UNDERWATER INSPECTION REPORT

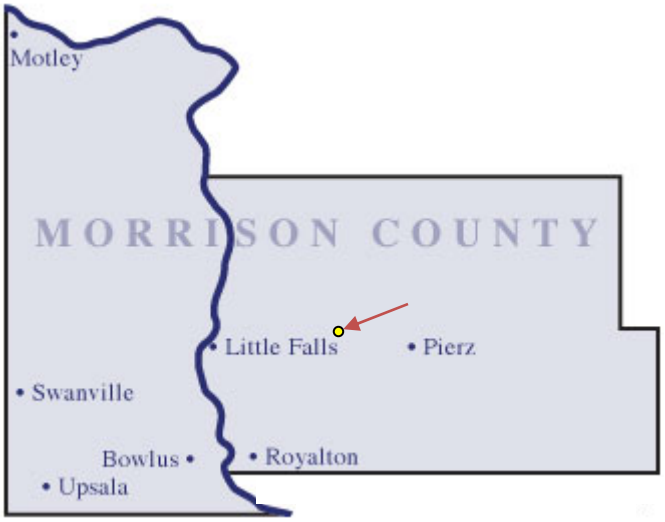
DOUBLE CORRUGATED METAL PIPE CULVERT

HAWTHORN ROAD

OVER

RICE CREEK (PELKEY LAKE)

MORRISON COUNTY



COLLINS ENGINEERS INC.

OCTOBER 25, 2012

PREPARED FOR

MORRISON COUNTY PUBLIC WORKS

BY

COLLINS ENGINEERS, INC.

JOB NO. 7423

MORRISON COUNTY PUBLIC WORKS
UNDERWATER INSPECTION

REPORT SUMMARY:

The structure inspected, the East and West CMP culverts, were found to be in satisfactory condition with some defects of only minor structural significance. The steel of both culverts exhibited moderate surface corrosion on all exposed steel surfaces. The corrosion appeared to be more prevalent throughout the top portion (above the water surface) of the pipes. Apart from up to 1/8 inch deep pitting, no significant loss of section was noted throughout both pipes. The inspector-diver has sounded the culvert surface in multiple locations using hand tools, and the pipes appear solid with no hollow regions detected. Refer to Photographs 1 and 2 for typical condition of the culvert pipes. A sag was observed in the top of both culverts. The deflection appeared to reach a maximum displacement of 0.5 to 1 foot near the center of both culverts. The roadway above the culverts exhibited two cracks parallel to each pipe but showed no signs of settlement or displacement. The floor of both culverts was clear of any debris or silt infilling throughout the entire length. At the time of inspection the hydraulic capacity of the two culverts was not compromised by the deflected shape or any other obstructions.

INSPECTION FINDINGS:

(A) Both culverts were clear of any debris or channel bottom material build-up throughout the entire length. The channel bottom material upstream and downstream of both culverts consisted of soft organic material allowing a maximum probe rod penetration of 1 foot.

(B) The exposed steel surfaces of both culverts exhibited moderate surface corrosion. The corrosion had a maximum of 1/8 inch loss of section. No areas of complete section loss or failed connections were observed.

(C) Both culverts exhibited a sag in the top (ceiling) at the CMP. The sag tapered from the ends of the culverts to the midpoint, where it had a maximum approximate displacement of 1 foot.

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

MORRISON COUNTY PUBLIC WORKS
UNDERWATER INSPECTION

1. STRUCTURE DATA

Feature Crossed: Rice Creek

Feature Carried: Hawthorn Road

Location: Morrison County

Structure Description: The structure consists of two (2) corrugated metal pipe culverts measuring 70 feet long and 6 feet in diameter.

2. INSPECTION DATA

Professional Engineer Diver: Barritt Lovelace, P.E.

