

SECTION 077200 - ROOF ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:

- 1. Roof curbs.
- 2. Roof hatches.
- 3. Heat-and-smoke vents.

- B. Related Sections include the following:

- 1. Division 5 Section "Metal Fabrications" for ladders and miscellaneous metal framing and supports.
- 2. Division 6 Section "Rough Carpentry" for roof sheathing, wood cants, and wood nailers.
- 3. Division 7 Section "Flashing and Sheet Metal" for shop- and field-fabricated metal flashing and counterflashing, scuppers, gutters and downspouts, fasciae, roof expansion-joint covers, valleys, and miscellaneous sheet metal trim and accessories.
- 4. Division 7 Sections for roofing accessories included as part of roofing Work.
- 5. Division 9 Sections for shop primers and field painting.
- 6. Division 23 Section "Power Ventilators" for power roof-mounted ventilators.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, materials, dimensions of individual components and profiles, and finishes.
- B. Shop Drawings: Show fabrication and installation details. Indicate dimensions, weights, loadings, required clearances, method of field assembly, and components. Include plans, elevations, sections, details, and attachments to other Work.
- C. Samples for Initial Selection: Manufacturer's color charts showing the full range of colors available for roof accessories with factory-applied color finishes.
- D. Samples for Verification: For each type of exposed finish required, prepared on Samples in manufacturer's standard sizes, and of same thickness and material indicated for the Work. If finishes involve normal color or shade variations, include sample sets showing the full range of variations expected.

1.4 QUALITY ASSURANCE

- A. Standards: Comply with the following:

1. SMACNA's "Architectural Sheet Metal Manual" details for fabrication of units, including flanges and cap flashing to coordinate with type of roofing indicated.
2. NRCA's "Roofing and Waterproofing Manual" details for installing units.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Roof Curbs and Equipment Supports:
 - a. Custom Curb, Inc.
 - b. Roof Products & Systems Corp.
 - c. ThyCurb, Inc.
2. Roof Hatches:
 - a. Babcock-Davis Hatchways, Inc.
 - b. Bilco Company.
 - c. Dur-Red Products, Inc.
 - d. Milcor, Inc.
 - e. Nystrom Products Co.
 - f. O'Keeffe's Inc.
 - g. Wasco Products, Inc.
3. Hatch-Type Heat-and-Smoke Roof Vents:
 - a. Babcock-Davis Hatchways, Inc.
 - b. Bilco Company.
 - c. Dur-Red Products, Inc.
 - d. Milcor, Inc.
 - e. Nystrom Products Co.
 - f. O'Keeffe's Inc.
 - g. Wasco Products, Inc.

2.2 MATERIALS, GENERAL

- A. Aluminum Sheet: ASTM B 209 (ASTM B 209M) for alclad alloy 3005H25 or alloy and temper required to suit forming operations, with mill finish, unless otherwise indicated.
- B. Extruded Aluminum: ASTM B 221 (ASTM B 221M) alloy 6063-T52 or alloy and temper required to suit structural and finish requirements, with mill finish, unless otherwise indicated.
- C. Galvanized Steel Sheet: ASTM A 653/A 653M with G90 (Z275) coating designation; commercial quality, unless otherwise indicated.
1. Structural Quality: Grade 40 (Grade 275), where indicated or as required for strength.

