
Part 1 General

1.1 RELATED SECTIONS

- .1 The articles concerning general conditions and any additional general conditions are to be applied to the following section as if it formed an integral part of the present section.
- .2 Section 07 84 00 - Firestopping.
- .3 Section 22 05 00 - Common Work Results for Plumbing.
- .4 Section 23 05 00 - Common Work Results for HVAC.
- .5 Section 23 08 02 - Cleaning and Start-up of Mechanical Piping Systems.

1.2 REFERENCES

- .1 Canadian General Standards Board (CGSB).
 - .1 CAN/CGSB-1.181-99, Ready-Mixed Organic Zinc-Rich Coating.

1.3 HEALTH AND SAFETY

- .1 Take necessary measures to ensure health and safety on construction site, in accordance with Section 01 35 29.06 - Health and Safety Requirements.

1.4 WASTE MANAGEMENT AND DISPOSAL

- .1 Sort waste in order to re-use and recycle in conformity with Section 01 74 21 - Waste Management Plan.
- .2 Collect packaging materials and send to appropriate recycling facilities.
- .3 Collect and sort plastic, paper, and corrugated cardboard wrappings, and dispose them in appropriate designated bins in conformity with the Waste Management Plan.
- .4 Disposed unused metallic elements in designated area for metal recycling.

Part 2 Products

- .1 Not used.

Part 3 Execution

3.1 CONNECTIONS TO EQUIPMENT

- .1 In accordance with manufacturer's instructions, unless otherwise indicated.
- .2 Use valves and either unions or flanges for isolation and ease of maintenance and assembly.
- .3 Use double swing joints when equipment mounted on vibration isolation and when piping subject to movement.

3.2 CLEARANCES

- .1 Provide clearance around systems, equipment, and components for observation of operation, inspection, servicing, maintenance, and as recommended by manufacturer.
- .2 Provide space for disassembly, removal of equipment and components as recommended by manufacturer as indicated without interrupting operation of other system, equipment, and components. The dedicated area must be consistent with the dimensions shown on plans or with the manufacturer's recommendations, the highest valve to be retained.

3.3 DRAINS

- .1 Install piping with grade in direction of flow, except as indicated.
- .2 Install drain valve at low points in piping systems, at equipment, and at section isolating valves.
- .3 Pipe each drain valve discharge separately to above floor drain. Discharge to be visible.
- .4 Drain Valves: NPS $\frac{3}{4}$ gate or globe valves, unless indicated otherwise, with hose end male thread, cap, and chain.

3.4 DIELECTRIC COUPLINGS

- .1 General: compatible with system, to suit pressure rating of system.
- .2 Locations: where dissimilar metals are joined.
- .3 NPS 2 and under: isolating unions or bronze valves.
- .4 Over NPS 2: isolating flanges.

3.5 PIPEWORK INSTALLATION

- .1 Screwed fittings jointed with Teflon tape.
- .2 Protect openings against entry of foreign material.
- .3 Install to isolate equipment and allow removal without interrupting operation of other equipment or systems.
- .4 Assemble piping using fittings manufactured to ANSI Standards.
- .5 Saddle type branch fittings may be used on mains if branch line is no larger than half size of main.
 - .1 Hole saw (or drill) and ream main to maintain full inside diameter of branch line prior to welding saddle.
- .6 Install exposed piping, equipment, rectangular cleanouts, and similar items parallel or perpendicular to building lines.
- .7 Install concealed pipework to minimize furring space and to maximize headroom and space.
- .8 Slope piping, except where indicated, in direction of flow for positive drainage and venting.

