

PipeLine

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Sliplining in Minnesota

The cities of Chaska and Shakopee are located in the southwest corner of the Twin Cities metropolitan area, 23 miles from Minneapolis, on the Minnesota River. While the cities own and operate local sanitary sewer collection systems, collected wastewater is conveyed through regional Metropolitan Council owned and operated interceptors to the Metropolitan Council's Blue Lake Treatment Plant where it is treated and discharged. Sewer rates are set by the City Council and reflect the costs of operating and maintaining the local collection system, as well as the charges imposed by the Metropolitan Council for interceptor trunk lines and treatment.

Although it was installed in the late 90's, the Chaska Interceptor was in need of rehabilitation. The gravity sewer is composed of lined and unlined concrete pipe as well as profile wall PVC pipe in shallow reaches. The focus of this project is the 7,500 linear feet of unlined reinforced concrete pipe (RCP). Inspection of the existing 72-inch RCP revealed 1½ inches and in some spots up to three inches of lost concrete in the crown of the pipe. In addition, there were a few spots where RCP joint gaskets and rebar were visible.

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Light weight CCFRPM can be handled with minimal equipment. Here a 66-inch large diameter pipe is lowered into an installation pit.

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Corrosion Resistance

The owner, Metropolitan Council Environmental Services (MCES), along with their consultant, Brown and Caldwell, St Paul, Minn., designed the Chaska Interceptor Improvements Phase 2 project. Together they decided to slipline the interceptor with fiberglass pipe due to its corrosion resistance. The project was awarded to Spiniello, headquartered in Livingston, NJ, for their bid of \$7.6 million. Spiniello rehabilitated the line by sliplining with centrifugally cast, fiberglass reinforced, polymer mortar (CCFRPM) pipe. CCFRPM would restore the structural integrity of the sewers which were buried at depths ranging from 13 to 24 feet.

“Sliplining was chosen to minimize disturbance. Most of the run is adjacent to a major highway drainage pond with high groundwater potential, this portion also having required significant rock blasting as part of the original pipeline’s installation, gave plenty of reasons not to want to excavate any more than necessary,” explained Peter Glashagel, P.E., senior engineer, Brown and Caldwell. This interceptor runs parallel to Highway 169, also known as the Shakopee Bypass.

“Preparation of the line required extra cleaning work due to significant amounts of sediment and encrustation deposits at several of the existing RCP joints,” Glashagel stated. It was important to clean the line of obstructions to ensure that the test mandrel and installed pipe would have proper clearance.

Hobas Pipe USA supplied 7,500 feet of 66-inch, 71 psi CCFRPM pipe. “Capacity preservation is often critical on rehabilitation projects and thin-walled CCFRPM pipe very often provides increased flow capacity because of its superior hydraulics compared to the existing sewer. Even a downsize in diameter can easily be offset by the flow factors,” explained Kimberly Paggioli, P.E., vice president marketing and quality control, Hobas Pipe USA.

Trouble-Free Installation

Spiniello excavated around manholes six and seven to create two pits about 50 feet apart for installation and the 7,500 feet of 66-inch pipe was installed in two pushes. The longest drive was 4,200 feet and the second push was 3,300 feet.



Year of Construction
2011 to 2012
Total Length of Pipe
7,500 feet
Diameter
66-inch
Stiffness Class
71 psi
Installation Method
Sliplining
Application
Wastewater

Client
Metropolitan Council Environmental Services
Contractor
Spiniello
Advantages
Corrosion resistant, trouble free installation



"All pipe was installed under normal flow conditions, which was about 50 percent full," stated Kent Meier, superintendent, Spiniello Companies. The pushing mechanism used was an Akkerman Pushing Machine.

In addition to the installation of the slipline pipe, manholes were rehabilitated. The existing manholes had a deteriorating spray-on lining and typically had one inch of corrosion. "Four manholes were replaced as part of the sliplining process and ten manholes were rehabilitated by removing the RCP cone and installing a fiberglass reinforced plastic FRP insert," explained Glashagel. "These required a special eccentric saddle cut to fit over the Hobas pipe at the bottom where the slipline pipe passed straight through the manholes. Then they cut the hole on the top of the pipe and field laminated the two fiberglass entities together."

"Fabrication of connections between fiberglass components is routine and can be easily accomplished in the field," explained Randy Whiddon, field service manager, Hobas Pipe USA.

Completion

Visual inspection of the installed line was performed by a closed-circuit television (CCTV). With no issues discovered by the CCTV, the entire annular space between the outside of the liner pipe and the inside of the existing pipe was grouted in one lift by filling the entire pipe-length with sewer water to ensure it would not float.

