ITEM 664.40XX0006 - PRECAST SANITARY SEWER MANHOLE

DESCRIPTION

This specification covers the requirements for furnishing and installing precast sanitary sewer manholes as shown on the plans and in accordance with these specifications. The work shall conform to the requirements of NYSDOT Section 604 – Drainage Structures with the following modifications:

MATERIALS

Under Section 604-2.01 Drainage Structure and Manholes, ADD the following:

“Exterior coating for manhole shall be either Mobil Mo-Tar 4, Rust-Oleum 9300 Epoxy System or approved equal.

Precast reinforced concrete top slab and/or precast landing if required shall be manufactured in accordance with the detail shown on the contract plans. The concrete used in the manufacturing of these slabs shall be minimum 4000 psi concrete as specified under Section 706-04, "Precast Concrete Drainage Units" of the NYSDOT Standard Specifications.”

Pipe Connections into the Sanitary Sewer Manholes shall be as follows
a. The precast reinforced concrete manhole base shall be provided with circular openings at the locations and elevations for the proper connection of pipes. The pipe connections shall be sealed with flexible manhole seal assemblies.

b. The flexible manhole seal assemblies shall be installed in accordance with the recommendations of the seal assembly manufacturer and shall conform to ASTM C923.

c. Flexible manhole seal assemblies shall permit at least an eight (8) degree deflection from the centerline of the opening in any direction while maintaining a watertight connection.

d. The flexible manhole seal assemblies shall be as manufactured by Interpace Corp. (Lock Joint Flexible Manhole sleeve), National Pollution Control Systems, Inc. (Kor-N-Seal) or Press-Seal Gasket Corp. or approved equal.

A cast-in-place concrete invert shall be formed within the precast concrete manhole base as shown on the contract drawings with Class A concrete.

CONSTRUCTION DETAILS

At the end of Section 604-3.02 Concrete Drainage Structure and Manholes, ADD the following:

Manhole Bases
For precast manhole bases, the area underneath the manhole base shall be excavated to the required elevation. The soil below the base shall not be disturbed. The manhole base shall then be lowered into the trench and checked for proper bearing on the subgrade, proper elevation and orientation to receive the incoming and outgoing sewers at the designated invert elevation. If the invert elevation varies by more than plus or minus ½ inch from the designated invert elevation, the base shall be removed and reset.
ITEM 664.40XX0006 - PRECAST SANITARY SEWER MANHOLE

Cast In Place Inverts
The concrete invert fill shall be installed following the connection of all sewer pipes to the manhole. The invert fill shall be true to the sewer pipe invert elevations, with smooth channels of uniform cross section and slope, either straight or with a continuous curve between inlet and outlet of pipes. The concrete invert fill shall be placed in accordance with dimensions and details shown on the Contract Plans.

To eliminate free fall conditions in a manhole resulting from invert elevation differentials between incoming and outgoing pipes, the Contractor shall form and construct suitable channels in the bottom of the manhole connecting the inverts.

The complete exterior, flow channel, and bench shall receive a prime and finish coat of the specified coating. Application shall be in strict conformance with the manufacturer’s recommendations.

Masonry Collar
The precast concrete pavers or precast concrete collar be constructed on the Precast Concrete Top Slab to bring the manhole frame and cover to the proper grade in accordance with the detail on the Contract Plans. The minimum height shall be 4 inches and the maximum height shall not exceed 16 inches.

Following the placement of the pavers, a ½ inch layer of Masonry mortar shall be applied to the exterior surface of the brick and trowelled to a smooth finish.

Leakage Tests
For leakage test purposes, a section of sewer line shall be construed as being that portion of a sewer line between two (2) consecutive manholes inclusive of upstream manhole and appurtenances unless otherwise specified.

The Contractor shall be required to notify the Engineer not less than forty-eight (48) hours prior to the time he intends to begin testing at any particular location.

