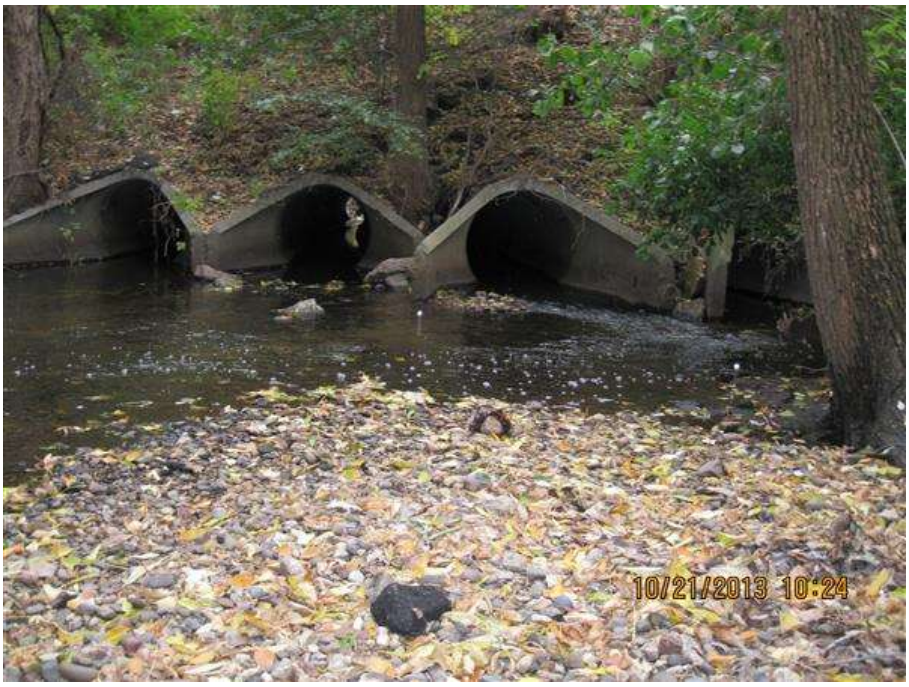
2015 ROUTINE
BRIDGE INSPECTION REPORT



BRIDGE # 93532
CSAH 15(CR E) over CO DITCH # 2

DISTRICT: Metro **COUNTY: Ramsey** **CITY/TOWNSHIP: New Brighton**

Date(s) of Inspection: 10/06/2015
Equipment Used:

Owner: County Highway Agency

Inspected By: Essler, Brian

Report Written By: Brian Essler
Report Reviewed By: Nicklaus Fischer
Final Report Date: 01/07/2016

MnDOT Bridge Office
3485 Hadley Avenue North
Oakdale, MN 55128

Table of Contents

MnDOT Structure Inventory Report

Bridge ID: 93532 CSAH 15(CR E) **over** CO DITCH # 2 **Date:** 01/07/2016

GENERAL

Agency Br. No.
District Metro
Maint. Area **Crew**
County 062 - Ramsey
City New Brighton
Township
Desc. Loc. 0.1 MI W OF JCT CSAH 77
Sect., Twp., Range 29 - 030N - 23W
Latitude **Deg** 45 **Min** 3 **Sec** 3.90
Longitude **Deg** 93 **Min** 11 **Sec** 58.23
Custodian 02 - County Highway Agency
Owner 02 - County Highway Agency
BMU Agreement
Year Built 1968
MN Year Reconstructed
FHWA Year Reconstructed
MN Temporary Status
Bridge Plan Location 3 - COUNTY
Date Opened to Traffic
On-Off System 1 - ON
Legislative District 50B

STRUCTURE

Service On 1 - Highway
Service Under 5 - Waterway
Main Span Type
5 - Prestress or Precast 14 - Pipe Culvert (Roun
Main Span Detail
Appr. Span Type
Appr. Span Detail
Skew 30 L
Culvert Type 4' DIA
Barrel Length 114 ft.
Cantilever ID

NUMBER OF SPANS

MAIN: 4 **APPR:** 0 **TOTAL:** 4
Main Span Length 4.6 ft.
Structure Length 24.0 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 12.00 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** 15
Roadway Name or Description
CSAH 15
Level of Service 1 - MAINLINE
Roadway Type 2 - 2-way traffic
Control Section (TH Only)
Reference Point 001+00.300
Detour Length 3.0 mi
Lanes **On** 2 **Under** 0
ADT 6773 **Year** 2008
HCADT 0 **ADTT** 0 **%**
Functional Class 16 - Urban - Minor Arterial

RDWY DIMENSIONS

If Divided	NB-EB	SB-WB
Roadway Width	30.00 ft.	ft.
Vertical Clearance	ft.	ft.
Max. Vert. Clear.	ft.	ft.
Horizontal Clear.	ft.	ft.
Lateral Clearance	ft.	ft.

