Sharing Valuable ROW Real Estate in Urban Spaces When Siting GI

October 16, 2019
Exhausting Best Opportunities for GI
GI Constrained by Urban Infrastructure
GI Engineers

Utility Engineers
How Are Utility Replacement Needs Established?

Utility Condition Assessment

- GIS Data
- CCTV Inspection
- Field Observation
- Immediate Concerns
- Institutional Knowledge
How Are Utility Replacements Prioritized?

RISK BASED

Overall Pipe Rating
= Probability of Failure

Risk Modifier
= Magnitude of Loss
What Decides Whether to Rehab or Replace?

Key decision factors

- Condition: Typically must be < 10% deformed
- Depth
- Available capacity
- Sags
- Extensive voids or sinkholes outside pipe
- Nearby utilities
What Rehab Methods are Available?

• Cured-in-Place lining (G&P)
• Sliplining – (G)
• Spray applied cementitious – (G&P)
• Spiral wound – (G)
• Pipe bursting – (G&P)
• Close-fit – (G&P)
• Polymer Coatings – (G&P)
• Pipe eating – (G)

G = Gravity   P = Pressure
# What Influences the Method?

<table>
<thead>
<tr>
<th>Gravity Sewer Main Problem / Issue</th>
<th>Cured-in-place lining</th>
<th>Fold-and-form lining</th>
<th>Sliplining</th>
<th>Cementitious Lining</th>
<th>Pipe eating</th>
<th>Pipe bursting</th>
<th>Spiral wound</th>
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What is Changing?

Sewer Assessment Technologies

• Visual
  • CCTV, Optical Scanning
• Acoustic
  • SL-Rat
• Laser
  • 2D (ring) and 3D Lidar
• GPR
  • Pipe Penetrating Radar
What is Changing?
Rehabilitation Methods

- Rehab needs increasing with asset age
- Methods are advancing
- Cost, efficiency, reliability major factors in changes

Spray-on Coating  Slip Liner  Spiral-Wound Liner
Where is Water Expected to Move?
How Close Can Utility Construction Get to GI?
How Do I Know the Subsurface Extents?
How Critical is Protection of the GI?
Summary

- Utility characteristics and preferences vary
- Utility rehab and replacement adapting
- Consider long-term interactions of GI and how to share urban ROW space
Are there Opportunities to Coordinate Implementation?

Complement gray infrastructure with green infrastructure to reduce stormwater flows in a cost-effective and aesthetic manner.

Coordinate construction with all utilities to minimize utility relocation and ensure no disruptions in service.

Holistic approach of rehab projects, including traffic patterns, potentially conflicting repairs, streetscaping.

Storm Sewer
Combined Sewer
Sanitary Sewer
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