DIVISION 35

SANITARY SEWER MANHOLES AND CLEANOUTS

35.01 SCOPE: The Contractor shall furnish all labor, materials, equipment and supplies and shall perform all work necessary for the construction of all manholes and cleanouts. The manholes and cleanouts shall be constructed at the location and inverts shown on the Construction Plans or as directed by the Engineer.

35.02 SUBMITTALS: Certificates of conformance or compliance shall be submitted for approval for the material quality of sewer manholes, cleanouts, frames, and covers and appurtenances.

35.03 MATERIALS: Materials for manholes and cleanouts shall be new and shall be furnished by the Contractor in accordance with the following requirements:

A. Brick: ASTM C-32, Grade MS.

B. Frames and Covers shall be of good quality cast iron of uniform grain, meeting ASTM A-48, Class, 30s, constructed in accordance with the details shown on the Plans or the applicable City of Chesapeake Standard.

C. Steps shall be in accordance with Chesapeake Standard ST-1 and all applicable OSHA Standards. Steps shall be coated to prevent deterioration of the metal.

D. Concrete for Invert Slabs: Air entrained Portland Cement Concrete (A3) having minimum twenty-eight (28) day compressive strength of 3000 psi in accordance with Division 36.

E. Mortar shall meet the requirements of Division 37.

F. Precast Reinforced Concrete Manholes shall be manufactured in accordance with ASTM Des. C-478 (latest revision) with eccentric or concentric cones or flat slab tops for shallow manholes. Joints shall be plastered inside and outside of the manhole with the aforementioned mortar ratio.

G. Curing Materials shall meet the requirements of Division 36.

H. Reinforcing Steel shall meet the requirements of Division 36.

I. Portland Cement Concrete shall meet the requirements of Division 36.

J. Boot for Connecting Pipeline shall meet the requirements of ASTM C-923 and shall be a KOR-N-Seal rubber boot or approved equal.

K. Interior Coating: The concrete interior of all manholes shall be coated with a material to prevent corrosion. Material to be used shall be approved byt eh Engineer prior to fabrication of the manholes and shall be SIKAGARD Hi Bilt.

35.04 EXECUTION:

A. Manholes shall be constructed of precast, reinforced concrete with cast iron frames and covers in accordance with the Public Facilities Manual, Volume II, City of Chesapeake.

B. The Base or Invert Slab for Manholes must be constructed monolithically with precast concrete manhole sections. The minimum thickness used shall be a function of the reinforcement as approved by the Engineer.

C. Invert Channels shall be smooth and accurately shaped with a semi-circular bottom conforming to the inside of the adjacent sewer sections and in accordance with the City of Chesapeake Standard IS-1. Inverts shall be formed of concrete, and no laying pipe through manholes will be permitted. Changes in size and grade shall be made gradually and evenly. Changes in direction of the sewer and entering branches shall have as long a radius of true curvature as the size of the manhole permits.

D. Precast Reinforced Concrete Manholes:

1. Prior to ordering precast manholes, the Contractor shall verify the required depth. Precast concrete bottom sections, risers, and top sections shall be fabricated such that when assembled, they provide a manhole conforming to the depth required. The Contractor shall be responsible for furnishing and constructing manholes such that the tops are flush with the finished grade.

2. Sections are to be assembled as to provide a plumb structure with uniform bearing at all joints and at the base slab. Joints shall be cleaned and plastic cement sealer applied immediately prior to assembly. Joints shall be water-tight. Where pipes enter the manhole, they shall be mechanically sealed with a neoprene molded device. The device and method of installation shall conform to ASTM C-923.

3. Shop drawings must be submitted and approved or certifications supplied stating that the structure conforms to City of Chesapeake Standards prior to construction.

4. Concrete shall have a minimum 28-day compressive strength of 4000 psi.

E. Manhole Frames and Covers shall be set flush with the finished grade.

F. Cleanouts shall be constructed in accordance with the Public Facilities Manual, Volume II.

G. Drop Connections shall consists of the aforementioned materials, and constructed in accordance with City of Chesapeake Standard DC-1.

H. Excavation for Structures: Excavation shall conform to the lines and grades as shown on the construction plans or established, by the Engineer. Where unstable material is encountered at the bottom of the excavation such material shall be excavated to a depth of one foot below the bottom of the structure and replace with gravel, course sand, or approved material, which will be incidental tot he costs per each specified in the unit price table. All sheeting, bracing, and shoring required for safety shall be installed in conformity with applicable rules and ordinances so as to meet the approval of the Engineer.

I. Backfill for Structures: Around and adjacent to structures, backfill shall be of material of suitable stability and perviousness, as determined by the Engineer. Backfill shall be placed in 12-inch layers, each layer being compacted by approved means. No backfill shall be placed against a structural wall until all connecting structural members are in place. It shall be the Contractor's responsibility to provide compaction to such a degree that the resulting settling within six (6) months after placing shall no be detrimental to the stability or appearance of the structure or adjacent areas. The Contractor shall provide adequate protection to all structures during backfilling and shall use every precaution to avoid damaging or defacing them.

35.05 MEASUREMENT AND PAYMENT:

A. Bid Item Definition:

1. Sewer manholes shall include furnishing and installing the structure base, walls, invert frame and cover, steps appurtenances, stone bedding, excavation, sheeting and bracing, dewatering, testing, backfill, compaction, and final surface grading.

2. Sewer cleanout assembly shall include furnishing and installing the wye, riser pipe, cleanout cap or plug, the cast iron cleanout cover, trench excavation, dewatering, trench backfill and compaction and final surface grading.

B. Measurement and Payment:

The term "complete-in-place," as it is used here, shall be taken to mean that the item of work shall be furnished and installed in accordance with the specifications complete with all appurtenances necessary for the item to be used for its intended function. Where appropriate, this means that payment for the item includes, but is not necessarily limited to, testing, cleanup, and restoration of all disturbed areas to original condition unless specified otherwise.

1. Manholes, which are installed and satisfactorily tested, shall be counted complete in place and shall be paid for on a per structure basis according to the plan depth (rim to invert) of the manhole. The applicable depth categories shall be those defined above for sewer pipe.

2. Sewer cleanout assemblies (mainline or lateral), which are installed and satisfactorily tested, shall be counted in place after completion of project restoration work, and shall be paid for on a per assembly basis.