3-PART CSI MASTERFORMAT SPECIFICATION

SECTION 07 7200 ROOF ACCESSORIES

SMOKE VENT

1. GENERAL
	* + 1. SUMMARY
				1. Section includes:

Hatch type Heat and Smoke Vents

SmokEscape metal lids used in all smoke venting applications

SunLit Translucent Lid, Incorporating a translucent multiwall polycarbonate lid for natural daylighting

SunLit Eco Skylight smoke vent equipped with automatic self-lifting mechanisms

AcousticMAX Acoustical STC48 smoke vents are sound transmission class rated for stages and theaters.

AcousticMAX Acoustical STC50 smoke vents are sound transmission class rated in compliance with IBC 1207.

* + - 1. Related Requirements:
				1. Division 05 for ladders and stairs.
				2. Division 07 for roofing and sealants.
			2. COORDINATION
				1. Coordinate layout and installation of roof accessories with roofing membrane and base flashing andinterfacing and adjoining construction to provide a watertight installation.
				2. Coordinate dimensions with rough-in information or Shop Drawings of equipment to be supported.
			3. SUBMITTALS
				1. Shop Drawings: Indicate configuration and dimension of components, adjacent construction, required clearances and tolerances, and other affected Work.

Hatch Units: Show types, elevations, thickness of metals, and full size profiles.

Hardware: Show materials, finishes, locations of fasteners, types of fasteners, locations and types of operating hardware, and details of installation.

General: Show connections of units and hardware to other Work. Include schedules showing location of each type and size of unit.

* + - * 1. Product Data: Manufacturer’s technical data for each type of hatch assembly, including setting drawings, templates, finish requirements, and details of anchorage devices.

Include complete schedule, types, locations, construction details, finishes, latching or locking provisions, and other pertinent data.

* + - * 1. Contract Closeout Submittals

Installation, Operating & Maintenance manuals

* + - 1. Quality Assurance
				1. Regulatory Requirements:

OSHA 29 CFR 1910.23 Guarding floor and wall openings and holes

OSHA 29 CFR 1926.502 Fall protection systems criteria

International Building Code (IBC) Section 1013.6 Roof Access

International Building Code (IBC) Section 1009.11 Means of Egress, Stairways, Stairway to Roof

International Building Code for venting requirements

IBC Section 410 for Stages and Platforms

IBC Section 910 for Factory and Storage occupancies

IBC Section 1207 Sound Transmission

Underwriters Laboratories Inc, UL 793 Listed for Heat and Smoke Vents

FM Global, Factory Mutual, FM 4430 Heat and Smoke Vents for Roofs

Reference NFPA 204 for general maintenance of Heat and Smoke vents.

ASTM E 90 Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements

* + - 1. DELIVERY, STORAGE, and HANDLING
				1. Deliver materials to Project site ready use.
				2. Exercise proper care in handling of Work so as not to disrupt finished surfaces.
				3. Store materials under cover in a dry and clean location off the ground.
			2. WARRANTY
				1. Provide manufacturer's standard 5 year warranty. Roof hatches and smoke vents shall be free from manufacturing defects in materials and fabrication for a period of 5 years from the date of shipment. Should a product fail to function in normal use within this period, manufacturer shall furnish a replacement or new part at Nystrom’s discretion.
1. PRODUCTS
	* + 1. MANUFACTURER
				1. Nystrom

9300 73rd Ave N

Minneapolis, MN 55428

Toll Free Hotline: 800-547-2635

Direct Phone: 763-488-9200

[Nystrom Roof Hatches](http://www.nystrom.com/roof-hatches)

* + - 1. HEAT AND SMOKE VENTS

Retain "Hatch-Type Heat and Smoke Vents" Paragraph below if required for Project. Coordinate fusible link rating with rating for automated sprinkler system heads. See the Evaluations.

* + - * 1. Hatch-Type Heat and Smoke Vents: Manufacturer's standard, with [**single**] [**double**]-walled insulated curbs, welded or mechanically fastened and sealed corner joints, integral condensation gutter, and cap flashing. Fabricate with insulated double-walled lid and continuous weathertight perimeter lid gaskets, and equip with automatic self-lifting mechanisms and UL-listed [**fusible links rated at 165 deg F (74 deg C)**] <**Insert temperature rating**> [**fire-suppression system**] [**smoke-detection system**].

