

Project Overview

During inspections of their road culverts, the City of Rock Springs discovered a corrugated metal culvert that was considered in danger of imminent failure. The 700 foot long culvert in question was arched with a maximum height of 48 inches and a maximum width of 72 inches.

The invert of the pipe, which was covered with dirt and trash, was mostly corroded away. In fact, approximately 18 inches of the underlying soil had been eroded along the full length of the culvert. In addition to the invert, there were joint separations of more than six inches in many of the joints. The crown had also caved in over a 10-foot section of the structure running directly under the road. The situation was clearly dire.

Solution

Initial thinking was that the entire culvert would need to be replaced.

The client decided on a trenchless repair method to prevent traffic disruption, save the existing road, and minimize the time and expense required to complete the project. Due to these factors, as well as the oval culvert shape, GeoSpray was selected as the ideal solution.

The major flaws in the pipe were then addressed. The timber bracing was used to return the crown to its original shape. Standard Portland cement fill was laid in the invert of the culvert to replace the missing soil and the joints were repaired.

Results

Once the basic shape of the pipe was returned to normal, the GeoSpray liner was applied to return the structural integrity of the system and create a like-new condition. The liner was applied using standard spray nozzle techniques to a final thickness of 1.5 inches. The inlet and outlet of the culvert were also treated with GeoSpray liner to create a monolithic structure.

The GeoSpray liner design was certified as a structural rehabilitation by a professional engineer. The City of Rock Springs was able to take a high risk situation and restore the storm culvert to better than new condition in under two weeks while keeping the road open to traffic.

Project Details

Application: Arched storm culvert

Client: City of Rock Springs

Location: Rock Springs, WY

Product Used: GeoSpray, 126,000 lbs

Installation: May 2014

Installer: Inland Pipe Rehab, LLC

Takeaway

GeoSpray geopolymers helped the city restore a failing culvert to better-than-new conditions in less than two weeks with minimal disruption.



Severely corroded CMP invert



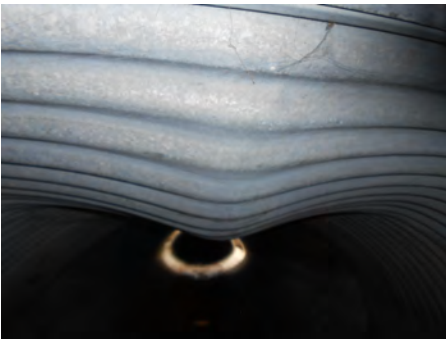
Invert needed to be repaired prior to application of geopolymer



Severe invert corrosion



Asset owners had used timber as a temporary structural support



Crown damage likely from time of install



Completed arched pipelining



Final geopolymer pipe