NORTH AMERICAN SOCIETY FOR TRENCHLESS TECHNOLOGY

NASTT Forum: Inspection and QA/QC for Trenchless Projects

UCT

January 30, 2018

Meet Our Trenchless Experts

NASTT Moderator:

Jeff Maier, PE, Director of Engineering, C&L Water Solutions

NASTT Panelists:

Bevin Beaudet, Palm Beach County
Ed Kampbell, Rehabilitation Resource Solutions LLC
John Matthews, Trenchless Technology Center
Jon Nix, Nix Construction
Piero Salvo, GAME Trenchless Consultants

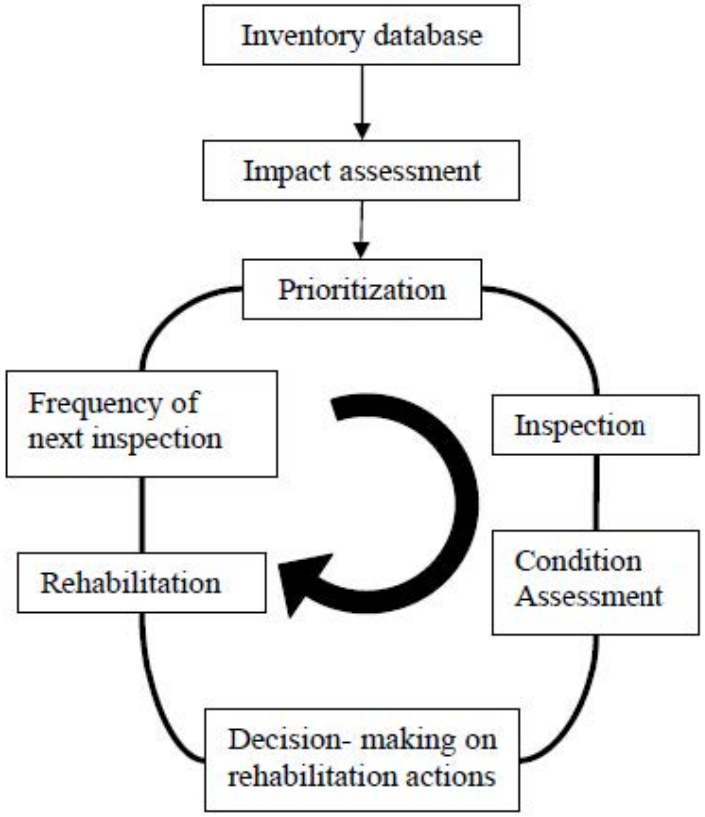
QA/QC BEGINS BEFORE CONSTRUCTION STARTS

The Owner and the Engineer Must Be Thoroughly Familiar With the Collection System:

The Entire Collection System Must Be Understood Through:

- **Observation – SSO's, High Flows During Rainfall Events etc.**
- **Direct inspection – NASSCO condition assessment tools**
- **Investigation – CCTV**
- **Indirect monitoring and reporting – Pump Run Times, Flow Measurements**

An analysis of the data and information helps determine structural and operational issues, and performance of the system. Condition assessment also includes failure analysis to determine the causes of infrastructure failures and to develop ways to prevent future breakdowns. Condition assessment enhances the ability of utilities to make technically sound judgments regarding asset management.



