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CASE STUDY:

KEEPING LAKE ERIE CLEAN



THE FIRST CHOICE OF ENGINEERS



WORLDWIDE

BACKGROUND

When heavy rains fell in Northern Ohio, stormwater and wastewater overflow entered Lake Erie and other waterways. To address the pollution Northeast Ohio Regional Sewer District (NEORS D) initiated several projects. Consulting firms Brown and Caldwell, and MQH Global oversaw several phases including the Easterly Wastewater Treatment Plant expansion.



PROBLEM

Developed on the northeast side of Cleveland in the 1930s, additions and changes to infrastructure involving buried pipes and other utility conduits challenged project contractor Shook Walbridge Joint Venture. Additionally, groundwater levels varied from 8 feet to 48 feet below grade.

SOLUTION

Although the original project specifications called for the use of prestressed concrete cylinder pipe (PCCP), the contractor proposed using Flowtite® FRP instead. Using the filament-wound pipe, which was only a tenth the weight of the PCCP, meant that smaller—and lighter and less costly—equipment could be used during installation.

Shook Walbridge, with the support of the Thompson Pipe Group – Flowtite engineering and project management staff, was able to implement the design changes with the Flowtite® FRP pipe for the project. Construction time could be reduced, leading to further savings.



To address potential buoyancy issues, the pipe was anchored to a reinforced concrete slab wherever the 60-, 72- and 84-inch pipes were to be installed. This effectively eliminated any risk of buoyancy problems.

Since the original PCCP design included harness restraints, three different applications were used, as appropriate. For small-diameter pipes (36- and 48-inch) the Flowtite® Key-lock Restrained Joint System was utilized. For larger diameters (60-, 70- and 84-inch), carbon fiber internal laminate restraints were used. Finally, for effluent conduits connected to rigid structures, bolted harness-style joints were used. This allowed the joints to maintain their flexibility.



OUTCOME

The use of Flowtite® FRP pipes and fittings led to a number of significant savings for the Northeast Ohio Regional Sewer District. These benefits included:

- ▶ **Savings in installation cost**
- ▶ **Shorter construction time due to revised foundation design**
- ▶ **Reduced long-term maintenance costs of the system**



Construction on further stages of the Easterly Secondary System Improvements (ESSI) project will continue through 2019. The goal is to increase processing capacity at the Easterly plant from 330 MGD to 400 MGD.

This, together with the two tunnel systems, will help prevent a billion gallons of untreated water from polluting Lake Erie each year.