

SECTION 15140
SUPPORTS, BASES, AND ANCHORS

PART 1 GENERAL

1.1 SECTION INCLUDES:

- A. Pipe and equipment hangers and supports.
- B. Equipment bases and supports.
- C. Sleeves and seals.
- D. Flashing and sealing equipment and pipe stacks.

1.2 REFERENCES

- A. ASME B31.1 - Power Piping.
- B. ASME B31.2 - Fuel Gas Piping.
- C. ASME B31.5 - Refrigeration Piping.
- D. ASME B31.9 - Building Services Piping.
- E. ASTM F708 - Design and Installation of Rigid Pipe Hangers.
- F. MSS SP58 - Pipe Hangers and Supports - Materials, Design and Manufacture.
- G. MSS SP69 - Pipe Hangers and Supports - Selection and Application.
- H. MSS SP89 - Pipe Hangers and Supports - Fabrication and Installation Practices.
- I. NFPA 13 - Installation of Sprinkler Systems.
- J. NFPA 14 - Installation of Standpipe and Hose Systems.
- K. UL 203 - Pipe Hanger Equipment for Fire Protection Services.

1.3 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Shop Drawings: Indicate system layout with location and detail of trapeze hangers.
- C. Product Data: Provide manufacturers catalog data including load capacity.
- D. Design Data: Indicate load carrying capacity of trapeze, multiple pipe, and riser support hangers.
- E. Manufacturer's Installation Instructions: Indicate special procedures and assembly of components.

1.4 REGULATORY REQUIREMENTS

- A. Conform to applicable code for support of plumbing and hydronic piping.
- B. Supports for Sprinkler Piping: In conformance with NFPA 13.
- C. Supports for Standpipes: In conformance with NFPA 14.

PART 2 PRODUCTS

2.1 PIPE HANGERS AND SUPPORTS

- A. Fire Protection Piping:
 - 1. Conform to NFPA 13 and NFPA 14.
 - 2. Hangers for Pipe Sizes 2 to 1½": Carbon steel, adjustable swivel, split ring.
 - 3. Hangers for Pipe Sizes 2" and over: Carbon steel, adjustable, clevis.
 - 4. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.

5. Wall Support for Pipe Sizes to 3": Cast iron hook.
 6. Wall Support for Pipe Sizes 4" and over: Welded steel bracket and wrought steel clamp.
 7. Vertical Support: Steel riser clamp.
 8. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
 9. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.
- B. Plumbing Piping - DWV:
1. Conform to ASME B31.9, ASTM F708, MSS SP58, MSS SP69, and MSS SP89.
 2. Hangers for Pipe Sizes 2 to 1½" inch: Carbon steel, adjustable swivel, split ring.
 3. Hangers for Pipe Sizes 2" and over: Carbon steel, adjustable, clevis.
 4. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
 5. Wall Support for Pipe Sizes to 3": Cast iron hook.
 6. Wall Support for Pipe Sizes 4" and over: Welded steel bracket and wrought steel clamp.
 7. Vertical Support: Steel riser clamp.
 8. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
 9. Copper Pipe Support: Vinyl coated carbon steel ring, adjustable. Copper plated or copper clad hangers shall not be used.
- C. Plumbing Piping - Water:
1. Conform to ASME B31.9, ASTM F708, MSS SP58, MSS SP69, and MSS SP89.
 2. Hangers for Pipe Sizes 2 to 1½": Carbon steel, adjustable swivel, split ring.
 3. Hangers for Cold Pipe Sizes 2" and over: Carbon steel, adjustable, clevis.
 4. Hangers for Hot Pipe Sizes 2 to 4": Carbon steel, adjustable, clevis.
 5. Hangers for Hot Pipe Sizes 6" and Over: Adjustable steel yoke, cast iron roll, double hanger.
 6. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
 7. Multiple or Trapeze Hangers for Hot Pipe Sizes 6" and Over: Steel channels with welded spacers and hanger rods, cast iron roll.
 8. Wall Support for Pipe Sizes to 3": Cast iron hook.
 9. Wall Support for Pipe Sizes 4" and over: Welded steel bracket and wrought steel clamp.
 10. Wall Support for Pipe Sizes 6" and over: Welded steel bracket and wrought steel clamp with adjustable steel yoke and cast iron roll.
 11. Vertical Support: Steel riser clamp.
 12. Floor Support for Cold Pipe: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
 13. Floor Support for Hot Pipe Sizes 4": Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
 14. Floor Support for Hot Pipe Sizes 6" and over: Adjustable cast iron roll and stand, steel screws, and concrete pier or steel support.
 15. Copper Pipe Support: Vinyl coated carbon steel ring, adjustable. Copper plated or copper clad hangers shall not be used.
- D. Hydronic Piping:
1. Conform to ASME B31.9, ASTM F708, MSS SP58, MSS SP69, and MSS SP89.
 2. Hangers for Pipe Sizes 2 to 1½": Galvanized steel, adjustable swivel, split ring.
 3. Hangers for Cold Pipe Sizes 2" and over: Galvanized steel, adjustable, clevis.
 4. Hangers for Hot Pipe Sizes 2 to 4": Carbon steel, adjustable, clevis
 5. Hangers for Hot Pipe Sizes 6" and over: Adjustable steel yoke, cast iron roll, double hanger.
 6. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.

