

SECTION 02604

VALVE BOXES, METER BOXES, AND METER VAULTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Valve boxes for water service.
- B. Meter boxes for water service.
- C. Meter vaults for water service.
- D. Valve boxes for water main and hydrant valves.

1.02 MEASUREMENT AND PAYMENT

A. Unit Price Contracts:

- 1. No separate payment will be made for valve boxes or meter boxes for water service under this section. Include payment in unit price for Section 02665 – Water Tap and Service Line Installation.
- 2. No separate payment will be made for valve boxes for water mains/hydrants valves under this section. Include payment in unit price for Section 02645 – Fire Hydrant Assembly or 02664 – Water Mains as applicable.
- 3. Payment for each size of meter vaults is on a unit price basis per vault. Payment will be made for each vault installed, regardless of depth.
- 4. Refer to Section 01025 – Measurement and Payment.

- B. Stipulated Price (Lump Sum) Contracts: If Contract is a Stipulated Price Contract, payment for Work in this Section is included in total Stipulated Price.

1.03 REFERENCES

- A. Section 01025 – Measurement and Payment
- B. Section 01300 – Submittals
- C. Section 02620 – PVC Pipe
- D. Section 02645 – Fire Hydrant Assembly
- E. Section 02664 – Water Mains
- F. Section 02665 – Water Tap and Service Line Installation

- G. ASTM D 2240 – Standard Test Method for Rubber Property-Durometer Hardness

1.04 SUBMITTALS

- A. Conform to requirements of Section 01300 – Submittals.
- B. Submit manufacturer’s product data for the following items for approval:
 - 1. Each type of valve box and lid.
 - 2. Each type of meter box and lid.
 - 3. Each type of meter vault and cover.
- C. Submit design calculations and shop drawings for precast meter vault with piping layout, sealed by an Engineer registered in the State of Texas, if proposed meter vault deviates from City details.
- D. Submit design calculations and shop drawings for cast-in-place meter vaults, sealed by an Engineer registered in the State of Texas.

PART 2 PRODUCTS

2.01 VALVE BOXES

- A. Valve Boxes for Water Service
 - 1. Provide valve boxes by DFW Plastics, Inc. for 3/4-inch to 2-inch water services for customer side isolation valves. Model No. DFW109.9.2.
 - 2. Valve box body:
 - a. Color – Black
 - b. Model No.: DFW109-9-BODY
 - 3. Valve box lid:
 - a. Color - Blue, Markings – Letters “I.C.V.”
 - b. Model No.: DFW109-3M-LID
 - 4. Combined Box and Lid:
 - a. Model No.: DFW109-9-3M
- B. Valve Boxes for Water Main and Hydrant Valves
 - 1. Provide Type A, slip type, valve boxes by SIP Industries, Star Pipe Products, or approved equal.

2. Materials to be cast iron or ductile iron unless otherwise noted in the Plans.
3. Valve box body to be painted blue unless otherwise indicated on the Plans.
4. Cast letter water “W” into lid, for valves servicing water mains and flushing hydrants. Cast letter fire “F” for valves servicing fire hydrants.
5. Riser pipes to be 6-inch PVC, DR 18, in accordance with Section 02620 – PVC Pipe.
6. Concrete collars:
 - a. Valve boxes in new concrete pavement; use strength and mix design of new pavement.
 - b. For other locations, use class “A” concrete, with a minimum compressive strength of 3,500 psi, in accordance with Section 03305 – Concrete for Utility Construction.

