

SECTION UC-080

METER BOXES, SECTIONAL PLATES AND VAULTS FOR WATER SERVICE

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. The Contractor shall furnish and install all concrete meter boxes, lids, sectional plates and precast vaults required for a complete installation.
- B. All concrete meter boxes, sectional plates and vaults shall be in accordance with the Department's Standard Details and as specified herein.

PART 2 - PRODUCTS

2.01 GENERAL

All materials used in the production of the concrete meter boxes, lids sectional plates and vaults shall be new and or recent manufacture. Aggregates shall not originate in salt or brackish water areas and no calcium chloride containing admixtures shall be used.

2.02 FINE AGGREGATE

Fine aggregate for concrete mixes shall consist of sand or stone screening, composed of hard durable grains, free of foreign matter such as loam, clay, dirt, organic matter or other impurities. Fine aggregate shall conform to the following gradation requirements:

<u>Size Sieve</u>	<u>Percent Passing</u>
3/8"	100
No. 4	90 to 100
No. 8	70 to 95
No. 16	50 to 85
No. 30	30 to 70
No. 50	10 to 45
No. 100	0 to 10

2.03 COARSE AGGREGATE

- A. Coarse aggregate for concrete mixes shall consist of gravel, broken stone or local limerock.
- B. Coarse aggregate shall be hard, durable and free of foreign matter such as loam, clay, dirt, organic matter or other impurities. It shall be free of adherent coatings. Coarse aggregate shall conform to the following gradation requirements:

1. Meter Boxes, Lids and Sectional Plates

<u>Size Sieve</u>	<u>Percent Passing</u>
3/4"	100
1/2"	90 to 100
3/8"	40 to 70
No. 4	0 to 15
No. 8	0 to 5

2. Vaults

<u>Size Sieve</u>	<u>Percent Passing</u>
1-1/2"	100
1"	95 to 100
1/2"	25 to 60
No. 4	0 to 10
No. 8	0 to 6

2.04 CEMENT

- A. Cement shall be a standard brand of Portland cement meeting the requirements of ASTM C150-86, "Portland Cement", Type I.
- B. Different brands of cement, even if tested and approved, shall not be mixed during use.

2.05 REINFORCING STEEL

- A. General: All reinforcing steel shall be free of rust, grease, dirt or mortar and shall be thoroughly cleaned of any such foreign matter or loose mill scale before being placed in position.
- B. Wire reinforcement shall conform to ASTM A82, "Steel Wire, Plain, for Concrete Reinforcement".
- C. Wire mesh reinforcement shall conform to ASTM A185, "Steel Welded Wire, Fabric, Plain for Concrete Reinforcement".
- D. Bar reinforcement shall conform to ASTM A615-7a, "Deformed and Plain Billet-Steel Bars for Concrete Reinforcement", Grade 60, deformed, except that steel manufactured by the Bessemer process will not be accepted.

2.06 WATER

Water used in mixing concrete that is not in the form of surface moisture on the aggregate shall be from the Department's water supply or other approved source. (See "Water Used in Construction" of Section 01100)

PART 3 - EXECUTION

3.01 MANUFACTURE

A. General

All concrete meter boxes, lids, sectional plates and vaults shall be manufactured in accordance with the applicable provisions of ASTM C858, "Underground Precast Concrete Utility Structures", as modified herein.

B. Forms

1. The Forms shall be made from of a non-porous material with smooth surfaces and shall be accurate and strong enough to maintain the structure's dimensions within one half of the allowable tolerances given in Section 3.4 of ASTM C858
2. The precast sections for 4' x 4' vaults shall be constructed with a threaded metal insert in accordance with Standard Detail No. WS 2.20, Sheet 1 of 2, contained herein. Also, each section shall be furnished with a corner bolt.

C. Cleaning and Oiling: Forms shall be cleaned before each use, and shall be free of paint or other protective coatings that might cling to the surface of the concrete. Releasing agents applied to the form to aid in breaking the bond shall not be injurious to the concrete.D. Reinforcement: Steel reinforcing shall be securely positioned in the form to maintain the concrete cover shown on the Standard Details.E. Mixture

1. The aggregates shall be sized, graded, proportioned and thoroughly mixed in a batch mixer with proportions of cement and water that will produce a homogeneous concrete having a compressive strength of 3500 psi at 28 days of age for the boxes and plates and 3000 psi for the vaults after the same curing period.
2. Batched concrete shall be made in standard concrete mixers only, and not in mortar boxes, wheelbarrows or similar equipment.
3. Mixers shall be standard mechanical (power-driven) rotary type for concrete. Mixers normally used for mortar or plaster mixing will not be permitted.

F. Concrete Placement

1. Concrete shall be placed either by gravity into the form at a rate such that the concrete is plastic at all times and flows readily into all parts of the form and around all reinforcement steel without segregation of materials, or by highspeed pneumatic rammer resulting in dense, evenly compacted concrete without disturbing the reinforcement. The surfaces from top to bottom shall show uniform compaction.

2. The top surface of the molded items shall be flat and finished smooth while in the mold. Capping will not be permitted. Where required by the Department, corners shall be rounded.
- G. Curing: Curing shall be by any method or combination of methods that will develop the required compressive strength within 28 days or less.
- H. Repairs: The precast units may not be repaired without specific approval by the Department.
- I. Inspection: The quality of materials, manufacturing process, and the finished units shall be subject to inspection at any time by the Department, and the supplier shall afford access for this purpose, if so required.

3.02 CERTIFICATION

Prior to installation of any of the above mentioned units, the Contractor shall furnished the Engineer, upon his required, with a statement giving the following information:

- A. Name of manufacturer.
- B. The source and type of cement.
- C. The source and specific gravities of the aggregates.
- D. The concrete mix proportions, and strength at 28 days.
- E. Name of admixtures, if any.
- F. Mill certificates for the reinforcement steel.
- G. Source of water.

3.03 REJECTION

The Precast units shall be subject to reject, either at the manufacturing plant or at delivery, upon failure to conform to any of the specified requirements herein. The following imperfections shall also be cause for rejection:

- A. Defects that indicate any imperfect concrete mixing and molding.
- B. Surface defects such as honey-combed or open textured and damaged area which would affect the structural adequacy.
- C. Repaired areas or capping.
- D. Improper radius at corners or improper tolerances.

END OF SECTION