Prior to undertaking any repairs, the Engineer's written approval of method and material to be used in the repair shall be secured. Items which in the opinion of the Engineer cannot be repaired shall be replaced.

a. All gravity and pressure sewer lines, including but not limited to pipe, fittings, manholes, risers, stubs, specials an appurtenances shall be tested for water tightness as hereinafter specified.

b. The Contractor shall furnish all necessary material, equipment, labor and other facilities required to satisfactorily perform the tests and shall make all necessary repairs or replacements and retests as required at his own expense.

c. The Contractor is warned that the Engineer may refuse to allow exfiltration testing, or void those already underway if, in his judgment, heavy rain or rainwater inflow will distort test results. Retests of the affected lines shall be done at no cost to the County, State or other agency having jurisdiction. No claims for delays will be considered by the County, State or other agency having jurisdiction, in the event testing is suspended by the Engineer, as specified above.

d. All sewer pipes and manholes must be clean prior to any work described in this section. They shall be free from dirt, debris, sand, stones, etc. and accumulated water must be removed.
ITEM 664.40XX0006 - PRECAST SANITARY SEWER MANHOLE

e. The testing of new manholes will be performed using the water exfiltration test or air test. Air pressure testing on manholes shall be done in accordance with ASTM C1244. This specification describes the testing process for an exfiltration test.

f. Prior to the exfiltration test, all pipes in the new manhole to be tested shall be plugged. All plugs shall be installed in the presence of the Engineer or his representative. Each new manhole shall be filled with water to a level not less than 4 feet above the exterior crown of the upstream pipe or above the normal groundwater level whichever is higher.

g. A twenty four (24) hour stabilization period will be required prior to taking measurements. Should the water level during the stabilization period drop below the test level as specified above, the Contractor, in the presence of the Engineer or his representative shall add make-up water for water lost during the stabilization period to increase the water level to the required height for the test.

h. The actual test period shall begin following the stabilization period. Addition of make-up water will not be allowed once the test has begun. Any deviation from the aforementioned will void the test.

i. The test shall be conducted for a period of at least two (2) hours. The Engineer or his representative will take three (3) readings of the water level at the beginning of the test period, and another three (3) readings of the water level at the end of the test period. The average of the readings will be used by the Engineer to calculate the leakage quantity.

j. The maximum allowable quantity of exfiltration from any manhole under test shall not exceed 0.25 gallons per foot diameter of manhole per foot of water depth measured from the invert of the downstream pipe per twenty-four (24) hours.

Prior to making any repairs, the Contractor shall submit to the Engineer, in writing, the proposed method of repair and secure his written approval of methods and material to be incorporated in the repair. The Engineer shall be the sole judge as to whether the pipes or manholes shall be repaired or replaced.

All repairs and retesting must be made in the presence of a representative of the Engineer and to the satisfaction of the Engineer.

Should a section or sections of pipe, or manholes fail to meet the leakage criteria, the Contractor shall at no cost to the County, State, or other agency having jurisdiction, locate the leaks and repair pipe and manholes, as necessary, until the leakage is within the permitted allowance.

Regardless of the results of the infiltration test, it is required that all visible leaks be repaired.

The injection of gel, sealant, or any other product to seal cracks, porous section, or any other structural defect of the pipe or manhole will not be permitted.

All tests and repairs shall be repeated as many times as necessary, at no cost to the County,
ITEM 664.40XX0006 - PRECAST SANITARY SEWER MANHOLE

State or other agency having jurisdiction, until the requirements hereinbefore specified have been met.

METHOD OF MEASUREMENT

The quantity to be measured under this item will be the number of linear feet of height, measured to the nearest ¼ foot, from the bottom of the manhole base to the top of the masonry collar.

BASIS OF PAYMENT

The unit price bid per linear foot shall include the cost of all labor, equipment, and materials necessary to complete the work including flexible gaskets between manhole sections, concrete invert fill, precast top slab and landings, and all necessary testing and any repairs to the manhole required in connection with the sewerage tests on the manhole.

Manhole frames and covers will be paid for under separate items.

Excavation (dewatering included in Excavation), backfill, select fill, geotextile and any necessary sheeting will be paid for under separate items.

Payment will be made under:

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Description</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>664.40480006</td>
<td>Precast Sanitary Sewer Manhole (48 inch DIA.)</td>
<td>Linear Foot</td>
</tr>
<tr>
<td>664.40600006</td>
<td>Precast Sanitary Sewer Manhole (60 inch DIA.)</td>
<td>Linear Foot</td>
</tr>
<tr>
<td>664.40720006</td>
<td>Precast Sanitary Sewer Manhole (72 inch DIA.)</td>
<td>Linear Foot</td>
</tr>
<tr>
<td>664.40840006</td>
<td>Precast Sanitary Sewer Manhole (84 inch DIA.)</td>
<td>Linear Foot</td>
</tr>
<tr>
<td>664.40960006</td>
<td>Precast Sanitary Sewer Manhole (96 inch DIA.)</td>
<td>Linear Foot</td>
</tr>
</tbody>
</table>