

Special Provision to Special Specification 7017

Sanitary Sewers



Special Specification 7017 "Sanitary Sewers," is amended with respect to the clauses cited below. No other clauses or requirements of this Item are waived or changed.

Article 2., "Materials," is amended as follows:

Article 2.22, is added as follows:

- 2.22. **Drop Connections for Sanitary Sewers.** Provide drop connections conforming to same pipe material requirements used in main pipe, unless otherwise indicated on the plans. The minimum outside drop is 6-in. in diameter. If PVC pipe is used, construct the drop connection using SDR 26 PVC pipe (ASTM D 3034).

Article 2.23, is added as follows:

- 2.23. **Survey Television Inspection.** Follow the television inspection procedures and requirements of the utility owner.

Article 2.24, is added as follows:

- 2.24. **Manhole Rehabilitation.** Submit descriptive information including technical data sheets and ASTM test results for each product proposed, indicating the product conforms to and is suitable for its intended use per the specifications. When appropriate, elect to use any material that is considered to be equal (i.e. a product that has structural and physical properties that are greater than or equal to those of the specified product). However, submittal to the Engineer is required no later than 10 days before use. If the Contractor elects to use any materials other than those contained herein, they should be completely and clearly identified when making the product submittal.

Use concrete in accordance with Item 420, "Concrete Substructures."

Mortar is to be composed of one part Portland cement, one part masonry cement (or 1/4 part hydrated lime), and masonry sand equal to 2.5 to 3 times the sum of the volumes of the cements and lime used.

Unless otherwise specified, use non-shrinking grout.

Use reinforcing steel in accordance with the requirements of Item 440, "Reinforcement for Concrete."

Use first quality, sound, kiln fired, new unbroken brick for ring adjustment courses.

Use Raven 405 Series High Build Epoxy Liner (minimum 200 mil thick), Spray Wall polyurethane system (minimum 250 mil thick), or approved equal, for the structural or high sulfate resistant lining for rehabilitation.

Article 3., "Construction," is amended as follows:

Article 3.14, is added as follows:

- 3.14. **Manhole Drop Connections for Sanitary Sewers.** When routing an approved service lead to an existing manhole with invert elevation more than 24-in. lower, utilize connections with an outside drop and adhere to the following criteria:
- The maximum allowable manhole wall penetration is 10- in. in diameter.
 - Provide an outside drop a minimum of 6-in. in diameter and construct it using SDR 26 PVC pipe

(ASTM D 3034).

- Locate the outside drop 45-degrees from the upstream side of the sewer line.
- Seal the wall penetration using an approved water stop and grout.
- Backfill the drop assembly with crushed stone wrapped in filter fabric, cement stabilized sand, or Class A concrete to form solid mass. Extend cement stabilized sand or concrete encasement a minimum of 4 in. outside the bells.

Article 3.15, is added as follows:

3.15. Survey Television Inspection. Follow the television inspection procedures and requirements of the utility owner.

Article 3.16, is added as follows:

3.16. Manhole Rehabilitation. Described are procedures for cleaning, preparation, application, and testing. The Applicator, approved and trained by the manufacturer, must furnish the labor, equipment, tools, and materials for applying a cementitious mix to form a monolithic liner of a minimum 1/2 in. thickness, with machinery specially designed for the application. Aspects of the installation must be in accordance with the manufacturer's recommendation and this specification, which includes:

- Removing any loose and unsound material,
- Cleaning the area to be restored with high pressure water,
- Repairing and filling of voids,
- Repairing and sealing of invert and benches,
- Eliminating active infiltration before making the application, and
- Spray application of a cementitious mix to form a structural or structurally enhanced monolithic liner.

Certification. Manufacturer is to certify that the Applicator has been trained and approved in the handling, mixing, and application of the products to be used. Equipment used for applying the products by the Applicator is to be certified and approved by the manufacturer. Submit five recent references of the Applicator indicating successful application of the proposed liner on projects of similar size and scope.

Surface Preparation. Use proper surface preparation procedures to ensure adequate bond strength to any surface to be coated. The Applicator is to inspect the surfaces specified to receive a liner before surface preparation. The Applicator is to notify the Engineer of any noticeable disparity in the surfaces which may interfere with the proper preparation or application of the repair mortar or liners. Remove concrete that is not sound or has been damaged by chemical exposure to a sound, concrete surface. Remove containments, including oils, grease, incompatible existing coatings, waxes, form release, curing compounds, efflorescence, sealers, salts, or other contaminants. Base surface preparation methods used based upon the condition of the substrate and the requirements of the liner to be applied.

Clean and abrade surface to receive liner to produce a sound concrete surface with adequate profile and porosity to provide a strong bond between the protective coating and substrate. Clean using a high pressure rotating pencil nozzle with a minimum of 4,000 psi and 4 gal/min to free foreign material within the manhole. Use detergent water and cleaning or muriatic acid when grease and oil are present. Remove materials resulting from the cleaning of manhole before application of coating.

Stop active water infiltration by using a cementitious water plug or hydro-active grout such as Strong-Seal Strong Plug, Quadex Hydra-Plug, or approved equal, which is compatible with the specified coating. Test prepared surfaces after cleaning and before application of the coating, if a specific pH or moisture content of the concrete is required according to manufacturer's recommendations.

Product Handling and Rehabilitation Conditions. Handle protective coating materials according to their material safety data sheets. Keep materials dry, protected from weather, and stored under cover.

