



STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

# Inspection Report for B-47-040

USH 10 over ST CROIX RIVER 01

Apr 13, 2017



Type	Prior	Frequency (mos)	Performed
Routine	04-26-16	24	X
Damage	08-15-10	0	
Fracture Critical	04-26-16	24	X
Interim	06-23-09	0	
Movable	04-26-16	24	X
Uw-Dive	10-24-13	48	
SIA Review	04-26-16	48	
Uw-Profile	04-25-14	60	

Latitude 44°44'57.33"N  
Longitude 92°48'11.93"W

Owner STATE HIGHWAY DEPT  
Maintainer STATE HIGHWAY DEPT

## Time Log

## Team members

Hours	Minutes	
8	0	

Inspector	Name	Number	Signature	Date
	Haig, Gregory	5014	<div>Gregory Haig</div> <div>E-signed by Gregory H Haig(dotghh)</div>	05-22-17

**BRIDGE INSPECTION REPORT**  
**Wisconsin Department of Transportation**  
**DT2007 2003 s.84.17 Wis. Stats.**

page 2

**Identification & Location**

Feature On: USH 10	Section Town Range: S09 T26N R20W	Structure Number: <b>B-47-040</b>
Feature Under: ST CROIX RIVER 01	County: PIERCE	
Location MINNESOTA STATE LINE	Municipality: PRESCOTT	Structure Name:

**Geometry**

measurements in feet, except where noted

Approach Roadway Width: 54	Bridge Roadway Width: 54.0	Total Length: 682.7
Approach Pavement Width: 54	Deck Width: 66.0	Deck Area (sq ft): 45058

**Traffic**

Lanes	ADT	ADT year	Traffic Pattern
On 4	13900	2012	TWO WAY TRAFFIC

**Capacity**

**Load Rating**

Inventory rating: HS21	Overburden depth (in): 0.0	Last rating date:	Controlling:
Operating rating: HS30	Deck surface material: CONCRETE	Re-rate for capacity (Y/N):	Control location:
Posting: MAX PERMIT WEIGHT 350K	Re-rate notes:		

**Hydraulic**

**Classification**

Scour Critical Code(113): (8) STABLE-ABOVE TOP FOOTING	Q100 (ft3/sec): 55000	
High water elevation (ft): 691.0	Velocity (ft/sec): 6.0	Sufficiency #: 61.7

**Span(s)**

Span #	Material	Configuration	Depth (in)	Length (ft)	Main
1	STEEL	DECK GIRDER		115.0	
2	STEEL	DECK GIRDER		133.5	
3	STEEL	BASCULE		205.5	Y
4	STEEL	DECK GIRDER		116.5	
5	STEEL	DECK GIRDER		108.0	

**Expansion joint(s)**

**Temperature:**

File:	New:
-------	------

**Clearance**

Item	File Measurement (ft)	File Date	New Measurement (ft)
Highway Min Vertical On Cardinal			
Horizontal On Cardinal			

**Special Components**

Component	Year	Work Performed	Note
CONC. PROTECTIVE TREATMENT - TK-590-1 MS			APPLIED IN 2014 MAINTENANCE PROJECT

**Construction History**

Year	Work Performed	FOS id
9999	NOT BUILT	
1991	SEAL CONCRETE	
1990	NEW STRUCTURE	1530-00-71

**BRIDGE INSPECTION REPORT**  
**Wisconsin Department of Transportation**  
**DT2007 2003 s.84.17 Wis. Stats.**

page 3

Structure No.: **B-47-040**

**Maintenance Items History**

Item	Recommended by	Status	Status change	Year completed
<b>Deck - Seal w/ Concrete Sealer</b>		COMPLETE		2014
UPLOADED ON 4/28/2015 FROM EXCEL SHEET COMPILED BY ALLAN JOHNSON. SEE SPECIAL COMPONENT TAB FOR SPECIFIC PRODUCT				

**Maintenance Items**

Item	Priority	Recommended by	Status	Status change
<b>Misc - Paint Spot / Complete</b>	MEDIUM	Haig, Gregory (5014)	IDENTIFIED	06/02/15
Ends of Span 3 girders and surrounding areas will need paint soon.				
<b>Superstructure - Other Work</b>		Haig, Gregory (5014)	IDENTIFIED	04/29/14
Clean, paint and protect the southwest corner rear lock				

**Elements**

Chk	Element	Defect	Description	UOM	Total	Quantity in Condition State			
						1	2	3	4
X	12		<b>Reinforced Concrete Deck-Coated Reinforcing</b>	SF	45,079	39,779	5,000	300	0
			Cracking (RC)	SF		0	5,000	300	0
		1130	Underside - numerous hairline (about every 4 ft) transverse cracks with light/medium efflorescence leaching. Cracks are located throughout the entire underside of the bridge. Bay 3 between girders 4 and 5 in span 3 has numerous cracks with rust staining. Rust is leaching through on top of girder 4 in span 3. The soffit on the outside north edge along the sidewalk has numerous vertical cracks at rail posts with rust staining.						
		8000	Wearing Surface (Bare)	SF	45,079	43,078	2,000	1	0
		3210	Debonding/Spall/Patched Area/Pothole	SF		0	0	1	0
			Small spall (6 in. x 6 in.) near finger joint on Wisconsin side located in the center of the left east bound lane.						
X	28		<b>Steel Deck With Open Grid</b>	SF	1,001	100	901	0	0
			Span 3						
		1000	Corrosion	SF		0	450	0	0
			Surface corrosion throughout.						
		1020	Connection	SF		0	451	0	0
			2008 some of the welds in steel grates have broken loose. During 2009 inspection Pierce Co Hwy Dept welded broken areas of steel grates. Slight mis-alignment (0.25IN) of center span locks has caused minor wear due to rubbing. 2 areas in each direction are "clicking" as traffic drives over. Could not pin down exact location. broken riveted areas were repaired in 2016 by welding.						
X	29	8518	Galvanization	SF	10,000	10,000	0	0	0
			<b>Steel Deck With Concrete Filled Grid</b>	SF	1,500	0	1,500	0	0
			Corrosion	SF		0	1,500	0	0
		1000	Rust staining throughout. <b>The bottom side of the sidewalk in the bascule span has heavy rust staining throughout.</b>						
		8513	Thin Polymer Overlay	SF	1,500	1,437	63	0	0
		8911	Abrasion, Wear, or Rutting (Wear. Surf.)	SF		0	63	0	0
			Grid is filled on the outside edges of the bascule span. Polymer overlay was placed over the area in 2007. The polymer at the ends of the span is beginning to "peel up"						

