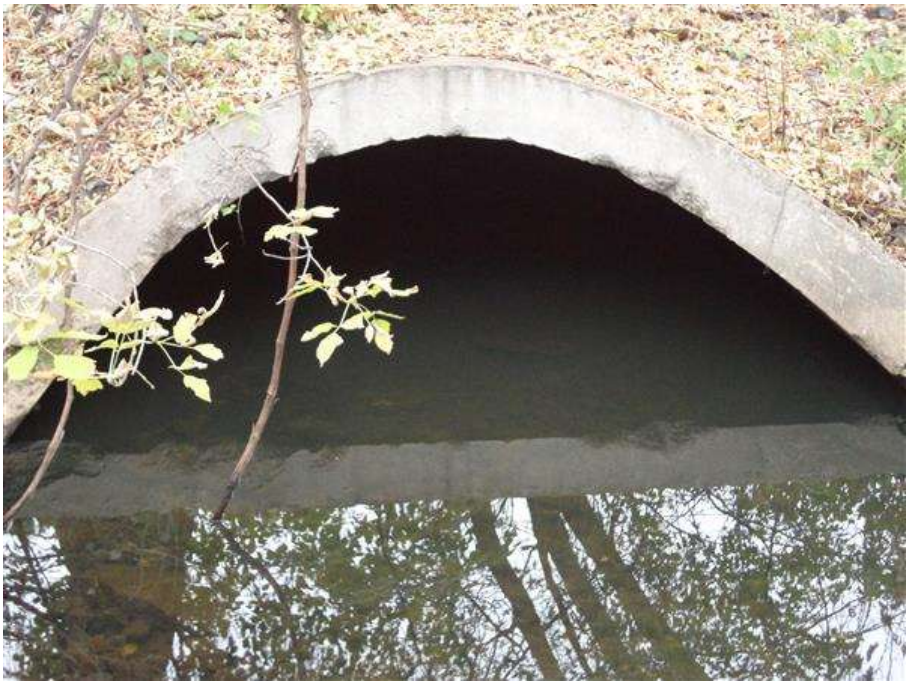
2015 ROUTINE
BRIDGE INSPECTION REPORT



BRIDGE # 93624
CSAH 68(MCKNIGHT) over BATTLE CREEK

DISTRICT: Metro **COUNTY: Ramsey** **CITY/TOWNSHIP: Maplewood**

Date(s) of Inspection: 10/16/2015
Equipment Used:

Owner: County Highway Agency

Inspected By: Bodelson, Dan; Essler, Brian

Report Written By: Dan Bodelson
Report Reviewed By: Nicklaus Fischer
Final Report Date: 01/05/2016

MnDOT Bridge Office
3485 Hadley Avenue North
Oakdale, MN 55128

Table of Contents

MnDOT Structure Inventory Report

Bridge ID: 93624 CSAH 68(MCKNIGHT) **over** BATTLE CREEK **Date:** 01/05/2016

GENERAL

Agency Br. No.
District Metro
Maint. Area **Crew**
County 062 - Ramsey
City Maplewood
Township
Desc. Loc. 0.3 MI S OF JCT TH 94
Sect., Twp., Range 1 - 028N - 22W
Latitude **Deg** 44 **Min** 56 **Sec** 41.85
Longitude **Deg** 93 **Min** 0 **Sec** 17.88
Custodian 02 - County Highway Agency
Owner 02 - County Highway Agency
BMU Agreement
Year Built 1983
MN Year Reconstructed
FHWA Year Reconstructed
MN Temporary Status
Bridge Plan Location 3 - COUNTY
Date Opened to Traffic 4/1/1983
On-Off System 0 - OFF
Legislative District 67B

STRUCTURE

Service On 1 - Highway
Service Under 5 - Waterway
Main Span Type
5 - Prestress or Precast 15 - Pipe Arch
Main Span Detail
Appr. Span Type
Appr. Span Detail
Skew 0
Culvert Type 138"X87"
Barrel Length 260 ft.
Cantilever ID

NUMBER OF SPANS

MAIN: 1 **APPR:** 0 **TOTAL:** 1
Main Span Length 11.5 ft.
Structure Length 11.5 ft.
Deck Width (Out-to-Out) 0.0 ft.
Deck Material N - Not Applicable
Wear Surf Type 6 - Bituminous
Wear Surf Install Year
Wear Course/Fill Depth 4.16 ft.
Deck Membrane 0 - None
Deck Rebars N - Not Applicable (no deck)
Deck Rebars Install Year
Structure Area (Out-to-Out) 0 sq. ft.
Roadway Area (Curb-to-Curb) sq. ft.
Sidewalk Width **Lt** 0.00 ft. **Rt** 0.00 ft.
Curb Height **Lt** 0.00 ft. **Rt** 0.00 ft.
Rail Type **Lt** NN **Rt** NN

