

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 27B60

LOWRY AVENUE

OVER THE

THE MISSISSIPPI RIVER

HENNEPIN COUNTY



OCTOBER 28, 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 units inspected at Bridge No. 27B60, West and East Piers, were found to be in very good condition with no defects of structural significance observed. Moderate to heavy timber debris was accumulated along the West Pier. The channel bottom appeared stable with no significant scour.

INSPECTION FINDINGS:

- (A) The channel bottom material consisted of sandy gravel and cobbles allowing up to 4 inches of probe rod penetration. Scattered construction debris was observed on the channel bottom around both piers.
- (B) Moderate to heavy accumulation of timber debris, consisting of up to 1 foot diameter pieces and timber piling, was observed along the west face of the downstream cell of the West Pier extending from the channel bottom to the waterline.
- (C) Concrete surfaces were smooth and sound. The steel sheet piling of the cofferdam was in like-new condition and exhibited no appreciable corrosion.

RECOMMENDATIONS:

- (A) Monitor accumulation of timber debris during future inspections, and if found to be increasing to an excessive extent, removal operations may become warranted at that time.

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

Inspection Team Leader:

WSB and Associates



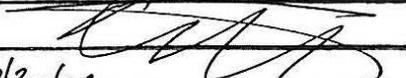
Barritt Lovelace
Registered Professional Engineer
Bridge Safety Inspection Team Leader

Respectfully submitted,

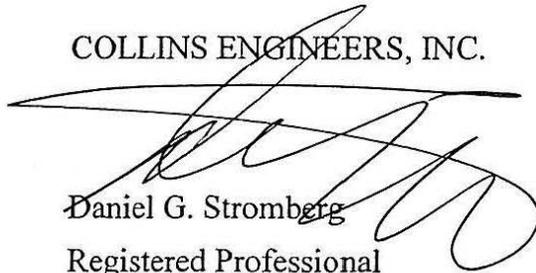
PROFESSIONAL ENGINEER

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: 27B60

Feature Crossed: Mississippi River

Feature Carried: Lowry Avenue

Location: Hennepin County

Bridge Description: The bridge superstructure consists of multiple spans with the main span an arch bridge suspending a concrete girder deck system. The approach spans over the waterway are concrete box girders. The superstructure is supported by reinforced concrete abutments and the piers within the waterway are comprised of reinforced concrete caissons.

2. INSPECTION DATA

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

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

Date: October 28, 2012

Weather Conditions: Cloudy, 40°F

Underwater Visibility: 3.0 feet

Waterway Velocity: None

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: West and East Piers

General Shape: The West and East Piers are two circular reinforced concrete caissons.

Maximum Water Depth at Substructure Inspected: Approximately 13.9 feet.

4. WATERLINE DATUM

Water Level Reference: The top of the upstream cell of West Pier.

Water Surface: Waterline located 7.8 feet from Water Level Reference.

Assumed Waterline Elevation = 92.2 feet

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

Item 60: Substructure: Code 8

Item 61: Channel and Channel Protection: Code 6

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

Item 113: Scour Critical Bridges: Code F/12

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
205	Concrete Columns (Caisson)	4	EA	4				
985	Slopes	1	EA	1				



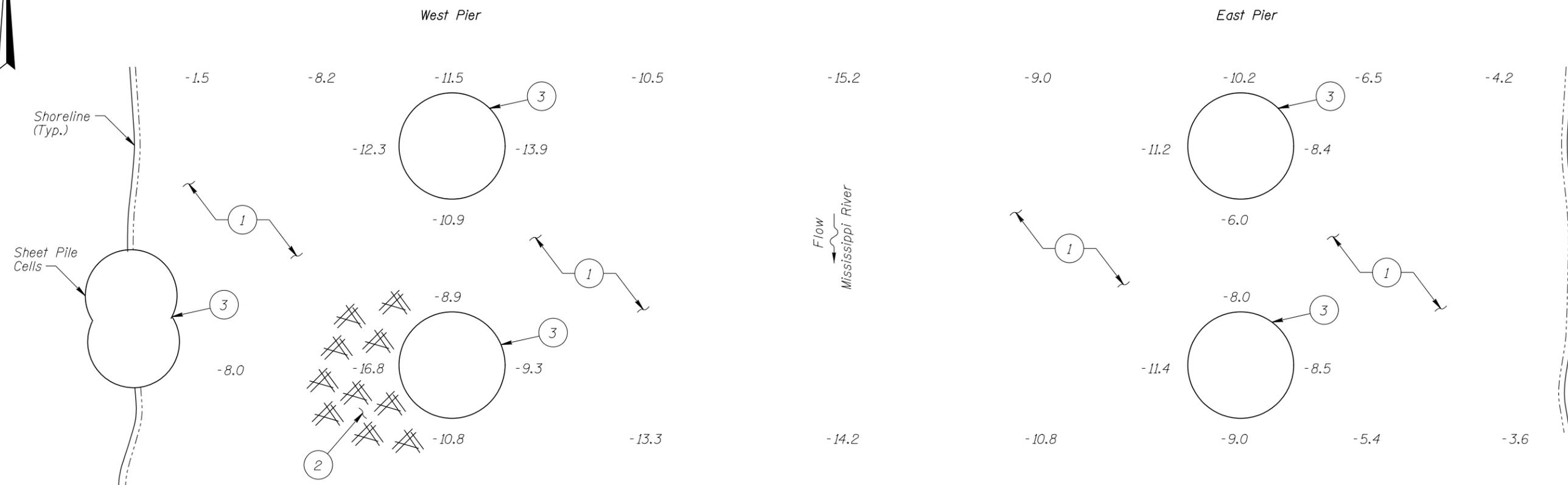
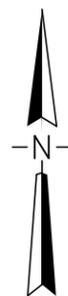
Photograph 1. Overall View of the Structure, Looking North.



