

SECTION 15140

SUPPORTS AND ANCHORS

PART 1 - GENERAL

1.1 WORK INCLUDED

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

1.2 REFERENCES

- A. NFPA 13: Standard for the Installation of Sprinkler Systems.
- B. NFPA 14: Standard for the Installation of Standpipe and Hose Systems.

1.3 QUALITY ASSURANCE: Supports for Sprinkler Piping: In conformance with NFPA 13. Supports for Standpipes: In conformance with NFPA 14.

1.4 SUBMITTALS: Submit shop drawings and product data under provisions of Section 01300. Indicate hanger and support framing and attachment methods.

PART 2 - PRODUCTS

2.1 PIPE HANGERS AND SUPPORTS

- A. Hangers for Pipe Sizes ½ to 1-1/2 inch: Malleable iron, adjustable swivel, split ring.
- B. Hangers for Pipe Sizes 2 inches and over: Carbon steel, adjustable clevis.
- C. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods. For two or more systems of piping run parallel and with same grade trapeze hangers may be used, as indicated.
- D. Wall support for pipe sizes to 3 inches: Cast iron hook.
- E. Wall support for pipe sizes 4 inches and over: Welded steel bracket and wrought steel clamp; adjustable steel yoke.
- F. Vertical support: Steel riser clamp.

- G. Floor support for all pipe sizes: Cast iron adjustable pipe saddle, locknut nipple, floor flange, and concrete pier or steel support.
- H. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.
- I. Shield for insulated piping 2 inches and smaller: 18 gage galvanized steel shield over insulation in 180 degree segments, minimum 12 inches long at pipe support.
- J. Shields for insulated water piping 2-1/2 inches and larger: Hard block non-conducting saddles in 90 degree segments, 12 inches minimum length, block thickness same as insulation thickness.
- K. Hangers shall be similar to "Split Ring" type. Metal strap or wire will not be acceptable.
- L. Use 22 gage galvanized sheet steel saddles between the pipe covering and each pipe hanger on all insulated lines. Saddles shall extend along pipe runs and at least half way up piping on each side.

Hang all piping under building slab per detail on Drawings.

2.2 HANGER RODS: Steel Hanger Rods: Threaded both ends, threaded one end, or continuous threaded.

2.3 INSERTS: 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 thick galvanized steel.
- B. Lead Flashing: 5 lb/sq ft sheet lead for waterproofing; one lb/sq ft sheet lead for soundproofing.
- C. Flexible Flashing: 47 mil thick sheet compatible with roofing.
- D. Caps: Steel, 22 gage minimum; 16 gage at fire resistant elements.

2.5 EQUIPMENT CURBS: Provide curbs as manufactured by equipment supplier to fit roof.

2.6 SLEEVES

- A. Sleeves for Pipes through Non-fire rated floors: Form with 18 gage galvanized steel.
- B. Sleeves for Pipes through Non-fire rated beams, walls, footings, and potentially wet floors: Form with steel pipe of 18 gage galvanized steel.

- C. Sleeves for pipes through fire rated and fire resistive floors and walls and fireproofing: Prefabricated fire rated sleeves including seals, UL listed.
 - D. Sleeves for Round Ductwork: Form with galvanized steel.
 - E. Sleeves for Rectangular Ductwork: Form with galvanized steel.
 - F. Fire Stopping Insulation: Glass fiber type, non-combustible. Section 07270: Fire Stopping.
 - G. Caulk: Acrylic sealant of quality specified in Section 07900.
- 2.7 FABRICATION:** Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping. Design hangers without disengagement of supported pipe. Provide copper plated hangers and supports for copper piping.
- 2.8 FINISH:** Prime coat exposed steel hangers and supports. Hangers and supports located in crawl spaces, pipe shafts, and above suspended ceilings spaced are not considered exposed.

PART 3 - EXECUTION

3.1 INSERTS

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

3.2 PIPE HANGERS AND SUPPORTS

- A. Support horizontal piping as follows:

<u>PIPE SIZE</u>	<u>MAX HANGER SPACING</u>	<u>HANGER DIAMETER</u>
½ to 1-1/4 inch	6' -6"	3/8"
1-1/2 to 2 inch	10' -0"	3/8"
2-1/2 to 3 inch	10' -0"	½"
4 to 6 inch	10' -0"	5/8"
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(or No-Hub) 5' - 0" and at joints

- B. Install hangers to provide minimum $\frac{1}{2}$ inch space between finished covering and adjacent work. Place a hanger within 12 inches of each horizontal elbow. Use hangers with 1-1/2 inch minimum vertical adjustment. Support horizontal cast iron pipe adjacent to each hub, with 5 feet maximum spacing between hangers.
- C. Support vertical piping at every floor. Support vertical cast iron pipe at each floor at hub. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers. Support riser piping independently of connected horizontal piping.

3.3 EQUIPMENT BASES AND SUPPORTS: Provide equipment bases of concrete type as indicated on structural drawings. Provide templates, anchor bolts, and accessories for mounting and anchoring equipment. Construct support of steel members. Brace and fasten with flanges bolted to structure. Provide rigid anchors for pipes after vibration isolation components are installed.

3.4 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 inches minimum above finished roof surface with lead worked one inch minimum into hub, 8 inches minimum clear on sides with 24 x 24 inches sheet size. For pipes through outside walls, turn flanges back into wall and caulk, metal counter flash and seal.
- C. Provide acoustical lead flashing around ducts and pipes penetrating equipment rooms, installed in accordance with manufacturer's instructions for sound control. Provide curbs for mechanical roof installation 14 inches minimum high above roof surface. Flexible sheet flash and counter flash with sheet metal; seal watertight.

3.5 SLEEVES

- A. Set sleeves in position in formwork. Provide reinforcing around sleeves. Extend sleeves through floors one inch above finished floor level. Calk sleeves full depth and provide floor plate.
- B. Where piping or ductwork penetrates floor, ceiling, or wall, close off space between pipe or duct and adjacent work with fire stopping insulation and calk seal. Provide close fitting metal collar or escutcheon covers at both sides of penetration. Install chrome plated steel escutcheons at finished surfaces.

END OF SECTION