

**SECTION 23 38 13  
COMMERCIAL-KITCHEN HOODS**

SPEC WRITER NOTES:

1. Delete between //-- --// if not applicable to project. Also delete any other item or paragraph not applicable in the Section and renumber the paragraphs.
2. Provide the year of latest edition to each publication given in paragraph APPLICABLE PUBLICATIONS.
3. Select grease-extracting ventilators according to usage requirements and codes.

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

- A. A complete listing of common acronyms and abbreviations are included in Section 23 05 11, COMMON WORK RESULTS FOR HVAC.
- B. This section specifies food service, grease-extracting, energy saving exhaust ventilators.
- C. Eyebrow, compensating, short circuit, short cycle types are prohibited.
- D. Definitions:
  1. Ventilator, kitchen hood, hood and canopy; for purposes of this section, these terms all have the same definition.
  2. UL Listed Grease Extractor: A slotted (not mesh) type grease extractor that has been tested and rated by Underwriters Laboratories.

**1.2 RELATED WORK**

- A. Section 01 00 00, GENERAL REQUIREMENTS.
- B. Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- C. Section 01 81 13, SUSTAINABLE CONSTRUCTION REQUIREMENTS.
- D. //Section 01 91 00, GENERAL COMMISSIONING REQUIREMENTS.//
- E. Section 05 50 00, METAL FABRICATIONS.
- F. Section 11 40 21, FOOD SERVICE EQUIPMENT-UTILITY DISTRIBUTION SYSTEM.
- G. Section 11 44 00, FOOD COOKING EQUIPMENT.
- H. //Section 13 05 41, SEISMIC RESTRAINT REQUIREMENTS FOR NON-STRUCTURAL COMPONENTS.//
- I. //Section 21 13 13, WET-PIPE SPRINKLER SYSTEMS.//
- J. //Section 22 11 00, FACILITY WATER DISTRIBUTION.//
- K. Section 23 05 11, COMMON WORK RESULTS FOR HVAC.
- L. //Section 23 08 00, COMMISSIONING OF HVAC SYSTEMS.//

- M. //Section 23 09 23, DIRECT-DIGITAL CONTROL SYSTEM FOR HVAC//
- N. //Section 23 34 00, HVAC FANS.//
- O. //Section 26 05 19, LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND  
CABLES.//

### 1.3 APPLICABLE PUBLICATIONS

#### SPEC WRITER NOTES:

1. Make material requirements agree with requirements specified in the referenced Applicable Publications. Verify and update the publication list to that which applies to the project unless the reference applies to all HVAC systems. Publications that apply to all HVAC systems may not be specifically referenced in the body of the specification but shall form a part of this specification.
2. Insert the year of approved latest edition of the publications between the brackets// // and delete the brackets if applicable to this project.

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only. Where conflicts occur these specifications and the VHA standards will govern.
- B. American Welding Society (AWS):  
D9.1/D9.1M-//2018//.....Sheet Metal Welding Code
- C. National Fire Protection Association (NFPA):  
17A-//2021//.....Standard for Wet Chemical Extinguishing Systems  
70-//2020//.....National Electrical Code (NEC)  
96-//2021//.....Standard for Ventilation Control and Fire  
Protection of Commercial Cooking Operations
- D. National Sanitation Foundation International/American National Standards Institute (NSF/ANSI):  
2-//2019//.....Food Equipment  
4-//2020//.....Commercial Cooking, Rethermalization, and  
Powered Hot Food Holding and Transportation  
Equipment
- E. Sheet Metal and Air Conditioning Contractors National Association (SMACNA):

//2001//.....Kitchen Ventilation Systems and Food Service  
Equipment Fabrication and Installation  
Guidelines