7. Multiple or Trapeze Hangers for Hot Pipe Sizes 6" and over: Steel channels with welded spacers and hanger rods, cast iron roll.
 8. Wall Support for Pipe Sizes to 3": Cast iron hook.
 9. Wall Support for Pipe Sizes 4" and over: Welded steel bracket and wrought steel clamp.
 10. Wall Support for Pipe Sizes 6" and over: Welded steel bracket and wrought steel clamp with adjustable steel yoke and cast iron roll.
 11. Vertical Support: Steel riser clamp
 12. Floor Support for Cold Pipe: Galvanized adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
 13. Floor Support for Hot Pipe Sizes 4": Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
 14. Floor Support for Hot Pipe Sizes 6" and over: Adjustable cast iron roll and stand, steel screws, and concrete pier or steel support.
 15. Copper Pipe Support: Vinyl coated carbon steel ring, adjustable. Copper plated or copper clad hangers shall not be used.
- E. Refrigerant Piping:
1. Conform to ASME B31.5, ASTM F708, MSS SP58, MSS SP69, and MSS SP89.
 2. Hangers for Pipe Sizes 2 to 1½": Galvanized steel, adjustable swivel, split ring.
 3. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
 4. Wall Support for Pipe Sizes to 1½": Cast iron hook.
 5. Vertical Support: Steel riser clamp.
 6. Floor Support: Galvanized adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
 7. Copper Pipe Support: Vinyl coated carbon steel ring, adjustable. Copper plated or copper clad hangers shall not be used.

2.2 ACCESSORIES

- A. Hanger Rods: Mild steel threaded both ends, threaded one end, or continuous threaded.

2.3 INSERTS

- A. Malleable iron case of galvanized steel shell and expander plug for threaded connection with lateral adjustment, top slot for reinforcing rods, lugs for attaching to forms, size inserts to suit threaded hanger rods.

2.4 FLASHING

- A. Metal flashing: 26-gage galvanized steel.
- B. Metal Counter-flashing: 22-gage galvanized steel.
- C. Lead Flashing:
 1. Waterproofing: 5-lb/sq ft sheet lead.
 2. Soundproofing: 1-lb/sq ft sheet lead.
- D. Flexible Flashing: 47 mil thick butyl sheet; compatible with roofing.
- E. Caps: Steel, 22-gage minimum; 16-gage at fire resistant elements.

2.5 EQUIPMENT CURBS

- A. Fabrication: Welded 18-gage galvanized steel shell and base, mitered 3" cant, variable step to match roof insulation, factory installed wood nailer.

2.6 SLEEVES

- A. For materials refer to Section 15000, Item 3.7.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

3.2 INSERTS

- A. Provide inserts for placement in concrete formwork.
- B. Provide inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
- C. Provide hooked rod to concrete reinforcement section for inserts carrying pipe over 4".
- D. Where concrete slabs form finished ceiling, locate inserts to be flush with slab surface.
- E. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut recessed into and grouted flush with slab.

3.3 PIPE HANGERS AND SUPPORTS

- A. Support horizontal and vertical piping in accordance with Florida Building Code Plumbing.
- B. Install hangers to provide minimum 2" space between finished covering and adjacent work.
- C. Place pipe hanger within 12" of each turn or elbow.
- D. Use hangers with 1½" minimum vertical adjustment.
- E. Support horizontal cast iron pipe adjacent to each hub, with 5' maximum spacing between hangers.
- F. Support vertical piping at every floor. Support vertical cast iron pipe at each floor at hub.
- G. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.
- H. Support riser piping independently of connected horizontal piping.
- I. Provide vinyl coated carbon steel hangers and supports. Copper plated or copper clad hangers shall not be used. Avoid contact of dissimilar metals.
- J. Design hangers for pipe movement without disengagement of supported pipe.
- K. Prime coat exposed steel hangers and supports. Refer to Section 09900. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.

3.4 EQUIPMENT BASES AND SUPPORTS

- A. Provide housekeeping pads of concrete, minimum 4" thick and extending 6" beyond supported equipment. Refer to Section 03300.
- B. Provide templates, anchor bolts, and accessories for mounting and anchoring equipment.
- C. Construct supports of steel members. Brace and fasten with flanges bolted to structure.
- D. Provide rigid anchors for pipes after vibration isolation components are installed.

3.5 FLASHING

- A. Provide flexible flashing and metal counter-flashing where piping and ductwork penetrate weather or waterproofed walls, floors and roofs.
- B. Flash vent and soil pipes projecting 3" minimum above finished roof surface with lead worked one-inch minimum into hub, 8" minimum clear on sides with 24" x 24" sheet size. For pipes through outside walls, turn flanges back into wall and caulk, metal counter-flash, and seal.
- C. Flash floor drains in floors with topping over finished areas with lead, 10" clear on sides with minimum 36" x 36" sheet size. Fasten flashing to drain clamp device.
- D. Seal floor, shower and mop sink drains watertight to adjacent materials.
- E. Provide acoustical lead flashing around ducts and pipes penetrating equipment rooms, installed in accordance with manufacturer's instructions for sound control.
- F. Provide curbs for mechanical roof installations 14" minimum high above roof surface. Flash and counter flash with sheet metal, seal watertight. Attach counter flashing mechanical equipment and lap base flashing on roof curbs. Flatten and solder joints.
- G. Adjust storm collars tight to pipe with bolts; caulk around top edge. Use storm collars above roof jacks. Screw vertical flange section to face of curb.

3.6 SLEEVES

- A. For construction and execution refer to Section 15000, item 3.7.

END OF SECTION