

CONSTRUCTION STANDARD SPECIFICATION

SECTION 02720

STORM SEWER SYSTEMS

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STORM SEWER SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY

- A. This section shall apply to the materials and operations required for the installation of exterior storm sewer systems.
- B. The extent of the work is indicated on the contract drawings.
- C. Related Sections: Refer to the following sections for related work:
 - 1. Section 02200, "Earthwork".
 - 2. Section 02725, "Sewer Manholes".
 - 3. Section 03300, "Cast-in-Place Concrete".
 - 4. Section 05120, "Structural Steel".

1.02 SUBMITTALS

Submit Material Safety Data Sheets (MSDS) for reinforced concrete pipes, cement mortar and joint compounds as required.

1.03 QUALITY ASSURANCE

- A. The materials and practices comprising the work shall conform to this and other referenced standard specifications.
- B. All materials used shall not contain any asbestos fibers.

PART 2 - PRODUCTS

2.01 PIPE AND FITTINGS

Piping materials shall be as indicated on the contract drawings. Each section shall be marked with a permanent label which allows identification of class and type of material. In addition, pipe materials shall conform to the following requirements:

- A. Reinforced Concrete Pipe and Fittings: Class III minimum or class as specified on the contract drawings, conforming to ASTM C 76. Reinforced concrete pipe shall be a minimum of 18" in diameter, unless otherwise shown on the drawings.
- B. Corrugated Steel Pipe and Fittings: Materials for the corrugated metal pipe (CMP), pipe arches and convector including base metal, rivets and spelter coating shall be as specified in AASHTO M 36. CMP shall be used for the construction of culvert road crossings only and shall be a minimum of 18" in diameter, unless otherwise shown on the drawings.
- C. Ductile Iron Sewer Pipe: 4" Class 51, 6" or larger Class 50, or class as specified on the contract drawings, conforming to ASTM A 746. Ductile iron pipe shall be a minimum of 4" and a maximum of 12" in diameter, unless otherwise shown on the drawings.

2.02 JOINTS

Joints shall be supplied with the pipe or fitting. Gasket materials shall be stored in accordance with ASTM C 443. In addition, the joints shall conform to the following requirements:

- A. Joints for reinforced concrete pipe shall be "O"-ring rubber gaskets conforming to ASTM C 361 and C 443.
- B. Joints for corrugated steel pipe shall have joining bands which are the same gauge and material as the pipe.
- C. Ductile iron pipe shall have push-on joints conforming to the applicable requirements of AWWA C111.

PART 3 - EXECUTION

3.01 PIPE LAYING

- A. General: Provide drainage pipe of the size, and class indicated and install at the locations and elevations indicated on the contract drawings.
- B. Pipe installation shall be in accordance with the pipe manufacturer's written installation instructions and with the applicable provisions or requirements of the following referenced handbooks and standard specifications:
 - 1. Ductile Iron Sewer Pipe: American Water Works Association C600.
 - 2. Reinforced Concrete Pipe: American Concrete Pipe Association "Concrete Pipe Installation Manual".
 - 3. Corrugated Steel Pipe: "Handbook of Steel Drainage & Highway Construction Products".
- C. Pipe shall be laid on a smoothly-graded, prepared subgrade soil foundation true to alignment and grade as indicated on the contract drawings. Bell holes shall be hand-excavated so that the bottom of the pipe is in continuous contact with the surface of the prepared subgrade material.
- D. Pipe laying shall proceed upstream with the spigot ends pointing in the direction of flow. Pipe shall not be laid in standing water or when trench or weather conditions are deemed unsuitable by the Sandia Delegated Representative (SDR).
- E. Approved backfill material shall be spaded and compacted into the "haunch" area under each side of the pipe so that all void spaces underneath the pipe are filled with compacted backfill material.
- F. Approved backfill material shall be placed in the trench along the side of the pipe and compacted by hand up to the top of the pipe. Approved backfill material shall be placed and compacted a minimum of 12" above the top of the pipe.

3.02 CLEANING

- A. Prior to laying pipe, the interior of each pipe section shall be cleaned of all soil and debris.
- B. After laying and backfilling, all pipe interiors shall be free of all foreign material such as soil, cement mortar, joint compounds, etc. If large amounts of material have accumulated, the SDR may require flushing of the pipe. If flushing is required, any outlets into existing lines will be blocked so that no foreign material is discharged into existing lines.

3.03 INSPECTION

- A. Upon arrival at the job site, each section of pipe shall be inspected for compliance with the applicable piping materials product requirements listed in Part 2 of this specification. Accepted sections of pipe may be marked by the SDR. Any section of pipe found to be defective shall be immediately removed from the job site and shall be replaced by the Contractor at no additional cost to Sandia National Laboratories (SNL).
- B. Immediately prior to laying, each pipe section shall be visually inspected for defects or damage. Any damaged or defective pipe shall not be used.
- C. Pipe roundness shall not vary from a true circle by more than 5% of the pipe's normal diameter and deviation from straight line parallel to pipe length shall not exceed 1/16" per linear foot measured on the concave side. Allowable deviation from vertical grade shown on the drawings shall be no more than 1/2" below or above the true grade line. In addition, vertical sags and crowns in the pipe joint shall be no more than 1/2" across any 16 feet of pipe length. Horizontal alignment between manholes shall be within 3" of the true line as shown on the drawings and shall not vary more than 1/2" across any single joint of pipe. Any sections of pipe found to be defective, damaged, or in poor alignment shall be taken up and relaid or replaced at the Contractor's expense.
- D. Storm sewer lines normally need not be tested, but if in the opinion of the SDR, the workmanship and material do not appear to be satisfactory, the SDR may require that the section be tested according to UNI-B-6, "Recommended Practice for Low-pressure Air Testing of Installed Sewer Pipe". If the line fails to meet the requirements of the test, the Contractor shall determine the source or sources of leakage and shall make repairs as necessary at no additional cost to SNL. The pipe installation shall be retested after making repairs to verify that it meets the requirements of the test.

END OF SECTION