F. Underwriters Laboratories, Inc. (UL):

710-//2012(R2021)//.....Exhaust Hoods for Commercial Cooking Equipment

**1.4 SUBMITTALS**

- A. Submittals, including number of required copies, shall be submitted in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Information and material submitted under this section shall be marked "SUBMITTED UNDER SECTION 23 XX XX, SECTION TITLE", with applicable paragraph identification.
- C. Manufacturer's Literature and Data Including: Full item description and optional features and accessories. Include dimensions, weights, materials, applications, standard compliance, model numbers, size, and capacity.
  - 1. Include manufacturer's address and telephone number.
  - 2. Include catalog or model numbers, and illustrations and descriptions of ventilators and accessories.
- D. Installation Drawings: Show dimensions; method of assembly; and details of installation, adjoining construction, coordination with service utilities, and other work required for a complete installation.
- E. Field Test Reports: Indicate dates and times of tests and certify test results.
- F. Operating Instructions: Include operating instructions covering operation of all components and maintenance procedures covering proper cleaning and necessary lubrication or adjustments to controls.

SPEC WRITER NOTE: Coordinate O&M Manual and commissioning requirements with Section 01 00 00, GENERAL REQUIREMENTS and Section 01 91 00, GENERAL COMMISSIONING REQUIREMENTS. O&M Manuals shall be submitted for content review as part of closeout documents.

- G. Complete operating and maintenance manuals including wiring diagrams, technical data sheets, information for ordering replaceable parts, and troubleshooting guide:
  - 1. Include complete list indicating all components of the systems.
  - 2. Include complete diagrams of the internal wiring for each item of equipment.

3. Diagrams shall have their terminals identified to facilitate installation, operation, and maintenance.
- H. //Completed System Readiness Checklist provided by the CxA and completed by the contractor, signed by a qualified technician, and dated on the date of completion, in accordance with the requirements of Section 23 08 00, COMMISSIONING OF HVAC SYSTEMS.//
- I. //Submit training plans and instructor qualifications in accordance with the requirements of Section 23 08 00, COMMISSIONING OF HVAC SYSTEMS.//

#### **1.5 QUALITY ASSURANCE**

- A. Installer Qualifications: Experienced in food service equipment installation or supervised by an experienced food service equipment installer.
1. Where required to complete equipment installation, electrician and plumber shall be licensed in jurisdiction where project is located.
- B. NSF Compliance: Equipment bears NSF Certification Mark or UL Classification Mark indicating compliance with applicable NSF standards, including NSF/ANSI 2, NSF 2-Supplement, and NSF/ANSI 4.
- C. UL Listing: Equipment has been evaluated according to UL 710, is listed in UL "Heating, Cooling, Ventilating and Cooking Equipment Directory," and is labeled for intended use.
- D. Fire Protection Systems: Comply with NFPA 96 and NFPA 17A.
- E. Welding: Perform welding according to AWS D9.1/D9.1M.

SPEC WRITER NOTE: Retain paragraph and subparagraphs below if required for project location.

- F. //Seismic Restraint:
1. Comply with requirements in Section 13 05 41, SEISMIC RESTRAINT REQUIREMENTS FOR NON-STRUCTURAL COMPONENTS.//
- G. In-Use Service: At least one factory-authorized service agency for equipment shall be located in the geographical area of the installation and shall have the ability to provide service within 24 hours after receiving a service call.
- H. Bio-Based Materials: For products designated by the USDA's Bio-Preferred Program, provide products that meet or exceed USDA recommendations for bio-based content, so long as products meet all performance requirements in this specifications section. For more

information regarding the product categories covered by the Bio-Preferred Program, visit <http://www.biopreferred.gov>.

- I. Refer to Section 01 81 13, SUSTAINABLE CONSTRUCTION REQUIREMENTS for additional sustainable design requirements.

#### 1.6 WARRANTY

- A. Warrant food service equipment to be free from defects in materials and workmanship in accordance with requirements of "Warranty of Construction" article in FAR clause 52.246-21.

#### 1.7 AS-BUILT DOCUMENTATION

- A. Comply with requirements in paragraph AS-BUILT DOCUMENTATION of Section 23 05 11, COMMON WORK RESULTS FOR HVAC.

