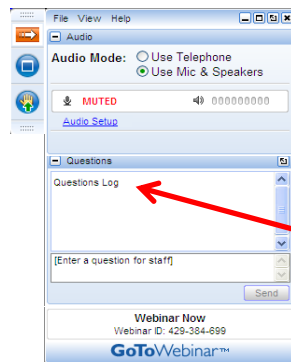


Sponsor eShowcase: Addressing Mexico City's AC Potable Water Pipes through Rehabilitation



Thursday, April 28th, 2016
1:00 - 1:45 pm ET

How to Participate Today



- **Audio Modes**
 - Listen using Mic & Speakers
 - Or, select "Use Telephone" and dial the conference (please remember long distance phone charges apply).
- **Submit your questions using the Questions pane.**
- **A recording will be available for replay shortly after this webcast.**

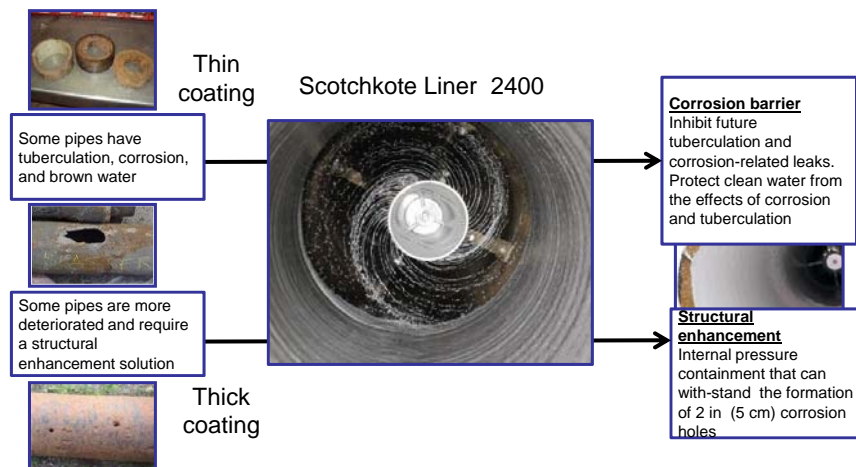


Scotchkote Liner 2400 is..

- ... a two part, quick curing polyurea formulation
- ... a spray applied, trenchless solution
- ... approved for contact with drinking water in countries in North America, Asia and Europe
- ...for pipes made of a variety of ferrous materials and asbestos-cement
- ... a solution to protect water quality and extend the service life in existing potable water pipes without the cost and community impacts of full pipe replacement.



Scotchkote Liner 2400 Addresses Multiple Problems



Protect Asbestos-cement Pipes

Protect cement matrix – 2.75 mm lining

- Inhibit calcium leaching
- Protect the matrix from deterioration by organic acids from microbiological activity
- Span small holes (6 mm), cracks and gaps (5 mm)

Provide structural enhancement – lining to various thicknesses

- Carry the internal pressure of the pipe
- Resist external hydrostatic pressure due to ground water
- Resist internal negative pressure during transient events

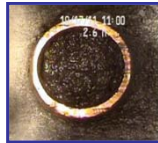


There may be certain rules and regulations governing work related to asbestos containing materials at the local, state, and federal levels. It is the responsibility of the authorized applicator (or their subcontractor) to interpret and comply with local, state, and federal regulations, obtain any required permits and complete any notification to regulatory agencies for any activities considered to be covered under such regulations before any project is begun.

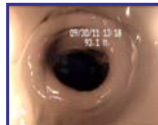
Scotchkote Liner 2400 – Restoration of Services



Service connections are not normally blocked

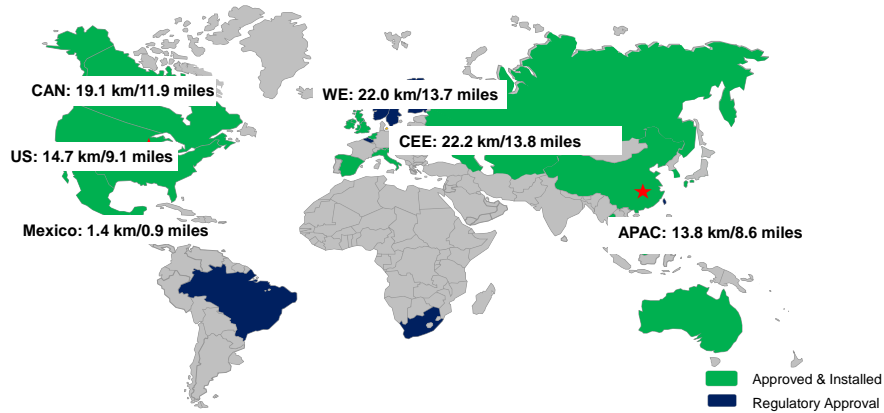


Debris in service connections can lead to blockage of service



Thick coatings may create some obstruction of the service

Pipe lined annually has grown 119% in 2 years*



3M Scotchkote Liner 2400 is a unique water quality and structural enhancement solution that resonates around the world

