

# New Orleans: Combining Sewer Repair

The Big Easy Uses Dual-Purpose Rehabilitation to Wire Its Central Business District

By James W. Rush



Known as “The Big Easy,” New Orleans is a popular destination for travelers because of its carefree lifestyle and bustling nightlife. But underneath the streets, New Orleans is like any other major U.S. city with aging sewer and water infrastructure in desperate need of repair.

And just like many other cities, New Orleans is in the midst of a multi-million dollar, multi-year program to repair its decaying infrastructure. Unlike most cities, however, New Orleans is taking a unique tact.

Rather than strictly addressing the sewer and water pipelines, New Orleans is upgrading its telecommunications system in the central business district as well. Specifically, the City is using a process known as dual-purpose rehabilitation to install new fiber-optic ducts while simultaneously replacing aging sewer mains.

With the backing of Mayor Ray Nagin, who previously served as vice president and general manager of Cox Communications in southeastern Louisiana and knows the value of a good telecommunications system, New Orleans and its sewerage and water board have contracted a pilot project to use the dual purpose rehabilitation method within a 14-block area in the central business district.

## Dual Purpose Rehabilitation

The patented dual-purpose rehabilitation (DPR) method was developed by Renaissance Integrated Solutions. Company CEO and co-founder Steve Paletta, who has a background in telecommunications and water and sewer pipeline construction, says that the DPR method offers a way for cash-strapped municipalities to cost-effectively repair underground infrastructure by introducing a source of additional revenue – the fiber-optic ducts that can be leased to telecommunications providers.

“Sewer rehabilitation has been a money pit for most cities, with huge costs and little visible reward for the average citizen,” he said. “In fact, a typical sewer rehab comes with a fairly hefty tax increase or boost in sewer service fees for the city’s residents, which makes no one happy.”

“However, if a city can upgrade that sewer while simultaneously creating a brand new revenue source – a fiber-optic network to lease to carriers or operate themselves – to pay for most, if not all, of the improvement, that’s a huge win for the city. And at the same time, you are paving the way for an ultra-fast, high-tech infrastructure throughout your city, which offers residents extraordinarily tangible benefits.”

# with Telecommunications Construction

Development of the DPR method began in 2000, with Paletta working with equipment manufacturers Vermeer Mfg. and Earth Tool Inc. on in-house and field-testing in Jacksonville, Fla. In 2002, Renaissance Integrated Solutions was founded, and in 2003, the company was marketing to municipalities across the United States. Prior to the pilot project in New Orleans, Renaissance performed demonstrations in Florida, Georgia and Wisconsin.

One unique aspect of the DPR method is that Renaissance partners, with the financial firm Morgan Stanley, offer cities a total package of finance and construction services.

## DPR: How it Works

The DPR process involves pipe bursting existing sewer or water lines while simultaneously installing a separate series of fiber-optic conduits. Other companies have offered services in which fiber-optic cables were robotically installed within sewers, but the advantage of the DPR system is that the fiber-optic conduits can be accessed without interfering with sewer service. It is also available for water pipelines.

Pipe bursting is a process that replaces existing pipe by

breaking it from within and forcing the fragments into the surrounding soil. The bursting head is either pulled through the pipe by a winch (static pull) or driven via compressed air (pneumatic). In both cases, a new pipe, typically high-density polyethylene (HDPE), is attached to the end of the bursting head and pulled into place. The process requires pits to be dug to reconnect service laterals.

The pipe bursting process has been gaining popularity in the United States because of its minimal disruption compared to open-cut replacement and the fact that the pipe can be upsized to allow for more capacity to accommodate future growth. Plus, unlike other rehabilitation/replacement methods, utilities get a brand new pipe.

In the DPR method, the pipe bursting head is slightly larger than standard bursting heads. The larger diameter allows for room to pull in a series of fiber-optic conduits on the outside of the new sewer or water pipe. The existing pipe material and ground conditions are also considerations when selecting the diameter of the bursting head.

The fiber-optic conduits are attached to the HDPE pipe behind the bursting head with carrot pullers. The new fiber-optic conduits are bolted to the new sewer main spaced at 2-in. intervals along the circumference of the pipe.