**BRIDGE INSPECTION REPORT**  
**Wisconsin Department of Transportation**  
**DT2007 2003 s.84.17 Wis. Stats.**

page 4

Structure No.: **B-47-040**

X	107		<b>Steel Open Girder</b>	LF	4,198	4,135	63	0	0
		1000	Corrosion	LF		0	63	0	0
			Small amounts of freckle rust is present in all spans.						
	8516		Painted Steel	SF	5,060	4,060	500	500	0
		3440	Effectiveness (Steel Protective Coatings)	SF		0	500	500	0
			There are small area of freckle rust throughout the entire structure. Approximately 50% of the paint on the bridge is beginning to chalk. Chalking is most prevalent on the south facia girders in which a majority of the paint is in poor condition. Further more several area of the paint on the south facia side is peeling off exposing the undercoating.						
X	113		<b>Steel Stringer</b>	LF	3,999	2,999	1,000	0	0
		1000	Corrosion	LF		0	1,000	0	0
			Some paint is peeling off in different areas and surface rust starting to form. Stringer in span 4, between floor beams 2 and 3 has a 2 foot cut on bottom flange. Approximately 25% of the stringers have some distress in the paint.						
X	152		<b>Steel Floor Beam</b>	LF	652	601	51	0	0
		1000	Corrosion	LF		0	51	0	0
			The bascule span had approximately 3 ft. of exposed steel that is actively rusting in each floor beam.						
X	210		<b>Reinforced Concrete Pier Wall</b>	LF	215	161	50	4	0
			The concrete surfaces at Piers 1 through 4 were typically smooth, sound, and in good condition. Piers 2 east face and pier 3 west face have treated timbers bolted to them.						
		1130	Cracking (RC)	LF		78	50	4	0
			See attached sketches for cracks and locations.						
X	215		<b>Reinforced Concrete Abutment</b>	LF	130	124	6	0	0
		1130	Cracking (RC)	LF		0	6	0	0
			East abutment backwall has a couple hairline/medium horizontal/vertical cracks. Joints are leaking badly on to abutment footing causing staining. OLD NOTE: West abutment is moving East about 2", Dead men were place behind west abutment and abutment seems to have stablize. 2016- bearings appear to be about 4 in. off center at 50 degrees f. It appears to be the same as previous inspections.						
X	220		<b>Reinforced Concrete Pile Cap/Footing</b>	LF	4	4	0	0	0
			Vertical footing and seal exposure at Piers 1 through 4. Voids are present only in the seal and do not affect structural capacity. (Dive inspection note) Can't be observed from above the waterline.						
X	300		<b>Strip Seal Expansion Joint</b>	LF	130	67	13	20	30
			West joint replaced in 2007.						
		2310	Leakage, Seal Adhesion, Damage, Cracking	LF		0	13	20	30
			Dirty - Minor leaking in East joint. Majority of the east joint has failed and is leaking badly. <b>Approximately 1 foot of the west strip seal is torn (near the southeast corner).</b>						
X	311		<b>Moveable Bearing</b>	EA	32	0	32	0	0
			At both abutments and piers 2 and 3.						
		1000	Corrosion	EA		0	32	0	0
			Light rust on all w/ some medium on ends.						

**BRIDGE INSPECTION REPORT**  
**Wisconsin Department of Transportation**  
**DT2007 2003 s.84.17 Wis. Stats.**

page 5

Structure No.: **B-47-040**

X	313		<b>Fixed Bearing</b> At piers 1 and 4.	EA	16	0	16	0	0
		1000	Corrosion Light rusting on all. Minor rusting at SW corner on bascule leaf.	EA		0	16	0	0
X	330		<b>Metal Bridge Rail</b>	LF	166	83	83	0	0
		1000	Corrosion Approximately 50% has minor corrosion majority of which is next to the flow line	LF		0	83	0	0
		8516	Painted Steel	SF	1,062	531	531	0	0
		3440	Effectiveness (Steel Protective Coatings) Approximately 50% has minor corrosion majority of which is next to the flow line. Southern parapet paint is flaking off and chalking throughout.	SF		0	531	0	0
X	331		<b>Reinforced Concrete Bridge Rail</b>	LF	1,538	207	1,327	4	0
		1080	Delamination - Spall - Patched Area Minor spall at the southeast corner of bridge (from impact?)	LF		0	0	4	0
		1130	Cracking (RC) Many hairline vertical cracks thru-out.	LF		0	177	0	0
		1190	Abrasion-Wear (PSC-RC) Approx 75% surface scaling. Some rubbing along the pier 4 where the railing changes from steel to concrete. Rubbing was caused by the twisting of the bascule span which has since been remedied.	LF		0	1,150	0	0
X	8400		<b>Integral Wingwall</b>	EA	4	4	0	0	0

**Assessments**

Chk	Element	Defect	Description	UOM	Total	Quantity in Condition State			
						1	2	3	4
X	9001		<b>Drainage - Approach</b> Curb & Gutter w/ inlet - NE, SE, & NW. Asp/gravel shldr at SW.	EA	3	3	0	0	0
X	9009		<b>Sidewalk</b> North side of bridge and Southeast area. Many hairline transverse cracks. Stay in place forms under sidewalk are starting to rust.	EA	2	2	0	0	0
X	9020		<b>Movable Bridge - Counterweight</b> Large spalls in both counter weights (see sketches). No significant changes in 2016.	EA	2	0	0	2	0
X	9045		<b>Slope Protection- Riprap</b> Eastside is grouted. <b>A bike trail has been placed under the west end of bridge. There is minor settlement and erosion just above the retaining wall that was built for the bike trail.</b>	EA	2	1	1	0	0
X	9167		<b>Steel Diaphragm</b> Very minor freckle rust on approximately 1/3 of the diaphragms.	EA	173	120	53	0	0
X	9290		<b>Dolphin or Fender System</b>	EA	4	4	0	0	0
X	9322		<b>Approach Roadway - Concrete (non-structural)</b> At east end of bridge only. Settled. Asp patches at longitudinal and transverse joints.	EA	1	0	1	0	0

