Mobile Pipe Lines 60-inch Fittings for Ala Moana Wastewater Pump Station Force Main #3 and #4

The City and County of Honolulu is completing construction of a dual, 60-inch force main that will convey wastewater from the Ala Moana Wastewater Pump Station (WWPS) to the Sand Island Wastewater Treatment Plant. The Ala Moana WWPS and force main system receives wastewater generated in the area encompassing Nia Valley to Nuuanu and Kakaako, and serves approximately half of the population of the island of Oahu. It is the largest wastewater pumping system on the island with an average flow rate of approximately 48 million gallons per day (MGD), with wet weather flow increasing to 120 MGD. The lines provide much needed relief to the #1 and #2 lines made of reinforced concrete.

Mobile Pipe Lining and Coating was chosen to apply polyurethane lining on 60-inch ductile iron fittings. Cast 60-inch fittings pose unique surface preparation challenges making Mobile Pipe's Quality Management System essential during the application process to ensure zero holidays prior to shipment. Each fitting was carefully inspected using a three-step procedure prior to surface preparation. This included checks for oil and grease, surface contamination, and casting defects. Once QC-verified at this hold-point, the fittings were abrasive blasted and polyurethane lined. After curing, QC then verified the lining for proper film thickness, adhesion, and a holiday-free surface using high voltage detection equipment.

Pipeline Details and Project Summary

Project:	Ala Moana Wastewater Pump Station Force Main #3 and #4
Location:	Honolulu, HI
Scope:	30+ Ductile Iron Fittings and Spools
Size:	48" to 60" Ductile Iron Fittings and Spools
Owner:	City and County of Honolulu
Engineer:	Fukunaga and Associates

Fittings for above-ground service treated with a paint system featuring a zinc rich primer

The rigidity of the fittings also created a unique opportunity for polyurethane linings. Polyurethanes are produced when liquid isocyanates react with a liquid blend of polyols, catalyst, and other additives. These components are referred to as a polyurethane system. Durashield™ 210 (DS 210) is a 100% solids (solvent-free), two-component aromatic polyurethane coating that contains no volatile organic compounds (VOC) or extending fillers. By employing hydrophobic polyurethane resins, DS210 has a very low water absorption rate and a superior cathodic disbondment characteristic. Additionally, film thickness is a major factor in performance. Polyurethane is typically applied with a thicker film than most epoxies which ensures a holiday-free coating over the typically rough and irregular surface condition of ductile iron fittings. Also, thicker films offer additional abrasion protection that effectively provides more margin of safety to deal with rough installation conditions. Finally, the quality and experience of the coating facility should always be considered as coatings and coating applicators are selected. Mobile Pipe's successful performance on this project benefited from its Quality Management System, its NACE certified employees, and its more than 30 years of coating and lining experience.

Mobile Pipe
LINING AND COATING

Project Profile

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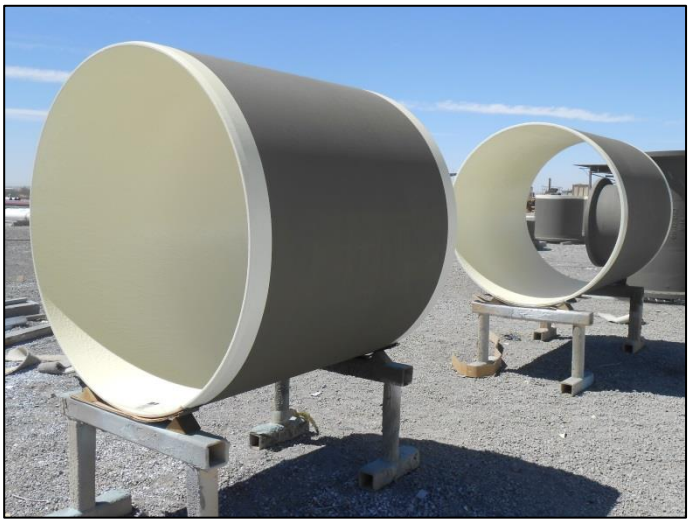
The quality of coating application is vital to the long-term success of the end-product. Environmental logs and QC reports are available for each Mobile Pipe project.



The exterior of the fitting was primed using Tnemec Omnithane® Series 1 urethane coating with Durashield™ 210 used as the lining.

The fittings were strapped and barged to Hawaii on a cargo ship. Cautious loading and additional steps in padding the fittings at choke points minimized potential shipping damage.