Basis-of-Design Product: Subject to compliance with requirements, provide Nystrom, Inc.; [**SmokEscape**] [**SunLit**] **[SunLit eco]** [**Acoustical]** or a comparable product by one of the following:

Retain one of four "Type and Size" subparagraphs below if type and size are not indicated on Drawings; for more than one type or size, indicate locations on Drawings or by inserts. Options are most manufacturers' stock sizes. Smoke vents used in all smoke venting applications; factories and storage occupancies, theaters, hoist ways, and other. Sizes available in single door, double door, and quad door construction.

Type and Size: SmokEscape metal lids used in all smoke venting applications, SV.

Certification: Smoke vent to have official UL label for testing to UL 793 Smoke and Heat Vents**.[,and FM 4430 Approved]**

Verify load requirements with authorities having jurisdiction.

Performance:

Loads: 40-lbf/sq. ft. (1.9-kPa) live load with a maximum deflection of 1/150th of the span **[30 lbf/sq. (1.4 kPa) single door units] [90 lbf/sq. (4.3 kPa) double door, quad door]** wind uplift

When release is actuated lid shall open against 10 lbf/sq. (0.5 kPa) snow load

Door Options:

Single Door: [**36 by 30 inches (900 by 750 mm)**] [**36 by 36 inches (900 by 900 mm)**] [**48 by 48 inches (1220 by 1220 mm)**] [Size as indicated on Drawings] <Insert dimensions>.

Double Door: [**48 by 48 inches (1220 by 1220 mm)**] [**48 by 96 inches (1220 by 2440 mm)**] [**60 by 60 inches (1525 by 1525 mm)**] [**60 by 96 inches (1525 by 2440 mm)**] [**60 by 120 inches (1525 by 3050 mm)**] [**72 by 72 inches (1830 by 1830 mm)**] [**72 by 96 inches (1830 by 2440 mm)**] [Size as indicated on Drawings] <Insert dimensions>.

Quad Door: [**66 by 144 inches (1675 by 3660 mm)**] [**72 by 120 inches (1830 by 3050 mm)**] [**72 by 144 inches (1830 by 3660 mm)**] [Size as indicated on Drawings] <Insert dimensions>.

Hatch Material:

Cover: **[14 gauge (1.9 mm) galvanneal steel] [11 gauge (3.2 mm) aluminum]**

Cover Insulation: 1 inch (25 mm) Polyisocyanurate insulation

Insulation options**: [2 inch (38 mm) Polyisocyanurate]**

Curb height in "Curb/Frame" paragraph below may be determined by adding thickness of roof insulation to the minimum base flashing height recommended by roofing membrane manufacturer or established by office practice.

Curb/Frame**: [14 gauge (1.9 mm) galvanneal steel] [11 gauge (3.2 mm) aluminum].** 12 inch (305 mm) high curb with integral counterflashing. Continuous 3.5 inch (89 mm) mounting flange with 5/8 inch (16 mm) mounting holes

Curb Insulation: 1 inch (25 mm) rigid Polyisocyanurate insulation

Insulation options: **[2 inch (50 mm) Polyisocyanurate insulation]**

Finish**: [ANSI 70 powder coat steel] [High Reflectance White powder coat steel] [Mill finished aluminum].**

Latch: Positive hold zinc plated steel rotary latch assembly. Upon latch releases, vent covers are closed manually at rooftop level.

Latch released manually via internal and external pull handles with cables.

Latch released automatically by UL 33 listed fusible melt-out link at temperature of [**165 deg F** **(74 deg C)**] [**212 deg F** **(100 deg C)**] [**280 deg F** **(138 deg C)**] [**350 deg F** **(177 deg C)**] [**360 deg F** **(182 deg C)**] [**370 deg F** **(188 deg C)**] [**386 deg F** **(197 deg C)**] [**450 deg F** **(232 deg C)**].

Springs: Gas spring with integrated damper.

Hinge: Pintle type with stainless steel hinge pin.

Hold Open Device: Automatic hold open arm with red vinyl grip handle release.

Weather Stripping: Extruded EPDM adhesive backed gasket seal continuous around perimeter of cover.

Options and Accessories.

Burglar Bars: **[1/2 inch (13 mm)] [3/4 inch (19 mm)] diameter steel rod [6 inches (152 mm) by 12 inches (305 mm)] [6 inches (152 mm) by 6 inches (152 mm)]** spacing, attached to inside of curb.

Fall Protection Security Mesh: 3/16 inch (4.8 mm) diameter steel rod, 4 inch (102 mm) by 4 inch (102 mm) spacing, securely attached to inside of curb.

