

SECTION 15062

**NON-PENETRATING ROOFTOP
HANGERS AND SUPPORTS**



For best results, display hidden notes to specifier.

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Pipe supports.
- B. Conduit supports.
- C. Duct supports, cable trays and mechanical supports.
- E. Crossover and walkway.
- D. Accessories.

1.2 RELATED SECTIONS

- A. Section 07700 - Roof Specialties and Accessories.
- B. Section 15060 - Hangers and Supports: Hangers and supports inside building.
- C. Section 16070 - Hangers and Supports: Hangers and supports inside building.

1.3 SUBMITTALS

- A. Product Data: Provide specification and data sheet for each type of support to be used.
- B. Shop Drawings: Show installation layout, indicating product type and spacing.
- C. Verification Samples: Actual samples of bases, each type of support, hanger, and fasteners.

1.4 QUALIFICATIONS

- A. Manufacturer Qualifications: Company specializing in the manufacturing of pipe support systems.
- B. Installer Qualifications: Company approved by manufacturer and with not less than 5 years of experience in installation of piping support systems.
- C. Pre-Installation Meeting: After approval of submittals, but before beginning installation, conduct a meeting at project site attended by Architect, Contractor, installers of roofing, and mechanical and electrical piping to be installed in pipe support system.
 - 1. Purpose of meeting is to describe in detail the installation process and to establish agreement, coordination, and responsibilities.
 - 2. Prepare detailed meeting report and distribute copies to Architect and all attendees.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to project site in manufacturer's original packaging, marked with manufacturer's name, product model names and catalog numbers, identification numbers and other related information.
- B. Store materials under cover until needed.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Miro Industries Inc; 2700 South 900 West, Salt Lake City, Utah 84119. ASD. Tel: (800) 768-6978. Fax: (800) 440-7958. Email: sales@miroind.com., www.miroind.com.