Hobas Pipe USA has supplied pipe for other MCES projects such as the 1-MN-320 Interceptor, Victoria Interceptor Sewer Tunnel and the Elko New Market Interceptor. [h](#)



TOP LEFT
Peter Glashagel, PE., senior engineer, Brown and Caldwell inspects a manhole during the initial condition assessment.

BOTTOM LEFT
Hobas manufactured the 66-inch sliplining pipe with a flush relining bell-spigot joint.

LEFT
66-inch CCFRPM pipe was sliplined into an existing 72-inch interceptor while maintaining flow.

TOP RIGHT
New manholes were installed and deteriorated manholes rehabilitated using fiberglass.



Hobas Casings in North Carolina

Year of
Construction
2009, 2010
Total Length of Pipe
**Several reaches
for crossings**
Diameter:
54-inch
Stiffness Class
72 psi
Application
Casing for pipeline
Client
Several
Advantages
**Non-metallic,
structurally sound**

The Piedmont region of central North Carolina is the state's most urbanized and densely populated area. It consists of gently rolling countryside frequently broken by hills or low mountain ridges.

Due to the rapid population growth, a significant part of the rural area in this region is being transformed into suburbs with shopping centers, housing and corporate offices. The new development requires expanded water and sewer services. In designing the new infrastructure, the engineers, Hazen and Sawyer, PC, faced challenges to make the best use of scarce dollars

while ensuring longevity of the new system. Designers also had to deal with the challenges related to the existing infrastructure.

Non Metallic Piping Option

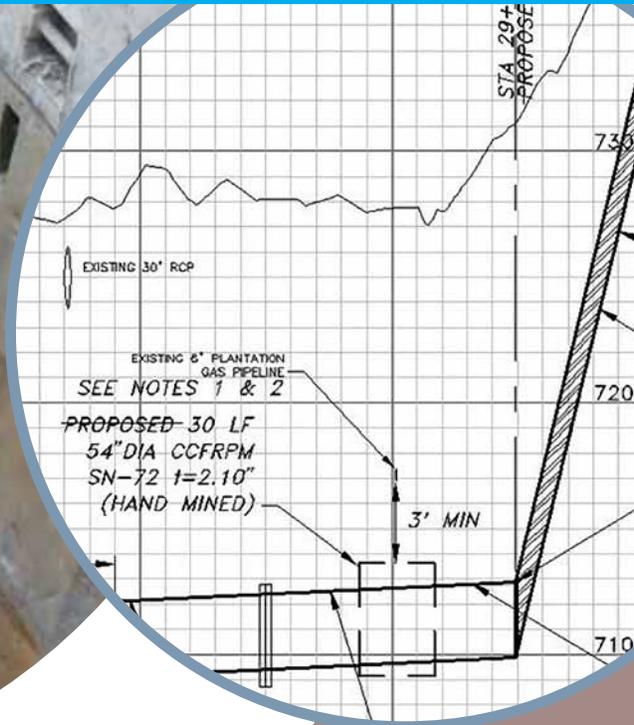
Pipelines are exposed to corrosion from a variety of sources both internally and externally. Metallic pipelines such as those designed with steel or ductile iron are routinely protected by a coating supplemented with cathode protection. For two separate pipeline projects in the Piedmont region of North Carolina, non-metallic Hobas pipe was chosen as a casing pipe for the underground utility crossings due to its inherent corrosion resistance and nonmetallic composition. Since Hobas casing pipe is non-ferrous (non-metallic), it will not act as a sacrificial anode to the cathodic protection as a traditional welded steel casing would. Even if a ferrous casing is coated or wrapped, Hazen and Sawyer was concerned that it would not last as long as anticipated. Hobas was specified on both projects in locations where the utilities crossed under petroleum pipelines with impressed current cathodic protection.

In 2004, Randleman Lake was created with the construction of the Randleman Lake Dam on Deep River, a tributary of the Cape Fear River. The lake was created to satisfy the drinking water needs of the greater Greensboro area for the next 50 years and to provide recreational opportunities.

Construction of the water treatment plant began in 2008 and was completed in 2010. Greensboro will receive roughly 12 million gallons a day from the treatment plant. Hazen and Sawyer designed a new force main to convey finished water from the new Piedmont Triad Regional Water Authority (PTRWA) water treatment plant in Randleman, N.C., north to a tie-in point in the City's distribution system.

Non-metallic
Hobas pipes
do not require
cathodic
protection.





The 30-inch diameter Randleman Feeder Main was designed for the City of Greensboro Water Resources Department.

