

## **SECTION 02445**

### **UTILITY CASINGS**

#### **PART 1 – GENERAL**

##### **1.1 DESCRIPTION**

**A.** This Section includes casing pipe, installed by boring and jacking, carrier pipe alignment guides, sand fill, end seals, and small diameter carrier pipes where indicated. Use when required to pass other utilities, streets, highways, railroads or obstructions without open excavation.

**B.** Related Work Specified Elsewhere

**1.** Force Main Construction: SECTION 02560.

##### **1.2 QUALITY ASSURANCE**

**A.** Reference Test Standards and Specifications

**1.** American Petroleum Institute (API)

**a.** APIRP1102 – Recommended Practice for Liquid Petroleum Pipelines Crossing Railroads and Highways.

**b.** API1104 – Standard for Welding Pipelines and Related Facilities.

**2.** American Society for Testing and Materials (ASTM)

**a.** ASTM A36 – Structural Steel.

**b.** ASTM A570 – Hot-Rolled Carbon Steel Sheet and Strip, Structural Quality.

**c.** ASTM C32 – Sewer and Manhole Brick (Made from Clay or Shale).

**d.** ASTM C270 – Mortar for Unit Masonry.

- e. ASTM D1785 – Polyvinyl Chloride (PVC) Plastic Pipe, Schedule 40 and 80.
  - f. ASTM D2466 – Polyvinyl Chloride (PVC) Plastic Pipe Fittings, Schedule 40.
  - g. ASTM D2855 – Standard Practice for Making Solvent-Cemented Joints with Polyvinyl Chloride (PVC) Pipe and Fittings.
3. American Water Works Association (AWWA)
- a. AWWA C200 – Steel Water Pipe 6 Inches (150mm) and Larger.
  - b. AWWA C206 – Field Welding of Steel Water Pipe.
4. Steel Structures Painting Council (SSPC)
- a. SSPC SP-3 - Power Tool Cleaning.

### 1.03 **SUBMITTALS**

- A. Submit as specified in Section 0330.
- B. Submit the following for acceptance prior to shipment:
  - 1. Pipe alignment guides.
  - 2. Guide spacer bands.
  - 3. Casing pipe.
  - 4. End seals.
- C. Affidavits
  - 1. Furnish for acceptance prior to shipment to jobsite.
  - 2. Certify compliance with applicable standards for the following:

- a. Casting material.
- b. Casing paint coating/lining system.
- c. Conduit.

**PRODUCT DELIVERY, STORAGE, AND HANDLING**

Take all necessary precautions when unloading, storing, and placing all equipment and components so as not to damage the product. All products with visible damage are subject to rejection.

**PART 2 – MATERIALS**

**2.01 MATERIALS**

**A. Casing Pipe**

New, smooth wall, welded steel pipe fabricated from ASTM A36 plate or ASTM A570 sheet with a minimum yield point of 36,000psi, conforming to AWWA C200. Furnish pipe with minimum wall thickness as follows:

**1. Minimum Casing Thicknesses:**

<b><u>Casing Diameter</u></b>	<b><u>Wall Thickness Under Highways</u></b>
<b><u>Inches</u></b>	<b><u>Inches</u></b>
Under 14	0.188
14 and 16	0.188
18	0.250
20	0.250
22	0.250
24	0.281
26	0.281
28 and 30	0.312
32	0.312
34	0.312
36	0.344
38, 40, and 42	0.344
48 and 54	0.375

- 2. Minimum casing inside diameter shall exceed outside diameter of carrier pipe joints or couplings by 4 inches.**

## **B. Joints**

1. All joints in steel pipe casings shall be field welded to conform to AWWA C206.

## **PART 3 – EXECUTION**

### **3.01 INSTALLATION**

- A All work shall, as a minimum, meet the requirements of APIRP1102 and the highway or utility having jurisdiction, and shall be subject to their inspection and approval.
- B. Install Casing Pipes
  1. By boring with continuous flight auger, pneumatic or hydraulic jacking, or other acceptable method. Reinforce leading end of casing with jacking band.
  2. Including measures for maintaining indicated line and grade for casings less than 24-inch diameter within a plus or minus tolerance of 0.5%. Maintain indicated line and grade for casings 24-inch and larger within a plus or minus tolerance of 3 inches over length of casing.
  3. With working pits of adequate size to provide safe working conditions. Install sheeting and bracing to conform to Section 2300.
  4. In such a manner as not to disrupt traffic or damage the roadway grade or surface.
  5. Casings rejected due to misalignment or other failures to conform to Specifications shall be abandoned in place and filled with concrete grout. Casing pipe shall not be recovered for reuse. Contractor shall relocate to a new site as directed by Engineer. The additional work and materials required to install the casing pipe at the new site shall be at no additional cost to the Owner.
  6. Contractor shall pump cement into annular space around outside of casing pipe to completely fill any void created during drilling and/or jacking operations.

### **3.02 PIPE ALIGNMENT SKIDS**

- A.** Furnish skids for pipe alignment guides as indicated for all carrier pipe to be installed in casing.
  - 1. Minimum spacing of skids shall be 10 feet or every pipe joint, whichever is the lesser.
  - 2. Size to fit outside diameter of carrier pipe and inside diameter of casing pipe.
  - 3. Skids to be sized slightly larger than carrier pipe's outside joint diameter.
  
- B.** Provide any of the following:
  - 1. Redwood timber skids notched for steel bands. Permanently attach each pair of skids with two  $\frac{3}{4}$  inch wide stainless steel bands. Wiring is not permitted.
  - 2. Stainless steel casing spacers with plastic runners, Cascade Waterworks Style CCS or Engineer-approved equal.
  - 3. Epoxy coated steel casing spacers with plastic runners.

### **3.04 SAND FILL AND END SEALS**

- A.** Construct end seals and fill annular space between carrier pipe and casing with sand or flowable fill as indicated and as follows:
  - 1. After inside of casing has been thoroughly cleaned and approved by Engineer.
  - 2. After carrier pipe has been permanently placed inside casing, tested, and approved.
  - 3. Place sand by Engineer-approved method and equipment.
  - 4. Brick end seals, or approved equal.

## **PART 4 – MEASUREMENT AND PAYMENT**

### **4.01 MEASUREMENT**

Measurement for the utility casing will be the number of linear feet along centerline of casing.

### **4.02 PAYMENT**

Payment for Utility Casings will be made at the contract lump sum price and shall be considered full payment for the casing in place including excavation, testing, cleaning, trenching, dewatering, backfill, and compaction. Payment will only be made on casing which has passed

**\*\* END OF SECTION 02445 \*\***