

## Proactive Rehab

### Heads Off Potential Crisis



This is the set-up of the Tenbusch Jacking Unit during the Grant Road project.



Pictured here is Grant Road and the deep manhole at the north end of the line segment being replaced. By excavating and removing the cone and first section - the manhole depth of 40 feet was reduced to 34 feet.

In Clayton County, GA, the sewer line under 40 feet of embankment and eight feet of backfill showed signs of imminent failure and the Clayton County Water Authority (CCWA) opted for a proactive approach. Rather than wait for the line to completely fail, they chose to replace it.

Clayton County has a population of 260,000 and is in the southeast quadrant of metro Atlanta. The county has been concerned about the maintenance of their sewer infrastructure for the last 30 years. The county has approximately 1,100 miles of sanitary sewer piping from 8 to 48-inches in diameter. The county services a portion of the Atlanta Hartsfield International Airport.

In the early 1980's, Interstate 675 was built through a corner of the county. The design included a bridge to accommodate Grant Road as it passed over the new interstate. Because the new elevation of the interstate was at or near the existing grade, Grant Road had to be raised up to the elevation of the bridge. This necessitated the placement of embankment about 40- feet thick on the west side of the new freeway. The county also had an eight-inch sewer that paralleled the interstate right-of-way in the Grant Road area. The existing sewer was about eight-feet deep when the embankment was placed.

During the CCWA's ongoing television inspection program, the 8-inch line in question was flagged for rehabilitation. The video showed that the existing line was vitrified clay pipe and was cracked longitudinally. As most experts will agree, this type of cracking is caused by a collection of conditions including: lack of bedding, poor installation or too great a load placed on the pipe. What damaged this line was unknown. What was apparent from the video inspection was that the line segment under Grant Road required replacement.

The design staff at the CCWA decided to replace the line segment from an existing manhole just north of the Grant Road pavement surface, running south approximately 440 feet under Grant Road and into a low swampy area to a shallow manhole. Because the grade at the surface of the road was close to 50 feet above the grade of the sewer line, the cost and disruption of open-cut construction could not be tolerated.

The CCWA's progressive approach to rehabilitation included the use of trenchless methods over the past three years to deal with the challenges they face in maintaining their collection system infrastructure. The line under Grant Road required replacement and the CCWA chose to use ductile iron pipe and the Tenbusch Insertion Method on this project.

This replacement work was performed under an annual contract with Clayton County by Environmental Consortium, with the help of Garney Companies.

#### Pipe

Ductile iron pipe was chosen for the project because it possesses tremendous columnar and tensile strength, which makes it an excellent material for trenchless applications. American Ductile Iron Pipe Company offers several joints designed for use in direct jacking, trenchless pipeline replacement (pipebursting) and microtunneling installation. Push-Bar



*Pictured here is the shallow end manhole that was used as the receiving pit. The new ductile iron pipe can be seen, as it has been pushed into the manhole four to six inches. The cone was removed to facilitate the work for the men.*



*The 34-foot deep manhole served as the receiving pit for the Tenbusch System "lead train." Replacing this manhole would have been especially expensive.*

pipe was chosen as the most appropriate joints available for this particular job.

Push-Bar Pipe employs an economical adaptation of the premier American Fastite Joint to transfer jacking loads from the pipe barrel directly to the face of the bell. It consists of a high-strength, alloy steel ring, the "push-bar," shop welded to the standard Fastite pipe spigot. This ring is made of the same material that has been used successfully in American's Lok-Ring and other restrained joints for over 30 years. A cushioning compression ring, made of compressible wood products, fits between the push-bar and the pipe bell for added assurance of load distribution. The pipe comes in short joints, as needed by the job site conditions, as well as the standard 20-foot laying lengths and carries the standard Fastite Joint pressure ratings. During installation, Fastite Joint Push-Bar Pipe is jacked or pushed with the spigots ahead. This allows for any debris remaining from the pipe replacement operation to flow smoothly over the bell of the Fastite Joint.