

# City of Danville Fire Marshal's Office



## Code Compliance Manual

*Supplemental Information intended for*

**Architects, Engineers,  
Designers, and Installers**

**2012 Edition UBC & SFPC**

City of Danville Fire Marshal's Office

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## Preface

This document has been prepared as a service to architects, engineers, designers, and installers of fire protection systems to provide basic information on the codes, policies, and requirements of City of Danville Fire Marshal's Office (FMO). The information provided represents the current **minimum** requirements of the FMO on new construction of buildings, installation and modification of fire protection systems, and other fire prevention related issues commonly encountered at the time of its' writing and does not represent all of the building and fire code requirements enforced.

The requirements set forth in this document should **not be considered** to be all inclusive, as application of the State and City Fire Prevention Code and other nationally recognized codes and recommended practices is constantly being evaluated and modified when found necessary. The information provided for fire protection plan submissions is provided for reference only. Each fire protection system installed or modified is required to comply with all applicable codes and standards as provided in the Uniform Statewide Building Code and Virginia Statewide Fire Prevention Code in place at the time of installation or modification.

Questions concerning the information contained within this manual should be directed to the City of Danville Fire Marshal's Office at 434-799-5226.

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## Applicable Codes and Standards

1. Virginia Uniform Statewide Building Code State - 2012 edition which includes, but is not limited to the following:
  - Virginia Construction Code (VCC) 2012
  - ICC International Mechanical Code 2012
  - ICC International Plumbing Code 2012
  - National Electrical Code 2011
  
2. Virginia Statewide Fire Prevention Code – 2012 edition which includes the International Fire Prevention Code 2012 with Virginia and City of Danville amendments. National Fire Protection Association (NFPA) standards most commonly used that are referenced by the USBC or SFPC are as follows:
  - NFPA 10 (2010) Portable fire extinguishers
  - NFPA 12A (2011) Halon 1301 fire extinguishing systems
  - NFPA 13 (2010) Installation of sprinkler systems
  - NFPA 13D (2010) Installation of sprinkler systems in one and two-family dwellings and mobile homes
  - NFPA 13R (2010) Installation of sprinkler systems in residential occupancies up to four stories in height
  - NFPA 14 (2010) Standpipe and hose systems
  - NFPA 16 (2011) Deluge foam-water sprinkler systems and foam-water spray systems
  - NFPA 17 (2009) Dry chemical extinguishing systems
  - NFPA 17A (2009) Wet chemical extinguishing systems
  - NFPA 20 (2010) Centrifugal fire pumps
  - NFPA 22 (2008) Water tanks for private fire protection
  - NFPA 25 (2011) Inspection, Testing & Maintenance of Water-Based Fire Protection Systems
  - NFPA 30 (2012) Flammable and combustible liquids code
  - NFPA 72 (2010) National fire alarm code
  - NFPA 80 (2010) Fire doors and windows
  
3. Elevator Code ASME A17.1-2007
  
4. Accessibility Code ICC A117.1-2009, Accessible and Usable Buildings and Facilities

# Fire Alarm Systems

## Minimum Requirements for Fire Protection Permit (FPP) Submissions

1. Submit completed FPP application form with plans.
  - FPP applications are available on line at the [City of Danville Web Site](#) or by contacting the Fire Marshal's office at 434-799-5226.
2. Submit a copy of current Virginia contractor's license.
3. Submit a copy of current Danville City business license.
4. Submit a minimum of two (2) sets of detailed construction documents/shop drawings and specifications to include, but not limited to the following:
  - Shop drawings shall be drawn to an indicated scale on sheets, stamped by NICET Level III or higher, of uniformed size.
  - Location and type of each fire alarm device to be installed i.e., fire alarm control panel, annunciator panel, strobes, horns, manual pull stations, duct detectors, control valve monitoring device, tamper switch monitoring device, etc.
  - Location of devices above the finished floor, ceiling heights, etc.
  - Proposed zoning for system – if applicable, fire alarm zones shall be coordinated with sprinkler zones
  - Location of control panels and annunciator panels
  - A detailed *sequence of operation* narrative that describes the performance and function of every device in the system; this shall include auxiliary control functions such as elevator capture and recall, HVAC shutdown, Central Station notification, release of fire doors, smoke control, etc.
  - A scaled diagram of the graphic fire alarm annunciator panel (FAAP)
  - Battery calculations
  - Wiring riser diagram; include type, gauge of wire and quantity of devices
  - Location of fire walls and fire doors, if applicable
  - Equipment specification sheets for all fire protection components
  - Provide Scope of Work
5. Identify method of system supervision per the USBC.

