



ONEOTA STREET PUMP STATION

FEATURED PRODUCTS

Series 218 MortarClad **Series 436 Perma-Shield FR**

During replacement of the last pumping station built by Duluth, Minnesota, in the 1920s, the Western Lake Superior Sanitary District (WLSSD) was able to rehabilitate the deteriorated concrete in an aging lift station using a high-build, fiber-reinforced epoxy liner from Tnemec. "The concrete in the lift station had corroded down to the river rock that was used as aggregate during mixing," Tnemec coating consultant Randy Bartz observed. "The level of deterioration was indicative of wastewater facilities around the country that are looking for ways of maintaining or restoring infrastructure that was constructed many years ago."

Prior to coating, the concrete was power washed and prepared in accordance with SSPC-SP13/NACE No. 6, ICRI-CSP5 *Surface Preparation of Concrete*. Next, the concrete was resurfaced with Series 218 MortarClad, an epoxy-modified cementitious mortar, which was trowel-applied at ¼-inch. "The concrete was especially corroded in the scum layer where there was as much as ½-inch of deterioration," Bartz noted. "That's where the coating contractor used a mason's brush to scrub the mortar around the exposed aggregate."

A topcoat of Series 436 Perma-Shield FR, a fiber-reinforced, 100 percent solids, modified polyamine epoxy liner, was spray-applied at 60 to 80 mils DFT. This high-build liner provides exceptional rehabilitative concrete corrosion protection from H₂S gas permeation and biogenic sulfide corrosion found in severe wastewater systems. The fiber reinforcement in Series 436 offers flexural and tensile strength, making it ideal to use in domestic wastewater systems where high abrasion and impact resistance are needed.

The restoration project was completed during winter months when the wastewater flow could be diverted from the lift station. "Ideally, we would like temperatures in the 50 degree range when we're applying these coatings," Bartz confirmed. "Given our winter weather in northern Minnesota, they had to pump indirect heat to the lift station to achieve proper cure."

According to Bartz, municipal wastewater containment structures are being used well beyond their 40 to 50 year design life. "Many municipalities are looking for ways to maintain the infrastructure that they have while adding even more capacity," Bartz added. "They're also concerned with containing odor, which contributes to an even more aggressive wastewater environment for coating systems that are used to protect concrete and steel from corrosion."

PROJECT INFORMATION

Project Location

Duluth, Minnesota

Project Completion Date

November 2007

Owner

Western Lake Superior Sanitary District

Architect/Engineer

MSA Professional Service
Duluth, Minnesota

Contractor/Applicator

Northland Painting of Duluth
Duluth, Minnesota



Because areas of the Oneota Street Pump Station in Duluth, MN were severely deteriorated, Series 218 MortarClad was used to resurface and repair the concrete.