Montana Department of Transportation
Research Programs
December 2013

# EXPERIMENTAL PROJECTS WORK PLAN

## Sprayroq-SprayWall Polyurethane Applied Lining for Culvert Rehabilitation

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| **Location:** | Mineral County-Missoula District: Interstate 90, Reference Point (RP) 59; Nemote Creek Crossing |
| **Project Name:** | I-90 Nemote Creek Culvert |
| **Project Number:** | IM 90-1(205)59 – Work Type 312: Structure Safety |
| **Experimental Project:** | MT-13-14 |
| **Type of Project:** | Culvert Rehabilitation |
| **Principal Investigator:** | Craig Abernathy: Experimental Project Manager (ExPM) |
| **Technical Contact:** | Jennifer Nelson, Missoula Design Supervisor |

## Description

The project is located at the crossing of Nemote Creek on Interstate 90, at RP 59.0 ±; approximately two miles west/north of the Tarkio Loop Road interchange, and 1.3 miles east/south of the Quartz Flats westbound rest area. The eight (8) gauge steel plate pipe culvert (SPPC) is 242 linear feet, and 12' in height.

Bulging and sagging of the culvert's panels were noted in 2006, and recommended for remedial action in May 2013. Maximum deflection within areas of deformation was roughly estimated to be six inches located in the upper plates of the pipe (refer to page 3). The purpose of the rehabilitation effort is to improve the structural capacity of the pipe to reduce the chance of a culvert failure that would impact the I-90 roadway.

## Experimental Design

Due to site constraints and apparent minimal change in the areas of deformation over the past seven years, the Department proposes to use a cure-in-place-pipe (CIPP) process to provide structural enhancement and corrosion resistance.

The selected product is Sprayroq's protective lining system *SprayWall*. SprayWall is a procedure using spray-applied polyurethane coating as the lining medium. The

manufacturer states the lining allows return to active service within an hour of application. Product information including technical performance, specifications and ASTM certification can be found at: SprayWall Polyurethane Lining.

## Evaluation Procedures

**Construction Documentation:** The Research Section will document the construction methods and equipment, material placement, weather, and specification conformance etc.,

**Post Documentation:** Will entail semi-annual site visits/inspections of the culvert, for visual documentation of the applied liner. Set deflection measurements locations (established after curing) will be measured as well and included in the annual and final reports; in addition to include any maintenance or other Department inspection information associated with the culvert treatment.

## Evaluation Schedule

Research will monitor and report on performance for a minimum period of five years annually, with every year up to *ten years (informally). This is in accordance with the Department's "Experimental Project Procedures". Delivery of a construction/installation report, interim, annual or semi-annual reports is required as well as a final project report (responsibility of Research). A web page will be dedicated to display all reporting from the project.

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| 2014: | Installation/Construction Report |
| 2015-2018: | Semi-Annual Inspections/ Annual Evaluation Reports |
| 2019: | Final Evaluation/Final Report |

*If considered the extra data collection and analysis will add value to the overall results of the project.

## UPDATE

This project is now scheduled for installation in the summer of 2015

**Nemote Creek Culvert 2013**

🡸 Representative image of the observed sagging in the top panels of the steel plate arch culvert.

🡸 Upstream (east end) entrance of culvert.

🡸 Downstream (west end) exit of culvert.

**Project Location**: Nemote Creek Culvert–Interstate 90 & Mullan Rd. East (old Highway 12), Reference Point 59: Mineral County, (yellow line denotes approximate position of the SPP culvert).