

15889 COMMERCIAL KITCHEN HOODS

SPECIFIER:

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This section is intended for use in hood replacement projects involving the non-wash down hoods specified and not where hoods are specified as part of a kitchen equipment design package or otherwise furnished under Division 11 of these specifications. Under Paragraph 1.2 select the Type of hood designation (I, II or both) as required for the project.

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. 15371 – Kitchen Hood (Type I) Fire Suppression System.
- B. 15861 – Air Moving Equipment.
- C. 15890 – Ductwork

1.2 SUMMARY

- A. This Section includes [**Type I**], [**Type II**], or [**Type I and Type II**] commercial kitchen hoods.

1.3 DEFINITIONS

- A. Listed Hood: A hood, factory fabricated and tested for compliance with UL 710 by a testing agency acceptable to authorities having jurisdiction.
- B. Type I Hood: A hood designed for grease exhaust applications.
- C. Type II Hood: A hood designed for heat and steam removal and for other non-grease applications.

1.4 SUBMITTALS

- A. Product Data: For the following:
 - 1. Filters/baffles.
 - 2. Fire-suppression systems.
 - 3. Lighting fixtures.
- B. Shop Drawings:
 - 1. Show plan view, elevation view, sections, roughing-in dimensions, service requirements, duct connection sizes, and attachments to other work.
 - 2. Show cooking equipment plan and elevation to confirm minimum code-required overhang.

3. Indicate performance, exhaust and makeup air airflow, and pressure loss at actual Project-site elevation.
4. Retain first subparagraph below for water-wash grease extractors.
5. Show control cabinets.
6. Show fire-protection cylinders, piping, actuation devices, and manual control devices.
7. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
8. Wiring Diagrams: Power, signal, and control wiring.
9. Piping Diagrams: Detail fire-suppression piping and components and differentiate between manufacturer-installed and field-installed piping. Include roughing-in requirements for drain connections. Show cooking equipment plan and elevation to illustrate fire-suppression nozzle locations.

1.5 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

1.6 COORDINATION

- A. Coordinate equipment layout and installation with adjacent Work, including lighting fixtures, HVAC equipment, plumbing and fire-suppression system components.

1.7 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 1. Furnish one complete set of grease filters/baffles.

PART 2 PRODUCTS

2.1 HOOD MATERIALS

- A. Stainless-Steel Sheet: ASTM A 666, Type 304.
 1. Minimum Thickness:
 2. Finish: Comply with SSINA's "Finishes for Stainless Steel" for recommendations for applying and designating finishes.
 - a. Finish shall be free from tool and die marks and stretch lines and shall have uniform, directionally textured, polished finish indicated and free of cross scratches. Grain shall run with long dimension of each piece.
 3. Concealed Stainless-Steel Surfaces: ASTM A 480/A 480M, No. 2B finish (bright, cold-rolled, unpolished finish).
 4. Exposed Surfaces: ASTM A 480/A 480M, No. 2B finish (bright, cold-rolled, unpolished).

5. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

B. Gaskets: NSF certified for end-use application indicated; of resilient rubber, neoprene, or PVC that is nontoxic, stable, odorless, nonabsorbent and unaffected by exposure to foods and cleaning compounds, and that passes testing according to UL 710.

2.2 GENERAL HOOD FABRICATION REQUIREMENTS

A. Welding: Use welding rod of same composition as metal being welded. Use methods that minimize distortion and develop strength and corrosion resistance of base metal. Make ductile welds free of mechanical imperfections such as gas holes, pits or cracks.

1. Welded Butt Joints: Full-penetration welds for full-joint length. Make joints flat, continuous, and homogenous with sheet metal without relying on straps under seams, filling in with solder or spot welding.
2. Grind exposed welded joints flush with adjoining material and polish to match adjoining surfaces.
3. Where fasteners are welded to underside of equipment, finish reverse side of weld smooth and flush.
4. Coat concealed stainless steel welded joints with metallic-based paint to prevent corrosion.
5. After zinc-coated steel is welded, clean welds and abraded areas and apply SSPC-Paint 20, high-zinc-dust-content, galvanizing repair paint to comply with ASTM A 780/A 780M.

B. For metal butt joints, comply with SMACNA's "Kitchen Ventilation Systems & Food Service Equipment Guidelines."

C. Where stainless steel is joined to a dissimilar metal, use stainless-steel welding material or fastening devices.

D. Form metal with break bends that are not flaky, scaly, or cracked in appearance; where breaks mar uniform surface appearance of material, remove marks by grinding, polishing and finishing.

