UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated July 2023
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08/23

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USACE / NAVFAC / AFCEC **UFGS-07 72 20 (August 2023)**

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UFGS-07 72 20 (August 2009)

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SECTION 07 72 20

GRAVITY-TYPE ROOF VENTILATORS
08/23

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NOTE: This guide specification covers the requirements for gravity-type roof ventilators including stationary, turbine, and ridge types.

Adhere to UFC 1-300-02 Unified Facilities Guide Specifications (UFGS) Format Standard when editing this guide specification or preparing new project specification sections. Edit this guide specification for project specific requirements by adding, deleting, or revising text. For bracketed items, choose applicable item(s) or insert appropriate information.

Remove information and requirements not required in respective project, whether or not brackets are present.

Comments, suggestions and recommended changes for this guide specification are welcome and should be submitted as a Criteria Change Request (CCR).
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PART 1 GENERAL

1.1 REFERENCES

****
NOTE: This paragraph is used to list the publications cited in the text of the guide specification. The publications are referred to in the text by basic designation only and listed in this paragraph by organization, designation, date, and title.

Use the Reference Wizard's Check Reference feature when you add a Reference Identifier (RID) outside of the Section's Reference Article to automatically

place the reference in the Reference Article. Also use the Reference Wizard's Check Reference feature to update the issue dates.

References not used in the text will automatically be deleted from this section of the project specification when you choose to reconcile references in the publish print process.

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The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE)

ASCE 7-22	(2022) Minimum Design Loads and Associated Criteria for Buildings and Other Structures

ASTM INTERNATIONAL (ASTM)

ASTM A653/A653M	(2023) Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
ASTM B209/B209M	(2021a) Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
ASTM B221	(2021) Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
ASTM B221M	(2021) Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric)

SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)

SMACNA 1793	(2012) Architectural Sheet Metal Manual, 7th Edition

1.2 DESIGN REQUIREMENTS

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NOTE: Use the latest ventilator manufacturer's recommendations, including latest ASHRAE Handbook "Fundamentals" published by the American Society of Heating, Refrigerating and Air-Conditioning Engineers, to determine the ventilator size and performance requirements.

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Design ventilators for use with the specific type of project roofing system, and to provide uniform and continuous air flow. Ventilator design must provide protection against rain and snow, and be provided with a continuous weep along the bottom of both sides of wind band. Units must be self-cleaning by the action of the elements, and have provisions for

carrying water and normal wind-transported soil matter to the outside. Design units for windspeeds of not less than [36] [_____] m/second [80] [_____] mph in accordance with ASCE 7-22. Ventilators must be free of internal obstructions or moving parts which require maintenance, and be complete with type of mounting indicated on drawings.

1.3 SUBMITTALS

****

NOTE: Review submittal description (SD) definitions in Section 01 33 00 SUBMITTAL PROCEDURES and edit the following list, and corresponding submittal items in the text, to reflect only the submittals required for the project. The Guide Specification technical editors have classified those items that require Government approval, due to their complexity or criticality, with a "G." Generally, other submittal items can be reviewed by the Contractor's Quality Control System. Only add a “G” to an item, if the submittal is sufficiently important or complex in context of the project.

For Army projects, fill in the empty brackets following the "G" classification, with a code of up to three characters to indicate the approving authority. Codes for Army projects using the Resident Management System (RMS) are: "AE" for Architect-Engineer; "DO" for District Office (Engineering Division or other organization in the District Office); "AO" for Area Office; "RO" for Resident Office; and "PO" for Project Office. Codes following the "G" typically are not used for Navy and Air Force projects.

The "S" classification indicates submittals required as proof of compliance for sustainability Guiding Principles Validation or Third Party Certification and as described in Section 01 33 00 SUBMITTAL PROCEDURES.

Choose the first bracketed item for Navy and Air Force projects, or choose the second bracketed item for Army projects.

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Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are [for Contractor Quality Control approval.][for information only. When used, a code following the "G" classification identifies the office that will review the submittal for the Government.] Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Roof Ventilators; G[, [_____]]

1.4 QUALITY ASSURANCE

Manufacturer must specialize in design and manufacture of the type of roof

ventilators specified in this section, and have a minimum of [_____] years of documented successful experience. Provide a ventilator installer experienced in the installation of ventilator types specified.

1.5 DELIVERY, STORAGE, AND HANDLING

Roof ventilators must be cartoned or crated prior to shipment. Protect ventilators from moisture and damage. Remove damaged items from the site.

PART 2 PRODUCTS

2.1 MATERIALS

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NOTE: Specify ventilators fabricated of aluminum in humid locations or project locations with Environmental Severity Classifications (ESC) of C3 thru C5. Galvanized steel is acceptable for project locations with ESC of C1 or C2. See UFC 1-200-01 for determination of ESC for project locations. Humid locations are those in ASHRAE climate zones 0A, 1A, 2A, 3A, 3C, 4C and 5C (as identified in ASHRAE 90.1).

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2.1.1 Aluminum Extrusions

Aluminum extrusions must be alloy 6063, temper T5 in compliance with ASTM B221M ASTM B221.

2.1.2 Aluminum Sheets

Aluminum sheets must be alloy 5005, temper H15 or alloy 3003, temper H14 in compliance with ASTM B209/B209M.

2.1.3 Galvanized Steel Sheets

Steel sheets must be commercial quality, zinc-coated steel (hot-dip galvanized) in compliance with ASTM A653/A653M, minimum G90 coating thickness.

2.2 RIDGE VENTILATORS

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NOTE: Review building code requirements to determine if no damper or manually-operated dampers are acceptable. If dampers must meet fire code requirements, carefully review code and ventilator manufacturer's data before editing this spec.

