

## CASE STUDY

## STATIC PIPE BURSTING WITH RESTRAINED-JOINT PVC PIPE IS IDEAL FOR SEWER MAIN REPLACEMENTS

Like those in many small municipalities, officials in Brownwood, Texas are all too familiar with the problems associated with an aging wastewater collection system. In the case of Brownwood, shifting heavy clay soil caused cracks in the city's sewer mains, creating space for tree roots to infiltrate the system causing back-ups, overflows and demolition of pipe bells. Moreover, population growth on the outskirts of the city's original infrastructure placed new demands on the system.

### CHALLENGE

Faced with replacing more than 50 miles of outdated sewer mains, the City of Brownwood placed a premium on a cost-effective process that would minimize disturbances to roadways, neighborhoods, creeks and parks. City officials also sought to decrease installation time, reduce costs for sewer-contaminated spoil dirt disposal, lower the volume of new embedment and cut down on flex base and street patching.

### APPLICATION

After considering available technologies, the city's utility managers chose the static pipe bursting method with Westlake Pipe & Fittings Certa-Flo®, a restrained-joint polyvinyl chloride (PVC) pipe manufactured specifically for trenchless and pipe bursting applications.

A proven method gaining popularity with public works professionals, engineers and contractors, static pipe bursting involves an expander preceded by a cutting head pulled through the existing line by a hydraulically powered bursting unit. As the expander is pulled through, it splits the host pipe. An expander attached to the rollers forces the fragmented pipe into the surrounding soil while simultaneously pulling in the new pipe.

The combination of static pipe bursting with restrained-joint PVC pipe offers improved mechanical properties, higher pressure ratings and improved flow performance compared to other thermoplastic materials. It also allows municipalities to stick to a proven, long-lasting material that works seamlessly with existing infrastructure.

### SOLUTION

The City of Brownwood rented a Grundoburst 800 G static pipe bursting system from TT Technologies providing 100,000 pounds of thrust and 200,000 pounds of pullback. With only four days of training by TT Technologies personnel, work crews completed 14 projects in a six-month span. During that same time, crews replaced nearly a mile (4,692 feet) of 6-inch to 10-inch clay sewer mains.



**Project Type:**  
Water & Force Main  
Sewer

**Application:**  
Static Pipe Bursting

**Owner:**  
City of Brownwood

**Product Used:**  
Certa-Flo® PVC Sewer  
Pipe

To compare pipe material performance during installation, the project team used a mix of 10-inch HDPE and 8-inch and 10-inch Certa-Flo PVC pipe. After working with both, crews overwhelmingly voiced their preference for PVC based on its reduced installation time.

For example, it takes a three-person crew eight hours to fuse the amount of 10-inch HDPE pipe that the Grundoburst 800G is able to pull in one hour. Plus, the Certa-Flo can be installed as the machine pulls it in the ground, thanks to its unique spline-locking joint system which utilizes an integral bell instead of coupling.

For shallow bursts (less than six feet) where there is approximately 50 feet behind the insertion pit, restrained joint PVC pipe can be assembled as fast as the machine can pull. While the speed of a burst is difficult to estimate due to the specifics of any given project, the actual installation of the main has been between two and seven feet per minute.

Static bursting not only allowed the City of Brownwood to replace 6-inch clay mains with 6-inch PVC, it also increased the size of the main by two pipe sizes. Six-inch clay has been replaced by 8-inch and 10-inch while many of the small diameter mains are currently at a minimum grade for their diameter.

City officials say static pipe bursting proved to be a faster, safer and more cost-effective alternative to open cut methods. Moreover, the process dramatically reduced disruption in neighborhoods and business areas while restoring an aging system which once again can service the needs of its citizenry.