ROADWAY

Bridge Match ID (TIS) 0
Roadway O/U Key Route On Structure
Route Sys 04 - CSAH **Number** 68
Roadway Name or Description
CSAH 68
Level of Service 1 - MAINLINE
Roadway Type 2 - 2-way traffic
Control Section (TH Only)
Reference Point 003+00.010
Detour Length 1.0 mi
Lanes **On** 4 **Under** 0
ADT 11354 **Year** 2008
HCADT 0 **ADTT** 0 **%**
Functional Class 16 - Urban - Minor Arterial

RDWY DIMENSIONS

If Divided	NB-EB	SB-WB
Roadway Width	44.00 ft.	ft.
Vertical Clearance	ft.	ft.
Max. Vert. Clear.	ft.	ft.
Horizontal Clear.	ft.	ft.
Lateral Clearance	ft.	ft.

Appr. Surface Width 44.0 ft.
Bridge Roadway Width 0.0 ft.
Median Width On Bridge ft.

MISC. BRIDGE DATA

Structure Flared 0 - No flare
Parallel Structure N - No parallel structure
Field Conn. ID
Abutment Foundation N - N/A
(Material/Type) N - N/A
Pier Foundation N - N/A
(Material/Type) N - N/A
Historic Status 5 - Not eligible

PAINT

Year Painted
Unsound Paint %
Painted Area sq. ft.
Primer Type
Finish Type

BRIDGE SIGNS

Posted Load 0 - Not Required
Traffic 0 - Not Required
Horizontal 0 - Not Required
Vertical N - Not Applicable

INSPECTION

Userkey 102
Unofficial Structurally Deficient N
Unofficial Functionally Obsolete N
Unofficial Sufficiency Rating 70.7
Routine Inspection Date 10/16/2015
Routine Inspection Frequency 24
Inspector Name County, Ramsey
Status A - Open

NBI CONDITION RATINGS

Deck N - Not Applicable
Unsound Deck %
Superstructure N - Not Applicable
Substructure N - Not Applicable
Channel 6 - Bank slump; minor damage
Culvert 5 - Mod. to major deterioration

NBI APPRAISAL RATINGS

Structure Evaluation 5
Deck Geometry N
Underclearances N
Water Adequacy 8 - Bridge Above Approache
Approach Alignment 8 - Equal to present desirabl

SAFETY FEATURES

Bridge Railing N - NOT REQUIRED
GR Transition N - NOT REQUIRED
Appr. Guardrail N - NOT REQUIRED
GR Termini N - NOT REQUIRED

IN DEPTH INSP.

	Y/N	Freq	Date
Frac. Critical			
Underwater			
Pinned Asbly.			
Spec. Feat.			

WATERWAY

Drainage Area (sq. mi.)
Waterway Opening 66 sq. ft.
Navigation Control 0 - No nav. control on waterw
Pier Protection
Nav. Clr. (ft.) **Vert.** ft. **Horiz.** ft.
Nav. Vert. Lift Bridge Clear. (ft.)
MN Scour Code E - CULVERT **Year**

CAPACITY RATINGS

Design Load 5 - HS 20
Operating Rating 5 - NRAP 24.0
Inventory Rating 5 - NRAP 18.0
Posting VEH: **SEMI:** **DBL:**
Rating Date 01/09/1985

MnDOT Permit Codes

A: N - N/A
B: N - N/A
C: N - N/A

MnDOT Structure Inventory Report

Additional Roadways

Bridge ID: 93624 CSAH 68(MCKNIGHT) over BATTLE CREEK **Date:** 01/05/2016

MnDOT BRIDGE INSPECTION REPORT

01/05/2016

Inspector: County, Ramsey

BRIDGE 93624 CSAH 68(MCKNIGHT) OVER BATTLE CREEK — ROUTINE INSP. DATE: 10/16/2015

County: Ramsey
City: Maplewood
Township:
Section: 1 Township: 028N Range: 22W
Span Type: 1 - Concrete 19 - Culvert (includes frame culverts)
List:
NBI Deck: N Super: N Sub: N Chan: 6 Culv: 5

Location: 0.3 MI S OF JCT TH 94
Route: 04 - CSAH 68 Ref. Pt.: 003+00.010
Control Section:
Maint. Area:
Local Agency Bridge Nbr.:
Open, Posted, Closed: A - Open
MN Scour Code: E - CULVERT

Length: 11.5 ft.
Deck Width: 0.0 ft.
Rdwy. Area/ Pct. Unsnd: sq. ft. / %
Paint Area/ Pct. Unsnd: sq. ft. / %
Culvert: 138"X87"
Postings:

