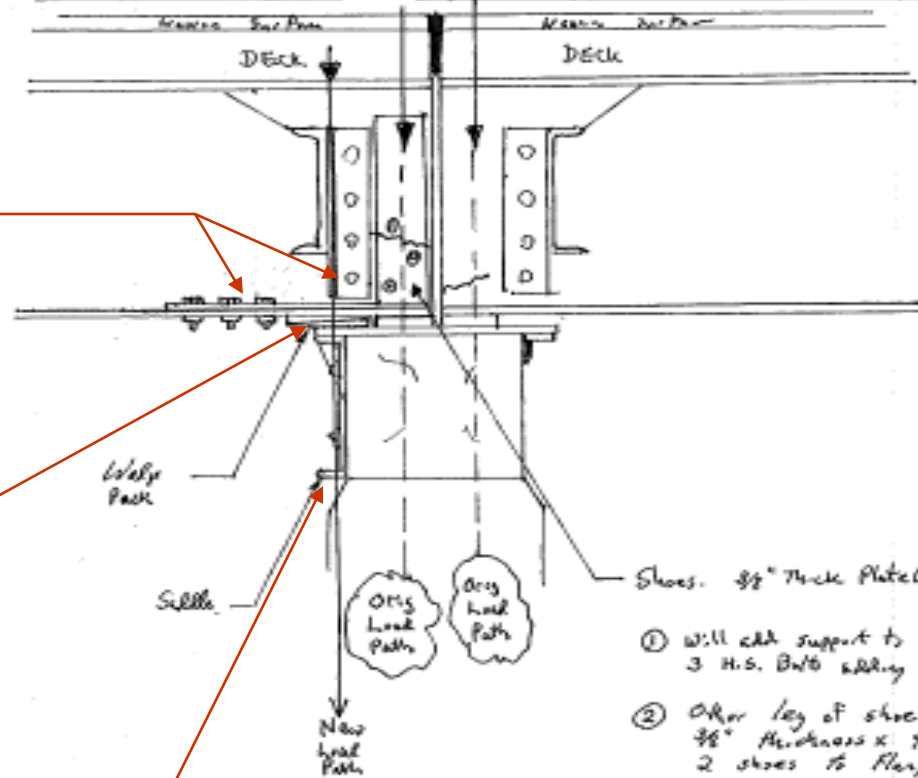


Saddle, Shoe & Wedge – a pair of c-channels supporting a precisely bent plate designed to re-support beam webs. Installed at 53 locations.



Martin's Point Repair Plan

PRELIM BY W. Douglas PE DATE 2/8/12 PROJ. NO. _____ FILE NO. _____ OF _____
 FINAL CHK. BY _____ DATE _____ LOCATION _____ SH. NO. 1 OF 2
 ITEM NO. _____ SUBJECT Martin's Point - Shoe Analysis



Boomerang-shaped plates bent 90 degrees. (Shoe)

Steel Wedge Pack, changing the load path

Saddle

Shoes. $\frac{3}{8}$ " Thick Plate(s).

- Will add support to Pulley web. 3 H.S. But adding $\frac{3}{8}$ " steel.
- Other leg of shoe will add $\frac{3}{8}$ " thickness x 4" width x 2 shoes to Flange area.

Total Added area = $\frac{3}{8} \times 4 \times 2 = 3 \text{ in}^2$

(compare) Original Flange area = 5.67 in^2
 $\frac{1}{4} \times \frac{1}{4} \times 2 = 5.67 \text{ in}^2$

Bottom Flanges have been reduced to $\approx \frac{3}{8}$ " in many cases.

$\therefore \frac{3}{8} \times 8 \frac{1}{4} = 3 \text{ in}^2$

Adding to Shoe increases the Flange to 6 in².



New Sharon – Sandy River Bridge

**Deteriorated Brgs &
Bottom Flanges.**



Sandy River Br Repair – new bearings & added 1" steel reinforcing plate – split lengthwise to accommodate traffic.