High Strength

As PTRWA worked on constructing the water treatment plant, a connection to the plant was established by the feeder main. This design included a bored crossing of three petroleum pipelines owned by Colonial Pipeline Company.

The Hobas casing pipe was installed by traditional pipe jacking methods. The carrier pipe was then installed within the casing and each end of the casing was sealed with a masonry wall.

In Charlotte, N.C., the Paw Creek Force Main Replacement project also utilized fiberglass pipe for crossings. This force main was built to replace an existing main that conveys raw sewage from the Paw Creek Pump Station to the Coffey Creek Interceptor.

The project had two petroleum pipeline crossings using Hobas pipes as a casing. In this instance, the casing protected existing petroleum lines which convey jet aviation fuel directly to Charlotte-Douglas International Airport. These lines were also crossed using a

jack and hand-mine method. The 54-inch casings had a pipe stiffness of 72 psi.

Both installations went smoothly and provided the owners with a casing material, which is structurally sound, leak-free and will provide a lifetime of corrosion-free service. 

ABOVE LEFT
Hobas casing pipe was used for underground utility crossings.

BELOW
Hobas pipe was installed by jacking methods.

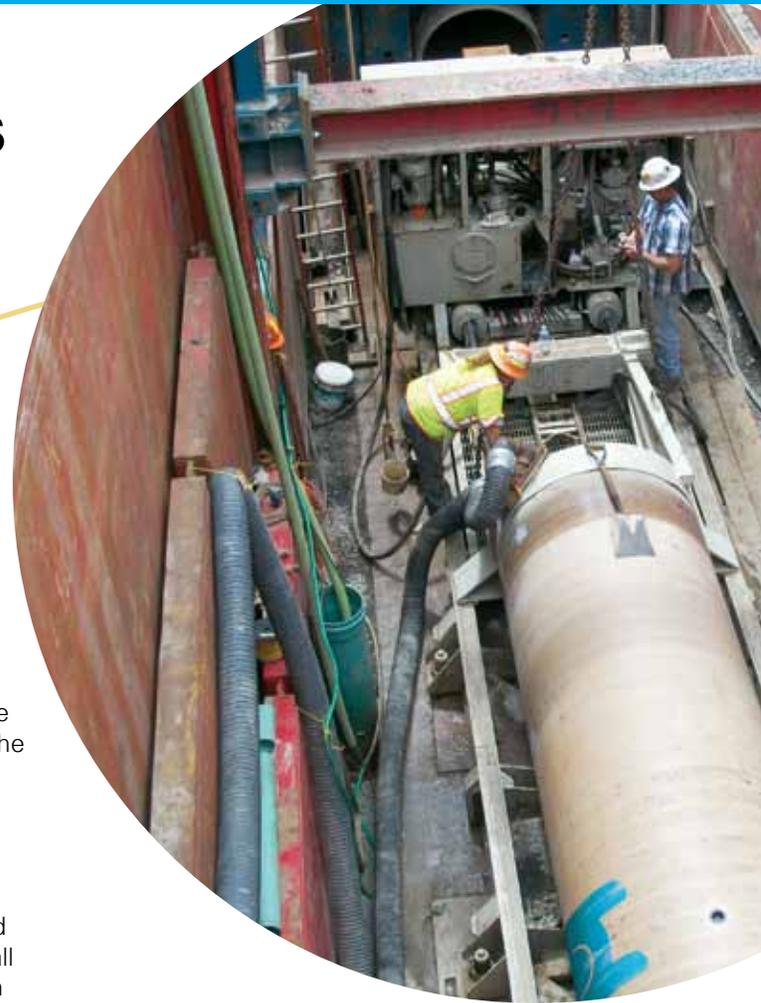


Preserving Sewers in Niagara Region

“Our Town slogan, ‘A Great Place to Live, Work and Play’ is the guiding principle of our administration. Tonawanda is home to over 74,000 residents who take pride in our community, boast of the successes and achievements of our children, and believe we must be caretakers of our elders and stewards of our resources and environment,” stated Anthony F. Caruana, Supervisor, Town of Tonawanda, New York.

For the Town of Tonawanda, being stewards of the environment extends to the preservations of natural resources such as the nearby Ellicott Creek, which discharges into the Niagara River that flows north from Lake Erie draining into Lake Ontario. The river includes a prominent tourist destination, Niagara Falls. The falls are actually a group of falls which include the Horseshoe Falls, American Falls and the smaller Bridal Veil Falls. The combined falls form the highest flow rate of any waterfall in the world, with a vertical drop of more than 165 feet (50 m).

High stiffness Hobas pipe was installed for the direct bury portion of the project which ranged in depth from 10 to 30 feet.