Manual Winch: Operation allowing remote closing of smoke vent from the floor area.

Optional latch release with electrical Belimo motor actuator, [**24 V DC/AC**] [**110 V AC**].

Linear Actuator Operation allowing remote opening and closing of smoke vent. Push button operator includes open and close.

Type and Size: SunLit Translucent Lid, SVL: Incorporating a translucent polycarbonate lid for natural daylighting.

Certification: Smoke vent to have official UL label for testing to UL 793 Smoke and Heat Vents.

Performance:

Loads: 40-lbf/sq. ft. (1.9-kPa) live load [30 lbf/sq. ft. (1.4 kPa) single door units] [90 lbf/sq. ft. (4.3 kPa) double door, quad door] wind uplift

When release is actuated lid shall open against 10 lbf/sq. (0.5 kPa) snow load.

Door Options:

Single Door: [**36 by 30 inches (900 by 750 mm)**] [**36 by 36 inches (900 by 900 mm)**] [**48 by 48 inches (1220 by 1220 mm)**] [Size as indicated on Drawings] <Insert dimensions>.

Double Door: [**48 by 48 inches (1220 by 1220 mm)**] [**48 by 96 inches (1220 by 2440 mm)**] [**60 by 60 inches (1525 by 1525 mm)**] [**60 by 96 inches (1525 by 2440 mm)**] [**60 by 120 inches (1525 by 3050 mm)**] [**72 by 72 inches (1830 by 1830 mm)**] [**72 by 96 inches (1830 by 2440 mm)**] [Size as indicated on Drawings] <Insert dimensions>.

Quad Door: [**66 by 144 inches (1675 by 3660 mm)**] [**72 by 120 inches (1830 by 3050 mm)**] [**72 by 144 inches (1830 by 3660 mm)**] [Size as indicated on Drawings] <Insert dimensions>.

Hatch Material:

Retain one of two "cover assembly" paragraphs below. For more than one type or size, indicate locations on drawings or by inserts

1. Cover:
	1. 11 gauge (3.2 mm) aluminum cover with 5/8 inch (16 mm) structural 3-wall multiwall polycarbonate cover Color: **[White] [Clear] [Green] [Blue] [Bronze**].
	2. 11 gauge (3.2 mm) aluminum extrusion cover with polycarbonate **[single] double]** dome. Color **[standard white] [clear]**
2. Cover Insulation: 1 inch (25 mm) Polyisocyanurate insulation (R-6/LTTR 5.6)
	1. Insulation options:  **[1 inch (25 mm) polystyrene] [2 inch (50 mm) Polyisocyanurate insulation]**

Curb height in "Curb/Frame" paragraph below may be determined by adding thickness of roof insulation to the minimum base flashing height recommended by roofing membrane manufacturer or established by office practice.

Curb/Frame: [**14 gauge (1.9 mm) galvanneal steel**] [**11 gauge (3.2 mm) aluminum**]. 12 inch (305 mm) high curb with integral counterflashing. Continuous 3.5 inch (89 mm) mounting flange with 5/8 inch (16 mm) mounting holes.

Curb Insulation: 1 inch (25 mm) rigid Polyisocyanurate insulation R-6)

Insulation options: **[2 inch (50 mm) Polyisocyanurate insulation]**

Finish**: [ANSI 70 powder coat steel] [High Reflectance White powder coat steel] [Mill finished aluminum].**

Latch: Positive hold zinc plated steel rotary latch assembly Upon latch releases, vent covers are closed manually at rooftop level.

Latch released manually via internal and external pull handles with cables.

Latch released automatically by UL 33 listed fusible melt-out link at temperature of [**165 deg F** **(74 deg C)**] [**212 deg F** **(100 deg C)**] [**280 deg F** **(138 deg C)**] [**350 deg F** **(177 deg C)**] [**360 deg F** **(182 deg C)**] [**370 deg F** **(188 deg C)**] [**386 deg F** **(197 deg C)**] [**450 deg F** **(232 deg C)**].

Optional latch release with Belimo motor actuator, [**24 V DC/AC**] [**110 V AC**].

Springs: Gas spring with integrated damper

Hinge: Pintle type with stainless steel hinge pin.

Hold Open Device: Automatic hold open arm with red vinyl grip handle release.

Weather Stripping: Extruded EPDM adhesive backed gasket seal continuous around perimeter of cover.

