

# **San Antonio Water System Standard Specifications for Construction**

## **ITEM NO. 1103 Point Repairs and Obstruction Removals**

### **1103.1 DESCRIPTION:**

1. Repair of sanitary sewer lines by replacing short lengths of failed pipe with new pipe.
2. Repair of service laterals located within the utility easement or street right-of-way, when replacing short lengths of failed pipe with new pipe.
3. Obstruction removal by remote device or excavation.

### **1103.2 REFERENCED STANDARDS:** Reference standards cited in this Specification Item No. 1103 to the current reference standard published at the time of the latest revision date.

1. San Antonio Water System (SAWS):
  - a. Specifications for Water and Sanitary Sewer Construction
  - b. SAWS Materials Specifications
2. City of San Antonio (COSA) Specifications for Construction
3. Texas Commission of Environment Quality (TCEQ)
  - a. Chapter 217 Design Criteria for Domestic Wastewater Systems

### **1103.3 SUBMITTALS:** Contractor shall submit manufacturer's product data, instructions, recommendations, shop drawings, and certifications.

1. Submit proposed methods, equipment, materials and sequence of operations for point repairs and obstruction removals.
2. Plan operations so as to minimize disruption of utilities to occupied facilities or adjacent property.
3. Submit test reports and inspection pre and post construction.
4. Sewer Main Televising
5. Videos become property of SAWS.

### **1103.4 MATERIALS:**

1. Material of sanitary sewer pipe and lateral:
  - a. Materials for sanitary sewer pipe and laterals shall conform to Specification Item No. 848, "Sanitary Sewers" and Specification Item No. 854, "Sanitary Sewer Laterals."
  - b. If point repair is located at a service connection, use a full-bodied fitting for the service connection.
  - c. No field fabrications of fittings are allowed.
2. Jointing Material: Use flexible adapters secured with ½ inch stainless steel bands, as manufactured by Fernco, or approved equal.
3. All flexible adapters shall be concrete encased to prevent movement or breakage of the steel bands.

### **1103.5 CONSTRUCTION:**

1. Point Repair:

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- a. Locate and replace small lengths of one or more pipe sections where isolated line failure has occurred due to settlement, corrosion, crushing, or separation of joints.
  - b. The Inspector may identify potential locations for point repair, but the Contractor is responsible for verifying all point repair locations.
  - c. Determine the location of point repairs by field inspection (if visible from surface) or smoke testing or video inspection of the sewer line between the manhole sections where the failed pipe is located. If the Contractor identifies the need for additional point repairs beyond those identified in the contract documents, they must first obtain authorization from the SAWS Inspector.
  - d. The Engineer will authorize the Contractor to make additional point repairs based on results of smoke testing and video inspection.
  - e. Smoke testing shall not be performed within 24 hours of a rainfall event, or if ponding/ standing water is present on the ground or in the drainage channels in the area planned for smoke testing
  - f. Smoke testing shall be accomplished utilizing two minimum 1,750 CFM blowers designed specifically for smoke testing of sewers.
  - g. Place blower on the upstream and downstream manhole of the line section to be tested.
  - h. Place sandbags in the upstream and downstream manholes to isolate the section being tested and prevent the migration of smoke into sections not being tested.
  - i. Utilize smoke bombs as necessary to ensure a continuous supply of smoke is provided for the entire duration of the test period.
  - j. The Inspector or Engineer will authorize the Contractor to make additional point repairs.
  - k. Do not make point repairs without prior authorization from the Inspector.
  - l. Perform point repairs only on those portions of service lines which are located in an easement or right-of-way; perform no repairs to service lines on private property.
  - m. Replace all identified damaged pipe for point repairs unless otherwise directed by the Inspector.
2. **Obstruction Removal:** Remove obstructions by one of the following methods:
- a. Obstruction removal by remote device:
    - (1) Protruding taps: Service laterals that protrude more than one inch into the sewer main.
    - (2) Other obstructions: Hanging gaskets, fixed debris, stabilized sand, hardened mineral deposits, roots, rust scale, tuberculation, etc.

