Flexible Connection

By Doug Riseden

Florida utility creates successful pipe connection

Left: Couplings with PVC piping in Haines City, Fla. Right: Attaching the couplings to the pipe

The Water Department for Haines City, Fla., serves 20,000 customers and oversees and maintains 89 miles of water main ranging from 2 to 30 in.; 7 miles of reclaimed water main; 40 miles of force main; and 51 miles of gravity sewer main with 850 manholes.

Haines City utility foreman James Coker has worked for the city since 2001. He and his team provide 24-hour support for repairs, and also support for surrounding municipalities when.

A Careful Connection

In 2012, a cable company bore into the ground in a residential area in Haines City and hit a 10-in. clay gravity sewer pipe, causing it to break. When Coker and his team arrived, they started by contracting out the excavation of the pipe, which was 12 ft deep. The break was significant enough that the damaged pipe had to be cut out and replaced with polyvinyl chloride (PVC) pipe joined to the clay pipe with couplings at each end.

Coker faced two challenges in ensuring the connection would be strong, secure and durable over the long term:

1. The connection needed to be flexible. The ground surrounding the pipe was often wet and muddy, meaning the ground would often shift. The connections between the PVC and clay pipe would have to be flexible enough to absorb these ground shifts, otherwise the connection would weaken and break over time.
2. The connection needed to allow for sewage to flow freely. Rubber couplings could be used to allow for flexibility given the shifting ground and accommodate the outside diameters (OD) of the PVC and clay pipe. The problem with this kind of connection is that shifts in the ground could cause the coupling to bend, which would obstruct sewage flow and catch debris.

Coker sought a coupling with the flexibility to accommodate shifting ground, yet would be rigid enough to allow sewage to flow through the pipe easily.

Secure Solution

Coker used two HYMAX couplings to connect the PVC pipe on each end to the clay pipe.

The couplings presented two fundamental advantages for this repair:

1. Deflection capability: The couplings allow for each connecting pipe end to flex 4 degrees, enabling continuous dynamic angular deflection. Simultaneously, the connection is strong and durable, allowing for sewage to flow easily, and still flexible enough to adapt to ground shifts.
2. Wide OD range: The couplings' gaskets allowed for a tight seal to be achieved in spite of the differing materials of the connecting pipe and the OD difference between the two kinds of piping.

Once the damaged clay pipe was removed, a piece of PVC piping was measured and cut to size. Coker's crew loosened the couplings' two-bolt enclosures and slid them onto each end of the pipe. Once the couplings were attached, the pipe was lowered into the crevice, where the repair was made.

Once in place, the couplings were slid into place to connect the PVC pipe with the clay pipe in the ground. Space was measured between the PVC and the clay pipe within the coupling, as the deflection abilities of the coupling be limited if they touched within the HYMAX. At this point, the crew tightened the two top-facing bolts on each coupling to complete the repair.

The couplings offered several advantages in repairing the sewer pipe. They provided a strong connection that allowed for both flexibility to handle ground shifts while being firm enough to provide a clear flow path. The couplings allowed for a wide range of ODs and pipe of differing materials, making it possible to use them within a wide range of circumstances. The two-bolt top-facing nature of the coupling closure made installation quick and simple. w&wd

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