



TRENCHLESS WATER MAIN RENEWAL

THE FIELD-PROVEN  
SOLUTION FOR **RESILIENT**  
**WATER INFRASTRUCTURE**



# DELIVERING RESILIENCE

Our field recognized technology, ALTRA10, protects and renews your drinking water infrastructure from the inside with minimal disruption to your communities.

## BENEFITS

*1,500 miles / 2,400 km installed to date:*

### PROVEN RESILIENCE

- Structural, class IV, high resiliency against severe soil movements like frost heave, flooding, landslides, subsidence, nearby excavations, and earthquakes;
- Proven resilience tested at Cornell University in 2019;
- Increased pressure and flow capacity;
- Added corrosion resistance;
- Regained full structural integrity;
- 100 year life expectancy.

### ENVIRONMENTAL BENEFITS

- Elimination of risk of future water main breaks;
- Reduction of 55M m3 of drinking water leaks;
- Reduction of GHG emissions by 8X.

### INSTALLATION BENEFITS

- Enable work in difficult to access, ecologically sensitive or high density area (e.g., highways, etc.);
- Quick installation with minimal disruption for the community;
- Little excavation and noise leading to fewer complains from neighboring residents;
- No disturbance to adjacent infrastructures;
- Line through bends and future service taps easily performed;
- No future maintenance required;
- Replacing lead services can be done simultaneously.

### ECONOMIC CONSIDERATIONS

- Most cost effective water main infrastructure replacement methods;
- Reduction in treatment and pumping costs.

# THE MOST IN-DEPTH AND PROVEN EXPERIENCE IN NORTH AMERICA



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INSTALLED OVER

**2,400**  
KILOMETERS

ACROSS

**350**  
CITIES IN  
NORTH  
AMERICA.



**CANADA**  
**BEST  
MANAGED  
COMPANIES**

# TECHNICAL SPECIFICATIONS

## ALTRA10 DIAMETERS

4-24 inches (100-600 mm)

## INSTALLATION LENGTH

Up to 1,000 feet (300 m)  
between access pits

## INSTALLATION METHOD

Pulled-in-Place Pipe (PIPP)

## OPERATING PRESSURE

Tested at greater than  
150 psi (10 bars)

## HAZEN-WILLIAMS COEFFICIENT

Greater than 120

## LINER LIFESPAN

More than 100 year life expectancy

## CLASS IV STAND-ALONE STRUCTURAL LINER

- Regained pressure and flow capacity
- Corrosion resistance
- Regained structural capacity
- Proven not to break upon hostpipe failure.

## ALTRA10 LINER

Circular woven polyester and fiberglass jacket, impregnated with epoxy resin (proprietary formulation) with fused, watertight polymeric membrane.

*The ALTRA10 structural liners offer many advantages, such as when:*

- Maintains access to homes and businesses at all times
- Eliminates pipe breakage and deterioration
- Allows access to pipes inaccessible by digging

# BASIC INSTALLATION STEPS

## 01. TEMPORARY BYPASS

Install temporary bypass through water meters or garden spigots

## 02. EXCAVATION

Excavate access pits at each end of the pipe section

## 03. CLEANING

Clean pipe with metal chain reamer

## 04. INSPECTION

Inspect pipe through closed-circuit television (CCTV) inspection to map the service connections

## 05. INSERTION

Insert plug in every service connection from inside the pipe using specialized robotic equipment

## 06. INJECTION

Inject epoxy into the liner on-site and pull into place

## 07. LINER FORMATION

Form the liner by sending swabs from one end to the other

## 08. CURING

Circulate hot water for curing

## 09. PRESSURE TEST

Perform hydrostatic pressure test

## 10. REINSTATE SERVICE

Reinstate service connections from inside the pipe by drilling using specialized robotic equipment

## 11. DISINFECTION AND RECONNECTION

Disinfect the pipe, test, and reconnect water distribution system

## 12. RESTORATION

Remove temporary bypass and restore site

# CERTIFICATIONS

- Compliant with BNQ 3660-950 et NSF/ANSI/CAN 61-G standards
- Mechanical properties exceed ASTM F1216 and ASTM F1743 Standards
- Tested in compliance with Australian/New Zealand Standard 4020 drinking water standards
- Meets the Solar Impulse Standards on Sustainability & Profitability



**ALTRA**



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