### PART 2 - PRODUCTS

#### 2.1 EXHAUST HOODS

- A. The hood shall be constructed of a minimum of 18 gauge, Type 304 stainless-steel with a #3 finish. Hood shall be constructed using the standing seam method for optimum strength. The seams on the canopy shall be welded liquid-tight, and all exposed external welds shall be ground and polished to match the original finish of the metal. Lighter material gauges, alternate material types and finishes (400 series stainless-steel, cold rolled steel, etc.) and non-liquid-tight welding (tack weld, spot weld, etc.) is prohibited. Construction shall include corrosion-resistant steel framing members for strength. Short circuit style hoods are prohibited. Hood shall be of a design to lower the CFM requirements by at least 20 to 30 percent. This can be accomplished by various internal configurations or air deflectors.
- B. Designer to verify CFM and pressure drop with manufacturer.

<b>INTERNATIONAL MECHANICAL REQUIREMENTS PER LINEAR FOOT</b>	
<b>TYPE OF HOOD</b>	<b>CFM</b>
<b>EXTRA HEAVY-DUTY COOKING APPLIANCES</b>	
Double Island Canopy (per side)	550
Single Island Canopy	700
Wall-Mounted Canopy	550
<b>HEAVY-DUTY COOKING APPLIANCES</b>	
Double Island Canopy (per side)	400
Single Island Canopy	600
Wall-Mounted Canopy	400
<b>MEDIUM-DUTY COOKING APPLIANCES</b>	
Double Island Canopy (per side)	300
Single Island Canopy	500
Wall-Mounted Canopy	300
<b>LIGHT-DUTY COOKING APPLIANCES</b>	
Double Island Canopy (per side)	250
Single Island Canopy	400

Wall-Mounted Canopy	200
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- C. Hood shall include UL listed and NSF certified grease extractor type, high efficiency cartridge style baffle filters of adequate number and sizes to ensure optimum performance in accordance with manufacturer's published information. The filter housing shall terminate in a pitched, full length grease trough, which shall drain into a removable grease container. Hood shall be provided with one (1) filter removal tool.
- D. Vapor proof, UL Listed, recessed //incandescent// //fluorescent// light fixtures shall be prewired to a junction box situated at the top of the hood for field connection. Wiring shall conform to the requirements of NFPA 70.
- E. Demand ventilator control system shall be installed in the hood. The demand system shall sense the heat/smoke/vapor and shall vary the speed of the exhaust fan according to the need. The demand system shall utilize various types of sensors to accomplish this, such as exhaust temperature sensor, optic sensor, carbon dioxide sensor and other state of the art sensing devices.
- F. Fire Protection Systems: Wet chemical with wall-mounted stainless-steel cabinet.

## SPEC WRITER NOTES:

1. Identify the ventilator(s) to be protected by fire protection system on contract drawings.
  2. Note in the fire protection specification if the fire protection system actuation is to be sequenced with any other food service ventilator fire protection in the area.
1. Fire protection system to provide duct, plenum, and surface protection for ventilator and equipment located below ventilator.
  2. System interwired with shunt trip breaker and gas solenoid valve of equipment located below ventilator for power and fuel shutoff during system actuation.
- G. Options:
1. Enclosure Panels: 1.3 mm (0.05 inch) thick stainless-steel shall be installed; locate between ventilator top and ceiling on all exposed sides.
  2. Back shall be //finished// //unfinished// (ALL EXPOSED AREAS OF HOOD TO BE FINISHED).

3. Stainless-steel wall flashing shall be installed on wall behind //and on the side(s)// of ventilator from wall curb to bottom of ventilator.
4. Remote monitoring of the demand ventilation control showing what is transpiring during the course of a day. //Provide remote monitoring of the kitchen ventilation system via the DDC control system. Coordinate interface with Section 23 09 23, DIRECT-DIGITAL CONTROL SYSTEM FOR HVAC.//
5. Fresh air make-up plenum incorporated into the front face of the hood or provided at ceiling line immediately in front of the hood.

