

# A BETTER REPLACEMENT

Poly pipe averts disaster as crumbling asbestos concrete undermines upstate New York island

By Stephen C. Cooper

**T**he final straw for a long section of the sanitary sewer line in Grand Island, N.Y., was a sinkhole large enough for a dump truck and sewage that flooded local residences and businesses in August 2013.

Running under Whitehaven Road, the main east/west multilane street, the 35-year-old, 30-inch-diameter asbestos cement pipe failed due to corrosion from hydrogen sulfide gas. Six hundred and fifty feet of 30-inch-diameter SaniTite HP triple-wall polypropylene pipe replaced the failed concrete pipe at depths of 22 to 24 feet.

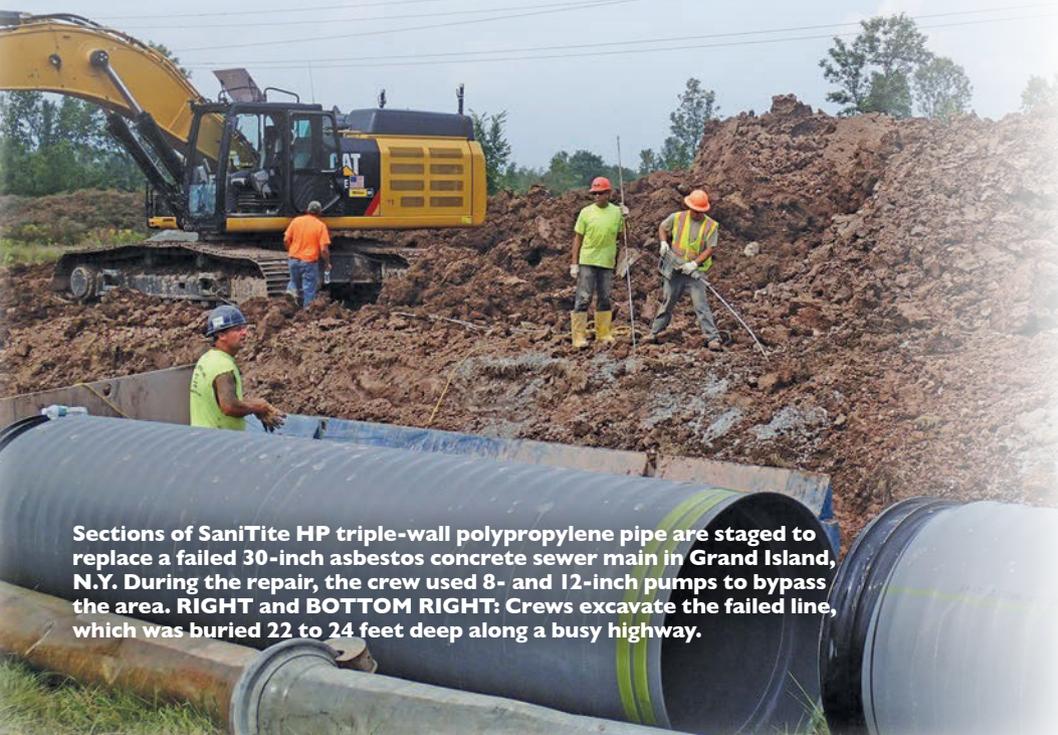
Due to the extreme nature of the pipe failure and because the Town of Grand Island is surrounded by the Niagara River, it was imperative that the pipe be replaced quickly to prevent further damage to homes and buildings, and to stop any effluent from flowing into the Niagara River and eventually over Niagara Falls, causing a potential environmental disaster. The \$500,000 emergency repair took a month to complete.

Since the 1700s, the Town of Grand Island has been a resort, a lumber town, a colonial battleground, part of the City of Buffalo and part of the nearby Town of Tonawanda. Today, it is home to more than 20,000 residents and hundreds of businesses, ranging from small stores to major corporations with 500 people and more. The island town is 8 miles from Niagara Falls.

“We had an asbestos cement pipe that over the years was being eaten away by hydrogen sulfide gas,” explains John Whitney, P.E., Grand Island engineer. “This pipe originates upstream and the end of it is a tributary to a very long force main. Sewage goes septic in that force main. When it gets discharged into the gravity sewer, which is the 30-inch ACP, hydrogen sulfide gas mixes with air and you end up with various permeations of sulfuric acid. That is very destructive to cement and the pipe got so thin it just collapsed. It had already caused a sink hole the size of a dump truck and 27 feet deep.”

Among other plastics, polypropylene is inert to the effects of hydrogen sulfide present in sanitary sewers, making it a highly recommended material of choice to replace deteriorating infrastructure across the country. SaniTite HP has been used in similar emergency repairs to replace failed infrastructure in Kentucky, Mississippi, Ohio and Pennsylvania.

“In other sections, also, there was a tremendous amount of dirt that had infiltrated into the pipe from cracks,” he says. “We ran a camera in there and looked upstream from one of the downstream manholes and saw that the dirt went right to the ceiling of the pipe. And because the pipe was in such a deteriorated condition, we would not have been able to clean it without destroying it. We replaced it in the same trench with the SaniTite HP pipe.”



Sections of SaniTite HP triple-wall polypropylene pipe are staged to replace a failed 30-inch asbestos concrete sewer main in Grand Island, N.Y. During the repair, the crew used 8- and 12-inch pumps to bypass the area. RIGHT and BOTTOM RIGHT: Crews excavate the failed line, which was buried 22 to 24 feet deep along a busy highway.





A satellite view of Grand Island surrounded by the Niagara River.

SaniTite HP pipe is a product of Advanced Drainage Systems. It is manufactured in 30- to 60-inch diameters and is available in triple-wall construction, as was used for this project. The triple-wall design provides smooth interior and exterior walls supported by a corrugated structural core for improved stiffness and greater beam strength to minimize deflection and enhance long-term performance. It meets ASTM F2736, ASTM F2764 and also exceeds the requirements of ASTM D3212 for water tightness with dual gaskets and banded-reinforced bell.

Rugged and lightweight, the pipe is easily handled with minimal equipment and crew. Its stick length reduces the number of joints, which also saves

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time and labor and makes for a more secure system versus the several-ton weight of each short section of comparable concrete pipe.

According to Bill Kelley of Lock City Supply in Lockport, N.Y., who provided the materials for the job, “This was a very deep cut near a very busy highway, and the repair had to be done quickly and safely. Not only is the pipe we used a good quality product, but it was also easy to install and we could get it delivered to the job site from a nearby plant. If ever there was a case to prove the benefits of this pipe, this was it. It truly is the next generation of pipe.”

Aside from the depth, the project also had other challenges, including a 1.5-inch rain storm, a ductile iron pipeline that had to be cut and reinstalled, plus high-voltage electric lines overhead.

“The break was right in front of a water pumping station with a 3-million-gallon water tank, and there was a 16-inch ductile iron water transmission main which we had to cross,” Whitney explains. “The only way to do this was to physically isolate it, cut the line, run the new sanitary line and then reinstall the iron pipe.

“We were also adjacent to the National Grid power transmission lines coming out of Niagara Falls that carry 230,000 volts. This meant that we had to have a high-voltage certified electrician with us and have the equipment grounded all the time.”

During the repair, the crew used 8- and 12-inch pumps to bypass the area. A doghouse manhole was used to tie in the new SaniTite HP pipe with the existing ACP.

“The new pipe worked out great,” Whitney says. “The procurement was very rapid, the cost was favorable and it went together very well.” ♦

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