

WATER PIPE REHABILITATION

IN BROOKLINE AND BRIGHTON

A MASSACHUSETTS WATER RESOURCES AUTHORITY PUBLICATION – 2002/2003

MWRA's system of tunnels and aqueducts conveys water to the Metropolitan Boston area from protected supply reservoirs in central Massachusetts. Large pipelines deliver this water to our customer communities. The water pipelines included in this project, portions of the "Boston Low Service" network, deliver water to downtown Boston and surrounding areas. The project includes construction work to rehabilitate large water pipelines in Brookline and smaller portions of pipe in Brighton. Cleaning or replacing old water mains is a key part of MWRA's program to improve the reliability and quality of water service to customers.

BACKGROUND

MWRA operates about 15 miles of unlined cast iron pipes laid in the Boston Low Service network between 1848 and 1908. The condition of old pipelines can contribute corrosion to water en route to customers and lead to main breaks that disrupt service, damage property, or even cause pavement collapses. In addition, more than 40 percent of the valves in this system were non-operable because of age, so MWRA would find it difficult to isolate a broken pipe in an emergency.

MWRA completed designs to improve and modernize the condition and operability of these lines and began rehabilitation work in 1999. Most of the project work includes cleaning out and placing a new cement mortar lining inside sections of existing 20- to 48-inch pipe. Large valves that are no longer operable are being replaced as well. The cost of the 10-mile pipeline construction work included in this contract is \$14 million. MWRA's contractor, P. Caliacco Corp., is completing the work in seg-



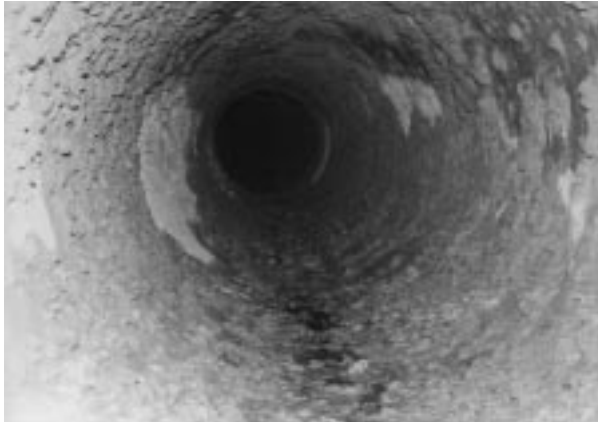
CONTRACTOR PREPARING ONE OF THE ACCESS PITS ON BEACON STREET.

ments in several Brookline and Boston neighborhoods (see enclosed map).

MWRA chose to rehabilitate these pipes, replacing sections only where necessary, to minimize cost and disruption to the public. The project will not interrupt water supply and construction has been organized to accommodate neighborhood traffic patterns, school schedules, holiday shopping, and community events. MWRA works with local public officials and businesses, other utilities, police and neighborhood associations to complete the project safely and efficiently. MWRA is working with Brookline and Boston officials to notify residents and business owners near the streets affected by the project.

LOCATIONS

Project construction began near Cleveland Circle on the Brighton/Brookline line. The work is taking place in segments that are organized around logical construction sequences and other, ongoing projects. Beacon Street in



THE CLEANING PROCESS REMOVES CORROSION PRODUCTS FROM THE INTERIOR OF THE PIPE.

Brookline, for example, is the site of several projects, including MBTA track and station improvements. MWRA is working with community officials to schedule its work in these high traffic and pedestrian neighborhoods in order to minimize impacts.

COMPLETED SEGMENTS

The first four segments of the project have been completed. They include the following streets:

- St. Paul St., from Beacon St. to Buick St.
- Winchester St., from Beacon St. to Fuller St.
- Fuller St., from Winchester St. to Harvard St.
- Harvard St., from Fuller St. to Verndale St.
- Centre St., from Fuller St. to Beacon St.

In 1999 MWRA completed two earlier phases of this project. They included work in Cleveland Circle, on Beacon, Buckminster and Boylston Streets, Clinton Road and Brookline Avenue. By working with local officials, MWRA has been able to notify the community well in advance of mobilization and thus minimize disruptions to the neighborhood. MWRA also worked with the Chamber of Commerce and local businesses to maintain access to shopping and parking areas.