Appr. Surface Width 32.0 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 85.4
Routine Inspection Date 10/06/2015
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 3 - Protection failure
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 0 - SUBSTANDARD
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 50 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 01/08/1985

MnDOT Permit Codes

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

MnDOT Structure Inventory Report

Additional Roadways

Bridge ID: 93532 CSAH 15(CR E) over CO DITCH # 2 **Date:** 01/07/2016

MnDOT BRIDGE INSPECTION REPORT

01/07/2016

Inspector: County, Ramsey

BRIDGE 93532 CSAH 15(CR E) OVER CO DITCH # 2 ROUTINE INSP. DATE: 10/06/2015

County: Ramsey
City: New Brighton
Township:
Section: 29 Township: 030N Range: 23W
Span Type: 1 - Concrete 19 - Culvert (includes frame culverts)
List:
NBI Deck: N Super: N Sub: N Chan: 3 Culv: 5

Location: 0.1 MI W OF JCT CSAH 77
Route: 04 - CSAH 15 Ref. Pt.: 001+00.300
Control Section:
Maint. Area:
Local Agency Bridge Nbr.:
Open, Posted, Closed: A - Open
MN Scour Code: E - CULVERT

Length: 24.0 ft.
Deck Width: 0.0 ft.
Rdwy. Area/ Pct. Unsnd: sq. ft. / %
Paint Area/ Pct. Unsnd: sq. ft. / %
Culvert: 4' DIA
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 85.4

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	10/06/2015	456 LF	0	0	456	0	N/A
			Routine	10/21/2013	456 LF	0	0	456	0	N/A

☐ Requires Monitoring ☐ Monitored

Notes: Culvert #1 is 90% Blocked at apron 2015.
Riprap is in front of the north end of culvert #2 & #3 2011-2015.
There is blockage in front of all culverts at the south end 2009-2015.
Culvert #1 is 1/2 full of debris 2009-2015.
There is moderate scaling bottom of culverts #2, #3 & #4 2009-2015.
There is delamination at south end culvert #2 at top inside of culvert 2007-2015.
There contains moderate settlement with separation of joints. There are 4 sets of culverts 2005-2015.
There is riprap and debris in culverts #1, #2 & #3. The south end of culvert #1 is severely blocked 2007.
#1 culvert is not completely blocked @ south end. #1 culvert 1/2 filled with debris 2005.
Culvert #1 is completely blocked from embankment erosion & debris 2001-2007.
Spalling at south end of culvert #2 2001-2007.

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	10/06/2015	1 EA	0	1	0	N/A	N/A
			Routine	10/21/2013	1 EA	0	1	0	N/A	N/A

☐ Requires Monitoring ☐ Monitored

Notes: Minor scour at both ends 2001-2015.

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
388	Culvert Headwall, Wingwall or Other End Treatment	2	Routine	10/06/2015	2 EA	0	2	0	0	N/A
			Routine	10/21/2013	2 EA	0	2	0	0	N/A

☐Requires Monitoring ☐Monitored

Notes: The south end of culverts #1 & #2 contain major spalls 2009-2015.
The south end of culverts #3 & #4 contain moderate spalls 2009-2015.
The north end of all culvert aprons contain moderate spalls 2009-2015.
The south end has debris in front of all 4 culverts restricting flow. 50% flow into Culvert #1 2011-2015.
Minor amount of debris @ south end except at apron #1. Apron #1 has 50% blockage with debris 2005, 2011-2015.
South end of apron #1 needs clean out 2001-2015.
Culvert aprons contain minor cracks with moderate - major spalls 2001-2015.
Apron #1 @ south end has 90% blockage with debris 2007.
North end of apron #1, #2 & #3 need clean out 2007.
North end of apron #1 & #2 need clean out 2005.
Aprons are tied to culverts.

