# SECTION 611 CATCH BASINS, MANHOLES, AND INLETS

## 611.1 Description

(1) This section describes constructing or reconstructing catch basins, manholes, inlets and similar structures, made of concrete, brick masonry, or concrete brick or block masonry, with necessary reinforcement, metal frames, grates and lids, including required excavating and backfilling.

## 611.2 Materials

### 611.2.1 Concrete

(1) Furnish materials conforming to the following:

Concrete ..... section 501
Brick masonry and concrete brick or block masonry ..... section 519
Mortar ..... 519.2.3
Reinforcement ..... section 505
Structural steel ..... 506.2.2
Miscellaneous metals ..... 506.2.3

(2) Furnish grade A, A-FA, A-S, A-T, A-IS, or A-IP concrete conforming to 501.2 as modified in section 716. Provide QMP for class III ancillary concrete as specified in section 716.

***Revise 611.2.1(3) to specify the ASTM C 913 standard for square and rectangular structures.***

(3) Use precast catch basin, manhole and inlet sections, risers, tops, and bases conforming to AASHTO M199 for circular structures and ASTM C913 for square and rectangular structures. Use a concrete mixture that contains not less than 564 pounds of cementitious material per cubic yard of concrete. If these units are wet cast then make them with air-entrained concrete containing 7.0 percent, +/- 1.5 percent, entrained air.

(4) Use castings conforming to AASHTO M105, class 30.

### 611.2.2 Support Assemblies

(1) Use support assemblies, from the department's approved products list for fiber optic cable. The support assembly consists of multiple brackets, racks, and rails used to suspend the required surplus cabling and any splice enclosures for a single manhole.

## 611.3 Construction

### 611.3.1 General

(1) Excavate and backfill as specified for excavation for structures in section 206, except do not backfill concrete brick or block masonry, brick masonry, or precast concrete set on mortar beds until at least 3 days after completing the unit. Use granular backfill material for backfilling unless the engineer directs otherwise.

(2) Construct concrete as specified in section 501, and as specified for culverts and retaining walls in section 504.

(3) Construct brick masonry and concrete brick or block masonry as specified in section 519.

(4) Construct structural steel and miscellaneous metals as specified for steel bridges in section 506.

(5) Cure the concrete by one of the methods specified in 502.3.8 for curing concrete in substructure units.

(6) The inlet and discharge elevations for catch basins, manholes, and inlets as indicated on the plans are subject to all revisions necessary to fit field conditions. The engineer may increase or decrease the depth of catch basins, manholes, or inlets in order to adjust their inlet or discharge elevations.

(7) Place precast reinforced bases on a 6-inch or thicker bed of uniformly compacted granular material conforming to section 209.

(8) Secure grade riser rings and adjustment rings with mortar, engineer-approved mastic, or using the manufacturer's recommended method.

### 611.3.2 Connections

(1) Make inlet and outlet sewer pipe, sewers, and conduit for connections with structures the same size, type, and class as the sewer pipe, sewers, and conduit to which connections are made and that they conform to the same pertinent requirements.

(2) For pipe placed in masonry for inlet or outlet connections, make it flush on the inside of the structure wall and extend the pipe through the walls and beyond the outside surfaces of the walls a sufficient distance to allow for connections with conduits or sewers. Carefully construct the masonry around them to prevent leakage around their outer surfaces.

(3) For fiber optic installations, permanently attach support assemblies to the manhole wall and mortar seal around all entering conduits.

### 611.3.3 Frames, Grates, and Lids

(1) Set all frames on full mortar beds except as specified for placing concrete in 415.3.6.1, or secure otherwise as the plans show. Fit or secure the grates and lids to the frames to eliminate rocking or chattering.

(2) Set the frames, grates, and lids accurately so the complete installation is at the correct elevation required to fit the adjoining surfaces. If installed in concrete surfaces, set the frames or castings, and grout as necessary, as specified in 415.3.6.1. Make sure the grates or lids are not in place while striking off and finishing the adjoining concrete.

(3) Set frames located in pavement areas so that they comply with the surface requirements specified in 450.3.2.9, Place a 6-foot straightedge over the centerline of each frame parallel to the direction of traffic at the completion of the paving. Make a measurement at each side of the frame, average the 2 measurements. If this average is greater than 5/8 inch, reset the frame to the correct plane and elevation. If this average is 5/8 inch or less but greater than 3/8 inch, the department will allow the frame to remain in place.

(4) If the frame is higher than the adjacent pavement, then make the 2 measurements at each end of the straightedge and average them.

### 611.3.4 Steps

(1) Install steps in all manholes as the plans show.

### 611.3.5 Reconstructing Catch Basins, Manholes, and Inlets

(1) If the plans show and the contract provides, reconstruct existing catch basins, manholes and inlets to the required lines and elevations the plans show, including the salvaging and resetting of existing covers, unless the contract provides for new covers or other salvaged covers.

(2) Use construction methods conforming to the requirements set forth above for the classes of work involved.

### 611.3.6 Covers for Catch Basins, Manholes, and Inlets

#### 611.3.6.1 General

(1) Place the frames on full mortar beds, except as specified in 415.3.6.1, and adjust them to bring the complete installation to the required elevation.

(2) Under the Manhole Covers Type M-Communications and Manhole Covers Type Q-Communications bid items, use covers stamped with "WISDOT COMMUNICATIONS" as the plans show.

