SECTION 03 48 20

VALVE BOXES AND METER VAULTS

PART 1: GENERAL

1.01 SECTION INCLUDES

A. Valve boxes for water and cleanout boxes for wastewater service.

B. Meter boxes for water service.

C. Meter vaults for water and wastewater service.

1.02 SUBMITTALS

A. Conform to requirements of Section 01 33 00 - Submittals.

B. Submit manufacturers' product data for following items for approval:

1. Each type of valve box and lid.
2. Each type of meter box and cover.
3. Each type of meter vault frame and cover.

C. Submit design calculations and shop drawings for precast vault elements, sealed by a Professional Engineer licensed to practice in the State in which the Work is performed..

D. Submit shop drawings for cast-in-place meter vaults for approval if proposed construction varies from Project Drawings.

PART 2: PRODUCTS

2.01 VALVE BOXES AND CLEANOUT BOXES

A. Provide approved Type A, cast-iron/ductile-iron, slide-type or screw-type, valve boxes. Design of valve box shall minimize stresses on valve imposed by loads on box lid.

B. Cast letter ‘S' into lid for cleanouts serving wastewater force main lines, 1/2-inch in height and raised 3/32-inch. Cast letter ‘W' into lid for valves serving potable water lines, 1/2-inch in height and raised 3/32-inch.

C. Unless otherwise specified, uncoated cast iron.

D. Riser Pipe.

1. Provide 6-inch PVC, Class 150, DR 18, riser pipes in accordance with Section 33 11 00.11 - Polyvinyl Chloride Pipe or;

2. 6-inch ductile-iron, thickness Class 51 riser pipes in accordance with Section 33 11 00.15 - Ductile Iron Pipe and Fittings.

3. Provide single section of pipe.

E. Concrete for valve box placement:

1. For locations in new concrete pavement, provide concrete in accordance with Cast-In-Place Concrete Section.

2.02 METER BOXES

A. Provide meter boxes for 5/8-inch through 1-inch meters of the following materials:

1. Non-traffic bearing locations: Cast iron, polyethylene, or concrete. Meter boxes of polyethylene construction shall not be installed in roadways.

2. Traffic bearing locations: Cast iron.

B. Provide cast iron, concrete or polyethylene meter boxes for 1 $^{1}/_{2}$-inch and 2-inch meters.

C. Provide meter box with reading lid. Provide lids with spring-type latching devices. Lids shall contain sufficient metal that meter box can be easily located with metal detector. Cast words "WATER METER" into lid with letters of 1/2-inch height and raised 3/32-inch.

D. All meter box lids shall be cast iron rated for H20 loading.

E. Extensions: Meter box extensions 3-inches and 6-inches in height shall be available from manufacturer as standard item.

F. Cast-Iron Boxes: Clean and free from sand blow-holes or other defects conforming to requirements of ASTM A48, Class 30B. Bearing surfaces shall be machined so that covers seat evenly in frames.

1. Boxes and lids shall have dipped, coal-tar-pitch, varnish finish.

2. Provide lock-type meter boxes when required by Project Drawings. Lock mechanisms shall work with ease.

G. Concrete Meter Boxes: Made of Class A concrete, with minimum 4000 psi compressive strength. Construct to dimensions shown on Project Drawings.

1. Castings: Free from fractures, large or deep cracks, blisters or surface roughness or any other defects that may affect serviceability.

2. Concrete meter lids are not permitted.

H. Meter Boxes shall be as per AW Standard Details.

2.03 METER VAULTS

A. Meter vaults may be constructed of precast concrete or cast-in-place concrete unless a specific type of construction is required by Drawings.

B. Concrete for meter vaults: Conform to requirements of Section - Cast-In-Place Concrete.

C. Reinforcing steel for meter vaults: Conform to requirements of Section – Cast In Place Concrete.

D. Meter vaults shall be designed to include anti-floatation provisions.

E. Grates and Covers: Use castings for frames, grates, rings and covers conforming to ASTM A48, Class 35B. Provide locking covers if indicated on Project Drawings.

