

SECTION 15100 - BASIC PIPING

PART 1 - GENERAL

1.01 REFERENCE

- A. For specific piping requirements and materials, refer to the respective sections for the various systems.
- B. See Other Sections of these specifications for VALVES, PIPING SPECIALTIES, SUPPORTS, VIBRATION ISOLATION, INSULATION, TREATMENT, TESTING, IDENTIFICATION, and FIRE STOP SYSTEMS.

1.02 THERMAL EXPANSION

- A. Swing joints, turns, pipe anchors, pipe guides, expansion loops or long off-sets shall be provided where necessary to allow for expansion and contraction. Pipe, fittings or equipment, broken during warranty, shall be replaced.

1.03 OPEN ENDS

- A. Keep ends of pipe, including those extending through and above roof, drains, equipment and fixture branches, closed with caps or plugs to prevent dirt or building material from entering the pipe and traps during construction.

1.04 NOISE CONTROL:

- A. Piping shall be free of any objectionable self-generated noise. Isolate piping from building where required preventing transmission of noise.

1.05 CROSS CONNECTIONS

- A. Under any conditions, piping shall not be installed that permits back-siphonage or any flow of polluted water or other liquid into domestic water piping system.
- B. Air gaps, receptor type drains and approved vacuum breaking devices shall be provided. Piping to hose-end faucets or to inlet below fixture overflow shall have vacuum breakers of make, design, size and location approved by the applicable code.

1.06 ACCESS DOORS AND PANELS

- A. Provide access doors for adequate accessibility to valves, drains, traps, and other devices requiring access for maintenance where such devices are concealed within inaccessible ceilings, walls or floors. Access doors minimum size shall be 10" x 12". Access doors shall be coordinated with the architect for locations and appearances.

1.07 SUBMITTALS

- A. Submit brochures or other data for approval of all items specified.

1.08 FIRE STOPPING

- A. Provide fire stopping at all pipe penetrations of fire and/or smoke walls and floors.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. All pipe and fittings shall be made in the USA and shall be labeled accordingly.
- B. For materials to be used on the various piping systems, refer to the specific piping sections for the various systems.
- C. FIRE-STOPPING
 - 1. Fire-stopping products shall be 3M. See Section 15140.
- D. CONDENSATE DRAINS: See Section 15420.
- E. EXPANSION LOOPS: Metraflex metraloop, same material as piping.
- F. FLEXIBLE PIPE CONNECTORS
 - 1. Double sphere neoprene connectors rated for 150 psi at 220°F. Model MFTFU or MFTNC as manufactured by Mason Industries, Inc. or approved equal.
 - 2. Install control cables when connectors are installed in unanchored piping or connected to isolated equipment and the pressure exceeds values recommended by the manufacturer.
- G. FOUNDATION WALL (BELOW GRADE) PENETRATIONS
 - 1. Link - Seal Thunderline pipe seals.

2.02 ACCESS DOORS AND PANELS

- A. Access doors to 16" x 24" size shall be "VENTLOCK" steel insulated access doors.
- B. Larger access doors shall be steel double panel construction with 1" rigid insulation between panels. Doors with largest dimension over 24", but less than 48", shall use "VENTLOCK" series 200 latches, hinges and gasketing, and construction shall be 22-gage galvanized steel. Doors with largest dimension over 48", shall use "VENTLOCK" series 300 latches, hinges and gasketing, and construction shall be 20-gage galvanized steel.
- C. Access doors shall be UL listed where fire-proofing membranes are penetrated.
- D. Equivalent access doors by Kees or Air Balance are acceptable.
- E. Access panels shall be HIGH SECURITY or MAXIMUM SECURITY type in secure areas of jail and prisons as approved by the Architect.

PART 3 – EXECUTION

3.01 ARRANGEMENT

- A. Exposed lines are to be run parallel with, or perpendicular to, building lines and wherever possible shall be grouped together for easier service and identification. Lines requiring a definite grade for drainage shall have precedence in routing over all other lines. Wherever possible, horizontal and vertical lines shall be held as close as possible to walls, ceilings, struts and members so as to occupy minimum space consistent with the

proper requirements for insulation, expansion, removal of pipe and access to valves. All concealed work shall finish off within limits permitted by vertical or horizontal chases. Arrange for concealment of all piping in finished area of buildings unless otherwise noted.

- B. Piping shall be worked into place without springing and/or forcing. All piping shall be arranged so as not to interfere with removal of other equipment or devices, not to block access to doors, windows, manholes, or other access openings.
- C. All piping shall be installed so as to avoid liquid or air pockets throughout the work. Piping shall be erected and pitched to insure proper draining. Air vents, manual or automatic shall be installed where required.
- D. All exposed fixture branches shall be chrome-plated.

