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Sharing Valuable ROW Real Estate in Urban Spaces When Siting GI

October 16, 2019

Exhausting Best Opportunities for GI

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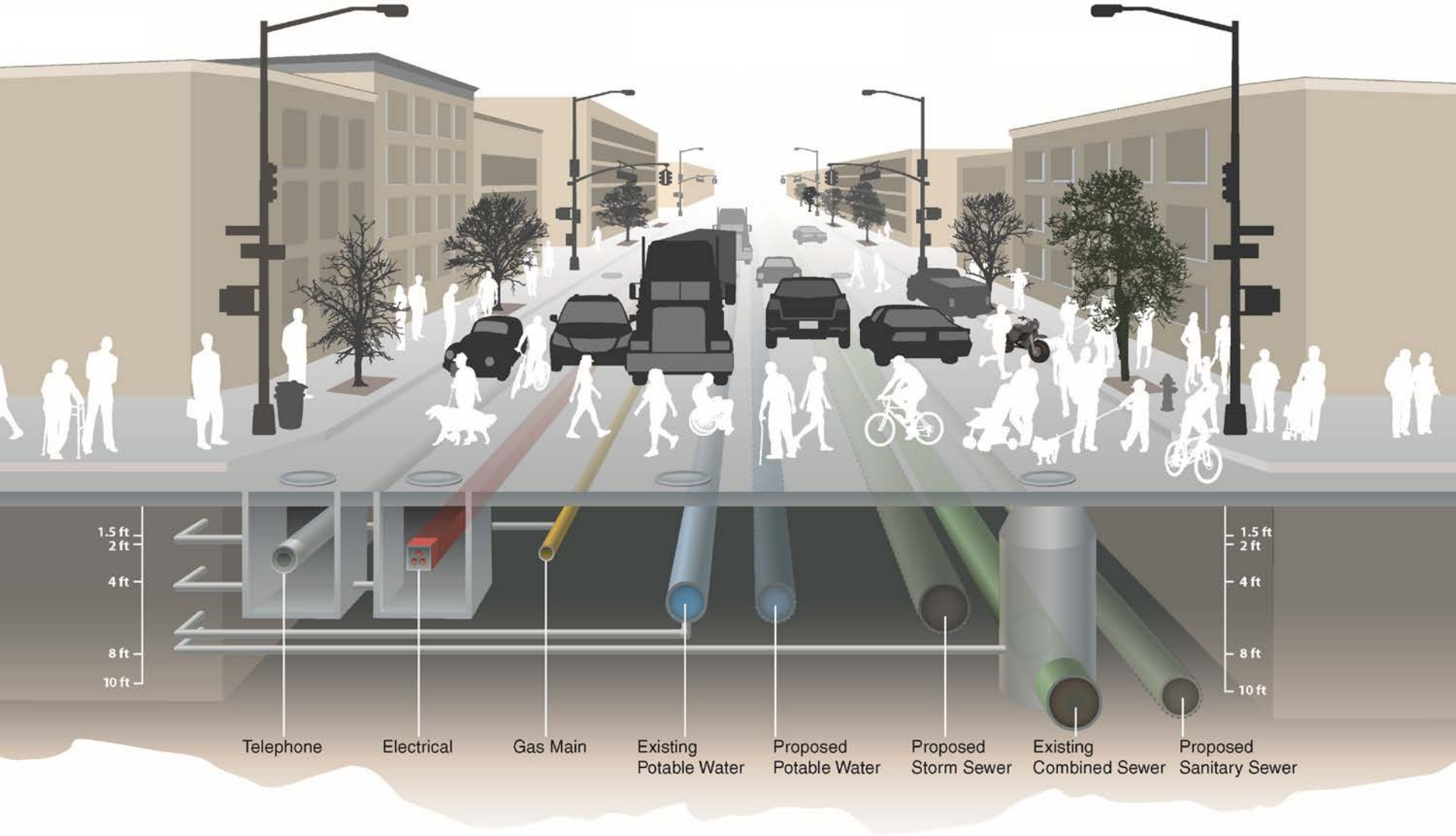
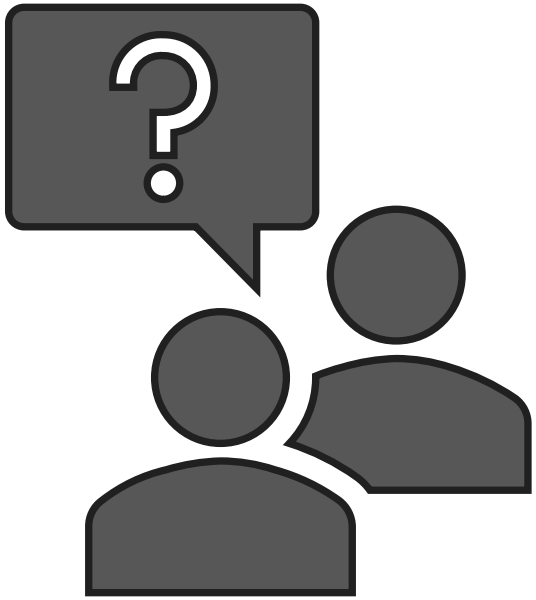
GI Constrained by Urban Infrastructure

