

COLORADO SPRINGS FIRE DEPARTMENT, DIVISION OF THE FIRE MARSHAL

COMMERCIAL KITCHEN HOOD FIRE SUPPRESSION SYSTEMS

General Requirements per Chapter 9 of the Locally Amended 2015
International Fire Code and the Applicable NFPA Codes.



Fire Construction Services
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PURPOSE

This guidance document has been developed in an effort to provide the highest level of service to the customers of the CSFD. The major goal of commercial kitchen hood fire suppression plan reviews is to ensure the design meets the minimum requirements of the adopted codes, standards and ordinances. To meet this goal, the submitted plans and supporting documentation must contain the information needed to conduct a thorough review.

SCOPE

This guidance document outlines the minimum requirements set forth in the International Fire Code, local amendments, and departmental policies and procedures as they relate to the installation of commercial kitchen hood fire suppression systems. This guidance document is not intended to provide an all-inclusive listing of submittal and inspection requirements, as it would be virtually impossible to cover all situations. Also included is information covering items required to be included on the working drawings and supporting documents.

DEFINITIONS

| | |
|------|--------------------------------------|
| CSFD | Colorado Springs Fire Department |
| NFPA | National Fire Protection Association |
| RBD | Regional Building Department |
| IFC | International Fire Code |
| CD | Compact Disk |

GUIDELINES

I. INTRODUCTION.

A. APPLICABLE CODES AND STANDARDS.

1. 2015 International Fire Code and local amendments
2. 2015 International Mechanical Code and local amendments
3. 2017 Edition of NFPA 17A Wet Chemical Extinguishing Systems
4. 2017 Edition of NFPA 96 Ventilation Control and Fire Protection of Commercial Cooking Operations. (NFPA 96 is not adopted by Colorado Springs but may be reference as a standard of good practice)
5. Colorado Springs City Ordinances
6. CSFD Administrative Rulings/Interpretations

B. ADMINISTRATIVE REQUIREMENTS.

1. **Approved Contractors.** All suppression contractors must obtain a Colorado Springs Fire Suppression Contractor B License (FSC-B) in order to design, install, add to, alter, service, repair, and inspect commercial kitchen hood fire suppression systems, in accordance with Pikes Peak Regional Building Code, Section 207. Please contact Regional Building Department, Contractor Licensing at 719-327-2887 for information on obtaining a license.

2. **Service Technicians.** A Colorado Springs licensed Service Technician (FST-B) shall be on-site for all installations, additions, alterations, repair and inspections of commercial kitchen hood fire suppression systems, in accordance with Pikes Peak Regional Building Code, Section 207. Please contact Regional Building Department, Contractor Licensing at 719-327-2887 for information on obtaining a license.
3. **Code/Standard Editions.** Commercial kitchen hood fire suppression systems shall meet the criteria of the adopted codes as amended and all applicable requirements of the most recent edition of the NFPA standards. NFPA standards are effective on January 1st of the year following the effective date printed in the standard. NFPA 96 is not adopted by CSFD but is used as a reference for good practices.
4. **Permits/Inspections.** Required plan submittal with approvals and permits must be secured through CSFD prior to the start of any work. Permitted work must be inspected by CSFD.
5. **Special Circumstances.** Depending upon the scope of work, different types of submittals may be required; therefore, you may want to contact Fire Construction Services for additional information.
6. **Alternative Methods.** If special building conditions and/or restrictions exist that may prohibit any of the requirements set forth in this guidance document from being met, approval from CSFD for an alternative means and methods approach is required. The alternative means and methods must be approved before installation of the system begins.
7. **Revisions.** All revisions shall be clouded and identified with a sequential numbering or lettering system, such as Revision A, B, etc. or Revision 1, 2, etc. Revisions are date sensitive, thus each revised sheet must bear the date of the revision.
8. **As-Built Plans.** All deviations from approved plans shall be documented and submitted to CSFD to archive. Reviews will not be conducted on as-built plans, unless specifically required by the fire inspector, as these field changes are often verified as compliant by the fire inspector. All as-built plans shall be conspicuously marked as such.

II. SUBMITTAL INFORMATION.

This section of the guidance document provides information as to documentation and shop drawings that shall be provided at the time of plan submittal. This documentation is required to assure the plan submittal package contains the necessary information for a complete plan review.

