Project Profile

San Francisco International Airport

**Tnemec Coatings Specification**

Series 431 Perma-Shield PL

**Project Name**

San Francisco International Airport

**Project Location**

San Francisco, California

**Project Completion Date**

August 2012

**Project Team**

Owner

City of San Francisco

San Francisco, California

Architect/Engineer

San Francisco International Airport

San Francisco, California

Shop Applicator

Mobile Pipe

Adelanto, California

**Project Description**

After the Federal Aviation Administration (FAA) increased safety requirements across the country, the San Francisco International Airport (SFO) came across several obstacles in moving their runways to comply with the changes. One of the obstacles they encountered, to move their industrial wastewater treatment and storm water pipes, provided an opportunity for the engineer to improve the lines’ performance.

The pressurized industrial wastewater pipe was specified as ductile iron or Fusible PVC. All fittings for the project were specified to be epoxy-coated and cement mortar-lined per AWWA C210 and C104 minimum requirements. But Mobile Pipe recommended that the life-cycle of the pipe could be extended by lining it with an abrasive- and chemical-resistant coating to withstand the intense pressure of the system. The engineer was presented with the performance criteria of Tnemec’s Series 431 Perma-Shield PL and, after comparing it to an “equivalent” ceramic 100% solids epoxy, decided its superior mechanical properties made it the clear choice for the fittings.

“Mobile Pipe was very excited to get an alternative lining choice,” said Tony Hobbs of TPC Consultants, Inc. “And Mobile Pipe’s enthusiasm was instrumental in getting Perma-Shield PL into the specification.”

Series 431 is in a league of its own when considering its tensile strength (ASTM D2370: 3,400 psi) and its abrasion resistance (ASTM D4060: 76 mg loss). Its adhesion to ductile iron is also a step up from alternate linings, and according to ASTM D4541 Method E, Type V, it is able to withstand pull-off strength of 2,866 psi. Plus, Series 431 has been tested extensively in wastewater environments and is formulated to protect ductile iron pipe from MIC and H2S gas permeation.

“Once the engineer decided on Series 431, we shipped the lining directly to Mobile Pipe to be lined in-shop,” explained Hobbs. “There were over 150 ductile iron pieces to be coated.” The fittings of all sizes, including elbows, reducers and tees, were prepared in accordance with NAPF 500-03-05: *Abrasive Blast Cleaning of Cast Ductile Iron Fittings*, and then the lining was spray-applied using a rotary coater pistol spray gun. In one coat, Series 431 was applied at 30-40 mils dry film thickness (DFT).

The pipes and fittings for the industrial wastewater line were completely installed by mid-2013. All of the lined fittings were compliant to California’s strict VOC regulations and the airport itself is now within the regulations of the Federal Runway Safety Act (FRSA) and the FAA.

Known as the “gateway to the Pacific,” SFO is the Bay Area’s largest airport and connects with more than 74 cities in the U.S. and 31 international points. The airport was recently voted gold winner of most “Eco-Friendly ‘Green’ Airport” by *Travel Weekly* and last year was awarded “Best Airport in the Americas” by the readers of *Frequent Business Traveler*.