

Chesterfield Fire and EMS
Fire and Life Safety Division
Clean Agent Fire Extinguishing Systems

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Clean Agent Fire Extinguishing Systems

NFPA 2001 – Standard on Clean Agent Fire Suppression Systems (2004 Edition)

**International Building Code – Section 904.10; International Fire Code – Section 904.10
(2006 Edition)**

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 2004 Edition of NFPA 2001

General (All submissions shall include the following):

- A minimum of four copies of shop drawings, calculations, and submittal data shall be provided with a permit application permitting evaluation of the system prior to installation. The permit application shall clearly designate the system as being required for compliance with Virginia Uniform Statewide Construction Code, or installed as an elective system at the discretion of the owner.
- Provide the name and address of the building owner. NFPA 2001 – Section 5.1.2.2
- Provide the name and address of the project or tenant where system will be installed. NFPA 2001 – Section 5.1.2.2
- Provide the name, address, and telephone/fax numbers for the designer of the fire suppression / detection system. NFPA 2001 – Section 5.1.2.2
- The plans shall be drawn to a uniform size and to a recognized scale. NFPA 2001 – Section 5.1.2.2
- Indicate the point of compass and the symbol legend. NFPA 2001 – Section 5.1.2.2
- Indicate the location and the construction of the protected enclosure walls and partitions. NFPA 2001 – Section 5.1.2.2

- Provide an enclosure cross section, full height or schematic diagram, including the location and the construction of building floor/ceiling assemblies above and below, the raised access floor and the suspended ceiling. NFPA 2001 – Section 5.1.2.2
- Indicate the type of clean agent being used by its brand name and its chemical nomenclature. NFPA 2001 – Section 5.1.2.2
- Provide the design extinguishing concentration or inerting concentration. NFPA 2001 – Section 5.1.2.2
- Provide a description of the occupancies and the hazards being protected, designating whether or not the enclosure is normally occupied. NFPA 2001 – Section 5.1.2.2
- Provide a description of the adjacent exposures and occupancies surrounding the enclosure. NFPA 2001 – Section 5.1.2.2
- Provide the description of the agent storage containers used including the internal volume, the recommended storage pressure, and the nominal capacity expressed in units of agent mass, or volume at standard conditions of temperature and pressure. NFPA 2001 – Section 5.1.2.2
- Provide a description of nozzle(s) being used including the size, the orifice port configuration, and the equivalent orifice area. NFPA 2001 – Section 5.1.2.2
- Provide a description of the pipe and fittings used including the material specifications, the grade, and the pressure rating. NFPA 2001 – Section 5.1.2.2
- Provide a description of the wire or cable used including the classification gauge (AWG), shielding, the number of strands in conductor, the conductor material, and the color-coding schedule. The segregation requirements of various system conductors shall be clearly indicated. The required method of making the wire terminations shall be detailed. NFPA 2001 – Section 5.1.2.2
- Provide a detail or description of the method of the detector mounting. NFPA 2001 – Section 5.1.2.2
- Provide the equipment schedule or bill of materials for each piece of equipment or device showing the device name, its manufacturer, its model or part number, the quantity of devices to be installed, and the description and function for each device. NFPA 2001 – Section 5.1.2.2
- Submitted plans shall provide a plan view of the protected area showing the enclosure partitions (full and partial height) the agent distribution system including the agent storage containers, piping, and nozzles; the type of pipe hangers and rigid pipe supports; the detection, alarm, and control system including all devices and a schematic of the wiring interconnection between them; the end-of-line device locations; the location of

controlled devices such as dampers and shutters and location of instructional signage.
NFPA 2001 – Section 5.1.2.2

- Provide an isometric view of agent distribution system showing the length and the diameter of each pipe segment; the node reference numbers relating to the flow calculations; the fittings including reducers and strainers; the orientation of tees and nozzles including the size, the orifice port configuration, the flow rate and the equivalent orifice area. NFPA 2001 – Section 5.1.2.2
- Scaled drawings shall be provided showing the layout of the annunciator panel graphics. NFPA 2001 – Section 5.1.2.2
- Provide details of each unique rigid pipe support configuration showing the method for securement to the pipe to the building structure. NFPA 2001 – Section 5.1.2.2
- Provide details of the method for the container securement showing the method of securement to the container and to the building structure. NFPA 2001 – Section 5.1.2.2
- Provide a complete step-by-step description of the system sequence of operations including the function of abort and the maintenance switches, the delay timers, and the emergency power shutdown. NFPA 2001 – Section 5.1.2.2
- The submitted plans shall include a point-to-point wiring schematic diagram(s) in a plan view and a system riser diagram showing all the circuit connections to the system control panel and the graphic annunciator panel. This is to include any external or add-on relays. NFPA 2001 – Section 5.1.2.2 and NFPA 72 – Section 6.16.2.2, 6.16.2.3 and 6.16.2.4 – 2007 Edition
- Provide a complete set of calculations to verify the enclosure volume and to determine the quantity of clean agent required. NFPA 2001 – Section 5.1.2.2
- Provide a complete set of back up battery calculations and voltage drop calculations for the detection system. NFPA 2001 – Section 5.1.2.2.
- Indicate the method used to determine the number and location of audible and visual indicating devices, and the number and location of the detectors. NFPA 2001 – Section 5.1.2.2
- Provide details and wiring diagrams for any special features, i.e.: interconnection of release panel with building fire alarm system, interface of the system with the HVAC controls, interface of the system with the security/special locking devices. NFPA 2001 – Section 5.1.2.2 and NFPA 72 – Section 6.16.2.2, 6.16.2.3 and 6.16.2.4 (2007 Edition)
- The submitted plans shall include the flow calculations for the system. The version of the flow calculation program shall be identified on the computer calculation printout. NFPA 2001 – Section 5.1.2.5.1

- Where field conditions necessitate any material change from approved plans, the change shall be submitted for approval prior to installation. NFPA 2001 – Section 5.1.3.2
- The system flow calculations shall be performed using a calculation method listed or approved for the agent by the authority having jurisdiction. The system design shall be within the manufacturer’s listed limitations. NFPA 2001 – Section 5.2.1
- All valves and fittings shall be rated for equivalent length in terms of pipe or tubing sizes with which they will be used. The equivalent length of the container valves shall be listed and shall include the siphon tube, the valve, the discharge head, and the flexible connector. NFPA 2001 – Section 5.2.2
- The submitted plans shall show the wiring details for shut down of non self-contained HVAC forced-air ventilation systems. NFPA 2001 – Section 5.3.5
- The submitted plans shall show the wiring details for the automatic closure of fire or fire/smoke dampers in the HVAC forced – air duct units that supply the protected enclosure. NFPA 2001 – Section 5.3.5
- Manufacturer’s data sheets for the following:**
 - Agent Cylinder and Valve Assemblies
 - Agent Cylinder Data
 - Agent Valve Outlet Adapters
 - Agent Discharge Nozzles
 - Agent Release Control Heads
 - Agent System Release Control Panels
 - Suppression System Abort Devices
 - Agent Manual Release Stations
 - Initiating Devices
 - Notification Appliances
 - Conductor Wire, Relays, Interface Modules
 - Other

Where multiple contractors are involved in the system design/installation, plan approval requires concurrent submittals and review of the fire suppression and detection systems. Refer to the Fire Alarm Checklist for additional information and requirements regarding the associated detection system.