Repair and under-coat materials are to be accepted and approved by the protective coating manufacturer for compatibility with the specified liner and are to be used to fill voids, structurally reinforce and rebuild surfaces, etc., as

determined necessary. The Engineer will determine type of manhole rehabilitation to be used according to the following:

Condition. Assure the manhole is exhibiting severe structural fatigue and collapse is imminent. Conditions indicating this degree of deterioration are distortion beyond 10%, severe corrosion (exposed reinforcing), or if a large section (greater than 30%) of the structure is missing. Use an approved structural liner followed by a compatible approved non-structural (sulfate resistant) protective liner to rehabilitate the manhole. Submit a letter from the manufacturer certifying the compatibility of the structural liner with the corrosion resistant protective coating.

Liner Application. Assure that the application procedure conforms to the recommendations of the liner manufacturer, including materials handling, mixing, environmental controls during application, safety, and equipment. Assure that the liner application equipment is specifically designed to accurately apply the specified liner material and is regularly maintained and in proper working order. Assure that the liner material is applied by a Certified Applicator of the liner manufacturer. Apply the liner to minimum thickness or as specified according to the Engineer's requirements and manufacturer's recommendations. Maintain the temperature of the surface to be coated between 40°F and 120°F during application. Before and during application, avoid exposure of direct sunlight or other intense heat source to the structure being coated. Where varying surface temperatures exist, apply the liner when the temperature is falling versus rising (late afternoon into evening versus early morning into afternoon).

Warranty. Warrant the work to the Department against defect in materials and workmanship for a period of 2 yr., unless otherwise noted, from the date of final acceptance of the project. Assure that the Applicator, within a reasonable time after receipt of written notice, repairs defects in material or workmanship which may develop during the 2 yr. period and any damage to other work caused by such defects for the repairing of same, at no expense to the Department.

Article 5., "Measurement," is amended as follows:

Article 5.10, is added as follows:

- 5.10. **Survey Television Inspection.** Pre-construction CCTV for the purpose of identifying locations of service connections and pipe condition will be measured by the foot from centerline to centerline of manholes. Follow the television inspection procedures and requirements of the utility owner.

Article 5.11, "Drop Connections," is added as follows:

- 5.11. **Manhole Drop Connection** will be measured by each manhole drop installed of the various sizes complete in place, tested, and accepted by the Engineer. The service connection and fittings are subsidiary to this Item.

Article 5.12, "Remove Existing Sanitary Sewer Pipe," is added as follows:

- 5.12. **Remove Existing Sanitary Sewer Pipe** will be measured by the foot, of the sizes specified.

Article 5.13, "Sanitary Sewer Cleanout," is added as follows:

- 5.13. **Sanitary Sewer Cleanout** will be measured by each cleanout performed complete in place.

Article 5.14, "Manhole Rehabilitation," is added as follows:

- 5.14. **Manhole Rehabilitation** will be measured by each.

Article 6., "Payment," is amended as follows:

Article 6.10, is added as follows:

- 6.10. **Survey Television Inspection.** Payment for pre-construction television inspection of sanitary sewers will be made at the unit price bid for "Pre-Construction Television Inspection," based on actual lengths of television inspection footage,

as measured in the field at grade. Follow the television inspection procedures and requirements of the utility owner, including delivery of inspection reports, which are subsidiary to this bid item. No separate payment will be made for the following:

- Poor or unacceptable-quality video (hazy, unclear images will not qualify for payment).
- Re-recording of any segment without prior approval of the Project Manager.
- Portions of sanitary sewer not recorded (no payment will be made for length of sewer through which the camera could not pass).
- Reverse setups required to bracket an obstruction.
- Sewer flow control.
- Pre-installation cleaning.
- Provide a record of location of stacks, stubs, etc. to the utility owner.
- Post-Construction Television Inspection; this work is subsidiary to installation of new sanitary sewers.

Article 6.11, "Drop Connections," is added as follows:

- 6.11. **Manhole Drop Connections.** Payment will be made at the unit price bid for "Manhole Drop" of the sizes and types specified. Unless otherwise specified on the plans, excavation, disposing of unsuitable excavated material, backfilling, connections, fittings, equipment, labor, tools, incidentals, and testing are subsidiary to this bid item.

Article 6.12, "Remove Existing Sanitary Sewer Pipe," is added as follows:

- 6.12. **Remove Existing Sanitary Sewer Pipe.** Payment will be made at the unit price bid for "Remove Existing Sanitary Sewer Pipe" of the sizes specified. The price is full compensation for demolition plan preparation, loading, hauling, disposal, stockpiling, removing pipe and appurtenances, excavation and backfill, equipment, labor, tools, and incidentals.

Article 6.13, "Sanitary Sewer Cleanout," is added as follows:

- 6.13. **Sanitary Sewer Cleanout.** Payment will be made at the unit price bid for "Sanitary Sewer Cleanout." Unless otherwise specified on the plans, material, excavation, disposing of unsuitable excavated material, backfilling, connections, fittings, equipment, labor, tools, incidentals, and testing are subsidiary to this bid item.

Article 6.14, "Manhole Rehabilitation," is added as follows:

- 6.14. **Manhole Rehabilitation.** The work performed and materials furnished in accordance with this item and measured as provided under "Measurement" will be paid for at the unit price bid for "Manhole Rehabilitation". This price will be full compensation for materials, labor, equipment, tools, testing, and all incidentals necessary to complete the work.