

Singapore NEWater Pipeline

Recycled Water Pipelines to Provide Singapore's Needs



Project Need

Singapore is a City state and has few reliable sources of water supply. In 1998 the Singapore Public Utilities Board (PUB) embarked on an ambitious plan to make the City-State of Singapore completely self sufficient in water by initiating the NEWater project to utilize reclaimed wastewater to provide for the country's needs. The process utilizes treated wastewater (sewage) that has been purified using dual-membrane (via microfiltration and reverse osmosis) and ultraviolet technologies, in addition to conventional water treatment processes.

This process involved the treatment of wastewater by forcing it through tiny membrane tubes at very high pressures to return the water to its completely pure state. This water is highly aggressive as it wants to absorb minerals from anything it touches. Demineralised water attacks the metals and cement linings used in normal pipes, so a special pipe lining and pipe joint was required that could offer a long life in this arduous application.

Solution

Steel Mains Sintakote[®] Steel Pipeline Systems Sintapipe was selected by PUB, it combines the strength of steel pipe, with a fusion bonded inert polyethylene lining and proprietary rubber ring joint system, meaning no risky onsite joint reinstatement.

Steel Mains supplied 30km of Sintapipe pipe and fittings in Lilac colour to identify the water is not drinkable. This consisted of the Tampines to Bedok Pipeline - 12.1km of 813OD x 8mm w.t.; Woodlands Industrial Park - 2.5km of 914OD x 8mm w.t.; Kanji Bedok Reverse Osmosis Plant - 300m of 914OD x 8mm w.t.; Tampines Ave 10 - 2.6km of 813OD x 8mm w.t.; Tampines Reservoir - 1km of 813OD x 8mm w.t.; Bedok Pipeline Extension - 1.5km of 813OD x 8mm w.t.; NEWater Desalination Project - NEWater Pasir Rising 12 - 2.3km of 813OD x 8w.t. and NEWater Bedok Pipeline - 7.7km of 813OD x 8w.t.

Achievements

The project involved manufacturing and shipping over 5,000 pipes of 6m lengths. These short pipe lengths were particularly suited to the narrow streets and confined spaces that were encountered for the contractors. The entire system was fabricated to order with every fitting having a rubber ring joint eliminating the need for onsite coating or lining repairs. Steel Main's manufacturing experience and logistics project planning skills were integral to ensuring the success of this challenging project.

Project: Singapore NEWater Recycled Water Pipeline

Principal: Public Utilities Board

Location: Singapore

Completion: 2003

Supplied: 30km of 813OD & 914 OD Sintapipe[®] Rubber Ring Joint MSPL Pipe & Fittings