Appraisal Ratings - Approach: 8 Waterway: 8
Required Bridge Signs - Load Posting: 0 - Not Required Traffic: 0 - Not Required
Horizntal: 0 - Not Required Vertical: N - Not Applicable

Unofficial Structurally Deficient N
Unofficial Functionally Obsolete N
Unofficial Sufficiency Rating 70.7

Structure Unit:

ELEM NBR	ELEMENT NAME	ENV	REPORT TYPE	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
241	Reinforced Concrete Culvert	2	Routine	10/16/2015	259 LF	0	259	0	0	N/A
			Routine	10/29/2013	259 LF	0	259	0	0	N/A

☐ Requires Monitoring ☐ Monitored

Notes: [2009-2015] Some infiltration of first 2 joints from the east end.
[2001-2015] Minor- moderate cracking and spalling with some leaching.
[2005-2015] Moderate scaling at water line. Pre-cast sections also have slight separation of joints.

ELEM NBR	ELEMENT NAME	ENV	REPORT TYPE	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
361	Scour Smart Flag	2	Routine	10/16/2015	1 EA	0	1	0	N/A	N/A
			Routine	10/29/2013	1 EA	0	1	0	N/A	N/A

☐ Requires Monitoring ☐ Monitored

Notes: [2001-2015] Some minor scour at apron ends, need additional scour protection.

ELEM NBR	ELEMENT NAME	ENV	REPORT TYPE	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
388	Culvert Headwall, Wingwall or Other End Treatment	2	Routine	10/16/2015	2 EA	0	1	1	0	N/A
			Routine	10/29/2013	2 EA	0	1	1	0	N/A

☐ Requires Monitoring ☐ Monitored

Notes: [2007-2015] There is major delamination west end at both corners of apron. There is also a major spall 4' X 6" area at top of west end. The west end also contains exposed re-bar with corrosion.
[2007-2015] Trash guard is bent inward at the east end. Debris was cleaned out at the east end in 2005.

ELEM NBR	ELEMENT NAME	ENV	REPORT TYPE	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
964	Critical Finding Smart Flag	2	Routine	10/16/2015	1 EA	1	0	N/A	N/A	N/A
			Routine	10/29/2013	1 EA	1	0	N/A	N/A	N/A

☐ Requires Monitoring ☐ Monitored

Notes: DO NOT DELETE THIS CRITICAL FINDING SMART FLAG.

Structure Unit:

ELEM NBR	ELEMENT NAME	ENV	REPORT TYPE	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
985	Slopes & Slope Protection	1	Routine	10/16/2015	1 EA	0	1	0	N/A	N/A
			Routine	10/29/2013	1 EA	0	1	0	N/A	N/A

☐Requires Monitoring ☐Monitored

Notes: [2015] Cleared trees above culvert on east end.
[2013-2015] West end at the north side contains some moderate slumping of bank.
[2005-2015] Riprap is needed at the east apron. East end contains some minor slumping.

ELEM NBR	ELEMENT NAME	ENV	REPORT TYPE	INSP. DATE	QUANTITY	QTY CS 1	QTY CS 2	QTY CS 3	QTY CS 4	QTY CS 5
987	Roadway over Culvert	1	Routine	10/16/2015	1 EA	1	0	0	N/A	N/A
			Routine	10/29/2013	1 EA	1	0	0	N/A	N/A

☐Requires Monitoring ☐Monitored

Notes: [2015] McKnight Rd. is OK
[2013] There was a new bituminous overlay by Ramsey County Maintenance. No settlement.

General Notes: 2015 Bridge safety inspection was completed by Dan Bodelson & Brian Essler 10/16/15.
2013 Bridge safety inspection was completed by B. Wieman 10/29/13.
2011 Bridge safety inspection was completed by B. Wieman 10/3/11.
2009 Bridge safety inspection was completed by B. Wieman 07/02/2009.
2007 Safety inspection was completed by B. Wieman & B. Essler.
Safety inspection was completed by Bret Wieman 8/23/2005.
*CUSTODIAN - RAMSEY WASHINGTON METRO DISTRICT NEW CONSTRUCTION 1983.

58. Deck NBI: Culvert

36A. Brdg Railings NBI: No bridge railing - culvert

36B. Transitions NBI: No bridge railing - culvert

36C. Appr Guardrail NBI: No guardrail

36D. Appr Guardrail Terminal NBI: No guardrail

59. Superstructure NBI: Culvert

60. Substructure NBI: Culvert

61. Channel NBI: Channel has minor to moderate degradation.

62. Culvert NBI: Culvert has moderate deterioration.

71. Waterway Adeq NBI: Greater than 3' of freeboard.

72. Appr Roadway Alignment NBI: No speed reduction required.

Inventory Notes: 260 LF X 138" X 87"

