

15060S02- PIPE AND PIPE-FITTING SCHEDULE

1. GENERAL

1. Piping shall be new, full weight, and of sizes shown on the drawings. Ends of piping shall be reamed, and where applicable, all threads shall be sharp and true.
2. Piping shall be installed at the locations shown on the construction drawings, properly graded and secured to insure noiseless circulation throughout the system. Supply and Return piping shall be properly erected to prevent the formation of air and water pockets. Any location that tends to trap air or hold water shall have automatic air vents installed at the high points, and manual drain valves installed at the low points. Any location on a steam line that holds water shall have a properly installed dirt leg and steam trap.
3. DIRECT BURY STEAM LINES ARE NOT ALLOWED, unless space constraints eliminate possibility of a tunnel. Consultant should contact the Physical Plant Division, Manager of Utilities to get approval for direct bury piping.
4. For underground piping see 15060S03 for Direct Buried Chilled Water Piping and 150506S04 for Underground and Direct Buried Steam and Condensate Piping.

2. SCHEDULE

Note: All piping, fittings, valves, strainers, check valves, control valves, pressure reducing valves, etc., on the high pressure steam, boiler feedwater, and high pressure steam condensate return to be designed for 300 psig steam pressure, (300 Class) at 500 deg F.

| Service | Sizes | Pipe | Fittings & Valves |
|---|-------------------|---|--|
| High Pressure Steam (above grade) | 2" and Smaller | Sch. 40 Black steel ASTM A106 Grade B | 300 lb. malleable iron, screwed. (300 lb. bronze gate valves) |
| High Pressure Steam (above grade) | 2 1/2" thru 8" | Sch. 40 Black steel ASTM A106 Grade B | Standard weight steel, welded. (300 lb cast steel flanged valves) |
| High Pressure Steam (above grade) | 10" and larger | Black Steel ASTM A106 Grade B 1/2" wall thickness | Extra strong steel, welded. (300 lb cast steel flanged valves) |
| High pressure steam condensate Boiler Feedwater (above grade) | 2" and Smaller | Sch. 80 Black steel | 300 lb. Malleable iron, screwed. (300 lb. screwed bronze gate valves) |
| High pressure steam condensate valves Boiler Feedwater (above grade) | 2 1/2" and larger | Sch. 80 Black Steel | Extra strong steel, welded. (300lb. Cast steel gate flanged) |
| Low Pressure Steam (above grade) | 2" and smaller | Sch. 40 Black steel | 150 lb. malleable iron, screwed. (150 lb. bronze gate valves) |
| Low Pressure Steam (above grade) | 2 1/2" and larger | Sch. 40 Black steel | Standard weight steel, welded. (150 lb. gate valves flanged) |

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|---|-------------------|---------------------|--|
| Low pressure steam condensate (above grade) | 2" and smaller | Sch. 80 Black steel | 300 lb malleable Iron screwed (150 lb. screwed bronze gate valves) |
| Low pressure steam condensate (above grade) | 2 1/2" and larger | Sch. 80 Black steel | Extra Strong Steel, Welded (150 lb. steel gate valves or 125 lb. CI flanged gate valves) |

Note: Low Pressure Steam Condensate to have 300 lb fittings, not for pressure concerns, but for longer life against corrosion. 150 lb. rated valves and flanges are acceptable on steam condensate.

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| Safety Valve Vents | 2" and smaller | Sch. 40 Black steel | 125 lb. Cast Iron, screwed |
| Safety Valve Vents | 2 1/2" and larger | Sch. 40 Black steel | Standard weight steel, welded |
| Gas (above grade) | 2" and smaller | Sch. 40 Black steel | 150 lb. Malleable iron, screwed (175 lb. WOG plug valves, Screwed) |
| Gas (above grade) | 2 1/2" and larger | Sch. 40 Black steel | Standard weight steel, welded. (175 lb. WOG plug valves, flanged) |
| Compressed air for Control air | All sizes | Type L (1/8" to 1/2" Soft copper) (3/4" and up Hard Copper) | Compression brass for small piping. Wrought copper for large piping |
| Condensation drains for air handlers | All Sizes | DWV copper | Wrought copper. Lead free solder. |

| Service | Sizes | Pipe | Fittings & Valves |
|---|--------------------|--------------------|---|
| Chilled Water Supply & Return (above grade) | 2 1/2" and smaller | Type L Hard Copper | Wrought copper. Lead free solder (bronze ball or gate valve 300 psig WOG) |

Note: All chilled water piping systems to be designed for 250 psig working pressure, including pumps, valves, strainers and fittings.

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|-----------------------------|---------|--------------------|---|
| Chilled Water (above grade) | 3" - 4" | Type L Hard copper | Wrought Copper, Lead free solder. 150 lb. bronze solder flanges |
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Valves for 3"-4" Chilled water supply and return:

Resilient seated, lug style, Butterfly valves with bubble tight bi-directional shutoff at 250 psig pressure, Ductile iron body with locking handle, lever operators, 150 ANSI bolt pattern

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|-----------------------------|-----------|---------------------|--|
| Chilled Water (above grade) | 6" and up | Sch. 40 Black steel | Standard weight steel, welded, 150lb or 250lb flanges to match valves. |
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Valves for 6" and Up chilled water supply and return:

Resilient seated, lug style, Butterfly valves with bubble tight, bi-directional shutoff at 250 psig pressure, Ductile iron body with gear operator and hand wheels, 150 ANSI bolt pattern

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|---------------------------------|--------------|--------------------------------|--|
| Domestic Cold Water Underground | All sizes | Type K Hard Copper | Wrought copper lead free solder (150 lb., flanged or screwed, gate or ball, bronze valves) |
| Domestic Cold Water Underground | 4" and Above | Cement lined Ductile Iron Pipe | Restrained Joint Ductile Iron Pipe, suitable for 150 psig working pressure |

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University of Kentucky

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| Service | Sizes | Pipe | Fittings & Valves |
|-----------------------------|---|--|--|
| Domestic Hot and cold water | All sizes | Type L Hard copper | Wrought copper lead free solder (150 lb., flanged or screwed, gate or ball, bronze valves) |
| Heating Hot water | 4" and less | Type L Hard copper | Wrought Copper. Lead free solder (150 lb, gate flanged or screwed bronze valves) |
| Heating Hot Water | 6" and up | Sch. 40 Black steel | Standard weight steel, welded. (150 lb, gate flanged cast iron valves) |
| Plumbing drain and waste | 4" and less | DWV copper | DWV copper. Lead free solder. Iron soil pipe fittings |
| Plumbing drain and waste | over 4" except for 2" to 4" in lieu of Copper | Service weight Hubless Cast Iron Soil pipe | Service weight, Hubless cast |

Note: Underground building drain pipe and fittings to be Cast Iron Soil Pipe ASTM A74, service weight, hub and spigot soil pipe and fittings. Pipe and Fittings shall have a heavy coating of coal tar varnish or asphaltum on both inside and outside surfaces. Hubs to have Neoprene Compression Gaskets: ASTM C564.

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|-----------------------|-----------|--|---|
| Acid waste | All Sizes | Standard weight, ASTM C 599 glass pipe | Glass fittings, Compression type couplings |
| Acid waste substitute | All Sizes | Standard weight, flame retardant polypropylene Pipe and fittings, ASTM F1412 | Grooved mechanical joint couplings and fittings. Couplings of 300 series Stainless Steel outer band, and 5/16" bolts. The poly propylene material shall conform to ASTM D4101 |