

SECTION 15371

KITCHEN HOOD AND DUCT FIRE SUPPRESSION SYSTEM

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes: A complete automatic fire suppression system for the exhaust hood, including necessary accessories.
- B. Related Sections:
 - 1. 07270 - Firestopping and Fire and Smoke Barrier Caulking.
 - 2. 11420 - Utility Distribution and Canopy Ventilating Systems.
 - 3. 15300 - Fire Protection.
 - 4. 16721 - Fire Alarm Detection System.

1.02 REFERENCES

- A. Comply with applicable standards of the following:
 - 1. American Society for Testing and Materials (ASTM) A53-96 Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
 - 2. Underwriters Laboratories (UL).
 - 3. National Electrical Manufacturers Association (NEMA).
 - 4. National Fire Protection Association (NFPA).
 - a. 17A.
 - b. 70 (National Electrical Code [NEC]).
 - c. 96.
 - 5. Florida Department of Education, Office of Educational Facilities - State Requirements for Educational Facilities - 1997 (SREF).
 - 6. Florida Statutes (FS) 633.
 - 7. State Fire Marshal (SFM) Rule 4A-21.

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: System shall be capable of automatically extinguishing grease fires occurring on equipment, cooking surfaces, hood, and ductwork.

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1. Upon detection of products of combustion, the sensing devices shall:
 - a. Activate the discharge head.
 - b. Shut-off the electrical and gas supplies to cooking equipment under the hood.
 - c. Shut-off supply fans on hoods with fire dampers. Hood exhaust fans shall continue to operate after the suppression system has been activated unless fan shutdown is required by a listed component of the ventilation system or by design of the extinguishing system.
2. The building fire alarm shall be activated upon operation of fire suppression system.
3. The automatic gas shut-off valve shall be of the mechanical type and be capable of manual reset to assure gas pilots are reactivated before renewal of gas flow. Electrical solenoid gas shut off valves are not allowed.

1.04 SUBMITTALS

- A. Submit properly identified manufacturer's literature before starting work.
- B. Submit Shop Drawings on the following:
 1. UL 300 listed automatic wet chemical fire suppression system.
 2. Control panel and actuators.
 3. Discharge nozzles.
 4. Detectors.

1.05 QUALITY ASSURANCE

- A. Fire protection equipment and devices shall be UL listed for service intended. Install equipment according to the standards of NFPA and as specified. Electrical installation shall comply with National Electrical Code (NEC).
- B. Equipment location shall be coordinated with A/E.
- C. Comply with UL 300.

1.06 WARRANTY

- A. During the 1 year warranty period, perform a semiannual and annual inspection of installation to verify its proper

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operation.

- B. Actuation components include remote manual pull station, mechanical or electrical devices, detectors, actuators, etc. and shall be checked for proper functioning during inspection.
- C. Fusible links shall be replaced at the annual inspection.
- D. Complete inspection shall be performed according to NFPA 17A and NFPA 96.
- E. Forward to the Board, A/E, insurance company, and local Fire Department results of inspections and tests.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Kitchen Hood and Duct Fire Suppression Systems:
 - 1. Amerex KP 3.75.
 - 2. Ansul R-102.
 - 3. Kidde Fenwal WHDR Series.
 - 4. Pyro Chem PCL Series.
- B. Automatic Controls: Grinnell or accepted equivalent.
- C. Joint Compound: White Tite Seal or accepted equivalent.

2.02 EQUIPMENT

- A. Materials used in system shall be approved by manufacturer of base equipment.
- B. Piping:
 - 1. Under 1 inch size: Galvanized steel, standard weight, schedule 40, ASTM A53; 1 inch and larger: Schedule 80.
 - 2. Exposed: Chrome-plated or stainless steel pipe.
- C. Fittings:
 - 1. Galvanized threaded malleable iron; 1 inch or larger extra heavy; chrome-plated malleable iron or stainless steel fittings compatible with type of pipe used; 2-1/2" and larger: threaded 300 PSI black steel, or flanged 600 PSI black steel.

