SECTION 15057

copper tubing, brass & Bronze Fittings

# GENERAL

## DESCRIPTION

### This section includes materials and installation of copper tubing, brass and bronze pipe fittings and appurtenances.

## REFERENCE STANDARDS

### 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. Reference shall be made to the latest edition of said standards unless otherwise called for.

#### ANSI B1. 1 – Unified Inch Screw Threads

#### ANSI B1.2 – Gauges and Gauging for Unified Inch Screw Threads

#### ANSI B1.20.1 – Pipe Threads, General Purpose (Inch)

#### ANSI B16.24 – Cast Copper Alloy Pipe Flanges and Flanged Fittings

#### ASTM A 307 – Carbon Steel Bolts and Studs

#### ASTM B 43 – Seamless Red Brass Pipe, Standard Sizes

#### ASTM B 62 – Composition Bronze or Ounce Metal Castings

#### ASTM B 88 – Seamless Copper Water Tube

#### ASTM B 88M – Seamless Copper Water Tube [Metric]

#### AWWA C800 – Underground Service Line Valves and Fittings

## RELATED WORK SPECIFIED ELSEWHERE

### EVMWD Standard Drawings

### Section 01300 – Shop Drawings and Submittals

### Section 02223 – Trenching, Backfilling and Compacting

### Section 15000 – General Piping Systems and Appurtenances

### Section 15044 – Hydrostatic Testing of Pressure Pipe

## SUBMITTALS

### Submit shop drawings in accordance with Standard Specification SECTION 01300.

### Submit manufacturer’s catalog data and descriptive literature for copper tubing, brass piping, brass nipples and fittings, bronze ball valves, angle meter stops, corporation stops, meter flange adapters and service saddles. Show dimensions and material of construction by specification number and grade.

## RECYCLED WATER IDENTIFICATION

### Copper Tubing, Brass, and Bronze Pipe Fittings for recycled water shall be identified with purple color coating, purple polyethylene sleeve, identification labels or signs.

# MATERIALS

## COPPER TUBING

### Copper water tube shall conform to ASTM B 88.

#### Tubing located above ground, in vaults and structures shall be Type K, drawn temper (hard).

#### Buried tubing shall be Type K, annealed temper (soft), except 3-inch tube shall be Type K, drawn temper (hard).

### Components shall be selected from the Approved Materials List in accordance with the Standard Drawings.

## BRASS PIPE, NIPPLES, AND FITTINGS

### Pipe and short threaded nipples.

#### Brass conforming to ASTM B43.

#### Copper conforming to ASTM B42, regular wall thickness, except that pipe and nipples of sizes 1- inch and smaller shall be extra strong.

#### Threads shall conform to ASME B1.20.1, NPT.

#### Fittings shall be compression type.

## SOLDER JOINT FITTINGS

### Wrought copper solder joint seamless fittings shall be designed for use with copper water tube.

#### Conform to ASTM B75 and ASME B16.22.

#### Material shall be UNS C10200, C12000, or C12200.

### Cast copper solder joint pressure fittings shall be designed for use with copper water tube.

#### Conform to ASME B16.18.

### Use solder joint fittings for working pressures of 300 psi or less.

## THREADED FITTINGS

### Cast bronze threaded fittings shall be designed for use with brass or copper pipe and nipples.

#### Conform to ASME B16.15, Class 125 and 250.

#### Use Class 125 fittings for working pressures of 200 psi or less.

#### Use Class 250 fittings for working pressures greater than 200 psi, but less than 400 psi.

## FLANGES AND FLANGED FITTINGS

### Cast bronze pipe flanges and flanged fittings.

#### Conform to ASME B16.24, Class 150 or Class 300.

#### Use Class 150 flanged fittings for working pressures of 225 psi or less.

#### Use Class 300 flanged fittings for working pressures greater than 225 psi; but less than 500 psi.

#### Provide flat faced flanges.

#### Use solder joint or threaded end companion flanges.

#### Companion flanges with solder joint or threaded end shall be limited to the pressure rating of the pipe connection and not the flanged joint.