2.2 SUPPORTS AND HANGERS

- A. Supports and Hangers - General: Provide with bases that rest on the roof membrane and that have:
1. Gently rounded edges to prevent damage to roof membrane.
 2. Drainage ports to prevent ponding.
 3. Carbon black additive in polycarbonate, when used, for UV stabilization.
- B. Fixed Height Pipe Stands: Polycarbonate resin bases.
1. 1-1/2-Inch Nominal Pipe: "U"-shaped cradle; 1-1/2 inch (38.1 mm) ID maximum pipe capacity, 1-9/10 inch (48.3 mm) OD maximum pipe capacity; 1-1/2 inch (38.1 mm) additional height per spacer, maximum 3 spacers; total load up to 80 lb (36 kg); 6 by 6 inch (152.4 by 152.4 mm) base (Model 1.5 and Model 1.5 Spacer).
 2. 3-Inch Nominal Pipe: Self-lubricating polycarbonate roller supported by glass filled nylon roller rod in "U"-shaped cradle; 3 inch (76.2 mm) ID maximum pipe capacity, 3-3/4 inch (95.25 mm) OD maximum pipe capacity; 2 inch (50.8 mm) additional pipe clearance per spacer, maximum 3 spacers; total load up to 100 lb (45 kg); 7-3/4 by 7-3/4 inch (196.8 by 196.8 mm) base (Model 3-R and Model 3-R Spacer).
 3. 4-Inch Nominal Pipe: Self-lubricating polycarbonate roller supported by glass filled nylon rod; 4 inch (101.6 mm) maximum pipe capacity, 5 inch (127 mm) OD maximum pipe capacity; total load up to 125 lb (57 kg); 7-1/2 by 10 inch (183.5 by 250 mm) base (Model 4-R).
 4. 5-Inch Nominal Pipe: Self-lubricating polycarbonate roller supported by stainless steel rod; 5 inch (127 mm) ID maximum pipe capacity, 6 inch (152.4 mm) OD maximum pipe capacity; total load up to 150 lb (68 kg); 9 by 15.25 inch (228.6 by 387.3 mm) base (Model 5-R).
- C. Adjustable Height Pipe Stands: Self-lubricating polycarbonate roller mounted on stainless steel or polycarbonate roller rod supported by two stainless steel threaded rods, with height adjustment up to 7-1/2 inches (183.5 mm) or 12 inches (304.8 mm) above roof surface.
1. 3-Inch Nominal Pipe: 3 inch (76.2 mm) ID maximum pipe capacity, 3-3/4 inch (95.25 mm) OD maximum pipe capacity.
 - a. Base Material: Polycarbonate resin; total load up to 100 lb (45 kg); 7-1/2 by 10 inch (183.5 by 254 mm) or 9 by 15.25 (228.6 by 387.3 mm) base (Model 3-RAH-7 or 3-RAH-12).
 - b. Base Material: Stainless steel; total load up to 100lb (45 kg); 8 by 14 inch (203.2 by 355.6 mm) base (Model 3-RAH-7 SS).
 - c. Base Material: Hot-dip galvanized steel; total load up to 100 lb (45 kg); 8 by 14 inch (203.2 by 355.6 mm) base (3-RAH-7 HDG).
 2. 4-Inch Nominal Pipe: 4 inch (101.6 mm) ID maximum pipe capacity, 5 inch (127 mm) OD maximum pipe capacity.
 - a. Base Material: Polycarbonate resin; total load up to 125 lb (57 kg); 7-1/2 by 10 inch (183.5 by 254 mm) base (Model 4-RAH-7).
 - b. Base Material: Stainless steel; total load up to 150 lb (68 kg); 12 by 16 inch (304.8 by 406.4 mm) base (Model 4-RAH-7 SS).
 - c. Base Material: Hot-dip galvanized steel; total load up to 150 lb (68 kg); 12 by 16 inch (304.8 by 406.4 mm) base (Model 4-RAH-7 HDG).
 3. 5-Inch Nominal Pipe: 5 inch (127 mm) ID maximum pipe capacity, 6 inch (152.4 mm) OD maximum pipe capacity; polycarbonate resin base; total load up to 150 lb; 9 by 15.25 inch (228.6 by 387.3 mm) base (Model 5-RAH-7 or Model 5-RAH-12).
 4. 6-Inch Nominal Pipe: 6 inch (152.4 mm) ID maximum pipe capacity, 8-1/2 inch (215.9 mm) OD maximum pipe capacity.
 - a. Base Material: Polycarbonate resin; total load up to 200 lb (90.7 kg); 16 by 18 inch (406.4 by 457.2 mm) base (Model 6-RAH-7 or 6-RAH-12).
 - b. Base Material: Stainless steel; total load up to 150 lb (68 kg); 12 by 16 inch (304.8 by 406.4 mm) base (Model 6-RAH-7 SS).
 - c. Base Material: Hot-dip galvanized steel; 12 by 16 inch (304.8 by 406.4 mm) base (Model 6-RAH-7 HDG).
- D. Pipe Hangers: H-frame assembly with horizontal channel strut supporting threaded rod and hanger; see drawings for specific hanger types and sizes required.
1. 2-1/2 Inch Nominal Pipe: Single polycarbonate resin base, stainless steel or hot-dip galvanized steel vertical rods, cross strut and hanger rod; polycarbonate or steel roller, clevis hanger or band hanger; 2-1/2 inch (63.5 mm) ID maximum pipe capacity, 3-1/2 inch (88.9 mm) OD maximum pipe capacity; total load up to 125 lb (57 kg); 9 by 15.25 inch (228.6 by 387.3 mm) base (Model 2.5-SB-H).