3.02 ASSEMBLY

- A. All pipes shall be cut square and shall have burr and cutting slag removed by reaming or other cleaning methods.
- B. Unions or flanges shall be used at all connections to all equipment to facilitate dismantling, and elsewhere as required, in the erection of pipe or installation of valves.
- C. All joints and changes of direction shall be made with standard fittings. Bending of pipe will be permitted providing a hydraulic bender is used and pipe is not deformed reducing cross sectional area. Reducers shall be used at pipe size changes.
- D. To prevent electrolysis or corrosion, an insulating dielectric union or fitting shall be used between dissimilar metal fitting and/or pipe. Paper is not acceptable as a dielectrical insulator. Provide an approved insulating method on all underground metallic pipe in contact with dissimilar metals.
- E. Nipples shall be of same material and composition as pipe on which they are installed, and shall be extra heavy when unthreaded shoulder is less than 1-1/2". No running thread nipples will be permitted. Minimum exposed shoulder of any nipple shall not be less than 3/4".
- F. Joints between steel or copper pipe and cast iron shall be made with caulking ferrules.
- G. Cast iron soil pipe and fittings shall be assembled with approved molded push-on type gaskets. Local code approved no hub pipe may be used above grade where applicable.
- H. Galvanized steel pipe shall be assembled with galvanized screwed fittings.
- I. Black steel pipe shall be assembled with screwed or welded fittings. Grooved type mechanical pipe couplings and fittings equal to that manufactured by Victaulic may be used. Weld-O-Let or Thread-O-Let fittings may be used where branch outlet is at least one pipe size smaller than the main. All piping below grade shall be welded.
- J. Copper pipe shall be assembled with wrought copper fittings. All joints shall be made with "SIL-FOS". Pipe, fittings and faucets used for domestic water shall be NSF 61 compliant.

3.03 SUPPORTS

- A. Provide an adequate pipe suspension system in accordance with recognized engineering practices, using, where possible, standard, commercially accepted pipe hangers and

accessories. No piping shall be supported by, of from, hangers, supporting electrical conduit.

3.04 SLEEVES AND PLATES

- A. Sleeves shall be used where piping passes through exterior walls; poured-in-place concrete walls, floors or roofs; where required for sealing to meet any sanitation codes, ordinances or laws; and areas where water may accumulate.
- B. Sleeves in poured wall construction, and where collapse is possible, shall be Schedule 40 pipe. Other sleeves shall be minimum 22-gage sheet metal.
- C. Sleeves accommodating insulated pipe shall be of sufficient diameter to pass piping and full-size insulation.
- D. In toilets, kitchens, equipment rooms and other areas where water may have accumulated on the floor, sleeves shall extend 1/2" above the finished floor. Other sleeves shall be flush with finished floor.
- E. After all piping has been inserted in sleeves, voids between pipe or insulation and sleeve shall be filled with packing material to within 1/2" of end of sleeve and then filled with silicone sealant.
- F. Spring clamp plates (escutcheons) shall be provided where pipes are exposed in occupied rooms and where walls, floors or ceilings are finished. Plates on extended sleeves shall have chromeplated skirts.
- G. In firewalls and not on grade floors, provide firestopping at all penetrations. Firestopping materials shall be installed in accordance with the manufacturer's recommendations and UL Listing.
- H. Install link seal joints at all below grade foundation wall penetrations to make water tight.

3.05 EXPANSION LOOPS

- A. Provide pipe anchors and pipe guides, and install in accordance with manufacturer's recommendations. Loop joints shall be same as specified for piping system.

3.06 TESTING

- A. Test all piping systems provided under this Contract as hereinafter specified and furnish to the Architect-Engineer copies of the test reports signed by the Contractor.
- B. Piping located underground shall be tested and inspected by the governing agency before backfilling.
- C. Equipment and personnel required for these tests shall be furnished without additional cost. Testing equipment shall be as required for particular test, with all equipment and gages accurate and in good working order.
- D. Equipment subject to damage at given test pressure shall be removed from line before pressure is applied. Use proper plugs or caps.
- E. See specific piping system specification for test pressure, duration and medium.

3.07 FLEXIBLE PIPE CONNECTORS

- A. Install flexible pipe connectors where shown on the Drawings and as required by other sections.
- B. Install connectors as close as possible to equipment inlets and outlets.
- C. Support pipe work independently of flexible connectors. Brace and anchor piping as required to prevent movement of piping ends of flexible connectors and align all equipment, pipe work, and flanges so that no flexible connectors shall be misaligned and/or stressed beyond the manufacturer's recommended limits.

END OF SECTION 15100