PIPELINE REHABILITATION
UCT – 2017 Conference

Epoxy Coatings & Cement Mortar Lining
(and the Technical Talk)

Presenters – Lenny Assard & David Rosenberg, Michels Corporation
History & Evolution of Pipe Rehabilitation

• Overview of Pipe Rehabilitation
  ➢ CIPP more than 40 years old for sewer mains
  ➢ Definition – same pipe, same trench, uses the existing host pipe
  ➢ CIPP for drinking water applications – more than 10 years old
  ➢ CML has been used for more than 70 years
  ➢ Epoxy / Spray-on coatings more than 20 years in the US

• Options for rehab - Products / Processes include: Slip lining, pipe bursting, cement mortar lining (CML), epoxy coatings, polyureas, & CIPP

• New Technologies – Continued enhancements to existing technologies – including UV liners & Geopolymers
Why Unlined cast iron host pipes need to be rehabbed?

• Improve Fire Flow Capacity
• Increase Hazen Williams Coefficient
• Improve Water Quality
• Reduces Energy Cost
• Reduces potential for water main breaks
• Reduction of corrosion to host pipe
Where or When to Rehabilitate Mains?

- Poor water quality areas – heavy tuberculation
- Low flow areas
- Older neighborhoods
- Look where past water main breaks have occurred (develop a scoring system)
- Evaluate open areas versus established neighborhood
- Dig & replace versus rehab?
Cement Mortar

- Non Structural
- Spray Applied
- Used mainly for water quality
- AWWA STD C-602 – Performance Standard
- Used for mains over 3 inches in diameter
- In the US since 1933, 24” and above
- Since 1950, smaller diameters
- Thickness varies depending on host pipe & diameters – 3/16 to 5/16 inches
Polyurethane/Polyureas

- Non Structural – Semi Structural
- Spray Applied
- Calibration of rig required to maintain proper thickness
- Temperatures, mixing rations, weights of material critical
- Will be used in host pipes 3 inches and above
- Thickness depends on application & host pipe material
Other Rehab Options

• Pipe Bursting
  • Upsizing may be possible
  • PVC, HDPE, DI materials can be used
  • Service issues

• Slip Lining
  • PVC, HDPE
  • Smaller diameter
  • Service Issues
Additional Processes Required to Perform Work

- Install temporary bypass
- Create access pits to the host pipe
- Clean & CCTV the host pipes prior to performing the work
- May require a dry host pipe prior to performing the work
Continued – Additional Processes Required to Perform Work

• Cure is required to set the product
• Restore existing services
• Perform pressure testing
• Chlorinate the mains – perform BAC-T tests
• Flushing of water mains
• Site restoration
Project Steps

• Provide access to the main – similar for all rehab options
• Clean & CCTV similar for all rehab options
• Temporary by-pass – dependent on lining rehab option
• Traffic control
• Apply lining & cure
  • Cement Mortar – 24 Hrs
  • Epoxy - 16 Hrs
  • Polyurethanes - Less than 30 minutes
  • Polyureas - Less than 30 minutes
• Site restoration
Temporary By-Pass
Spray Rig - CML
Spray Rig
Resources

• American Water Works Association (AWWA) – M28 3rd Edition
• United States Environmental Protection Agency (EPA) – May 2002
• Hazen and Sawyer – Buried Assets Article 2011
Questions?

Thank You

Michels Corporation
Lenny Assard
David Rosenberg