

**SECTION 200****DRAINAGE****SECTION 201****BASINS, MANHOLES AND INLETS****DESCRIPTION****201.20 General.**

This work shall consist of the construction of manholes, inlets and basins in accordance with the specifications, and in close conformity with the lines and grades shown on the plans or established by the Engineer.

**MATERIALS****201.40 General.**

Concrete for these structures shall meet the requirements of Section 901 Cement Concrete Masonry. Other materials shall meet the requirements specified in the following Subsections of Division III, Materials.

Clay Brick	M4.05.2
Cement Concrete Blocks	M4.05.1
Precast Units	M4.02.14
Cement Mortar	M4.02.15
Reinforcing Bars	M8.01.1
Iron Castings	M8.03.0
Steel Castings	M8.03.2
Dry Stone Masonry	M9.04.9

**CONSTRUCTION METHODS****201.60 General.**

Basins, manholes and inlets shall be built to the lines, grades, dimensions and design shown on the plans and as directed with the necessary frames, gratings, covers, hoods, etc., and in accordance with these specifications. Basins and inlet grates other than Cascade type may be Type A-1 or A-3, but only one type may be used throughout the project.

Sanitary Sewer Manholes shall be constructed according to the specifications of the Municipality as designated in the Contract. Castings shall be obtained as directed without cost to the Contractor at the site of the improvements from existing structures; from the Party of the First Part at the Town or City Yard; from the Massachusetts Correctional Institute of Walpole; furnished under Section 220, or furnished as a contract item. It will be the Contractor's responsibility to determine, prior to submitting his/her bid, from which of the above mentioned sources he/she will obtain the castings. Transportation, delivery, and installation of all castings will be included in the contract unit bid price for the kind of structure involved.

**201.61 Excavation.**

See Subsection 140.60

**201.62 Laying Brick and Blocks.**

Brick and concrete blocks shall be soaked in water before laying. All joints in brick structures shall be thoroughly flushed full of mortar and no joint on the inside face shall be greater than 3 millimeters. After the bricks are laid, the joints shall be pointed on the outside. As brick walls are laid up, the outside of the structure shall be plastered with 15 millimeter thick mortar coat. As circular concrete block walls are laid-up the horizontal joints and keyways shall be flushed full with mortar. As rectangular blocks are laid up all horizontal and vertical joints shall be flushed full with mortar. Plastering of the outside of block structures will not be required. The joints in precast units shall be wetted and completely mortared immediately prior to settling a section. No structure shall be backfilled until all mortar has completely set. When the floors of structures are made of concrete sectional plates the opening in the floor shall be filled with brick chips and mortar, cement concrete, or left open, as directed.

**201.63 Placing Castings.**

Frame castings for basins, manholes and inlets shall be set in full mortar beds true to the lines and grades as directed.

Where directed the castings shall be temporarily set at such grades as to provide drainage during the construction.

The castings of structures located within the pavement area shall not be completely set to the established grade until the bottom course of pavement has been laid.

The final setting of all other castings shall be performed at the proper stage of construction as directed.

Cement concrete collars shall be placed around the castings after the final setting as shown on the plans and as directed.

Hoods shall be installed in catch basins only when required by Special Provisions.

**201.64 Weep Holes.**

Unless otherwise directed or specified in the Special Provisions, 2 weep holes shall be built into the walls of all new basins, precast units and in Types C, CF, D and DF drop inlets as shown on the plans. Each weep hole shall consist of a section of 100 millimeter pipe or equivalent opening to carry water through the wall of the structure.

The ends of the pipe, if used, shall be saw cut and left flush with the walls of the structure.

The outside end of the pipe or opening shall be covered with a 6.3 millimeter mesh galvanized wire screen 730 micrometer satisfactorily fastened against the wall. The drain to the weep hole shall be excavated and backfilled with 0.05 cubic meters of crushed stone conforming to Material Section M2. The stone shall be placed against and over the end of the pipe or opening to prevent the entrance of the finer filling material. Only one type of weep hole shall be used throughout the project.

**201.65 Backfilling.**

Backfilling requirements shall conform to the Provisions of Subsections 120.60B, 150.60 and 150.64.

**COMPENSATION**

**201.80 Method of Measurement.**

Measurement for catch basins, leaching basins, manholes and drop inlets (Types C and D), will be based on a standard unit having a depth of 2 meters; for drop inlets (Types A and B) having a depth of 1.5 meters, as measured vertically at the center of the structure from the top of the grating or cover to the top of the floor in the case of basins and inlets and the invert in the case of manholes. When the measured depth exceeds the standard unit, the number of units paid for will be in the proportion of the measured depth to the standard depth down to 3 meters. Basins, manholes, or drop inlets having a depth less than this standard unit will be counted as one unit. Each gutter inlet shall be counted as one unit. Measurement for manholes more than 3 meters down to a depth of 4 meters will be based on a standard unit depth of 3 meters as measured vertically at the center of the structure from the top of the cover to the

invert. Measurement for manholes more than 4 meters down to a depth of 5 meters will be based on a standard unit depth of 4 meters as measured vertically at the center of the structure from the top of the cover to the invert.

When items for Manholes (3 meters to 4 meters Depth) or Manholes (4 meters to 5 meters Depth) do not appear in the Proposal the standard unit of depth for all structures shall be 2 meters.

Special manholes will be measured as complete units regardless of depth.

Transportation, delivery and installation of all castings will be included in the contract unit bid price for the kind of structure involved.

### 201.81 Basis of Payment.

The accepted quantities of manholes, inlets and basins will be paid for at the contract unit price each, complete in place, which shall not include the cost of castings.

Payment for the concrete collars shall be included in the contract unit price of the structure involved.

Extra depth excavation below the proposed bottom of structure to obtain a stable foundation will be paid for as Class B Trench Excavation.

When directed, the castings of drainage structures on roadways opened to traffic will be set to a temporary grade, and the unit will be considered complete in place and paid for at the contract unit price for the type of structure involved. At such time as the casting or structure and casting is adjusted to final grade the work shall be done and payment made under the provisions of Section 220. Crushed stone for weep holes will be included in the price of the structure.

If the material for backfill is obtained from borrow it will be paid for at the contract unit price per cubic meter or metric ton for the kind of borrow required.

Furnishing new castings will be paid for at the contract unit price each under the items for Frame and Grate or Frame and Cover or \_\_\_ millimeter Hood.

### 201.82 Payment of Items.

201.	Catch Basin	Each
202.	Manhole	Each
202.2	Manhole (3 meters to 4 meters Depth)	Each
202.3	Manhole (4 meters to 5 meters Depth)	Each
203.	Special Manhole	Each
204.	Gutter Inlet	Each
205.	Leaching Basin	Each
206.	Drop Inlet, Type A	Each
206.1	Drop Inlet, Type AF	Each
207.	Drop Inlet, Type B	Each
207.1	Drop Inlet, Type BF	Each
208.	Drop Inlet, Type C	Each
208.1	Drop Inlet, Type CF	Each
209.	Drop Inlet, Type D	Each
209.1	Drop Inlet, Type DF	Each
220.	Drainage Structure Adjusted	Each
221.	Frame and Cover	Each
222.	Frame and Grate	Each
222.1	Frame and Grate, MHD Cascade Type	Each
224.*	___ millimeter Hood	Each
142.	Class B Trench Excavation	Cubic Meter
144.	Class B Rock Excavation	Cubic Meter
151.	Gravel Borrow	Cubic Meter
156.	Crushed Stone for Drainage Revetment and Water Work Foundation	Metric Ton

\*Pipe or appurtenance size will be included as part of the item number in order to differentiate between the sizes.