THE NEXT PHASE

Work will begin this spring on the remaining two segments in Boston and Brookline neighborhoods:

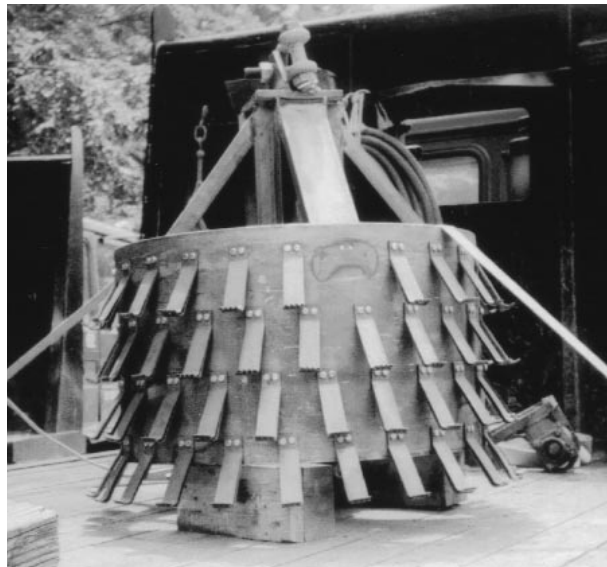
- Beacon St., from Cleveland Circle to Harvard St., beginning in March 2002 through July 2003.
- Longwood Ave., from Harvard St. to Chapel St., beginning in March 2003 through July 2003.

Some of this work on Beacon Street will look familiar to residents, but there are actually two parallel pipes running down the street. The contractor is working on the second pipe, up to Harvard Street, in this segment.

The work will take place in phases. The contractor opens an access pit to reach a pipe segment and do the cleaning, then places steel plates over the pit and moves to the next area. Then the contractor returns to the access pit to complete the relining, cleaning and disinfection process. Detail police officers manage traffic flow in busy areas. The project will not interrupt water supply to businesses and residences.

THE CLEANING AND LINING PROCESS

Cleaning out rust and corrosion and lining old pipes is a cost-effective and non-intrusive way to add many years of service life to old cast iron pipes. The contractor first chooses locations for access pits at key points about 1,000 feet apart, or at bends along the length of the pipe. These excavations are generally 10 by 20 feet in size allowing equipment to be lowered into and pushed through the pipelines. The workers cut and remove a section of pipe, about 12 feet long, so they can insert a mechanical scraper in the pipe to clean it. The scraper has a series of spring-loaded metal blades that literally scrape old buildup from the walls of the cast iron pipe. The workers winch the scraper repeatedly – until the walls are clean – from one access pit to another. Then they put a cir-



THE SCRAPER HAS A SERIES OF SPRING-LOADED METAL BLADES THAT REMOVE OLD BUILDUP FROM THE WALLS OF THE WATER PIPES.



WATER PIPE
AFTER CLEANING
AND LINING.

MWRA offers a wide variety of informational materials on the region's water and sewer systems and the natural environment. To find out what's available, visit our website at www.mwra.com, or contact the Public Information Unit, MWRA, 100 First Avenue, Boston, MA 02129.

Questions about the project should be directed to MWRA's Jeff McLaughlin or Howard Hughes who can be reached at (617) 788-1170 or by e-mail: Jeffrey.McLaughlin@mwra.state.ma.us Howard.Hughes@mwra.state.ma.us.

MASSACHUSETTS WATER RESOURCES AUTHORITY

The Massachusetts Legislature created MWRA in 1984 to upgrade, operate and maintain the regional water supply and sewerage treatment system. This system serves 2.5 million people and 5,500 businesses in 61 communities. MWRA's mission includes:

- (1) building and operating new facilities to improve wastewater transport, treatment and discharge;
- (2) modernizing an antiquated waterworks system to meet new water quality standards and to improve supply reliability.

MWRA supplies about 260 million gallons of clean drinking water per day to communities through 400 miles of tunnels, aqueducts and pipes. MWRA transports 370 million gallons per day of wastewater collected from communities through 228 miles of sewers.

MWRA INTEGRATED WATER SUPPLY IMPROVEMENT PROGRAM

Old water pipes in MWRA and community systems can create taste, odor and rusty-water problems for customers resulting from buildup of deposits in corroded pipes. As part of a long-range program to rehabilitate 200 miles of pipeline, MWRA has a target of completing 7-10 miles of pipeline rehabilitation work each year.

Rehabilitating and replacing old water pipes is an essential part of MWRA's Integrated Water Supply Improvement Program. MWRA provides interest-free loans for community projects involving water pipeline rehabilitation. Other elements of the 10-year program include:

- Comprehensive watershed protection;
- A major new deep-rock aqueduct, the MetroWest Water Supply Tunnel, to assure continuous and reliable water transmission to communities;
- Projects in the distribution system – including pipeline rehabilitation and new covered storage facilities – to protect water quality; and
- Construction of modern treatment facilities for enhancing water quality.

To maintain a safe level of service MWRA will continue to protect watersheds and reservoirs, maintain the distribution system and provide proper treatment of its water. MWRA is committed to protecting the source and improving the water delivery system as well as maintaining and operating wastewater treatment facilities that protect the environment.

