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FEATURED PROJECT

Specialty Repairs

THICK-FILM COATING

CUSTOMER
Wastewater Treatment Facility

LOCATION
Plymouth, MA

APPLICATION TEAM
A&G Industrial

DATE OF APPLICATION
June 2016

SYSTEM
Thick Film, Structural Lining System

SUBSTRATE
Concrete

PROBLEM

A wastewater treatment plant in Plymouth found some significant degradation to the concrete in one of their raw sewage storage tanks. The upper wall area and ceiling experienced the most extreme degradation due to the build-up of hydrogen sulfide gas in the vapor zone above the raw sewage. The structural integrity of the tank was a major concern as an internal wall of the tank was shared between two identical tanks. After decontamination and surface preparation procedures, it was found that nearly six inches of concrete were missing in the upper wall and ceiling.

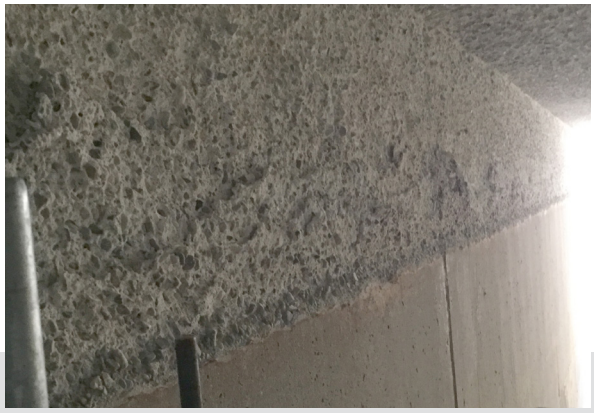

Figure 1 Close-up View of the Top 3 feet of the Concrete Tank

SOLUTION

Advanced FRP Systems proposed a combination of a high-compressive strength epoxy mortar, EM-110, and a thick-film structural lining, SL-310. The full reinforcement system was designed and stamped by a structural engineer to ensure the structural integrity of the raw sewage tanks.

STEPS:

1. The concrete was decontaminated with hydrogen peroxide and pressure washed.
2. An internal expansion joint was filled with HP-300 Elastomer, an elastomeric epoxy.
3. FRP 200 Sealer was applied at 3 - 5 mils to increase adhesion and prevent outgassing from the concrete.
4. The upper walls had two inches of EM-110 applied via trowel in two coats.
5. SL-310 was applied at 40 - 250 mils over the entire tank via airless spray, with the highest film build on the upper walls and ceiling.

The repair solution provided the structural strength required to rebuild the missing concrete and the final coatings were resistant to the high concentration of hydrogen sulfide gas as well as immersion in raw storage.

Figure 2 Temporary HDPE molds to rebuild Expansion Joint

Figure 3 After Application of Two Inches of EM-110, High-Strength Epoxy Mortar

BENEFITS

- Spray-applied, thick-film lining system was applied in a single day
- Our epoxy based systems ensure best in-class adhesion to concrete
- A zero-VOC coating system minimized pinholes and ensured solvent entrapment would not occur.
- Coating will provide a 20-year, maintenance-free service life for the tank owner.
- Entire reinforcement system was certified and stamped by a structural engineer