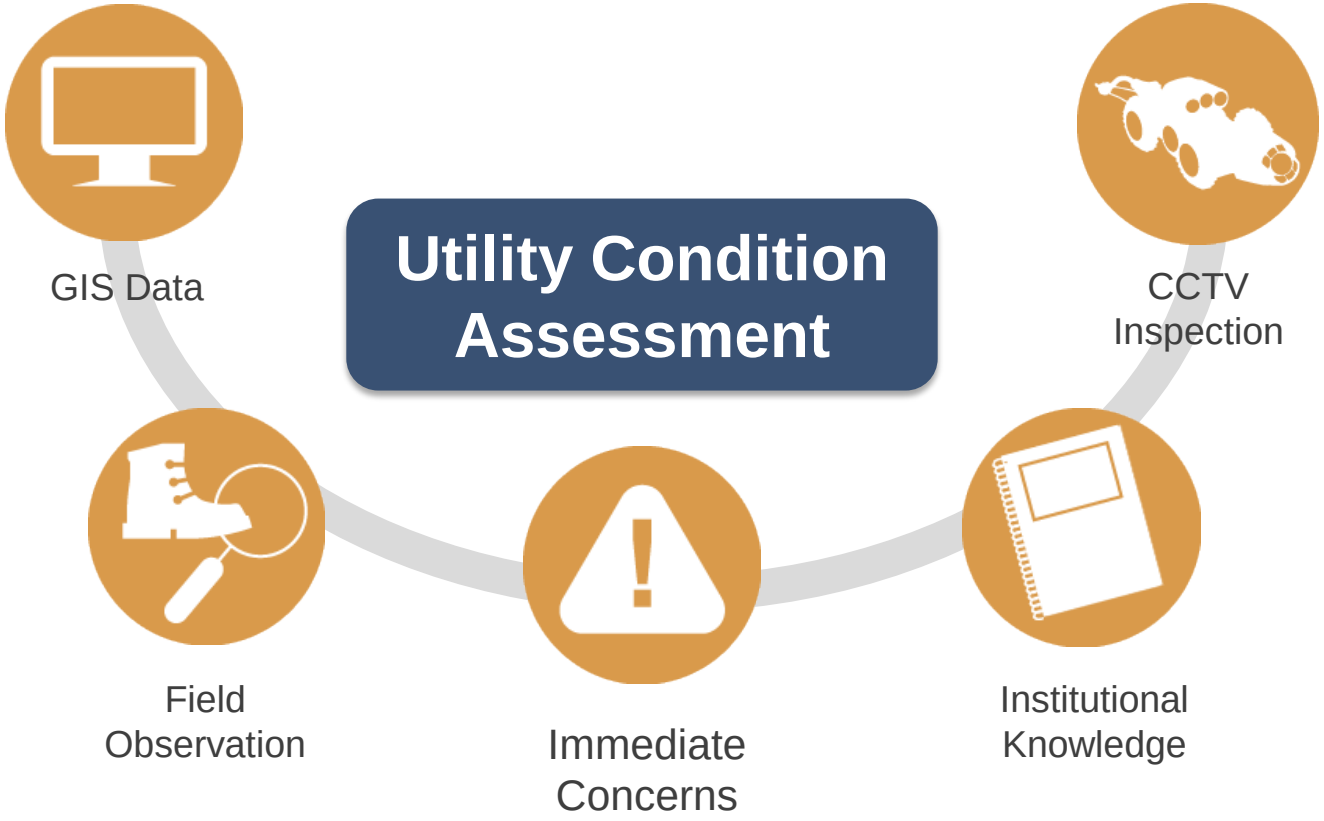


GI Engineers



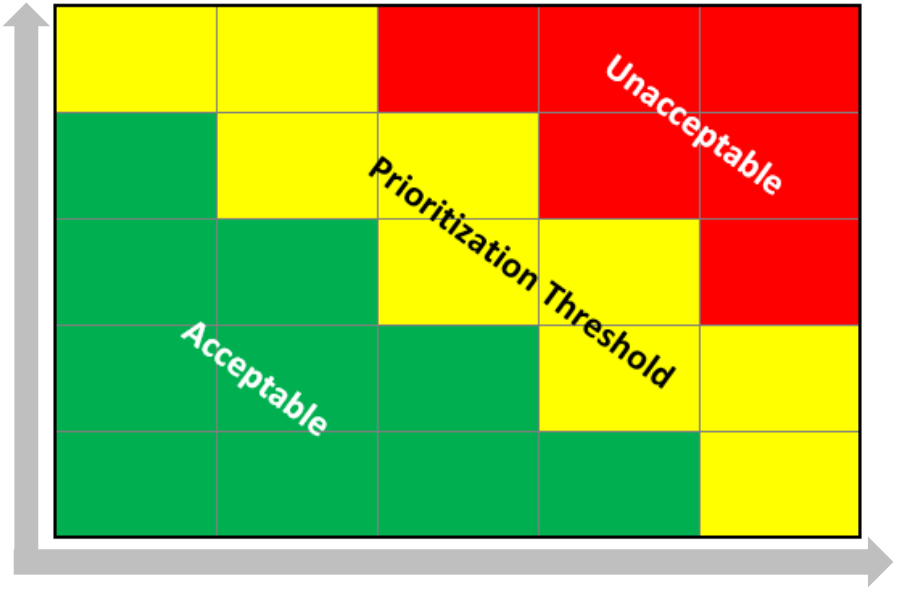
Utility Engineers

How Are Utility Replacement Needs Established?



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

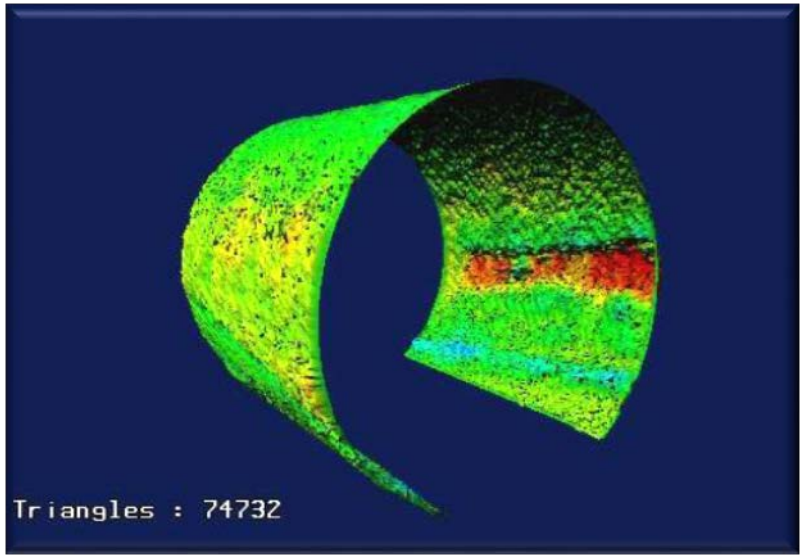
What Influences the Method?

Gravity Sewer Main Problem / Issue	Cured-in-place lining	Fold-and-form lining	Sliplining	Cementitious Lining	Pipe eating	Pipe bursting	Spiral wound
Lack of Capacity	X	X	X	X	●	●	X
Near Capacity	●	●	X	X	●	●	X
Large Diameter	●	X	●	●	X	X	●
Small Diameter	●	●	●	X	●	●	X
Non-circular Geometry	●	X	□	X	X	X	●
Extensive Laterals	●	●	□	□	X	□	□
High Base Flows	□	□	●	●	□	X	□
High Ovality or Misaligned	●	X	X	●	●	●	●

What is Changing?