Options and Accessories.

Burglar Bars**: : [1/2 inch (13 mm)] [3/4inch (19 mm)] diameter steel rod [6 inches (152 mm) by 12 inches (305 mm)] [6 inches (152 mm) by 6 inches (152 mm)]** spacing, attached to inside of curb.

Fall Protection Security Mesh: 3/16 inch (4.8 mm) diameter steel rod, 4 inch (102 mm) by 4 inch (102 mm) spacing, securely attached to inside of curb.

Manual Wrench: Operation allowing remote closing of smoke vent from the floor area.

Optional latch release with electrical Belimo motor actuator, [**24 V DC/AC**] [**110 V AC**].

Linear Actuator Operation allowing remote opening and closing of smoke vent. Push button operator includes open and close.

Type and Size: Sunlit eco Skylight smoke, SVE: vent equipped with automatic self-lifting mechanisms and UL-listed fusible links rated at 165 deg F (74 deg C) <Insert temperature rating>

Certification: Smoke vent to have official UL label for testing to UL 793 Smoke and Heat Vents**.[Optional: FM 4430 Approved]**

Loads: Minimum 40-lbf/sq. ft. (1.9-kPa) <Insert value> external live load and 40-lbf/sq. ft. (1.9-kPa) internal uplift load

When release is actuated, lid shall open against 10-lbf/sq. ft. (0.5-kPa) snow or wind load and lock in position.

Door Options: Double-leaf lid, SVEA48x96 48 by 96 inches (2440 by 2440 mm) <Insert dimensions>.

Hatch Material

Dome: Single Clear Polycarbonate dome incorporated into a 0.0808 inch (2.05 mm) aluminum frame

Curb, Framing, and Lid Material: 0.0907 inch (2.05 mm) Aluminum with 0.1285 inch (3.26 mm) cross member for additional strength. Extruded EPDM adhesive backed gasket seal continuous around perimeter of cover.

Finish: Mill finished aluminum.

Latch: Positive hold zinc plated steel rotary latch assembly designed to hold covers closed against 90 lbf/sq. (4.3 kPa) wind uplift. Upon latch releases, vent covers are closed manually at rooftop level

Latch released manually via internal and external pull handles with cables.

Latch released automatically by UL 33 listed fusible melt-out link at temperature of **[165 deg F (74 deg C)] [360 deg F (182 deg C)]**

Springs: Gas spring with integrated damper

Hinge: fully integrated extruded and secured into the exterior curb.

Type and Size: Acoustical Smoke Vents, SV, rated per ASTM E 90 and OITC rated per ASTN E 1332.

STC Rating: [**STC 48 - OITC 36**] [**STC 50 - OITC 39**] Rated per ASTM E 90 and OITC rated per ASTM E 1332.

Loads: 40-lbf/sq. ft. (1.9-kPa) live load with a maximum deflection of 1/150th of the span; 90 lbf/sq. (4.3 kPa) wind uplift

When release is actuated, lid shall open against 10-lbf/sq. ft. (0.5-kPa) snow or wind load and lock in position.

Door Options:

Double Door: [**48 by 48 inches (1220 by 1220 mm)**] [**48 by 96 inches (1220 by 2440 mm)**] [**60 by 60 inches (1525 by 1525 mm)**] [**60 by 96 inches (1525 by 2440 mm)**] [**60 by 120 inches (1525 by 3050 mm)**] [**72 by 72 inches (1830 by 1830 mm)**] [**72 by 96 inches (1830 by 2440 mm)**] [Size as indicated on Drawings] <Insert dimensions>.

Quad Door: [**66 by 144 inches (1675 by 3660 mm)**] [**72 by 120 inches (1830 by 3050 mm)**] [**72 by 144 inches (1830 by 3660 mm)**] [Size as indicated on Drawings] <Insert dimensions>.

Certification: Smoke vent to have official UL label for testing to UL 793 Smoke and Heat Vents **[,and FM 4430 approved]**.

Hatch Material:

Cover: 14 gauge(1.9 mm) galvanneal steel cover and liner.

Cover Insulation: 2 inch (50mm) Mineral Wool insulation with sound mat contained within 3-1/4 inch (826 mm) thick covers, providing total thermal resistance of R-10.

Curb height in "Curb" paragraph below may be determined by adding thickness of roof insulation to the minimum base flashing height recommended by roofing membrane manufacturer or established by office practice.

