

The School District of Palm Beach County

Project Name:

SDPBC Project No.:

SECTION 23 05 29
CURBS, HANGERS and SUPPORTS for HVAC PIPING

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 and Heat Transfer Components
- D. ASME B31.9 – Building Service Piping
- E. ASTM F708 – Standard Practice for Design and Installation of Rigid Pipe Hangers
- F. MSS SP58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation
- G. FBC – Florida Building Code

1.3 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- 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 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.

PART 2 PRODUCTS

2.1 Piping

- A. Hydronic Piping
 - 1. Conform to ASME B31.9, ASTM F708, and MSS SP58.
 - 2. Hangers for Pipe Sizes 2 to 1½": Use galvanized steel adjustable swivel split ring.
 - 3. Hangers for Cold Pipe Sizes 2" and over: Use galvanized steel adjustable clevis.
 - 4. Hangers for Hot Pipe Sizes 2 to 4": Use 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: Use steel channels with welded spacers and hanger rods.
 - 7. Multiple or Trapeze Hangers for Hot Pipe Sizes 6" and over: Use steel channels with welded spacers and hanger rods, cast iron roll.
 - 8. Wall Support for Pipe Sizes to 3": Use cast iron hook.
 - 9. Wall Support for Pipe Sizes 4" and over: Use welded steel bracket and wrought steel clamp.
 - 10. Wall Support for Pipe Sizes 6" and over: Use welded steel bracket and wrought steel clamp with adjustable steel yoke and cast iron roll.

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11. Vertical Support: Steel riser clamp
 12. Floor Support for Cold Pipe: Use galvanized adjustable pipe saddle, lock nut, nipple, floor flange and concrete pier or steel support.
 13. Floor Support for Hot Pipe Sizes 4": Use galvanized adjustable pipe saddle, lock nut, nipple, galvanized floor flange and concrete pier, or galvanized steel support.
 14. Floor Support for Hot Pipe Sizes 6" and over: Use adjustable cast iron roll and stand, steel screws, concrete pier or steel support.
 15. Copper Pipe Support: Use vinyl coated carbon steel ring, adjustable.
 - a. Do not use copper plated or copper clad hangers.
- B. Refrigerant Piping
1. Conform to ASME B31.5, ASTM F708, and MSS SP58.
 2. Hangers for Pipe Sizes 2 to 1½": Use galvanized steel adjustable swivel split ring.
 3. Multiple or Trapeze Hangers: Use steel channels with welded spacers and hanger rods.
 4. Wall Support for Pipe Sizes to 1½": Use cast iron hook.
 5. Vertical Support: Use steel riser clamp.
 6. Floor Support: Use galvanized adjustable pipe saddle, lock nut, nipple, floor flange, concrete pier, or steel support.
 7. Copper Pipe Support: Use vinyl coated carbon steel ring, adjustable.
 - a. Do not use copper plated or copper clad hangers.
- 2.2 ACCESSORIES
- A. Hanger Rods shall be 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 stainless steel.
 - B. Metal Counter-flashing: 22-gage stainless 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: Stainless Steel 22-gage minimum, 16-gage at fire resistant elements
- 2.5 EQUIPMENT CURBS
- A. Factory prefabricated welded aluminum or stainless roof curbs, shell, and base, mitered 3" cant, variable step to match roof profile:
 1. Openings less than 50" x 50" use 0.065 aluminum sheets, or 18 gauge stainless steel.
 2. Openings 50" x 50" or greater use 0.080 aluminum sheets, or 16 gauge stainless steel.
 - B. Curb shall be secured to roof joists and decking with watertight flashing and completely sealed with roof membrane.
- 2.6 SLEEVES
- A. For materials, refer to Section 23 05 00, Item 3.7.

PART 3 EXECUTION

3.1 INSTALLATION

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- 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 FBC 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, or 8" on center for straight pipe.
- 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.
 - 1. 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.
 - 1. Do not use copper plated or copper clad hangers.
 - 2. Avoid contact of dissimilar metals.
- J. Design hangers for pipe movement without disengagement of supported pipe.
- K. Provide and install galvanized steel hangers and supports.
 - 1. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not exposed.
 - 2. When using trapeze hangers are used, provide restraints for each pipe supported.
 - 3. Provide double nuts to secure rods and supports in place.
 - 4. When supporting insulated pipe, provide galvanized metal saddles for each hanger to prevent damage to insulation.
 - 5. Paint all welds with cold galvanized paint to prevent rusting.
 - 6. All supports and mounting flanges shall be galvanized steel and paint all exterior hangers and supports per section 23 05 00 section 3.17. Color determined by Architect.
 - 7. All exterior mounting hardware shall be galvanized or stainless steel.

3.4 EQUIPMENT BASES AND SUPPORTS

- A. Provide housekeeping pads of concrete, minimum 4" thick and extending 6" beyond supported equipment.
 - 1. Refer to Section 03 30 00.
- B. Provide templates, anchor bolts, and accessories for mounting and anchoring equipment.
- C. Construct supports of steel members.
 - 1. Brace and fasten with flanges bolted to structure.
 - 2. Raise all floor mounted supports a minimum of 1" AFF and insert grout to prevent to prevent water from puddling under support.

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3. Floor mounted supports shall be provided with removable top bracket that completes the pipe circumference assembly.
 4. All wall mounted supports shall be fabricated from galvanized steel with cold galvanized paint covering all welds.
- D. Provide rigid anchors for pipes after installing vibration isolation components.
- 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.
 1. 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.
 1. 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.
 1. Flash and counter flash with sheet metal, seal watertight.
 2. Attach counter flashing mechanical equipment and lap base flashing on roof curbs.
 3. Flatten and solder joints.
 - G. Adjust storm collars tight to pipe with bolts; caulk around top edge.
 1. 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 23 05 00, item 3.7.

END OF SECTION