UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 94246

ABANDONED RAILROAD (PEDESTRIAN BRIDGE)

OVER THE

MISSISSIPPI RIVER

HENNEPIN COUNTY, CITY OF MINNEAPOLIS

OCTOBER 29, 2012

PREPARED FOR THE

MINNESOTA DEPARTMENT OF TRANSPORTATION

BY

COLLINS ENGINEERS, INC.

JOB NO. 7423

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure unit inspected at Bridge No. 94246, Pier 4, was found to be in satisfactory condition below water with no defects of structural significance. Overall, the conditions at the bridge have not changed appreciably since the last inspection. The steel sheeting encasement exhibited moderate surface corrosion with no appreciable loss of section apart from random rust nodules and minor pitting. The timber fender system protecting Pier 4 was in fair to poor condition with some areas of failed connections, missing members, and impact damage. The channel bottom was stable with no evidence of significant scour or appreciable changes since the previous inspection.

INSPECTION FINDINGS:

(A) The channel bottom material consisted of sand, gravel and areas of riprap, 3 feet diameter and smaller, with 2 inches of probe rod penetration.

(B) The steel sheeting encasing the concrete pier below water displayed a 1/8 inch layer of light to moderate corrosion, random 1 inch diameter rust nodules, and random 1/8 inch deep pitting.

(C) Fender system timber whalers were in fair to poor condition with some areas of decay and rot at the waterline and several failed connections. Moderate impact damage was evident in several locations around the pier perimeter.

RECOMMENDATIONS:

(A) Depending on the proposed future use of the structure, consideration can be given to replacing the missing, deteriorated and damaged timber fender components during normal maintenance operations.

(B) Reinspect the submerged substructure unit at the normal maximum recommended (NBIS) interval of sixty (60) months.

Respectfully submitted,

Inspection Team Leader:
WSB and Associates

Barritt Lovelace
Registered Professional Engineer
Bridge Safety Inspection Team Leader

PROFESSIONAL ENGINEER
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.
Daniel G. Stromberg
Date 6/30/14 License # 21491

COLLINS ENGINEERS, INC.

Daniel G. Stromberg
Registered Professional
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 94246

Feature Crossed: Mississippi River

Feature Carried: Abandoned Railroad

Location: Hennepin County, City of Minneapolis

Bridge Description: The superstructure consists of a steel deck truss over seven spans. The superstructure is supported on reinforced concrete abutments and piers. Plans indicate that the pier and abutment footings are spread footings bearing on sandstone. The abutments and piers are numbered 1 through 8 from east to west.

2. INSPECTION DATA

Professional Engineer/Team Leader: Barritt R. Lovelace, P.E. (WSB)

Dive Team: Marc B. Parker, Lukas Janulis, P.E.

Date: October 29, 2012

Weather Conditions: Cloudy 40^{o} F

Underwater Visibility: 0.5 Foot

Waterway Velocity: 0.5 ft/sec

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Pier 4

General Shape: The pier consists of a rectangular reinforced concrete shaft encased in an oblong rectangular steel sheet pile encasement (perimeter wall construction) filled with concrete. The sheet piling was faced with a timber fender system above the waterline.

Maximum Water Depth at Substructure Inspected: Approximately 16.2 feet.

4. WATERLINE DATUM

Water Level Reference: The top of the steel sheeting pile encasement on the downstream end of Pier 4.

Water Surface: The waterline was approximately 11.5 feet below reference.
Waterline Elevation = 725.5.

5. NBIS CODING INFORMATION (Minnesota specific codes are used for 92B and 113)

Item 60: Substructure: Code 6

Item 61: Channel and Channel Protection: Code 7

Item 92B: Underwater Inspection: Code B/10/12

Item 113: Scour Critical Bridges: Code K

Bridge is scour critical because abutment or pier foundation is rated as unstable due to observed scour at bridge site.

_____ Yes X No

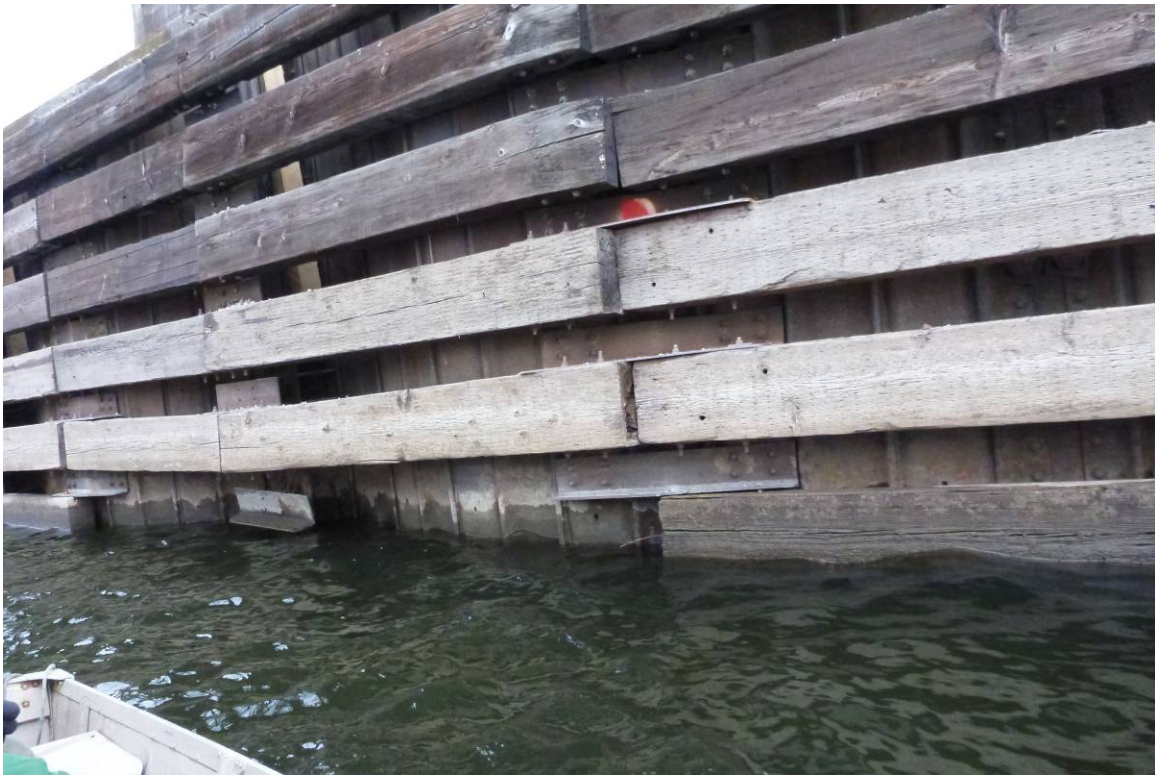
6. STRUCTURAL ELEMENT CONDITION RATING

Item #	Element Description	Quantity	Unit	Conditions				
				1	2	3	4	5
361	Scour Smart Flag	1	EA	1				
988	(Miscellaneous) Sheet Piling and Fender System	1	EA		1			
985	Slope and Slope Protection	1	EA	1				

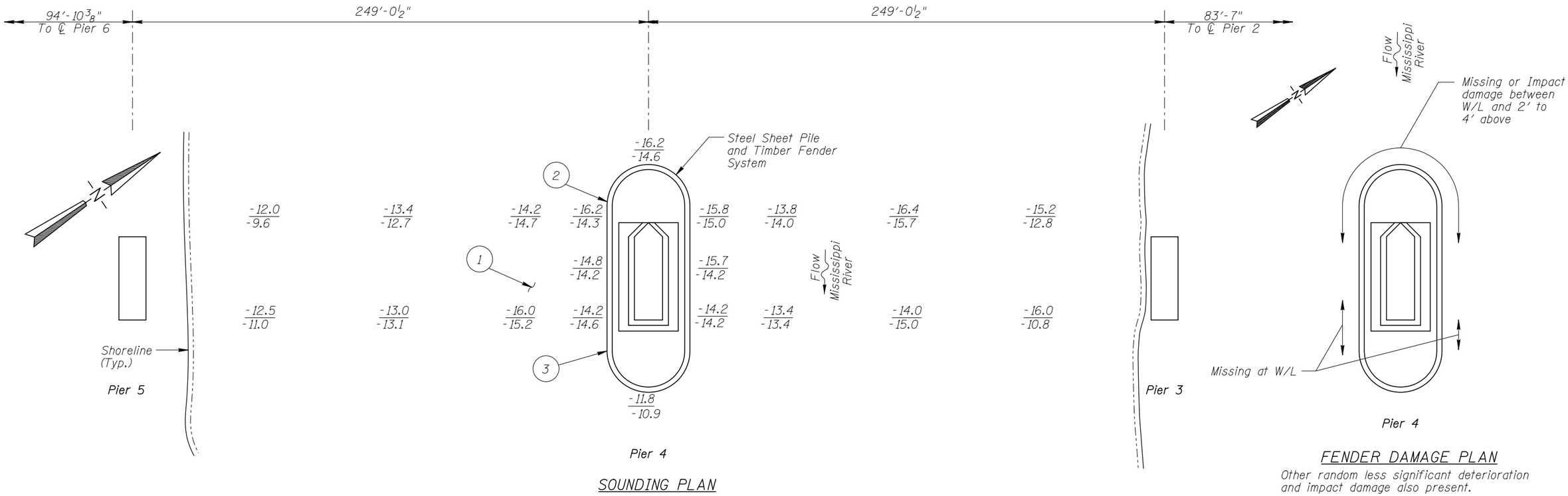
Photograph 1. View of Upstream End of Pier 4, Looking Southwest.

Photograph 2. View of Downstream End of Pier 4, Looking Northeast.

Photograph 3. View of the Damaged Fender System at Upstream Nose of Pier 4, Looking West.



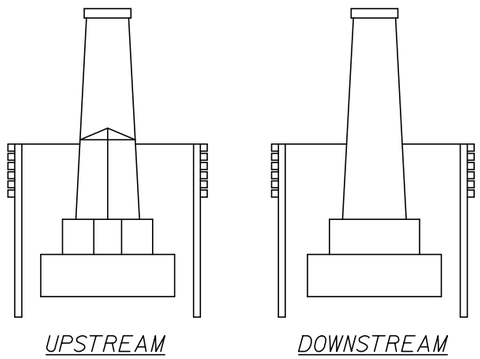
Photograph 4. View of the Damaged Fender System at Downstream Half of Pier 4, Looking West.



SOUNDING PLAN

FENDER DAMAGE PLAN

Other random less significant deterioration and impact damage also present.



TYPICAL END VIEW OF PIER 4

INSPECTION NOTES:

1. The channel bottom material consisted of sand, gravel and areas of riprap, 3 feet diameter and smaller, allowing 2 inches of probe rod penetration.
2. The steel sheeting encasing the concrete pier below water displayed a 1/8 inch layer of light to moderate corrosion, random 1 inch diameter rust nodules, and random 1/8 inch deep pitting.
3. Fender system timber whalers were in fair to poor condition with some areas of decay and rot at the waterline and several failed connections. Moderate impact damage was evident in several locations around the pier perimeter. (See Fender Damage Plan).

GENERAL NOTES:

1. Pier 4 was inspected underwater.
2. At the time of inspection on October 29, 2012 the waterline was located approximately 11.5 feet below the top of the steel sheet pile fender system at the downstream end of Pier 4. This corresponds to a waterline elevation of 725.5.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.
4. Soundings were taken parallel to the bridge at 1/4 point intervals between the substructure units.

Legend

-2.0	Sounding Depth (10/29/12)
-5.2	Sounding Depth (8/30/07)

Note

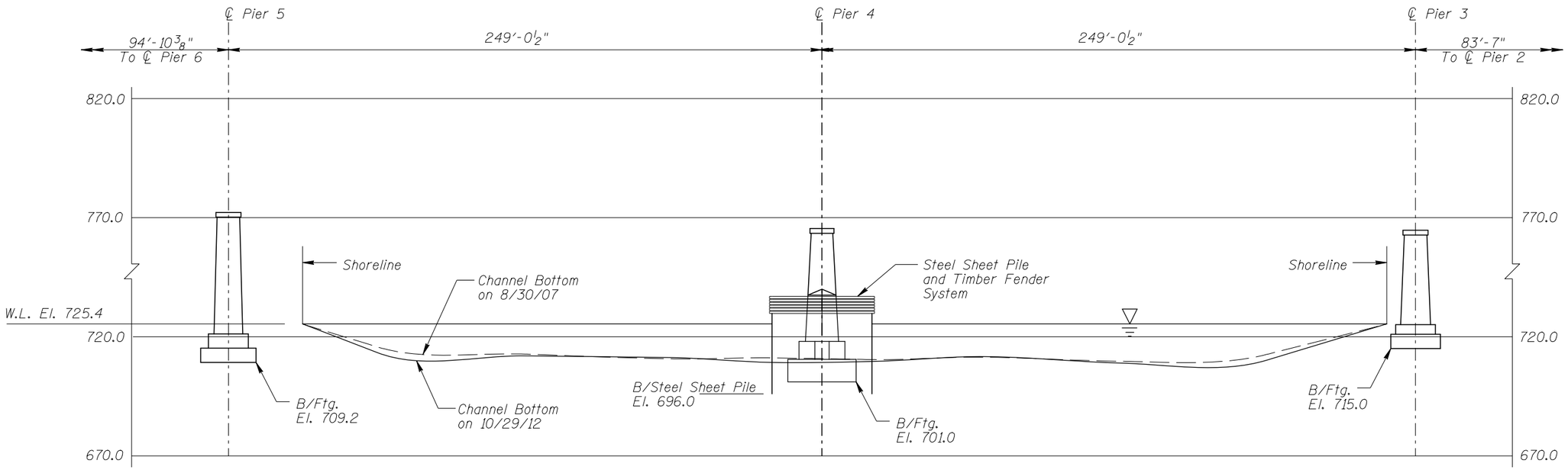
All soundings based on 2012 waterline location.

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

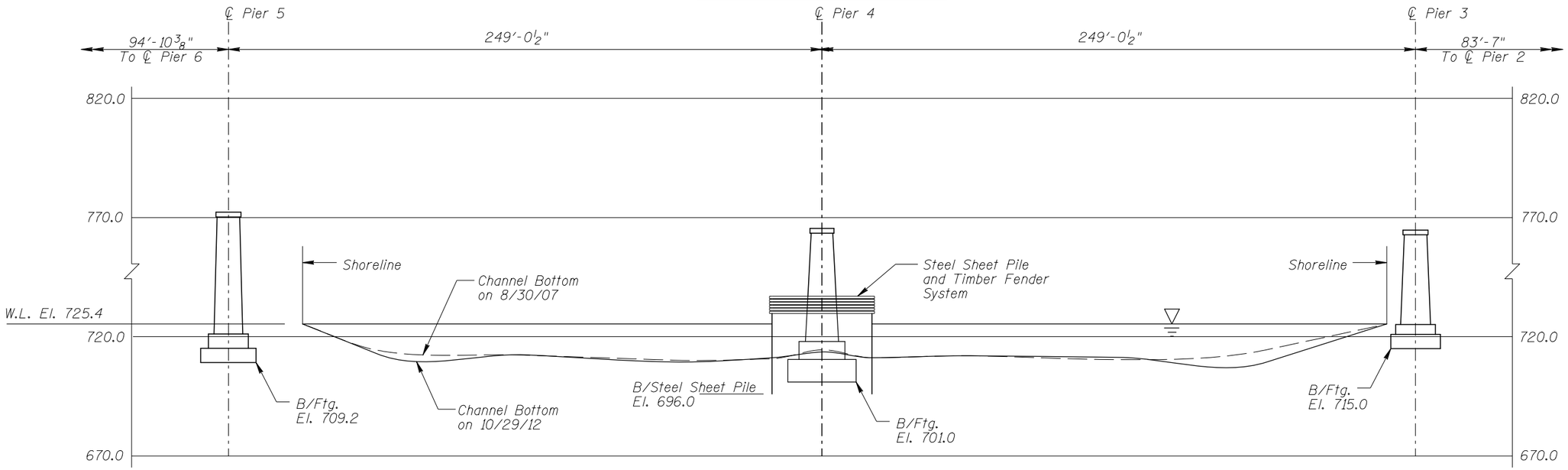
STRUCTURE NO. 94246
OVER THE MISSISSIPPI RIVER
HENNEPIN COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: CRE	COLLINS ENGINEERS, INC. 123 North Wacker Drive Suite 900 Chicago, IL 60606 (312) 704-9500 www.collinsengr.com ILLINOIS PROFESSIONAL DESIGN FIRM LICENSE NO. 184-000893	Date: JAN., 2013
Checked By: LJ		Scale: NTS
Code: 742394246		Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:

Refer to Figure 1 for General Notes.