E. Sheared Metal Edges: Finish free of burrs, fins and irregular projections.

F. In food zones, as defined in NSF, fabricate surfaces free from exposed fasteners.

G. Cap exposed fastener threads, including those inside cabinets, with stainless-steel lock washers and stainless-steel cap (acorn) nuts.

H. Fabricate pipe slots on equipment with turned-up edges sized to accommodate service and utility lines and mechanical connections.

I. Fabricate equipment edges and backsplashes according to SMACNA's "Kitchen Ventilation Systems & Food Service Equipment Guidelines."

J. Fabricate enclosure panels to ceiling and wall as follows:

1. Fabricate panels all exposed side(s) with same material as hood, and extend from ceiling to top of hood canopy and from canopy to wall.
2. Wall Offset Spacer: Minimum of 3 inches.
3. Wall Shelves and Overshelves: Fabricate according to SMACNA's "Kitchen Ventilation Systems & Food Service Equipment Guidelines," with minimum 0.0625-inch- thick, stainless steel shelf tops.

2.3 TYPE I EXHAUST HOOD FABRICATION

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. Aerolator Systems, Inc.
2. AHR Metals, Inc.; Air Saver Systems.
3. Captive-Aire Systems.
4. Carroll Manufacturing International.
5. Gaylord Industries, Inc.
6. Grease Master; a division of Custom Industries, Inc.
7. Greenheck.
8. Halton Company.
9. LCSystems, Inc.
10. Vent Master; Div. of Garland Commercial Ranges, Ltd.

B. Weld all joints exposed to grease with continuous welds, and make filters/baffles or grease extractors and makeup air diffusers easily accessible for cleaning.

1. Fabricate hoods according to NSF 2, "Food Equipment."
2. Hoods shall be listed and labeled, according to UL 710, by a testing agency acceptable to authorities having jurisdiction.
3. Hoods shall be designed, fabricated, and installed according to NFPA 96.
4. Include access panels as required for access to fire dampers and fusible links.
5. Duct Collars: Minimum 0.0598 inch thick steel at least 3 inches long, continuously welded to top of hood and at corners. Fabricate a collar with a 0.5 inch wide duct flange.
6. Duct-Collar Fire Dampers: Collar and damper shall comply with UL 710 testing and listing required for the entire hood.
 - a. Collar: Minimum 0.0598 inch thick stainless steel, at least 3 inches long, continuously welded to top of hood and at corners. Fabricate a collar with a minimum 0.5 inch wide duct flange.
 - b. Blades: Minimum 0.1046 inch thick stainless steel, counterbalanced to remain closed after actuation.
 - c. Blade Pivot and Spring: Stainless steel.
 - d. Fusible Link: Replaceable, 212 deg. F rated.
7. Makeup Air Fire Dampers: Labeled, according to UL 555, by a testing agency acceptable to authorities having jurisdiction.
 - a. Fire Rating: 1-1/2 hours.

- b. Frame: SMACNA Type A or Type B, with blades fabricated with roll-formed, galvanized steel; with mitered and interlocking corners.
 - c. Blades: Roll-formed, interlocking or folded, minimum 0.034 inch thick, galvanized-steel sheet.
 - d. Horizontal Dampers: Include a blade lock and stainless-steel closure spring.
 - e. Fusible Link: Replaceable, 212 deg F rated.
- C. Hood Configuration: Exhaust only or with makeup air as shown on drawings.
- 1. Makeup air shall be introduced through perforated diffusers or supply-air registers with adjustable guide vanes.
- D. Hood Style: Wall-mounted canopy, back shelf, single or double island canopy as shown on drawings.
- E. Filters/Baffles: Removable, of aluminum construction. Pitched grease collection trough and removable collection cup shall be steel. Exposed surfaces shall be pitched to drain to collection cup. Filters/baffles shall be tested according to UL 1046, "Grease Filters for Exhaust Ducts," or other National Recognized Testing Laboratory (NRTL) as approved by OSHA and authorities having jurisdiction.
- F. Lighting Fixtures: Surface-mounted, fluorescent fixtures and lamps with lenses sealed vaportight. Wiring shall be installed in conduit on hood exterior. Number and location of fixtures shall provide a minimum of 70 foot candles at 30 inches above finished floor.
- 1. Light switches shall be mounted on front panel of hood canopy or in hood control panel.
 - 2. Lighting Fixtures: Fluorescent complying with UL 1598.
- G. Comply with requirements in Section 15900 - "Control and Instrumentation" and Sequence of Operations as shown on drawings for hood controls.
- H. Hood Controls: Hood-mounting control cabinet, factory wired to control groups of adjacent hoods, where applicable and fabricated of stainless steel.
- 1. Exhaust Fan: On-off switches shall start and stop the exhaust fan. Interlock exhaust fan with makeup air supply fan to operate simultaneously. Interlock exhaust and make-up air fans with fire-suppression system to operate fan(s) during fire-suppression-agent release in accordance with NFPA 96 or hood listing. Include red pilot light to indicate fan operation.
 - 2. Fan Interlock: Factory wire the fan starters in a single control cabinet for adjacent hoods to operate together.
- I. Capacities and Characteristics:
- 1. As scheduled on drawings.

