

1 Amend **Section 604 - Manholes, Inlets and Catch Basins** to read as follows:

2
3 **"SECTION 604 - MANHOLES, INLETS AND CATCH BASINS**

4
5 **604.01 Description.** This work includes constructing and/or adjusting
6 manholes, inlets, catch basins, and/or standard valve boxes according to the
7 contract.

8
9 **604.02 Materials.** Concrete for structures shall be of the class specified.
10 Concrete shall conform to Section 601 - Structural Concrete. If concrete in
11 structures is to come in direct contact with sewage or sewage gases, the
12 Contractor shall modify the proportioning of concrete according to Section 625 -
13 Sewer System.

14
15 Brick for water valve manhole shall be concrete brick. Brick for water
16 valve manhole shall conform to Subsection 704.02 - Concrete Brick.

17
18 Other materials shall conform to the following:

19		
20	Asphalt Filler	702.07
21		
22	Structural Backfill Material	703.20
23		
24	Trench Backfill Material	703.21
25		
26	Asphalt (Filler) Type C Asphalt	705.06(C)
27		
28	Clay or Shale Brick	704.01
29		
30	Mortar for Manholes	705.08
31		
32	Reinforcing Steel	709.01
33		
34	Precast Concrete Units	712.06
35		
36	Frames, Grates, Covers and Ladder Rungs	712.07
37		
38	Pipe Collar for Valve Box	712.22
39		
40	Cullet Materials for Utility Structures	717.03
41		
42	Cullet Materials for Drainage Systems	717.04
43		

44 When the location of manufacturing plants allows, the Engineer may
45 inspect the plants periodically for compliance with specified manufacturing
46 methods. The Engineer may get material samples to verify compliance with

the contract. This may be the basis for acceptance of manufacturing lots regarding quality.

The condition of materials will be subject to inspection for acceptance before or during incorporation of materials into the work.

604.03 Construction Requirements.

(A) General. Concrete construction shall conform to Section 503 - Concrete Structures.

Reinforcing steel work shall conform to Section 602 - Reinforcing Steel.

A certified welder shall do the shop and field welding according to Section 501 - Steel Structures.

Dip or soak the brick in water before laying the bricks. Joints shall be full mortar joints. Joints shall not be more than 0.5-inch wide. Joints in the brick work on the inside portion of the brick manhole shall be neatly struck.

The Contractor may furnish and install storm drain manholes, inlets, and catch basins as precast units or combined precast and cast-in-place units. Units completed in place shall conform to cast-in-place construction specified in the contract. If the Contractor uses precast units or combination of precast and cast-in-place units, the Contractor shall submit shop drawings to the Engineer for acceptance before construction.

(B) Manholes, Inlets, and Catch Basins. Construct the concrete base according to the contract. Allow the concrete to set for at least 24 hours before constructing additional material on this base. Do not remove the forms for at least 24 hours after placing the concrete. Finish the concrete while the concrete is still fresh.

(1) Sewer Manholes. The Contractor may make the sanitary sewer manholes entirely of bricks from the concrete base upwards if:

(a) the invert to the top of the frame is 10 feet deep or less,

(b) the invert is not below the ground water table, and

(c) the Contractor locates the manhole in a relatively dry area.

Make the manhole walls below the 10-foot depth of concrete.

Construct precast concrete sewer manhole sections according to the contract and ASTM C 478.

Place the reinforcing steel for precast sections according to ASTM C 478.

Construct cast-in-place sewer manhole walls according to the contract.

Place the reinforcing steel for cast-in-place manhole walls according to the contract.

An expert cement finisher shall shape and finish the sanitary sewer manhole inverts using accepted mortar.

Plaster the outer portion of the sewer manhole bricks with a one inch thickness of accepted mortar. Plaster the interior brick work to present a smooth surface.

(2) Water Valve Manholes. If portion of the brick manhole is below the four-foot elevation, USGS datum, or ground water table, waterproof the depth of the manhole below such elevation. Apply an interior and exterior coat of accepted mortar. The mortar coat shall have a thickness of not less than five-eighths inch on each face. Extend the waterproof from the four-foot elevation or ground water table:

(a) down to the bottom of the floor slab on the outside portion of the manhole and

(b) to the top of the floor slab on the inside portion of the manhole.

Leave a space of at least two inches between the brick and the upper half of the barrel of the pipe. Fill that space with a specified asphalt filler. Install reinforced concrete lintels, made from Class B Concrete, in the Type A Manholes shown in the contract.

Upon completion, clean the manhole thoroughly of debris and paint the frame and cover with one coat of accepted asphaltum paint.

142 **(3) Storm Drain Manholes, Inlets, and Catch Basins.** The
143 contract requires rungs at 12 inches on centers when the height of
144 the structure is greater than 4.5 feet. Measure the height of the
145 structure from the invert to the top of the structure.

146
147 Install one rung 16 inches from the bottom or as specified by
148 the Engineer if the height of the structure is 4.5 feet or less.
149 Install additional rungs when specified by the Engineer.

150
151 Construct precast concrete storm drain manhole sections
152 according to the contract and ASTM C 478.

153
154 Place reinforcing steel for precast sections according to
155 ASTM C 478.