2.02 METER BOXES

- A. Provide meter boxes by DFW Plastics, Inc. for 5/8 x 3/4-inch to 2-inch water meters.
- B. Meter box types and sizes shall be based on the location and application as indicated in Table 2.02 below:

| Meter Size (IN) | Application | Location | Model No. (Combined) |
|-------------------------------|---|----------------------------|---------------------------|
| 5/8 x 3/4 3/4 1 | Residential Irrigation Commercial | Non-Vehicular Traffic Area | DFW1300-12-(3)MT |
| | | Vehicular Traffic Area | DFW37C-12-AF3MT SMALL GAL |
| 1-1/2 | Residential Irrigation Commercial | Non-Vehicular Traffic Area | DFW1600-12-(3)MT |
| | | Vehicular Traffic Area | DFW65C-12-AF3MT SMALL GAL |
| 2 | Residential Irrigation Commercial | All Locations | DFW65C-14-AF3MT SMALL GAL |
| Dual 5/8 x 3/4 3/4 1 | Residential Irrigation Commercial | Non-Vehicular Traffic Area | DFW1300X-12-(3)MT |
| | | Vehicular Traffic Area | DFW38C-14-AF3MT SMALL GAL |

Table 2.02 – Meter Box Type and Size

1. Table 2.02 provides model numbers for complete (body and lid) meter boxes. See the 2.02C and 2.02D for individual meter box body and lid model numbers.
2. Dual meters in a single meter box are prohibited for domestic services greater than 1-inch.

- C. Meter box body:
1. Non-vehicular Traffic Areas:
 - a. 5/8x3/4 to 1-inch: DFW1300-12-BODY
 - b. 1-1/2-inch: DFW1600-12-BODY
 - c. 2-inch: DFW65C-14-BODY
 - d. Dual Meters: DFW1300X-12-BODY
 2. Vehicular Traffic Areas:
 - a. 5/8x3/4 to 1-inch: DFW37C-12-BODY
 - b. 1-1/2 to 2-inch: DFW65C-14-BODY
 - c. Dual Meters: DFW38C-14-BODY
- D. Meter box lids:
1. Anti-float material, magnetic detector installed for locating, and compatible with City specified Advanced Metering Infrastructure endpoints.
 2. Color – blue.
 3. Markings:
 - a. City of Galveston Logo
 - b. Letters “WATER METER”.
 4. Non-vehicular Traffic Areas:
 - a. 5/8x3/4 to 1-inch: DFW1200E-(3)MT-LID
 - b. 1-1/2-inch: DFW1600E-(3)MT-LID
 - c. 2-inch: DFW65C-AF3MT SMALL GAL-LID
 - d. Dual Meters: DFW1200E-(3)MT-LID
 5. Vehicular Traffic Areas:
 - a. 5/8x3/4 to 1-inch: DFW37C-AF3MT SMALL GAL-LID
 - b. 1-1/2 to 2-inch: DFW65C-AF3MT SMALL GAL-LID
 - c. Dual Meters: DFW38C-AF3MT SMALL GAL-LID

2.03 METER VAULTS

- A. Meter Vaults shall be constructed of precast, or cast-in-place concrete to the specified dimensions on City details unless otherwise noted in the Plans.
- B. Cast-in-place vault walls and floors shall be of monolithic construction.
- C. Joints: Hydrophilic waterstops are required for all vault joints.
- D. Concrete: Class “A” concrete, with a minimum compressive strength of 4,500 psi, in accordance with Section 03305 – Concrete for Utility Construction.
- E. Reinforcing steel: Conform to Section 03305 – Concrete for Utility Construction.
- F. Interior piping shall be supported by concrete pipe supports as indicated on Detail No. 02604-01 Typical Meter Vault for Meters 3-Inch to 8-Inch.
- G. Wall penetrations for incoming and outgoing service piping shall include wall sleeves with integral water stops and link-type modular compression seals by Link-Seal or approved equal.
- H. Covers: Conform to Section 02603 – Frames, Grates, Rings, and Covers.
 - 1. Covers shall include a 30-inch by 48-inch single leaf aluminum hatch with stainless steel hinges, slamlock, and safety net.
 - 2. Covers shall be compatible with City specified Advanced Metering Infrastructure endpoints.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Written approval from the City shall be obtained for the location of meter vaults.
- B. Verify lines and grades are correct.
- C. Verify compacted subgrade will support loads imposed by vaults.

