SECTION 15129

open trench pipe casing

# general

## scope of work

### This section includes materials for and installation of open trench pipe casings.

## references codes and stanadards

### The publications listed below form part of this specification to the extent referenced and are referred to in the text by the basic designation only. References shall be made to the latest edition of said standards unless otherwise called for.

#### ASTM A 36/A 36M – Standard Specification for Carbon Strucpctural Steel

#### ASTM A 283/A 283M – Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates

#### ASTM A 568/A 568M – Standard Specification for Steel, Sheet and Strip, Carbon, Hot-Rolled, and Structural Quality Cold Rolled

## RElated work specified elsewhere

### EVMWD Standard Drawings

### Section 01300 – Shop Drawings and Submittals

### Section 15000 – General Piping Systems and Appurtenances

## design requirements

### Pipe casings shall be provided for carrier piping where shown on the Approved Drawings or as required by the DISTRICT. The sizes and material type for pipe casing shall be as detailed in Part 2 of this Section.

### The Engineer may select a greater steel thickness and diameter as appropriate for the intended application.

## submittals

### The following items shall be submitted for review and approval by the Engineer prior to the start of the casing work:

#### Casing pipe.

#### Casing spacers and end seals.

#### Installation procedure.

#### Method of restraint to be used for the casing and carrier pipes.

#### Welding procedure.

#### Cathodic Protection.

## delivery, storage and handling

### Pipe casing shall be stored in suppliers' yards and on the job site in accordance to the manufacturer's recommendations.

### Store pipe casing in the field by the supporting the pipe uniformly. Do not stack pipe higher than 1.22m (4’) high or stack the pipe with weight on the bell ends. Cover stored pipe casing to protect it from the sun's ultraviolet radiation. Pipe which has been contaminated with any petroleum products (inside or outside) shall not be installed.

### Proper care shall be used to prevent damage in handling, moving and placing the pipe casing. All pipe casing materials shall be lowered into the trench in a manner that prevents damage. The pipe casing shall not be dropped, dragged or handled in a manner that will cause bruises, cracks, or other damage.

## casing spacers and end seals

### Casing spacers and end seals shall be used for all carrier pipe installations within casings.

## tracer wire

### Tracer wire shall be installed atop all potable and recycled water carrier pipe in accordance Standard Drawing W-35.

## warning/identification tape

### Warning/Identification Tape shall be installed in accordance with Standard Drawing W-35.

## recycled water identification

### Pipe casing for recycled water system applications shall be purple. The pipe markings shall include the designation "RECYCLED WATER" in addition to the standard factory labels required by AWWA.

### Fittings and pipe appurtenances installed with PVC mains for recycled water shall be identified with purple-colored coating, purple polyethylene sleeve, identification labels or signs in accordance with the Approved Materials List.

# materials

## pipe casing

### Pipe casing materials shall be as indicated below and shall be selected from the Approved Materials List. The size of the pipe casings required for the various sizes of carrier pipe is as follows:

|  |  |
| --- | --- |
| **Carrier Pipe Size** | **Minimum Casing Size** |
| 150mm (6”) | 350mm (14”) |
| 200mm (8”) | 400mm (16”) |
| 250mm (10”) | 450mm (18”) |
| 300mm (12”) | 500mm (20”) |
| 400mm(16”) | 750mm (30”) |
| 500mm (20”) | 900mm (36”) |
| 600mm (24”) | 1,050mm (42”) |

### Pipe Casing for Carrier Pipe larger than 600mm (24”) shall be as determined by the Engineer.

### Steel Pipe casings shall be as follows:

#### Steel pipe casings, unless otherwise approved by the DISTRICT, shall be butt- welded sheets (spiral welding of pipe not allowed) conforming to ASTM A 36/A 36M, ASTM A 283/ A 283M, Grade D, or ASTM A 568/A 568M, Grade 33. Other steel grades may be used upon approval of the DISTRICT. Steel casings sized 500mm (20”) or smaller shall have a minimum wall thickness of 9.53mm (3/8”). Steel casings sized larger than 500mm (20”) shall have a minimum wall thickness of 12.70mm (1/2”).