- .9 Install, except where indicated, to permit separate thermal insulation of each pipe.
- .10 Group piping wherever possible or as indicated.
- .11 Ream Pipes: remove scale and other foreign material before assembly.
- .12 Use eccentric reducers at pipe size changes to ensure positive drainage and venting.
- .13 Provide for thermal expansion as indicated.
- .14 Valves:
 - .1 Install in accessible locations.
 - .2 Remove interior parts before soldering.
 - .3 Install with stems above horizontal position, unless indicated.
 - .4 Valves accessible for maintenance without removing adjacent piping.
 - .5 Install globe valves in bypass around control valves.
 - .6 Use gate, ball, and butterfly valves at branch take-offs for isolating purposes, except where specified.
 - .7 Install butterfly valves between weld neck flanges to ensure full compression of liner.
 - .8 Use chain operators on valves NPS 2½ and larger where installed more than 2,400 mm above floor in Mechanical Rooms.

3.6 CHECK VALVES

- .1 Install silent check valves on discharge of pumps and in vertical pipes with downward flow and as indicated.
- .2 Install swing check valves in horizontal lines on discharge of pumps and as indicated.

3.7 SLEEVES

- .1 General: install where pipes pass through masonry, concrete structures, fire rated assemblies, and as indicated.
- .2 Material: Schedule 40 black steel pipe.
- .3 Construction: use annular fins continuously welded at mid-point at foundation walls and where sleeves extend above finished floors.
- .4 Sizes: 6 mm minimum clearance between sleeve and uninsulated pipe or between sleeve and insulation.
- .5 Installation:
 - .1 Concrete, masonry walls, and concrete floors on grade: terminate flush with finished surface.
 - .2 Other floors: terminate 25 mm above finished floor.
 - .3 Before installation, paint exposed exterior surfaces with heavy application of zinc-rich paint to CAN/CGSB-1.181.

.6 Sealing:

- .1 Foundation walls and below grade floors: fire retardant, waterproof non-hardening mastic.
- .2 Elsewhere provide space for firestopping. Maintain fire rating integrity.
- .3 Sleeves installed for future use: fill with lime plaster or other easily removable filler.
- .4 Ensure no contact between copper pipe or tube and sleeve.

3.8 ESCUTCHEONS

- .1 Install on pipes passing through walls, partitions, floors, and ceilings in finished areas.
- .2 Use one piece escutcheons, in chrome or nickel plated brass or stainless steel type 302, hold with set screws.
- .3 Use outside diameter to cover opening or sleeve and inside diameter to fit around pipe or outside of insulation if so provided.

3.9 PREPARATION FOR FIRESTOPPING

- .1 Install firestopping within annular space between pipes, ducts, insulation and adjacent fire separation in accordance with Section 07 84 00 - Firestopping.
- .2 Uninsulated unheated pipes not subject to movement: no special preparation.
- .3 Uninsulated heated pipes subject to movement: wrap with non-combustible smooth material to permit pipe movement without damaging firestopping material or installation.
- .4 Insulated Pipes and Ducts: ensure integrity of insulation and vapour barriers.

3.10 FLUSHING OUT OF PIPING SYSTEMS

- .1 Flush system in accordance with Section 23 08 02 - Cleaning and Start-up of Mechanical Piping Systems.
- .2 Before start-up, clean interior of piping systems in accordance with requirements of Section 01 74 11 - Cleaning, supplemented as specified in relevant mechanical sections.
- .3 Preparatory to acceptance, clean, and refurbish equipment and leave in operating condition, including replacement of filters in piping systems.

3.11 PRESSURE TESTING OF EQUIPMENT AND PIPEWORK

- .1 Advise Departmental Representative 48 hours minimum prior to performance of pressure tests.

- .2 Test pipework as specified in relevant Sections of Division 23.
- .3 Maintain specified test pressure without loss for 4 hours minimum unless specified for longer period of time in relevant Sections of Division 23.
- .4 Prior to tests, isolate equipment and other parts which are not designed to withstand test pressure or media.
- .5 Conduct tests in presence of Departmental Representative.
- .6 Pay costs for repairs or replacement, retesting, and making good.
- .7 Departmental Representative to determine whether repair or replacement is appropriate.
- .8 Insulate or conceal work only after approval and certification of tests by Departmental Representative.

END OF SECTION