



Chesterfield Fire and EMS

Fire and Life Safety Division

Office 804-748-1426
Fax: 804-768-8766
www.chesterfield.gov/fire

WET CHEMICAL EXTINGUISHING SYSTEMS

NFPA 17-A, 2009 Edition, Virginia Construction Code (VCC) and Virginia Statewide Fire Prevention Code (VSFPC) 2012 Editions

Revision date: 6/19/2015

Project Name : _____
Project Address : _____
File Number: _____ Date : _____
Code Edition: _____

All supporting documentation showing items listed below are required for review. The checklist is based on the **2009** Edition of NFPA 17-A and **2012** Editions of Virginia Construction Code and the Virginia Statewide Fire Prevention Code.

General (All submissions shall include the following):

- Applications for permit shall be made to Chesterfield Building Inspection Department prior to commencement of any installation or alteration involving fire protection systems regulated by the Virginia Construction Code. A minimum of three copies of shop drawings and submittal data shall be provided with the application prior to installation. The application shall clearly indicate the system is required or elective at the discretion of the owner.
Virginia Construction Code, Section 108.1.

NOTE: For existing systems, a permit is not required for maintenance of the system including the following items:

1. A check to see that the hazard has not changed.
2. An examination of all detectors, the expellant gas container(s), the agent container(s), releasing devices, piping, hose assemblies, nozzles, signals, all auxiliary equipment, and the liquid level of all non-pressurized wet chemical containers.
3. Verification that the agent distribution piping is not obstructed including disassembly of all piping, conducting a full or partial discharge test, and/or utilizing other methods recommended by the manufacturer.

- During permit approval, design and installation of fire protection systems (wet chemical) shall be performed by persons or companies who have appropriate Virginia Contractor's License with "FSP" designation (fire suppression contracting) and a Chesterfield Business License. This will be confirmed by the Permit Technician during application process.

- Commercial cooking systems:** The automatic fire-extinguishing system for commercial cooking systems shall be of a type recognized for protection of commercial cooking equipment and exhaust systems of the type and arrangement protected. Pre-engineered automatic dry and wet-chemical extinguishing systems shall be tested in accordance with UL 300 and *listed and labeled* for the intended application. Other types of automatic fire-extinguishing systems shall be *listed and labeled* for specific use as protection for commercial cooking operations. The system shall be installed in accordance with the Virginia Construction Code, its listing and the manufacturer's installation instructions. VCC Section 904.11
- System interconnection:** The actuation of the fire suppression system shall automatically shut down fuel or electrical power supply *to the cooking equipment*. The fuel and electrical supply reset shall be manual. VCC Section 904.11.2

EXCEPTIONS:

1. Gas appliances not requiring protection but located under the same ventilation equipment shall also be shut off. NFPA 17A, Section 4.4.3.2
 2. Steam supplied from an external source shall not be required to shut down. NFPA 17A, Section 4.4.3.3
 3. Solid fuel cooking operations shall not be required to shut down. NFPA 17A, Section 4.4.3.4
 4. Exhaust fans and dampers shall not be required to be shut down on system actuation as the systems have been tested under both zero-and high-velocity flow conditions. NFPA 17A, Section 4.4.3.5.
 5. If the expellant gas is used to pneumatically operate these devices, the gas shall be taken prior to its entry into the wet chemical tank. NFPA 17A, Section 4.4.3.6
 6. Shutoff devices shall require manual resetting prior to fuel or power being restored. NFPA 17A, Section 4.4.3.7
- Plans shall be drawn to an indicated scale or shall be suitably dimensioned and shall be reproducible. Section 6.3.1
 - Plans shall contain sufficient detail to evaluate the protection of the hazard(s). Provide building floor plan layout indicating location of hood(s), all appliances under the hood(s), elevation views of all equipment, location of manual pull station in relation to protected equipment in a normal route to the means of egress (minimum of 10-feet / maximum 20-feet away from kitchen exhaust system) and description and location of all required nozzles, including minimum and maximum required height above hazard surface(s). Section 6.3.2
 - At least one manual system actuator, pull station, shall be provided for each system and be located not more than 48 inches and not less than 42 inches above the finished floor. Sections 5.2.1.6, 5.2.1.10, VCC Section 904.11.1
 - Details on the system shall include the following:
 1. Size, length, and arrangement of connected piping
 2. Description and location of nozzles. Section 6.3.3

Submitted plans shall indicate maximum flow points available for the system, the flow point(s) of each nozzle type, the number of each nozzle type utilized, and the total flow points actually utilized.