2. 5-Inch Nominal Pipe: Vertical rods, cross strut and hanger rod; polycarbonate or steel roller, clevis hanger or band hanger; 5 inch (127 mm) ID maximum pipe capacity, 6 inch (152.4 mm) OD maximum pipe capacity.
 - a. Base: Polycarbonate; total load up to 250 lbs. (113.3 kg); 16 by 18 inch (406.4 by 457.2 mm) bases (Model 5-SB-H P).
 - b. Base: Hot-dip galvanized steel; total load up to 170 lbs. (77 kg); 12 by 16 inch (304.8 by 406.4 mm) bases (Model 5-SB-H HDG).
 3. 6-Inch Nominal Pipe: Dual polycarbonate resin, stainless steel or hot-dip galvanized steel bases, rigid strut frame and hanger rod; polycarbonate or steel roller, clevis hanger or band hanger; 6 inch (152.4 mm) ID maximum pipe capacity, 7-1/2 inch (190.5 mm) OD maximum pipe capacity; total load up to 310 lb (140 kg), 155 lb (70.2 kg) on each base; 8 by 14 inch (203.2 by 355.6 mm) or 9 by 15.25 inch (228.6 by 387.3 mm) bases (Model 6-H).
 4. 8-Inch Nominal Pipe: Dual polycarbonate resin, stainless steel or hot-dip galvanized steel bases, rigid frame and hanger rod; steel roller, band or clevis hanger; 8 inch (203.2 mm) ID maximum pipe capacity, 9 inch (228.6 mm) OD maximum pipe capacity; total load up to 700 lb (317.1 kg), 350 lb (158.6 kg) on each base; 12 by 16 inch (304.8 by 406.4 mm), 9 by 31.69 inch (228.6 by 804.92 mm) or 16 by 18 inch (406.4 by 457.2 mm) bases (Model 8-H).
 5. 16-Inch Nominal Pipe: Dual polycarbonate resin base or 11 gage stainless steel or hot-dip galvanized bases, rigid frame and hanger rod, 11 gage hot-dip galvanized steel; hot-dip galvanized clevis hanger; 16 inch (406.4 mm) ID maximum pipe capacity, 18 inch (457.2 mm) OD maximum pipe capacity; total load up to 1600 lb (724.8 kg), 800 lb (362.4 kg) on each base; 16 by 18 inch (406.4 by 457.2 mm) or 20 by 20 inch (508 by 508 mm) bases (Model 16-H).
- E. Conduit Hangers: Hot-dip galvanized channel strut to which conduit or pipe can be attached with clamps:
1. For 2-1/2 inch (63.5 mm) Clearance Above Roof: Fixed height; 2-1/2 inch (63.5 mm) ID maximum pipe capacity, 3 inch (76.2 mm) OD maximum pipe capacity; total load up to 100 lb (45.3 kg); 7-1/2 by 10 inch (183.5 by 254 mm) base (Model 2.5-Conduit Support-2).
 2. For 5 inch (127 mm) Clearance Above Roof: Adjustable height type with two stainless steel threaded rods; 2-1/2 inch (63.5 mm) ID maximum pipe capacity, 3 inch (76.2 mm) OD maximum pipe capacity; total load up to 100 lb (45.3 kg); 7-1/2 by 10 inch (183.5 by 254 mm) base (Model 2.5-Conduit Support-5).
 3. For 7-1/2 inch (183.5 mm) Clearance Above Roof: Adjustable height type with two stainless steel threaded rods; 2-1/2 inch (63.5 mm) ID maximum pipe capacity, 3 inch (76.2 mm) OD maximum pipe capacity; total load up to 100 lb (45.3 kg); 7-1/2 by 10 inch (183.5 by 254 mm) base (Model 2.5-Conduit Support-7).
 4. For 12 inch (304.8 mm) Clearance Above Roof: Adjustable height type with two stainless steel threaded rods; 2-1/2 inch (63.5 mm) ID maximum pipe capacity, 3 inch (76.2 mm) OD maximum pipe capacity; total load up to 100 lb (45.3 kg); 9 by 15.25 inch (228.6 by 387.3 mm) base (Model 2.5-Conduit Support-12).
- F. Strut-Type Supports: Single base with two threaded rods supporting hot-dip galvanized horizontal channel strut.
1. Size: 12 inch (304.8 mm) strut 1-5/8 by 13/16 inch (41.3 x 28.6 mm), pipe clearance variable up to 7 inch (177.8 mm) above the roof membrane.
 - a. Base: Stainless steel; total load up to 150 lb (68 kg.); 12 by 16 inch (304.8 by 406.4 mm) base (Model 12-Base Strut-7 SS).
 - b. Base: Hot-dip galvanized steel; total load up to 150 lb (68 kg.); 12 by 16 inch (304.8 by 406.4 mm) base (Model 12-Base Strut-7 HDG).
 2. Size: 16 inch (406.4 mm) strut 1-5/8 by 13/16 inch (41.3 x 28.6 mm), pipe clearance variable up to 7 inch (177.8 mm) or 12 inch (304.8 mm) above the roof membrane.
 - a. Base: Polycarbonate resin; total load up to 125 lb (56.6 kg.); 9 by 15.25 inch (228.6 by 387.3 mm) base (Model 16-Base Strut-7 or 16-Base Strut-12).
 - b. Base: Polycarbonate resin; total load up to 125 lb (56.6 kg.); 9 by 15.25 inch (228.6 by 387.3 mm) base (Model 16-Base Strut-7 SS).
 - c. Base: Polycarbonate resin; total load up to 125 lb (56.6 kg.); 9 by 15.25 inch (228.6 by 387.3 mm) base (Model 16-Base Strut-7 HDG).
 3. Size: 20 inch (507.9 mm) strut 1-5/8 by 13/16 inch (41.3 x 28.6 mm), pipe clearance variable up to 7 inch (177.8 mm) or 12 inch (304.8 mm) above the roof membrane.
 - a. Base: Polycarbonate resin; total load up to 250 lb (113.3 kg.); 16 by 18 inch (406.4 by 457.2 mm) base (Model 20-Base Strut-7 or 20-Base Strut-12).

- G. Duct Supports and Cable Trays: Dual bases supporting “H” frame strut assembly to support duct.
1. Size as required; see drawings.
 2. Strut Material: Hot-dip galvanized steel.
 3. Stainless steel bases and hot-dip galvanized steel struts.
 4. Base Material: Polycarbonate resin, stainless steel or hot-dip galvanized
 5. Base Size: 8 by 14 inches (203.2 by 355.6 mm) or 9 by 15.25 inches (228.6 by 387.3 mm) (Model 6-DS).
 6. Base Size: 12 by 16 inches (304.8 by 406.4 mm) or 16 by 18 inches (406.4 by 457.2 mm) or 9 by 31.69 (228.6 by 804.92 mm) (Model 8-DS).
- H. Mechanical Equipment Supports: Bases supporting; hot-dip galvanized grating to spread weight across roof membrane.
1. Light Duty: Base Material Polycarbonate resin; total load up to 2 lb (0.9 kg) per square inch, 7-1/2 by 10 inch (183.5 by 254 mm) (Model Mechanical Support-LD).
 2. Heavy Duty: Base Material Stainless Steel or hot-dip galvanized total load up to 2 lb (0.9 kg) per square inch, 12 by 16 inches (304.8 by 406.4 mm) (Model Mechanical Support-HD).
- I. Crossover and Walkway Systems: Base supporting; hot-dip galvanized steel vertical struts with hot-dip galvanized steel horizontal grating, hot-dip galvanized corner and side brackets.
1. With cross bracing.
 2. Base Material: Polycarbonate resin, stainless steel or hot-dip galvanized steel; total load up to 200 lb (90.7 kg) per support footprint.
 3. Base Size: 9 by 31.69 inches (228.6 by 804.92 mm) or 12 by 16 inches (304.8 by 406.4 mm) or 16 by 18 inches (406.4 by 457.2 mm).