The fiber-optic conduits comprise two types: main line fiber conduits and lateral fiber conduits. The main line fiber conduits connect to the main fiber-optic loop and deliver telecommunications service throughout the project area. These typically have an inside diameter of 1 ¼ in. The lateral fiber conduits provide access from the main loop to individual buildings and typically have an internal diameter of 1 in.

Once the sewer or water mains have been burst and replaced with new HDPE pipe, service laterals are replaced using the same DPR process. The lateral fiber conduits are spliced into the main line fiber conduits and routed to a lateral fiber access junction box. The lateral sewer service connections are then reconnected to the new main using an electrofusion saddle connection.

## New Orleans Sewer Rehab

The Sewerage and Water Board (SWB) of New Orleans has developed a multi-million dollar, multi-year program – the Sewer System Evaluation and Rehabilitation Program (SSERP) – to rehabilitate the existing sewer collection system and expand the capacity of the transmission system and the sewer treatment facilities. The program, managed by the engineering firm MWH, is broken into 10 sewer basins, including one in the central business district.



The City of New Orleans is upgrading its telecommunications system in its central business district by using dual-purpose rehabilitation to install fiber-optic ducts while simultaneously replacing its aging sewer mains.

The program is the result of a U.S. EPA mandate to correct problems with the New Orleans sewer system, which involves 86 square miles. A consent decree, signed in 1998, stipulated that the city repair its system by 2010 at an estimated cost of \$624 million.

For the central business district basin, SWB and MWH opted to use Renaissance's DPR process.

"Renaissance brought a really compelling case with its business model, tying the required municipal sewer rehabilitation with a potential revenue stream and additional value-adding infrastructure for nearly the same cost," said Marty

Dorward, MWH vice president and a consulting engineer with the SWB. "And our central business district was the ideal candidate for a pilot of the technology. It has its own contained sewer basin. As a business district it showed the greatest initial promise for generating revenue from fiber-optic infrastructure, and the EPA schedule required the central business district rehabilitation be completed by the end of 2005. It made a lot of sense."

In 2004, three pilot programs using the DPR process were completed. All three involved the replacement of 8-in. sewer mains. The first demonstration project completed was a 220-ft section of sewer on Marais Street, which included the installation of five 1 ¼-in. fiber-optic conduits. The second demonstration project was completed along Commerce Street, which included 260 ft of new sewer main and the installation of eight 1 ¼-in. fiber-optic conduits. In this pilot program, the main line was enlarged from 8 to 12 in. in diameter. The third pilot program involved the replacement of 140 ft of 8-in. main (upsized to 10 in.).

Based on the successful completion of the three pilot programs, SWB and MWH decided to implement the DPR method for its central business district rehab program. Bids were advertised in July 2004 and a contract was awarded to Boh Brothers Construction Co. of New Orleans, a licensed DPR installer.

The contract calls for 26,000 ft of sewer main to be replaced with HDPE pipe utilizing the DPR method and fiber-optic conduit. Once complete, more than 200 buildings will be part of the city's fiber-optic network. To date, crews have completed 7,000 ft of rehab and fiber-optic conduit installation.

The completion of the program will be a major upgrade to the New Orleans telecommunications systems and will be an advantage for attracting and retaining downtown businesses. According to Paletta, only 5 percent of businesses in the city and 1 percent of homes had fiber-optic connections before the current project got under way.

Once the central business district basin is complete, the City plans to lease the fiber-optic space. Through its arrangement with Renaissance Integrated Solutions, the City will keep 85 percent of the lease revenues. Other cities could choose to sell the space outright or deploy their own fiber-optic networks.

"New Orleans is one of the poorest cities in the country; clearly the ability to address its sewer situation while creating a second, distinct revenue stream is a major win for this city," Dorward said. "In the past, there have been numerous ideas of how to use public sewer systems to bridge the last mile, but they never took hold because the technology was based on putting the fiber inside the sewer pipe itself. That's a tough sell with operators. This is the first system that keeps the conduit separate, keeps the two infrastructures separate.

"If cities have looked at this possibility in the past but dismissed it because of this operational concern, this is a chance to take a new look at bridging the last mile along with their sewer rehab."

James W. Rush is editor of Last Mile.