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- (3) Payment will not be made for obstruction removal if the existing sewer line, service line, or tap is damaged and point repair is required.
    - b. Obstruction removal by excavation: Obstructions encountered during liner insertion that are removed by digging and exposing the damaged section of main.
3. Sequencing:
  - a. Before rehabilitating a section of sewer main between adjacent manholes, complete point repair and obstruction removal of that section.
  - b. Clean line and perform post-installation video inspection for each point repair on sewer mains not scheduled for rehabilitation.
  - c. Post-installation video inspection of service laterals having point repairs performed are required.
  - d. All approved post installation video shall be performed in conformance to Specification Item No. 866, "Sewer Main Television Inspection."
4. Protection:
  - a. Provide barricades, warning lights and signs for excavations created by point repairs. Comply with Specification Item No. 805; "Temporary Facilities and Controls."
  - b. Do not allow soil, sand, debris or runoff to enter sewer system.
5. Bypass Pumping:

Install and operate bypass pumping equipment as required to maintain sewage flow and to prevent backup or overflow. Comply with Specification Items No. 864, "Large Diameter Bypass Pumping." Or Specification Item No. 865 "Small Diameter Bypass Pumping."
6. Excavation:
  - a. Excavate and backfill trenches in accordance with Specification Item No. 804, "Excavation, Trenching and Backfill."
  - b. Perform work in accordance with OSHA standards. Employ a trench safety system as required in Specification Item No. 550, "Trench Excavation Safety Protection."
  - c. Remove and lawfully dispose of excess excavated material and debris from the work site daily.
7. Typical Sequence of Point Repair:
  - a. Perform pre-installation video inspection, if required, to verify location of sewer main point repair locations.
  - b. Perform service testing between manholes to verify location of service lateral point repair locations.
  - c. After the location of a point repair is determined, excavate the required length for the point repair.

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- d. Prior to replacing a damaged section(s) of pipe, determine condition of the existing line on both sides of the point repair by tamping the main at least 10 feet in each direction.
  - e. Determine whether additional lengths of main (beyond "minimum length" criteria) need replacement.
  - f. Report need for additional replacement to Inspector and obtain authorization before proceeding.
  - g. Remove the damaged section(s) pipe and replace with new pipe, shaping the bottom of the trench and placing the required pipe bedding so that the grade of the replaced pipe matches the grade of the existing main.
  - h. Establish proper grade for the section(s) of pipe being replaced using methods acceptable to the Inspector.
  - i. Connect the new pipe to existing main using flexible adapters.
  - j. If joints cannot be made watertight using flexible adapters, place waterstop gaskets on each joint and encase in a reinforced concrete collar.
  - k. Reconnect affected service connections or stacks using full-bodied fittings.
  - l. No field fabrication of fittings is allowed.
  - m. After completion of point repair, and prior to backfill, perform a smoke test to demonstrate satisfactory integrity of the repair, in the presence of the Inspector.
  - n. Test as specified in Specification Item No. 849, "Sanitary Sewer Pipe Acceptance Testing."
  - o. Repair and retest sections that fail until repaired sections pass the test.
  - p. Encase exposed pipe in cement stabilized sand or flowable fill.
  - q. Backfill the excavation as specified in Specification Item No. 804, "Excavation, Trenching and Backfill."
  - r. Perform a post-installation video inspection as specified in Specification Item No. 866, "Sewer Main Television Inspection."
  - s. Point repairs that show offset joints, non-uniform grade, incorrect alignment, excessive deflection or similar conditions are considered defective work.
  - t. Contractor shall replace pipe and bedding, as required, to correct defective work.
9. Abandonment of Point Repair:
- a. Notify the Inspector if a pipe is exposed by excavation and is found to be in good condition, not requiring a point repair. That point repair shall not be performed.
  - b. Notify the Inspector if the pre-installation video inspection reveals that no point repair is required. The point repair shall not be performed.

