

SECTION 33 40 01

STORM DRAINAGE SYSTEM

(Sentences and/or paragraphs that are double underlined indicate revisions that were made from the 2012 specification.)

PART 1 - GENERAL**1.1 DESCRIPTION**

- A. This Specification includes the general description of the Storm Drainage System and the components included in that system.
- B. This is a general specification which applies to the furnishing of all plant, labor, equipment, appliances and materials and in performing all operations in connection with the construction of storm drainage systems, together with the inlets, storm drain manholes, headwalls, safety end treatments, cleanout structures and other incidentals, in accordance with the plans and these specifications.

1.2 MEASUREMENT AND PAYMENT

Payment shall be made at the price bid per unit item for furnishing and installing pipe, which bid price will include all costs for the complete pipe installation, including trenching and backfill, embedment, compaction or tamping, testing, final cleanup, and all other work not otherwise provided for in the Proposal.

- A. Pipe
Payments will be made at the price bid per foot for furnishing and installing pipe, which bid price will include all costs for the complete pipe installation, including line fittings, trenching, and backfill, embedment, compaction or tamping, and all other work not otherwise provided for in bid proposal. Pipe will be measured (by horizontal distance) from the inside face of the inlet or junction box or end of pipe without adjustment for the slope of the pipe. The length of the inlet or junction box shall not constitute a payable quantity.
- B. Manholes/Junction Boxes
Payment will be made at the unit price bid per each for manhole. Manholes will be measured per each.
- C. Inlets
Payment will be made at the unit price bid per each for inlet by length and type. Inlets will be measured per each.
- D. Headwalls
Payment will be made at the unit price bid per each for headwall by type. Headwalls will be measured per each.
- E. Rock Rubble Rip Rap
Rock Rubble Rip Rap shall be measured by area as provided for in the bid proposal form.
- F. Channel Grading
Channel Grading shall be measured by area as provided for in the bid proposal form.

1.3 SUBMITTALS

All submittal requirements are listed with the material specifications

PART 2 – PRODUCTS

2.1 MATERIALS

See:

SECTION 31 78 00 - PIPE BORING, JACKING, TUNNELING & ENCASEMENT

SECTION 31 23 33 - EXCAVATING, TRENCHING, AND BACKFILLING

SECTION 03 30 00 - CONCRETE

SECTION 33 40 02 - REINFORCED CONCRETE PIPE

SECTION 33 40 03 - STANDARD STORM SEWER INLETS

SECTION 33 40 05 - REINFORCED CONCRETE HEADWALLS

SECTION 33 42 16 - PRECAST BOX CULVERTS

SECTION 33 40 04 - REINFORCED CONCRETE RIPRAP

HDPE Storm Drain Pipe (to be specified by design engineer)

2.2 TESTING REQUIREMENTS

T.V. Camera Inspection shall be performed on all installed underground storm drain conduits longer than 20 feet before acceptance. When the Contractor performs the inspection, the City Engineer or his representative shall be notified one working day prior so that he can view the procedure. The inspection shall be in digital video format, saved to a DVD or CD (enclosed within a protective case) and shall be given to the City Engineer or his representative for review and final records.

T.V Camera Inspection shall be completed no sooner than 60 days before punchlist, and submitted no fewer than 14 days prior to initial punchlist walkthrough. For sewer pipe located under roadways or pavement, Contractors are encouraged to perform preliminary T.V. inspection prior to constructing roadway or pavement.

Conduit shall be cleaned prior to T.V. inspection. All dirt/debris in the line which could cover a defect shall be removed. Jetting of the lines in conjunction with the T.V. Inspection is prohibited. If the line to be televised is discovered to contain foreign material, which prohibits an acceptable T.V. inspection, the line shall be cleaned and televised again.

Select and use closed circuit television equipment that will produce a color digital video that clearly shows pipe and joints, and shall be a self propelled tractor-type system. Produce and use closed circuit television equipment using a panorama tilt, radial viewing, pipe inspection camera that pans plus and minus 75 degrees, rotates 360 degrees, and has optical zoom from 6 or less inches to infinity. The camera must have an accurate footage counter accurate to within 1 foot per 500 foot of pipe. Footage shall be continuously displayed on the video at all times. The camera operator shall stop at each junction box and complete a 360 degree view of the junction box slow enough to identify all defects. Glare shall be avoided and shall not interfere with viewing the pipe segment. Maximum rate of travel for the camera shall be 30 feet per minute. DVDs or CDs shall be continuous between manholes. Provide DVDs or CDs with labels indicating project number, segment number, date televised, date submitted, starting manhole number, ending manhole number, pipe diameter, pipe length and street name.

2.2 TESTING REQUIREMENTS (CONT'D)

The T.V. inspection shall be used to identify defective construction such as sags, debris, separated joints, etc. The City Engineer shall make all final determinations if the severity of the defect constitutes failure and subsequent removal of the segment in question.

PART 3 – EXECUTION

3.1 GENERAL

Construction methods for each material are specified in the material specifications.

A. Minimum Cover

The minimum cover for class III storm drain pipe (12” through 60”) (See SECTION 33 40 02 – REINFORCED CONCRETE PIPE) shall be two feet (2’) in areas subject to vehicular loads and one foot in non-vehicular areas as measured from the outside top of pipe vertically to finished ground or pavement surface elevation.

END OF SECTION