2. Flanges 2-1/2" and larger: 600 PSI, black steel.
- D. Gaskets: Stainless steel, similar to Flexitallic.
 - E. Extinguisher Cylinders: Totally self-purging, with remote manual and automatic releasing mechanism in separate cabinet to allow discharge of wet agent. Size and type depending on cooking equipment and exhaust hood used.
 - F. Discharge Nozzles: Suitably shielded, jet outlet type corrosion and deformation resistant to high temperatures designed to insure even distribution of wet agent without turbulence, of proper shape for their location, and provided with proper size orifices.
 1. Nozzle openings on concealed piping shall be flush with hung ceiling with flanged ceiling connection or escutcheon.
 2. Use flanged type nozzles connected to ductwork.
 - G. Electric Switch: Provide trip lever operated, 2 single pole double throw switches to sound the building fire alarm, shut off electric and gas supply to equipment (manual reset relay), and shut off supply fans serving protected space.
 - H. Automatic Controls: Fusible links, for 360 degrees F. operation or as appropriate to the type of equipment being protected.
 - I. Manual Pull Box: Provide at outside of each protected space and where noted, surface-mounted red enameled cast iron or cast aluminum alloy pull boxes with glass or breakable plastic shield and having handle connected to releasing device through suitable corrosion resisting cable run in 3/8" galvanized standard weight steel pipe conduit with enclosed type corner pulleys at changes in direction.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Perform work by a Florida licensed company possessing a Class D license issued by the State Fire Marshall with Class 4 permitted technicians according to FS 633 and SFM Rule 4A-21 and according to local and state codes and NFPA 17A and NFPA 96.
 1. Installation shall be certified in writing by the installer to:

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- a. The Board's insurance rating authority.
 - b. Local fire authority.
 - c. The Board.
 - d. The manufacturer.
- B. The fire protection system provided shall be capable of detecting fire in the hood and duct, and automatically discharge non-toxic wet extinguishing agent into hidden areas behind the plenum chamber filters, the exhaust system, and cooking appliance area.
- C. Piping:
- 1. Run piping enclosed where possible in wall chases, recesses, pipe shafts, wall partitions, and ceilings where provided.
 - a. Non-concealed piping shall run as inconspicuously as possible in schedule 40 chrome-plated (CP) piping or stainless steel piping.
 - 1) Chrome-plated piping shall not show tool marks or more than one thread at fittings.
 - 2) Fittings, valves on CP piping shall be CP finish, or compatible with the type of pipe used.
 - 2. Use reducing fittings for changes in pipe size. Bushings are not allowed.
 - 3. Use extra heavy pipe for nipples where unthreaded portion is less than 1-1/2". Close nipples are not acceptable. Use shoulder nipples.
 - 4. Provide unions and flanges for connections to equipment.
- D. Joints:
- 1. Make joints in screwed piping with acceptable compound on male threads only. Do not use lamp wick in joints. Threads shall be perfect, clean cut and of proper length. Pipe shall be properly reamed after cutting and threading.
 - 2. Make flanged joints with full face rubber gasket or stainless steel.
- E. Hangers and Supports:
- 1. Properly support piping by accepted type hangers and

supports:

- a. To secure piping in place.
- b. To prevent vibration.
- c. Of ample size to carry pipe.

2. Chain, straps, perforated bar, or wire hangers not allowed.
3. Hangers and supports in exposed CP piping shall be CP finish.
4. Provide necessary supplemental steel for proper support or attachment of hangers.

F. Escutcheons:

1. Unless otherwise noted, provide exposed pipes with acceptable type chrome plated brass or chrome plated steel escutcheons where they pass through walls, partitions, floors, or ceilings. Hold in place by set screws.
2. At CP piping provide satin CP finish escutcheons.

G. Sleeves:

1. Provide sleeves large enough to fit pipe passing through floors, ceiling, walls, or partitions.
2. Penetrations by fire protection water lines through fire rated floors and walls shall be installed and firestopped using UL classified through-penetration firestopping and fire and smoke barrier caulking as specified in Section 07270, Firestopping and Fire and Smoke Barrier Caulking.
3. The fire rating of the firestopping and caulking shall be equivalent to or greater than the fire-rating of the floor or wall penetrated.
4. Install firestopping and caulking according to manufacturer's instructions.

H. Fusible Links: Mounted on brackets centered in exhaust duct maximum 20 feet downstream, above cooking appliances, and above and within the perimeter of the appliance.

I. Cuttings and Patching:

1. The installer of the automatic wet chemical fire suppression system shall be responsible for:
 - a. Cutting and patching.
 - b. Preparatory work required for the reception of the

system.

- c. Cleaning up and restoration of construction and finishes defaced, marred, or otherwise disturbed because of the installation.

- J. Clean equipment, piping, and other exposed work as directed. Perform cleaning work in stages if required to facilitate work of others.

- 1. Plated, polished, bronzed, or painted work shall be bright and clean.
- 2. Blow out piping with air or nitrogen after installation and before nozzle settings.
- 3. Adjust equipment and discharge nozzles for proper operation.
- 4. Tension cables with pulleys without overloading.

3.02 FIELD QUALITY CONTROL

- A. During the Board's substantial completion inspection, conduct a full-scale "bag test" of system to verify the system works as intended, including the interface that activates the building fire alarm system when the fire suppression system discharges.

END OF SECTION