PART 1 - GENERAL

1.1 General

.1 All conditions included in Section 23 05 00, Division 1 and General Conditions form part of this specification and the Contractor shall comply with all and each clause included in these Sections.

1.2 Submittals

.1 Provide Shop Drawing and Maintenance Manual submittals in accordance with Section 01 33 00 - Submittal Procedures and section 23 05 00 – Common Work Results - Mechanical.

1.3 Closeout Submittals

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

1.4 Maintenance Material Submittals

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

1.5 Delivery, Storage and Handling

.1 Deliver, store and handle materials in accordance with Section with manufacturer's written instructions and 01 61 00 - Common Product Requirements.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

PART 2 - PRODUCTS

2.1 Plumbing Pipe Hangers

.1 Myatt, Grinnell, Bibby or approved equal and equal to the following Myatt Cat. Nos.:

.1 Cast iron: Fig. 124 Bibby steel support hanger, 6600 Series.
.2 Copper Pipe: Fig. 151CT or Fig. 124L with taped or plastic hangers. Inside insulation, Fig. 124 outside insulation.

.2 Hanger rod to Grinnell Fig. 146. Hanger rods to be cadmium plated or galvanized steel, and double nutted (top and bottom).

2.3 Insulation Protection Shields

.1 18 gauge rolled galvanized steel.

2.4 Riser Clamps

.1 Steel or cast iron pipe: black carbon steel to MSS-SP-58, type 42, UL listed.

.2 Copper pipe: carbon steel copper plated to MSS-SP-58, type 42 or epoxy coated.

.3 Bolts: to ASTM A 307.

.4 Nuts: to ASTM A 563.

2.5 Equipment Supports

.1 Fabricate equipment supports not provided by equipment manufacturer from structural grade steel.

2.1 Equipment Anchor Bolts and Templates

.1 Provide templates to ensure accurate location of anchor bolts.

2.7 Bases and Supports

.1 Concrete bases are by the Construction Manager.

.2 Concrete bases will be required under all floor mounted equipment including equipment with attached skids and bases unless otherwise noted. All such bases will be 100mm (4") deep and will be 100mm (4") larger in all directions than the equipment being supported.

.3 Where equipment is raised above the floor it will be supported by means of angle iron, I beams or pipe. All such supports shall be anchored to the floor and shall have a metal base to spread the load. These supports shall be cross-braced with diagonal members.

.4 Where equipment is suspended from the structure provide appropriately sized hanger rods, channel iron or angle iron hangers. Distribute the weight of the units uniformly across the structure, consistent with the design loading for the structure and as approved by the Engineer.

.5 Where structure has not been designed to support equipment, this Mechanical Trade Contractor shall provide pipe stands or angle iron supports to support the equipment from the floor.

.6 Unless specifically noted otherwise, provide spring isolators under all floor mounted vibrating, rotating or oscillating equipment designed to eliminate 90% of the vibration from being transmitted to the structure. For similar suspended equipment, provide spring hangers.

PART 3 - EXECUTION

3.1 Plumbing Hangers

.1 All piping shall be securely hung from the building structure using approved hangers.

.2 Nominally horizontal piping shall be supported so that,

.1 Galvanized iron or steel pipe is supported at intervals not exceeding,

.1 12ft if the pipe size is 6 in. or more, and

.2 8ft if the pipe size is less than 6 in.,

.3 Cast iron pipe is supported,

.1 At or adjacent to each hub or joint,
.2 At intervals not exceeding 10ft, and

.3 At intervals not exceeding 3ft if the pipe has mechanical joints and the length of pipe between adjacent fittings is 12in or less.

.4 PVC DWV pipe is to be supported,

.1 at intervals not exceeding 4ft,
.2 at the ends of branches,
.3 at changes of direction or elevation, and
.4 if the pipe is a fixture drain that is more than 3ft in length, as close as possible to the trap,

.5 Plastic water pipe is supported at intervals not exceeding 1 000 mm,

.6 Copper tube and copper and brass pipe is supported at intervals not exceeding,

.1 10ft if the tube or pipe is hard temper and larger than 1 in. in size,
.2 8ft if the tube or pipe is hard temper and 1 in. in size or less, and
.3 8ft if the tube is soft temper,

.7 PE/AL/PE or PEX/AL/PEX composite pipe is supported at intervals not exceeding 3ft, and PP-R plastic pipe is supported,

.1 at intervals not exceeding 1 000 mm,
.2 at the end of branches, and
.3 at changes of direction and elevation.

.8 Where hangers are used to support nominally horizontal piping, the hangers shall be,

.1 supported by metal rods of not less than,

.1 3/8” dia. rod for supporting pipe 2 in. or less in size,
.2 3/8” dia. rod for supporting pipe 4 in. or less in size, and
.3 1/2” dia. rod for supporting pipe over 4 in. in size.

.9 Where a hanger is attached to concrete or masonry, it shall be fastened by metal or expansion-type plugs that are inserted or built into the concrete or masonry.

.10 On vertical sanitary piping the pipe shall be supported at each floor by means of iron hooks or straps placed directly below hub or fittings. Maximum distance between vertical pipe hangers to be 7500mm (24'-6"). Vertical drops to fixture shall be supported at top of riser to prevent strain on fixture connection.

.11 For plumbing systems cold water pipes less than 32mm (1.1/4") and all hot water pipes shall have line size long clevis epoxy coated pipe hangers. Cold water pipes larger than 32mm (1.1/4") shall have insulation protection shields and oversized hangers with calcium silicate, Buckaroos or plastic stand-offs between the pipe and the shield.

3.2 Pipe Hangers

.1 Furnish and install all hangers required for the proper support of piping in this division.

.2 Horizontal drainage pipes shall be supported at intervals of not more than 5'-0" except that where ten (10) foot lengths of cast iron is used, it may be supported at each coupling.

.3 In concrete construction, each Sub-Contractor shall set inserts at proper centres, securely attached to forms before concrete is poured. Inserts shall be Grinnell No. 281.

.4 Beam clamps shall be used when hanging from any structural steel members. No drilling or welding of these members shall be permitted unless approved by the Architect.

.5 All piping shall be securely hung from the building structure using approved hangers.

.6 Hang all piping to and from any circulating pumps 1.5Kw (2 HP) and larger within mechanical room with spring hangers.

.7 Supporting bolts shall be maximum size useable with the specified hanger, with adjustable and locking stop units.

.8 On uninsulated copper piping, use insulation taped hangers, or other approved separation between copper and ferrous hanger.

.9 Hanger pipe and structural attachments shall be offset in such a manner that the rod is vertical where the piping is hot.

.11 Hangers supporting pumps to use a nut and a lock-nut at the bolted connections to equipment and structure.

3.3 Reciprocating Equipment

.1 All drip ledge bases shall be piped to the nearest floor drain.

.2 Upon satisfactory pump alignment, base shall be filled with grout and after hardening, anchor bolts shall be tightened and alignment rechecked and if necessary corrected by the use of shims.

.3 All base mounted equipment such as pumps, tanks, boilers, etc. shall be mounted on a 102 mm (4") thick concrete housekeeping pad.

.4 All piping within 15m (50ft) total pipe length connected to major equipment isolated from the building structure by means of spring isolators and unit inertial bases shall be isolated from the building structure by means of vibration mounts, resilient pipe guides and resilient penetration sleeves/seals except where flexible pipe and duct connections are installed at equipment. Three #77 Victaulic joints may be used in lieu of flexible pipe connectors.

END OF SPECIFICATION SECTION