

SECTION 63

STORM SEWER JUNCTION BOXES AND MANHOLES

63.1 DESCRIPTION

A. General: This work consists of the construction or reconstruction of manholes. For the purposes of this section manholes may be round or square, precast or cast in place.

B. Related Work:

Section 9	Sanitary Sewer
Section 50	Precast Concrete
Section 54	Drainage Pipe Installation
Section 55	Cast in Place Concrete Structures
Section 56	Class M6 Concrete for Curb & Gutter and Flatwork
Section 57	Reinforcing Steel
Section 62	Drop Inlets
Section 100	Portland Cement
Section 106	Masonry Mortar Sand
Section 120	Drainage Pipe Material
Section 123	Concrete Reinforcement
Section 200	Controlled Low Strength Material
Section 203	Submittals

63.2 MATERIALS

A. Cast in Place Concrete: Shall conform to the requirements of Class M6, Section 56.

B. Precast Units: Shall conform to AASHTO M 199 and Section 50.

C. Castings: Unless otherwise specified on the plans, frames and covers shall consist of approved gray iron castings meeting AASHTO M 105-06/ASTM A48 Class 35B. Frame and covers to be placed in the roadway surface shall also meet AASHTO M306-10.

D. Mortar: Shall consist of one (1) part portland cement and two (2) parts mortar sand conforming to Sections 100 and 106 respectively. Alternate commercially available grout may be used if approved by the Engineer.

E. Concrete Reinforcement: Shall conform to Section 123.

63.3 CONSTRUCTION REQUIREMENTS

Concrete for cast-in-place manholes shall be proportioned, mixed, hauled, and placed in accordance with Section 55.

When the foundation for a manhole is in new embankment, the embankment shall be constructed at least one (1) foot above the footing before the foundation is prepared. The foundation shall be compacted to the satisfaction of the Engineer.

Unless otherwise permitted by the Engineer, pipe sections shall be flush on the inside of the structure wall and project outside for proper connection with the next pipe section. Masonry shall fit neatly and tightly around the pipe.

Storm sewer manhole frames and covers located within the roadway surface shall meet Sanitary Sewer Manhole Frame and Cover Specifications Section 9. The manhole lid shall be labeled "Storm" or "Storm Sewer", and is not required to be supplied with a type "t" or o-ring gasket. Castings shall be set to the correct elevation using adjusting rings as necessary. Adjusting rings and final frame and grate adjustment shall be per Section 9. Chimney seals are not required for storm sewer manholes.

If Flowable Fill is utilized to backfill, the Flowable Fill shall be placed in accordance with Section 200 – Controlled Low Strength Material.

Installations shall be finished and left in a condition satisfactory to the Engineer.

The following specific provisions shall apply to the various types of construction:

A. Cast-in-Place Concrete: The foundation for manholes shall be thoroughly moistened immediately prior to placing concrete.

Steel reinforcement shall be placed in accordance with Section 57. Epoxy coated reinforcement is not required.

Concrete shall be protected and cured in accordance with Section 55. The minimum curing time shall be seventy-two (72) hours. The finished surface of the concrete shall present a neat and smooth appearance.

Upon completion and curing of the unit, the sheeting, bracing, forms, and falsework shall be removed and the excavation backfilled. The unit shall not be backfilled until the completion of the 72 hour curing period, or until the concrete reaches a minimum compressive strength of 3000 psi. Backfill shall be placed in loose layers not exceeding 6 inches thick and compacted to the same degree as specified for the adjacent embankment. Installations shall be completed and left in a neat appearing condition.

B. Pre-Cast Sectional Reinforced Concrete Units: The fabrication of precast manholes shall conform to Section 50.

1. Placing: Pre-cast units shall be placed on a minimum of four (4) inches of Type 1 bedding material. Backfill shall be placed in layers not exceeding six (6) inches thick and compacted to the same degree as specified for adjacent embankment.

The bottom-precast section shall be set in a full mortar bed and the joints between sections and around pipes shall be filled with mortar or an approved plastic cementing compound.

- 2. Pipe Connection and Field Collar:** An M-6 concrete collar a minimum 2 foot wide by 6 inch thick shall be placed around the outside of the pipe connection. The collar shall be reinforced with 6 inch by 6 inch W2.9 by W2.9 wire mesh. All costs for the collar shall be incidental to the unit price for the corresponding bid item.
- C. Adjusting Ring and Cover:** When the manhole ring and cover are to be lowered sufficiently to require reconstruction of the structure, or raised more than one (18) inches, or when the reconstruction of existing manhole is specified without change in grade, the manhole shall be reconstructed to the extent necessary to provide the adjustment specified.

When the ring and cover on an existing manhole are to be lowered to an extent which does not require reconstruction of the structure, or when the ring and cover are to be raised up to (18) inches or less, the adjustment shall be made by adding or removing adjusting rings. Adjusting rings shall be per Section 9.

- D. Manhole Steps:** Shall not be installed.
- E. Testing:** Pipe culverts and storm sewers shall be tested in accordance with the provisions contained in Section 54 – Pipe Culverts.

63.4 METHOD OF MEASUREMENT

- A. Pre-Cast Manholes:** Manholes of pre-cast sectional reinforced units will be measured as a unit for each manhole constructed.

Manhole rings and covers shall be included in construction of the manhole. No separate measurement will be made for manhole rings and covers.

- B. Cast-in-Place Concrete Manholes:** Shall be measured as a unit for each manhole constructed.

Manhole rings and covers shall be included in construction of the manhole. No separate measurement will be made for manhole rings and covers.

- C. Reconstructing or Adjusting Manholes:** Will be measured as a unit for each manhole reconstructed or adjusted.

- D. Flowable Fill:** Shall be measured in accordance with Section 200 – Controlled Low Strength Material.

63.5 BASIS OF PAYMENT

- A. Pre-Cast Manholes:** Manholes of pre-cast sectional reinforced concrete units will be paid for at the contract unit price bid per manhole, furnished and accepted, inclusive of materials, ring and cover, labor, equipment, excavation, and incidentals necessary.
- B. Cast-in-Place Concrete Manholes:** Units will be paid for at the contract unit price bid per manhole, furnished and accepted, inclusive of materials, ring and cover, labor, equipment, excavation, and incidentals necessary.
- C. Reconstructing or Adjusting Manholes:** Will be paid for at the contract unit price bid per reconstruction or adjustment of manhole. Payment for this item will be full compensation for furnishing materials, labor, and equipment necessary.
- D. Flowable Fill:** Shall be paid in accordance with Section 200 – Controlled Low Strength Material.

END OF SECTION