

SYNTHO-GLOSS®

PRE-STRESSED CONCRETE PIPE: RAW SEWAGE



Problem

The City of Orlando, FL, had experienced problems with a 42 inch force main that runs from a lift station to the Iron Bridge Water Reclamation Treatment Facility.

Conditions

One of Orlando's largest, pumps 12 to 20 million gallons of sewage a day to the Iron Bridge Water Reclamation Treatment Facility. Sewage is discharged through five miles of 42-inch diameter PCCP. PCCP is pre-stressed reinforcing wire (rebar) covered with a steel plate, then surrounded by an inner and outer concrete layer. Together, they total two inches thick.

The 20-year-old pre-stressed concrete cylinder pipe (PCCP) had developed a leak adjacent to an aerial crossing. Copious amounts of hydrogen sulfide gas liquefying to sulfuric acid were causing its deterioration. Orlando's Public Works Department (PWD) monitored the pipe regularly, yet it was a resident who, reported sewage percolating out of the ground.

Solution

Normally, PWD crews would cut out the corroded section and replace it with repair couplings. This takes 10 to 12 hours. "Had we chosen that option," Proulx said, "major bypass pumping would have been required, since we can't shut down the force main. It would have been a miserable, tough job, and cost the city quite a bit more money." A three-man crew began excavating at midnight when the flow was lowest. The crew discovered sulfuric acid had eaten through two feet of the pipe's crown. After excavating completely around the pipe's full diameter, the men knocked away the outer layers of the pipe and exposed the damaged crown. They cleaned the outside of the pipe and welded a new steel plate to the existing steel cylinder. Then they covered that with an epoxy followed by a quick-setting cement, followed by 8 layers of Syntho-Glass.

"What we needed was a secondary patch to lock the first one in place," Proulx said. "We chose Syntho-Glass® because of its quick cure time, 30 minutes at 75°F, and ease of application."

Result

Using Syntho-Glass, PWD crews successfully repaired the leaking pipe, preventing an ecological and public health catastrophe.

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