2.4 TYPE II EXHAUST HOOD FABRICATION

- 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. Captive-Aire Systems.
 - 2. Carroll Manufacturing International.
 - 3. Gaylord Industries, Inc.
 - 4. Grease Master; a division of Custom Industries, Inc.
 - 5. Greenheck.
 - 6. Halton Company.
 - 7. LCSystems, Inc.
 - 8. Vent Master; Div. of Garland Commercial Ranges, Ltd.
- B. Fabricate hoods according to NSF 2, "Food Equipment."
- C. Hood Configuration: Exhaust and makeup air.
 - 1. Makeup air shall be introduced through supply-air registers or perforated metal diffusers or panels.
- D. Hood Type: Heat and vapor removal.
- E. Hood Style: Wall-mounted canopy, back shelf, single or double island canopy as shown on drawings.
- F. Condensate Hood Baffles: Removable, stainless steel baffles to drain into a hood drain trough, and stainless steel drain piping.
- G. Lighting Fixtures: Surface-mounted, fluorescent fixtures and lamps with lenses sealed vapor-tight. Wiring shall be installed in stainless steel conduit on hood exterior. Number and location of fixtures shall provide a minimum of 70 foot candles at 30 inches above finished floor.
 - 1. Light switches shall be mounted on front panel of hood canopy or in hood control panel.
 - 2. Lighting Fixtures: Fluorescent complying with UL 1598.
- H. Capacities and Characteristics:
 - 1. As scheduled on Drawings.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Indicate field joints and methods of connection on Drawings. Coordinate with NSF requirements.
- B. Complete field assembly of hoods where required.
 - 1. Make closed butt and contact joints that do not require filler.
 - 2. Grind field welds on stainless steel equipment smooth, and polish to match adjacent finish. Comply with welding requirements in Part 2 "General Hood Fabrication Requirements" Article.
- C. Install hoods and associated services with clearances and access for maintaining, cleaning, servicing hoods, filters/baffles, grease extractor, and fire-suppression systems according to manufacturer's written instructions and requirements of authorities having jurisdiction.
- D. Make cutouts in hoods where required to run service lines and to make final connections, and seal openings according to UL 1978.
- E. Securely anchor and attach items and accessories to walls, floors or bases with stainless steel fasteners, unless otherwise indicated.
- F. Install hoods to operate free from vibration.
- G. Install trim strips and similar items requiring fasteners in a bed of sealant. Fasten with stainless steel fasteners at 48 inches on-center maximum.
- H. Install sealant in joints between equipment and abutting surfaces with continuous joint backing, unless otherwise indicated. Provide airtight, watertight, vermin-proof sanitary joints.
- I. Install lamps, with maximum recommended wattage, in equipment with integral lighting.
- J. Set initial temperatures, and calibrate sensors.
- K. Set field-adjustable switches.

3.3 CONNECTIONS

- A. Install piping with clearance to allow service and maintenance.
- B. Connect ducts according to requirements in Section 15910 - "Air Duct Accessories." Install flexible connectors on makeup air supply duct. Weld exhaust-duct connections with continuous liquid-tight joint.

3.4 FIELD QUALITY CONTROL

- A. Testing perform tests and inspections and prepare test reports.
- B. Tests and Inspections:

1. Test each equipment item for proper operation. Repair or replace equipment that is defective, including units that operate below required capacity or that operate with excessive noise or vibration.
2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
3. Test water, drain, gas and liquid-carrying components for leaks. Repair or replace leaking components.
4. Perform hood performance tests required by authorities having jurisdiction.
5. Perform fire-suppression system performance tests required by authorities having jurisdiction.

C. Prepare test and inspection reports.

3.5 DEMONSTRATION

- A. Provide minimum of 2 hour training to M-DCPS designated Owner's maintenance personnel to adjust, operate and maintain the installed commercial kitchen hoods. Provide necessary printed hand-outs during training.

END OF SECTION