ADVANCED TRENCHLESS INC.
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Water North Coalition

Presented by:
Dave Machado, General Manager
Kelly Herman, Sales Specialist

Trenchless Technology, Practical Applications and What You Might Not Know

- Advanced Trenchless Inc. (ATI) Owned by Aquatera since December 2017
- Aquatera is a full service utility corporation – a regional provider of water, wastewater and solid waste service.
- ATI operating for 10 successful years
- Highly trained teams of installers and technicians
- In-house Engineer and tech team
- Dave Machado, General Manager
- Tracey Anderson, Business Development Manager
- Kelly Herman, Sales Professional

AQUATERA®
WATER EARTH INNOVATION

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WHAT?

- Trenchless Solutions
- Cured In Place Pipe (CIPP)
- Triplex Lining System – one of the few providers in Western Canada
- Technology
- Equipment
- Highly trained teams
- Highest quality materials
- Impeccable quality control
- Safety

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WHERE?

- Team deployment throughout Western Canada
- Alberta owned and managed
- Specialize in project management
- Arrange multiple municipalities to add to cost savings

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WHEN?

NOW!

- Is there a sense of urgency?
- Is there a call to action?

Our internal and external teams work to ensure each project is completed within the desired timeline that is requested by our highly valued clients.

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WHY?

- Underground infrastructure
- Plan, invest, engineer, construct, mandate to provide services
- What is the condition and age?
- Performing?
- Failing?
- Out of site, out of mind
- Proactive or reactive?

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THE BIG WHYS?

- Would you like to dig up your roads?
- Would you like to damage assists?
- Why would you like to disrupt traffic or have road closures?
- Why would you like to take weeks or months to finish a project?
- Why do you want to conflict with other utility services?
- Why do you want to have to set a trench?
- Why do you not want a long term solution?
- Why do you want to panic?
- Why do you want to pay up to 3 times more?

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Sewer / Storm Open Cut Work Process

- Reactive
- Panic - All hands on deck
- What is the problem – and solution?
- Solicit prices
- Mobilize contractor
- Road closures
- Permitting
- Utility conflicts

- Bypass pumping
- Noise
- Time to complete
- Trench setting
- Temporary and permanent paving
- Disturb new paving

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“CIPP First” Approach

- Inspect the system to identify problems **BEFORE** they become emergencies
- Maintain and actively use asset condition database to manage information
- Use database to prioritize design efforts for future rehabilitation contracts
- Budget for annual CIPP rehabilitation construction contract
- Rehabilitate 4X more pipe
- Improve infrastructure renewal rate

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(Sample) Cost of Sewer Open Cut Repairs

Project	No. of Locations	LF	Cost	Cost/LF
X Street Emergency Repair	1	365	$300,885	$824
Y Street Emergency Repair	1	500	$200,252	$401
Contract 1 Sewer System Improvements	12	1,770	$1,318,064	$745
Contract 2 Sewer System Improvements	3	1,935	$1,347,150	$696
On call excavation	3	1,145	$510,799	$446
On call excavation	6	405	$550,711	$1,360
On call excavation	11	750	$957,875	$1,277
On call excavation	4	320	$280,000	$875
TOTAL	**41**	**7,190**	**$5,465,736**	**$760**

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(Sample) Cost of Proactive CIPP

Project	LF	Cost	Cost / LF
Contract 1 Sewer System Improvements	8,920	$865,792	$97.06
Contract 2 Sewer System Improvements	1,851	$217,504	$117.51
Subtotal	**10,771**		**$100.58**
CCTV Inspection + Engineering Costs	146,743	$1,083,296	$5.40
TOTAL		**$1,875,157**	**$174.09**

$760 → $174

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Summary - Why Cured In Place Pipe (CIPP)?

Asset Specific Objectives:

- Reduce / eliminate root intrusion
- Reduce maintenance requirements – seamless, jointless
- Repair both the lateral and the connection to the main

Management Specific Objectives:

- Improve value and customer experience
- Find cost savings for repairs
- Annual planning / budgeting
- Improve efficiency and effectiveness of the sanitary operations

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Summary - Why Cured In Place Pipe (CIPP)?

- "CIPP First" approach promotes proactive rehabilitation
- CIPP saves time and money vs. open cut
- CIPP program facilitates annual rehabilitation budgeting and planning

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HOW? THE EASY SOLUTION

Professional infrastructure and project management

- Flushing and CCTV inspections
- Accurate, detailed visual representation of the state of the pipe
- Rate state and condition of each pipe 1 - 5
- Set up database to support infrastructure
- Indicates timelines for planning and budgeting
- Decide on scope of projects. Spot repairs or complete lining
- Complete project management – the 5 year plan

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SUCCESS!

- Ease of managing, budgeting, planning
- No trenching
- Small footprint
- Less noise and equipment
- Less garbage to landfill
- Extremely quick
- Multiple jobs in one day
- Lasts 50 to 100 years
- Quality control
- Minor if any traffic interruption
- Minor if any service interruption

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MASSIVE COST SAVINGS!

