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Geopolymer Lining System Used For Difficult Deep Manhole and Brick Sewer Rehabilitation

ABSTRACT
This presentation includes detailed insight to the rehabilitation of a 125' deep, 8' in diameter manhole that connected to a 350 LF, 78" H x 66" W egg shaped storm culvert that discharged into a nearby river. Both the manhole and storm culvert were constructed in the early 1900s and were suffering from severe infiltration and degradation.
Due to the depth and diameter of the manhole, combined with the length and shape the culvert, the engineering design was extremely complex. Adding to the project's difficulty was the physical location of the manhole — which was on a busy thruway located at the edge of a very steep cliff. This alone limited the method of rehabilitation. Ultimately, the Quadex Lining System® and GeoKrete Geopolymer were selected to structurally rehabilitate both. Several key factors drove this decision: An advanced application process, the versatility of GeoKrete Geopolymer, an experienced engineering team and installation crew and a small construction footprint. We have captured the entire rehabilitation process through a series of photographs and videos.
The project presented a number of challenges, including the careful removal of several extremely heavy baffles throughout the depth of the deteriorated and crumbling manhole. Also, its depth required a special crane operation and procedure for the crew be lowered and raised inside the manhole for the prep, cleaning, infiltration control and application processes.
During the coursed of the project the weather — that ranged from very warm with heavy rains to very cold and snowy with gusting winds — forced the crews to develop innovative solutions to work around the wind and weather conditions. Regardless, the entire project was completed within the allotted time frame and within budget.