Dan Bodelson
Inspector's Signature

Nicklaus Fischer
Reviewer's Signature

Pictures

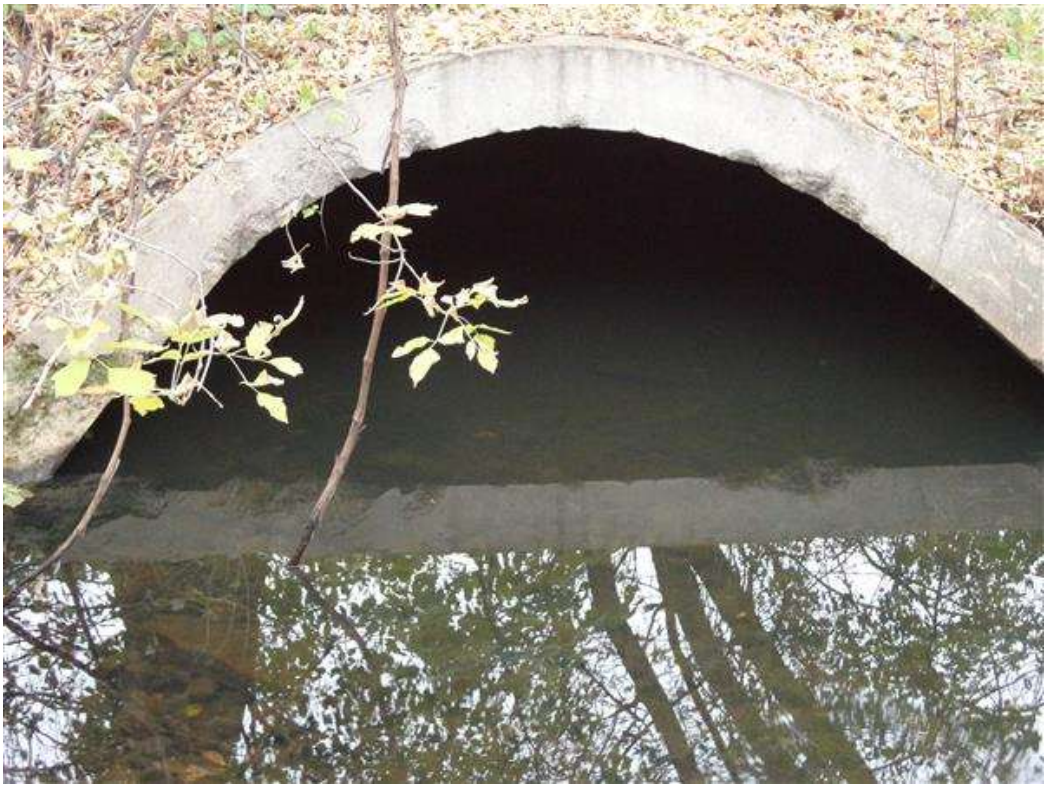


Photo 1 -

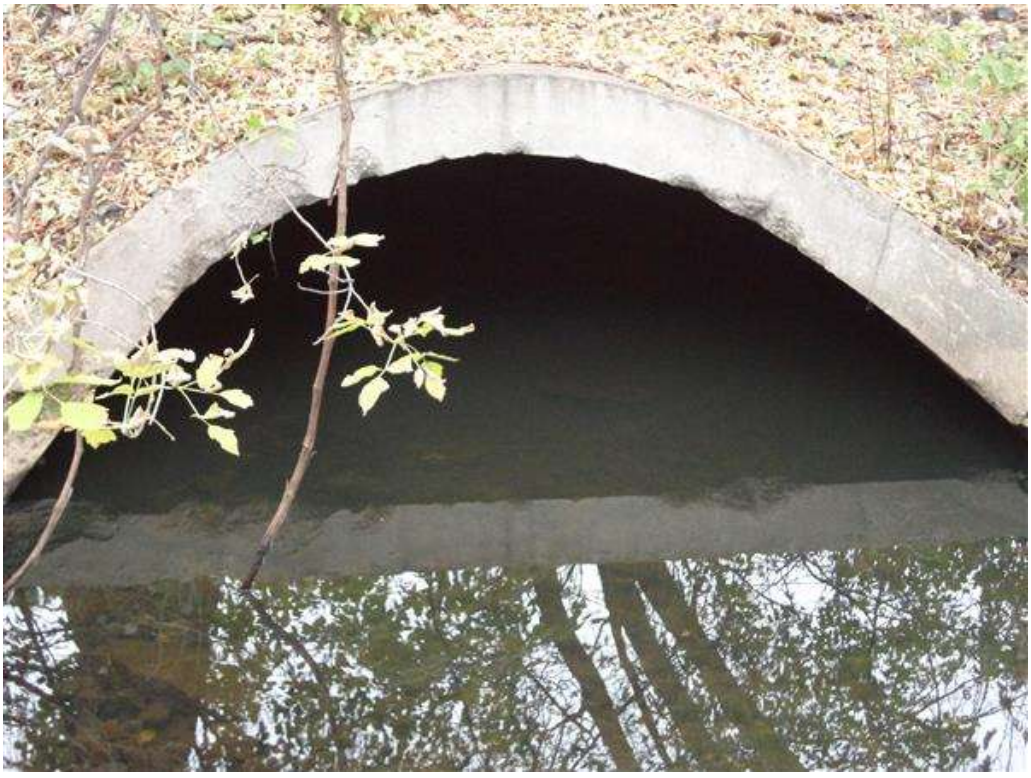


Photo 2 -

Pictures

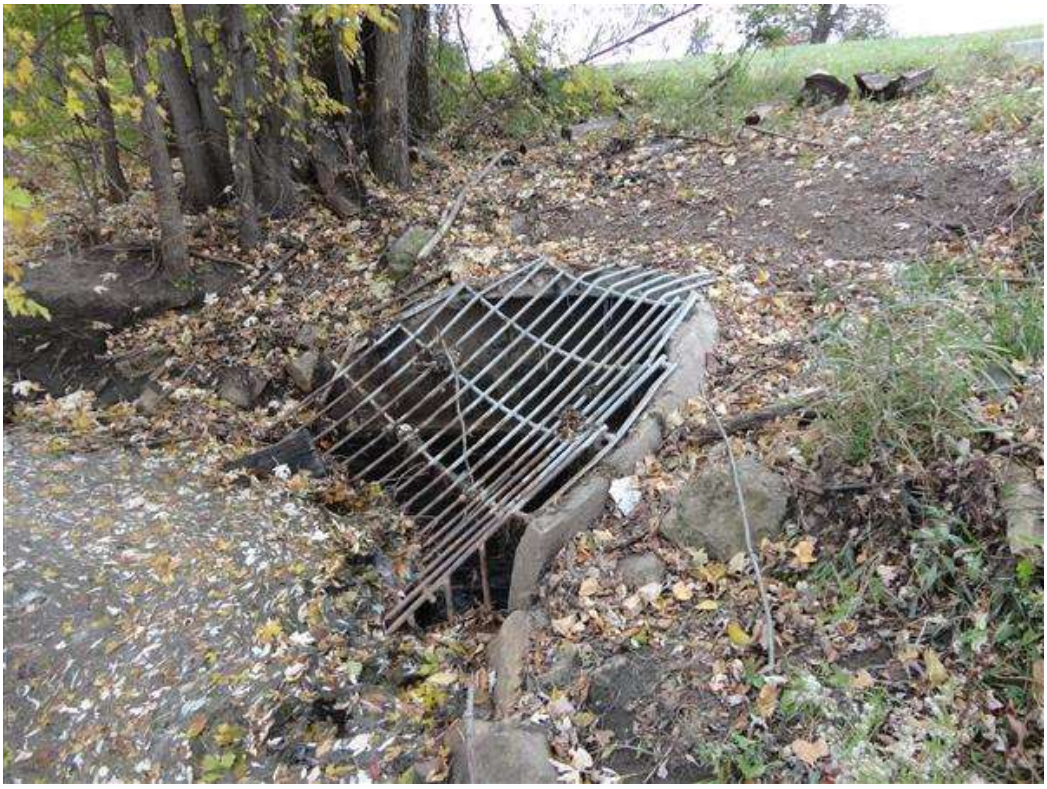


Photo 3 -

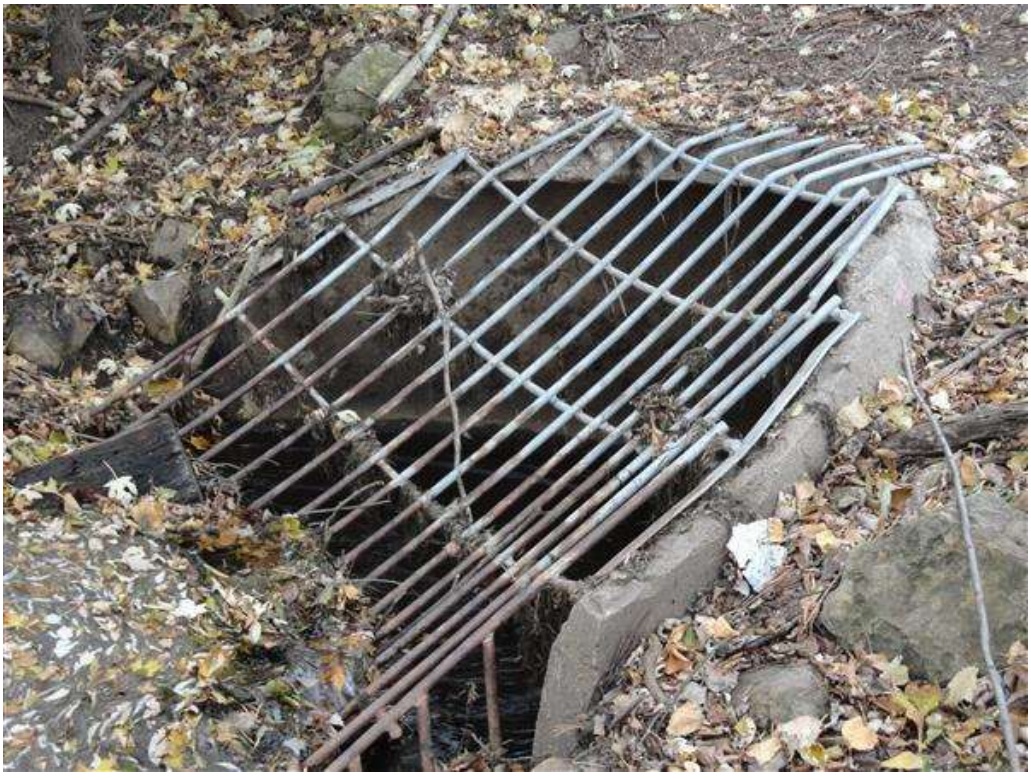


Photo 4 -

Pictures

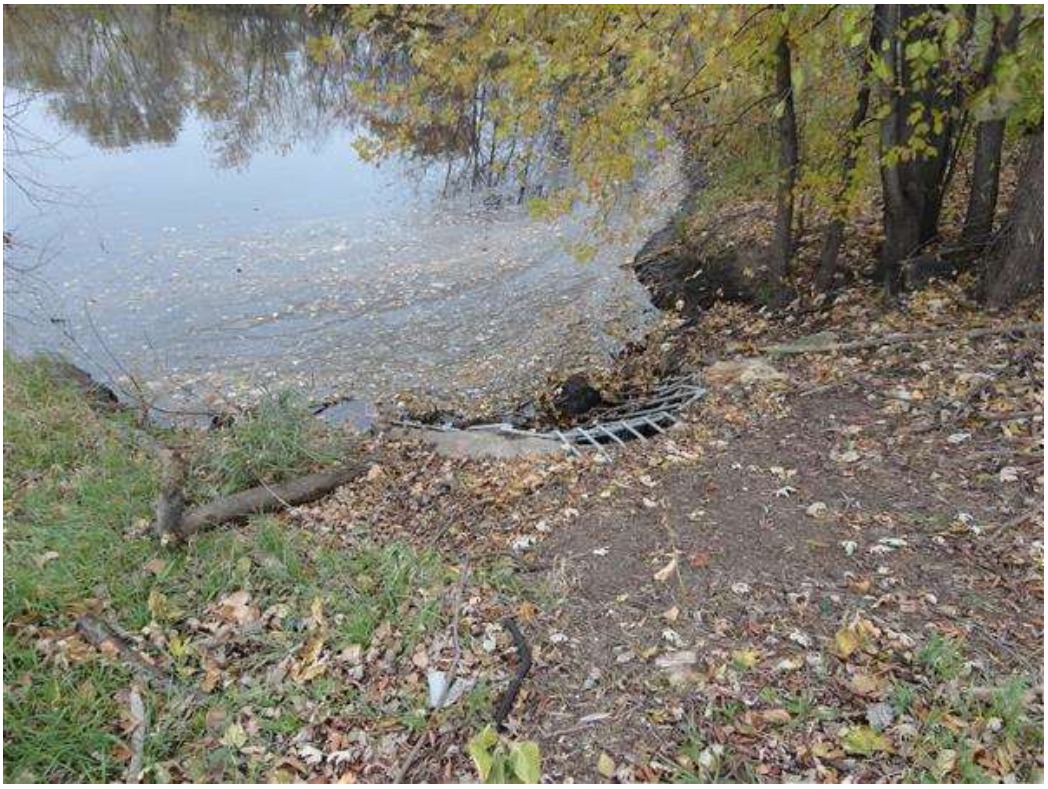


Photo 5 -

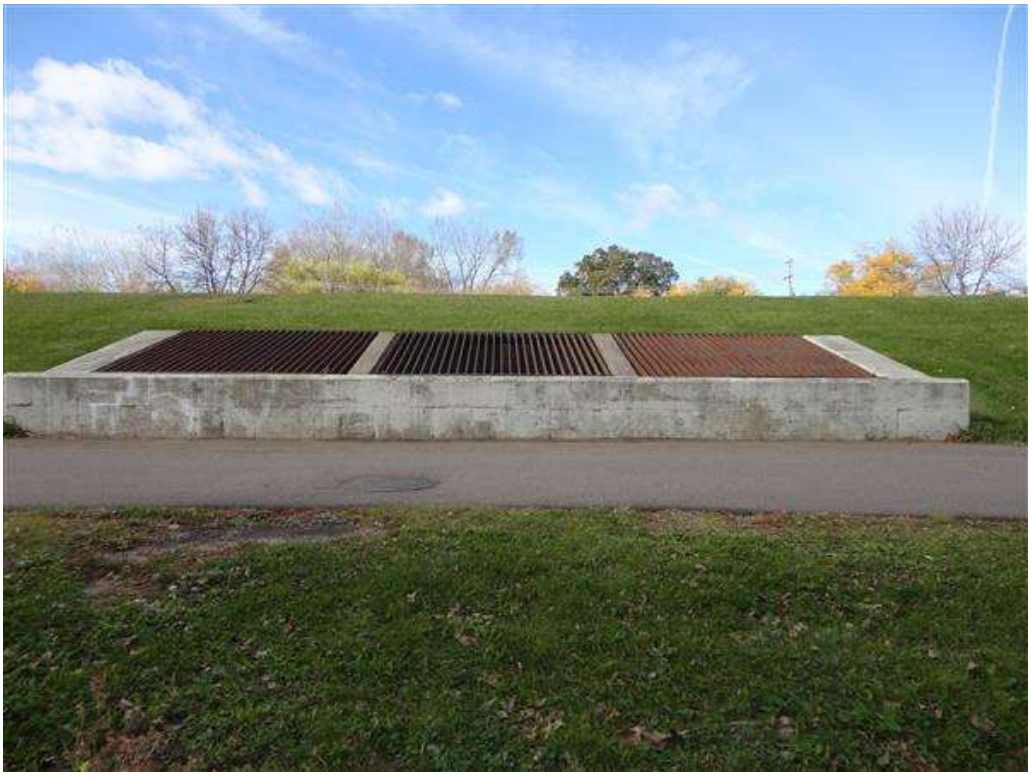


Photo 6 -

1. bridge safety 041.JPG

2. bridge safety 042.JPG

3. bridge safety 043.JPG

4. bridge safety 044.JPG

5. bridge safety 045.JPG

6. DSC00179.JPG

Culvert

Bridge No.: 93624

Culvert

Item	*Description*	*Condition*	*Comments*
Culvert Overall:	**NBI Item 62**	5	Culvert has moderate deterioration.

MnDOT Scour Code: E - CULVERT

