Safe Handling and Disposal of Asbestos Cement Water Main

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OAWWA Water Distribution Seminar – July 10, 2018
ASBESTOS CEMENT PIPE – REMOVAL & DISPOSAL

Agenda

1. Introduction to Gandee & Associates, Inc.
2. Overview: Asbestos-Containing Material (ACM)
3. Asbestos Cement Pipe – Removal & Disposal
4. Question & Answer Session
INTRODUCTION: GANDEE & ASSOCIATES, INC.

- Registered engineering firm in the State of Ohio since 1979.

- Engineers specializing in asbestos, lead-based paint, mercury, underground & above-ground storage tanks, and other hazardous materials. Experienced with demolition design and administration.

- Since 1979, Gandee has inspected approximately 10,000 facilities for asbestos, designed and administered approximately 2,500 abatement and/or demolition projects, including work with public facilities in Ohio, over 30 Ohio Colleges and Universities, more than 300 Ohio School Districts, etc.

- Additional information about asbestos and other environmental hazards can be found at our website (www.gandee.net).
OVERVIEW: ASBESTOS-CONTAINING MATERIALS

• Used in Over 3,000 Commercial Products
• Extremely Long, Thin, Flexible Fibers that can be Woven
• High Tensile Strength
• Resistance to Chemical and Thermal Degradation
• High Electrical Resistance
• Fire-Resistant
• Good Insulator
• Use of Asbestos is NOT Banned
ASBESTOS EXPOSURE & HEALTH RISKS

• Primary Route of Exposure: Inhalation
• Kills Over 12,000 People/Year in the U.S.
• Latency Period of 10-40 Years
• Asbestos-Related Diseases:
  • Asbestosis
  • Mesothelioma
  • Lung Cancer
FRIABLE vs NON-FRIABLE ASBESTOS-CONTAINING MATERIALS

• A friable material is that which can be crumbled, pulverized, or reduced to powder by hand pressure.

• Potential to release asbestos fibers in the air.

• Ohio EPA – Less than 4 square inches.
OSHA REGULATORY REQUIREMENTS

- Class II vs Class III Work
- Worker Training Requirements (with annual refreshers)
- Supervision by a Competent Person
- Engineering Controls (demarcation, wet methods, drop cloths, clean-up and disposal, etc.)
- Intact Removal Methods
- Respiratory Protection and Protective Clothing
- Air Monitoring (exposure assessments)
- Prohibitions
U.S. and Ohio EPA and DEPARTMENT OF TRANSPORTATION
REGULATORY REQUIREMENTS

• Disposal Requirements (landfills and double-bagging of waste)
• Contractor and Worker Licensing
• Waste Manifests and Waste Container Labeling
• Notification Requirements
ASBESTOS CEMENT (AC) PIPE

• First Used in Water, Wastewater, & Storm Drainage Systems in U.S. in 1929 (common use by mid-40s)
• Made From Mixture of Portland Cement, Asbestos Fibers (typically 12% or more), Water, & Silica
• The Presence of Asbestos Fibers in Lieu of Reinforcing Steel Provided Adequate Strength with Lower Weight
  • AC Pipe also Resistant to Hydrogen Sulfide Corrosion, and Soils Aggressive to Steel
• If Project Has The Potential to Disturb Existing Cement Pipe, Cement Pipe Needs to Be Either:
  • Sampled for the Presence of Asbestos by an Ohio-Licensed Asbestos Hazard Evaluation Specialist, or
  • Assumed to Contain Asbestos
ASBESTOS CEMENT PIPE RENEWAL

THREE OPTIONS:

1. REMOVAL
2. ABANDON-IN-PLACE
3. “TRENCHLESS” METHODS
Acceptable Work Practices: snap cutter (non-carbide-tipped cutting blades); field lathes; pressure tapping (wet tapping); nonpressure tapping; and tapped coupling.

Unacceptable Work Practices: Dry-abrasive disk tools; disk sanders; carbide-tipped cutting blades; rasps; shell cutters; drills; and hammer and chisels.
ASBESTOS CEMENT PIPE RENEWAL

REMOVAL ("DIG AND REPLACE")

• Trench is dug to expose the AC pipe, which is then cut into manageable-size pieces, and properly disposed in a landfill that accepts regulated asbestos-containing waste since it is considered a Category II material.