- Information shall be submitted pertaining to the following:
 1. The location and function of detection devices
 2. Operating devices
 3. Auxiliary equipment
 4. Electrical circuitry. Section 6.3.4.

- Where field conditions necessitate any substantial change from the approved plan, as-installed plans shall be submitted to this office. Section 6.3.6

- Specifications and manufacturer's installation instructions shall be included in the plan submittal package. Items necessary include the following:
 1. Designation of the authority having jurisdiction.
 2. Statement that the installation conforms to NFPA 17-A, 2009.
 3. Indication that only equipment referenced in the manufacturer's listed installation and maintenance manual, or alternate suppliers' components that are listed for use with the specific extinguishing system, shall be used.
 4. Identification of special auxiliary devices acceptable to the system manufacturer.
 5. List of specific tests required by the manufacturer.
 6. Identification of the hazard to be protected, including such information as physical dimensions, cooking appliances, energy sources for each appliance, and air-handling equipment.

- The submitted plans shall show dimensions of the hood and associated ductwork. Section 6.3.2

- A fusible link or heat detector shall be provided above each cooking appliance or group of appliances protected by a single nozzle. The submitted plans shall indicate the specific temperature rating of the fusible link or heat detector utilized in accordance with the manufacturer's design manual. Temperature readings shall be taken at each detector location to determine correct fusible link temperature rating. Temperature can be recorded using either a maximum registering thermometer, temperature tape or any other accurate thermometer. Sections 5.6.1.4, 5.6.1.5, 5.6.1.6 and 5.6.1.6.1

- Distinctive audible or visible alarms shall be provided to show that the system has operated, and that the system is in need of a recharge. Section 5.2.1.8 and VCC 904.3.4.

- Where electrical power is required to operate the fixed fire-extinguishing system, the system shall be monitored by a supervisory alarm with a reserve power supply provided. Section 5.3.1

- If a building evacuation fire alarm system is provided, the extinguishing system shall be monitored by the fire alarm control panel in accordance with the requirements of NFPA 72 - The National Fire Alarm Code (2010 edition) so that the actuation of the

extinguishing system will sound the fire alarm as well as provide the function of the extinguishing system. Section 5.2.1.9, VCC- Section 904.3.5

- Each protected cooking appliance, individual hood, and branch exhaust duct directly connected to the hood shall be protected by a system or systems designed for simultaneous operation. Section 5.1 and VCC-Section 904.3.2 .
- Automatic fire suppression shall be provided for all portions of a common exhaust duct. Section 5.6.2
- A specifically listed Class “K” type fire extinguisher shall be provided in accordance with 2012 Edition of International Fire Code. The portable extinguisher shall be compatible with the extinguishing agent utilized for the fire suppression system and shall be within 30’ of the cooking equipment. VCC – Section 906.4 and VSFPC - Section 904.11.5
- When hazard areas include deep fat fryers, listed Class K portable fire extinguishers shall be provided as follows:
 1. For up to four fryers having a maximum cooking medium capacity of 80 pounds each: one Class K portable fire extinguisher of a minimum 1.5-gallon capacity.
 2. For every additional group of four fryers having a maximum cooking medium capacity of 80 pounds each: one additional Class K portable fire extinguisher of a minimum 1.5 gallon capacity shall be provided.
 3. For individual fryers exceeding 6 square feet in surface area: Class K portable fire extinguishers shall be installed in accordance with the extinguisher manufacturer’s recommendations. VSFPC Section 904.11.5.2.
- Mechanical, Plumbing (gas), and Electrical final inspections on the ventilation hood, associated gas pipe inspections and electrical interface shall be completed prior to scheduling the required acceptance testing and commissioning of the fire suppression system with Chesterfield Fire and Life Safety Division.
- Fire protection systems shall be tested in accordance with the requirements of the Virginia Construction Code and the Virginia Statewide Fire Prevention Code. All tests shall be witnessed by the fire code official. Tests required by the VCC and VSFPC and the standards listed in this document shall be conducted at the expense of the owner or the owner’s representative. It shall be unlawful to utilize cooking equipment until the required inspections and approvals within that portion of the structure have been tested and approved. VCC Section 901.5
- Where movable cooking equipment is to be installed, a means shall be provided to ensure that the cooking equipment is properly repositioned, after movement for cleaning or servicing, in relation to the appliance discharge nozzle. Permanent floor rails or guides, or other suitable means of correct cooking equipment location shall be provided and in place at the time of final inspection. Section 5.6.4