Photograph 2. View of East Pier, Looking Northeast.



Photograph 3. View of West Pier, Looking Southwest.



SOUNDING PLAN

Legend

- 4.8 Sounding Depth (10/28/12)
- Timber debris

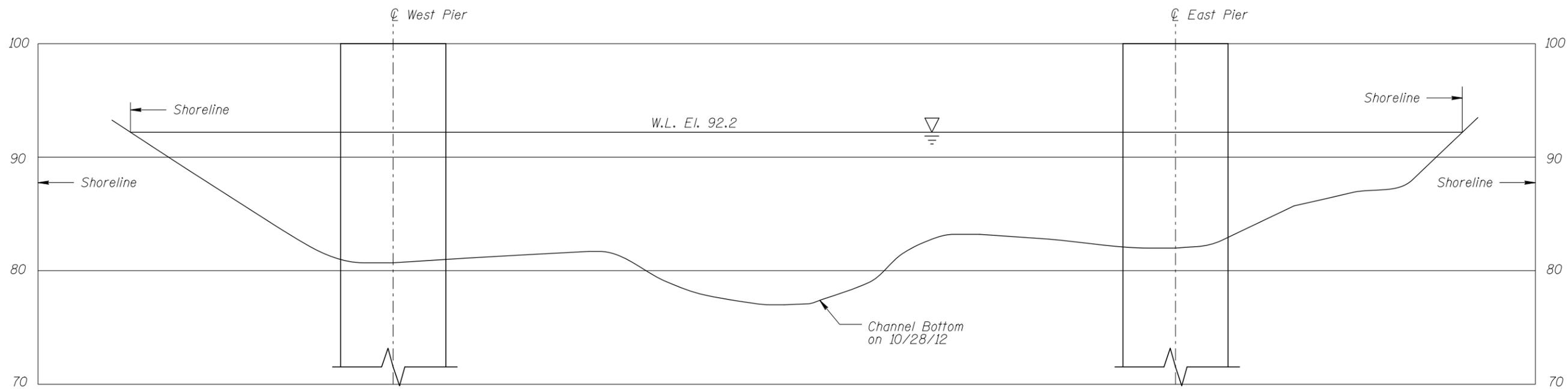
INSPECTION NOTES:

- 1 The channel bottom material consisted of sandy gravel and cobbles allowing up to 4 inches of probe rod penetration. Scattered construction debris was observed on the channel bottom around both piers.
- 2 A moderate to heavy accumulation of timber debris, consisting of up to 12 inches diameter logs and timber piling, was observed along the west face of the downstream cell of the West Pier, extending from the channel bottom to the waterline.
- 3 Concrete surfaces were smooth and sound. The steel sheet piling of the cofferdam was in like-new condition and exhibited no appreciable corrosion.