## SOLDER

### Solder shall be 95-5 (95-percent tin and 5-percent antimony).

#### Conform to ASTM B32, Alloy Grade Sb5.

#### Do not use lead or cored solder.

### Soldering Flux shall comply with ASTM B813.

## BRONZE APPURTENANCES

### Corporation stops, curb stops, meter and angle meter stops, meter flange adapters, and bronze-bodied service saddles shall be selected from the Approved Materials List in accordance with the Standard Drawings.

### Fittings shall be compression type.

### All items specified herein shall be manufactured of bronze conforming to ASTM B 62.

### Service saddles shall be the double strap type. Service saddles shall be used on all service and appurtenance connections on PVC piping. For piping materials other than PVC, service and appurtenance connections shall be performed in accordance with the DISTRICT Standard Drawings.

## BOLTS AND NUTS FOR FLANGES

### Bolts and nuts shall be in accordance with the Approved Materials List.

# EXECUTION

## general

### Handling and cleaning.

#### Refer to Section 15000, “General Piping Requirements” for requirements.

### Install pipe and tube without springing, forcing, or stressing the pipe, tube, or any connecting valves.

### Provide pipe hangers and supports for pipe and tube where installed above ground, in vaults and structures.

#### Refer to Section 15020, “Pipe Supports” for requirements.

#### All fittings installed in copper pipe or tubing require support to prevent the fitting’s weight from being carried by the adjacent pipe.

### Use soldered joints and fittings with copper water tube in buried and exposed service.

### Use threaded joints and fittings with brass or copper piping in buried and exposed service.

### Copper, bronze, brass, chromium plate, nickel, stainless steel, monel metal, and lead surfaces are not to be painted or finished unless called for in other parts of the Specifications or on the Drawings or as recommended by the manufacturer.

### Identification of unburied piping shall conform to ANSI A13.1 unless shown otherwise on the Drawings or in these Specifications.

#### Refer to Section 15000, “General Piping Requirements” for requirements.

### Pressure testing of pipe.

#### Test copper pipe, tube, and fittings at the same time that the connecting pipelines are pressure tested.

#### Refer to Section 15044, “Hydrostatic Testing and Flushing” for requirements.

### Disinfection of piping.

#### Refer to Section 15044, “Hydrostatic Testing and Flushing” for requirements.

## installation

### Tube cutters shall always be sharp.

#### Do not take too deep a cut with each turn of the cutter or back and forth motion of a saw blade.

#### Cut tubing square and remove burrs.

#### Use a sizing ring on the ends of soft copper tubing and bring to true dimension and roundness.

#### Clean the surfaces to be soldered with fine emery cloth, cleaning pads, or special wire brushes.

##### Rub hard enough to remove the surface film of oil, grease, heavy oxide, and soil, but not hard enough to remove metal.

#### Coat clean surfaces with a thin film of non-toxic and non-corrosive flux, assemble joint full depth, and remove excess flux before soldering.

### Make soldered joints in accordance with ASTM B828.

#### Solder shall penetrate to the full depth of the cup in joints and fittings.

#### Solderers shall comply with ASME B31.3, paragraph 333.

### Bends in soft copper tubing shall be long sweep.

#### Shape bends with shaping tools.

#### Form bends without flattening, buckling, or thinning the tubing wall at any point.

### Clean threaded joints by wire brushing or swabbing.

### Apply Teflon joint compound or Teflon tape to male pipe threads before mating threaded joint.

#### Joints shall be watertight.

## installing buried tubing

### Remove foreign matter and dirt from inside of tubing and keep clean during and after laying.

### Handle tubing in a manner to avoid any damage to the tubing.

### Grade the bottom of the trench to the line and grade to which the tubing is to be laid.

#### Line bottom of trench with imported sand; minimum thickness 2 inches.

#### Before laying the tubing, check the grade and correct any irregularities found.

END OF SECTION