Acceptance Test in accordance with 2013 Edition of NFPA 17A

- A letter or form shall be submitted requesting the use of the 2013 Edition of NFPA 17A for acceptance testing of the installed system. If you elect not to send the letter, we will commission the system using the 2009 Edition of NFPA 17A which requires a liquid discharge of the system.
- It shall be verified that the appliances, hoods and ducts are properly protected with nozzles and positioned in accordance with the manufacturer's design, installation, and maintenance manual. Section 6.4.1.
- It shall be verified that nozzle sizes and pipe sizes are in accordance with the manufacturer's design, installation, and maintenance manual. Section 6.4.2.
- It shall be verified that piping supports are securely fastened. Section 6.4.2.2.
- It shall be verified that the installed appliances are the same and in the same locations as the approved system design. Section 6.4.3.
- Piping shall be physically checked for tightness. Section 6.4.4.1.
- A test using nitrogen or dry air shall be performed on the piping network at a pressure not to exceed the normal operating pressure of the extinguishing system. Section 6.4.4.2.
- The test shall verify that nitrogen or dry air has discharged out of each nozzle in the system. Section 6.4.4.2.2.
- The piping shall not be hydrostatically tested. Section 6.4.4.2.3.
- The labeling of devices with proper designations and instructions shall be verified. Section 6.4.5.
- Where the system is connected to a building alarm system, verification that alarm-sounding or notification devices and remote annunciation devices are functional shall be required. Section 6.4.6.
- Verification that all manual devices (manual pull stations) are readily accessible and accurately identified shall be required. Section 6.4.7
- System operational tests shall be performed in accordance with the manufacturer's design, installation, and maintenance manual and include functional tests of the automatic detection system, the manual release devices, the gas shutoff, the shutoff of makeup air supplied internally to a hood, and the electrical power shutdown. Section 6.4.8
- Where a releasing control panel is provided, verification that it is connected to a dedicated circuit and labeled properly shall be required. Section 6.4.9.1

- Where a releasing control panel is provided, verification that it is readily accessible and restricted from unauthorized personnel shall be required. Section 6.4.9.2
- Verification that each extinguishing agent storage container is reconnected and the system has been returned to its fully operational condition shall be required. Section 6.4.10.1
- After completion of functional testing, if the system is connected to an alarm-receiving office, the alarm-receiving office and all concerned personnel at the end user's facility shall be notified that the fire system test is complete and that the system has been returned to full-service operational condition. Section 6.4.10.2
- The installing contractor shall complete and sign an acceptance test report acceptable to the authority having jurisdiction. Section 6.4.10.3. (See attached report)
- The owner shall be provided with a copy of the manufacturer's design, installation, and maintenance manual or the owner's manual. Section 6.4.10.4.

WET CHEMICAL SYSTEM ACCEPTANCE TEST REPORT

Property Information

Building name: _____

Address: _____

Building owner: _____

Address: _____

Phone / Fax / E-mail: _____

Designer / Installer Information

Company name: _____

Address: _____

Contact person: _____

Phone / Fax / E-mail: _____

Description of hazard protected: _____

System manufacturer / model: _____

System Check or Test	Results
Installation in accordance with approved plans, where required, and manufacturer's design, installation and maintenance manual.	
Piping test (6.4.4.2)	
Proper labeling (6.4.5)	
Proper alarm operation (6.4.6)	
Manual release accessibility (6.4.7)	
Releasing control panel (6.4.9)	
Automatic detection & manual release (6.4.8)	
System properly charged and left in normal "set" condition (6.4.10)	
Manual left with owner (6.4.10.4)	
Date system left in service:	

Test Witnessed By:

Owner / Authorized agent

Title

Date

Installing contractor

Title

Date

Additional comments: