

SECTION 07 72 00 - ROOF ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Roof curbs.
 - 2. Equipment supports.
 - 3. Roof hatches.
 - 4. Fixed ladder safety railing systems.
 - 5. Movable safety railing systems.
 - 6. Pipe, conduit and duct supports.
 - 7. Vent pipe extensions.
 - 8. Storm collars.
 - 9. Isolation barrier membrane.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Meet with Owner, Architect, roofing Installer, Installer, and installers whose work interfaces with or affect roof accessories.
 - 2. Review special roof details, roof drainage, and conditions of other construction that will affect roof accessories.

1.4 COORDINATION

- A. Coordinate layout and installation of roof accessories with roofing membrane and base flashing and interfacing and adjoining construction to provide a leakproof, weathertight, secure, and noncorrosive installation.
- B. Coordinate dimensions with rough-in information or Shop Drawings of equipment to be supported.
- C. Coordinate construction operations on or adjacent to roof, included in different Sections, which depend on each other for proper installation, connection, and operation.

1.5 SUBMITTALS, GENERAL

- A. General: Submit all action submittals required by this Section concurrently.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of roof accessory. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
 - 1. Roof curbs.
 - 2. Equipment supports.
 - 3. Roof hatches.
 - 4. Fixed ladder safety railing systems.
 - 5. Movable safety railing systems.
 - 6. Adjustable-height roller-bearing pipe and conduit supports.
 - 7. Hanger-type pipe and conduit supports.
 - 8. Vent pipe extensions.
 - 9. Storm collars.
 - 10. Isolation barrier membrane.
- B. Shop Drawings: For roof accessories.
 - 1. Include plans, elevations, keyed details, and attachments to other work. Indicate dimensions, loadings, and special conditions.

1.7 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For roof accessories to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. General Performance: Roof accessories shall withstand exposure to weather and resist thermally induced movement without failure, rattling, leaking, or fastener disengagement due to defective manufacture, fabrication, installation, or other defects in construction.

2.2 ROOF CURBS

- A. Roof Curbs: Internally reinforced roof-curb units capable of supporting superimposed live and dead loads, including equipment loads and other construction indicated on Drawings, bearing continuously on roof structure, and capable of meeting performance requirements; with welded or mechanically fastened and sealed corner joints, straight sides, and integrally formed deck-mounting flange at perimeter bottom.

1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:
 - a. Conn-Fab Sales, Inc.; Series 4000.
 - b. Pate Company (The); PC-2.
 - c. Thybar Corporation; TC-3.
- B. Size: Coordinate dimensions with roughing-in information or Shop Drawings of equipment to be supported.
- C. Material: Zinc-coated (galvanized) steel sheet, 0.052 inch thick (18 gage).
- D. Construction:
 1. Curb Profile: Manufacturer's standard compatible with roofing system.
 2. Fabricate curbs to minimum height of 12 inches above roofing surface unless otherwise indicated.
 3. Top Surface: Level top of curb.
 4. Insulation: Factory insulated with 1-1/2-inch-thick glass-fiber board insulation.
 - a. R-Value: 6.0 according to ASTM C1363.
 5. Liner: Same material as curb, of manufacturer's standard thickness and finish.
 6. Nailer: Factory-installed wood nailer along top flange of curb, continuous around curb perimeter.
 7. Wind Restraint Straps and Base Flange Attachment: Provide wind restraint straps, welded strap connectors, and base flange attachment to roof structure at perimeter of curb, of size and spacing required to meet wind uplift requirements.

2.3 EQUIPMENT SUPPORTS

- A. Equipment Supports: Rail-type metal equipment supports capable of supporting superimposed live and dead loads between structural supports, including equipment loads and other construction indicated on Drawings, spanning between structural supports; capable of meeting performance requirements; with welded corner joints, and integrally formed structure-mounting flange at bottom.
 1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:
 - a. Conn-Fab Sales, Inc.; Series 300.
 - b. Pate Company (The); ES-2.
 - c. Thybar Corporation; TEMS-3.
 - B. Size: Coordinate dimensions with roughing-in information or Shop Drawings of equipment to be supported.
 - C. Material: Zinc-coated (galvanized) steel sheet, 0.052 inch thick (18 gage).
 - D. Construction:

1. Curb Profile: Manufacturer's standard compatible with roofing system.
2. Nailer: Factory-installed continuous wood nailers 5-1/2 inches wide on top flange of equipment supports, continuous around support perimeter.
3. Wind Restraint Straps and Base Flange Attachment: Provide wind restraint straps, welded strap connectors, and base flange attachment to roof structure at perimeter of curb of size and spacing required to meet wind uplift requirements.
4. Metal Counterflashing: Manufacturer's standard, removable, fabricated of same metal and finish as equipment support.
5. Fabricate equipment supports to minimum height of 12 inches above roofing surface unless otherwise indicated.