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

STRUCTURE NO. 94246
OVER THE MISSISSIPPI RIVER
HENNEPIN COUNTY

UPSTREAM AND DOWNSTREAM FASCIA PROFILES

Drawn By: CRE	COLLINS ENGINEERS, INC. 123 North Wacker Drive Suite 900 Chicago, IL 60606 (312) 704-0200 www.collinsengr.com	Date: JAN., 2013
Checked By: LJ	ILLINOIS PROFESSIONAL DESIGN FIRM LICENSE NO. 184-003993	Scale: 1"=50'
Code: 742394246		Figure No.: 2

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES
DAILY DIVING REPORT

INSPECTORS: Collins Engineers, Inc. DATE: October 29, 2012
ON-SITE TEAM LEADER: Barritt R. Lovelace, P.E. (WSB)
BRIDGE NO: 94246 WEATHER: Cloudy 40° F
WATERWAY CROSSED: Mississippi River
DIVING OPERATION: _____ SCUBA X SURFACE SUPPLIED AIR
_____ OTHER
PERSONNEL: Marc B. Parker, Lukas Janulis, P.E.
EQUIPMENT: Commercial Scuba, U/W Light, Scraper, Probe Rod, Boat, Camera, Fathometer.
TIME IN WATER: 10:50 A.M.
TIME OUT OF WATER: 11:45 A.M.
WATERWAY DATA: VELOCITY 0.5 ft/sec
VISIBILITY 0.5 foot
DEPTH 16.2 feet maximum at Pier 4
ELEMENTS INSPECTED: Pier 4
REMARKS: Overall, the conditions at the bridge have not changed appreciably since the last inspection. The steel sheeting encasement exhibited moderate surface corrosion with no appreciable loss of section. The timber fender system protecting Pier 4 was in fair to poor condition with some areas of failed connections, missing members, and impact damage. The channel bottom was stable with no evidence of significant scour or appreciable changes since the previous inspection.

FURTHER ACTION NEEDED: _____ YES X (*) NO

* Depending on the proposed future use of the structure, consideration can be given to replacing the missing, deteriorated and damaged timber fender components during normal maintenance operations.

Reinspect the submerged substructure unit at the normal maximum recommended (NBIS) interval of sixty (60) months.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 94246
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Barritt Lovelace, P.E. (WSB)
WATERWAY CROSSED Mississippi River

INSPECTION DATE October 29, 2012

NOTE: USE ALL APPLICABLE CONDITION DEFINITIONS AS DEFINED IN THE MINNESOTA RECORDING AND CODING GUIDE INCLUDING GENERAL, SUBSTRUCTURE, CHANNEL AND PROTECTION, AND CULVERTS AND WALL DEFINITIONS TO COMPLETE THIS FORM.

CONDITION RATING

			SUBSTRUCTURE						CHANNEL					GENERAL					
UNIT REFERENCE NO.		MAXIMUM DEPTH OF WATER	SHEET PILING	COLUMNS, SHAFTS, OR FACES*	FOOTINGS	DISPLACEMENT	OTHER (TIMBER FENDERS)	OVERALL SUBSTRUCTURE CONDITION CODE*	SCOUR	EMBANKMENT EROSION	EMBANKMENT PROTECTION	OTHER (DRIFT/DEBRIS)	OVERALL CHANNEL & PROTECTION CONDITION	CONCRETE	STEEL	TIMBER	LOSS OF SECTION	PREVIOUS REPAIR OR MAINTENANCE	OTHER
	UNIT DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Pier 4	16.2’	6	N	N	9	5	6	N	8	7	N	7	N	7	5	7	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the conditions at the bridge have not changed appreciably since the last inspection. The steel sheeting encasement exhibited moderate surface corrosion with no appreciable loss of section. The timber fender system protecting Pier 4 was in fair to poor condition with some areas of failed connections, missing members, and impact damage. The channel bottom was stable with no evidence of significant scour or appreciable changes since the previous inspection.

NOTES: ATTACH SKETCHES AS NEEDED, IDENTIFY REMARK BY REFERRING TO UNIT REFERENCE NO. AND REMARK NO.
USE GENERAL SECTION TO IDENTIFY OVERALL PRESENCE OF SPALLS, CRACKS, CORROSION, ETC.