HK Pipelines

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Hydro-Klean Removes 1,350 Tons of Debris from DSM Sewer

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By Andy Merical, CEO

The problem was an old, 5-foot-diameter storm sewer, 18 feet below heavily traveled sections of 2nd Avenue in a Des Moines business section. Constructed of bricks, it was falling apart structurally, filling up with sand and loose bricks, and causing considerable flooding along that street during heavy rains.

The City of Des Moines had two choices: repair the aging sewer or replace it. Replacement would mean closing 2nd Avenue from the Des Moines River to University Avenue, because of the width of the trench to dig it up would be as wide as the road itself. There would be no access for industries or for customers to the many merchants along this stretch. The alternative chosen by the City of Des Moines was a trenchless pipe repair known as "lining." This process would make the sewer as good as new, and block only two of the four lanes of the street, allowing traffic and business to resume with far less inconvenience to drivers.

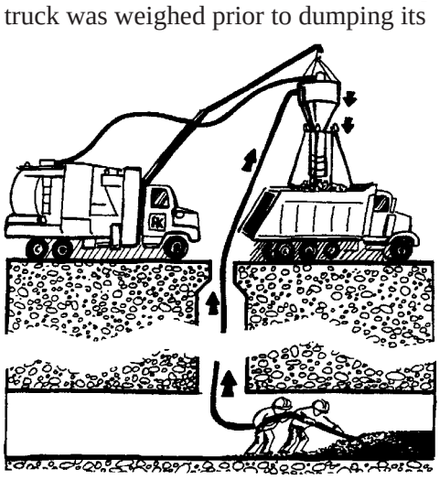
Insituform of Mid-America, residing in St. Louis, Missouri, was awarded the project as general contractor. Hydro-Klean was awarded the subcontract to clean the sewer in the preparation of the repair process. This meant removing loose bricks that had fallen from the ceiling of the sewer and hundreds of tons of sand. Conventional sewer-cleaning methods and equipment would have worked, but Hydro-Klean was chosen to clean the sewer with a relatively new and innovative method that would allow the debris to be removed in a fraction of time and minimize the disruption to the community.

The equipment Hydro-Klean used was an industrial vacuum machine that has a lot more power than conventional sewer cleaning equipment. The biggest advantage of this equipment was its ability to simultaneously off-load the waste into dump trucks for transportation to the disposal site. Otherwise, there would have been substantial downtime created by the vacuum machine having to store the waste in its built-in tank, tear down its setup, and transport the waste to the disposal site that was 20 miles away. And this would have to be done every time it got full.

A key link in this process is the detachable cyclone, a large apparatus that is capable of separating the bricks, sand, and water from the airstream passing through it. The cyclone, held over the dump truck by its own crane, is connected to an 8-inch vacuum hose between the sewer and the truck. A pair of automatic valves on the bottom of the cyclone allows the solids and liquids to be gravity dumped, without interrupting the vacuum cleaning process. The water entering the dump trucks was simply pumped back to the sewer.

Workers entered the sewer and labored on the business end of the long vacuum hose, as they worked their way up the sewer, vacuuming up the waste. The project continued 24 hours a day until the sewer was cleaned. Each dump truck was weighed prior to dumping its load of waste. When the cleaning portion of the project had finished, over 2,700,000 pounds of sand and bricks were removed from the sewer. And this was done in far less time and expense than other forms of cleaning.

HK Industrial Vacuum With Detachable Cyclone



Once the cleaning was complete, the lining began. A fabric-like "sock," several hundred feet long and saturated with a thermal setting resin, was placed in the storm sewer by using water to fill the inside of the liner. Hydraulic pressure from the water inverts the liner, causing it to turn inside out while traveling down the sewer, and thereby lining the inside of the sewer. Once the chosen span has the liner in place, the water is circulated through hugh boilers that heat the water to a critical temperature, at which point the resin in the liner catalyzes and turns to hard plastic. This process is repeated in sections until the entire sewer destined for repair is lined. The finished product is a structurally sound sewer that flows like new with an interior as smooth as a plastic pipe.

Traffic, not floodwater, should continue to flow along 2nd Avenue for a long time to come. All things considered, this repair choice was not only more convenient for the community; it was less expensive than digging up the sewer and replacing it.