Sewer Assessment Technologies

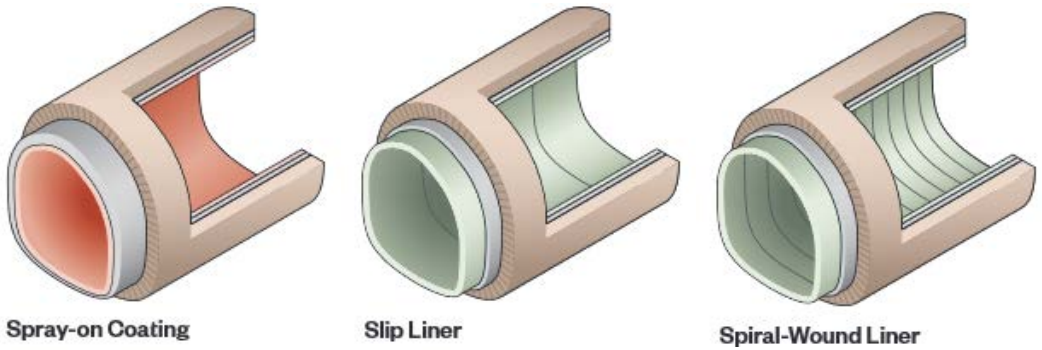
- Visual
  - CCTV, Optical Scanning
- Acoustic
  - SL-Rat
- Laser
  - 2D (ring) and 3D Lidar
- GPR
  - Pipe Penetrating Radar



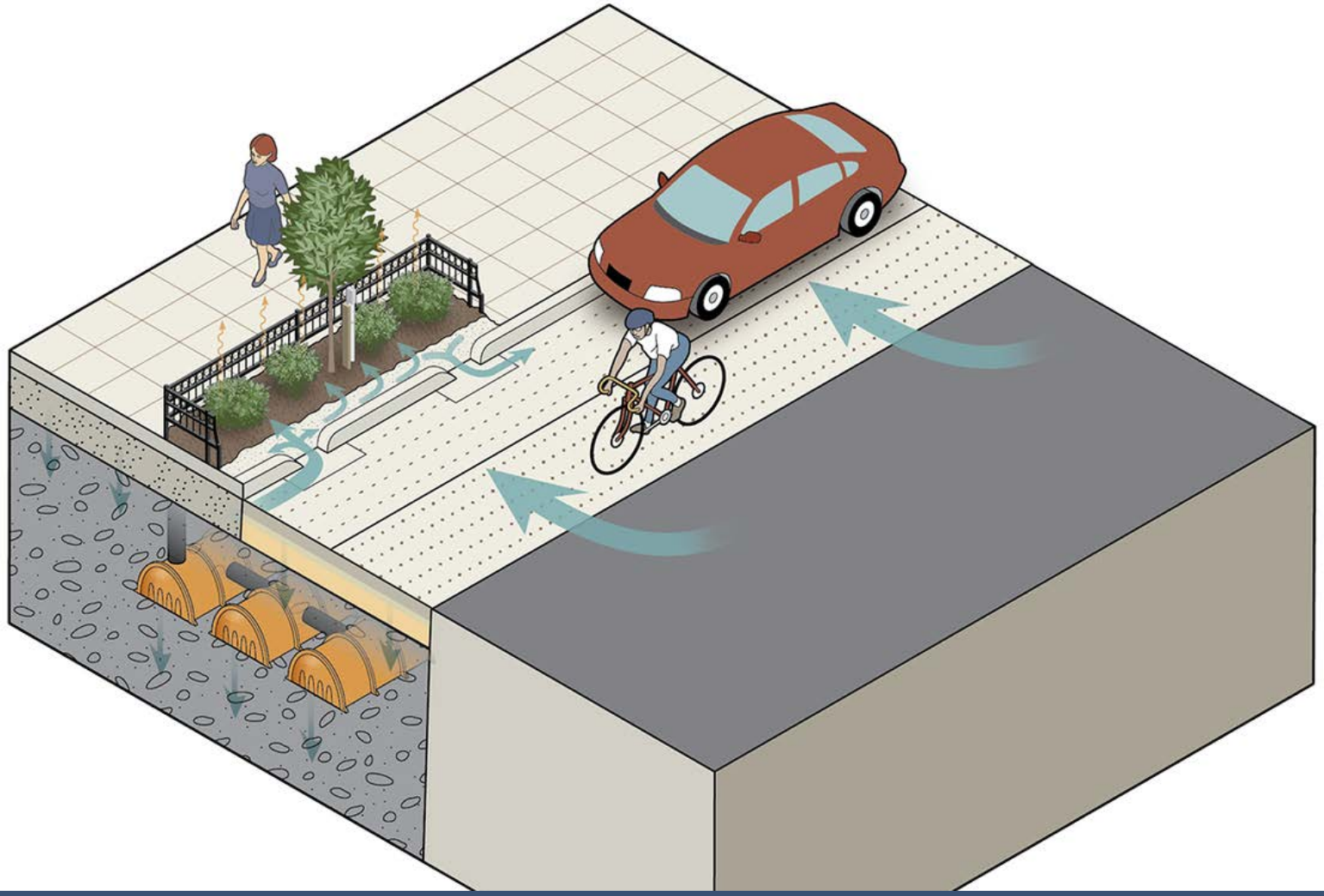
What is Changing?

