

**PART 1**      **GENERAL**

**1.1**      **SUMMARY**

- .1      Section includes:
  - .1      Concrete housekeeping pads, hangers and supports for mechanical piping, ducting and equipment.

**1.2**      **RELATED SECTIONS**

- .1      Section 01 33 00 - Submittal Procedures.
- .2      Section 01 35 29 06 – Health and Safety Requirements
- .3      Section 02 41 13 – Selective Site Demolition
- .4      Section 05 12 23 - Structural Steel for Buildings.
- .5      Section 05 50 00 - Metal Fabrications.

**1.3**      **REFERENCES**

- .1      American National Standards Institute/ American Society of Mechanical Engineers (ANSI/ASME)
  - .1      ANSI/ASME B31.1, Power Piping, (SI Edition).
- .2      American Society for Testing and Materials (ASTM)
  - .1      ASTM A125, Specification for Steel Springs, Helical, Heat-Treated.
  - .2      ASTM A307, Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
  - .3      ASTM A563, Specification for Carbon and Alloy Steel Nuts.
- .3      Factory Mutual (FM)
- .4      Health Canada / Workplace Hazardous Materials Information System (WHMIS).
  - .1      Materials Safety Data Sheets (MSDS).
- .5      Manufacturer's Standardization Society of the Valves and Fittings Industry (MSS)
  - .1      MSS SP-58, Pipe Hangers and Supports - Materials, Design and Manufacture.
  - .2      ANSI/MSS SP-69, Pipe Hangers and Supports - Selection and Application.
  - .3      MSS SP-89, Pipe Hangers and Supports - Fabrication and Installation Practices.
- .6      Underwriter's Laboratories of Canada (ULC)

**1.4        SYSTEM DESCRIPTION**

- .1        Design Requirements
  - .1        Construct pipe hanger and support to manufacturer's recommendations utilizing manufacturer's regular production components, parts and assemblies.
  - .2        Base maximum load ratings on allowable stresses prescribed by MSS SP58 or ASME B31.1.
  - .3        Ensure that supports, guides, anchors do not transmit excessive quantities of heat to building structure.
  - .4        Design hangers and supports to support systems under all conditions of operation, allow free expansion and contraction, prevent excessive stresses from being introduced into pipework or connected equipment.
  - .5        Provide for vertical adjustments after erection and during commissioning. Amount of adjustment to be in accordance with MSS SP58.
- .2        Performance Requirements
  - .1        Design supports, platforms, catwalks, hangers, to withstand seismic events for location as per the National Building Code

**1.5        SUBMITTALS**

- .1        Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .2        Shop drawings: submit drawings stamped and signed for approval by Owner's Representative.
- .3        Submit shop drawings and product data for following items:
  - .1        Bases, hangers and supports.
  - .2        Connections to equipment and structure.
  - .3        Structural assemblies.
- .4        Quality assurance submittals: submit following in accordance with Section 01 33 00 - Submittal Procedures.
  - .1        Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
  - .2        Instructions: submit manufacturer's installation instructions.
    - .1        Owner's Representative will make available 1 copy of systems supplier's installation instructions.
- .5        Closeout Submittals:
  - .1        Provide maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals

**1.6            QUALITY ASSURANCE**

- .1        Health and Safety:
  - .1        Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

**1.7            DELIVERY, STORAGE, AND HANDLING**

- .1        Packing, shipping, handling and unloading:
  - .1        Deliver, store and handle in accordance with Section 01 61 00 - Common Product Requirements.
  - .2        Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2        Waste Management and Disposal:
  - .1        Construction/Demolition Waste Management and Disposal: separate waste materials for reuse and recycling in accordance with Section 02 41 13 Selective Site Demolition

**PART 2            PRODUCTS**

**2.1            GENERAL**

- .1        Fabricate hangers, supports and sway braces in accordance with ANSI B31.1 and MSS SP-58 and SP-89.
- .2        Use components for intended design purpose only. Do not use for rigging or erection purposes.

**2.2            EQUIPMENT SUPPORTS**

- .1        Fabricate equipment supports not provided by equipment manufacturer from structural grade steel meeting requirements of Section 05 12 23 - Structural Steel for Buildings. Submit calculations with shop drawings.

**2.3            EQUIPMENT ANCHOR BOLTS AND TEMPLATES**

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

**2.4            OTHER EQUIPMENT SUPPORTS**

- .1        From structural grade steel meeting requirements of Section 05 12 23 - Structural Steel for Buildings.
- .2        Submit structural calculations with shop drawings.

**PART 3**      **EXECUTION**

**3.1**      **MANUFACTURER'S INSTRUCTIONS**

- .1      Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

**3.2**      **INSTALLATION**

- .1      Install in accordance with:
  - .1      Manufacturer's instructions and recommendations.
- .2      Provide supplementary structural steelwork where structural bearings do not exist or where concrete inserts are not in correct locations.

**3.3**      **HORIZONTAL MOVEMENT**

- .1      Angularity of rod hanger resulting from horizontal movement of pipework from cold to hot position not to exceed 4 degrees from vertical.
- .2      Where horizontal pipe movement is less than 13 mm, offset pipe hanger and support so that rod hanger is vertical in the hot position.

**3.4**      **FINAL ADJUSTMENT**

- .1      Adjust hangers and supports:
  - .1      Ensure that rod is vertical under operating conditions.
  - .2      Equalize loads.
- .2      Adjustable clevis:
  - .1      Tighten hanger load nut securely to ensure proper hanger performance.
  - .2      Tighten upper nut after adjustment.
- .3      C-clamps:
  - .1      Follow manufacturer's recommended written instructions and torque values when tightening C-clamps to bottom flange of beam.
- .4      Beam clamps:
  - .1      Hammer jaw firmly against underside of beam.

**END OF SECTION**