2.4 ROOF HATCHES

- A. Roof Hatches: Thermally-broken metal roof-hatch units with insulated double-walled lids and insulated single-walled curbs, welded or mechanically fastened and sealed corner joints, continuous lid-to-curb counterflashing and weathertight perimeter gasketing, straight sides, and integrally formed deck-mounting flange at perimeter bottom.
 1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:
 - a. Babcock-Davis; ThermalMAX BRHTA36X30.
 - b. Bilco Company (The); Type S-50TB.
 - c. Nystrom; ThermalMAX RHTA36X30.
- B. Type and Size: Single-leaf lid, 30 by 36 inches (verify existing opening dimensions in field).
- C. Loads: Minimum 40-lbf/sq. ft. external live load and 20-lbf/sq. ft. internal uplift load.
- D. Material: Aluminum sheet.
 1. Thickness: 0.090 inch.
 2. Finish: Mill.
- E. Construction:
 1. Curb and Hatch Lid Insulation: 3-inch-thick, polyisocyanurate board.
 - a. R-Value: 20.0 according to ASTM C1363.
 2. Hatch Lid: Opaque, insulated, and double walled, with manufacturer's standard metal liner of same material and finish as outer metal lid.
 3. Fabricate curbs to minimum height of 12 inches above roofing surface unless otherwise indicated.
- F. Hardware: Spring operators, hold-open arm, galvanized steel spring latch with turn handles, stainless steel butt- or pintle-type hinge system, and padlock hasps inside and outside.
- G. Roof-Hatch Safety Railing System: Roof-hatch manufacturer's standard system including rails, clamps, fasteners, safety barrier at railing opening, and accessories required for a complete

installation; attached to roof hatch and complying with OSHA requirements and authorities having jurisdiction.

1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:
 - a. Babcock-Davis; SRBAY36X30FG.
 - b. Bilco Company (The); BIL-Guard 2.0, RL2-STB.
 - c. Nystrom; SRBAY36X30FG.
2. Height: 42 inches above finished roof deck.
3. Posts and Rails: Aluminum pipe, Schedule 40, 1-1/4 inches in diameter.
4. Maximum Opening Size: System constructed to prevent passage of a sphere 21 inches in diameter.
5. Self-Latching Gate: Fabricated of same materials and rail spacing as safety railing system. Provide manufacturer's standard hinges and self-latching mechanism.
6. Post and Rail Tops and Ends: Weather resistant, closed or plugged with prefabricated end fittings.
7. Provide weep holes or another means to drain entrapped water in hollow sections of handrail and railing members.
8. Fabricate joints exposed to weather to be watertight.
9. Fasteners: Manufacturer's standard.
10. Finish: Powder-coat finish.
 - a. Color: Safety yellow.

2.5 MOVABLE SAFETY RAILING SYSTEMS

- A. Movable Safety Railing Systems: Manufacturer's standard system including rails, clamps, fasteners, and accessories required for a complete installation; freestanding, non-penetrating, and complying with OSHA requirements and authorities having jurisdiction.
 1. Basis-of-Design Product: Subject to compliance with requirements, provide Safety Rail Company; SRC 360 Mobile Safety Rail System, or a comparable product.
 2. Height: 42 inches above finished roof.
 3. Bases: Cast iron with EPDM pad, with base mover/dolly.
 4. Posts and Rails: Steel tube, not less than 0.064-inch-thick (16 gage), 1-5/8 inches in diameter.
 5. Maximum Opening Size: System constructed to prevent passage of a sphere 21 inches in diameter.
 6. Provide weep holes or another means to drain entrapped water in hollow sections of handrail and railing members.
 7. Fabricate joints exposed to weather to be watertight.
 8. Fasteners: Manufacturer's standard.
 9. Finish: Hot dip galvanized finish.

2.6 FIXED LADDER SAFETY RAILING SYSTEMS

- A. Fixed Ladder Safety Railing Systems: Manufacturer's standard clamp-on system including rails, clamps, fasteners, safety gate at railing opening, and accessories required for a complete installation; freestanding, non-penetrating, and complying with OSHA requirements and authorities having jurisdiction.
1. Basis-of-Design Product: Subject to compliance with requirements, provide Safety Rail Company; Ladderguard Lite 15 Fixed Ladder Guarding System, or a comparable product.
 2. Height: 42 inches above finished roof.
 3. Bases: Freestanding railing holders.
 4. Posts and Rails: Steel tube, not less than 0.064-inch-thick (16 gage), 1-5/8 inches in diameter.
 5. Spanner Brackets: Steel brackets to span gap between safety railing system and ladder rails.
 6. Maximum Opening Size: System constructed to prevent passage of a sphere 21 inches in diameter.
 7. Self-Latching Gate: Fabricated of same materials and rail spacing as safety railing system. Provide manufacturer's standard hinges and self-latching mechanism.
 8. Provide weep holes or another means to drain entrapped water in hollow sections of handrail and railing members.
 9. Fabricate joints exposed to weather to be watertight.
 10. Fasteners: Manufacturer's standard.
 11. Finish: Hot dip galvanized finish.

2.7 PIPE AND CONDUIT SUPPORTS

- A. Adjustable-Height Roller-Bearing Pipe and Conduit Supports: Pipe stand base, pipe support, and roller housing, with stainless steel threaded rod designed for adjusting support height, accommodating up to 6 inch diameter pipe or conduit; with pipe guide; for penetration-free installation over roof membrane type; as required for load and quantity of pipe or conduit runs and sizes.
1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:
 - a. Miro Industries, Inc.; Roller Series Supports.
 - b. PHP Systems & Design; Type PP10 with Roller for up to 6" diameter pipe.
 2. Base: Molded polypropylene or polycarbonate.
 3. Maximum Height: 12 inches above roof (verify existing pipe heights in field).
- B. Hanger-Type Pipe and Conduit Supports: H-frame assembly of bases, vertical and horizontal hot-dip galvanized-steel members and hanger-type pipe supports, for penetration-free installation over roof membrane type; sized as required for load and quantity of pipe or conduit runs and sizes, and indicated clearance height above roof.
1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:

- a. Miro Industries, Inc.; Custom Hanger Supports.
 - b. PHP Systems & Design; Type PSE-Custom.
 - c. Rooftop Support Systems, a division of Eberl Iron Works, Inc.; RTS H Stands.
- 2. Bases: Vulcanized rubber, molded polypropylene, or polycarbonate.
 - 3. Pipe Supports: Clevis hanger with continuous-thread rod.

2.8 VENT PIPE EXTENSIONS

- A. Vent Pipe Extensions: Prefabricated plumbing vent pipe extensions. Solid-wall PVC pipe with integral six-inch-long joint splice sleeve insert at each end. Verify existing pipe size in field.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Tubos, Inc.; TUBOS Vent Pipe Extensions, or a comparable product.

2.9 STORM COLLARS

- A. Storm Collars: Not less than 0.0188-inch-thick (26 gage), stainless-steel sheet umbrella with stainless-steel band clamp, installed with heat-resistant sealant.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide SBC Industries; Clamp Umbrella (Storm Collar) – Model UMB, or a comparable product.

2.10 METAL MATERIALS

- A. Zinc-Coated (Galvanized) Steel Sheet: ASTM A653/A653M, G90 coating designation.
- B. Aluminum Sheet: ASTM B209, manufacturer's standard alloy for finish required, with temper to suit forming operations and performance required.
 - 1. Mill Finish: As manufactured.
- C. Aluminum Extrusions and Tubes: ASTM B221, manufacturer's standard alloy and temper for type of use, finished as indicated; otherwise mill finished.
 - 1. Powder-Coat Finish: AAMA 2603 except with a minimum dry film thickness of 1.5 mils. Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.
- D. Stainless Steel Sheet and Shapes: ASTM A240/A240M or ASTM A666, Type 304.

2.11 MISCELLANEOUS MATERIALS

- A. Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items required by manufacturer for a complete installation.
- B. Glass-Fiber Board Insulation: ASTM C726, nominal density of 3 lb/cu. ft., thermal resistivity of 4.3 deg F x h x sq. ft./Btu x in. at 75 deg F, thickness as indicated.

