STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

Inspection Report for B-16-038-0013

USH 2 over ST LOUIS RIVER

Sep 17,2015

Type	Prior	Frequency (mos)	Performed
Routine	09-17-15	24	X
Fracture Critical	09-17-15	24	X
Interim	09-27-05	0	
Uw-Dive	09-19-12	60	
Uw-Profile		60	
SI&A	08-19-13	48	

Latitude	46°43'53.87"N	Owner	STATE HIGHWAY DEPT
Longitude	92°08'40.03"W	Maintainer	STATE HIGHWAY DEPT

Time Log

Hours	Minutes
4	0

Team members

Bill Kurtz, Ben Koeppen

	Name	Number	Signature	Date
Inspector	Bjorklund, Allan M	8003	Completed by Allan Bjorklund(dotayb)	
Reviewer				

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

Identification & Location

Feature On: USH 2	Section Town Range: S08 T49N R14W	Structure Number: **B-16-038-0013**
Feature Under: ST LOUIS RIVER	County: DOUGLAS(16)	
Location: AT MINNESOTA STATE LINE	Municipality: CITY-SUPERIOR(16281)	Structure Name:

Geometry

measurements in feet, except where noted

Approach Roadway Width: 64	Bridge Roadway Width: 70.0	Total Length: 500.0
Approach Pavement Width: 0	Deck Width: 82.0	Deck Area (sq ft): 41000

Traffic

	Lanes	ADT	ADT year	Traffic Pattern
On	4	17500	2010	TWO WAY TRAFFIC
Under	0			NO TRAFFIC

Capacity

Load Rating

Inventory rating: HS28	Overburden depth (in): 1.5	Last rating date: 04-01-13	Controlling:
Operating rating: HS47	Deck surface material: CONCRETE	Re-rate for capacity (Y/N): Y	Control location:
Posting: MAX PERMIT WEIGHT 350K	Re-rate notes: Concrete Overlay Finished 2015		

Hydraulic

Classification

Scour Critical Code(113): (5) STABLE-WITHIN FOOTING LIMITS	Q100 (ft3/sec): 0	
High water elevation (ft): 0.0	Velocity (ft/sec): 0.0	Sufficieny #: 87.6

Span(s)

Span #	Material	Configuration	Depth (in)	Length (ft)	Main
1	STEEL	TIED ARCH		500.0	Y

Expansion joint(s)

Temperature:

File:	New:

Vertical Clearance

	Measurement file (ft)	File Date	Measurement new (ft)
Highway Minimum Under Cardinal			
Highway Minimum Under Non-Cardinal			
Highway Minimum On	19.9	17-Sep-2015	19.9
Railroad Minimum Under			

Elements

Chk	Element	Defect	Description	UOM	Total	Quantity in Condition State 1	2	3	4
X	**12**		**Reinforced Concrete Deck**	SF	41,268	41,268	0	0	0
			At time of inspection construction project is in progress with the **E**B lanes shutdown.						
		1080	Delamination - Spall - Patched Area	SF		0	0	0	0
		1130	Cracking (RC)	SF		0	0	0	0
	8000		Wearing Surface (Bare)	SF	41,268	41,268	0	0	0
			At time of inspection construction project is in progress with the **E**B lanes shutdown.						
		3210	Debonding/Spall/Patched Area/Pothole	SF		0	0	0	0
		3220	Crack (Wearing Surface)	SF		0	0	0	0
	8522		Coated Reinforcing	SF	41,268	0	0	0	0
			core sample taken for cloride testing mid span EB. Cloride content (LB/CY) is high enough to warrent a NBI 4. Border bridge agreement to place deck at NBI 5. Testing report in files NWR/Superior.						
X	**102**		**Steel Closed Web / Box Girder**	LF	1,000	839	160	1	0
			(see Addendum 2000, 2002, 2004, 2006, 2007, 2009) Standing water 1"+/- on east end of tie-girder from failed caulking. Begun drilling 1" weep holes in floor of tiegirder to let water out. 4-6 holes drilled right side under cables 10 & 11. remaining holes to be drilled week of 9/24/2007. At time of inspection the **paint on the** arch **is complete except f**or **are**as **to be touch**ed **up where hangers were located. Three areas where there's separation** of the **upper backer bar in north** girder **found. The first** is **an 8inch separation of upper inner bar approx. 11ft east of hanger 7. The second is a 6inch separation of upper outer bar approx. 15ft west of hanger 5, this will require removal of approx. 3ft of bar. The third is on the upper inner radius on the west end, for approx. 3ft. These three areas will be ground out under the project by Lunda.**						
		1000	Corrosion	LF		0	160	0	0
			Corrosion p**ainted over** on floor under cables and around the splice plates both inside and on the exterior of the tie girder**s. Some rust staining in north girder under cables and at splice plates. Most likely stains are from blast material that was in the protective covering of the cables that were not completely cleaned up. The paint is intact under the staining on areas checked.**						
		1010	Cracking	LF		0	0	1	0
			In South tie girder on east side of Hanger 2 there is a crack in the upper horizontal stiffener for Floor Beam 3.**This crack has been painted over in 2015, monitor.**						
	8516		Painted Steel	SF	26,000	26,000	0	0	0
			North Girder **painted** in **2014. South G**irder **paint**ed **in 2015.At time** of **inspection all paint completed except for areas of touch up where support hangers are for the SafeSpan.**						
X	**113**		**Steel Stringer**	LF	4,501	4,501	0	0	0
			(see Addendum 2000, 2002, 2004, 2006, 2007, 2009, 2011)Est. 28135SF for paint.						
		1000	Corrosion	LF		0	0	0	0
X	**141**		**Steel Arch**	LF	1,000	1,000	0	0	0
			(see Addendum 2000, 2002, 2004, 2006, 2007, 2009, 2011)						
		1000	Corrosion	LF		0	0	0	0
		1010	Cracking	LF		0	0	0	0
	8516		Painted Steel	SF	105,300	105,300	0	0	0
			At time of inspection **the paint on the arch is complete except for touch up of enclosure anchor areas.**						

