



Santa Clara Fire Department

Fire Extinguishing Systems for Commercial Cooking Operations



PURPOSE

This guideline has been prepared to assist those responsible for the design, installation, testing, and inspection of wet chemical fire extinguishing systems used to protect commercial cooking appliances to comply with 2002 NFPA 17A; 2010 California Fire Code (CFC) Chapter 9, Section 904.11; and the 2010 California Mechanical Code (CMC) Chapter 5. The information contained in this document is intended to promote compliance and to ensure that commercial type food heating and processing operations are adequately protected in the event of a grease fire.

SCOPE

This guideline applies to any facility where commercial cooking operations produce grease-laden vapors. Cooking appliances producing grease-laden vapors shall be equipped with an exhaust system with the following components: hood, grease removal devices, duct system, and fire extinguishing equipment. This guideline defines protection for cooking surfaces, deep fat fryers, griddles, upright broilers, char broilers, range tops and grills, open face ovens, salamanders, cheese melters, woks, open face pizza ovens, and other similar cooking appliances. Protection shall also be provided for the enclosed plenum space within the hood, above filters, and in exhaust ducts serving the hood.

SUBMITTAL REQUIREMENTS

SCFD does not review the installation of the hood but rather the fire extinguishing system, which is installed. Fees are based on the number of fire extinguishing systems installed, rather than the number of hoods.

1. General Requirements:

- A. Submit a completed SCFD Permit Application, which can be obtained at the Fire Marshal's Officer which is located at 1675 Lincoln Street, Santa Clara or on the City of Santa Clara website at www.santaclaraca.gov.
- B. Submit appropriate fees: Please reference SCFD Plan Check Fees document.
- C. Submit a minimum of two (maximum of three) sets of legible, scaled plans with ONE set of current and complete technical data sheets/manufacturer's specifications.

2. Plan Submittal Requirements:

The plans submitted shall include the following information:

- A. Scope of work for the project.
- B. Complete address of the project.
- C. Name and phone number of the project coordinator, facility owner, and system designer. A Class A California licensed "Fire Protection Engineer" shall design, stamp and sign all drawings that are installed by a C-16 contractor that did not design the system. C-16 contractors can design the system, as long as that contractor performs the entire installation without subcontracting any portion of the work out.
- D. Applicable codes and standards used for the system design (e.g., 2010 CFC, 2010 CBC, etc.).
- E. Sectional view of cooking appliances with the dimensions of each piece of cooking equipment specified.
- F. Specify the size and location of the back shelf, if any.
- G. If applicable to the appliances on site, specify the following:

- i. Whether or not the fryer has a drip board;
 - ii. Type of char broiler;
 - iii. The depth of wok.
- H. Floor plan layout that includes the location of the cooking equipment, exit doors, manual pull, and other non-protected appliances indicated.
- I. Fire extinguishing protection is required for open pizza ovens. If the pizza oven is closed, and no protection is provided, this must be specified on the plan.
- J. Hood, plenum, and duct dimensions.
- K. Piping schematic that includes the equivalent pipe length calculation (if applicable); the number and type of nozzles; and the location, height and direction of nozzle placement over each piece of cooking equipment.
- L. When applicable, provide calculations that demonstrate minimum and maximum volume quantities meet manufacture's specifications per the General Piping requirements.
- M. An equipment legend for each supply tank (multiple cylinders supplying the same nozzles shall be combined on legend). The legend shall include the type of nozzles that are connected to that tank, the tip number/identifier, the total number of flow point used, and the number of flow points allowed for that size tank.
- N. Detection schematic that includes the location of each fusible link for each protected equipment, the location of the manual pull, and the length of the detection system.
- O. All hoods shall be secured in place by noncombustible supports. CMC 508.1.1
- P. NEW EXHAUST SYSTEMS: Provide a copy of the final construction plans for the complete hood exhaust system (if applicable). Sufficient drawings shall be provided that depicts the hood, plenum, duct, pollution control units if applicable, from the hood to the exhaust ejection point to the atmosphere.
- Q. EXISTING EXHAUST SYSTEMS: Provide a scaled elevation view of the exhaust system from the floor through the roof/wall to the point where the exhaust is ejected to the atmosphere. The cooking appliances and any pollution control unit or smoke/odor scrubber shall be depicted. If there are areas that cannot be surveyed due to lack of access, they shall be identified within the elevation view.
- R. Listed ultra-violet hoods shall be installed, maintained and protected in accordance with the terms of their listing and the manufacturer's instructions. CMC 508.8
- S. Any equipment, listed or otherwise, that provides secondary filtration or air pollution control and that is installed in the path of travel of exhaust products shall be provided with an approved automatic fire extinguishing system for the protection of the component sections of the equipment and shall include protection of the ductwork downstream of the equipment, whether or not the equipment is provided with a damper. If the equipment can be a source of ignition, it shall be provided with appropriate detection to operate the fire-extinguishing system. CMC 512.3.2
- T. Where a cooking exhaust system employs an air pollution control device that re-circulates air into the building, the provisions of CMC 516.0 and the manufacturing instruction manual shall apply. CMC 512.3.3