#### 611.3.6.2 New Covers

(1) If the plans show, the contract provides, or the engineer directs, furnish and install new covers, including frames, grates, or lids, as the plans show, on both new and existing structures.

#### 611.3.6.3 Salvaged Covers

(1) If the plans show and the contract provides, remove, handle, store, and reinstall existing covers in a way that prevents damaging the covers. If the contractor damages covers through its own operations then the contractor shall replace them at no expense to the department.

(2) Use construction methods conforming to the requirements above for these installations.

### 611.3.7 Adjusting Catch Basin, Manhole, and Inlet Covers

(1) Unless the contract provides otherwise, adjust existing covers, including frames and grates or lids, to the required elevation. Remove the existing fixture, adjust the top of the existing structure, and reinstall the fixture. Support the fixture on a collar of concrete, brick masonry, concrete brick or block masonry, a precast concrete grade riser ring, or a grade adjustment ring from the department's approved products list, constructed to hold the covers firmly in place.

(2) Instead of adjusting the covers as specified above, the contractor may adjust the lids of covers on resurfacing projects, if the engineer allows, by using engineer-approved adjustment castings designed for the purpose.

(3) A vertical change exceeding one foot in the elevation of a cover, or requiring removal of masonry beyond the shimming or grade adjustment device, is a reconstruction and the contractor must comply with section 611 for reconstruction of catch basins, manholes, and inlets.

### 611.3.8 Clean Out

(1) The contractor shall clean out all soil, debris, or other accumulated matter from all catch basins, manholes, inlets, or similar structures constructed or reconstructed under the contract before the engineer will accept the work. Remove all materials in all of these structures deposited or lodged due to the contractor's operations.

## 611.4 Measurement

(1) The department will measure all the bid items under this section as each individual unit acceptably completed.

## 611.5 Payment

### 611.5.1 General

***Revise 611.5.1(1) to rename, renumber, & add shape information to catch basin, manhole, & inlet bid items; and add several new items.***

(1) The department will pay for measured quantities at the contract unit price under the following bid items:

| ITEM NUMBER | DESCRIPTION | UNIT |
|---|---|---|
| 611.0410 | Reconstructing Catch Basins | EACH |
| 611.0420 | Reconstructing Manholes | EACH |
| 611.0430 | Reconstructing Inlets | EACH |
| 611.0500 - 0599 | Manhole Covers (type) | EACH |
| 611.0600 - 0699 | Inlet Covers (type) | EACH |
| 611.1000 - 1999 | Catch Basins (dimensions) | EACH |
| 611.2000 - 2099 | Manholes (dimensions) | EACH |
| 611.2100 - 2199 | Manholes Communications (dimensions) | EACH |
| 611.2500 - 2699 | Manholes Variable (type) (dimensions) | EACH |
| 611.3000 - 3499 | Inlets (dimensions) | EACH |
| 611.3900 - 3999 | Inlets Median (number of grates) | EACH |
| 611.8105 | Adjusting Catch Basin Covers | EACH |
| 611.8110 | Adjusting Manhole Covers | EACH |
| 611.8115 | Adjusting Inlet Covers | EACH |
| 611.9705 | Salvaged Manhole Covers | EACH |
| 611.9710 | Salvaged Inlet Covers | EACH |

(2) Granular backfill material required for backfilling is incidental to the work.

### 611.5.2 Catch Basins, Manholes, and Inlets

(1) Payment for the Catch Basins, Manholes, and Inlets bid items is full compensation for providing all materials, including all masonry, conduit and sewer connections, steps, and other fittings; for all excavating, backfilling, disposing of surplus material, and for cleaning out and restoring the work site; except that the department will pay for covers, including frames, grates and lids separately.

(2) The department will apply contract unit prices without adjustment to the quantities of all catch basins, manholes, or inlets constructed to depths not greater than one foot above or below the elevations, the plans show. Catch basins, manholes, or inlets that the engineer orders constructed to depths greater than one foot above or below the elevations the plans show as specified for extra work in 109.4.

### 611.5.3 Reconstructing Catch Basins, Manholes, and Inlets

(1) Payment for Reconstructing Catch Basins, Reconstructing Manholes, and Reconstructing Inlets is full compensation for providing all required materials, including masonry and fittings; for salvaging and reinstalling existing covers, including frames, grates or lids; for all necessary excavation, backfilling, disposing of surplus material, and for cleaning out and restoring the work site.

### 611.5.4 Manhole Covers and Inlet Covers

(1) Payment for the Manhole Covers and Inlet Covers bid items is full compensation for removing and salvaging the existing covers; and for providing new covers, including frames, grates or lids, and all other required materials and for installing and adjusting each cover. Old covers removed remain the property of the municipality.

### 611.5.5 Adjusting Catch Basin, Manhole, and Inlet Covers

(1) Payment for Adjusting Catch Basin Covers, Adjusting Manhole Covers, and Adjusting Inlet Covers is full compensation for providing all required materials, exclusive of frames, grates or lids available and designated for adjusting; and for removing, reinstalling and adjusting the covers. The contractor shall replace covers rendered unusable by the contractor's operations, at no expense to the department.

### 611.5.6 Salvaged Manhole Covers and Inlet Covers

(1) Payment for Salvaged Manhole Covers and Salvaged Inlet Covers is full compensation for removing the existing cover including frames, grates, or lids; for cleaning, transporting, and storing; for installing and adjusting; and for providing all other required materials.