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Dave Machado

General Manager ATI

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Our Services & Customers

Services

- CIPP:
  - Pipe Relining
  - Lateral Repairs
  - Specialty Lining
- CCTV Inspection Services
- Manhole Rehabilitation
  - Licensee of Triplex technology - one of the only providers in Western Canada

Customers

- City of Edmonton
- EPCOR
- Suncor
- Aquatera

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Cured In Place Pipe (CIPP)

What is CIPP and how do we use it?

- CIPP is a rehabilitation process of installing a new pipe within the old pipe.
- CIPP can be installed in pipes ranging from 4” – 108” (100mm – 1.75meters)
- CIPP can be fully structural and watertight if designed and installed properly
- The key to utilizing CIPP as a solution is to identify pipes for rehabilitation **BEFORE** failure

- There is also Cured In Place Manhole (CIPMH), offering the same benefits in manholes, chambers, vaults and other vertical structures.

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Cured In Place Pipe (CIPP)

- Ability to fix most pipes without excavation, and best used proactively.
- The City of Edmonton has been re-lining pipes since the late 80's – annually they rehabilitate roughly 20-40 km of pipe.
- In addition, many other municipalities are rehabilitating many of their systems – from mainlines and laterals to manholes.

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Cured In Place Pipe (CIPP)

- Also used in areas prone to future failures, including aged sewer systems, joints susceptible to infiltration and exfiltration, deteriorated surfaces and build-up of minerals through joints.

- By using CIPP before it gets to this point, time and money are saved and unnecessary excavation can be prevented.

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Cured In Place Pipe (CIPP)

The application can also be used in non-traditional areas:

- Large sections of pipe completely missing
- Severe fractures
- Pressure pipe
- Corrosive environments
- Heavy ground water infiltrations

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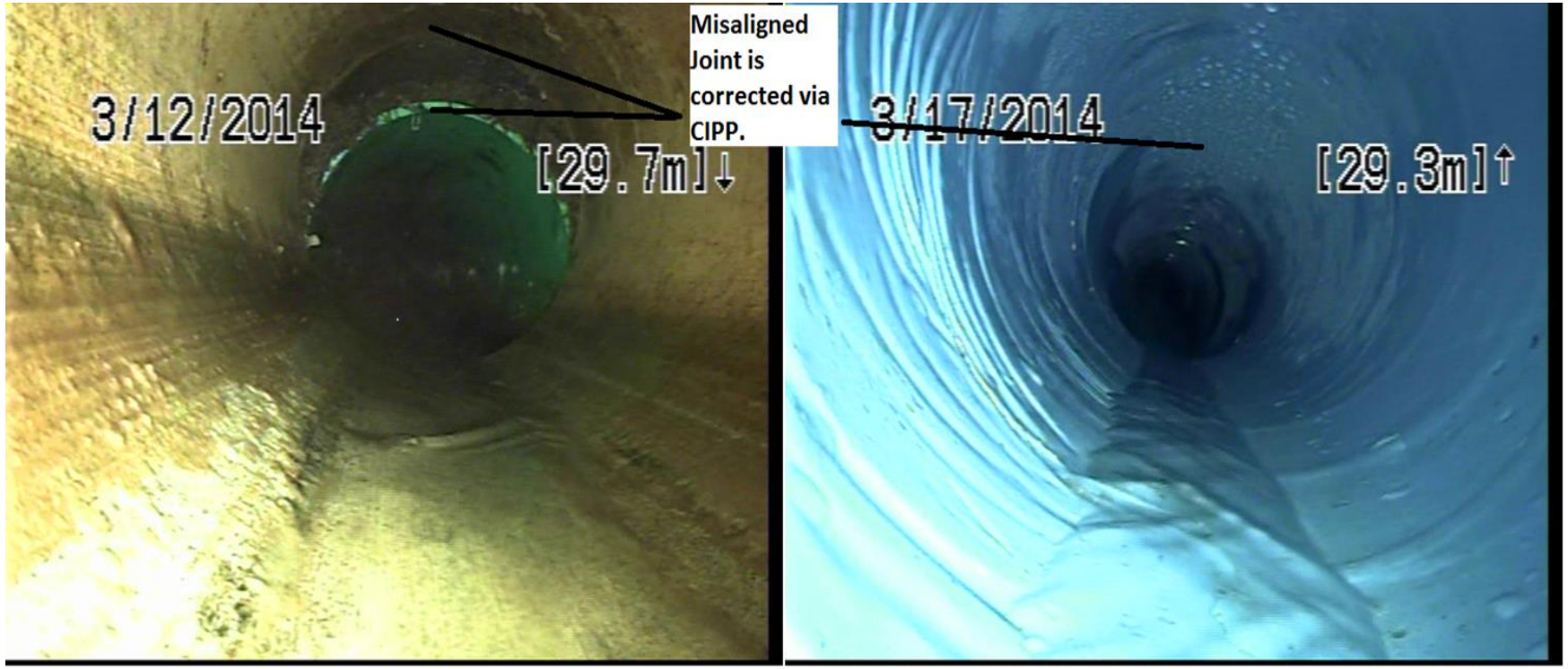
Lateral Repairs

Lateral sewer lines from buildings to the main can also be affected by cracks, fractures, breaks and root intrusion.

