Bowling Green Northeast Correctional Center

Heating and Cooling

Background

Northeast Correctional Center, located in Bowling Green, Missouri, opened in 1998 and houses over 2,000 male inmates. After a few years of the facility's opening, corrosion failure in both the heating and domestic hot water underground distribution systems began. Consisting of more than 20,000 feet of buried pipe to supply hot water for heating and domestic use to the entire facility, the system continued to experience problems and required frequent maintenance.

Schedule 40 steel piping was used in the heating hot water loop, and the domestic hot water loop consisted of copper pipe. Significant external corrosion pipe failure had occurred within both systems, with the heating system showing signs of failure prior to the domestic hot water system.

By 2013 the degradation of the piping system in addition to the constant repairs needed finally brought the system to a critical status. If a solution was not put in place quickly, the piping system was at risk of shutting down the facility and would cause the relocation of thousands of inmates.

Solution

The engineering firm chosen by the Department of Correction (DOC) evaluated many piping materials including carbon steel, stainless steel, copper, polypropylene, chlorinated polyvinyl chloride, and fiberglass reinforced plastic (FRP) pipe. All were reviewed for application compatibility, field installation, and pipe insulation options. Cost estimates for each method were drawn and a report was given to the facility for evaluation.

Ultimately, fiberglass pipe, pre-insulated with closed cell polyurethane and a high-density polyethylene jacket installed belowground was determined as the best option to acheive the project goals of corrosion resistance, ease and speed of installation, and project cost. Our St. Louis area distributor, Westfall Company, Inc., assisted the engineering firm with the material selection of the piping systems, and also provided field service training to the installing contractor. Our Green Thread™ pipe was chosen for the cool potable water, and our Bondstrand™ piping was used for the hot potable water. Piping diameters ranged from 2 to 8 in.

Case study facts

Location: Bowling Green, Missouri

Customer: Department of Correction (DOC) Center

Time frame: 2015

Results

The project was completed on-time, on-budget, and without any major issues. During the first heating season of the new system, only two repairs were needed. One repair of simply tightening the flange bolts, and the second was a result of a leak in a copper fitting where the new FRP pipe connected to existing interior piping. The FRP pipe system continues to perform above expectations and has significantly reduced operational and maintenance costs.

Several thousand feet of Green Thread pipe installed for the correctional facility's cooling water.

FRP piping was chosen as the best material for corrosion resistance, ease and speed of installation, and overall project cost.