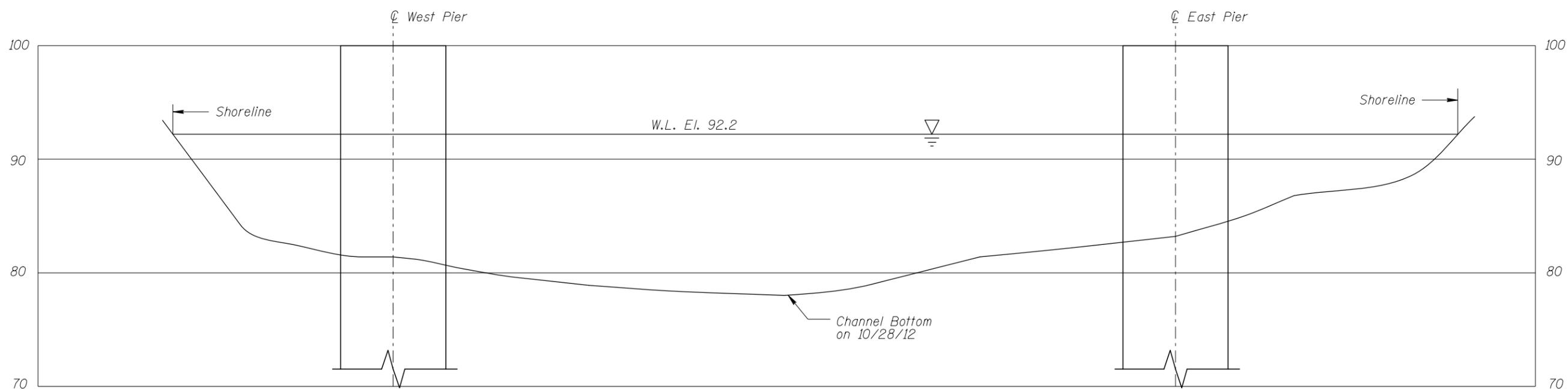
GENERAL NOTES:

1. The East and West Piers were inspected underwater.
2. At the time of inspection on October 28, 2012, the waterline was located approximately 7.8 feet below the top of the upstream cell of the West Pier. Since design drawings were not available a reference elevation of 100.0 was assumed. Based on the assumed reference the waterline elevation was 92.2 feet.
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.

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 27B60 OVER THE MISSISSIPPI RIVER HENNEPIN COUNTY		
INSPECTION AND SOUNDING PLAN		
Drawn By: JTF	COLLINS ENGINEERS <small>123 North Wacker Drive Suite 900 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Date: OCT. 2012
Checked By: LJ		Scale: NTS
Code: 742327B60		Figure No.: I



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note: _____
 Refer to Figure 1 for General Notes.

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 27B60 OVER THE MISSISSIPPI RIVER HENNEPIN COUNTY		
UPSTREAM AND DOWNSTREAM FASCIA PROFILES		
Drawn By: JTF	COLLINS ENGINEERS <small>123 North Wacker Drive Suite 900 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Date: OCT. 2012
Checked By: LJ		Scale: NTS
Code: 742327B60		Figure No.: 2

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

INSPECTORS: Collins Engineers, Inc. DATE: October 28, 2012

ON-SITE TEAM LEADER: Barritt R. Lovelace P.E. (WSB)

BRIDGE NO: 27B60 WEATHER: Cloudy, 40°F

WATERWAY CROSSED: Mississippi River

DIVING OPERATION: SCUBA SURFACE SUPPLIED AIR
 OTHER

PERSONNEL: Marc B. Parker, Lukas Janulis, P.E.

EQUIPMENT: 14 foot Boat, Commercial Scuba, Fathometer, Sounding Rod, Camera

TIME IN WATER: 10:15 a.m.

TIME OUT OF WATER: 10:45 a.m.

WATERWAY DATA: VELOCITY None

VISIBILITY 3.0 feet

DEPTH 16.8 feet maximum at Pier 1

ELEMENTS INSPECTED: Piers 1 and 2

REMARKS: Overall, the concrete piers were found to be in very good condition with no defects of structural significance observed. Moderate to heavy timber debris accumulation was observed along the West Pier. The concrete surfaces were smooth and sound. The channel bottom appeared stable with no significant scour.

FURTHER ACTION NEEDED: YES NO

Monitor accumulation of timber debris, and if found to be increasing to an excessive extent, removal operations may become warranted at that time.

Reinspect the submerged substructure units 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. 27B60
 BINSPECTORS Collins Engineers, Inc.
 ON-SITE TEAM LEADER Barritt R. Lovelace, P.E. (WSB)
 WATERWAY CROSSED Mississippi River

INSPECTION DATE October 28, 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

UNIT REFERENCE NO.	UNIT DESCRIPTION	MAXIMUM DEPTH OF WATER	SUBSTRUCTURE					CHANNEL					GENERAL						
			PILING (SHEET)	COLUMNS, SHAFTS, OR FACES*	FOOTINGS	DISPLACEMENT	OTHER	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
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Pier 1	16.8'	8	9	N	9	N	8	N	8	8	6	6	9	8	N	N	N	N
	Pier 2	11.4'	8	9	N	9	N	8	N	8	8	N	8	9	8	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the concrete piers were found to be in very good condition with no defects of structural significance observed. Moderate to heavy timber debris accumulation was observed along the West Pier. The concrete surfaces were smooth and sound. The channel bottom appeared stable with no significant scour.

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.