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- c. Backfill the excavation, replace pavement or sidewalk, and repair and seed or sod unpaved areas. No separate pay item.
10. **Obstruction Removal:**
- a. Remote Device: Remove obstructions identified on video of a sanitary sewer line segment which could cause a non-uniform liner pipe installation or obstruction of the liner during installation. Obtain authorization from the Inspector for obstruction removal with a remote device before proceeding.
  - b. Use a power-driven cutting device (robotic cutter) to remove protruding taps.
  - c. Cut protruding taps so that protrusions are no greater than  $\frac{3}{4}$  inch.
  - d. If a protruding tap cannot be removed by the cutting device, then a point repair may be performed.
  - e. Obtain authorization from the Inspector before proceeding.
  - f. To remove other obstructions, use a remote device.
  - g. Pull or drive the device from manhole to manhole up to a continuous length of 500 feet using a solid steel mandrel, porcupine, root saw, bucket, robotic cutter or similar device to remove the obstruction.
  - h. Select a device that is adequately sized to remove the obstruction.
  - i. Use excavation as the method of obstruction removal when installation of the liner in the sanitary sewer is in progress.
  - j. If during the liner insertion operation, a collapsed sewer, offset joint, or other obstruction is encountered which prevents or blocks the passage or insertion of the liner, notify the Inspector for authorization to excavate.
  - k. Excavate at the point where there is an obstruction.
  - l. Use a trench safety system as specified in Specification Item No. 550, "Trench excavation Safety Protection."
  - m. Break out the existing sanitary sewer pipe (carrier pipe) as directed by the Inspector.
  - n. Remove only that amount of material which is causing the obstruction. Remove the minimum amount of carrier pipe.
  - o. Under such conditions, replacement of the carrier pipe is not required.
  - p. Do not disturb the existing sewer bedding during excavation.
  - q. However, if embedment is disturbed during the obstruction removal procedure, place cement-stabilized sand or crushed stone beneath the liner. No Separate pay item.
  - r. When the liner is completely in place, encase it with crushed stone or cement- stabilized sand.

### **1103.6 MEASUREMENT**

- 1. Measurement for sewer line point repair is on a unit price basis for each repair performed.

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- a. Minimum length of pipe to be replaced for each repair, determined by depth of sewer line measured from natural ground to flow line at point of repair.
  - b. 20 feet minimum length.
  - c. Measurement for sewer line extra length point repair is on a linear foot basis in excess of minimum replacement length specified above.
2. Obstruction Removal:
    - a. Obstruction removal by excavation will be paid per each obstruction removal performed.
  3. Payment for service lateral point repair is on a linear foot basis for all sizes of service laterals and for all depths (same unit price per linear foot, regardless of size and depth).
  4. Minimum length of service lateral point repair is 3 feet.

### **1103.7 PAYMENT**

1. When authorized by the Inspector in locations where excavation by machine is not suitable, no direct payment shall be made for hand excavation.
2. No direct payment shall be made for abandonment of point repair.
3. No direct payment shall be made for abandonment of point repair by video inspection.
4. The cost of the following items of work are included in the unit prices for point repairs, and all associated work:
  - a. Excavation, embedment and backfill;
  - b. Hauling away and lawful disposal of excess excavated materials and debris;
  - c. Pipe, pipe fittings, adapters and concrete collars;
  - d. Smoke testing and any required retesting;
  - e. Restoration of site improvements, including sodding;
  - f. Post-cleaning video inspection;
  - g. All materials, labor, equipment, tools and safety plan for the work.
5. Unit Price - Obstruction Removal:
  - a. Obstruction removal by excavation will be paid per each obstruction removal performed.
  - b. Obstruction removal can be submitted for payment when the obstruction has been cleared from the sewer line to be lined.
  - c. Liner work must proceed at least 6 feet before payment for removal of another obstruction will be considered (i.e., all obstruction within a distance of 6 feet is considered to be part of the same obstruction.)
  - d. Obstruction removal by remote device will be paid on a unit price basis, per manhole section, and shall include all obstruction removals within a manhole section.

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- e. The cost of the following work items are included in the unit prices for obstruction removal by remote device or excavation:
    - (1) Cleaning of sanitary sewers due to broken pipe, roots, dirt, loose deposits, etc.;
    - (2) Post television inspection;
    - (3) Excavation, embedment and backfill or flowable fill;
    - (4) Hauling away and lawful disposal of excess excavated material and debris;
    - (5) Restoration of site improvements, including sodding;
    - (6) All other necessary effort to complete work.
  - f. Payment will not be made for obstruction removal if the existing sewer line, service line or tap is damaged and a point repair is required.
  - g. Payment will not be made for removal of a protruding tap if the service reconnection is performed by excavation.
  - h. Removal of hard deposits, concrete, debris, pipes or any other material in a manhole, or that is accessible from the manhole wall, will be cleared under work items for rehabilitation of sanitary sewer pipes and manholes.
6. Stipulated Price (Lump Sum): If the Contract is a Stipulated Price Contract, payment for work in this Section is included in the total Stipulated Price.
7. Payment for service lateral point repair is on a linear foot basis for all sizes of service laterals and for all depths (same unit price per linear foot, regardless of size and depth).
8. No separate payment will be made for point repair done within the limits of a service lateral reconnection as defined in this Section.

**- End of Specification -**