**BRIDGE INSPECTION REPORT**  
**Wisconsin Department of Transportation**  
**DT2007 2003 s.84.17 Wis. Stats.**

page 6

Structure No.: **B-47-040**

X	9323		Approach Roadway - Asphalt At west side of bridge only.	EA	1	1	0	0	0
X	9335		Decorative Rail	EA	2	2	0	0	0

**NBI Ratings**

	File	New
Deck	6	6
Superstructure	7	7
Substructure	7	7
Culvert	N	N
Channel	8	8
Waterway	8	8

**Structure Specific Notes**

NBI rating is a 6 for substructure because of the movement of the West abutment which seems to be stable now. Oil Aurs gave the structure and hydrolic systems a tune up the fall of 1998 - Ed says still not working correctly. Welded 1/16 inch shims on the male to female mating mechanism in 1999. Extended 1 1/2 inch pump pipe on outside of pier wall in 2001 to the to keep pier wall from staining.

\*\*On 8-15-2010 while in computer mode the lift bridges locking system engaged before lift bridge was completely down bending both steel locking beams on Minnesota side (NW-SW corners) . On the Wisconsin side (SE and NE corners) the steel locking beams were only scraped but no real structural damage to beams. Pierce County did the repair work on bridges locking beams.

**Inspection Specific Notes**

May need to repaint or spot paint soon - detailed paint condition needed (i.e. top coat condition). **A bike trail was constructed under span1 on the Minnesota end of the bridge in 2016. A retaining wall was also constructed as part of the bike trail. Both are owned and are to be maintained by Mn/DOT.**

**Inspector Site-Specific Safety Considerations**

Marine Traffic

**Structure Inspection Procedures**

The only portion of the bridge that is fracture critical is the bascule span. Although we generally inspect the entire bridge, this procedure only applies to the fracture critical inspection. In order to see both outside girders the snooper truck must set up twice, once on the westbound side and once on the east bound side. Traffic control is set up by the county. We first close the north lane on the westbound side (single lane closure, there are 4 lanes on the bridge). The snooper truck is then positioned on the bascule span and deployed to the north. The entire inspection of the westbound side generally takes 2-3 hours. After we have inspected the north side of the bridge the traffic control is picked up and re-set on the eastbound side of the bridge and the same inspection procedure is used except the truck will deploy to the south. In addition if the bridge must be lifted during the inspection, the inspection will have to be halted, the snooper will have to moved off the bascule span and the traffic control cones will have to be moved. After the span is lowered back down, the traffic cones can be put back and the inspection continued.

During the inspection the two main bascule girders are to be inspected at an arms length or less.

Additionally, the inspection of the connections to the main counter weights have to be inspected from inside the tower or accessed through the sidewalk on the Minnesota side.

**Special Requirements**

	Chk	Hours	Cost	Comments
Other Access	X			UB60 Snooper
Equipment	X			
Traffic Control	X			County sets up traffic control

**Movable**

	Rating	Comment
<b>Mechanical</b>	GOOD	See Documents for details
<b>Electrical</b>	GOOD	See Documents for details
<b>Hydraulic</b>	GOOD	See Documents for details
<b>Operator House</b>	GOOD	See Documents for details
<b>Safety Device</b>	GOOD	See Documents for details

**Maintenance Notes**

**Underwater Probe Form  
B-47-040**

**General Site Conditions - Scour**

**General Site Conditions - Embankment Erosion/Conditions**

**Substructure Notes**

Unit	Max Water Depth(ft)	Mode	Notes
Cardinal		Wade	
Pier 1		Wade	
Pier 2		Wade	
Pier 3		Wade	
Pier 4		Wade	
Non Cardinal		Wade	

**Movable Mechanical**  
**Document Comment/Description**

Bascule girder bearing plates (Southeast)



**Movable Mechanical**  
**Document Comment/Description**

Wisconsin finger joint with spalling concrete under (Part of counterweight)



**Movable Mechanical**  
**Document Comment/Description**

Wisconsin finger joint with spalling concrete under (Part of counterweight)



**Movable Mechanical**  
**Document Comment/Description**

Main Rocker bearing at Southeast corner



**Movable Mechanical**  
**Document Comment/Description**

Bottom and face of counter weight (Wisconsin side)



**Movable Mechanical**  
**Document Comment/Description**

Bottom and face of counter weight (Wisconsin side)



Movable Mechanical  
Document Comment/Description

Bottom and face of counter weight (Wisconsin side)