156
157 **(C) Setting Frames.** Place the frames in the concrete according to
158 the contract. Carefully tamp the concrete around the frame.

159
160 Set the frame in full mortar beds. Bring the mortar up around the
161 bottom of the frame.

162
163 **(D) Excavation and Backfill.** Excavate and backfill according to
164 Section 206 - Excavation and Backfill for Conduits and Structures.

165
166 **(E) Reconstructing Manholes.** Reconstruct the existing manholes
167 to the required elevations according to the contract and as ordered by the
168 Engineer. Adjust the manhole frame to the required grade using the same
169 type of material used in its original construction. Carefully remove,
170 clean, and paint the existing frame and cover with accepted asphaltum
171 paint before reinstallation.

172
173 **(F) Constructing and/or Adjusting Valve Boxes.** Construct or adjust
174 the valve boxes to the required elevations according to the contract and
175 as ordered by the Engineer.

176
177 Set and center the 8-inch pipe collar plumb over the valve stem.
178 Ends of the pipe collar shall have smooth, machined edges. Backfill
179 around the gate valve and pipe collar with trench backfill by hand.
180 Backfill 8 inches below the surface of the ground.

181
182 Upon completion of installation, clean and paint the valve box
183 frames and covers with one coat of accepted asphaltum paint.

184
185 Adjust the existing valve boxes to the required grade using the
186 same type of material used in its original construction. Carefully remove,
187 clean, and paint the existing cast iron frame and cover with accepted

asphaltum paint Cut the existing pipe collar or install a new pipe collar.
Reinstall the frame and cover and pour the four inch thick concrete.

604.04 Method of Measurement.

(1) Manholes, inlets, catch basins, and other types of drainage structure will be paid per each in accordance with the contract documents.

(2) The Engineer will measure steel frame grates, steel grates, and cast iron frame and cover, and adjusting frame and cover per each in accordance with the contract documents, for work on grates, frames, and covers that do not affect their respective drainage structure body or neck.

604.05 Basis of Payment. The Engineer will pay for the accepted pay items listed below at the contract price per pay unit, as shown in the proposal schedule. Payment will be full compensation for the work prescribed in this section and the contract documents.

The Engineer will pay for each of the following pay items when included in the proposal schedule:

Pay Item	Pay Unit
Type ____ Manholes, ____ feet to ____ feet	Each
The Engineer will pay for:	

(1) 20 percent of the contract bid price upon completion of excavating to the depth established for the manhole.

(2) 60 percent of the contract bid price upon completion of constructing the manhole.

(3) 20 percent of the contract bid price upon completion of backfilling around the manhole.

Type ____ Inlet, ____ feet to ____ feet	Each
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The Engineer will pay for:

(1) 20 percent of the contract bid price upon completion of excavating to the depth established for the inlet.

(2) 60 percent of the contract bid price upon completion of constructing the inlet.

(3) 20 percent of the contract bid price upon completion of backfilling around the inlet.

Type ____ Catch Basins, ____ feet to ____ feet Each

The Engineer will pay for:

(1) 20 percent of the contract bid price upon completion of excavating to the depth established for the catch basin.

(2) 60 percent of the contract bid price upon completion of constructing the catch basin.

(3) 20 percent of the contract bid price upon completion of backfilling around the catch basin.

Type ____ Structure, ____ feet to ____ feet Each

The Engineer will pay for:

(1) 20 percent of the contract bid price upon completion of excavating to the depth established for the structure.

(2) 60 percent of the contract bid price upon completion of constructing the structure.

(3) 20 percent of the contract bid price upon completion of backfilling around the structure.

Reconstructed Type ____ Manholes, ____ feet to ____ feet Each

The Engineer will pay for:

(1) 80 percent of the contract bid price upon completion of reconstructing the manhole.

(2) 20 percent of the contract bid price upon completion of removing, cleaning, and painting the existing frame and cover.

Reconstructed Type ____ Inlet, ____ feet to ____ feet Each

The Engineer will pay for:

(1) 80 percent of the contract bid price upon completion of reconstructing the inlet.

(2) 20 percent of the contract bid price upon completion of removing, cleaning, and painting the existing frame and cover.

Reconstructed Type ____ Catch Basins, ____ feet to ____ feet Each

The Engineer will pay for:

(1) 80 percent of the contract bid price upon completion of reconstructing the catch basin.

(2) 20 percent of the contract bid price upon completion of removing, cleaning, and painting the existing frame and cover.

Adjusting ____ Frame and Cover Each

The Engineer will pay for:

(1) 80 percent of the contract bid price upon completion of adjusting the frame and grate.

(2) 20 percent of the contract bid price upon completion of installing, cleaning, and painting the frame and cover.

Adjusting ____ Steel Frames and Grates Each

The Engineer will pay for:

(1) 80 percent of the contract bid price upon completion of adjusting the steel frame and grate.

(2) 20 percent of the contract bid price upon completion of installing, cleaning, and painting the frame and cover.

Type ____ Steel Grates Each

The Engineer will pay for:

(1) 100 percent of the contract bid price upon completion of the furnishing and installing steel grate.

Type ____ Cast Iron Frame and Cover Each

The Engineer will pay for:

(1) 100 percent of the contract bid price upon completion of furnishing and installing cast iron frame and grate."

END OF SECTION 604

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