#### Steel pipe casings shall not be lined or coated with any material unless otherwise directed by the Engineer.

#### If required, steel pipe casing shall be lined and coated with liquid epoxy paint per AWWA C210. Liquid epoxy shall be applied in three coats to a minimum thickness of 0.305mm (0.012” or 12 mils). The final coat of the liquid epoxy shall be blue for potable water and purple for recycled water steel casing pipe.

#### Steel pipe casings shall include the installation of an anode in accordance with the Standard Drawings, unless otherwise directed by the Engineer.

## casing spacers

### Casing spacers shall be stainless steel, centered-position type with PVC liner and non-metallic anti-friction runners selected from the Approved Materials List.

## casing end seals

### Casing end seals, selected from the Approved Materials List, shall wrap around the casing and carrier pipe to provide a barrier to backfill material and seepage. The casing end seal shall be a minimum 6.25mm (¼”) thick styrene butadiene rubber sheet attached to the carrier pipe and casing with 25mm (1”) wide stainless steel bands. Zippered casing end seals with stainless steel bands may also be used.

## tracer wire

### Tracer wire materials shall be in accordance with Standard Drawing W-35 and the Approved Materials List.

## warning/identification tape

### Warning/Identification tape materials shall be in accordance with Standard Drawing W-35 and the Approved Materials List.

# execution

## TRENCH EXCAVATION, BACKFILL AND COMPACTION

### Trenching, bedding, backfilling and compaction operations shall be performed in accordance with SECTION 02223.

## dewatering

### The CONTRACTOR shall provide, and maintain at all times during construction, ample means and devices to promptly remove and dispose all water from any source entering trench excavations or other parts of the work in accordance with SECTION 02223. Any damage caused by flooding of the trench shall be the CONTRACTOR’s responsibility.

### Dewatering shall be performed by methods that will maintain a dry excavation, preservation of the final lines and grades and protection of all utilities. If flooding of the trench does occur, the CONTRACTOR shall immediately dewater and restore the trench. Damaged or altered pipeline appurtenances or trench materials shall be repaired or replaced as directed by the Engineer.

## pipe casing installation

### Installation of pipe casing and carrier pipe shall be as described below and in accordance with the Standard Drawings.

#### Pipe casing shall be installed in an open trench type excavation.

#### Pipe casings shall be lowered onto the bedding of the proper lines and grades called for on the Approved Plans.

#### Pipe casings shall have firm bearing along their full length.

#### Steel casing sections shall be jointed by full-circumference butt welding in the field. Steel casing shall have all areas of damaged coating repaired.

#### Carrier pipe shall be pushed into the casing incorporating the use of casing spacers as described below.

#### Ductile-iron carrier pipe joints shall be restrained either by mechanical means or by use of splined gaskets.

#### Steel carrier pipe sections shall be lap joint welded per Section 15061.

#### Upstream and downstream elevations of the carrier pipe shall be verified prior to installing the end seals.

#### The portion of carrier pipes installed within casings shall have pressure, leakage, and infiltration testing completed in accordance with SECTION 15044 prior to installation of the end seals.

#### The annular space between the carrier pipe and casing shall not be filled with any material unless otherwise noted on the Approved Plans.

## casing spacers

### Casing spacers shall be used to prevent the carrier pipe bell from touching the casing and to maintain a uniform space between the carrier pipe and casing interior. A minimum of three casing spacers shall be installed, equally spaced, on each pipe section at intervals recommended by the manufacturer.

## casing end seals

### Casing end seals shall be installed in accordance with the manufacturer's recommendations.

### Carrier pipe shall pass hydrostatic or leakage tests in accordance with SECTION 15044 prior to the installation of casing end seals or backfilling operations.

## tracer wire

### Tracer wire shall be installed on the carrier pipe in accordance with Standard Drawing W-35.

## warning/identification tape

### Warning/Identification tape shall be installed above the casing pipe in accordance with Standard Drawing W-35.

end of section