- D. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A 792/A 792M with Class AZ-50 (AZ-150) coating, structural quality, Grade 40 (Grade 275), or as required for strength.
- E. Insulation: Manufacturer's standard rigid or semirigid glass-fiber board of thickness indicated.
- F. Wood Nailers: Softwood lumber, pressure treated with waterborne preservatives for aboveground use, complying with AWWA C2; not less than 1-1/2 inches (38 mm) thick.
- G. Fasteners: Same metal as metals being fastened, or nonmagnetic stainless steel or other noncorrosive metal as recommended by manufacturer. Match finish of exposed fasteners with finish of material being fastened.
 - 1. Where removing exterior exposed fasteners affords access to building, provide nonremovable fastener heads.
- H. Gaskets: Manufacturer's standard tubular or fingered design of neoprene, EPDM, or PVC; or flat design of foam rubber, sponge neoprene, or cork.
- I. Bituminous Coating: SSPC-Paint 12, solvent-type bituminous mastic, nominally free of sulfur and containing no asbestos fibers, compounded for 15-mil (0.4-mm) dry film thickness per coating.
- J. Mastic Sealant: Polyisobutylene; nonhardening, nonskinning, nondrying, nonmigrating sealant.
- K. Elastomeric Sealant: Generic type recommended by unit manufacturer that is compatible with joint surfaces; ASTM C 920, Type S, Grade NS, Class 25, and Uses NT, G, A, and, as applicable to joint substrates indicated, O.
- L. Roofing Cement: ASTM D 4586, nonasbestos, fibrated asphalt cement designed for trowel application or other adhesive compatible with roofing system.

2.3 ROOF CURBS

- A. General: Provide roof curbs capable of supporting superimposed live and dead loads, including equipment loads and other construction to be supported on roof curbs. Coordinate dimensions with rough-in information or Shop Drawings of equipment to be supported.
- B. Fabrication: Unless otherwise indicated or required for strength, fabricate units from minimum 0.0747-inch- (1.9-mm-) thick, structural-quality, hot-dip galvanized or aluminum-zinc alloy-coated steel sheet; factory primed and prepared for painting with welded or sealed mechanical corner joints.

2.4 ROOF HATCHES

- A. General: Fabricate units to withstand 40-lbf/sq. ft. (1.9- kPa) external and 20-lbf/sq. ft. (0.95- kPa) internal loading pressure. Frame with minimum 9-inch- (225-mm-) high, integral-curb, double-wall construction with 1-1/2-inch (38- mm) insulation, formed cants and cap flashing (roofing counterflashing), with welded or sealed mechanical corner joints. Provide double-wall cover (lid) construction with 1- inch- (25-mm-) thick insulation core. Provide gasketing and equip with corrosion-resistant or hot-dip galvanized hardware including pintle hinges, hold-open devices, interior padlock hasps, and both interior and exterior latch handles.

- B. Type: Single-leaf personnel access.
 - 1. For Service Stair Access: 30 by 96 inches equivalent to Bilco Model #L-40.
- C. Material: Galvanized steel sheet curbs and aluminum covers (lids).
- D. Sloping Roofs: Where slope or roof deck exceeds 1/4 inch per foot (1:48), fabricate hatch curbs with height tapered to match slope to level tops of units.
- E. Hatch Railing System: Fixed railing system meeting OSHA fall protection regulations.
 - 1. Equivalent to Bil-Guard Model #RL-L by Bilco.
 - 2. Locate at all hatches.

2.5 HEAT-AND-SMOKE VENTS

- A. General: Automatically operated roof vents for heat and smoke constructed to operate (open) without power source that could be interrupted during a fire. Custom fabricate units only to extent necessary to comply with indicated dimensions and other special requirements.
- B. Live Load and Uplift: Unless otherwise indicated, fabricate to withstand a minimum 10-lbf/sq. ft. (0.5-kPa) external live load and 30-lbf/sq. ft. (1.4-kPa) uplift.
- C. Regulatory Requirements: Comply with provisions of the following:
 - 1. UL 793, for construction and performance of automatically operated roof vents for heat and smoke.
 - 2. NFPA 204M, for heat-and-smoke vent design constraints, operation, size, and location.
- D. Heat-and-Smoke Vent Compliance: Provide units that have been tested, listed, or approved as follows:
 - 1. Construction/Operation: UL listed.
 - 2. Construction/Operation: FM approved.
- E. Framing: Fabricate from the following materials, with manufacturer's standard welded or sealed mechanical corner joints, including cap flashing (roofing counterflashing):
 - 1. Material: Formed sheet or extruded aluminum or galvanized steel, at Contractor's option.
 - a. Finish: High-performance organic coating.
 - b. Finish: Clear anodic.
 - 2. Unit Support: Double-wall curb construction with 1-inch (25-mm) insulation, of height indicated or, if not indicated, for mounting with height minimum 9 inches (225 mm) above roof membrane.
 - a. Provide formed cants and base profile coordinated with roof type and insulation thickness.
 - 3. Sloping Roofs: Where slope of roof deck exceeds 1/4 inch per foot (1:48), fabricate curbs with height tapered to match slope to level tops of units.