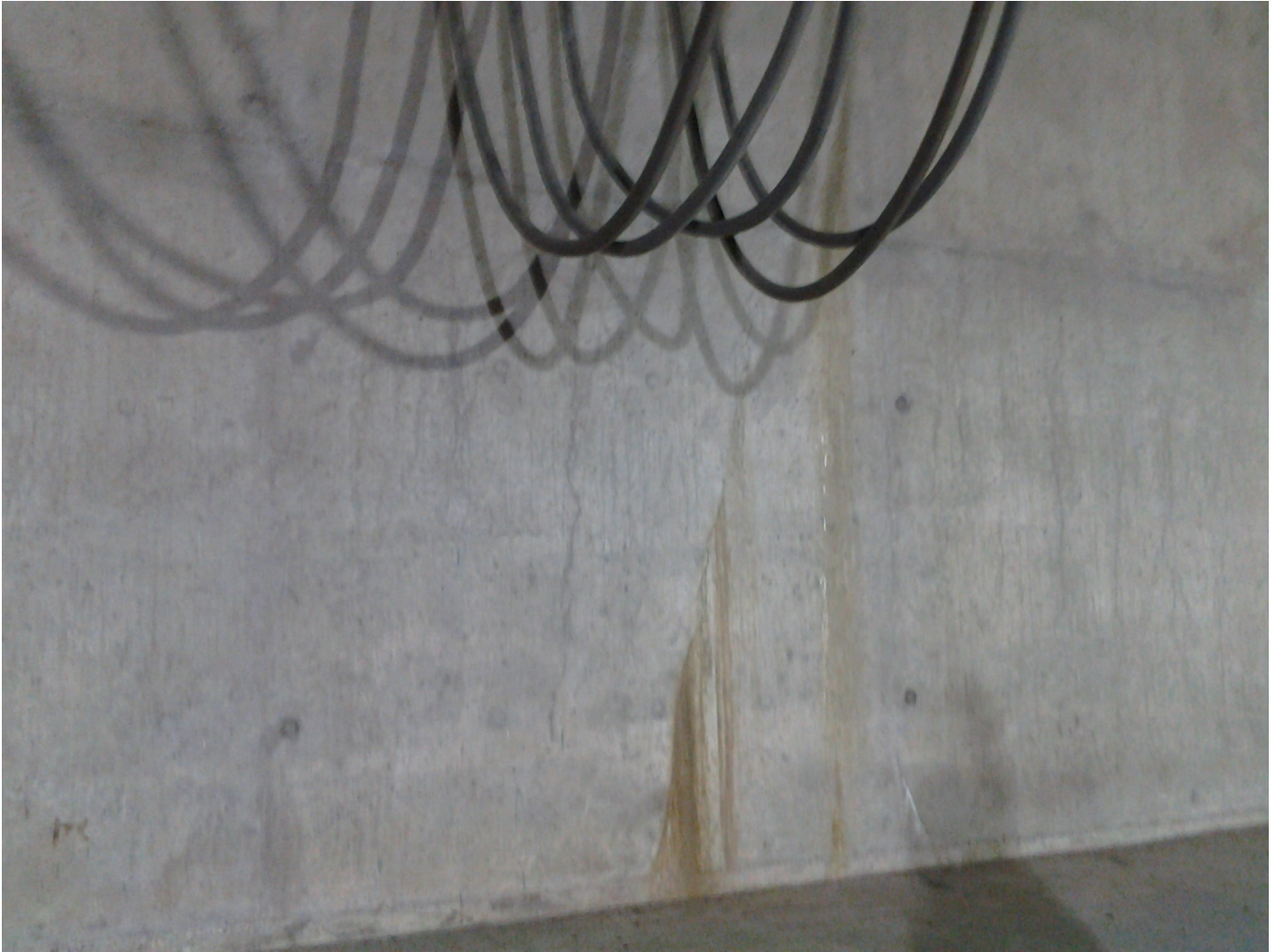
**Movable Mechanical**  
**Document Comment/Description**

Cracks in the west wall of the east counterweight pit



**Movable Mechanical**  
**Document Comment/Description**

Cracks in the west wall of the east counterweight pit



**Movable Mechanical**  
**Document Comment/Description**

Northeast Rocker



**Movable Mechanical  
Document Comment/Description**

Wisconsin side counterweight



**Movable Mechanical**  
**Document Comment/Description**

Wisconsin side counterweight



**Movable Mechanical**  
**Document Comment/Description**

Northeast connection near the northeast rocker (minor corrosion)



**Movable Mechanical**  
**Document Comment/Description**

Minor rust on main spokes at the northeast rocker.



**Movable Mechanical**  
**Document Comment/Description**

Bascule bearing plates at northeast corner. Minor misalignment (constructed that way)



**Movable Mechanical**  
**Document Comment/Description**

Minnesota side counterweight



**Movable Mechanical**  
**Document Comment/Description**

Minnesota side counterweight. Also, some corrosion under finger joint in the stringers.



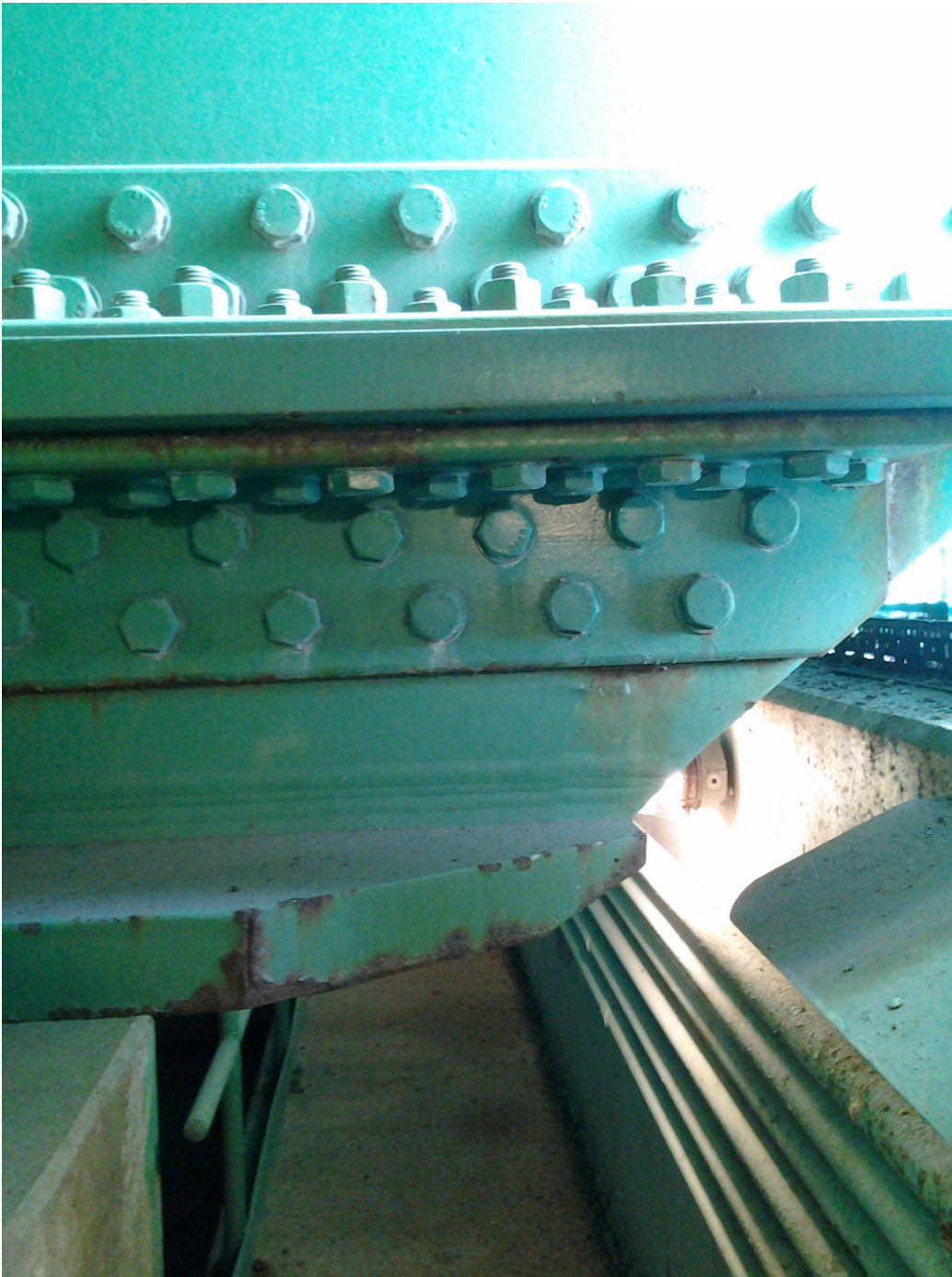
**Movable Mechanical**  
**Document Comment/Description**

Minor corrosion in the southwest connection just in front of the counterweights.



