

TECHNICAL SPECIFICATIONS  
FOR  
MANHOLES, CATCHBASINS, INLETS, AND JUNCTION BOXES

1. Description

- (a) This work shall consist of constructing the following drainage structures: manholes, catch basins, inlets, and junction boxes. Construction shall be in conformity to the lines, grades, dimensions, and sizes shown on the Plans or as directed by the Engineer.
- (b) The height or depth of these drainage structures will vary with location, but unless otherwise shown on the plans, shall be such that the frames will match the grades and lines of the roadway surface and the invert will be at designed elevations.
- (c) Cast iron frames, grates, and covers shall be provided as specified on the Plans.
- (d) Connections to pipes and other existing structures as may be necessary as a required part of the construction.

2. Materials

- (a) Concrete, cement, sand, and water shall conform to the applicable requirements of the Standard Specifications, Section 15.0, Concrete Structures. Concrete shall be Class A.
- (b) Brick shall conform to AASHTO Designation M 91 Grade SM.
- (c) Frames, covers, and grates shall be the type specified on the drawings. The castings shall conform to AASHTO Designation M 105, Class 30 (ASTM A 48, Class 30). All castings shall be true to pattern, to form and dimension, free from any faults or cracks, and cleaned of sand in a manner to provide a clean uniform surface. Bearing surfaces between frames and grates shall be machined to provide uniform bearing. Castings shall be treated with two coats of bituminous paint. All castings shall weigh at least 95% of the theoretical weight shown on the drawings. All castings shall have the date of manufacture cast into each unit.
- (d) Round precast concrete structures shall conform to ASTM C 478. Square and rectangular precast concrete structures shall conform to ASTM C 913 for wall thickness, slab thickness, concrete strength and steel reinforcement requirements.
- (e) Prior to delivery all basic materials specified herein shall be tested and inspected by an approved independent commercial testing laboratory or, if approved by the Engineer, certified copies of test reports prepared by the manufacturer's testing laboratory will be acceptable. All materials which fail to conform to these Specifications shall be rejected. After delivery to the site, any materials which have been damaged in transit or are otherwise unsuitable for use in the work shall be rejected and removed from the site.

### 3. Construction Requirements

#### (a) General

- 1) Manholes, inlets, catch basins, and junction boxes shall conform to the Standard Detail Drawings and Specifications. Deviations from these drawings may be approved by submitting a detailed drawing to the Engineer before construction begins. When poured concrete is to be used instead of brick, a minimum wall thickness of 8 inches for unreinforced concrete and 6 inches for reinforced concrete must be used on the detailed drawing submitted.
- 2) Structural excavation and backfill shall be done in accordance with the Standard Specifications for Grading.
- 3) After the foundation has been prepared, the bottom shall be constructed to the required lines and grades. After the bottom has been allowed to set for at least 24 hours, the structure shall be constructed with care being exercised to form the incoming and outgoing sewer pipes into the walls of the structure at the required elevations. Pipe shall be placed in the wall and beyond the outside surface of the walls to allow for connections, the end of the pipe being placed flush with the inside face of the wall. Masonry shall be carefully constructed around the pipe so there will be no leakage around the outer surface. Inverts shall be constructed as shown on the drawings, and be smooth and accurately shaped to the same cross section as the invert of the sewer pipes which they connect.
- 4) Cast iron frames shall be set in cement mortar beds accurately to line, finished elevation, slope, and crown so that subsequent adjustments will not be necessary.
- 5) After the masonry and frames have time to set, but in no case less than 24 hours, the space around the drainage structure shall be backfilled and compacted to the required grade. The interior shall be cleaned of debris and excess material, the grating or cover placed, and all unused material, equipment, tools, and debris removed from the area.

#### (b) Precast Reinforced Concrete Manholes

- 1) Precast sections shall consist of reinforced concrete sections manufactured, tested, and marked in accordance with the provisions of AASHTO Designation M 199(ASTM C 478).
- 2) Each section of the precast manhole shall have not more than three holes for the purpose of handling and laying. These holes shall be tapered and shall be plugged with stoppers or mortar after installation.

#### (c) Drop Manholes

- 1) Where the difference in the invert elevation of a sewer 18 inches in diameter or smaller and any other sewer intersecting in one manhole is 3 feet or more, a drop manhole shall be constructed as shown on the plans. They shall be similar in construction to the standard manhole except that a drop connection of pipe and fittings of the proper size and material shall be constructed outside the manhole and supported by Class A concrete.

4. Method of Measurement

- (a) Manholes, catch basins, inlets, and junction boxes will be listed on the Bid Schedule for each type as detailed on the Plans.
- (b) The quantity of each type of drainage structure for which payment will be allowed shall be the actual number constructed by the Contractor in accordance with the Plans and Specifications accepted by the Engineer.

5. Basis of Payment

Payment shall be made for the quantities as measured and listed under the applicable pay items in the Bid Schedule.

Payment shall constitute full compensation to the Contractor under this item and shall cover the cost of furnishing all labor, materials, tools, plant equipment, services and other expenses in connection with the construction of manholes, inlets, catch basins and junction boxes complete in place including common excavation, shoring, backfill, masonry, castings, concrete reinforcing steel, inspection and test, all as herein specified and shown on the Plans.