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	10/06/2015	1 EA	1	0	N/A	N/A	N/A
			Routine	10/21/2013	1 EA	1	0	N/A	N/A	N/A

☐Requires Monitoring ☐Monitored

Notes: < none >

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
982	Approach Guardrail	2	Routine	10/06/2015	1 EA	0	0	1	N/A	N/A
			Routine	10/21/2013	1 EA	0	0	1	N/A	N/A

☐Requires Monitoring ☐Monitored

Notes: No twisted end or crash attenuator @ north side -east end. Not required due to low speed as per MNDOT. 2013-2015
Guardrail system on the south side is absent. 1989-2015.
Minor traffic impact to guardrail on north side behind catch basin 2003-2015.
Traffic impact to twisted end @ north side - east end. Requires replacement 2007-2011.
Requires crash attenuator on north side guardrail 2009. Not required due to low speed as per MNDOT.
Need twist down end treatment for north side guardrail 1989 -2007.

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	10/06/2015	1 EA	0	0	1	N/A	N/A
			Routine	10/21/2013	1 EA	0	0	1	N/A	N/A

☐Requires Monitoring ☐Monitored

Notes: Bank has eroded to <7' from bituminous and concrete entrance for business 2009-2015.
Bank @ SW corner has slumped in front of culvert #1 2007-2015. Recommend bank restoration and riprap 2009-2015.
The north side has sheet piling, which is holding 2003-2015.
Erosion has taken place above the culverts at the south end 2003-2007.
South end needs 48'' RCP extended & erosion control installed. Some erosion work done 1995.

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	2	Routine	10/06/2015	1 EA	1	0	0	N/A	N/A
			Routine	10/21/2013	1 EA	1	0	0	N/A	N/A

☐Requires Monitoring ☐Monitored

Notes: There is moderate settlement of west bound County Road E 2007-2015.
Minor settlement with pothole developing on the south side 2003-2005. Minor settlement 2001.

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

General Notes:	2015 Bridge safety inspection conducted by B. Essler & D Bodelson on 10/6/2015. 2013 Bridge safety inspection conducted by B. Essler & D Bodelson on 10/21/2013. 2011 Bridge safety inspection conducted by B. Wieman on 10/11/2011. 2009 Inspection was completed by B. Wieman 7/10/2009. Highly recommend slope restoration and riprip @ SW corner 2009-2015. Inspection was completed by B. Wieman 7/25/2007. Bank @ SW corner has slumped in front of apron #1. #1 culvert has 90% blockage 2007-2009, 2015 All aprons need protective fill 1983-1997. 3rd from east missing tie for apron 1989-2000. Apron #1 severely blocked 1987. Totally blocked 1989-2001. South slope badly eroded. Caused by catch basin at top. Needs cleaning 1983-1985. Channel, south side needs cleanup of major blockage 1983-1994. Some cleanup done 1997. Unreported as a bridge prior to 1981. Existing drainage system drains into top of culvert #1 @ north curb line from catch basin.
58. Deck NBI:	Culvert
36A. Brdg Railings NBI:	Culvert
36B. Transitions NBI:	Not connected to the culvert
36C. Appr Guardrail NBI:	Does not meet standards
36D. Appr Guardrail Terminal NBI:	Twisted end treatment installed with speed limit less than 40 MPH
59. Superstructure NBI:	Culvert
60. Substructure NBI:	Culvert
61. Channel NBI:	Bank has eroded to less than 7' from bituminous and concrete pavement above culvert. bank has slumped in front of culvert 1. South channel filled with debris. North channel debris 20' to 100' in channel north of aprons.
62. Culvert NBI:	Moderate scaling. Moderate settling with separating of joints. Moderate to major spalls
71. Waterway Adeq NBI:	greater than 3' of freeboard
72. Appr Roadway Alignment NBI:	No speed reduction required
Inventory Notes:	

