

## SECTION LS 2530

### SANITARY SEWERS

#### PART 1 – GENERAL

##### 1.1 SUBMITTALS

- A. General: Submit the following in accordance with The General Conditions.
1. Product data for drainage piping specialties.
  2. Shop drawings for precast concrete sanitary manholes, including frames and covers.

##### 1.2 PROJECT CONDITIONS

- A. Site Information: Perform site survey, research public utility records and physically locate and verify existing utility locations prior to beginning construction of proposed sewer.
1. Verify that sanitary sewerage system piping may be installed in compliance with the design and referenced standards.
  2. Locate existing storm and sanitary sewerage system piping and structures that are to be abandoned and closed.

##### 1.3 SEQUENCING AND SCHEDULING

- A. Coordinate with other utility work.
- B. Coordinate with any other contractor work in the project area.

#### PART 2 – PRODUCTS

##### 2.1 PIPE AND FITTINGS

- A. General: provide pipe and pipe fitting materials compatible with each other. All proposed pipe and fittings shall have the manufacturer's certification for the applicable burial depth. Where more than one type of materials or products is indicated, a product shall be proposed to the City prior to acceptance.

- B. Provide SDR 26 sanitary sewer main pipe, gaskets and fittings with premium joints. Concrete or vitrified clay pipe shall be used where shown on the drawings.
- C. Provide sanitary sewer lateral pipe and fittings per CMS 707.44.
- D. Provide joints for sanitary sewer pipe and fittings per CMS 706.11 (concrete pipe) or 706.12 (vitrified clay pipe).
  - 1. Sleeves: ASTM F 477, elastomeric seal for plastic pipe. Sleeves for dissimilar or other pipe materials shall be compatible with pipe materials being joined.
  - 2. Bands: Stainless steel, one at each pipe insert.
- E. Couplings: Rubber or elastomeric compression gasket, made to match pipe inside diameter or hub, and adjoining pipe outside diameter.
  - 1. Gaskets: ASTM F 477, elastomeric seal for plastic pipe. Gaskets for dissimilar or other pipe materials shall be compatible with pipe materials being joined.
- F. Inspection Tee's: Riser shall be six (6) inch diameter PVC sewer pipe meeting these specifications with 6" x 6" tee connection to the lateral and an E-Z set locating plug cap placed at the top. In pavement areas an East Jordan #3675 or approved equal shall be installed. See City of Lakewood Standard Detail S-4.

## 2.1 MANHOLES

- A. General: Provide pipe and pipe fitting materials compatible with each other. Where more than one type of materials or products is indicated, the City shall approve the proposed product. Manholes and castings shall be certified by the manufacturer to be capable of supporting HS-20 highway loads.
- B. Manholes shall be ODOT Standard No.3, in accordance, CMS 604 with the following requirements.
  - 1. Top Section: Eccentric cone type, unless concentric cone or flat-slab-top type is indicated. Top of cone to match grade rings.
  - 2. Grade Rings: Brick not to exceed nine inches (9") total thickness and match 24-inch diameter frame and cover.

C. Castings: **East Jordan #1715 w/solid Type A cover. Stamped “Sanitary”.**

1. Slag shall not be used for any purpose on this project.

**PART 3 – EXECUTION**

3.1 SANITARY SEWER

A. Install sanitary sewer per CMS Item 603 Type B Conduit with Type 2 bedding, except as modified herein.

1. Preparation of foundation for sanitary sewers.
  - a. Grade trench bottom to provide a smooth, firm, stable and rock-free foundation throughout the length of the pipe.
  - b. Remove unstable, soft and unsuitable materials at the surface upon which pipes are to be laid and backfill with No. 57 limestone to required bedding elevation. Place 6” of No. 57 limestone for bedding and 12” for cover over pipe.

B. Installation, General

1. Install piping beginning at low point of systems or remove and replace as shown on the plans, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves and couplings in accordance with manufacturer’s recommendations for use of lubricants, cements and other installation requirements. Maintain swab or drag in line and pull past each joint as it is completed. Use push camera to inspect remaining lines in the presence of the City representative.
2. Neatly saw cut ends of the pipe to be replaced and place Fernco at each end for connection.
3. Use proper size increasers, reducers and couplings where different size or material of pipes and fittings are connected.
4. The Contractor shall correct all defects detected during the testing and inspection of the sanitary sewer at no additional cost to the project.

5. Clear interior of piping and structures of dirt and other superfluous material as work progresses.
6. All new laterals to the right-of-way lines shall be provided with a new test tee.
7. Ponding or flooding shall not be used to compact backfill.
8. Bed the pipe with 6" of compacted No. 57 Limestone and place No. 57 limestone 12" over the pipe. The remaining backfill shall be LS 613 LSM up to subgrade elevation.

