

CONCRETECLOTH™

Geosynthetic Cementitious Composite Mat (GCCM)



WATER/WASTEWATER



STRUCTURAL STRENGTHENING

CASE STUDY: Noble County Highway

PROJECT OVERVIEW

The invert of a 12' diameter CMP culvert in Noble County, IN, was experiencing minor pitting and rusting. The Noble County Highway Department needed a preventative solution to protect the invert from further abrasion and deterioration. The Highway Department wanted to make minor repairs instead of waiting for the culvert to get to a state beyond repair where replacement or major rehabilitation were the only options. GeoTree Solutions provided recommendations for the use of Concrete Cloth™ GCCM. A thickness of 8 mm (CC8) was chosen for the project. GeoTree assisted with the identification of the material quantity and offered on-site installation assistance for the job.

SOLUTION

The Highway Department attended a presentation on Concrete Cloth at the 2017 Purdue Road School and was intrigued by the application of the material. Compared to Concrete Cloth GCCM CC8, culvert replacement and concrete paving of the invert are costly options. With Concrete Cloth, the invert could be covered by county crews who received on-site installation assistance from a regional manager at GeoTree Solutions. Before the Concrete Cloth was installed, the culvert had to be cleaned of all silt, and minimal voids in the invert had to be sealed with concrete to fill places that were rusted through completely.

RESULTS

It was decided that 3 panels of CC8 material could be laid longitudinally down the culvert to cover the desire area of the invert. The two side panels were first secured and then a center panel was laid atop the other two panels with significant overlap to prevent water ingress. The panels were secured with stainless steel screws to the culvert and sealed with a bitumen sealant. The Noble County maintenance crew longitudinally installed and hydrated 1000 square feet of the product in three hours. Lining the invert should extend the life of the culvert by significantly slowing down its deterioration rate. The Highway Department was pleased with the installation and wants to use the same fabric on several county metal culverts. The ability of the Highway Department to use their own maintenance crews to perform the work was a key cost saving for the project.

PROJECT DETAILS

Location: Noble County, IN

Application: Culvert Invert Lining

Client: Noble County Highway Department

Installation: August 2017

Contractor: IPR



Rehabilitated culvert invert with CC8.



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Existing invert with pitting and corrosion.



CC8 fabric roll lowered into culvert.



Laying CC8 sections longitudinally in invert.



Securing CC8 with stainless steel screws.



Hydrating CC8 to harden fabric.



Completed rehabilitation.



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