Information included on this list is intended to represent the minimum requirements for fire protection plan submissions. Each fire protection plan is required to comply with all applicable codes and standards.

### APPLICABLE CODES & STANDARDS

2012 Uniform Statewide Building Code

NFPA 72 (2010)

\* After initial plan submission, contact the Fire Marshal's Office for questions regarding plan status, plan revisions or inspection requests.

## Fire Alarm Express Permits

### Fire Alarm Express Permit Requirements:

1. Must obtain a fire protection permit
2. FPP applications are available on line at the City of Danville Web Site <http://www.danville-va.gov/index.aspx?nid=315> or by contacting the Fire Marshal's office at 434-799-5226.
3. Scope of work shall be any of the following:
  - monitoring the sprinkler flow and tamper switches,
  - adding a fire alarm panel,
  - one smoke detector above the FACP, and
  - one alarm device on the exterior of the building
4. Fire alarm installation is still required to comply with NFPA 72; equipment listed for fire protection use is required
5. Fire inspection is required (Fire Alarm, Battery Test and Fire Alarm Final). During the fire inspection, the contractor is required to provide the following, but not limited to:
  - All fire alarm manufacturer's equipment cut-sheets
  - A riser diagram showing the FACP and all devices
  - The location of FACP in the sprinkler room showing that the proper clearance for the FACP
  - The battery calculations
  - The sequence of operation
  - Verification of the connection to the central station

Note: The Fire Alarm Express Permit does not apply to existing fire alarm systems that need to modify the fire alarm panel or any similar alterations. This option will be allowed for all occupancies that only need a fire alarm sprinkler monitoring system.

## Automatic Fire Sprinkler Systems

### Minimum Requirements for Fire Protection Permit (FPP) Submissions

1. Submit completed FPP application form with plans.
  - FPP applications are available on line at the City of Danville Web Site <http://www.danville-va.gov/index.aspx?nid=315> or by contacting the Fire Marshal's office at 434-799-5226.
2. Submit a copy of current Virginia contractor's license.
3. Submit a copy of current Danville City business license.
4. Submit a minimum of two (2) complete stamped sets of detailed construction documents/shop drawings to include, but not limited to the following:
  - Shop drawings shall be drawn to an indicated scale on sheets of uniformed size.
  - Sufficient detail to document the hazard classification; warehouse projects should provide a detailed letter describing the storage arrangement, the

commodity classification, intended storage height of each commodity, whether there is fixed rack storage, dimensions of the rack/shelving including the vertical flues, spacing between aisles, etc.

