

604.01

**ITEM 604 MANHOLES, CATCH BASINS, INLETS, INSPECTION WELLS,
JUNCTION CHAMBERS, PRECAST REINFORCED CONCRETE
OUTLETS, OR MONUMENTS**

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604.01 Description. This work consists of constructing or reconstructing manholes, catch basins, inlets, inspection wells, junction chambers, precast reinforced concrete outlets, or monuments of the type and sizes specified; or adjusting existing castings to grade, as specified.

Use removed or excavated materials in the Work when the material conforms to the specifications; if not, then recycle or dispose of the material according to 105.16 and 105.19.

604.02 Materials. Furnish materials conforming to:

Structure concrete, Class C.	499, 511
Brick and masonry units.....	704
Precast reinforced concrete manhole, catch basin, and inlet sections.....	706.13
Precast reinforced concrete outlet	706.15
Preformed expansion joint fillers	705.03
Epoxy coated reinforcing steel	509.02, 709.00
Cast frames, grates, and covers 711.12, 711.13, or 711.14	
Welded frames and grates	513.17, 711.01
Steps.....	711.13, 711.30, or 711.31
Structural backfill, Types 1, 2 and 3.....	703.11
Resilient and flexible gasket joints.....	706.11
Curing materials	705.05, 705.07
Mortar	602
Nonshrink Mortar.....	705.22

When precast structures such as manholes, inlets, headwalls, endwalls, catch basins or any similar structures are proposed to be incorporated into the work, submit the following:

- (a) Manufacturer’s name.
- (b) Detail design plans
- (c) Material specifications

The City will base approval on complete inspection of manufacturer’s facility and production, materials to be used, and final product. All products delivered to the job site will also be subjected to functional tests and must be marked with a “COC” stamp.

Deliver castings to the project unpainted.

604.03 Construction Methods, General. Construct the specified structures according to the plans. Place inlets, catch basins, inspection wells, junction chambers, monuments, or precast outlets at the locations and elevations shown in the plans according to the Standard Drawings or as directed by the Engineer. Place manhole castings at the elevation and station with offset to the center of the casting or as directed by the Engineer. Place the manhole base at the elevation and station with offset to agree with the pipe station, offset and pipe invert elevation according to the Standard Drawings or as directed by the Engineer. Use flat slab top manholes as shown on the Standard Drawings. Do not remove the flat slab top manhole lifting devices.

If the Engineer changes the structure elevation by more than 1 foot (0.3 m), the City will pay according to 109.05.

Thoroughly mortar with a flush mortar joint the underdrain outlet pipe to the precast reinforced concrete outlet. Furnish and place lateral sewer connections including drops and leads except pipe included in Item 603.

Locate or cut conduits as shown on the standard construction drawings so they do not protrude inside the structure walls.

Take adequate precautions to prevent structure concrete or mortar cement from freezing. Preheat the brick, concrete block, or precast concrete structure throughout the entire mass to a temperature between 50 to 80 °F (10 to 27 °C) before placing mortar if the ambient temperature is 40 °F (4 °C) or less.

Set iron frames, tops, and covers of the type shown on the plans in a mortar bed with a flush mortar joint.

Prevent earth or debris resulting from construction operations from entering the manholes, catch basins, junction chamber, inlets, and precast reinforced concrete outlets. Remove any debris.

A. Reconstruction to Grade.

1. Carefully remove and clean the existing castings.
2. Remove the existing walls of manholes down to the spring line or below as necessary.
3. Remove existing walls of catch basins and inlets below the window openings, grates, or any points of wall failure.

Using the salvaged casting, reconstruct the structure to the new grade, conforming as nearly as practicable to the existing dimension and type of construction.

B. Adjustment to Grade.

1. Carefully remove and clean the existing frame, adjust the height of supporting walls, and reset the existing frame in a bed of concrete mortar or structure concrete to the new grade.
2. Carefully remove the existing cover or grate and install a casting or an adjusting device approved by the Engineer to the new grade and install per the manufacturer's recommendations.

604.04

C. Allowable Tolerance.

The maximum allowable tolerance is minus ¼-inch for all structure lids and grates below the finished pavement surface. There is no allowable tolerance for structure lids and grates above the finished pavement surface.

604.04 Excavation and Backfill. Excavate to dimensions that provide ample room for construction.

The Engineer will require the removal of unsuitable material below the structure bedding. Replace unsuitable material with Item 603 Structural Backfill. When the Engineer requires the removal and replacement of unsuitable material below the bedding for precast structures and below the structure for cast-in-place structures, the City will provide compensation according to the Contract or by Supplemental Agreement.

Ensure that the backfilling follows the completion of the work as closely as the type of construction will permit. Do not disturb the structure while backfilling. Backfill structures located within the pavement area with structural backfill to the subgrade according to Item 603, Type A conduit or Item 912. Backfill structures outside of the pavement area according to Item 911.

604.05 Brick and Block Masonry. Thoroughly wet brick and concrete block masonry units before laying in the mortar, and lay the brick and masonry units with a flush mortar joint.

Take adequate precautions to prevent concrete and mortar from freezing. Do not set brick and masonry units having a temperature of 40 °F (4 °C) or less with mortar until heated. When required, heat to ensure that a temperature of 50 to 80 °F (10 to 27 °C) is obtained throughout the entire mass of the material.

Cure the exposed surfaces of all brick and block masonry by covering with wet burlap for 48 hours or by applying curing membrane according to Item 511.

604.06 Precast Concrete Modular Construction. Furnish precast bases on a compacted structural backfill bed having a minimum thickness of 3 inches (75 mm). Ensure that the structural backfill bed is level and uniformly support the entire area of the base.

After placing the pipe, grout all openings between the pipe and structure less than 4 inches (100 mm) with mortar and grout all openings between the pipe and structure greater than 4 inches (100 mm) with nonshrink mortar. Seal all joints between modules with materials specified in Item 603 for Type A, B, C, D, or F conduit.

Cure median inlets with the same materials and methods specified in 622.07.

604.07 Concrete (Cast-In-Place). Place and furnish structure concrete as shown on the plans.

604.08 Method of Measurement. The City will measure Manholes, Inlets, Catch Basins, Monument Assemblies, Reference Monuments, Inspection Wells, Junction Chambers, and Precast Reinforced Concrete Outlets, whether new, reconstructed, or adjusted to grade, by the number of each type of structure complete and accepted.

604.09 Basis of Payment. The City will pay for accepted quantities at the contract prices as follows:

Item	Unit	Description
604	Each	Manholes
604	Each	Inlets
604	Each	Catch Basins
604	Each	Monument Assemblies
604	Each	Reference Monuments
604	Each	Right-of-Way Monuments
604	Each	Inspection Wells
604	Each	Junction Chambers
604	Each	Manhole, Catch Basin or Inlet Reconstructed to Grade
604	Each	Manhole, Catch Basin, Inlet, or Monument Box Adjusted to Grade
604	Each	Precast Reinforced Concrete Outlet