Waterway Inspection

Item No.	Yes, No, NA or Not Visible	Description
1.		Is there a significant build-up of debris?
2.		Is there erosion of the embankment around the headwalls?
3.		Is there any indication of cracking or settlement of the culvert barrel or headwalls?
4.		Is there shifting of the channel alignment or erosion of the stream banks? Also are there cracks in the soil of the banks parallel to the stream?
5.		Do scour measurements indicate that the streambed is below the bottom of the cutoff walls at the ends of the culvert?
6.		Is there evidence of distress in the roadway or approaches such as cracks in the pavement and sags in the guardrail or roadway? Also, is there cracking, erosion, or failure of the side slopes at or adjacent to the culvert?
7.		Is there an indication of "piping" of water along the outside of the culvert such as cavities adjacent to the barrel?
8.		Is the culvert without a bottom and scour measurements indicate that the streambed is below the plan streambed elevations?
9.		Has the riprap or other scour protection been damaged or otherwise made ineffective?
10.		If the culvert was designed to be buried (fill inside the culvert), is the material still in the barrel?

Notes:

- Streambed sounding data is to be documented.

- Soundings of the streambed should be done at each end of the culvert. If Items #5 or #8 are "Yes", then a streambed profile of the scoured area should be done.

- If "Yes" is the answer to any items on the checklist, notify the Program Administrator for further instructions.

Comments:

Completed On _____ By _____

Channel

Bridge No.: 93624

Channel

Item	*Description*	*Condition*	*Comments*
Channel Overall:	**NBI Item 61**	6	Channel has minor to moderate degradation.

Bank Protection/Revetment

Item	*Description*	*Condition*	*Comments*
Upstream Bank Protection:			
Downstream Bank Protection:			
Bridge Revetment:			
MnDOT Scour Code:	E - CULVERT		

Underwater Inspection

Underwater Inspection By Divers:

No. of Piers To Be Inspected:

Waterway Characteristics

Reference Point:		**High Water Elev.:**		**Current Water Elev.:**	
Pile Tip Elev.:		**Low Water Elev.:**		**Current Streambed Elev.:**	
		Scour Hole Elev.:		**Current Scour Hole Elev.:**	

Waterway Inspection: (Not applicable for culverts)

