

# GEOSPRAY®

## Used to Line Corroded Culvert



### CASE STUDY:

Washington Street

Grayslake, IL

Corrugated Metal Arch

Culvert Rehabilitation

### PROJECT OVERVIEW

Culverts carry out an essential job ensuring water and debris does not flow onto roads causing a danger to motorists. Keeping culverts in working condition is a priority to many counties and highway agencies around the U.S. so when the Lake County Division of Transportation in Illinois identified a metal structure plate arch culvert that showed signs of major deterioration (pitting and corrosion), they needed a way to structurally reline it to ensure it remained in top working condition and extend its service life.

### SOLUTION

The county had previously worked with GeoTree and was aware of the GeoSpray geopolymer product and its rehabilitative capabilities. After looking into the trenchless and replacement options available they decided on a culvert liner system that included the cementitious geopolymer option due to its lower cost compared to other systems and speed of installation. The Michels/Berger Construction team bid and was awarded the project with the GeoSpray geopolymer spray-on lining system.

The culvert was in place to drain the upstream Mill Creek watershed under Washington Street near Grayslake, Illinois. In order to carry out the lining work with no internal flow during the installation, a 36" HDPE bypass pipe was placed on 12" blocks and run through the culvert. The bypass system included pumps and a cofferdam installed at the culverts inlet to divert flow through the internal bypass pipe during the hand spraying lining operation. This enabled the installation team to spray line the pipe without disrupting the flow of Mill Creek. The 36" bypass pipe was removed at the completion of the lining and after the area under the elevated bypass pipe was sprayed.

Approximately 2.75" of GeoSpray mortar was applied to the interior walls of the 96' long, 11' 7" wide and 7' 5" high metal arch culvert.

Due to the extreme cold conditions, Michels tented the culvert ends and applied internal heat to the inside of the pipe during the operation to ensure the product could be applied and cured correctly. The use of specialized grouts was required to seal any active infiltration from joints and, rusted through voids/holes, found within the culvert length. Applied in layers, the Michels team took five days to complete the geopolymer lining installation once the bypass system was placed.

### PROJECT DETAILS

**Location:** Grayslake, IL

**Application:** Corrugated Metal Arch Culvert Rehabilitation

**Client:** Lake County Division of Transportation

**Installation:** November 2019

**Installer:** Michels Pipe Services, Brownsville, Wisconsin



GeoSpray applied to the walls of the culvert.



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## INSTALLATION IN PICTURES



1 Culvert inlet and outlet before repair.



2 Cofferdam and draw down pumps put in place.



3 Bypass HDPE pipe laid through culvert.

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4 GeoSpray applied to the walls of the culvert.



5 Completed install of GeoSpray.

6 13 months after installation, GeoSpray lining remains strong and secure.



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