2.3 ACCESSORIES

- A. Support Pads: 15-3/4 by 19-3/4 inch (400 x 501.7 mm) square, 1/8 inch (3 mm) thick, flexible PVC with carbon black additive for UV stabilization.
- B. Deck Plates: Square metal deck plate with curved up edges, to spread load and protect roof membrane.
1. Thickness: 16 gauge (1.5 mm).
 2. Thickness: 18 gauge (1.2 mm).
 3. Thickness: 20 gauge (0.9 mm).
 4. Material: Stainless steel.
 5. Material: Hot-dip galvanized.
 6. Size: 12 x 12 inch (304.8 x 304.8 mm) square; total load up to 200 lb (90.6 kg) (Model DP-12).
 7. Size: 18 x 18 inch (457.2 x 457.2 mm) square; total load up to 400 lb (181.2 kg) (Model DP-18).
 8. Size: 24 x 24 inch (609.6 x 609.6 mm) square; total load up to 800 lb (361.4 kg) (Model DP-24).
 9. Sizes: As indicated on drawings.
 10. Application: Provide under each support, hanger, and duct base unit.
 11. Application: _____.
- C. Rollers:
1. Roller 3: 3 inch (76.2 mm) sturdy polycarbonate roller, shaft 5/8 inches (15.9 mm), end diameter 1-7/8 inches (47.6 mm). Roller surface has a 3 inch (76.2 mm) radius arch. Maximum load capacity may not exceed 150 lbs. (68 kg).
 2. Roller 5: 5 inch (127 mm) sturdy polycarbonate roller, shaft 5/8 inches (15.9 mm), end diameter 2-7/16 inches (61.9 mm) Roller surface has a 5 inch (127 mm) radius arch. Maximum load capacity may not exceed 150 lbs. (68 kg).

PART 3 EXECUTION

3.1 TAKE-OFF

- A. Provide a certified technician to do a physical on-site take-off.
1. Measure
 2. Design
 3. Lay-out
 4. Tag

3.2 CONSULTING

- A. Provide consulting on new and existing projects which will require pipe supports.
 - 1. Quantities of supports.
 - 2. Type of supports.
- B. Provide consulting on existing systems.
 - 1. Check condition of existing supports.
 - 2. Recommend improvements or changes.

3.3 TECHNICAL SERVICE

- A. Provide a trained technician to evaluate an installation to assure it meets specs and manufactures requirements.

3.4 INSTALLATION

- A. Determine that roof structure, roof insulation, and roof membrane are structurally adequate to support weight of pipe, duct, conduit, and supports and hangers.
- B. Install supports and hangers in accordance with manufacturer's recommendations.
- C. Install supports at maximum spacing of 10 feet (3 m) unless closer spacing is required due to weight of pipe or conduit contents or greater spacing is specifically allowed by manufacturer; space and adjust to support an equal amount of weight; do not exceed manufacturer's recommended load limits.
- D. Remove roofing aggregate from area 2 inches (50.8 mm) larger than support base; comply with roofing manufacturer's requirements to maintain roofing warranty.
- E. Install an additional sheet of roofing material, support pad, or deck plate beneath each support base.
- F. Support Pads:
 - 1. Remove rock, aggregate, dirt and excess dust from area to be covered by pad.
 - 2. Apply support pad on cleaned area.
 - 3. Center bases on top of support pads.
- G. Deck Plates:
 - 1. Locate centered under bases of pipe supports and hangers.
 - 2. Remove rock, aggregate, dirt and excess dust from an area 2 inches (50.8 mm) larger than deck plate.
 - 3. Install with curved edges up.
- H. Pipe Supports: Center beneath pipe so that pipe is located squarely over and through cradle or hanger. Set pipe in support without dropping or causing undue impact.
- I. Adjustable Supports: Adjust height of each support to achieve proper height and level before installing supported item.
 - 1. Level rollers or struts before installing pipe.
 - 2. Make final height adjustments to provide even distribution of load on all supports.
- J. Fixed Anchor Supports: Prior to installation of roof decking, insulation and roof membrane attach support to roof structure as indicated on drawings.
 - 1. After installation of roof decking, insulation and membrane, install pipe or roof top mechanical supports used in connection with fixed anchor supports.
 - 2. Install piping or mechanical units on each support.

3.5 FIELD QUALITY CONTROL

- A. When requested by Architect, provide a factory-trained representative of manufacturer to visit site while work is in progress to assure that installation complies with design requirements and manufacturer's installation requirements.
- B. After system startup, correct any deficiencies that arise, including but not limited to, improper location or position, improper seating or level on the roof, lack of roof pads or deck plates, inadequate operation, and as directed by Architect.