3.02 VALVE BOXES

- A. Valve Boxes for Water Service
 - 1. Install valve boxes for water service a maximum of 18-inches from the meter box, out of vehicular traffic areas unless otherwise indicated on the plans.
 - 2. Valve boxes required to be installed in vehicular traffic areas shall be installed with a concrete collar in accordance with Detail No. 02607-01 Concrete Collar for Valves and Manholes.

3. Set, align, and adjust valve box so that lid is level with finished grade.

B. Valve Boxes for Water Mains and Hydrant Valves

1. Install PVC riser pipe of suitable length for depth of cover indicated on the Drawings adjusted to length necessary to accommodate actual finished grade.
 - a. Install riser pipe in a plumb, vertical position, with the bell on top of the valve.
 - b. Provide 6-inches telescoping freeboard space between riser pipe top butt end and interior contact flange of valve box to accommodate vertical movement. The end of riser pipe resting on valve shall be notched out sufficiently to provide a snug fit around the valve bonnet and to center valve inside of riser pipe.
2. Set, align, and adjust valve box so that lid is level with finished grade.
3. Paint covers of new valve boxes orange when installed until roadway/trench restoration is complete. After completion of all roadway scope, paint valve boxes blue as indicated in Paragraph 2.01.B. of this Section.
4. Install concrete collars around valve boxes in accordance with Detail No. 02607-01 Concrete Collar for Valves and Manholes.

3.03 METER BOXES

- A. Meter boxes shall be installed in accordance with the manufacturer's recommendations and City Detail No. 02665-01 Typical Water Services for Meters 2-Inch and Under.
- B. Meter boxes shall be installed flush with finished grade. For curb streets, locate meter boxes 12-inches to 18-inches from the back of curb. For streets with roadside ditches, locate meter boxes a minimum of 18-inches from the top bank of the roadside ditch.
- C. Meter boxes shall be located out of vehicular traffic areas unless otherwise indicated on the plans.
- D. When unavoidable, meter boxes installed in vehicular traffic areas shall be traffic rated as indicated in Table 2.02.

3.04 METER VAULTS

- A. Construct concrete meter vaults to the dimensions shown on City Detail 02604-01 Typical Meter Vault for Meters 3-Inch to 8-Inch. Interior meter vault depth shall not exceed depth indicated on the detail without written authorization from the City.
- B. Precast Meter Vaults
 1. Install precast meter vaults in accordance with manufacturer's recommendations.

2. Set meter vault level on a minimum 6-inch-thick bedding of compacted cement stabilized sand in accordance with Section 02252 – Cement Stabilized Sand.
3. Seal lifting lugs with non-shrink grout.

C. Meter Vault Floor Slab:

1. Floor slabs shall be constructed of 6-inch-thick reinforced concrete.
2. Sumps pits with drains are prohibited.
3. Install dowels at a maximum of 18-inches on center for keying walls to floor slab.
4. Precast floor slab elements may be used for cast-in-place vault construction.

D. Cast-in-Place Meter Vaults

1. Do not cast in the presence of water.
2. Key walls to floor slab. Hydrophilic waterstops are required for all joints between wall and floor slab. Minimum wall thickness shall be 6-inches.
3. Walls and floors are to be cast monolithically.
4. Set frame for metal cover in concrete.

3.05 FRAME AND COVER FOR METER VAULTS

A. In paved areas, covers shall be constructed of 6-inch-thick reinforced concrete.

1. Set top of cover flush with adjacent concrete.
2. 1/2-inch redwood isolation joints required between vault and adjacent concrete.

B. In unpaved areas, covers shall be galvanized steel.

1. Covers shall be installed on a 1/4-inch x 6-inch continuous 60 durometer neoprene bearing pad.
2. Set frame for metal cover in concrete.
3. Set top of cover 4-inches above finished grade.

3.06 BACKFILL

A. Provide bank run sand in accordance with Section 02229 and backfill and compact in accordance with Section 02227.

B. In unpaved areas, slope backfill around meter boxes and vaults away at a minimum 1:5 slope.

END OF SECTION