A. MINIMUM REQUIREMENTS OF SUBMITTAL.

1. **Drawings/Plans.** Drawings shall be submitted on sheets no less than 11 x 17 inches. Plans shall be scaled or suitably dimensioned and reproducible. Plans shall contain the information and/or details indicated in the checklist in the appendix.
2. **Plan Review Number.** Submittals associated with a construction project shall be provided with the CSFD Plan Review Number. This number is an eight digit numeric code located on the back of the construction plans. Suppression system work only projects shall be indicated as such on the submittal so that it can be assigned a plan review number.
3. **Number of Drawing Sets.** A minimum of two (2) sets of drawings are required to be submitted to CSFD. A maximum of three (3) original sets will be stamped with CSFD approval.
4. **Cut Sheets/Specifications.** A minimum of one (1) set of manufacturer's product information shall be provided. This is to include information on all devices that are part of or being connected to, the commercial kitchen hood fire suppression system; such as piping, valves, control heads, nozzles, fusible links, method of supporting/mounting

equipment, pipe, and conduit, etc. Any cut sheets showing multiple installation/protection methods shall have the specific method used highlighted. As an example, there are several nozzles used to protect fryers, the specific nozzle protection shall be highlighted. Please provide only those pages from the design manual that are applicable to the system being installed. Stamped cut sheets will be returned to the contractor and must remain on the job site with the approved plans.

CSFD accepts cut sheets on CD. The CD must have the individual cut sheets for the materials specific to the job. Note: we will not accept manufacturer's CD's! If the option to submit cut sheets via CD is chosen, CSFD will stamp, date and initial the CD – it is then the contractor's responsibility to provide the means of reviewing that disk upon the fire inspector's request.

III. GENERAL INFORMATION AND REQUIREMENTS.

A. MONITORING. Where a building fire alarm system is provided, commercial kitchen hood fire suppression systems shall be monitored by the building fire alarm system.

Buildings provided with a dedicated function system (such as elevator recall or sprinkler monitoring) that is not already monitored, are not required to monitor the commercial kitchen hood fire suppression system.

IV. SPECIFIC SYSTEM INFORMATION.

A. APPLIANCES REQUIRING PROTECTION. The adopted International Mechanical Code requires Type 1 hood installations to be provided over medium-, heavy- and extra-heavy-duty appliances. Light duty appliances that produce grease or smoke as part of the cooking process shall also be provided with a Type 1 Hood. Kitchen hood fire suppression systems shall be provided where a Type 1 hood is installed.

1. Light Duty Appliances: Light duty appliances include gas and electric ovens, (including standard, bake, roasting, revolving, retherm, convection, combination convection/steamer, countertop conveyORIZED baking/finishing, deck and pastry), electric and gas steam-jacketed kettles, electric and gas pasta cookers, electric and gas compartment steamers (both pressure and atmospheric) and electric and gas cheese-melters.
2. Medium Duty appliances. Medium duty cooking appliances include electric discrete element rangers (with or without oven), electric and gas hot-top ranges, electric and gas griddles, electric and gas double-sided griddles, electric and gas fryers (including open deep fat fryers, donut fryers, kettle fryers and pressure fryers), electric and gas conveyor pizza ovens, electric and gas tilting skillet (braising pans) and electric and gas rotisseries.
3. Heavy Duty Appliances. Heavy duty cooking appliances include electric and gas under-fired broilers, electric and gas chain (conveyor) broiler, gas open burner ranges (with or without an oven), electric and gas wok ranges, smokers and smoker ovens, and electric and gas over-fired (upright) broilers and salamanders.
4. Extra-Heavy Duty Appliances. Extra-heavy duty appliances are those utilizing open flame-combustion of solid fuels at any time.

B. WET CHEMICAL EXTINGUISHING SYSTEMS.

1. Fuel and/or electrical power supply shall be arranged to shut off all cooking equipment AND electrical receptacles located under the hood when the suppression system is actuated. Any receptacles that could be used to power appliances located under the hood shall also shut down. Shutoff devices shall require manual resetting. (IFC 904.12.2)
2. Where two or more hazards can be simultaneously involved in fire by reason of proximity, the hazards shall be protected by either multiple systems installed to operate

simultaneously or one system designed to protected all hazards that can be simultaneously involved. (NFPA 17A: 5.1.2.2 and IFC 904.3.2)

3. Exhaust fans are required to remain on, while make-up air is shut down. (IFC 904.12.2.1)
4. Moveable cooking appliances shall be provided with a means to ensure that it is correctly positioned in relation to the appliance discharge nozzle during cooking operations. (NFPA 96: 12.1.2.3.1)
5. At least one manual pull station shall be provided for each system and shall be located in a path of egress (IFC 904.12.1) at least 10 to 20-feet from the kitchen exhaust system. Multiple pull stations shall be provided with signage as to what kitchen hood fire suppression system they are connected to and/or what appliances/hazards they protect.
6. All deep-fat fryers shall be installed with at least a 16-inch space between the fryer and surface flames from adjacent cooking equipment and not less than 3' from solid fuel cooking equipment. As an alternative, a steel or tempered glass baffle may be installed at a minimum of 8-inches in height between the fryer and surface flames of the adjacent appliance; if the fryer and the surface planes are at different horizontal planes, the 8-inch height shall be measured from the higher of the two appliances. (NFPA 96:12.1.2.4 and 96: 12.1.2.5)
7. Fusible links shall be provided within each exhaust duct opening and above each protected cooking appliance in accordance with the manufacturer's listing (NFPA 17A: 5.6.1.4 – 5.6.1.5)
8. A class K portable fire extinguisher is required for all commercial kitchens equipped with wet chemical fire suppression systems. Extinguishers shall be within 30-feet of appliances as measured along an unobstructed path of egress. Solid fuel cooking appliances may have additional requirements, please refer to IFC 904.12.5.