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Provide roof ridge ventilators fabricated of [galvanized steel] [aluminum], and assembled to any desired length. Connect continuous-run ridge ventilators with splice plates of type which will telescope together and not require fasteners, soldering or welding. Provide ventilators with [manually-operated single-leaf dampers complete with accessories to meet design and performance requirements.] [UL labeled fire-actuated damper system complete with accessories to meet building code requirements.] Provide dampers and airshafts complete with urethane gasketing for

extra-tight enclosures. Provide metal closure strips, which match the panel roof rib contours, to close out weather and provide a secure seat for ventilators. Provide [Insect] [Bird] screens.

2.3 STATIONARY VENTILATORS

Provide stationary roof ventilators fabricated of [galvanized steel] [aluminum] with seamless spun conical-shaped weathercap, and having straight-through drainage for eliminating the possibility of air-borne debris collecting in the ventilator openings. Provide [Insect] [Bird] screens.

2.4 TURBINE VENTILATORS

Provide turbine ventilators fabricated of [galvanized steel] [aluminum] [corrugated] [flat] sheets, complete with sensitive ball-bearing action to enable the slightest motion of air to move the rotor head where suction is maintained at low wind velocities. Ventilators must have 360 degree operating surface to assure access of wind currents regardless of wind velocities. Anchor rotor head to prevent head from lifting or jumping off the rotor in high winds. Rotor crown plate must be seamless. Provide [Bird] [Insect] screens.

2.4.1 Dampers

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NOTE: Select desired option for operation of the ventilator dampers.

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Provide turbine ventilators with [dampers manually-operated with direct pull-chain or rack and pinion] [push-button control electric gear motor-operated dampers] [thermostat control electric gear motor-operated dampers].

2.4.2 Rotor Shaft

Rotor shaft bearings must be entirely shielded in corrosion-resistant aluminum casing. Bearings must be pre-lubricated and have life-time warranty. Bearings must be at top and bottom to assure accurate alignment. Shaft and bearings must be easily replaceable as a unit. Rotor collar must be rolled and welded.

2.5 FABRICATION

Ventilators must be fabricated in accordance with approved shop drawings. Welds, soldered seams, rivets and fasteners must be clean, secure, watertight, and smooth. Edges must be wired or beaded, where necessary, to ensure rigidity. Joints between sections must be watertight and allow for expansion and contraction. Galvanic action between different metals in direct contact must be prevented by nonconductive separators.

2.6 CURB BASES

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NOTE: Delete this paragraph if flange-mounting is used.

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Ventilator bases for curb-mounted installations must be of size indicated on drawings, and be designed specifically for the type of ventilator and roofing system approved for this project. Curb bases must be factory-formed and flashed for a watertight installation. Curb bases must be fabricated of material and finish to match the ventilator.

2.7 SCREENS

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NOTE: Select screen types required above within each ventilator type section. Insect screens are typically required for ventilators in hospitals, mess halls, bakeries and similar buildings. Insect screens should not be used when exhausting noxious gases because insect screens will clog up. Include bird screens where insect screens are not required in order to meet requirements of ASHRAE 62.1. If both bird screening and insect screening are required, indicate location of each on drawings and edit as required.

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Screens must be furnished by ventilator manufacturer as part of ventilator assembly. Screen (with frames) must be manufactured of material to match ventilators, and must be designed to be easily removed for cleaning purposes.

2.8 FINISH

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NOTE: Use high performance coating systems for special situations where appearance is important, project locations with Environmental Severity Classifications (ESC) of C3 thru C5, or high humidity locations. In ESC C1 and C2 project locations, other finish options are acceptable. See UFC 1-200-01 for determination of ESC for project locations. Humid locations are those in ASHRAE climate zones 0A, 1A, 2A, 3A, 3C, 4C and 5C (as identified in ASHRAE 90.1).

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2.8.1 Galvanized Steel Finish

Galvanized steel roof ventilators must be factory-coated with rust-resistant primer and [baked-on finish coats of acrylic] [finish coats to match metal roof panels] [two-coat high-performance coating system] [field-painted in accordance with Section 09 90 00 PAINTS AND COATINGS] [_____].

2.8.2 Aluminum Finish

Aluminum roof ventilators must be factory-finished [to match metal roof finish and color] [with two-coat fluoropolymer high-performance coating system] [_____].

2.8.3 Color

Color must be in accordance with [Section 09 06 00 SCHEDULES FOR FINISHES]

[_____].

PART 3 EXECUTION

3.1 PREPARATION

Prepare rough openings and other roof conditions in accordance with approved shop drawings and manufacturer's recommendations. Rough openings must be field-measured and recorded on shop drawings prior to fabrication of roof ventilators. Before starting the ventilator work, protect surrounding roof surfaces from damage. Coordinate fabrication with construction schedule. Submit dimensioned drawings indicating location of each type of ventilator including details of construction, gauges of metal, and methods of operation of dampers and controls.

3.2 INSTALLATION

Coordinate roof ventilator installation with roofing work, and in accordance with approved shop drawings, manufacturer's published instructions, and chapter 8 of SMACNA 1793. The ventilator installation must be watertight and free of vibration noise. Protect galvanized and nonferrous-metal surfaces from corrosion or galvanic action by applying a heavy coating of bituminous paint on surfaces that will be in contact with concrete, masonry, or dissimilar metals. Aluminum surfaces in contact with sealant must not be coated with a protective material. Do not use aluminum with copper or with water which flows over copper surfaces. Clean roof ventilators in accordance with ventilator manufacturer's recommendations.

3.3 PROTECTION

Protect exposed ventilator finish surfaces against the accumulation of paint, grime, mastic, disfigurement, discoloration and damage for duration of construction activities.

-- End of Section --