Lining methods can be utilized to repair damaged lateral lines, similar to spot repair and full reline repair services.



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Specialty Lining

Working for an industrial client in the oilsands, we were able to engineer and present an installation strategy that did not require a full excavation at the exterior manhole, using a **No Confined Space Entry** approach.

We incorporated the use of an in-pipe robot to avoid a conventional confined space entry to perform liner “cut-out” at base of the manhole.

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Before

- There are multiple trenchless pipe repair systems
- Developed and perfected in cold climates
- Lifespan of at least 50 years

After

Flushing and CCTV Inspection

Getting a thorough look at the sewer and storm system mainlines, laterals and manhole chambers is the initial step to assess areas for repair and maintenance

The line is cleaned with high-pressure flushing equipment to ensure a complete view. Any debris that is washed down the line is vacuumed and disposed.

This defines "current state" for any rehabilitation programs

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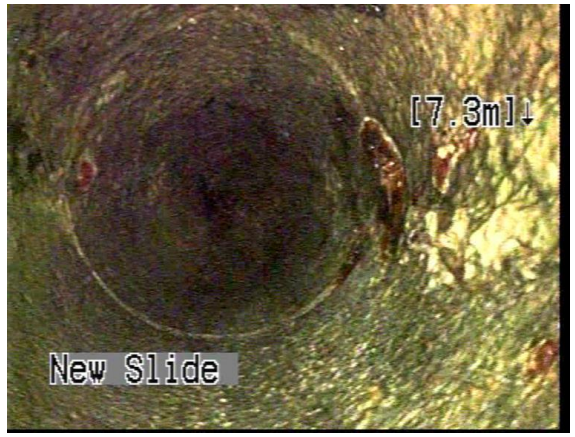
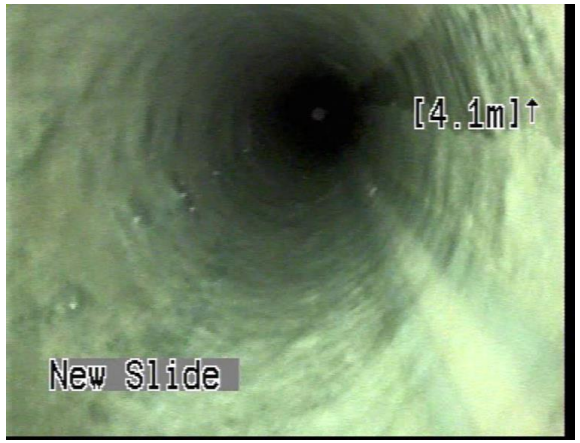
Sewer Manhole Rehabilitation

This deep sewer manhole sustained sink-hole and soil wash-out due to perforated ex-filtrating supernatant pipe.

Before:
Pipe is corroded and fully perforated and ex-filtrating into surrounding soil.

After:
Pipe is sealed and structurally restored – improved flow capacity and smoother interior surface





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Manhole Rehabilitation

Using a combination of techniques including resin injection, spray coatings, rubber seals and hand lay-up of resin/fibreglass, we can resolve challenges of water infiltration and exfiltration.

In this wet well, we used multi-layer fibreglass/silicate resin laminate for corrosion resistance and to seal against in/ex-filtration and structural enhancement

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Manhole Relining

The patented Triplex Liner System is a cured-in-place structural liner (CIPSL). This is a system for permanent structural rehabilitation to correct:

- Infiltration
- Exfiltration
- Chemical corrosion problems
- Also to be used for preventative maintenance

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Manhole Relining

The CIPSL has been specifically designed for use in:

- Manholes and Catch Basins
- Sewage Pump Stations
- Wet Wells
- Vaults
- Storm water Culverts & Pipes
- Tanks

Cured-in-Place
Permanent Rehabilitation
Municipal & Industrial
Wastewater • Stormwater

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Manhole Relining

Triplex is engineered to be the most cost effective long-term solution available to day, due to it's layered technology

Layer 1 – Structural Fiberglass
Layer 2 – Impermeable Membrane
Layer 3 – Structural Fiberglass

Engineering Certification for 100 year life service

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Manhole Relining

Manhole Before | Cleaned & Prepped | Manhole Lined

Manhole Before | Cleaned & Prepped | Manhole Lined

Value Engineering = Lowest Cost Per Year of Use

Engineered for 100-year useful design life in corrosive sewer & stormwater conditions

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Triplex Lining System

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Grande Prairie Manhole Rehabilitation

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Triplex Lining System

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Beyond rehab?

Scheduled for August install

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Questions?

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Thank You!

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