Curb: 14 gauge(1.9 mm) galvanneal steel curb. 12 inch (305 mm) high double wall curb with EZ tab counterflashing and 5-1/2 inch (140 mm) mounting flange with 1/2 inch (13 mm) diameter holes.

Curb Insulation:

STC 48, OITC 36: 2 inch (50 mm) Mineral wool insulation with sound mat contained within 2-3/4 inch (70 mm) thick curb and channel providing total thermal resistance of R-10.

STC 50, OITC 39: 3 inch (75 mm) Mineral wool insulation with sound mat contained within 3-3/4 inch (95 mm) thick curb and channel, providing total thermal resistance of R-14.

Finish:

Cover Exterior**: [ANSI 70 powder coat steel][High Reflectance White powder coat steel.] [As selected by Architect from manufacturer's full range]** <Insert color>

Cover Interior: Black powder coat finish.

Curb: Black powder coat finish.

Latch: Positive hold zinc plated steel rotary latch Upon latch releases, vent covers are closed manually at rooftop level.

Latch released manually via internal and external pull handles with cables.

Latch released automatically by UL 33 listed fusible melt-out link at temperature of [**165 deg F** **(74 deg C)**] [**212 deg F** **(100 deg C)**] [**280 deg F** **(138 deg C)**] [**350 deg F** **(177 deg C)**] [**360 deg F** **(182 deg C)**] [**370 deg F** **(188 deg C)**] [**386 deg F** **(197 deg C)**] [**450 deg F** **(232 deg C)**].

Options and Accessories.

Burglar Bars**: : [1/2 inch (13 mm)] [3/4inch (19 mm)] diameter steel rod [6 inches (152 mm) by 12 inches (305 mm)] [6 inches (152 mm) by 6 inches (152 mm)]** spacing, attached to inside of curb.

Fall Protection Security Mesh: 3/16 inch (4.8 mm) diameter steel rod, 4 inch (102 mm) by 4 inch (102 mm) spacing, securely attached to inside of curb.

Manual Winch: Operation allowing remote closing of smoke vent from the floor area.

Optional latch release with electrical Belimo motor actuator, [**24 V DC/AC**] [**110 VAC**].

Linear Actuator Operation allowing remote opening and closing of smoke vent. Push button operator includes open and close.

1. Execution
	* + 1. EXAMINATION
2. Verification of Conditions: Examine areas and conditions under which Work is to be performed and identify conditions detrimental to proper or timely completion.
3. Verify that deck, curbs, roof membrane, base flashing, and other items affecting Work of this Section are in place and positioned correctly.
4. Verify tolerances and correct improper condition
5. Identify conditions detrimental to providing proper quality and timely completions of work.
6. Do not proceed with installation until detrimental conditions have been corrected.
	* + 1. Installation
7. Comply with manufacturer's recommendations.
8. For Miami-Dade Hurricane Hatch™, install using the manufacturer’s anchoring options as detailed on shop drawings and installation instructions for wood curbs, steel curbs or concrete curbs.
9. Coordinate installation of components of this Section with installation of roof deck, roof structure, roofing membrane, and base flashing.
10. Coordinate installation of sealant and roofing cement with Work of this Section to ensure water tightness.
11. Securely anchor roof accessories in compliance with manufacturer's instructions.
12. Set units plumb, level, and true to line without warp or rack. 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.
13. Flange Seals: Unless otherwise indicated, set flanges of accessory units in a thick bed of roofing cement to form a seal
	* + 1. FIELD QUALITY CONTROL
14. Smoke Vent Testing: Test for proper operation after installation by one or all of the operational methods:
15. Melting fusible link for inside at smoke vent level recommend using hand held propane tank torch. Replace fusible link, then close vents from the exterior at the roof top level.
16. Pull internal and/or external manual pull handles and then close vents from the exterior at the roof top level.
17. If applicable; open the vents using an electrical signal for fire alarm, push button or other, then close vent from the exterior at the roof top level.
18. Do not paint the internal mechanisms, especially moving parts such as spring/dampers, rotary latches and especially the fusible links. Painting any of these components may damage the vents and will void the warranty.
	* + 1. ADJUSTING
19. Adjust movable parts for smooth operation.
20. Operational Units: Test-operate units with operable components. Clean and lubricate joints and hardware. Adjust for proper operation.
	* + 1. cleaning
21. Clean exposed surfaces per manufacturer's written instructions. Touch up damaged metal coatings.

END OF SECTION