
USACE / NAVFAC / AFCEA UFGS-07720 (August 2004)

Preparing Activity: USACE
Superseding
UFGS-07720A (January 2004)

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated 23 June 2005

Latest change indicated by CHG tags

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SECTION 07720

ROOF VENTILATORS, GRAVITY-TYPE 08/04

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

Comments and suggestions on this guide specification are welcome and should be directed to the technical proponent of the specification. A listing of technical proponents, including their organization designation and telephone number, is on the Internet.

Recommended changes to a UFGS should be submitted as a Criteria Change Request (CCR).

Use of electronic communication is encouraged.

Brackets are used in the text to indicate designer choices or locations where text must be supplied by the designer.

PART 1 GENERAL

1.1 REFERENCES

NOTE: Issue (date) of references included in project specifications need not be more current than provided by the latest guide specification. Use of SpecsIntact automated reference checking is recommended for projects based on older guide specifications.

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 (2002) Minimum Design Loads for Buildings and Other Structures

ASTM INTERNATIONAL (ASTM)

ASTM A 653/A 653M (2004a) Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

ASTM B 209 (2004) Aluminum and Aluminum-Alloy Sheet and Plate

ASTM B 209M (2004) Aluminum and Aluminum-Alloy Sheet and Plate (Metric)

ASTM B 221 (2004a) Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes

ASTM B 221M (2004) Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric)

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

SMACNA Arch. Manual (2003, 6th Ed) Architectural Sheet Metal Manual

1.2 DESIGN REQUIREMENTS

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

Ventilators shall be designed for use with the specific type of project roofing system, and shall provide uniform and continuous air flow. Ventilator design shall provide protection against rain and snow, and shall be provided with a continuous weep along the bottom of both sides of wind band. Units shall be self-cleaning by the action of the elements, and shall have provisions for carrying water and normal wind-transported soil matter to the outside. Units shall be designed for windspeeds of not less than [36] [_____] m/second [80] [_____] mph in accordance with ASCE 7. Ventilators shall be free of internal obstructions or moving parts which will require maintenance, and shall be complete with type of mounting indicated on drawings.

1.3 SUBMITTALS

NOTE: Submittals must be limited to those necessary for adequate quality control. The importance of an

item in the project should be one of the primary factors in determining if a submittal for the item should be required.

A "G" following a submittal item indicates that the submittal requires Government approval. Some submittals are already marked with a "G". Only delete an existing "G" if the submittal item is not complex and can be reviewed through the Contractor's Quality Control system. Only add a "G" if the submittal is sufficiently important or complex in context of the project.

For submittals requiring Government approval on Army projects, a code of up to three characters within the submittal tags may be used following the "G" designation 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 projects.

Submittal items not designated with a "G" are considered as being for information only for Army projects and for Contractor Quality Control approval for Navy projects.

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are [for Contractor Quality Control approval.] [for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government.] The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Roof Ventilators[; G][; G, [_____]]

Dimensioned drawings indicating location of each type of ventilator including details of construction, gauges of metal, and methods of operation of dampers and controls.

1.4 QUALIFICATION

Manufacturer shall specialize in design and manufacture of the type of roof ventilators specified in this section, and shall have a minimum of [_____] years of documented successful experience. Ventilator installer shall be experienced in the installation of ventilator types specified.

1.5 DELIVERY, STORAGE AND HANDLING

Roof ventilators shall be cartoned or crated prior to shipment. Ventilators shall be protected from moisture and damage. Damaged items shall be removed from site.

1.6 PROJECT/SITE CONDITIONS

Rough openings shall be field-measured and recorded on shop drawings prior to fabrication of roof ventilators. Fabrication shall be scheduled with construction schedule.

PART 2 PRODUCTS

2.1 MATERIALS

NOTE: Materials selected for ventilators will be based on the degree of permanence of the installation. Typically, aluminum will be used for permanent-type installation, and galvanized steel will be used for a temporary nature. For special situations where appearance is important, or resistance to specific corrosive conditions is required, special paint type coatings are available from manufacturers. Manufacturer's literature should be reviewed to specify special coatings.

2.1.1 Aluminum Extrusions

Aluminum extrusions shall be alloy 6063, temper T5 in compliance with ASTM B 221M ASTM B 221.

2.1.2 Aluminum Sheets

Aluminum sheets shall be alloy 5005, temper H15 or alloy 3003, temper H14 in compliance with ASTM B 209M ASTM B 209.

2.1.3 Galvanized Steel Sheets

Steel sheets shall be commercial quality, zinc-coated steel (hot-dip galvanized) of quality established by ASTM A 653/A 653M, minimum G90 coating thickness.

2.2 RIDGE VENTILATORS

Roof ridge ventilators shall be fabricated of [galvanized steel] [aluminum], and shall be assembled to any desired length. Continuous-run ridge ventilators shall be connected with splice plates of type which will telescope together and not require fasteners, soldering or welding. Ventilators shall be provided 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.] Dampers and airshafts shall be complete with urethane gasketing for extra-tight enclosures. Metal closure strips which match the panel roof rib contours shall be provided to close out weather and provide a secure seat for ventilators. [Insect] [Bird] screens shall be provided.

2.3 STATIONARY VENTILATORS

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.

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

2.4 TURBINE VENTILATORS

Turbine ventilators shall be 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 shall have 360 degree operating surface to assure access of wind currents regardless of wind velocities. Rotor head shall be anchored to prevent head from lifting or jumping off the rotor in high winds. Rotor crown plate shall be seamless. [Bird] [Insect] screens shall be provided.

2.4.1 Dampers

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

2.5 FABRICATION

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

2.6 CURB BASES

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

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

2.7 SCREENS

NOTE: 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. Bird screens should be used where insect screens are not required. Edit as required.

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

2.8 FINISH

2.8.1 Galvanized Steel Finish

Galvanized steel roof ventilators shall 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 09900 PAINTS AND COATINGS] [_____].

2.8.2 Aluminum Finish

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

2.8.3 Color

Color shall be in accordance with [Section 09915 COLOR SCHEDULE] [_____].

PART 3 EXECUTION

3.1 PREPARATION

Rough openings and other roof conditions shall be prepared in accordance with approved shop drawings and manufacturer's recommendations. Before starting the ventilator work, surrounding roof surfaces shall be protected from damage.

3.2 INSTALLATION

Roof ventilator installation shall be coordinated with roofing work, and shall be installed in accordance with approved shop drawings, manufacturer's published instructions, and chapter 8 of SMACNA Arch. Manual. The ventilator installation shall be watertight and shall be free of vibration noise. Aluminum surfaces shall be protected from direct contact with incompatible materials. Aluminum surfaces which will be in contact with sealant shall not be coated with a protective material. Aluminum shall not be used with copper or with water which flows over copper surfaces. Roof ventilators shall be cleaned in accordance with ventilator manufacturer's recommendations.

3.3 PROTECTION

Exposed ventilator finish surfaces shall be protected against the accumulation of paint, grime, mastic, disfigurement, discoloration and damage for duration of construction activities.

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