Rehabilitation Methods

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

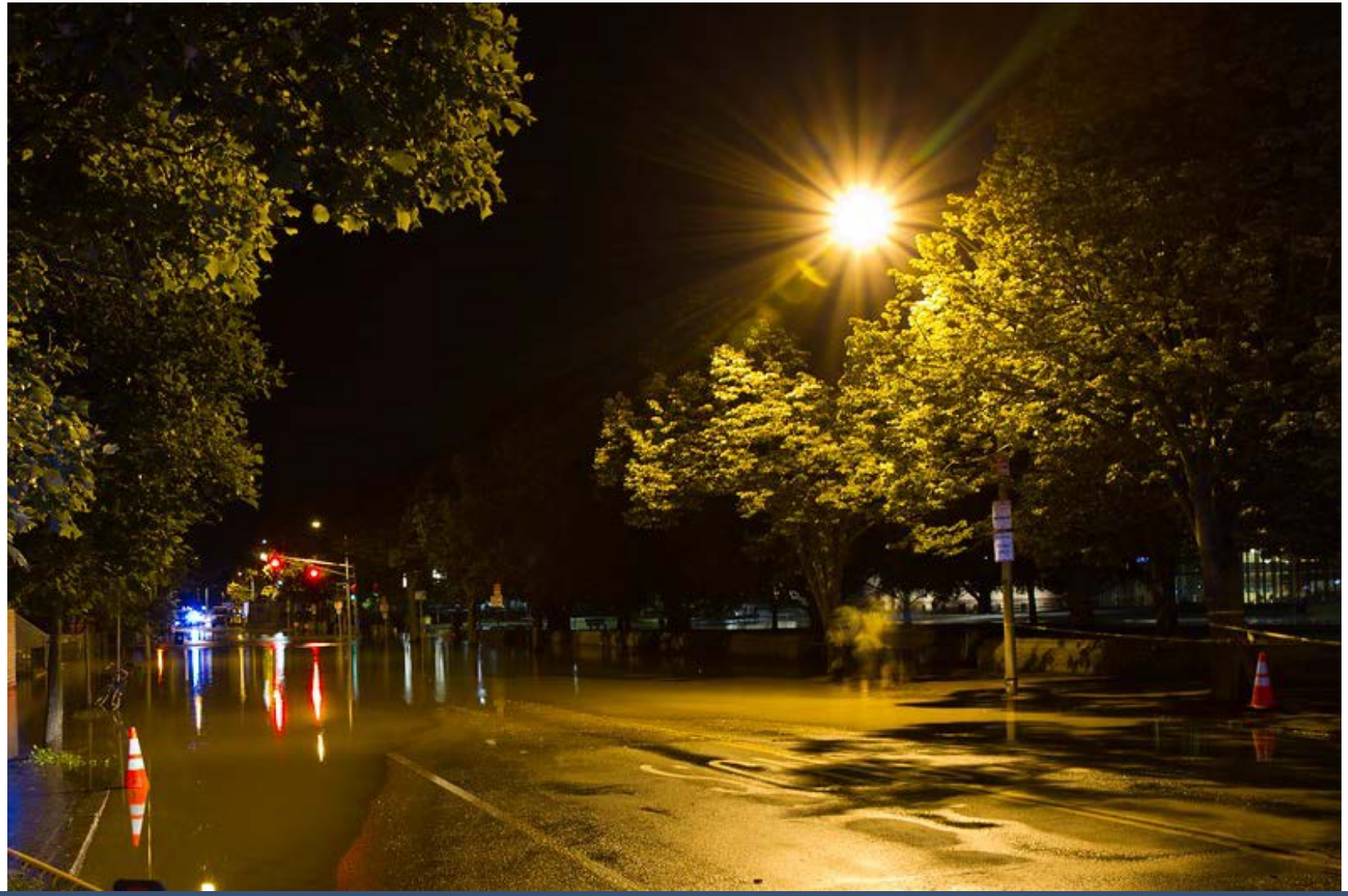


Where is Water Expected to Move?



