

## Service Tee Renewal

**Description:** Project will develop a method to trenchlessly seal a service tee by gaining internal access to the tee and applying a sealant to existing or potential leaks.  
**Status:** Laboratory testing of sealants proceeding

### BENEFITS

Our contractor, the Trenchless Technology Center (TTC), has several years of sealing experience with water/sewer rehabilitation and other underground piping facilities. The service tee renewal project with TTC would allow service tee rehabilitation with the reduction of maintenance costs through remote access to the service tee location, i.e. the meter set area. Such a technology would avoid excavation and restoration costs, minimize customer service downtime and extend the years of service. Another benefit which could be realized is the reduction of greenhouse gas emissions by sealing and preventing gas emissions paths. Finally, gas companies could benefit from improved public relations with regard to open dig sites, interrupted traffic and reducing permit requests.

### BACKGROUND

Customer service lines are pipes by which distribution mains supply individual customers with natural gas. Historically, a steel customer service line accessed a tap at the steel main with a steel tee fitting (service tee). Over time, for steel service tees (not plastic tees), the fitting may have corroded and developed leaks. The repair of such leaks generally involves excavation in the street where the main is tapped. Despite extensive research in the 1990s and early 2000s, there lacks a commercial technology that effectively and economically rehabilitates the steel service tee in a trenchless fashion under live operating conditions.

NYSEARCH has been involved in previous projects involving sealing and repairing services/mains by means of remote access and trenchless technologies. Tools such as SlimKit (Service Line Inspection Maintenance Kit) have been established. In the 1990s, NYSEARCH also worked with Cornell University in developing a polymer sealant for internal rehabilitation of service tees. While additional service tee renewal research involved the development of a sealant and delivery system by NICOR, the work did not proceed to commercialization.

Since the 1990s, when previous research was completed, technical advancements of sealant and adhesive materials have largely improved.



Figure 1: Decommissioned Service Tee

Also, improvements to the micro-technologies of robotics and long reach delivery systems increase the likelihood of a success for remotely operated systems to reach and deliver sealant to

the service tee location. Therefore, the NYSEARCH committee decided to pursue a project that utilizes up-to-date materials and micro-mechanics to service tee repairs via excavation.

### TECHNICAL APPROACH

TTC is developing a sealant and delivery system through laboratory testing using decommissioned service tees (Figure 1). A variety of sealants are being tested in combination with stents to seal larger leaks. A mechanical delivery system is being developed to provide complete service tee rehabilitation via access at the customer's meter set (Figure 2).

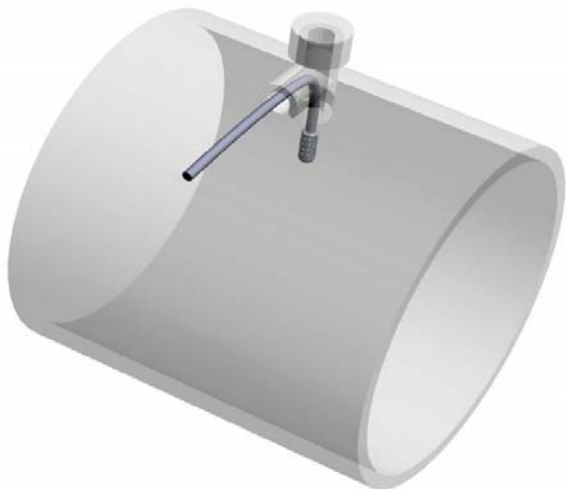


Figure 2: Conceptual Representation of Sealant Delivery System

Compatibility with other rehabilitation systems such as the Renu service line rehabilitation system will be ensured.

### PROGRAM STATUS

Funding companies have supplied the TTC laboratory with decommissioned service tees. TTC tested multiple sealants for application, adhesion and sealing performance (Figure 3). Laboratory test results of the sealants are under funder review. TTC has recommended moving forward with an adhesive sealant and stent combination. Mechanical delivery methods of the sealant and stent are in the conceptual phase and are being prepared for funder consideration.



Figure 3: Cutaway View of a Test Service Tee After Adhesive Application

### Highlights

- Trenchless rehabilitation of service tees
- Compatibility with other rehabilitation systems

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