SPEC WRITER NOTES:

1. Symbols below correspond with "Room Equipment Guide" identification system. Verify project requirements before specifying equipment that deviates from "Room Equipment Guide."
2. Edit symbols to coordinate with identification shown on contract drawings.

H. Exhaust Ventilator System Requirements:

<b>SYMBOL</b>	<b>Description</b>	<b>Type</b>
K1301	Ventilator	Single sided- Wall
K1302	Ventilator	Single sided- Island
K1303	Ventilator	Dual sided
K1304	Fire protection system with remote, wall-mounted pull station(s) located near door(s)	-

**PART 3 - EXECUTION**

**3.1 INSTALLATION**

- A. If an installation is unsatisfactory to the COR, the contractor shall correct the installation at no additional cost or time to the Government.
- B. Install ventilators level and plumb with access clearances required for operation, maintenance, and cleaning and in accordance with the manufacturer's published documentation.

SPEC WRITER NOTE: Show on contract drawings overhead support for equipment specified in this section. Specify requirements for support in Section 05 50 00, METAL FABRICATIONS.

C. Coordinate installation of ventilators with overhead supports; Refer to Section 05 50 00, METAL FABRICATIONS.

D. Interconnect ventilators to service utilities.

SPEC WRITER NOTE: Retain paragraph below if seismic restraints are required for project location.

E. //Install seismic restraints for equipment.//

**3.2 FIELD TESTING**

A. General: Following installation, test ventilators for compliance with specified requirements and those of authorities having jurisdiction. Perform testing after air-handling systems have been balanced and adjusted.

B. Smoke Test:

1. Test Conditions:

- a. Perform tests with cooking equipment served by ventilator turned off.
- b. Perform tests with supply and exhaust fans serving the food service kitchen area turned on.

2. Test Procedure: Move a smoke bomb around the perimeter of cooking equipment at the top surface.

3. Test-Performance Requirements: No visible smoke shall escape from the ventilator canopy into the room.

C. Demand Ventilator Control Test:

1. Test Conditions:

- a. Perform tests with cooking equipment served by exhaust ventilator turned off.
- b. Perform tests with air-handling units serving food service kitchen turned on.

2. Test Procedure: Turn on equipment and measure speed of exhaust fan(s) as equipment heats up. Move a smoke bomb around the perimeter of the cooking equipment at the top surface and continue to measure speed of exhaust fan(s).

3. Test-Performance Requirements: Speed of fan(s) should increase/decrease with the severity of the heat or smoke.

D. Wet Fire Extinguishing System: Test system to verify that equipment operation complies with NFPA 96 and NFPA 17A.



**3.3 CLEAN-UP**

- A. At completion of the installation, clean and adjust equipment as required to produce ready-for-use condition.
- B. Where stainless-steel surfaces are damaged during installation procedures, repair finishes to match adjoining undamaged surfaces.

**3.4 STARTUP AND TESTING**

- A. Perform tests as recommended by product manufacturer and listed standards and under actual or simulated operating conditions and prove full compliance with design and specified requirements. Tests of the various items of equipment shall be performed simultaneously with the system of which each item is an integral part.
- B. When any defects are detected, correct defects and repeat test at no additional cost or time to the Government.
- C. //The CxA will observe startup and contractor testing of selected equipment. Coordinate the startup and contractor testing schedules with the COR and CxA. Provide a minimum notice of 10 working days prior to startup and testing.//

**3.5 //COMMISSIONING**

- A. Provide commissioning documentation in accordance with the requirements of Section 23 08 00, COMMISSIONING OF HVAC SYSTEMS.
- B. Components provided under this section of the specification will be tested as part of a larger system.//

**3.6 DEMONSTRATION AND TRAINING**

- A. Provide services of manufacturer's technical representative for //4//  
// // hour//s// to instruct each VA personnel responsible in operation and maintenance of the system.
- B. //Submit training plans and instructor qualifications in accordance with the requirements of Section 23 08 00, COMMISSIONING OF HVAC SYSTEMS.//

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