• This work needs to be performed by either an Ohio-licensed Asbestos Abatement Contractor or a Contractor who has been properly trained and insured for the handling of asbestos-containing materials.

Pertinent Regulations: OSHA, U.S. EPA, Ohio EPA, ODOT
# ASBESTOS CEMENT PIPE RENEWAL

## REMOVAL ("DIG AND REPLACE")

<table>
<thead>
<tr>
<th>PROS</th>
<th>CONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Future On-Site Liability</td>
<td>Added Expense of Abatement Contractor?</td>
</tr>
<tr>
<td></td>
<td>Potential for Additional Time</td>
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**Additional Considerations**
- Need to consider all regulatory requirements.
ABANDON EXISTING ASBESTOS CEMENT PIPE

ABANDON-IN-PLACE

• Abandon AC pipe in place, and install new pipe on a parallel alignment.

• The location of the abandoned pipe should be recorded on as-built plans or Geographic Information System (GIS) to minimize the chance for future disturbance.
  • EPA has also suggested pumping grout into buried lines no longer in service.

• Pertinent Regulations: OSHA
# ASBESTOS CEMENT PIPE RENEWAL

## REMOVAL (ABANDON-IN-PLACE)

<table>
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<tr>
<th>PROS</th>
<th>CONS</th>
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<tbody>
<tr>
<td>Limit Need for Abatement Contractor</td>
<td>Must Record Location of Abandoned AC Pipe</td>
</tr>
<tr>
<td>Do Not Need to Add Time to Schedule for</td>
<td>Potential for Future Work to Disturb</td>
</tr>
<tr>
<td>Existing AC Pipe to be Removed</td>
<td>Abandoned AC Pipe (Future Liability/Expense)</td>
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### Additional Considerations

- Will portions of AC pipe need to be disturbed in order to abandon the pipe?
ASBESTOS CEMENT PIPE RENEWAL

REMOVAL ("TRENCHLESS" METHODS)

- Popular trenchless methods include Cured-In-Place Pipe (CIPP), Spray-In-Place Pipe (SIPP), Pipe Bursting, and Pipe Reaming.

- **Pipe Bursting**: Uses specialized equipment to fracture pipes and displace the existing pipe into the soil, while forming a cavity in the soil large enough to place a new pipe of equivalent or larger size in the ground. [Pipe Bursting Video Link]

- **Pipe Reaming**: Patented process by which existing pipe is fractured and removed (using drilling oil) as the new pipe is installed.

- **Pertinent Regulations**: OSHA, U.S. EPA, Ohio EPA, ODOT
### ASBESTOS CEMENT PIPE RENEWAL

#### PIPE BURSTING

<table>
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<th>PROS</th>
<th>CONS</th>
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<tbody>
<tr>
<td>Ability to Reuse Existing Pathway</td>
<td>Friable Pipe Fragments Remain (Waste Disposal Site)</td>
</tr>
<tr>
<td>Notifications to Ohio EPA (OEPA) not Required?</td>
<td>Must Record Location of Abandoned Pipe</td>
</tr>
<tr>
<td>Use of an Asbestos Hazard Abatement Contractor (AHAC)?</td>
<td>Potential for Future Work to Disturb Abandoned AC Pipe (Future Liability/Expense)</td>
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</table>

#### PIPE REAMING

<table>
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<th>PROS</th>
<th>CONS</th>
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<tbody>
<tr>
<td>Ability to Reuse Existing Pathway</td>
<td>More Expensive Than Pipe Bursting?</td>
</tr>
<tr>
<td>Removal of Most (90%?) of Fragments with Flushing?</td>
<td>Regulatory Stance?</td>
</tr>
<tr>
<td>Need to Use an AHAC and submit OEPA Notifications</td>
<td>With 10% Remaining, same Cons as Bursting?</td>
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WASTE DISPOSAL SITE

• Active and Inactive Waste Disposal Sites (friable asbestos-containing materials)
• Signage Requirements
• Use of a Map or Diagram of Site to Show Location and Quantity of Friable Asbestos-Containing Materials
• Notification Requirements for Future Work and Deed Notation Requirements
ASBESTOS CEMENT PIPE RENEWAL

REVIEW

• Multiple regulatory requirements need to be considered prior to determining which method of AC pipe renewal will be utilized.

• Stance of regulatory agencies for the various renewal options are still being considered.
QUESTION & ANSWER SESSION

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“THANK YOU FOR HAVING US TODAY!”