**Movable Mechanical**  
**Document Comment/Description**

Minor corrosion in the southwest connection just in front of the counterweights. (backside)



**Movable Mechanical**  
**Document Comment/Description**

Minnesota counterweight



**Movable Mechanical**  
**Document Comment/Description**

Minnesota counterweight



**Movable Mechanical**  
**Document Comment/Description**

Southwest rear lock corrosion



**Movable Mechanical**  
**Document Comment/Description**

Southwest rear lock corrosion



**Movable Mechanical**  
**Document Comment/Description**

Southwest bascule bearing misalignment.



Routine  
Document Comment/Description

East abutment



Routine  
Document Comment/Description

West abutment



Routine  
Document Comment/Description

Pier 1 - west face



Routine  
Document Comment/Description

Pier 2 - west face



Routine  
Document Comment/Description

Pier 3 - east face



Routine  
Document Comment/Description

Pier 4 - west face



Routine  
Document Comment/Description

Span 1 - deck underside (typ.)



Routine  
Document Comment/Description

Bay 1 between girders 5 and 6 at pier 4. Plywood left from original construction.



**Routine**

**Document Comment/Description**

Rust staining on the bottom of the deck in span 4 between girders 4 and 5.



Routine  
Document Comment/Description

Rust staining on the bottom of the deck in span 4 between girders 4 and 5.



**Routine**

**Document Comment/Description**

Cracks in pier 3. Looking west at the northwest corner.



**Routine**

**Document Comment/Description**

Diaphragm corrosion on the west side of pier 3.



Routine  
Document Comment/Description

Diaphragm corrosion on the west side of pier 3.



**Routine**

**Document Comment/Description**

Spot rusting in the bascule span floor beams.



Routine  
Document Comment/Description

Spot rusting in the bascule span floor beams.



**Routine**

**Document Comment/Description**

Spalled concrete at pier 3 on the bascule span side.



**Routine**

**Document Comment/Description**

Corrosion of the cross members near pier 2.



**Routine**  
**Document Comment/Description**

Span 1 southside chalking paint and exposed under coating.



**Routine**

**Document Comment/Description**

Span 1 southside chalking paint and exposed under coating.



Routine  
Document Comment/Description

Cracking in pier 3 looking to the southeast.



Routine  
Document Comment/Description

southside of girder 1 in bascule span. Chalking paint



**Routine**  
**Document Comment/Description**

Loss of paint on galvanized steel parapet.



**Routine**

**Document Comment/Description**

Pier 2 looking west cracking.



**Routine**

**Document Comment/Description**

South bascule center joint. Wearing can be seen on the bottom plate.



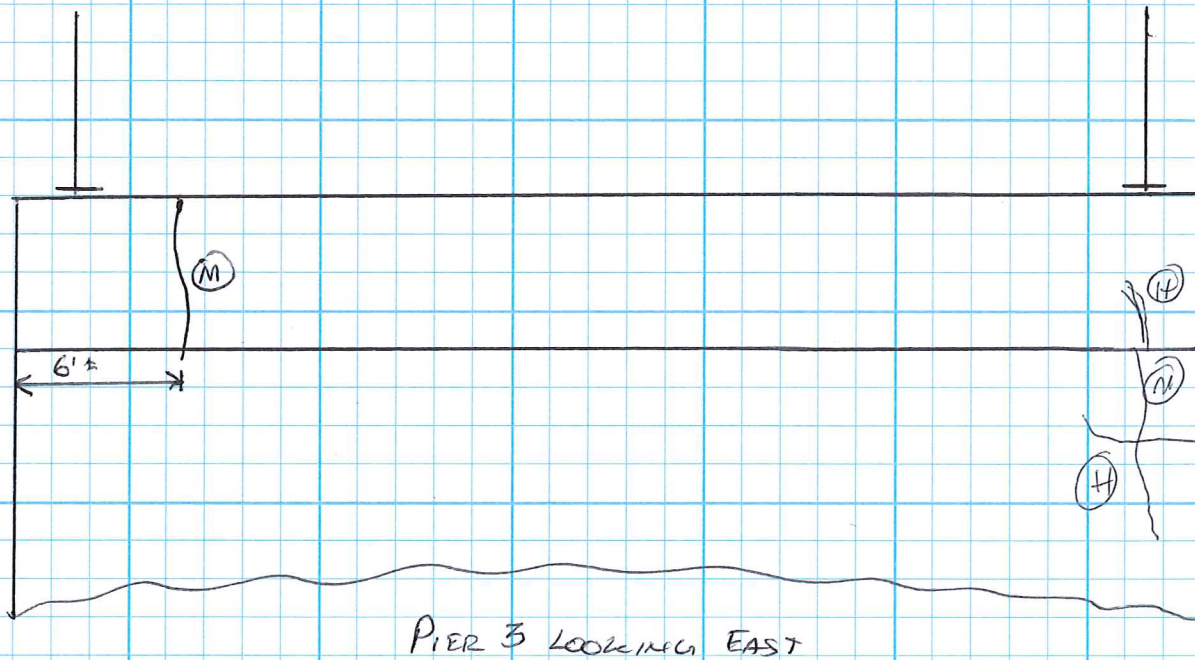
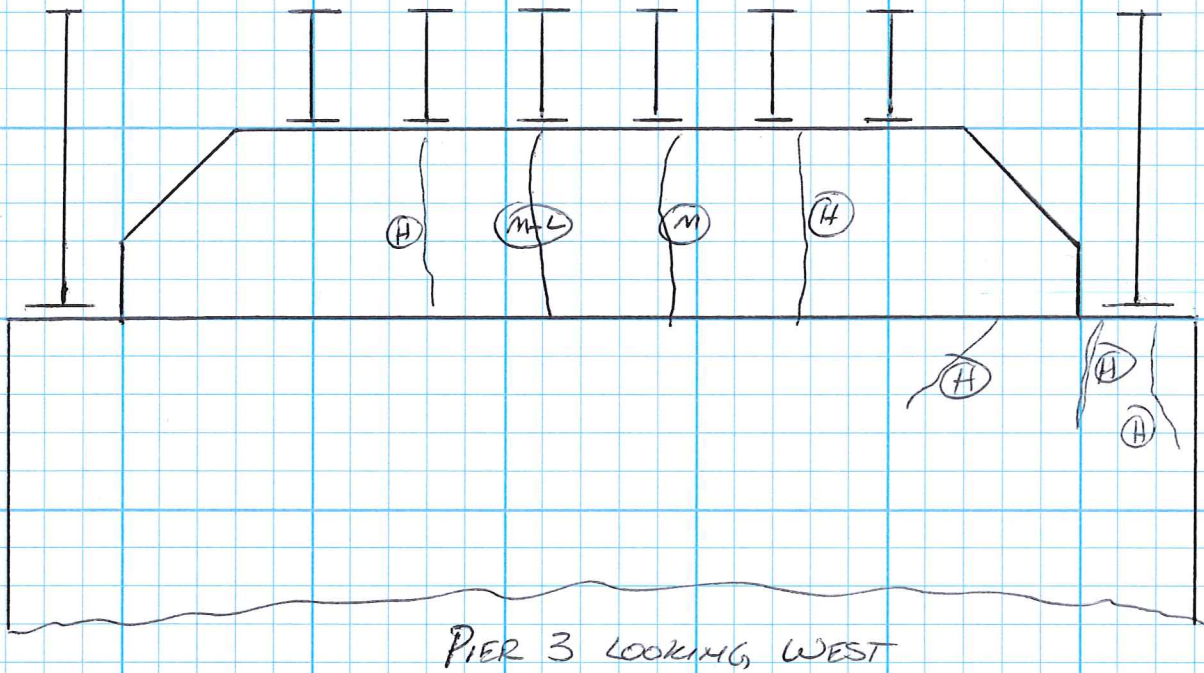
Routine  
Document Comment/Description  
Erosion around NW wing



