

APWA Public Works Management Practices

Practice Summary Sheet

Chapter: **31**

Title: **Wastewater Collection and Conveyance**

Practice Number: **31.8**

Name: **Inflow and Infiltration**

Assigned to: **Dwayne Barnes**

Practice Statement:

An infiltration and inflow control plan is established including inspection and repair elements.

The plan may be coordinated with plans for future growth in the community to prevent overtaxing the system. Inflow and infiltration rates are used as part of the system analysis to determine the capacity of the system for land use planning and zoning purposes.

Agency Compliance:

Sanitary sewer mains are inspected on a seven-year cycle using digital closed-circuit television (CCTV) equipment. Staff rate the pipes using the Pipeline Assessment Certification Program (PACP) criteria developed by the National Association of Sewer Service Companies (NASSCO). NASSCO ratings use a scale of 1 through 5 based on the severity of many defect types, of which inflow and infiltration (I&I) is one of the defect types.

The CCTV inspection supervisor reviews completed PACP reports and generate service requests for all defects. The service requests are forwarded to the repair and maintenance workgroup supervisor.

City staff also inspect manholes using the NASSCO Manhole Assessment Certification Program (MACP). Defects, including I&I, trigger the generation of service request for the repair and maintenance workgroup supervisor.

Repair Elements

Upon receipt of service request, the repair and maintenance workgroup supervisor reviews available information. This information may include: PACP or MACP inspection reports; CCTV videos; and system maps. Depending on the defect, type of pipe or manhole, severity, magnitude, location, and level of service, the supervisor will select a repair method that is the most cost-effective based on safety and efficiency.

Conventional repair methods include:

- Pipe grouting
- Manhole grouting
- Installing short section cured-in-place-pipe (CIPP) liner
- Excavation and replacement of defective pipe section
- Manhole coating
- Manhole replacement
- CIPP lining the entire pipe segment
- Replacing the segment using the pipe bursting method
- Replacing segment using open excavation



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City staff have the training and equipment to grout pipe and manholes, install short CIPP liners, and excavate to replace short sections of pipe and manholes. If the magnitude of the defect(s) is such that an entire pipe segment requires replacement, the project will be transferred to Public Works Engineering Division for project delivery.

Associated Documents:

[Example CCTV Inspection Report - I&I.pdf](#)

[Example Workorder - Pipe Grout I&I.pdf](#)

[Example Pipe Grout Repair Report smh-4286 - smh-4287.pdf](#)