SECTION 33 30 00 - SANITARY SEWERAGE UTILITIES

PART I - GENERAL

1.1 SUBMITTALS

A. [Note to AE: EPA Approval: On U of I projects, the AE shall prepare submission for the Owner’s signature and forwarding to the EPA in order to secure approval prior to bidding for all sewer connections and extensions.]

B. Construction Documents: Include the average and peak flows (for the entire building) that were used to size the sanitary drain piping.]

PART 2 - PRODUCTS

2.1 MATERIALS

A. Code Compliance: All material involved in underground sanitary sewer work shall be in accordance with the most recent edition of the Standard Specifications for Water & Sewer Main Construction in Illinois and the Illinois State Plumbing Code.

1. PVC ASTM D3034 or F891 cellular core sewer pipe
2. Vitrified clay
3. Extra strength non-reinforced concrete

B. Acceptable Materials: Beginning 5 feet outside of the foundation wall, all sanitary pipe shall not be less than 6-inches in diameter, and shall be extra strength vitrified clay, extra strength non-reinforced concrete, PVC pipe and ABS pipe which meets ASTM D-2680.

2.2 FITTINGS

A. Sewer wyes shall be made of the same material as the main-line piping, shall comply with the appropriate provisions of the Standard Specifications for Water & Sewer Main Construction in Illinois and shall be encased in granular bedding as a minimum.

B. Saddles will only be allowed if the main line piping has a 12-inch diameter or greater. If a connection is to be made where there is no wye and the piping is smaller that 12-inches, a section of pipe shall be removed and a wye inserted with mission couplings and new sections of pipe as needed.

C. Mission couplings shall conform to ASTM C-425. They shall be made of stainless steel with an interior rubber collar and shall have take-up clamps to fit the appropriate outer diameter of the pipe being used. The take-up clamps shall be properly tightened, the sewer shall be tested by the exfiltration method and, after the connection passes, the entire connection shall be encased in granular fill to a minimum of 6-inches all around.

D. Gaskets: Gaskets for push-on joints shall conform to ASTM F-477.

E. Plugs shall be specifically manufactured for the pipelines in which they are to be installed. The plug shall be constructed of a material approved by the U of I and shall provide a permanent watertight installation without permanently sealing the joint.

2.3 MANHOLES

A. Manholes shall comply with the minimum standards in the Standard Specifications for Water & Sewer Main Construction in Illinois and shall be a minimum of 48-inches in diameter. See Drawing for standard manhole and for plan view of manhole.

B. Drop Connections: For all Projects for the U of I, drop manhole installations shall be installed on the outside of the manhole and shall comply with appropriate provisions and

C. Abandoned manholes shall be removed to 2-feet below grade and filled with washed sand or gravel. All openings in abandoned manholes shall be plugged with concrete and brick.

D. Maximum spacing between manholes shall be approximately 300 feet, unless a Variance is approved by the U of I.

PART 3 - EXECUTION

3.1 INSTALLATION

3.2 TRENCHES

A. Abandoned Utilities: Where abandoned pipes, conduits or sewers are removed from the trench, leaving dead ends in the ground, such ends shall be plugged or bulk-headed with concrete.

3.3 BEDDING

A. Bedding Material: The pipe bedding shall be 6-inches of IDOT grade FA-1, FA-2, FA-6 or other granular material approved by the U of I.

3.4 TIE-INS AND CHANGE OF DIRECTION

A. Tie-Ins and Change of Direction: Any change of direction, tie-in, or branch connection to the sanitary sewer system shall occur at a sanitary manhole, unless a Variance is approved by the U of I.

3.5 JOINTS

A. Means to Contract and Expand: Provisions shall be made for contraction and expansion at each joint with a rubber ring and integral thickened bell as part of each joint. Provide elastomeric gasket joint of the push-on type, conforming to ASTM D-3212.

3.6 GPS DATA COLLECTION:

A. Minimum 24 hours: The contractor shall contact the Facilities & Services project representative a minimum of 24 hours prior to backfilling any underground utility installation exterior to the building including excavation for maintenance and/or repair of an existing utility for the purpose of GPS data collection.

3.7 BACKFILL

A. Under Paved Areas: Backfill of trenches under paved areas and within 2-feet of the edge of any pavements shall be backfilled with trench backfill. This backfill shall be placed in 12-inch maximum depths and compacted to 95% of the standard Proctor. If flowable fill is used, the fill shall be designed to have a compressive strength between 100 and 150 psi.

B. Metallic Lined Plastic Underground Warning Tapes: Polyethylene plastic tape with metallic core, 6 inches wide by 4 mils thick, solid green in color with continuously printed caption in black letters “CAUTION SEWER LINE BURIED BELOW.”

C. Outside of Paved Areas: Backfill of trenches outside of paved areas shall be trench material only to 12-inches above the top of the pipe. The remainder shall be earth, generally excavated material, free from wood, boulders larger than 6-inches in diameter, and other foreign materials. Maximum lifts for backfill to be in 12-inch depths

D. Jetting And Water Soaking: Not allowed.

E. Mounded Above Grade: Backfillings shall be well mounded above finished grade to allow for settling.

3.8 PAVEMENT REPAIRS
A. All pavements and sidewalks shall be replaced to their original thickness, material type or types, and grade except where the old pavement was deficient, in which case the pavement shall be brought up to current standards.

3.9 GRADE ADJUSTMENTS TO SURFACE STRUCTURES
A. Frames, grates, and covers of all surface structures, such as manholes and clean outs shall be adjusted to proposed finish grade. Grade rings shall be supplied and installed as required.

3.10 ABANDONED UTILITIES
A. Close open ends of abandoned underground utilities that are indicated to remain in place. Provide sufficiently strong closures to withstand hydrostatic or earth pressure that may result after ends of abandoned utilities have been closed.

3.11 TESTING
A. Comply with provisions of the Standard Specifications for Water and Sewer Main Construction in Illinois. All reaches shall be tested. The Contractor shall provide written verification that the sanitary sewer has passed at least 1 of the required testing procedures.

3.12 FLUSHING AND CLEANING
A. After all backfilling and pavement restoring operations have been completed, the Contractor shall flush and clean all sanitary sewer lines with the U of I Inspector present.
B. During the flushing and cleaning operation, a wire screen with a 1/4-inch or smaller mesh shall be placed over the downstream outlet of the lower manhole to prevent any debris from being washed into the existing sewer system.

END OF SECTION 33 30 00

This section of the U of I Facilities Standards establishes minimum requirements only. It should not be used as a complete specification.