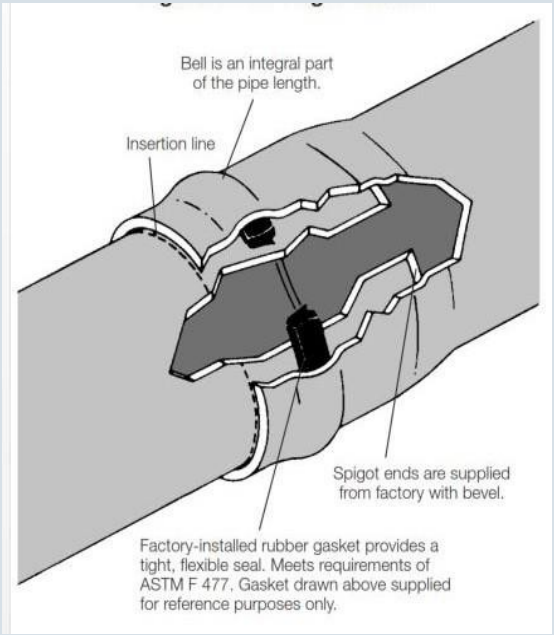
Source: McDonald and Zhao, 2001

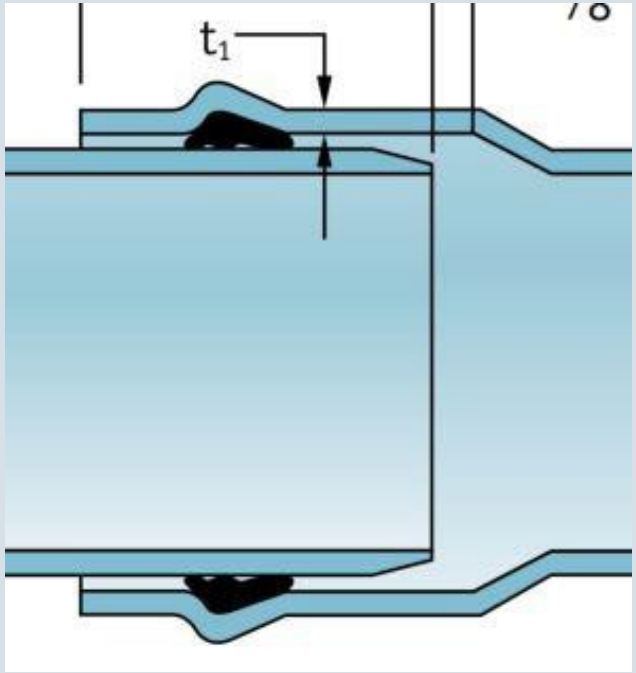
OTHER IMPORTANT REQUIREMENTS FOR QA/QC

- **The Entire Rehabilitated Portion of the Collection System Must Be Sealed**
  - **Main Line Pipes**
  - **Manholes**
  - **Laterals**
- **The Goal Should Be To Result In “As Good As New” Condition**
- **Adherence to Appropriate Standards**
- **Life Cycle Cost Analysis**

WHAT IS “GOOD AS NEW”?

- **New Pipe Is Sealed Using Rubber Gaskets per ASTM 477**


Bell is an integral part
of the pipe length.
Insertion line
Spigot ends are supplied
from factory with bevel.
Factory-installed rubber gasket provides a
tight, flexible seal. Meets requirements of
ASTM F 477. Gasket drawn above supplied
for reference purposes only.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ADHERENCE TO APPROPRIATE STANDARDS

- **ASTM 1216 Is The Grandfather for CIPP Lining**
- **Manholes Can Be Sealed Using ATM 3033 or 2551**
- **New Pipe Is Sealed Using Rubber Gaskets per ASTM 477**
- **ASTM 2561 Is The Only ASTM Standard Approved For Lateral Lining. ASTM 1216 Is Sometimes Referenced and Used For Laterals But It Is Not Standardized For Laterals**

IMPORTANCE OF LIFE CYCLE COST ANALYSIS (LCC)

LCC IS Required For SRF Funded Projects
LCC Should Be Performed By Any Responsible Owner/Engineer
ASTM 1675 Gives A Blueprint for LCC of Trenchless Rehabilitation
LCC Includes Analysis of:

- **expected service life**
- **replacement costs**
- **costs of transporting and treating I/I**
- **routine maintenance costs**
- **job site tests**
- **published reports**
- **manufacturer product data**
- **anecdotal local experience**
- **projected future operating and maintenance, rehabilitation and replacement costs.**

CLEAN OUTS

Clean-outs are required for a fully compliant ASTM F2561 installation. However, There are many benefits to installing a clean-out during lateral lining:

- **Improved Installation and Inspection**
- **Protection of Public Health**
- **Plumbing Codes**
- **Access By the Utility**
- **Access By the Homeowner**

Following lateral lining, the clean-out becomes a major asset to the utility.

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Thank you for your participation!

For more information about trenchless technology and NASTT visit nastt.org