

FEATURED PROJECT

Water-Immersion Coatings

APPLICATION OF COATING IN A HIGH-SALINITY ENVIRONMENT

CUSTOMER

Water Treatment Facility

APPLICATION TEAM

Henkels and McCoy

SYSTEM

Water-Immersion Coating System

LOCATION

New Jersey

DATE OF APPLICATION

September 2020

SUBSTRATE

Carbon Steel

PROBLEM

During an inspection, a water treatment plant found groundwater was leaking into the chamber of one of its underground pumping vaults. The damage was primarily attributed to internal corrosion of the steel on the floor and lower sections of the wall, with multiple through-wall failures identified. A solution had to be installed that would prevent groundwater infiltration, reinforce the corroded floor-to-wall joint, and resist periodic immersion in water with a high salinity. The solution also needed to be installed without grit blasting the repair area as the sensitive pumping equipment could not be removed or safely protected.



Figure 1 Extreme Corrosion with Through-Wall Failures After Surface Preparation

To prepare the repair area, the failed existing coating was removed via Bristle Blasting and a surface-tolerant epoxy primer was installed to maximize adhesion to the exposed steel. Pitting and holes were filled in with a high-build epoxy putty then reinforced with two layers of a high-strength woven fiberglass mat. An elastomeric epoxy was then applied to minimize any stress from thermal cycling and provide maximum impact and abuse resistance to the cured system.



Figure 2 Pitting Repair with FRP Repair Putty Prior to Glass Reinforcement

SOLUTION

STEPS:

1. The steel was Bristle blasted then primed with FRP 201 Sealer.
2. FRP Repair Putty was used to fill in existing pitting and provide coves in the corners.
3. Fiberglass was saturated with FRP 200 Saturating resin and installed around the circumference of the vault to reinforce the floor-to-wall joint.
4. Two layers of HP-300 Elastomer were applied via roller at 15 – 20 mils per coat.

The final system provided an immersion-grade, reinforced epoxy that tied into the existing internal coating to prevent future corrosion from the inside of the vault.

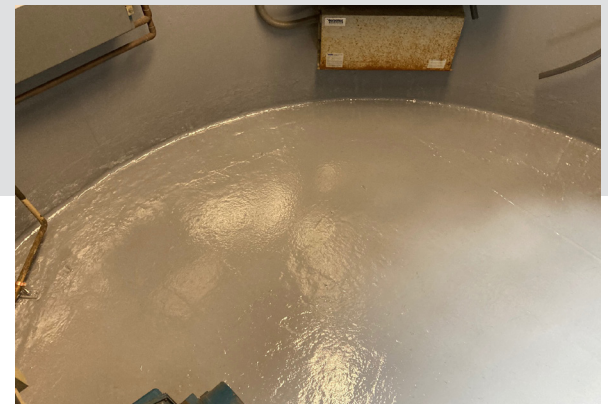


Figure 3 Vault Floor After Rebuild and Coating Application

BENEFITS

- FRP 201 Sealer provides outstanding adhesion even to marginally prepared substrates, anchoring the full coating system
- Fiber reinforcement provides additional structural strength
- HP-300 Elastomer provides excellent impact resistance in case workers need to perform repairs on the pumps
- The final repair will provide a 20-year, maintenance-free service life