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Authorized Dealer

Wastewater Tank Lining

Category: Concrete Tank Lining Protection

Customer: Altoona Wastewater Treatment Facility,
Altoona, PA

Project: Stop Corrosive Hydrogen Sulphide From
Destroying Concrete Substrate

Product: Rhino Primer 251™ and Rhino Hi-Chem™ PW

Problem

Hydrogen sulphide corrosion was destroying the concrete tank walls at this Wastewater Treatment Facility in Altoona, PA. Two tanks, 60' x 24.5' x 11' each, plus several additional sq. feet of old, pitting and rough concrete required a flexible yet durable protective coating. The work also had to be accomplished in a confined space and within the facility's safety protocols.

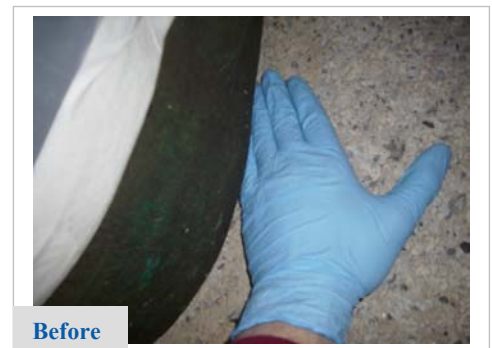
Solution

The job went out to general bid and was won by Tank Coating Technologies (TCT) of Tilton, NH. To ensure a smooth finish with high chemical resistance, TCT choose Rhino Linings Hi-Chem PW for its protective solution. Hi-Chem PW provided a rapid curing, elastomeric polyurethane formulation with good elongation properties. It also was specifically designed for harsh chemical environments and came with NSF/ANSI 50 and 61 certifications.

An epoxy solution was discarded because it wouldn't provide the flexibility and expanded life span available with the Hi-Chem PW solution. Plus, TCT had a proven track record of successful chemical protection applications in wastewater treatment plants using Rhino Linings Hi-Chem PW polyurethane.

For tank preparation procedures, TCT began by checking the concrete substrate for chloride and PH levels. They then lightly washed the concrete with a neutralizing solution and used a high-pressure 3,000 psi spray as a rinse. The cumbersome task of masking (using paper, plastic and wire trim) and disassembly of piping and detailed areas (to be sprayed and reassembled later) was accomplished by a method designated by TCT as "keepers".

Keepers incorporates steel grating of various types that are mechanically fastened to the walls using a concrete nail gun. This structure increases the mechanical adhesion of the Hi-Chem PW coating especially in the high hydrostatic pressure environment.



Next, TCT filled concrete gaps and bug holes with a fast curing polyurethane caulk. Rhino Primer 251 was applied over the caulked areas with an HVLP gun at a thickness of 5 mils. To solve the problem of identifying pin holes in the concrete, inspections were performed regularly and a black marker was used to indicate where touch up was necessary. Rhino Primer 251 was then applied over the entire area at 180-200 mils.

Periodic thickness measurements were performed using ultrasonic and analog methods to ensure proper priming procedures were maintained. To complete the job, TCT sprayed Rhino Hi-Chem PW polyurethane at 250 mils over the entire tank which monolithically sealed the walls and eliminated the possibility of future corrosive hydrogen sulphide destroying the concrete substrate.

Results

One tank was done in November 2007 and the second was completed in February 2009. Both are still operating with no corrosion issues. By selecting Rhino Hi-Chem PW as its protective tank lining, Tank Coating Technologies was able to provide a monolithic, chemical/corrosion resistant solution with an extensive life span.

Hi-Chem PW Benefits:

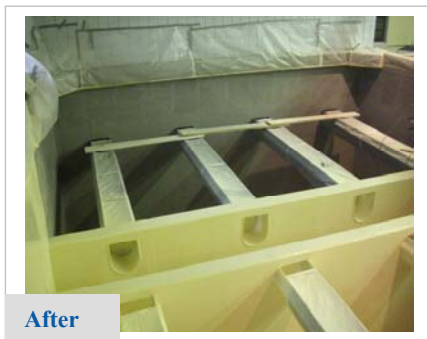
Rhino Hi-Chem™ PW is a two-component, 100% solids (no VOCs, no solvents), exothermic, rapid curing, elastomeric polyurethane lining system specifically designed for excellent chemical resistance.

- Excellent corrosion resistance.
- Excellent chemical resistance.
- Dense chemical structure imparts high impermeability.

Hi-Chem PW Physical Properties:

• Hardness (Shore D)	65±5	ASTM D-2240
• Tensile Strength (psi)	2000-2200	ASTM D-412
• Elongation (%)	60-80	ASTM D-412
• Tear Strength, Die C (pli)	190 – 210	ASTM D-624
• Taber Abrasion Resistance	50-60	ASTM D-4060

* Properties were checked of Hi-Chem PW lining 1/8" (125 mils), (3.18 mm) thick



Industrial applications are highly specialized and specific consultation and training may be required to perform such applications. Rhino Linings® does not provide confined space training and/or expertise in this area. Product MSDS sheets and specific chemical properties should be evaluated before undertaking any application.



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