### 3.2 SANITARY MANHOLES

- A. Install sanitary manholes per CMS Item 604, except as modified herein.
  1. Preparation of foundation for sanitary manholes.
    - a. Grade bottom to provide a smooth, firm, stable and rock-free foundation throughout the length of the pipe.
    - b. Remove unstable, soft and unsuitable materials to a maximum 1 foot below soil subgrade elevation and replace with No. 57 limestone.
- B. Installation, General
  1. Assemble as detailed on the drawings.
  2. A minimum of 4 inches of compacted No. 57 limestone shall be placed between the manhole base and the prepared subgrade.
  3. Backfill around manhole shall be compacted No. 57 limestone.
  4. Install gaskets, seals, sleeves and couplings in accordance with manufacturer's recommendations for use of lubricants, cements and other installation requirements.
  5. Protect existing piping and structures to prevent concrete or debris from entering during construction. Remove debris, concrete or other extraneous material that may accumulate on a daily basis.

### 3.3 TAP CONNECTIONS

- A. Make connections to existing piping and underground structures so that finished work will conform as nearly as practicable to the requirements

specified for new work. Tap connections shall not be made without the expressed consent of The City of Lakewood.

### 3.4 Sewer Separations

- A. In the event, that a sewer separation is being performed and the existing over-under sewer is being converted to a storm only manhole. The existing invert plate cover shall be removed and disposed. After the separation work is completed, the resulting lower sanitary pipe remaining shall be abandoned by filling with a high strength grout mix up to the storm manhole invert elevation. This work is incidental to the sewer separation work.
- B. In the event, that a sewer separation is being performed and the existing over-under sewer is being converted to a sanitary only manhole. After the separation work is completed, the existing storm line shall be abandoned by bulkheading the entry and exit points and abandoning the storm line by filling with a high strength grout mix. The invert plate cover shall be removed and disposed. This work is incidental to the sewer separation work.

### 3.5 FIELD QUALITY CONTROL

- A. After 30 days from the installation, a test pig shall be pulled through all new sewer main pipe prior to acceptance by the City. All new sewer lines shall be CCTV upon completion of the test pig pulling test.
- B. Cleaning: Clear interior of piping and structures of dirt and other superfluous material **as work progresses**. Maintain swab or drag in piping and pull past each joint as it is completed.
  - 1. In large, accessible piping, brushes and brooms may be used for cleaning.
  - 2. Place plugs in ends of uncompleted pipe at end of day or whenever work stops.
  - 3. The Contractor is financial liable for all expenses incurred as a result of construction debris or other negligent activities that cause a sewer restriction or blockage.

### 3.6 FINAL CLEANING AND DOCUMENTATION

- A. Final project acceptance and retainage release are contingent upon completion of the following:

- B. The Contractor shall provide a final cleaning of all sanitary main sewers, manholes and laterals after all other construction activities have been completed.
- C. The Contractor shall provide a video recording of the interior of the sanitary main sewers and manholes after the cleaning has been completed.
- D. Contractor shall televise the main sewer downstream of the main sewer to the next manhole or 300 feet, whichever is less. All debris so located shall be removed by the Contractor.
- E. All cleaning and documentation costs shall be included in the tabulated items for sanitary sewer, lateral and manhole installation or pavement installation. All video recordings shall be turned over to the City.

**PART 4 – PAYMENT**

**4.1 METHOD OF MEASUREMENT**

- A. The City of Lakewood will measure and pay for Sanitary Sewer Pipe by the actual length of pipe with fittings installed. The City of Lakewood will measure and pay for Sanitary Manhole with frame and cover by each installed. Payment for these items shall be considered full compensation for all labor, equipment and material. Measurements of pipe will include the length of fittings and couplings, etc., These pay items include pipe with fittings or manhole, saw cutting (first and final cuts), excavation, boring/jack operations, disposal, shoring, groundwater control and dewatering, by-pass flows, bedding and cover, backfill, sealed connections at catch basins and manholes, testing, CCTV, cleaning and site restoration in-kind (topsoil/seeding or pavement restoration in-kind).

**4.2 BASIS OF PAYMENT**

- A. The City will pay for accepted quantities at the contract unit prices as follows:

<b><u>Item</u></b>	<b><u>Unit</u></b>	<b><u>Description</u></b>
<b>LS 2530</b>	<b>Foot</b>	<b>_____ “ Sanitary Sewer Pipe, SDR 26 Remove and Replace</b>
<b>LS 2530</b>	<b>Each</b>	<b>Sanitary Manhole with frame and cover</b>

**END SECTION LS 2530**