Non-Image Documents

Type	Document	Document Comment/Description	Attached
Movable Mechanical	b47-040__xmd25.docx	Mechanical, Electrical, Hydraulic and Generator Inspection	
Routine	b47-040_17_Rd1.pdf	Pier cracking hand sketches	X
Routine	b47-040_17_Rd2.pdf	Counterweight Deterioration	X

This page intentionally left blank



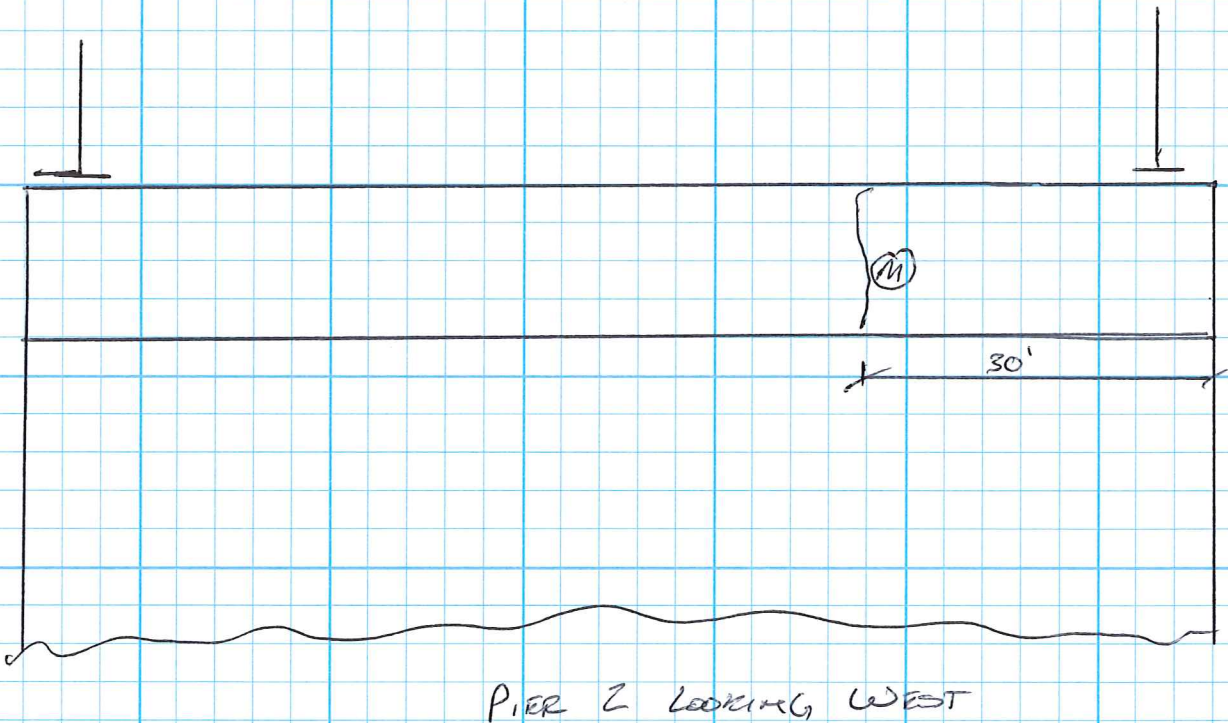
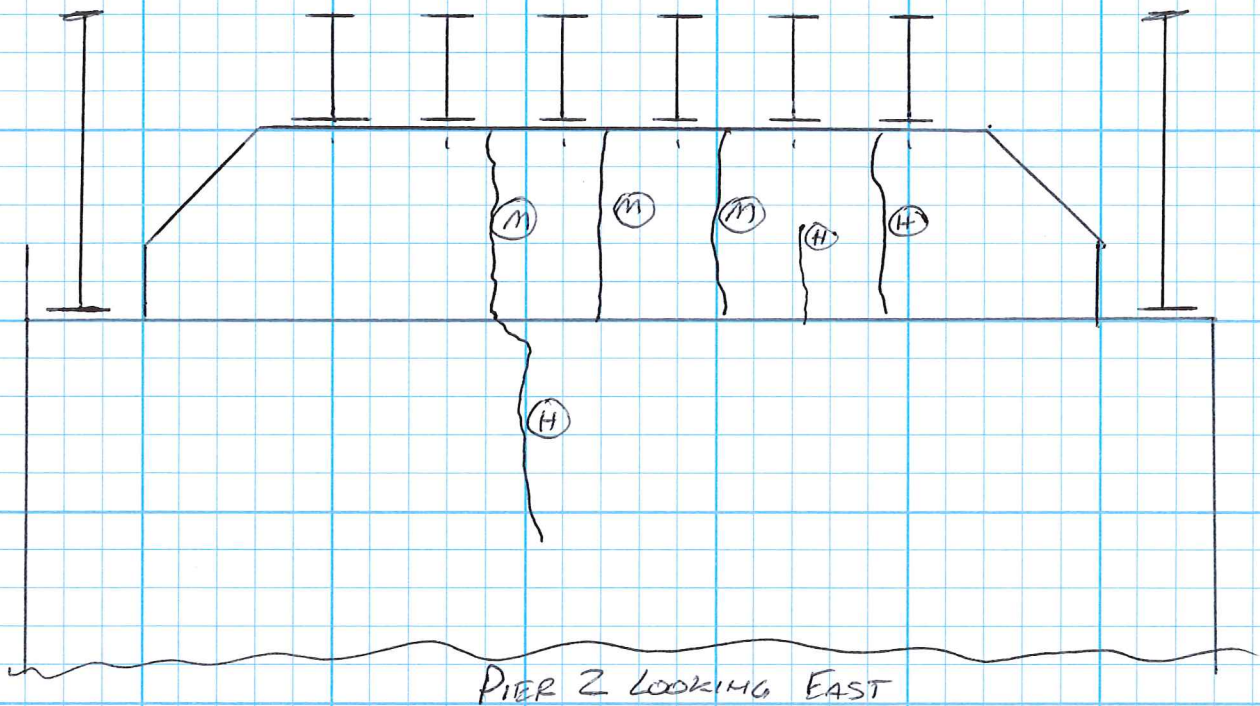
- (H) HAIRLINE
- (M) MEDIUM
- (M-L) MEDIUM TO LARGE
- (L) LARGE