How Close Can Utility Construction Get to GI?

How Do I Know the Subsurface Extents?

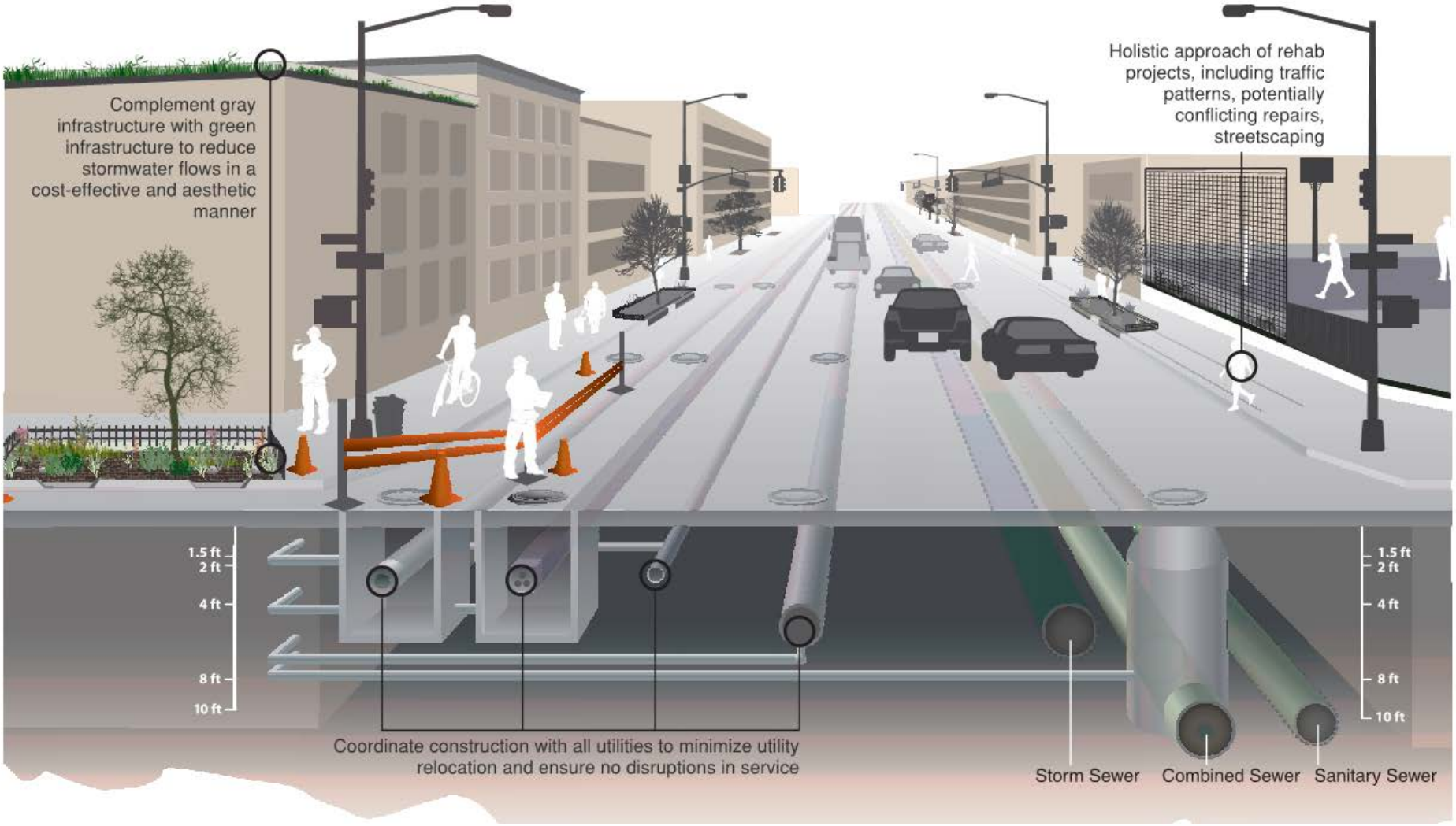


How Critical is Protection of the GI?

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?



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