Brian Essler
Inspector's Signature

Nicklaus Fischer
Reviewer's Signature

Pictures

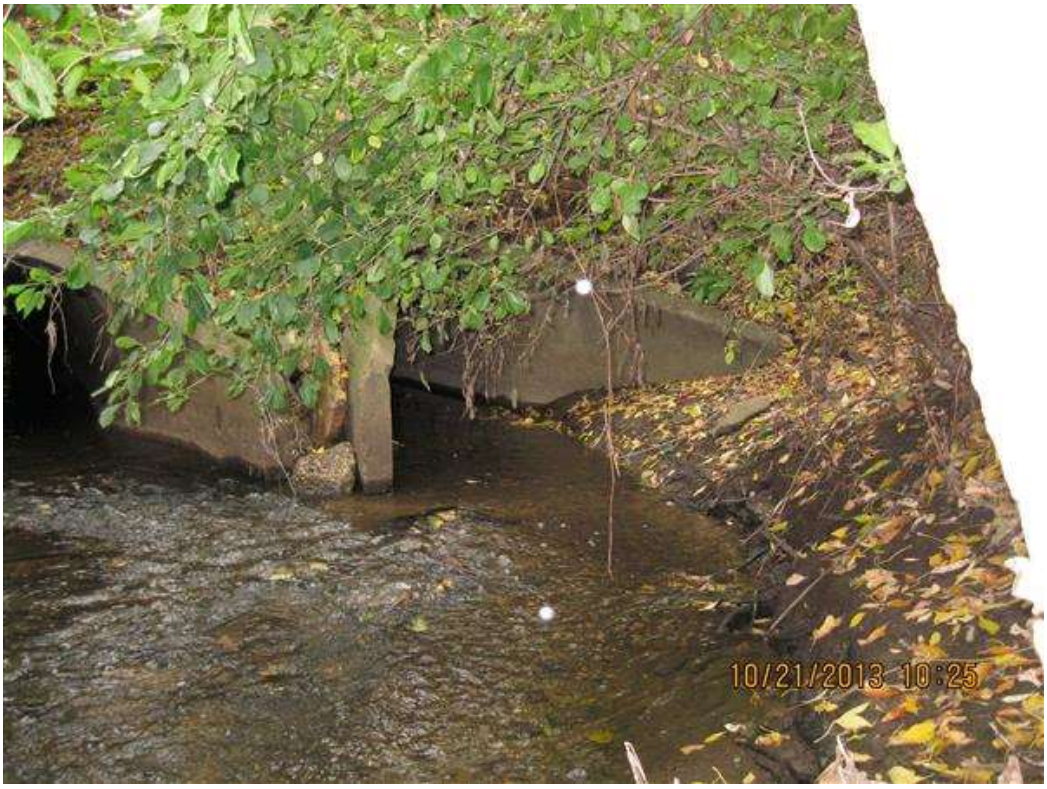


Photo 1 - North Culvert 1

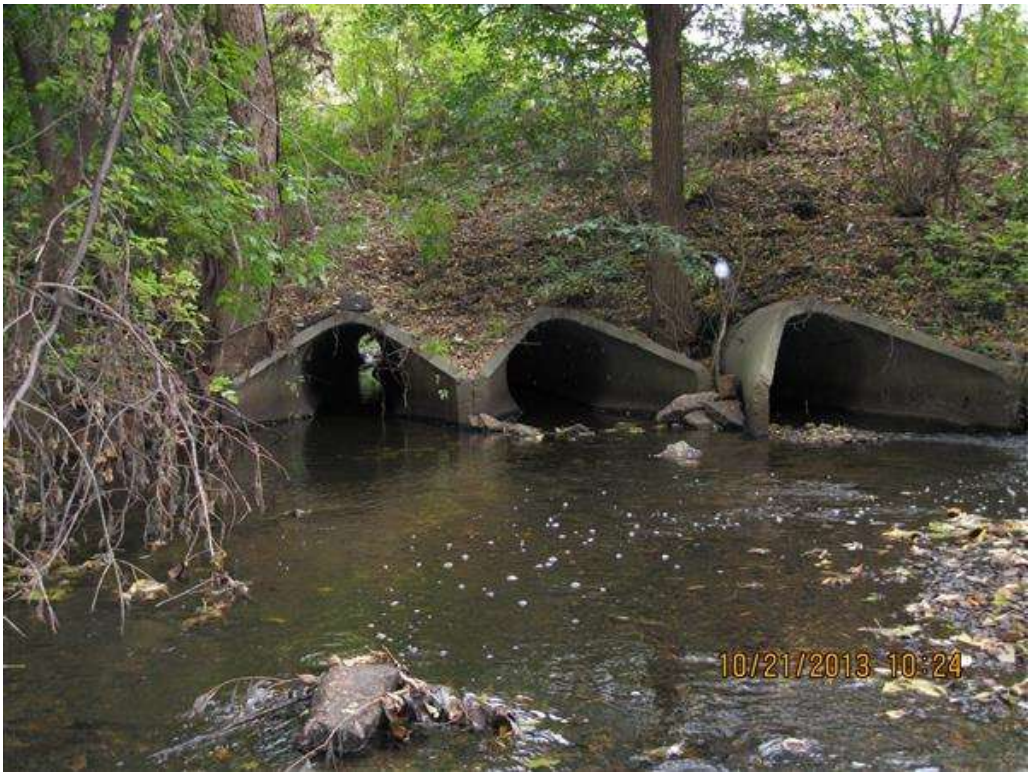


Photo 2 - North End

Pictures

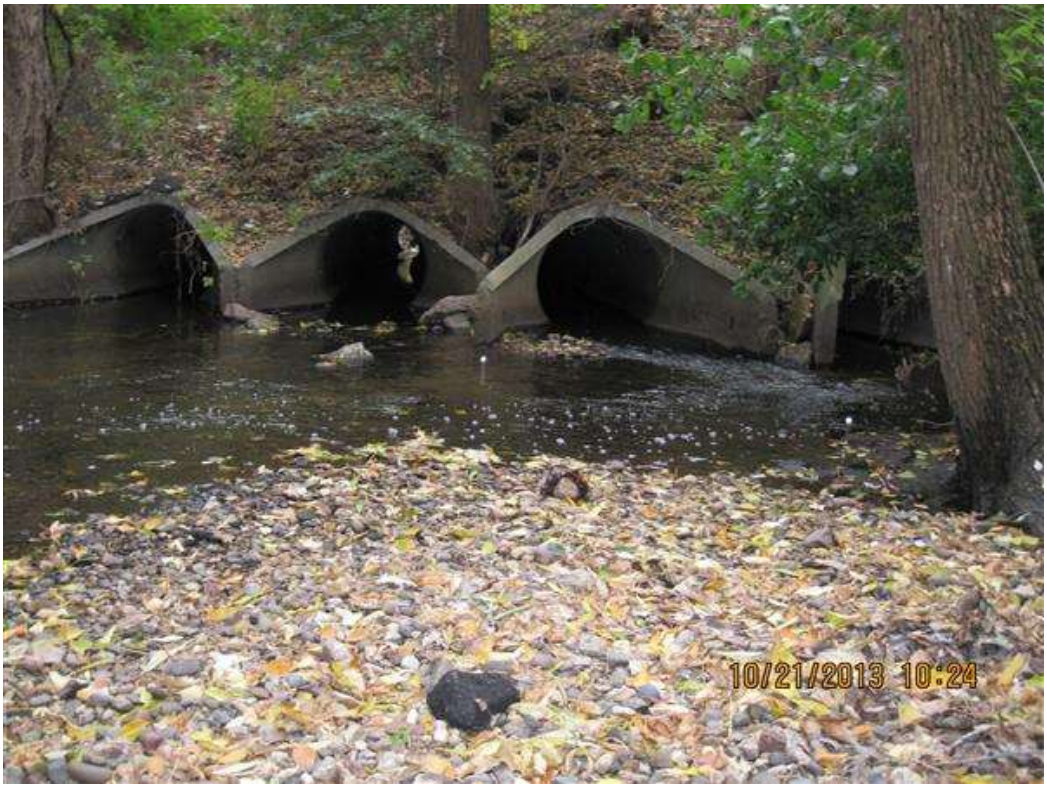


Photo 3 - North End1

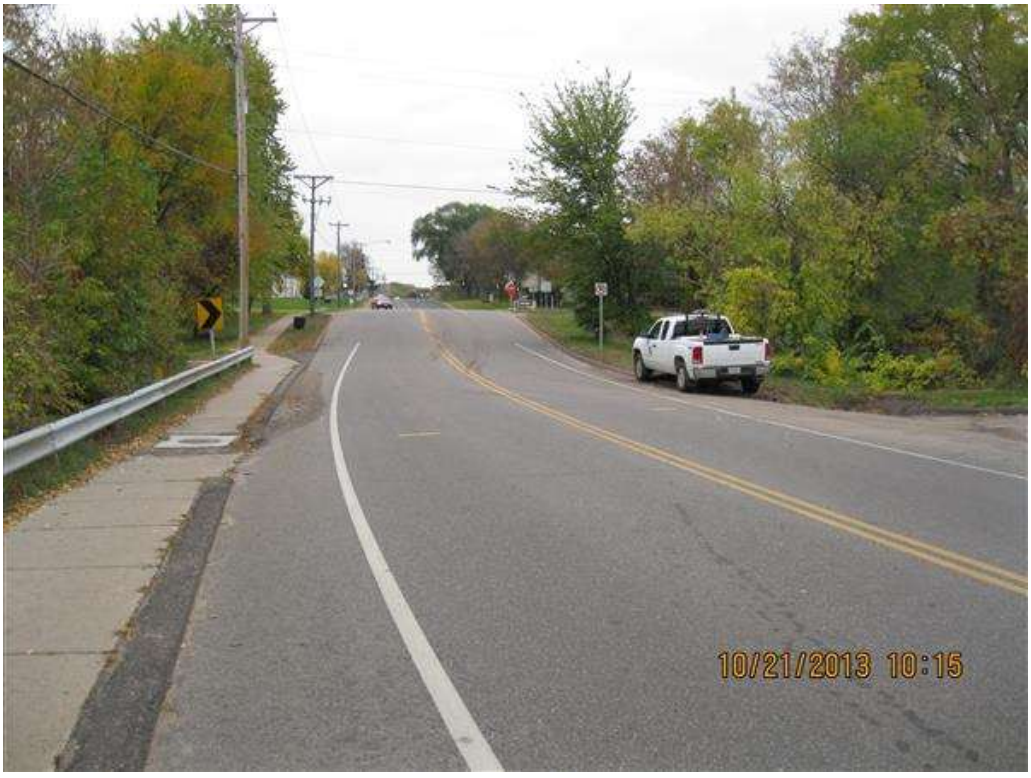


Photo 4 - Roadway East