X	**148**		**Steel Secondary Cables**	EA	44	44	0	0	0
			(see addendum 2000,2002,2004,2006, 2007, 2009, 2011) At time of inspection **all** shims on the **lower anchors** have been replaced. **The application of the Briden Metalcoat as well as the rubber seal and caulking of the covers is completed on the north cables. During inspection it rained and the north cables were dry in the tie girder except for the east cable of #4 hanger which had a small leak.**						
		1000	Corrosion	EA		0	0	0	0
			Some rust staining along lower anchors. Most likely from abrasive blast material that was caught in protective covering of the **cable during paint.**						
X	**152**		**Steel Floor Beam**	LF	1,131	1,131	0	0	0
			(see Addendum 2000, 2002, 2004, 2006, 2007, 2009, 2011) Est. 22744SF for paint.						
		1000	Corrosion	LF		0	0	0	0
X	**210**		**Reinforced Concrete Pier Wall**	LF	226	26	185	15	0
		1080	Delamination - Spall - Patched Area	LF		0	0	15	0
			Pier 30 has a shallow rebar on the east side that is rusting and exposed. 2011 on vertical SE corner of Pier 30 spall has exposed rebar midpoint of main body heavy rust on rebar with cracking and rust staining below 20 LF+/- Pier 29 south end spall in top of bumper & bottom of main body 100" up from water SW corner. crack on top P 30 bay 6 and spall P 30 bay 5 next to bearing pad 2013.						
		1130	Cracking (RC)	LF		0	0	0	0
		1190	Abrasion-Wear (PSC-RC)	LF		0	185	0	0
			Abrasion around base of both Piers 29 and 30.						
X	**303**		**Modular Joint**	LF	82	82	0	0	0
		2310	Leakage, Seal Adhesion, Damage,Cracking	LF		0	0	0	0
X	**311**		**Moveable Bearing**	EA	11	11	0	0	0
		1000	Corrosion	EA		0	0	0	0
		2210	Movement	EA		0	0	0	0
		2220	Alignment	EA		0	0	0	0
X	**313**		**Fixed Bearing**	EA	2	2	0	0	0
		1000	Corrosion	EA		0	0	0	0
X	**330**		**Metal Bridge Rail**	LF	1,500	1,500	0	0	0
			Metal rail on top of two exterior concrete parapets and on exterior of pedestrian sidewalk.						
		1000	Corrosion	LF		0	0	0	0
		1900	Distortion	LF		0	0	0	0

X	**331**		**Reinforced Concrete Bridge Rail**	LF	1,500	1,500	0	0	0
		1080	Delamination - Spall - Patched Area	LF		0	0	0	0
		1130	Cracking (RC)	LF		0	0	0	0

Assessments

Chk	Element	Defect	Description	UOM	Total	Quantity in Condition State 1	2	3	4
X	**9004**		**Drainage - Deck**	EA	4	4	0	0	0
X	**9009**		**Sidewalk**	EA	500	500	0	0	0
X	**9167**		**Steel Diaphragm**	EA	224	224	0	0	0
X	**9169**		**Lateral Bracing**	EA	24	24	0	0	0
X	**9290**		**Dolphin or Fender System**	EA	4	4	0	0	0
			Dolphins sheet piling pitted 1/16". There is a study concerning an accelerated corrosion process in the St. Louis Bay which is applicable to these dolphins. Continue to monitor.						

NBI Ratings

	File	New
Deck	5	7
Superstructure	7	7
Substructure	7	7
Culvert	N	N
Channel	8	8
Waterway	8	8

Structure Specific Notes

At time of inspection the construction project 8680-04-71 was underway on the closed **ea**st bound lanes.