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

Date: October 25, 2012

Weather Conditions: Cloudy, 50^{o} F

Underwater Visibility: 1 foot

Waterway Velocity: None / Negligible

3. WATERLINE DATUM

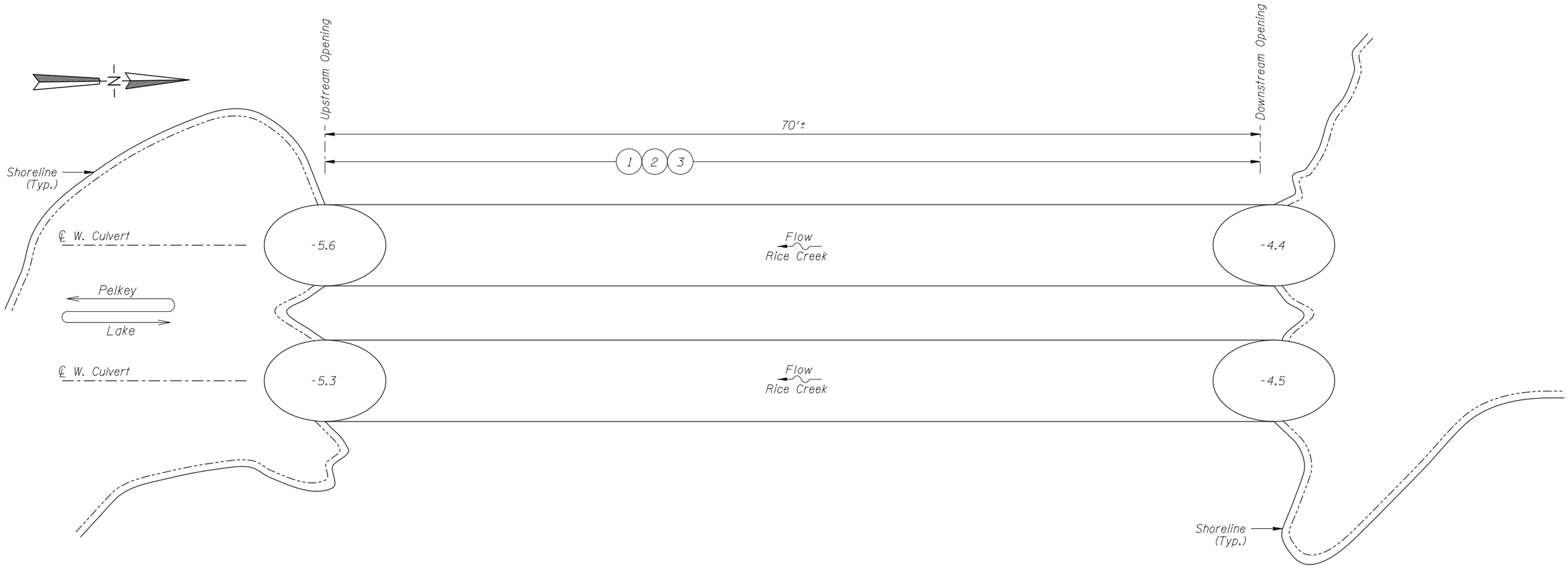
Water Level Reference: Top of the West Culvert at the upstream opening.

Water Surface: The waterline was approximately 1.6 feet below the reference.

Maximum Water Depth at Substructure Inspected: Approximately 5.6 feet.

Photograph 1. View of the Steel Condition and Ceiling Sag in the West Culvert, Looking South.

Photograph 2. View of the Steel Condition and Ceiling Sag in the East Culvert, Looking South.



INSPECTION NOTES:

1. *The corrugated metal pipes were clean of debris and silt build-up throughout the length of both culverts.*
2. *The steel of all culvert surfaces exhibited moderate surface corrosion with a maximum pitting depth of 1/8 inch.*
3. *Both culverts exhibited a slight downward bow towards the center of the culvert length. The maximum deflection of the top of the culvert was approximately 0.5 to 1 foot downward. The roadway and shoulder above the culvert exhibited two cracks parallel to each culvert pipe. The roadway showed no other signs of settlement.*

GENERAL NOTES:

1. *The East and West CMP culverts were inspected during the underwater inspection.*
2. *At the time of inspection on October 25, 2012, the waterline was located approximately 1.6 feet below the top of the CMP culvert at the upstream opening of the West culvert.*

Legend

-1.0	*Sounding Depth from Waterline (10/25/2012)*
1	*Inspection Note Number*

MORRISON COUNTY

DOUBLE CMP CULVERT
HAWTHORN ROAD OVER THE RICE CREEK

INSPECTION AND SOUNDING PLAN

Drawn By: MBP	COLLINS ENGINEERS, INC. 123 North Wacker Drive Suite 900 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com	Date: FEB., 2013
Checked By: LJ		Scale: NTS
Code: 742300001		Figure No.: 1

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

INSPECTORS: Collins Engineers, Inc. DATE: October 25, 2012

ON-SITE TEAM LEADER: Barritt Lovelace, P.E.

BRIDGE NO: N/A WEATHER: Cloudy, 50° F

WATERWAY CROSSED: Rice Creek (Pelkey Lake)

DIVING OPERATION: X SCUBA _____ SURFACE SUPPLIED AIR

_____ OTHER _____

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

EQUIPMENT: Commercial Scuba, Probe Rod, Camera, Hand Tools

TIME IN WATER: 3:50 P.M.

TIME OUT OF WATER: 4:30 P.M.

WATERWAY DATA: VELOCITY None / Negligible

VISIBILITY 1 foot

DEPTH 5.6 feet maximum at the West Culvert Downstream Opening.

ELEMENTS INSPECTED: The East and West Culverts

REMARKS: Overall, the structure inspected underwater was found to be in satisfactory condition with some defects of only minor structural significance. The steel of both barrels exhibited moderate corrosion on all exposed surfaces. An estimated 0.5 to 1 foot sag was observed in the top of both culverts. The sag reached a maximum deflection near the center of the culverts. The culvert pipes were clear of any debris and obstructions throughout the length of both culverts.