Pictures

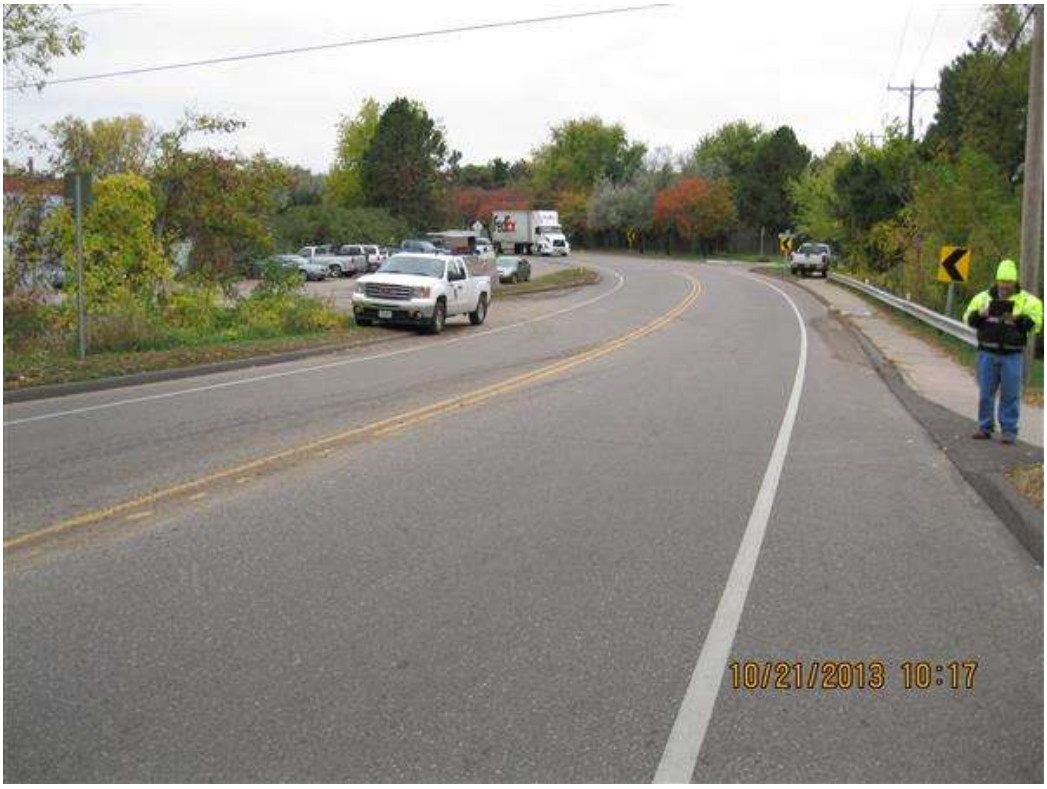


Photo 5 - Roadway West

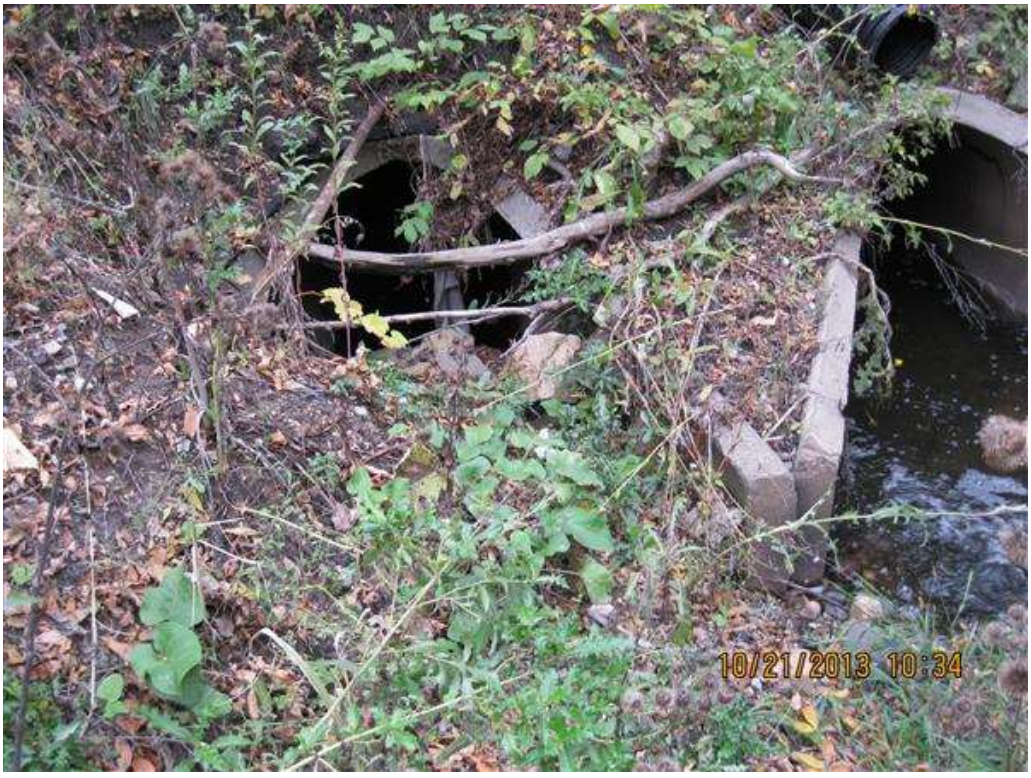


Photo 6 - South Culvert 1

Pictures

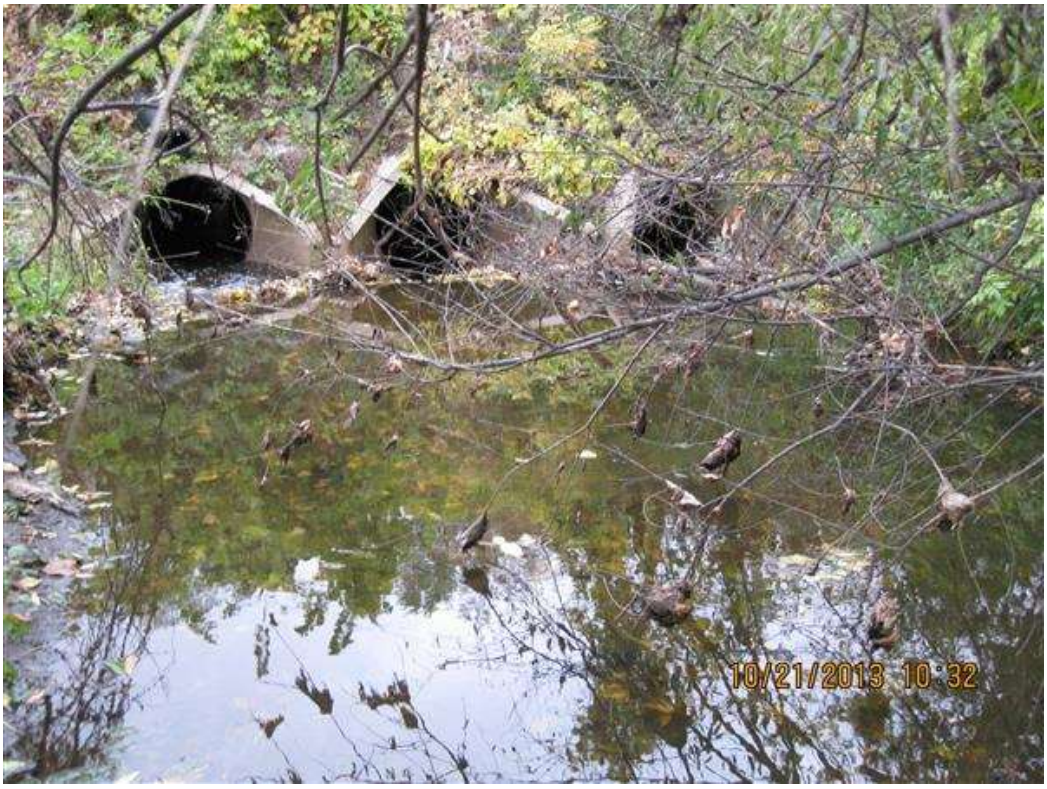


Photo 7 - South End

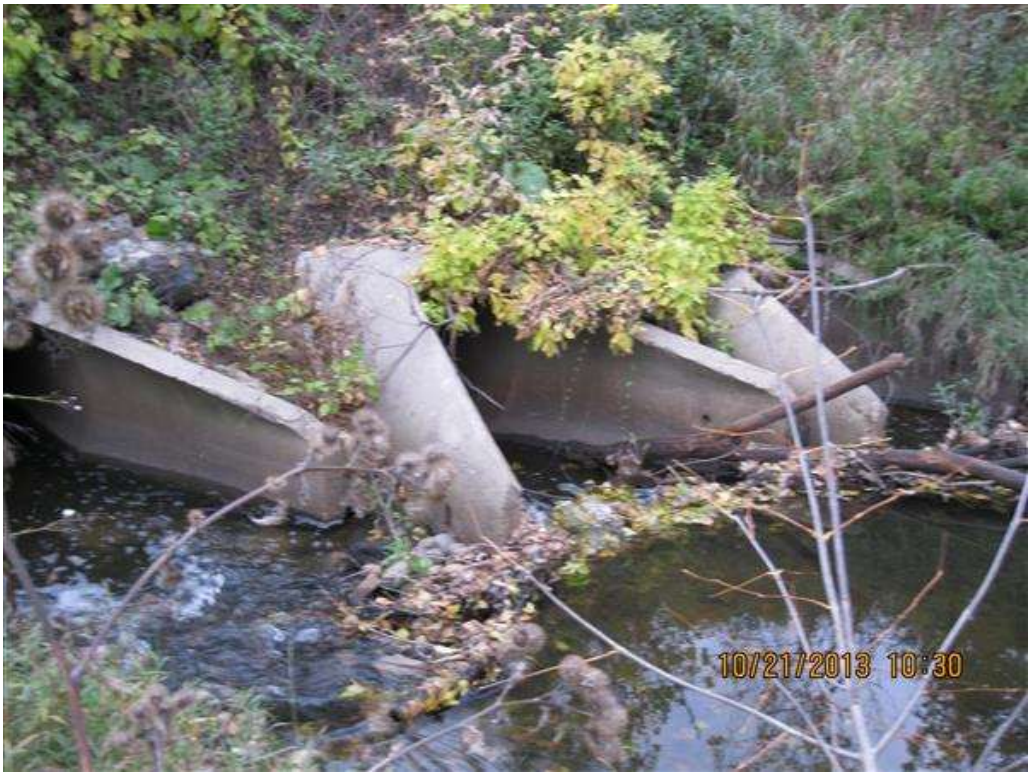


Photo 8 - South End1

1. North Culvert 1.JPG

2. North End.JPG

3. North End1.JPG

4. Roadway East.JPG

5. Roadway West.JPG

6. South Culvert 1.JPG

7. South End.JPG

8. South End1.JPG

Culvert

Bridge No.: 93532

Culvert

Item	*Description*	*Condition*	*Comments*
Culvert Overall:	**NBI Item 62**	5	Moderate scaling. Moderate settling with separating of joints. Moderate to major spalls

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.: 93532

Channel

Item	*Description*	*Condition*	*Comments*
Channel Overall:	**NBI Item 61**	3	Bank has eroded to less than 7' from bituminous and concrete pavement above culvert. bank has slumped in front of culvert 1. South channel filled with debris. North channel debris 20' to 100' in channel north of aprons.

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.: 93532

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.: 93532

BRIDGE OWNER: County Highway Agency

DATE INSPECTED: 10/06/2015

STRUCTURE TYPE: Concrete Culvert (includes frame culverts)

FACILITY CARRIED: CSAH 15(CR E)

FEATURES INTERSECTED: CO DITCH # 2

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