C. DRY CHEMICAL EXTINGUISHING SYSTEMS.

1. New Installations are required to meet the testing requirements of UL-300 and shall be listed and labeled for the application.
2. Existing dry chemical systems and pre-UL300 wet chemical systems protecting commercial cooking operations are required to be modified, upgraded or replaced to meet UL 300 requirements where changes in the cooking medium (i.e. from animal fats to vegetable oils), positioning of cooking equipment, or the replacement of cooking equipment occur in existing commercial cooking systems, the extinguishing systems shall comply with the applicable provisions of IFC 904.12.6.1.

V. INSTALLATION.

A. PERMITS.

1. The installation of the commercial kitchen hood fire suppression system is not to commence, including any pre-piping, until submittals have been reviewed and approved by CSFD and a permit has been secured.
2. Permits for kitchen hood fire suppression systems expire one year after date of issue. A 30-day grace period is allowed to renew the permit. After the grace period expires, if inspections have been conducted in the past 13 months, new plans and permit is not required to be submitted for issuance of a new permit. If the grace period has expired and no inspections have occurred in the past 13 months, new plans shall be submitted prior to issuance of a new permit.
3. When modifications are made to an existing system that involves the changing of tank size or control equipment a permit is required. Work such as re-piping for a new appliance arrangement does not require a permit. Any abandoned pipe or conduit from a previous installation shall be removed from within the hood, plenum and exhaust duct.

4. Penetrations and holes resulting from the removal of conduit or piping shall be sealed with listed or equivalent liquid tight sealing devices.
5. If a hood and resulting system are taken down and re-installed, then an inspection is required to confirm control functions and the interlocks function as intended. Please contact Fire Construction Services to discuss your situation if you have additional questions. (NFPA 96:10.2.7).
6. Maintenance is defined as the work necessary to keep equipment operable or to make repairs. Replacement of fusible links or repairing damaged components is considered maintenance and does not require a permit.

VI. INSPECTIONS AND TESTING.

It shall be the duty of the person doing the work authorized by a permit to notify the CSFD that the work is ready for inspection. It shall also be the responsibility of the person requesting the inspections to provide access to and means for proper inspection of the work.

Be advised that approval as the result of an inspection shall not be construed to be an approval of a violation of the provision of the adopted fire code, standards, or of other ordinances of the City of Colorado Springs. Inspections presuming to give authority to violate or cancel provision of this code or of other ordinances of the jurisdiction shall not be valid (IFC 106.4).

- A. **VISUAL INSPECTION.** Piping shall be visually inspected to verify proper materials and installation methods. Nozzles shall be provided with caps to prevent grease, debris or other foreign materials from entering the piping system. Nozzles shall be located per the manufacturer's specification for proper protection of appliances.
- B. **SYSTEMS OPERATIONAL TESTS.** A puff test will be required, so please be prepared with the necessary equipment. Please contact Fire Construction Services if you have questions.
- C. **MANUFACTURER'S DESIGN MANUAL.** The current system design manual shall also be available for reference.
- D. **INSTALLERS CERTIFICATION.** A completed copy of the Installer Certification shall be provided at the time of final inspection.

REFERENCES AND LINKS

Administrative Rulings and IFC Amendments can be found on the CSFD web site at <https://coloradosprings.gov/fire-department/page/fire-code-amendments-and-administrative-rulings?mlid=9796>

APPENDIX

Working Drawing Submittal Checklist

Plan Requirements

Working Drawings

Title Block shall contain the following:

- Name of owner and occupant
- Location including full street address as assigned by RBD Enumerations
- Name, address, phone, FAX number and email address of designer and installing contractor
- CSFD Plan Review number
- A scale including graphic representation OR suitably dimensioned.
- Detailed scope of work in narrative format
- Editions of IFC and NFPA standards used

Information required on Drawings:

System Information:

- Type of Hood being protected - canopy, eyebrow, back shelf, etc.
- Type of Agent being used and amount provided
- Description of maximum number of flow points supported by the system, and the number of flow points used
- Description and location of nozzles
- Size, length and arrangement of connected piping - may be combined with an isometric view
- Maximum length of pipe, fittings permitted and/or any volume limitations.
- Location and function of detection devices (fusible links)
- Equipment schedule or bill of materials
- Plan view of the kitchen layout to include exiting and manual pull station location
- Isometric view of piping to include the nozzles and appliances
- Details of each unique rigid pipe support configuration showing method of securement to the pipe and to the building structure
- Details of the method of container securement showing method to the container and to the building structure