Traffic in Mexico City

“Most Horrific Traffic in the Entire World” Gizmodo.com, Sep. 2011

IBM Commuter Pain Index 108 (Los Angeles, 34)

“Stranded in a Sea of Cars...” New York Times, March 2015

-“...six hour commutes are not uncommon.”

“World’s Worst Cities for Rush Hour Traffic” CNN.com, March 2015

“...the Mexican capital ranks as the second most congested city overall...”



Photo, Wikipedia.org

Water Challenges in Mexico City

Iztapalapa is a region of Mexico City with about 1.8 million residents

“In Izatapalapa, there are 1,000 trucks distributing water to two million people”
– Juan Jose Santibanez, Environment Scientist (PBS News Hour)

(In Izatapalapa) “...pipe pressure is just 500g per square centimetre, and taps are dry more often than not.” – Jonathan Watts, TheGaurdian.com



Iztapalapa Trial Project

Project to demonstrate fast return to service and minimal traffic disruption

1.4 km of 4-6" pipe

Roughly 90% asbestos-cement & 10% Cast Iron

No bypass to be used

Household cisterns can provide 1-2 days water supply

2.75 mm lining thickness selected

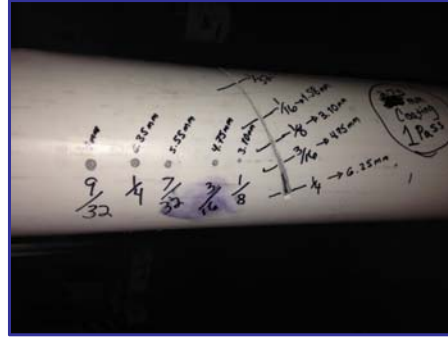


Gap and Hole Spanning

3M provided 2 field technicians to train application team, and provide on site advice

2.75 mm of Scotchkote Liner 2400 can span gaps of up to 5 mm and holes up to 6 mm diameter

An ad hoc test was devised to demonstrate hole and gap spanning capability.



Excavation

The applicator planned to access pipe for lining by removing 4-way connections

Manhole workspace and openings created by 4-way removal were inadequate for lining equipment.

Access pits adjacent to manholes were required



Pipe Condition

Asbestos-cement pipe exhibited biological build up

Iron pipe segments exhibited corrosion and tuberculation

Asbestos cement sections were cleaned with low pressure water jetting

Iron sections cleaned by scraping



Pipe Cleaning Asbestos-Cement

Low pressure jetting was used to remove biological build up in the asbestos cement sections

A new jet cleaning system was purchased for this project

Operating pressure roughly 1-2000 psi



Pipe Cleaning



Pipe Cleaning Cast Iron

The presence of cast iron in some sections of the project was not anticipated

Drag scraping was implemented to clean the corrosion and tuberculation from the cast iron section.

Following cleaning, foam swabs are used to dry and prepare the pipe



Lining Rig

Heated tanks for base and activator

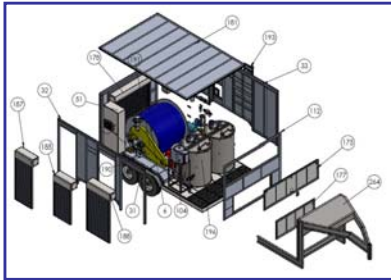
Full-sweep mixers

1:1 ratio metering pump

Umbilical ~650 feet

PLC and HMI

Calibration certificate on board



Lining Head

Air line Inline mixer Skis Air motor Spray Head



Post Lining Inspection and Reinstatement

Post lining inspection was conducted

Service reinstatement was not needed, services were replaced after lining

Some longitudinal variation (ringing) was evident

Ringling is largely resolved by umbilical replacement

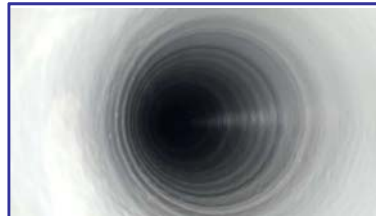


Outcome

"It's amazing the impact in the water quality was visible immediately."

"We were able to reconnect the water service in less than 8 hours. Before it took at least 24 hours."

"It's possible to give new life to the pipelines. We didn't know we could do that."



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