1. Use clean castings capable of withstanding application of AASHTO M306 - 40,000 pound proof loading without detrimental permanent deformation.

2. Fabricate castings to conform to shapes, dimensions, and with wording or logos shown on Project Drawings. Standard dimension for manhole cover opening is 32-inches in diameter.

3. Use clean castings, free from blowholes and other surface imperfections. Use clean and symmetrical cast holes in covers, free of plugs.

F. Provide safety grate option and keyed locks for all access hatches. Provide master access keys in accordance with Owner's requirements. Two of each key shall be provided and keys shall be tagged for lock location.

PART 3: EXECUTION

3.01 EXAMINATION

A. Obtain approval from AW Project Manager for location of meter vault and meter boxes.

B. Verify lines and grades are correct.

C. Verify compacted subgrade will support loads imposed by vaults.

i. Require 12" compacted soil

or

ii. 6" compacted soil and 6" of <1" clean stone

3.02 VALVE BOXES

A. Install riser pipe with suitable length for depth of cover indicated on Project Drawings or to accommodate actual finish grade.

1. Install with bell on top of valve

2. Install valve box and riser piping plumbed in a vertical position

B. Provide 6-inches telescoping freeboard space between riser pipe top butt end, and interior contact flange of valve box, for vertical movement damping. End of pipe resting on valve shall be notched out sufficiently to provide a snug fit around the valve bonnet and to center valve inside of pipe.

C. Set, align, and adjust valve box so that lid is level with final grade.

3.03 METER BOXES

A. Install cast iron meter boxes in accordance with manufacturer's instructions.

B. Construct concrete meter boxes to dimensions shown on Project Drawings.

C. Adjust top of meter boxes to conform to cover elevations specified in Paragraph 3.05, Frame and Cover for Meter Vaults, below.

D. Do not locate under paved areas unless approved by AW Project Manager. Use approved traffic type box with cast iron lid when meter must be located in paved areas.

3.04 METER VAULTS

A. Construct concrete meter vaults to dimensions shown on Project Drawings. Do not cast in presence of water. Make bottom uniform. Verify lines and grades are correct and compacted subgrade will support loads imposed by vaults.

B. Precast Meter Vaults:

1. Install precast vaults in accordance with manufacturer's recommendations. Set level on a minimum 3-inch-thick bed of sand conforming to requirements of Utility Backfill Materials Section.

2. Seal lifting holes with cement-sand mortar or non-shrink grout.

C. Meter Vault Floor Slab:

1. Construct floor slabs of 6-inch-thick reinforced concrete. Slope floor 1/4-inch per foot toward sump. Make sump 12-inches in diameter, or 12-inches square, and 4-inches deep, unless other dimensions are required by Project Drawings. Install dowels at maximum of 18-inches, center-to-center for keying walls to floor slab.

2. Precast floor slab elements may be used for precast vault construction.

D. Cast-in-Place Meter Vault Walls:

1. Key walls to floor slab and form to dimensions shown on Project Drawings. Minimum wall thickness shall be 6-inches.

2. Cast walls monolithically. One construction joint will be allowed when vault depth exceeds 12-feet.

3. Set frame for cover in concrete.

3.05 FRAME AND COVER FOR METER VAULTS

A. Set cast iron frame in a mortar bed and adjust elevation of cover as follows:

1. In unpaved areas, set top of meter box or meter vault cover 4 to 6-inches above natural grade.

2. In paved areas, set top of meter box or meter vault cover flush with adjacent concrete.

3.06 BACKFILL

A. Provide backfill in accordance with Utility Backfill Materials Section and backfill and compact in accordance with Excavation and Backfill for Utilities Section.

B. Compacted soil and stone shall extend minimum of 6” beyond meter vaults and 3” beyond valve boxes.

C. Valve boxes shall be supported by bricks all around, where needed.

END OF SECTION 03 48 20