- F. Hatch-Type Units: Equip units with unit support, lid, lid gaskets, automatic self-lifting mechanisms, UL-listed fusible links rated at 160 deg F (71 deg C) or other heat- or smoke-sensitive release devices, as indicated, and hardware including hinges, hold-open devices, and independent manual-release devices for inside and outside operation of covers.
1. When release is actuated, cover will open against 10-lbf/sq. ft. (0.5-kPa) snow or wind load and lock in position.
 2. Lid: Double-leaf, aluminum sheet covers with 1-inch (25-mm) integral insulation.
 3. Lid: Provide acoustical fire vents equivalent to Bilco Type ACDSH at auditorium.
- G. Unit Sizes:
1. 5'-0" x 5'-0" equivalent to Bilco Model #DSH6060.
 2. At auditorium locations, 5'-0" x 5'-0" equivalent to Bilco Model #ACDSH6060.

2.6 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.7 GALVANIZED STEEL SHEET FINISHES

- A. Surface Preparation: Clean surfaces with nonpetroleum solvent so surfaces are free of oil and other contaminants. After cleaning, apply a conversion coating suited to the organic coating to be applied over it. Clean welds, mechanical connections, and abraded areas, and apply galvanizing repair paint specified below to comply with ASTM A 780.
1. Galvanizing Repair Paint: High-zinc-dust-content paint for regalvanizing welds in steel, complying with SSPC-Paint 20.
- B. High-Performance Organic Finish: Cleaned and primed with inhibitive primer and organic coating as specified below. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
1. Fluoropolymer Three-Coat System: Manufacturer's standard three-coat, thermocured system consisting of specially formulated inhibitive primer, fluoropolymer color coat, and clear fluoropolymer topcoat, with both color coat and clear topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight; complying with AAMA 621 for coil-coated sheets.
 - a. Color and Gloss: As selected by Architect from manufacturer's standard of colors.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Comply with manufacturer's written instructions. Coordinate installation of roof accessories with installation of roof deck, roof insulation, flashing, roofing membranes, penetrations, equipment, and other construction involving roof accessories to ensure that each element of the Work performs properly and that combined elements are waterproof and weathertight. Anchor roof accessories securely to supporting structural substrates so they are capable of withstanding lateral and thermal stresses, and inward and outward loading pressures.
- B. Install roof accessory items according to construction details of NRCA's "Roofing and Waterproofing Manual," unless otherwise indicated,
- C. Separation: Separate metal from incompatible metal or corrosive substrates, including wood, by coating concealed surfaces, at locations of contact, with bituminous coating or providing other permanent separation.
- D. Flange Seals: Unless otherwise indicated, set flanges of accessory units in a thick bed of roofing cement to form a seal.
- E. Cap Flashing: Where required as component of accessory, install cap flashing to provide waterproof overlap with roofing or roof flashing (as counterflashing). Seal overlap with thick bead of mastic sealant.
- F. Operational Units: Test-operate units with operable components. Clean and lubricate joints and hardware. Adjust for proper operation.
- G. Heat-and-Smoke Vents: Locate, install, and test according to NFPA 204M.

3.2 CLEANING AND PROTECTION

- A. Clean exposed surfaces according to manufacturer's written instructions. Touch up damaged metal coatings.

END OF SECTION 077200