



2012 Annual Awards Program

Program Excellence Awards Nomination Form

Deadline for Nominations: March 16, 2012

Complete this form (sections 1 and 2) and submit with your descriptive narrative.

SECTION 1: Information About the Nominated Program

Program Excellence Award Category (*select only one*):

- ☒ Community Health and Safety
- ☐ Community Partnership
- ☐ Community Sustainability
- ☐ Strategic Leadership and Governance

Name of program being nominated: Waterline Replacement by Pipe Bursting

Jurisdiction(s) where program originated: City of Round Rock, TX

Jurisdiction population(s): 101,000

Please indicate the month and year in which the program you are nominating was fully implemented. (Note: All Program Excellence Award nominations must have been fully implemented by or before January 31, 2011, to be eligible. The start date should not include the initial planning phase.)

Month: September Year: 2001

Name(s) and title(s) of individual(s) who should receive recognition for this award at the ICMA Annual Conference in Phoenix, Arizona, October 2012. (Each individual listed MUST be an ICMA member to be recognized.):

Name: Steve Norwood

Title: City Manager Jurisdiction: City of Round Rock

Name: _____

Title: _____ Jurisdiction: _____

Name: _____

Title: _____ Jurisdiction: _____

SECTION 2: Information About the Nominator / Primary Contact

Name of contact:	<u>Shannon McIntire</u>		
Title:	<u>Information Specialist</u>	Jurisdiction:	<u>City of Round Rock, TX</u>
Street address:	<u>221 E. Main Street</u>		
City:	<u>Round Rock</u>	State/Province:	<u>TX</u>
Zip/Postal Code:	<u>78664</u>	Country:	<u>USA</u>
Telephone:	<u>512-218-5407</u>	Fax:	<u>512-218-7097</u>
E-mail:	<u>smcintire@roundrocktexas.gov</u>		

Pre-chlorinated Pipe-Bursting: Safer, faster and less expensive

The City of Round Rock was the first city in Texas to use the pre-chlorinated pipe bursting of potable water lines to replace water mains. The City's first project began in the fall of 2007. It employed a process used in Europe for many years to replace 2 ½ miles of water line in the Greenlawn Place subdivision. Using this process the City saved an estimated \$387,000 versus conventional methods and cut the project time by over half. Since then, the City has completed three more projects and is taking bids on a fourth. The City has replaced nearly 10 miles of water lines using the pre-chlorinated pipe bursting method and plans to replace at least two miles of pipe per year. The City received an Outstanding Municipal Utility Award from Texas Municipal Utility Association in 2012 in part for its pipe-bursting program.

Problem assessment

The City of Round Rock has many older neighborhoods with aging, small diameter water lines that need to be replaced. One neighborhood was Greenlawn Place, which needed to replace 17,000 feet of 6 and 8-inch diameter water lines that were in need of constant repair. The City decided to employ the pre-chlorinated pipe bursting method instead of conventional open cut and replace procedures. No other city in Texas had used this method before, so Round Rock's Utility Department was breaking new ground.

Project implementation and costs

The pipe bursting method involves digging an entry and exit pit on either end of the pipe segment to be replaced, breaking into the existing line, inserting a steel rod through the existing water line (all the way through the pipe) and coming out the other end at the entry pit. The

polyethylene pipe and pipe-bursting head are then connected to the steel rod and it is literally pulled back through the existing pipe, breaking the old pipe as it goes through, and pulling in the new polyethylene water line. Since the new water line has already been disinfected and passed a bacteriological test, it can be immediately put into commission. The new pipe is reconnected to the system to provide residents with water almost as soon as it is installed. Conventional methods require the pipe to be tested after it is installed, which can take up to 18 hours.

As a result, this process involves much less disruption for residents because there is no need to dig long trenches that tear up yards, sidewalks and streets. It also requires less time to install, which means less time that residents have to be without water and put up with construction crews in their street.

Asbestos cement pipes can be abandoned by installing completely new lines rather than undergo the expense of removal. Removal can cause utility infrastructure congestion, higher design costs and environmental impacts. All can be significantly reduced if the existing pipeline route can be followed.

For the Greenlawn project, the cost to replace the water lines was approximately 70 to 75 percent of the cost to replace the same length of line using conventional construction techniques. In addition, since the project required 85 percent less excavation than the conventional “open cut trench” option, safety was also improved.

Tangible results

The City has continued to use this method on projects annually to replace existing pipe. The savings will allow for more replacement projects and the result is a superior water system

that will last for 75 years or more. The City received an Outstanding Municipal Utility Award from Texas Municipal Utility Association in 2012 in part for its pipe-bursting program.

Pipe bursting: In depth analysis

The pre-chlorinated pipe-bursting method, as its name implies, uses the new pipe to break up the old pipe as it is being installed. For this procedure, crews set up a staging area which is used to fuse 40-foot pipe sections of HDPE (High Density Polyethylene) pipe. The length of the pipe section fused together corresponds to the appropriate length of the water line to be replaced. Each pipe then undergoes testing and disinfection procedures per American Water Works Association guidelines.

After pressure testing and two 24-hour sample results pass bacteriological testing, the pipe section is available to be pulled into place. The pre-chlorination process eliminates the need to set up an above ground distribution system, also known as temporary service.

Temporary service not only takes time and money to set up and tear down, but many times can become cumbersome to the homeowners as the above ground lines will run through front yards and over driveways. These lines may have to stay in place for weeks at a time depending on weather conditions.

On average, 300 to 600 feet of water line can be replaced per day using the pipe bursting method, or in other words, about one subdivision or city block per day. A normal day of pipe bursting operations would happen something like this: After the entry and exit pits are excavated, the main is decommissioned around 8 a.m. Next, the steel rods (about 3 feet long and 1 ½ inches diameter) are linked together then shuttled through the existing main from the exit pit to the entry pit. By mid-morning, the tooling, which consists of the bursting head, the expander and the new

pipe are attached to the rods at the entry pit. The pull-back process begins at this point.

Depending on the length of the line, the bursting, or pulling the new pipe into place, will take under two hours.

The pullback causes the host pipe to first be burst. The pieces of the host pipe are then pushed into the surrounding soil by the expander. The expander is roughly 15 percent larger than the outside diameter of the new pipe being pulled in to facilitate the pulling process. The new pipe is pulled through the annular space created by the expander. The installation crew then has to make the service connections and permanent connections to the main.

Since the first project, the City of Round Rock has completed 3 more pre-chlorinated pipe bursting projects, and is currently taking bids on a fourth project. The city will have replaced nearly 10 miles of water lines using the pre-chlorinated pipe bursting method. Future plans include continued water line replacement projects to replace about 2 miles of pipe per year.