Project/Structure No. B-47-0040	Hwy. No. 10	County PIERCE	Computations by GHH	Date 4/26/10
Name of Road BASCOLE BRIDGE			Checked by	Date
Title/Item INSPECTION SKETCHES			Sheet	Of

# DESIGN/FINAL COMPUTATIONS

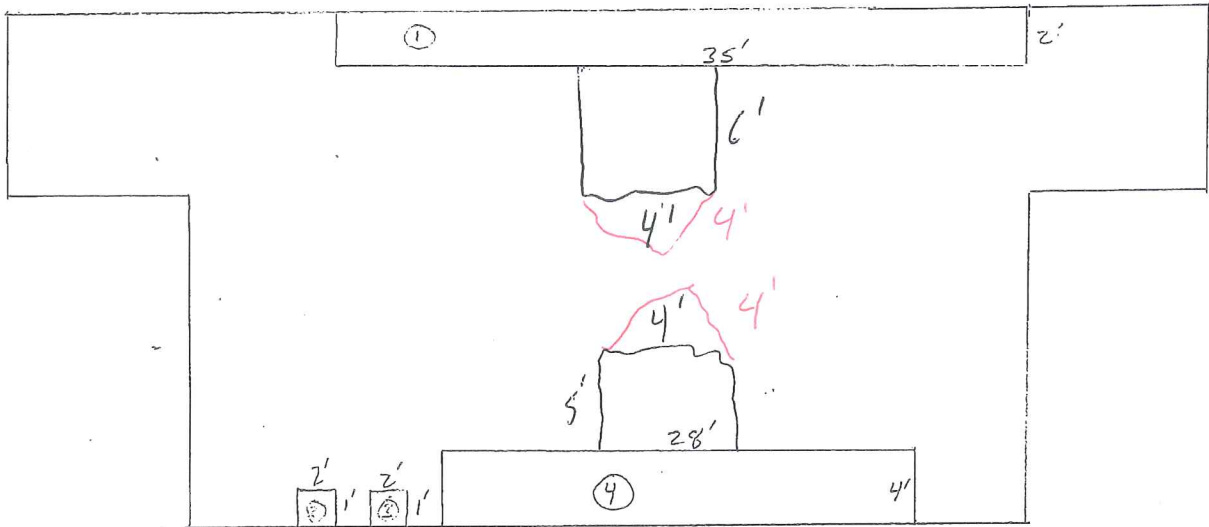
DT2138 2005 (Replaces ED408)