Item No.	Yes, No, NA or Not Visible	Description
1.		Is there a significant build-up of debris?
2.		Is there a change in the horizontal alignment of the handrail or structure members such as beams?
3.		Is there any indication of vertical movement of the superstructure?
4.		Is there shifting of the channel alignment or erosion of the stream banks? Also are there cracks in the soil of the banks parallel to the stream?
5.		Is there a significant change in the alignment of hte exterior bearings?
6.		Are there cracks or other signs of distress in the approach pavement?
7.		Is the water currently on the superstructure?
8.		Are the slopes unstable?
9.		Do scour measurements indicate: (place a check by all that apply.)
		☐ A. that the streamed is two or more feet below the bottom of pier footings which are supported on piles?
		☐ B. scour below the bottom of spread footings?
		☐ C. scour below the bottom of high abutment footings?
		☐ D. that the streambed has scoured five feet or more below the original streambed elevation at pier bents?

10. _____ Have the scour countermeasures been damaged or otherwise made ineffective?

Notes:

- Streambed sounding data is to be documented.

- Per MnDOT Bridge Inspection Manual Section 2.2.5, at bridges that require x-sections, take channel x-sections, along the upstream and/or downstream face of the bridge.

- If "Yes" is the answer to any items on the checklist, notify the Program Administrator for further instructions.

Comments:

Completed On _____ By _____

Scour POA

Bridge No.: 93624

Scour POA

1. Is POA on File? _____
2. Date of most recent POA: _____
3. Here is a link to MnDOT's Bridge Scour website for other resources:
   - *http://www.dot.state.mn.us/bridge/hydraulics/scour.html*
   - The Scour POA should be kept in the bridge file and/or uploaded to SIMS using the "Inspection Files" tab.

Implementation

Scour POAs are required to be implemented by FHWA.

1. Is this POA being implemented? _____

Channel Section

Upstream

Custom Label	Location	Elevation

Downstream

Custom Label	Location	Elevation

Distance Measured From:

Elev. of Ref. Pt:

Depth to Water Surface:

WS Elev:

Vertical Datum:

Comments:

Distance Measured From:

Elev. of Ref. Pt:

Depth to Water Surface:

WS Elev:

Vertical Datum:

Maintenance

Element	Source Code	Work Code	Description	P/R	Priority	Work Order #	Year Due	Last Viewed	Entered	Start Date	Completed

BRIDGE STRUCTURAL ASSESSMENT REPORT

PURPOSE:

This report is a structural assessment of the structure and its ability to carry loads based on conditions identified in the attached bridge inspection report. The assessment is only a cursory review intended to provide guidance as to the relative hazards for structural conditions and deficiencies identified. This report is mandatory for all fracture critical bridges and is completed by the MnDOT Bridge Office upon receipt of the 7 Day FC Report; however, it is an OPTIONAL tool for agencies to utilize at their discretion for all other inspection types.

BRIDGE NO.: 93624

BRIDGE OWNER: County Highway Agency

DATE INSPECTED: 10/16/2015

STRUCTURE TYPE: Concrete Culvert (includes frame culverts)

FACILITY CARRIED: CSAH 68(MCKNIGHT)

FEATURES INTERSECTED: BATTLE CREEK

TYPE OF INSPECTION: ☑ ROUTINE
☐ FRACTURE CRITICAL
☐ PINNED ASSEMBLY:
☐ SPECIAL:
☐ DAMAGE:
☐ OTHER:

Check all that apply:

Redundancy: ☐ Load Path ☐ Structural ☐ Internal

Connection Type: ☐ Riveted ☐ Bolted ☐ Welded ☐ Other:

1. Was a critical finding identified during this inspection or upon structural review? ☐ Yes ☐ No

   a) If selected "**Yes**" above, state briefly the finding(s):

2. If a critical finding was identified, what is the current status? ☐ Pending ☐ Resolved ☐ N/A

   a) Briefly state actions taken:

3. Does the condition of any bridge component indicate impaired function? Examples of bridge components with impaired function include elements that are: frozen or immoveable, out-of-plumb or misaligned, distorted or structurally deformed, excessively deteriorated, cracked, broken, eroded or scoured. ☐ Yes ☐ No

a) If selected "**Yes**" above, state briefly the component(s) and condition(s):

4. Does the overall condition of the bridge, or any of its components mentioned in Question 3, suggest the need for detailed structural analysis and/or a revised load rating? ☐ Yes ☐ No

   a) If selected "**Yes**", state the reason for this recommendation and indicate a proposed timeframe in accordance with State of Minnesota Rule 8810.9500 (Subpart 2):

5. Based on the structural assessment of these findings, recommendations include:

   ☐ Repair/Maintenance ☐ Monitoring Plan
   ☐ Other ☐ Increased Inspection Frequency

   Explain recommended actions:

6. Other comments:

Bridge Office Reviewer