
Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 23 05 01 – Common Work Results for Mechanical.

1.2 REFERENCES

- .1 American Society of Mechanical Engineers (ASME)
 - .1 ASME B31.1-20, Power Piping.
- .2 ASTM International
 - .1 ASTM A 125-1996(2018), Standard Specification for Steel Springs, Helical, Heat-Treated.
 - .2 ASTM A 307-21, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
 - .3 ASTM A 563-21a, Standard Specification for Carbon and Alloy Steel Nuts.
- .3 Manufacturer's Standardization Society of the Valves and Fittings Industry (MSS)
 - .1 MSS SP 58-2018, Pipe Hangers and Supports Materials, Design and Manufacture.
 - .2 MSS SP 69-2003, Pipe Hangers and Supports Selection and Application.
 - .3 MSS SP 89-2003, Pipe Hangers and Support Fabrication and Installation Practices.
- .4 Underwriter's Laboratories of Canada (ULC)

Part 2 Products

2.1 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 ASME B31.1 or MSS SP 58.
 - .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 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 in accordance with MSS SP 58.
 - .6 Performance Requirements:
 - .1 Design supports, platforms, catwalks, hangers to withstand seismic events.
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2.2 GENERAL

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

2.3 PIPE HANGERS

- .1 Finishes:
 - .1 Pipe hangers and supports: galvanized.
 - .2 Use hot dipped galvanizing process.
 - .3 Ensure steel hangers in contact with copper piping are copper plated.
 - .2 Upper attachment structural: suspension from lower flange of I-Beam:
 - .1 Cold piping DN 50 maximum: malleable iron C-clamp with hardened steel cup point setscrew, locknut and carbon steel retaining clip.
 - .2 Rod: 9 mm UL listed
 - .3 Cold piping DN 65 or greater, hot piping: malleable iron beam clamp, eye rod, jaws and extension with carbon steel retaining clip, tie rod, nuts and washers, UL listed and MSS-SP 69.
 - .3 Upper attachment structural: suspension from upper flange of I-Beam
 - .1 Cold piping DN 50 maximum: ductile iron top-of-beam C-clamp with hardened steel cup point setscrew, locknut and carbon steel retaining clip, UL listed and MSS SP 69.
 - .2 Cold piping DN 65 or greater, hot piping: malleable iron top-of-beam jaw-clamp with hooked rod, spring washer, plain washer and nut UL listed..
 - .4 Upper attachment to concrete:
 - .1 Ceiling: carbon steel welded eye rod, clevis plate, clevis pin and cotters with weldless forged steel eye nut. Ensure eye 6 mm minimum greater than rod diameter.
 - .2 Concrete inserts: wedge shaped body with knockout protector plate UL listed and MSS SP 69.
 - .5 Shop and field-fabricated assemblies:
 - .1 Sway braces for seismic restraint systems: retain services of Seismic Engineer, submit stamped and sealed shop drawings submissions.
 - .2 Support of Bay 3 Return Air Duct Header: Retain services of Structural and Seismic Engineer for design and fabrication of support structure serving Return Air Duct Header.
 - .6 Hanger rods: threaded rod material to MSS SP 58:
 - .1 Ensure that hanger rods are subject to tensile loading only.
 - .2 Provide linkages where lateral or axial movement of pipework is anticipated.
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- .7 Pipe attachments: material to MSS SP 58:
 - .1 Attachments for steel piping: carbon steel.
 - .2 Attachments for copper piping: copper plated black steel.
 - .3 Use insulation shields for hot pipework.
 - .4 Oversize pipe hangers and supports.
 - .8 Adjustable clevis: material to MSS SP 69 UL listed, clevis bolt with nipple spacer and vertical adjustment nuts above and below clevis.
 - .1 Ensure "U" has hole in bottom for rivetting to insulation shields.
 - .9 Yoke style pipe roll: carbon steel yoke, rod and nuts with cast iron roll, to MSS SP 69.
 - .10 U-bolts: carbon steel to MSS SP 69 with 2 nuts at each end to ASTM A 563
 - .1 Finishes for steel pipework: black.
 - .11 Pipe rollers: cast iron roll and roll stand with carbon steel rod to MSS SP 69.

2.4 INSULATION SHIELDS

- .1 Insulated cold piping:
 - .1 64 kg/m³ density insulation plus insulation protection shield to: MSS SP 69, galvanized sheet carbon steel. Length designed for maximum 3 m span.
- .2 Insulated hot piping:
 - .1 Curved plate 300 mm long, with edges turned up, welded-in centre plate for pipe sizes DN 300 and over, carbon steel to comply with MSS SP 69.

Part 3 Execution

3.1 INSTALLATION

- .1 Install in accordance with Manufacturer's instructions and recommendations.
- .2 Vibration Control Device:
 - .1 Install on piping systems at pumps, boilers, chillers, cooling towers, and as indicated.