A Baton Rouge Emergency

Sinkhole repair is complicated by above- and below-ground utilities.

By Jeff Duplantis and Philip R. Snyder

In the capital of Louisiana, disaster seemed imminent. A hurricane? No, but a major supermarket parking lot was collapsing and several utility lines were in jeopardy. On the weekend of January 5, 2007, a sinkhole formed in Baton Rouge along the shoulder of Essen Lane, washing out the area beneath the Albertson's parking lot. A nearby Entergy power pole was in danger. On Sunday evening, observers said that the hole was getting bigger and soon became an emergency repair operation for the Parish of East Baton Rouge Department of Public Works (DPW).

To complicate the repairs, overhead electrical, phone, and cable lines had to be rerouted so construction equipment could be brought in and maneuvered safely on and around the site. Buried utilities including water, fiber optic, telephone, and cable lines also created a tight working space.

The Essen Lane collapse exposed the failure in the top of the 54-in. RCP sanitary sewer gravity main. At the top, a 15-in. potable water main is broken and numerous other utilities are adjacent, including telephone, cable, and fiber optic lines.

Allen & LeBlanc crew members slipline the 48-in. CCFRPM pipe into position. The integral fiberglass low profile bell is gasketed and provides a watertight seal with the spigot joint while allowing the pipe to be pulled or jacked into the host pipe. The low profile design prevents hang-ups and minimizes friction during installation. The entire project was approximately 400 ft long.

But fast response by the contractors, government agencies, and a major pipe manufacturer prevented catastrophe. Contractor Allen & LeBlanc Inc was contacted on Monday, January 8, to excavate the shoulder between the Essen Lane roadway and the edge of the Albertson's asphalt parking lot. They found that the failure was apparently caused by the collapse of the top of a 54-in. gravity sewer main located about 25 ft below the surface. The Entergy crews also arrived on Monday to remove the pole and reroute the electric lines.

DPW has an on-going project with engineering and construction firm CH2M HILL (www.ch2m.com) for a parish-wide sanitary sewer overflow program, so they asked for a representative from the firm to visit the project site to establish subsurface information because the affected line is scheduled for upgrading during the program. Jeff Duplantis, senior project manager with CH2M HILL, met with David Ratcliff from DPW at the project site on that same Monday. Ratcliff quickly contacted several local pipe suppliers in an attempt to locate enough pipe joints to repair the collapsed line adequately.

Responding to the emergency quickly, by Tuesday, representatives from DPW, CH2M HILL, HOBAS Pipe (www.hobas.com), Allen & LeBlanc, and the local utility companies were all at the project site to develop a plan of action. Up to that point, only limited work had been done including closing the 15-in. potable water main, which had been exposed during the excavation of the sewer main. The water company had installed valves in the water line upstream and downstream of the gravity sewer break and removed two joints within the excavation.

Five Phases

They broke the operation down into five phases: 1) excavate the sinkhole, 2) relocate the utilities, 3) locate repair equipment and materials, 4) complete sliplining operations, and 5) cleanup.

The existing sewer line was a 54-in. gravity sewer main. DPW's intent was to repair the failed section with fiberglass sliplining pipe installed between the upstream and downstream manholes. The lead times were too long for the several local fiberglass manufacturers and suppliers they had contacted. They had to find one that could provide the required pipe at a good price in a short time.

Denny Kennard, area manager for HOBAS Pipe USA, was able to promise delivery of the necessary pipe and couplings within a week after the order was placed. Duplantis of CH2M Hill was familiar with HOBAS so DPW gave them the order. HOBAS pipe is centrifugally cast, fiberglass-reinforced, polymer mortar pipe (CCFRPM). The proposed 48-in. pipe has an OD of 51.9 in. at the bell and 50.8 in. at the pipe wall.

Rob Epstein, HOBAS customer service representative, explained the quick delivery, "We have a flexible manufacturing process that allowed us to shift production from a job that was ahead of schedule to accommodate this emergency situation. We have the ability to manufacture many pipe sizes for many different projects at the same time, giving us tremendous flexibility. We do not have any pipe in the yard for stock. Everything is custom-made for an order."

The plan was to use the CCFRPM pipe to slipline the failed sewer from the failure point, which was located just outside of the upstream manhole, to the downstream manhole where quality connections could be made to the existing system.

Equipment was brought in to excavate the sinkhole between the street and parking lot. DPW realized that the depth of the repair made it necessary to install some form of trench support. Within the first few days of working on the project, contractor Allen & LeBlanc installed temporary sheeting to stabilize the excavation. However, before the sliplining activities were started, they located the necessary repair equipment and materials and installed a trench box system. Then, a working pit was excavated to restore flow in the gravity main.

A sling attached to an excavator easily handled a lightweight 20-ft joint of 48-in. CCFRPM sliplining pipe, lowering it into the installation pit.

The project presented many challenges. The sewer main was extremely close to the adjacent street and the utility lines within the repair zone were highly congested, so progress was slow. Allen & LeBlanc worked closely with DPW and the local utility companies to ensure that their utilities would be relocated appropriately with minimal service disruptions.

All utilities were relocated and all repair materials and equipment were on site by February 2, 2007. At that time, Allen & LeBlanc set up the necessary equipment to maneuver the 20-ft joints of CCFRPM pipe into the working pit and install them. Once sliplining operations began, Allen & LeBlanc worked into the evening hours to ensure that the project was completed.

Following the sliplining operations, they grouted the liner pipe to the existing sewer system at both ends to ensure a tight seal. Backfill of the system was performed to DPW standards and the site was dressed to pre-construction conditions. GE

A sinkhole formed in Baton Rouge along the shoulder of Essen Lane, washing out of the area beneath the Albertson's parking lot. A nearby Entergy power pole and several buried utility lines were in danger.

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