

ITEM 922

SANITARY SEWER MANHOLE

922.1 Description

This section shall govern the provisions for furnishing all materials, equipment, labor and superintendence and performance of all operations necessary in connection with the placement of pre-cast sanitary sewer manholes and subsequent backfilling and testing as specified herein.

922.2 Material

Frame and cover shall conform to EJIW V-1418-1, with City of Deer Park logo on cover, or approved equal.

Concrete: All concrete used in the construction of the manhole foundation shall be Class "A" concrete conforming to the requirements as set forth in the Technical Specification "Concrete for Structures".

Mortar: Mortar shall be composed of one part Portland cement and two parts clean, sharp sand. Hydrated lime may be added to the mix but in no case shall it exceed 10 percent by weight to the total dry mix.

Reinforcing Steel: All reinforcing steel used in the construction of manholes shall conform to ASTM A-15 Intermediate Grade Billet Steel.

Pre-cast Manhole: Pre-cast manhole shall conform to ASTM Designation C-478 Standard Specifications for Pre-cast Reinforced Concrete Manhole Sections and ASTM C-923 Standard Specifications for Resilient Connectors Between Reinforced Concrete Manhole Structures and Pipes.

922.3 Construction Methods

General: The placement of manholes shall be done as soon as practicable prior to the sewer lines being laid into or through the manhole location. Install pre-cast manholes to conform to locations and dimensions shown on Drawings. Provide manhole sections, base sections and related components to conform to ASTM C478. Provide base riser section with integral floors and adjustment rings which are standard components of manufacturer of manhole sections. The bottom of the base section shall have a minimum thickness of 12 inches. Walls shall have a minimum thickness of 5 inches. Provide tops to support HS-20 vehicle loading and receive cast iron frame covers. Manhole walls, transition slabs, cone tops and manhole base slab shall be designed, by manufacturer, to requirements of ASTM C-478 for depth as shown on the drawings. The pre-cast concrete base shall have suitable cutouts or holes to receive pipe and connections with resilient connectors. The pre-cast base for the manhole shall be placed at the locations and elevations, and to the dimensions as shown on the plans.

After completing the excavation the pre-cast manhole base shall be placed on a minimum 6 inch thick layer of 2 sack per ton cement stabilized sand foundation for leveling and support of the base section. Unstable ground conditions or ground water will require a 12 inch thick (minimum) foundation of crushed stone wrapped in filter fabric. If wet sand is encountered the bedding is to be determined by the design Engineer and approved by the City Engineer. Install sections, joints and gaskets in accordance with the manufacturer's printed recommendations. Install pre-cast adjustment rings above the top of cones or flat-top sections as required to adjust finished elevation and to support manhole frame. Seal any lifting holes with non-shrink grout. Place at least four pre-cast concrete grade rings with thickness of 3 inches each to provide 12 inches or less, under casting.

The inverts passing through the manhole shall be shaped and grouted across the floor of the manhole as shown on the plans. The invert shaping may be accomplished by adding and shaping mortar and placing the required additional material on the foundation slab if the inverts were not previously provide by the manufacturer in the pre-cast base

Pre-cast concrete adjustment rings and manhole frame for manholes shall be attached to the manhole. Seal between the concrete adjustment ring and the pre-cast top section with non-shrink grout; do not use mortar between adjustment rings. Apply latex-based bonding agent to pre-cast concrete surfaces joined with non-shrink grout. Set cast iron frame on adjustment ring in bed of approved sealant material. Install sealant bed consisting of two beds of sealant, each bead having minimum dimensions of 1/2-inch and 1/2-inch wide. Wrap manhole frame and adjustment rings with external sealing material, minimum 3 inches beyond joint between ring and frame and adjustment rings and pre-cast section. Encase manhole frame in mortar or non-shrink grout placed flush with face of manhole ring and top edge of frame. Provide rounded corner around perimeter. Adjust manhole frame to finished grade for slope on right-of-way backfill and 6 inches above ground in easements or areas outside the street right-of-way.

Backfill at manholes shall be placed as the work progresses. Backfill material in areas of excavation surrounding manholes from the foundation up to an elevation 12 inches over each pipe connected to the manhole shall be 2 sack/per ton cement stabilized sand. In the case where excavation around the manhole is within two feet of the back of curb or is under the edge of pavement then the cement stabilized sand shall be brought to the bottom of the sub-grade for the proposed concrete pavement. The remaining backfill material from the excavation shall be placed at 90 per cent of the density of the surrounding natural ground and water tamped as per utility backfill requirements.

922.4 Testing

After completion of the manhole the manhole shall be tested for leakage. The test shall be conducted by the contractor in coordination with the Engineer or his authorized representative. The required testing will be as specified under Specification Item 923 – Sanitary Sewer Line and Manhole Testing. All manholes which fail the test shall be carefully inspected by the contractor or his representative to determine the problem for that manhole; then, it shall be corrected and retested.

Approval of Results: All results of the manhole test shall be subject to approval by the Engineer or his authorized representative.

922.5 Measurement

Manholes will be measured by each manhole complete, at all depths.

Testing will not be measured.

922.6 Payment

Payment for the completed sanitary sewer manhole will be made at the unit price bid per each manhole which price shall be full compensation for furnishing all materials, equipment, labor, superintendence, excavation, backfill, clean-up and other incidentals for a complete manhole installation.

Payment for testing of sanitary sewer manholes will not be made but shall be considered incidental to construction and acceptance of the installed and completed manholes.

END OF ITEM 922