WL POLYETHYLENE PIPE

PLASTICS
The Ideal Piping Solution

Flexibility, durability, and reliability during an earthquake. using PE4710

CASE STUDY

EBMUD Inner Harbor Crossing

East Bay Municipal Utility District (EBMUD) is a not-for-profit water and wastewater public utility in Oakland, CA. EBMUD is investing more than $2.8 billion over a 5-year period to rehabilitate water treatment plants, pumping plants, reservoirs, pipelines, wastewater facilities and sewer interceptors. EBMUD is proactively replacing its water pipelines to improve water service, reduce water loss and the number of pipeline breaks in the service area. Half of these pipelines were installed more than 50 years ago. The pipelines are constructed of cast iron, asbestos cement, and steel. EBMUD is recognized as a responsible financial steward and is the only California water utility to receive Moody's Investors Service's highest water bond rating.

EBMUD provides water service to 40,000 customers on Alameda Island (island) including the U.S. Naval Air Station at Alameda with several underwater pipeline crossings from Oakland to the island (see Figure 1). Only four of the original seven underwater water pipeline crossings are operable. The last crossing failure was in 2009. Hydraulic model investigations determined that the failure of one of the remaining crossings would lead to a reduction in available fire flow rates on the island.

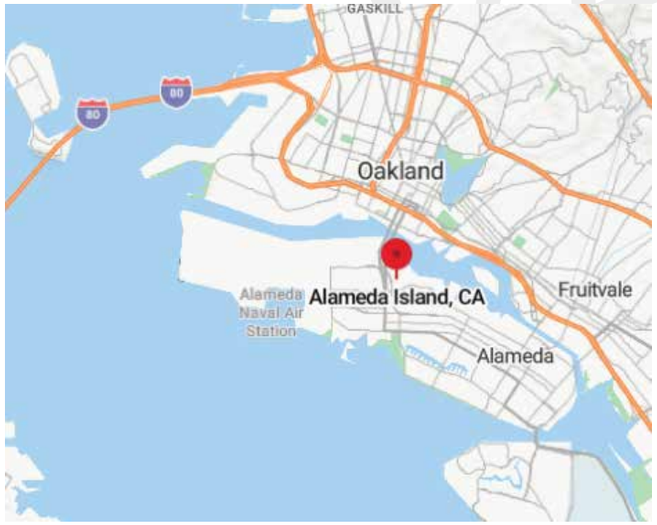

Figure 1: Vicinity Map of City of Oakland and Alameda Island

EBMUD created the Alameda-North Bay Farm Island Master Plan in 2014 to address the issue aging Oakland Inner Harbor Crossings. The plan calls for EBMUD to reduce the four water transmission lines that serve Alameda to three transmission lines. In 2016, EBMUD completed an environmental impact report for the full project that prioritized the crossing between Alice Street in Oakland to Webster Street in Alameda. In 2022, EBMUD awarded a $25 million contract to Cratus Inc., a San Francisco-based construction company, to install a new 32-inch diameter PE4710 pipeline crossing beneath the Oakland Harbor via Horizontal Directional Drilling (HDD) to replace a 1940s-era cast iron pipeline crossing in an area that is susceptible to liquefaction during an earthquake. PE4710 pipe material was chosen because of its flexibility, durability, and reliability during an earthquake.

In Spring of 2023, the approximately 3,000-foot-long pipeline crossing of 32-inch diameter DR9 earthquake-resistant PE4710 pipe was installed. The PE4710 pipe was manufactured by WL Plastics and supplied by P&F Distributors. Before being pulled through the bore hole north of Estuary Park in Oakland on April 7 and 8, construction crews fused together sixty-three 50-foot-long sections of WL

Plastics PE4710 pipe along Mitchell Avenue in Alameda and placed it on rollers to reduce friction during the pull (see Figures 2 & 3).

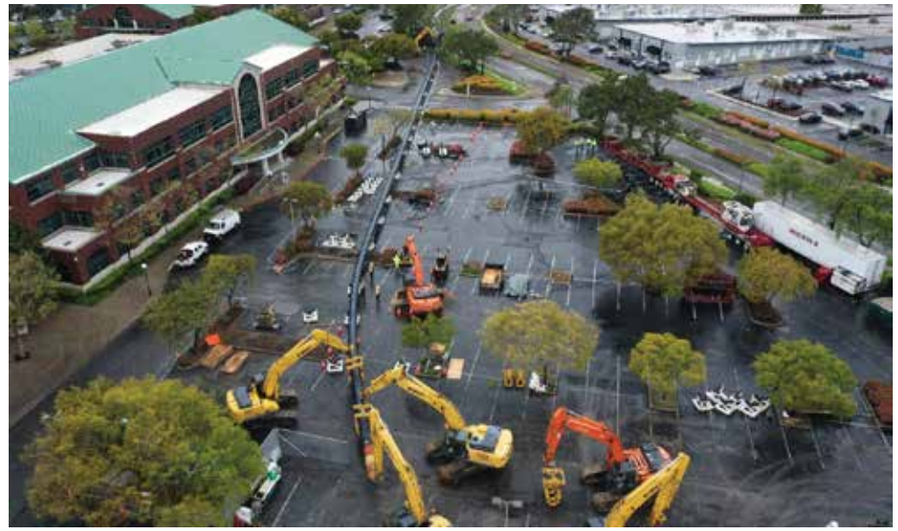

Figure 2: Fused 32-inch diameter PE4710 pipe string on rollers being pulled to borehole

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"The pull of the new pipe under the estuary was a remarkable feat of engineering and construction," said EBMUD Board Director Doug Linney. "This work will benefit the 76,000 residents of Alameda for decades to come with a more resilient and reliable water distribution pipeline. We are extremely grateful and proud of this effort, the crews who performed it, and our customers for their patience and support."