

PROJECT PROFILE

Featured Products

Series 218 MortarClad

Series 435 Perma-Glaze



A coatings system including Series 218 MortarClad and Series 435 Perma-Glaze was used to replace the polyurea linings that were failing on the digester lids at the Chambers Creek WWTP.

Chambers Creek Digester

Located on 44 acres in Pierce County, five miles south of Tacoma, Wash., the Chambers Creek WWTP treats residential and commercial wastewater in its service area and currently processes 21 mgd.

In the midst of a June 2001 facility upgrade, bids were requested to provide new 36-inch-thick concrete lids with protective coatings for two of the three digester tanks at Chambers Creek. The specification called for an interior polyurea liner over the entire 80 foot diameter of the lids and five feet down the walls. For the rest of the walls below the waterline, Tnemec's Series 61 Tneme-Liner, a cross-linked cycloaliphatic amine epoxy with strong corrosion and chemical resistance, was specified. This product was originally applied when the tanks were built in the 1980s; it had stood up to the aggressive environment and had never lost its performance characteristics.

In the fall of 2001, the tanks were cleaned, the original floating lids were replaced, the new stationary concrete lids were installed, and the specified polyurea system was applied. A systematic check less than a year later found that the polyurea linings were beginning to lose their elasticity and adhesion to the substrate. The thick film was beginning to deform, blister and wrinkle, starting in the crest of each dome and moving outward to the edges. The owner's warranty required the material to be replaced, so the contractor removed the delaminated lining from both lids and applied the polyurea over a different primer.

By the summer of 2003, the coating on both digester lids was failing once again above the waterline in the tanks' head space. It was apparent that a new solution was needed as the warranty work was no longer actionable and the delays were costing a great deal of money.

The utility emptied one digester and it was immediately evident to the Tnemec coating consultant that the failure was likely due to elevated H₂S concentrations that had permeated the coating in the head space. This environment can be aggressive, often filled with H₂S gases that can permeate a liner, alter the physical properties of the film and ultimately affect the adhesion to the substrate.

To remedy the situation, the contractor removed the failed coating on the first lid by abrasive blasting per SSPC-SP13/NACE 6 to achieve ICRI CSP-5. Series 218 MortarClad, a modified epoxy cementitious resurfacer, was applied to make the concrete surface perfectly smooth for a pinhole-free finish coat application.

Next, the contractor spray-applied Series 435 Perma-Glaze, a 100% solids epoxy composite liner, to a dry film thickness of 40-50 mils DFT with heated plural component spray equipment. This abrasion resistant lining exhibits low permeation to gases including H₂S as well as protects against MIC and provides excellent chemical resistance to severe wastewater environments.

The Perma-Shield system has been in place in the first digester since 2004 and the Chambers Creek management team gives the system high marks.

Project Name

Chambers Creek Digester

Owner

Pierce County Public Works

Project Location

Tacoma, WA

Engineer

Pierce County Public Works

Project Completion Date

September 2004

Coatings Contractor

Coatings Unlimited