

SECTION 40 05 13.33 – COPPER WATER TUBE

PART 1 - GENERAL

1.1 THE REQUIREMENT

- A. The CONTRACTOR shall provide copper tube for water, gas, and vacuum service, complete and in place, in accordance with the Contract Documents

PART 2 - PRODUCTS

2.1 PIPE MATERIAL

- A. Copper water tube shall conform to the requirements of ASTM B 88 – Seamless Copper Water Tube, and shall be soft temper tube in rolls for buried locations, or hard drawn lengths for all other applications. Unless otherwise indicated, all copper water tube shall be of Type K wall thickness.

2.2 JOINTS

- A. Copper water tube shall have soldered joints, flared ends and fittings, or compression type joints. Soldered joints shall be made with 95 - 5 percent tin-antimony solder or with silver solder. Buried piping shall have flared or compression type joints. No soft-soldered joints will be allowed on buried piping. No solders containing more than 0.2 percent of lead shall be used.

2.3 FITTINGS

- A. Soldered Fittings: Soldered fittings shall conform to ANSI B 16.18 – Cast Copper Alloy Solder Joint Pressure Fittings, or to ANSI/ASME B 16.22 – Wrought Copper and Copper Alloy Solder – Joint Pressure Fittings. The soldering flux shall be the Manufacturer's approved type for the fitting and solder used.
- B. Flared Fittings: Flared fittings shall conform to ANSI/ASME B 16.26 – Cast Copper Alloy Fittings for Flared Copper Tubes.
- C. Compression Fittings: Compression type fittings shall be brass fittings as manufactured by **Crawford Company - SWAGELOK, Parker-Hannifin - CPI**, or equal.
- D. Flanged Fittings: Cast copper alloy flanges and flanged fittings shall be in accordance with ANSI/ASME B 16.24 – Cast Copper Alloy Pipe Flanges and Flanged Fittings, and ASTM B 62 – Standard Specification for Composition Bronze or Ounce Metal Castings, with 150 lb. ratings, or as indicated.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: All copper tubes shall be installed in a neat and workmanlike manner, properly aligned, and cut from measurements taken at the site, to avoid interferences with structural members, architectural features, openings, and equipment. Exposed tubing shall afford maximum headroom and access to equipment, and where necessary all tubing shall be installed with sufficient slopes for venting or drainage of liquids and condensate to low points. All installations shall be acceptable to the ENGINEER.
- B. Supports and Anchors: All tubing shall be firmly supported with fabricated or commercial hangers, brackets, or supports in accordance with Municipality of Anchorage plumbing and mechanical requirements. Where necessary to avoid stress on equipment or structural members, the tubes shall be anchored or harnessed. Expansion joints and guides shall compensate for expansion due to temperature differences.
- C. Valves and Unions: Unless otherwise indicated, tubing to fixtures, groups of fixtures, and equipment shall be provided with a shutoff valve and union, unless the valve has flanged ends. Low points in water systems and drip legs in steam, gas, and air systems shall have drainage valves. Unions shall be provided at threaded valves, equipment, and other devices requiring occasional removal or disconnection.
- D. Branch Connections: Branch connections in horizontal runs of air and gas tubing shall be made from the top of the main to avoid drainage of condensate into the equipment.

3.2 PREPARATION

- A. Prior to installation, each tube length shall be carefully inspected, flushed clean of any debris or dust, and be straightened, if not true. Ends of tubes shall be reamed and filed smooth. All fittings shall be equally cleaned before assembly.

3.3 JOINTS

- A. Brazed and Soldered Joints: Brazed and soldered joints shall conform to the manufacturer's recommendations and to the specifications and recommendations of ANSI/ASME B 31.1 – Power Piping. All brazing shall be done by skilled and qualified welders. Prior to the application of flux, the end of all tubes shall be thoroughly dried and cleaned.

3.4 INSPECTION AND FIELD TESTING

- A. Inspection: All finished installations shall be carefully inspected for proper joints and supports, anchoring, interferences, and damage to tubing, fittings, and coating. Damage shall be repaired to the satisfaction of the ENGINEER.

- B. Field Testing: Prior to enclosure or burying, all tubing systems shall be pressure tested to 1-1/2 times the maximum working pressure. The CONTRACTOR shall furnish all test equipment, labor, materials, and devices at no extra cost to the OWNER.
- C. Leakage may be determined by loss of pressure, soap solution, chemical indicator, or other positive and accurate methods. All fixtures, devices, or other accessories which are to be connected to the lines and which would be damaged if subjected to the test pressure shall be disconnected and ends of the branch lines shall be plugged or capped as required during the testing procedures.
- D. Leaks shall be repaired to the satisfaction of the ENGINEER, and the system shall be re-tested, at no extra cost to the OWNER, until no leaks are found.

END OF SECTION 40 05 13.33