Wisconsin Department of Transportation

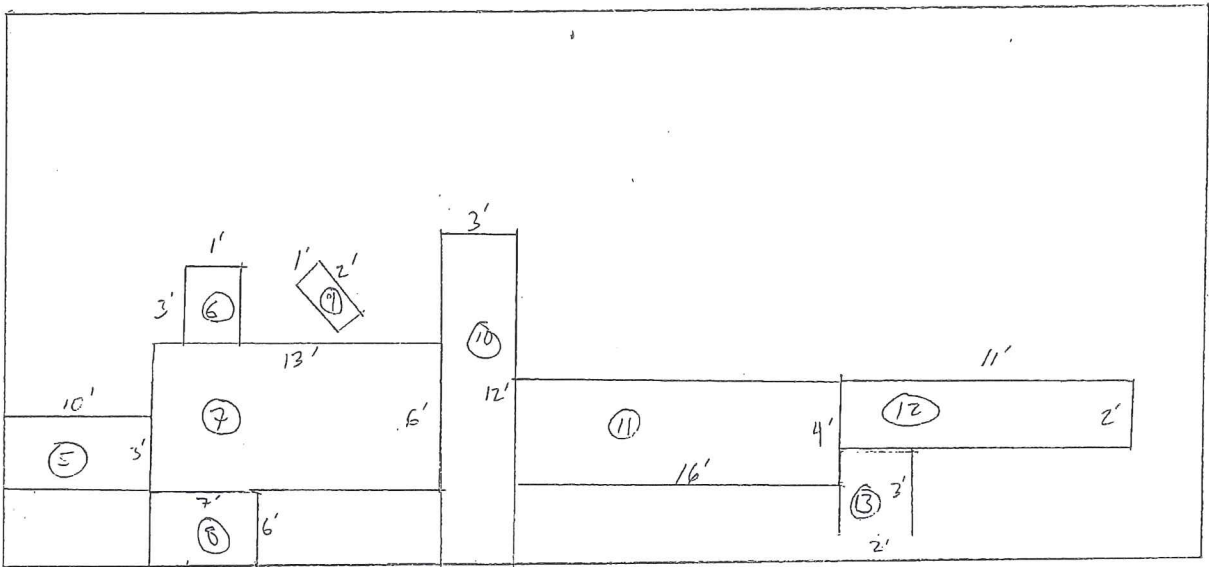


- (H) HAIRLINE
- (M) MEDIUM
- (L) LARGE

Project/Structure No. B-47-0040	Hwy. No. 10	County PIERCE	Computations by GHH	Date 4/26/16
Name of Road BASCOLE BRIDGE			Checked by	Date
Title/Item INSPECTION SKETCHES			Sheet	Of



COUNTER WEIGHT



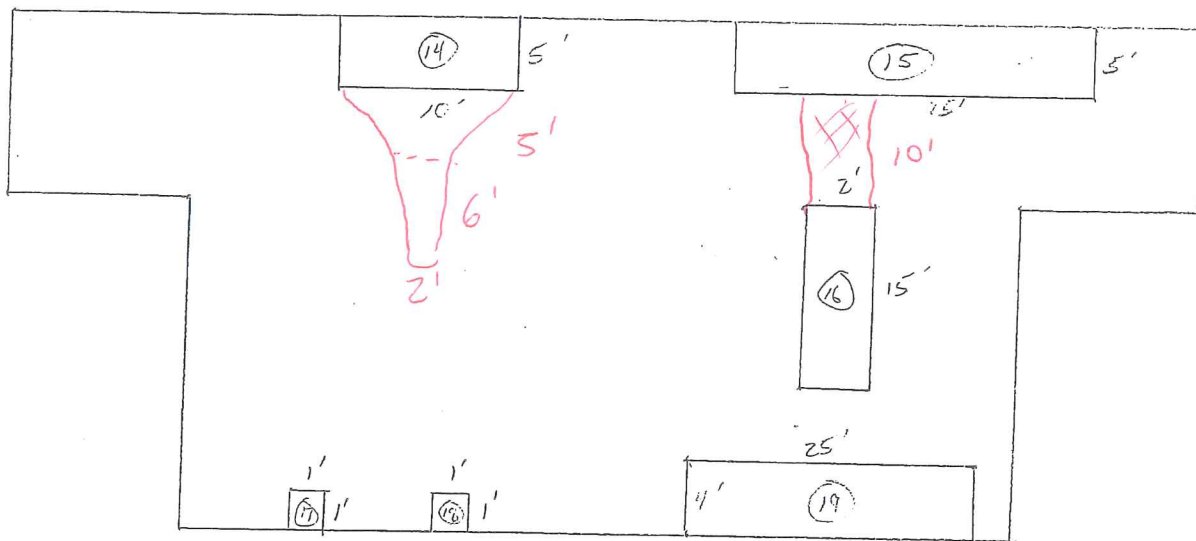
FLOOR

B-47-40  
 RESCOTT BRIDGE  
 CONCRETE SURFACE PLASTER (WE SIDE)

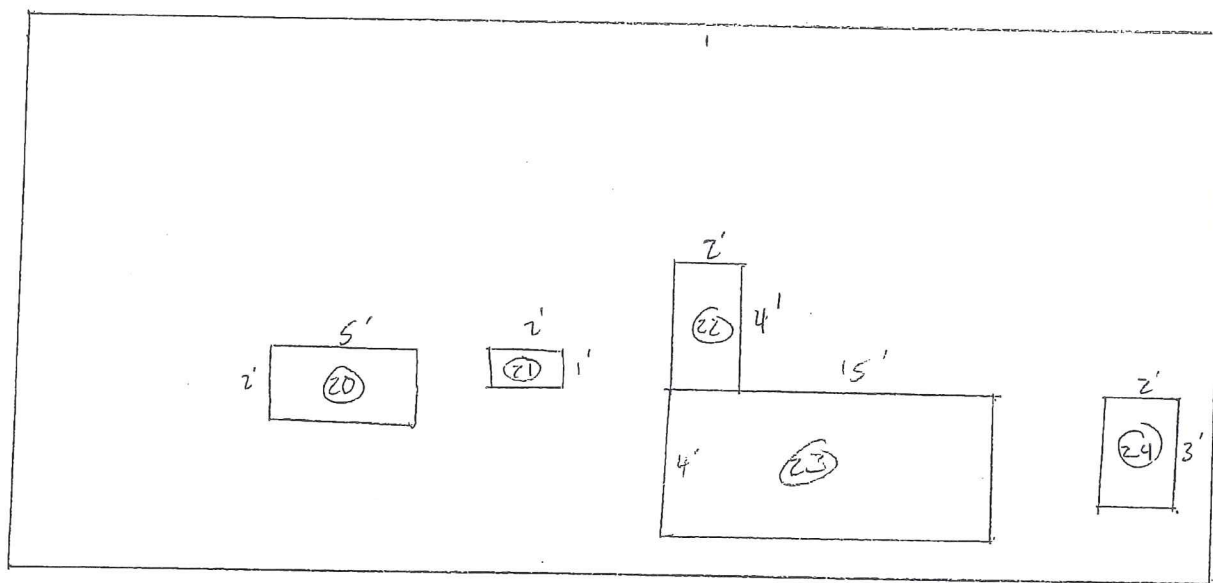
USH 10 PIERCE

KSH

6-24-13



COUNTER WEIGHT



FLOOR

B-47-40  
 PRESCOTT BRIDGE  
 CONCRETE SURFACE REPAIR (MIN SIDE)

USH 10 PIERCE

G-24-13

2 3