- C. Polyisocyanurate Board Insulation: ASTM C1289, thickness and thermal resistivity as indicated.
- D. Wood Nailers: Softwood lumber, pressure treated with waterborne preservatives for aboveground use, acceptable to authorities having jurisdiction, containing no arsenic or chromium, and complying with AWPA C2; not less than 1-1/2 inches thick.
- E. Isolation Barrier Membrane: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber compound, bonded to a polypropylene film to produce an overall thickness of not less than 0.014 inch.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide GCP Applied Technologies, Inc.; Vycor PRO, or comparable product.
- F. Fasteners: Roof accessory manufacturer's recommended fasteners suitable for application and metals being fastened. Match finish of exposed fasteners with finish of material being fastened. Provide nonremovable fastener heads to exterior exposed fasteners. Furnish the following unless otherwise indicated:
 - 1. Fasteners for Zinc-Coated Steel: Series 300 stainless steel.
 - 2. Fasteners for Aluminum Sheet: Series 300 stainless steel.
- G. Gaskets: Manufacturer's standard tubular or fingered design of neoprene, EPDM, PVC, or silicone or a flat design of foam rubber, sponge neoprene, or cork.
- H. Elastomeric Sealant: ASTM C920, elastomeric silicone polymer sealant as recommended by roof accessory manufacturer for installation indicated; low modulus; of type, grade, class, and use classifications required to seal joints and remain watertight.

2.12 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions, and other conditions affecting performance of the Work.
- B. Verify that substrate is sound, dry, smooth, clean, and securely anchored.
- C. Verify dimensions of roof openings for roof accessories.

- D. Proceed with installation only after unsatisfactory conditions have been corrected.
- E. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 INSTALLATION

- A. Install roof accessories according to manufacturer's written instructions.
 - 1. Install roof accessories level; plumb; true to line and elevation; and without warping, jogs in alignment, buckling, or tool marks.
 - 2. Anchor roof accessories securely in place so they are capable of resisting indicated loads.
 - 3. Use fasteners, separators, sealants, and other miscellaneous items as required to complete installation of roof accessories and fit them to substrates.
 - 4. Install roof accessories to resist exposure to weather without failing, rattling, leaking, or loosening of fasteners and seals.
- B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.
 - 1. Install isolation barrier membrane between metal and wood blocking, wrinkle free. Apply primer if required by membrane manufacturer. Use primer rather than nails for installing membrane at low temperatures. Overlap edges not less than 3-1/2 inches. Roll laps with roller. Cover membrane within 14 days.
- C. Roof Curb Installation: Install each roof curb so top surface is level.
- D. Equipment Support Installation: Install equipment supports so top surfaces are level with each other.
- E. Roof-Hatch Installation:
 - 1. Verify that roof hatch operates properly. Clean, lubricate, and adjust operating mechanism and hardware.
 - 2. Attach safety railing system to roof-hatch curb.
- F. Fixed Ladder Safety Railing System Installation: Assemble in place to verify that components are complete. Instruct Owner's designated personnel in properly handling, adjusting, and maintaining units.
- G. Movable Safety Railing System Installation: Assemble in place to verify that components are complete. Instruct Owner's designated personnel in properly handling, adjusting, and maintaining units.
- H. Pipe Support Installation: Comply with MSS SP-58 and MSS SP-89. Install supports and attachments as required to properly support piping. Arrange for grouping of parallel runs of horizontal piping, and support together.
 - 1. Pipes of Various Sizes: Space supports for smallest pipe size or install intermediate supports for smaller diameter pipes as specified for individual pipe hangers.

2. Install pipe and conduit supports over adhered flexible walkway pads.

- I. Vent Pipe Extension Installation: Install prefabricated vent pipe extensions according to manufacturer's written installation instructions.
- J. Storm Collar Installation: Install storm collars according to manufacturer's written installation instructions.
- K. Seal joints with elastomeric sealant as required by roof accessory manufacturer.

3.3 CORRECTION AND CLEANING

- A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing according to ASTM A780/A780M.
- B. Clean exposed surfaces according to manufacturer's written instructions.
- C. Clean off excess sealants.
- D. Replace roof accessories that have been damaged or that cannot be successfully restored by finish touchup or similar minor correction procedures.

END OF SECTION 07 72 00