Project Impactor: On Location

On Line Pipe Replacement in Centerville, Iowa

David Wampler is an accomplished directional drilling contractor with water, sewer, fiber and gas installation experience. Dave organized a municipal seminar and demonstration to provide local Municipalities and Engineering firms with an overview of directional drilling, pipe bursting and HDPE pipe and an on the job demonstration of the process. More than 75 people attended.

Dave got the project through an open cut low bidder on a 340' section of 10" clay tile line that ran from a manhole on the center of the street through a back yard, under some large trees and beneath a creek.

Heavy rains the previous day had the creek running high with rain water. Despite bypass pumping the 10" sewer line was running 25% to 30% full from infiltration coming from the creek. Pipe bursting a live sewer is not typically recommended, but with such a large group of people attending they decided to give it a try.

The first 20' of pipe went into the ground at a rate of about 4 feet per minute. The tool did not function well in the water and was pulled back out of the hole, releasing a massive amount of water. Disassembly of the tool revealed not only water but also a large amount of debris from inside the HDD drill rod. Air had been run down the drill rod prior to the pull. However, some existing debris had not been cleared and was introduced into the Impactor. No damage was caused.

At 2:00 PM it was decided not to begin the burst as sewer flows would begin to rise as people returned home from work. The game plan was to add additional bypass pumping for the water and creek water, and complete the pull the following morning after blowing some air and water through the drill rods.

The next day David's crew attempted the burst again but success wasn't in the cards. The temperature was well below freezing causing ice to form in the Impactor, allowing it to cycle but not impact. Additionally, a brass washer and screw and pieces of a nylon bushing from the safety shut off valve on the air compressor broke free and traveled down the drill rod and into the Impactor. The resulting damage could not be repaired on site.

Dave and his crew completed the job using a pneumatic bursting system.

Once the damage from the foreign matter was repaired the design team reproduced the freezing effect in a test fixture. The introduction of isopropyl alcohol eliminated the effect of ice accumulation. Some modifications were made to the air flow paths and pneumatics allowing the Impactor to function in freezing conditions even with slight accumulations of ice.

Lessons learned?

1. Try not to burst with flow in a sewer line.
2. Always clean drill rods by blowing air and water through them prior to attaching to the Impactor.
3. Murphy was an optimist.

Project Details

Contractors	Jackson Creek Enterprises
Date	19-Feb-02
Project	Sanitary sewer main replacement, Centerville, Iowa
Specifications	340’ of 10” clay tile replaced with 10” SDR 17 HDPE
Equipment	HammerHead 8" Air Impactor with expander for pulling in 10” HDPE and Vermeer® Navigator® D33x44 Horizontal Directional Drill

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