



UNIVERSITY FOOTBALL STADIUM UNDISTURBED BY PIPE REHABILITATION

Founded in 1866, Towson University's water infrastructure was due for an upgrade. This fact became apparent when 100 In ft of 72-in. corrugated metal pipe (CMP) storm culvert collapsed on the Maryland university's campus grounds. While immediate emergency repairs were needed, long-term repairs were necessary to prevent future incidents, especially after an inspection of a downstream sewer line revealed 900 In ft of 72-in. CMP and 300 In ft of 84-in. CMP in poor shape.

A portion of the damaged pipe ran approximately 30 ft below the university's football stadium, Unitas Stadium, rendering a trenchless solution necessary. To further complicate matters, no manhole or other access points were available for approximately 900 In ft of the 1,200 In ft project.

"Pumping material long distances was a key challenge," said Linda Keairns, marketing manager for AP/M Permaform. "The material was pumped almost 700 ft in one area and applied to the interior of the pipe with CentriPipe, a centrifugally cast concrete pipe (CCCP) solution. A temporary access point was installed into a manhole chimney from a 45 degree angle, to gain access to the pipe on the downstream end."

Other solutions were considered, including sliplining which would reduce the flow capacity of heavily utilized storm pipe and cured-in-place pipe which was considered untenable in the situation. First, invert repair was necessary using a fine aggregate composite concrete, then chemical grouting

around pipe joints was performed. Approximately 5,600 gal of two-part structural polymer were pumped into annular space around the deteriorating CMP due to unexpectedly large annular voids.



“The pipe running under Unitas Stadium was cost-effectively rehabilitated with a trenchless solution, avoiding open-cut, enabling football practice ... and all other practices and day-to-day activities to proceed as normal while work was being conducted below ground,” Keairns said. “This was of significant importance to the university and their students. All while maintaining the important flow capacity of the pipe.”

The pipe rehabilitation project at Towson University is one of the first large CCCP projects directly underneath a large building and to impact such a developed urban area. The project successfully repaired the deteriorating pipes while maintaining flow capacity of the existing pipe despite challenges.

“The team is most proud of the collaboration and installation of a proven, structural, cost-effective solution that best serves Towson’s needs,” Keairns said.

Project Year: 2018
Contractor: Centrifugal Lining
Designers: Whitney Bailey Cox & Magnani LLC
Solution Providers: AP/M Permaform
Owner: Towson University
Location: Towson, Md.
Cost: \$1,641,120
Size: 1,200 In ft