NOTE: If the chemical fire extinguishing system is not designed to fully protect the duct then the duct will also require fire sprinklers to be installed as per *2010 NFPA 13, Section 7.10.3*.

TESTING

The system shall be pre-tested prior to SCFD inspection to determine that the system is properly installed and functions in accordance with the approved plans and the manufacturer's installation and maintenance manual. Testing during the SCFD inspection shall include a manual and automatic activation via fusible link. A shut down of all electrical and gas cooking equipment shall also be demonstrated. Nozzle type, height, and orientation relative to placement of cooking appliances will also be verified during the inspection.

OPERATIONS/MAINTENANCE

The responsibility for inspection, maintenance, training, and cleanliness of the ventilation control and fire protection of the commercial cooking operations shall be the ultimate responsibility of the owner of the system provided that this responsibility has not been transferred in written form to a management company or other party. CMC 507.1.3

The extinguishing system shall be maintained in accordance with the current CFC, CMC, NFPA 17A, and manufacturer's requirements including the following:

1. Existing automatic fire extinguishing systems. Where changes in the cooking media, positioning of cooking equipment or replacement of cooking equipment occur in existing commercial cooking systems, the automatic fire-extinguishing system shall be required to comply with the applicable provisions CFC Sections 904.11.6.1.
2. Extinguishing systems shall be serviced at least every six months, or after activation of the system, by a qualified person. Maintenance shall be conducted in accordance with the manufacturer's listed installation and maintenance manual. CFC 904.11.6.2. NFPA 17A Section 7.3.1

Note: Records shall be kept for up to three years. CFC 901.6.2

3. Fusible links shall be replaced at least annually. CFC 904.11.6.3
4. The hood ventilation system shall be operated at the required rate of air movement, and approved grease filters shall be in place when cooking equipment under a kitchen grease hood is operated.
5. When grease extractors are installed, they shall be operated with commercial-type cooking equipment.
6. Hydrostatic testing of the wet chemical extinguishing system shall be completed in intervals not exceeding 12 years. NFPA 17A 7.5
7. All interior surfaces of the exhaust systems shall be made accessible for cleaning and inspection purposes. CMC 507.1.6
8. The entire exhaust system shall be inspected for grease build-up by a properly trained, qualified, company or persons. Inspections shall be completed in accordance with CFC Table 609.3.3.1 (see below).

Table 609.3.3.1
COMMERCIAL COOKING SYSTEM INSPECTION FREQUENCY

Type of Cooking Operations as determined by Fire Code Official	Minimum Frequency of Inspections
High-Volume cooking operations such as 24-hour cooking, charbroiling or wok cooking	3 months
Low-Volume cooking operations such as places of religious worship, seasonal businesses and senior centers	12 months
Cooking operations utilizing solid-fuel burning cooking appliances	1 month
All other cooking operations	6 months

9. If during the inspection it is found that the hood, grease removal devices, fans, ducts or other appurtenances have an accumulation of grease, such components shall be cleaned. CFC 609.3.3.2
 - a. Records for inspections shall state the following:
 - i. The name of the individual and company performing the inspection.
 - ii. A description of the inspection.
 - iii. When the inspection took place.
 - b. Records for cleaning shall state the following:
 - i. The name of the individual and company performing the cleaning.
 - ii. When the cleaning took place.