Inspection Specific Notes

Wisdot crews begain drilling 1" holes in tiegirder floors but had to stop due to equipment problems and need to ventalate girders. Is on our list of things to do. Holes are 1" diameter located two inches out from diaphragms under cable anchors in center of box. One on each side of diaphragms. Plan to drill 60 holes. Holes to be drilled 9/24/2007 week.
Inspection done 8/17 thru 8/30/2007. Broken red nav light on SE dolphin, electrician notified.
Dolphins sheet piling pitted 1/16".
Fracture critical inspection performed by Joel Alsum. Copy of supplemental on file in NWR/ Superior office.
Underwater Bridge Inspection Report by Collins Engineers, Inc. for Mndot on file in bridge file Superior office NWR. Entered for date only by DJH.
Inspected by MNDOT in 2008 file in bridge office Superior NWR entered for date by DJH.
(09) Inspected by DJH etal between 8-24-2009 and 9-4-2009. Fracture Critical inspection by Joel Alsum. Copy of supplemental on file in NWR/Superior office. Fracture Critical Inspection by Joel Alsum, copy of supplemental on file in Superior 0ffice.
Inspected 2010 by Mndot, Gary Elmquist et al. Signed copy of inspection in bridge file Superior office and attached to this subsection. Entered for date only by D. Harrington
Inspected by DJH etal between 8/22/2011and 8/31/2011. Fracture crictical by Al Bjorklund and Daniel Harrington 8/23/2011.
Inspected 2012 by DJH etal between 8/15/12 and 8/30/12. Fracture Critical inspection by DJH and Al Bjorklund PE 8/20/2012.Inspected by DJH etal between 8/12/13 and 8/29/13. Fracture Critical inspection by DJH and Al Bjorklund PE 8/19/13.
Overlay and Paint project scheduled for 2014.
Note: safety railing on pier 30 has section loss on wire rope at location near ladder south side with broken strands, scheduled for replacement in 2014. Use Caution!

Inspector Site-Specific Safety Considerations

Ship traffic, Waves/Wind

Structure Inspection Procedures

**Access was achieved via contractors lane closure and access ladders to SafeSpan under entire center span.
A flashlight and gas meter was used to enter interior of the tie girder and upper arch.**

Special Requirements

	Chk	Comments
Traffic Control		
ReachAll Vehicle		
Access Equipment		
Other		

Construction History

Year	Work Performed	FOS id
2011	MATERIALS TESTING	
9999	NOT BUILT	8680-04-71
1984	NEW DECK	8680-01-75
1984	NEW SUPERSTRUCTURE	8680-01-83
1983	NEW STRUCTURE	8680-01-78

Maintenance Items History

Item	Recommended by	Status	Status change	Year completed

Maintenance Items

Item	Priority	Recommended by	Status	Status change

Underwater Probe Form
B-16-038-0013

General Site Conditions - Scour

This bridge is on a 4 year dive schedule per agreement with MNDOT Dist 1.

General Site Conditions - Embankment Erosion/Conditions

Substructure Notes

Unit	Max Water Depth(ft)	Mode	Notes
Cardinal Abutment		Wade	
Pier 1		Wade	Boat required for access to lower pier 29 and fender system.
Pier 2		Wade	Boat required for access to lower pier 30 and fender system.
Non Cardinal Abutment		Wade	

FractureCritical

Document Comment/Description

Crack located on upper horizontal stiffener for FB 3 on east side of hanger 2 in south tie girder.

FractureCritical

Document Comment/Description

Close up of crack in south tie girder on east side of hanger 2.

FractureCritical

Document Comment/Description

Crack located on upper horizontal stiffener for FB 3 on east side of hanger 2 in south tie girder. After paint 2015. Note protective covering of cable in place yet.

FractureCritical

Document Comment/Description

Close up of crack in south tie girder on east side of hanger 2. After paint 2015. Monitor.

FractureCritical

Document Comment/Description

Typical tie girder access door modifications. Note larger "roof" over both the door and the lock.

FractureCritical

Document Comment/Description

Backer bar separation of 8 inches on upper inner corner approx. 11ft east of hanger #7 north.

FractureCritical

Document Comment/Description

Backer bar speration of 6 inches at upper exterior corner approx. 15ft west of hanger #5 north.
Note the two areas previously ground out. Recommend removal between these two areas, approx. 3 ft.

FractureCritical

Document Comment/Description

Backer bar separation, approx. 3ft., in north tie girder at the west entry inside edge.

FractureCritical

Document Comment/Description

North tie girder #4 hanger east side small leak. Note rust staining. Appears to be from abrasive blast media which fell from the protective coating around the cable during painting operations.

FractureCritical

Document Comment/Description

N 4 E. Note rust staining. Where checked the paint was intact under staining. This was the only cable were leaking was noted on the north girder.

FractureCritical

Document Comment/Description

North field splice #2. Staining on floor at joint.

FractureCritical

Document Comment/Description

Typical caulking of cable through cover plate on north tie girder. Caulking to hold in rubber sealer.

FractureCritical

Document Comment/Description

Typical cover plate on north tie girder. Cables are coated with Briden Metalcoat. A rubber compound is placed in the gap around the cable through the cover. The cover is caulked at all joints.

FractureCritical

Document Comment/Description

Typical exterior. Note painted over section loss adjacent to field splice. Also, note supports for Safe Span decking, which requires touch up to the paint.

FractureCritical

Document Comment/Description

Typical Bay.