Deteriorated Concrete

Although in a picturesque area, the Town of Tonawanda has been challenged recently to address their Sanitary Sewer Overflows (SSO's), which could have a significant effect on residents and the environment.

To address the aging infrastructure problem, the Town is beginning a complex and cost-intensive program which will abate numerous SSO's, which can occur during wet weather events. In 2006, a major collapse occurred on the Parker-Fries Interceptor that required a costly repair and could have resulted in significant basement backups. This major interceptor

became the first project in the Town's complex and cost-intensive program to address the poor overall condition of the sewers.

The Town of Tonawanda selected CRA Infrastructure and Engineering, Inc., (CRA), in Buffalo, to develop a set of improvements for the Parker-Fries Interceptor Project. The comprehensive plan included considerations of the existing interceptor alignment, utility conflicts, Parker Pump Station operation, subsurface geotechnical conditions and impacts to the residents.

Hobas Only Spec

“Due to the size, complexity and cost of the project, the Parker-Fries Interceptor Project was split into four phases with implementation over approximately seven years,” stated Kenneth Maving, Director of Water Resources for the Town of Tonawanda. The Town and CRA evaluated the possible large diameter piping options, and decided to include only





LEFT
High strength 84-, 72- and 48-inch Hobas jacking pipe was supplied for the Parker-Fries Interceptor Project.

BOTTOM
Town of Tonawanda is using Hobas pipes as part of a complex and cost-intensive program which will abate numerous Sanitary Sewer Overflows.



July of 2012. Kandey is a site and utility contractor specializing in civil engineering construction and has been providing services throughout the Buffalo and Western New York areas since 1984. Although they are experienced with utility installation, this was their first experience utilizing Hobas pipe. The installation included over 4,000 feet of 84-, 72- and 48-inch diameter sewer pipe installed by tunneling and 5,700 feet of 48-, 36- and 30-inch diameter installed by open cut. A 46-psi pipe stiffness product was supplied for the direct bury portion of the project which ranged in depth from 10 to 30 feet. Hobas supplied flush joint jacking pipe in a variety of axial capacities for the portions of the project that were installed by direct jacking.

Successful Completion

The project was challenging, with project coordination including several public meetings to address traffic and other citizen concerns. In the fifth and last public meeting concerning the project, Tonawanda's Town Supervisor, Anthony F. Caruana, stated, "The good news is that we're ahead of schedule and we're also under budget."

With the project now complete, all parties are pleased with the new interceptor and expect a 100-year service life. "Hobas Pipe did an outstanding job on this project, right through from the bidding process, ordering, scheduling deliveries and especially addressing issues in the field," concluded Joe Kandefor, Vice President of Kandey. 

Hobas pipe in the project specifications. It was important to find a product with a proven track record that would provide a long service life, including the leak-free capability of the product and its resistance to sulfuric acid, which gives Hobas a 100-year service life in a sanitary sewer environment.

Phase One of the Parker-Fries Interceptor Project was bid in February of 2010 and awarded in June of 2010. Kandey Company, Inc. of West Seneca, New York, was awarded the \$26.4 million project and construction began in the summer of 2010. The job was scheduled to last two years and was completed in



Year of Construction
2010 to 2012
Total Length of Pipe
9,700 feet
Diameter
30- to 84-inch
Stiffness Class
46 psi
Installation Method
Direct bury & tunneling
Application
Wastewater
Client
Town of Tonawanda
Contractor
Kandey Company, Inc.
Advantages
Reliability, field service support



Hobas Pipe USA
1413 E. Richey Road
Houston, Texas 77073
Tel: (281) 821-2200

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Hobas Pipe USA Expands Product Range

We have been manufacturing centrifugally cast, fiberglass-reinforced, polymer mortar (CCFRPM) pipe at our Houston plant since 1987. Recently we have introduced new, larger diameters. We now manufacture pipe in diameters from 18 inches to 126 inches with capabilities to produce even larger diameters.

Recent projects utilizing Hobas' expanded diameter range include two new sizes. One is a 120-inch diameter that will be supplied to the City of Houston's Northside Sewer Relief Tunnel, area 5. It will be used to rehabilitate over a mile of existing 132-inch monolithic concrete. The

other, a 126-inch nominal diameter pipe, with an outside diameter of 132.5 inches, will be supplied to Milwaukee, Wis., for the rehabilitation of another monolithic sewer 144 inches in diameter.

"We see a trend in the sewer market toward larger diameters, and we are investing in our facility to ensure we meet the needs of our customers. Recent investments in our manufacturing plant and test facilities allow for future diameter growth," stated Kimberly Paggioli, P.E., vice president, marketing and quality control. 