Such records shall be completed after each inspection or cleaning, maintained on the premises for a minimum of three years and copied to the Fire Code Official upon request. CFC 609.3.3.3

SCHEDULING INSPECTIONS

1. Inspection appointments can only be made by the permit applicant or listed contractor.
2. It is the responsibility of the permit applicant or listed contractor to have a representative on the job site during the inspection with a set of approved plans. Failure to do so will result in the cancellation of the inspection and a re-inspection fee will be assessed.
3. Call (408) 615-4970 at least one business day prior to the desired date of the inspection. Inspections are assigned on a first come first served basis. The inspection request line is open Monday through Friday between 8:00 a.m. and 5:00 p.m.

SMART PERMIT INFORMATION SYSTEM

The City of Santa Clara offers you the opportunity to check the status of you fire permits on-line. To access the Smart Permit Information System please log onto the system at:

http://santaclaraca.gov/community/smt_permit_information.html

You can search the system using your Case Number (Permit number; fir2008-00001), Project Name, Applicant Name or the address of the project.

SANTA CLARA FIRE DEPARTMENT NOTES

Provide the following notes on the plan, verbatim, under the heading "SANTA CLARA FIRE DEPARTMENT NOTES":

1. When a fire alarm system is provided in the building, it shall be interconnected so that the activation of the hood extinguishing system will sound the fire alarm and transmit a signal to the central station. The hood extinguishing system does not need to be interconnected if the building is only equipped with a fire sprinkler monitoring system.
2. The approved system shall be pre-tested prior to the SCFD scheduled inspection of the required acceptance test.
3. Piping shall be rigidly supported to prevent movement. Swivel nozzles shall be rotated to a predetermined aiming point and then tightened to hold that angle. Careful attention shall be given at the time of designing the system as nozzles cannot be moved "out of the way" once approved in the field. Any moving of the pipe or nozzles shall require an approved contractor to evaluate the pipe/nozzle layout.
4. Movable cooking equipment shall be provided with a means to ensure that it is correctly positioned in relation to the appliance discharge nozzle during cooking operations. NFPA 17A 5.6.4
5. Manual pull stations shall be located no higher than four feet above finished floor and shall be readily accessible for use at or near a means of egress from the cooking area a minimum of 10 feet and maximum of 20 feet from the kitchen exhaust system. CFC904.11.1
6. All gas fueled, electrically powered, and heat-producing equipment located under the hood shall shut down upon activation of the extinguishing system. CFC 904.11.2
7. All discharge nozzles shall be provided with caps, covers, or other suitable protective devices. NFPA 17A 4.3.1.5
8. All discharge nozzles shall be located and installed in relation to the protected appliance as shown in the manufacturer's listed installation manual.
9. Hood and duct construction and installation shall be in accordance with the CMC and nationally recognized standards. These assemblies are subject to approval and inspection by the City of Santa Clara Building Official and are not part of the SCFD plan review process except as it relates to the installation of the hood extinguishing system.
10. Where multiple manual actuators are installed for protection of separate extinguishing systems, they shall be identified as to which extinguishing system each will activate.
11. Hood exhaust fans shall continue to operate after the extinguishing system has been activated, unless fan shutdown is required by a listed component of the ventilation system or by the design of the extinguishing system.
12. The inside edge of the hood shall overhang a horizontal distance of not less than 6 inches beyond the edge of the cooking surface on all open sides, and the vertical distance between the lip of the hood and the cooking surface shall not exceed 4 feet unless the manufacturer's specifications state otherwise.
13. Fryers shall be separated from surface flame appliances by 16 inches or an 8 inch steel or tempered glass baffle plate shall be provided between fryers and surface flames. CMC 515.1.2.5.
14. A Class K rated extinguisher shall be provided within a maximum of 30 ft. of cooking equipment. CFC 906.1 Additional extinguishers may be required based on travel distance for solid fueled equipment or multiple fryers. CFC 904.11.5 Portable fire extinguishers shall be maintained in accordance with CFC 906.2, portable fire extinguishers shall be conspicuously located along normal paths of travel where they will be readily accessible. CFC 906.3(j)