- Cross-sectional details for sloped ceilings, attic roofs, stairways, elevation changes, (floor to floor and overall height dimensions of the building), etc. Also provide details for potential obstructions such as bulk heads, ceiling fans, surface mounted lights, half height walls, etc.
- Hydraulic calculations for most demanding area(s); all hydraulic reference nodes must be clearly delineated on the plan including the reference points to the water supply source
- Show the sprinkler zones and align them with fire alarm zones, if applicable
- Water supply data – must be within one-year period. *Note: Water supply data is available from the Danville City water department*
- Location, size, and type of all pipe to be installed including sprinkler fittings
- Location, size, and type of all sprinkler heads to be installed; sprinkler legend shall include symbol, type, model no., finish, temperature classification, orifice size, K-factor, thread size, manufacturer, escutcheon and quantity of each type and dimensions for sprinkler coverage (for residential application)
- Spacing requirements, obstruction to sprinkler discharge requirements, etc.
- Riser detail showing all devices including backflow preventer and FDC interconnection
- Details for hangers / fastener methods and locations (including trapeze style)
- The use of “sammy” screw hanger installation methods shall have an engineer’s certification from the truss manufacturer when connecting hangers into engineered open wood web joist systems.
- Location of all control valves and inspector’s test valves
- Pipe volume calculations for dry systems
- Provisions for off-site monitoring and valve supervision
- Identify the location and rating of fire walls, fire separation walls, fire partitions, etc.
- Submit equipment specification sheets for all fire protection components.
- For residential applications, identify the sprinkler spacing requirements on the plans such as distances from surface lighting, air returns, fire places, ovens, heat diffusers, fire place flue piping, washer/dryer, water heater, furnace, etc. in accordance with the manufacturer’s equipment listing. Sidewall sprinkler heads are required on the top floor and no sprinkler piping shall be located in areas subjected to temperatures less than 50°F i.e., attic spaces, garage ceilings, and exterior walls.
- CPVC piping will follow minimum spacing requirements where the pipe is concealed and exposed to a heat source

- The minimum distance from heat producing sources shall be as follows: 18” for hot air flues and uninsulated heat ducts; 12” for uninsulated hot water pipes; and 6” from water heater or furnace unless otherwise specified by manufacturer’s equipment specifications. Special consideration will be given for areas that will not permit such distances and will be evaluated on a case by case basis. Information included on this list is intended to represent the minimum requirements for fire protection plan submissions. Each fire protection plan is required to comply with all applicable codes and standards.

### **APPLICABLE CODES & STANDARDS**

2012 Uniform Statewide Building Code NFPA 14 (2010 edition) / 22 (2008 edition)  
NFPA 13 / 13R / 13D / 20 (2010 edition) NFPA 25 (2011 edition) / 30 (2012 edition)

*\* After initial plan submission, contact the Fire Marshal’s Office for questions regarding plan status, plan revisions or inspection requests.*

## **Sprinkler Express Permits**

**\*\*\*For Mercantile & Business Use Groups with Construction Modifications Up to 5 Sprinkler Heads or Less.**

This process is intended to save owners/contractors time since they would not need to draw and submit sprinkler plans for relatively minor sprinkler modifications such as mercantile and business facilities that need a quick plan review turnaround time for new tenants that require minor changes to the tenant space such as relocating a wall or adding a restroom. “Big box” mercantile stores qualify if the sprinkler system was initially properly designed and installed.

The sprinkler type and K-factor needs to be the same. There should not be extensive sections of pipe being added off the cross-mains. Relatively short lengths of pipe added to the system should be reasonably acceptable. If the scope of work does not meet the criteria below, the contractor must submit complete plans for the work.

The following criteria apply:

- FPP permit is required/
- Sprinkler plans showing scope of work are required during the inspections.
- Scope of work must be clearly defined on the permit—
  - Adding or relocating how many heads (also show it on the plans)
  - Reason for sprinkler modification i.e., adding office wall, etc.
- Add or relocate a combined total of 5 heads or less; sprinkler head(s) must be the same i.e., same type, K-factor, temperature, style, orifice, etc.
- Sprinkler installation must comply with NFPA 13
- The sprinkler head spacing is required to be consistent with the existing design.
- No modification to the sprinkler cross-mains or risers is allowed.



- Sprinkler pipe must be consistent with the existing design.
- New hangers shall comply with the spacing requirements in NFPA 13.
- Fire protection system inspections are still required.

\*\*\*If the guidelines for this permit process are not met, the customer will be required to submit plans to the FMO for review.

## **Sprinkler System Water Supply Submission Requirements**

All automatic sprinkler hydraulic designs submitted to the Fire Marshal's Office must provide for the following:

1. Flow test data for an on-site hydrant, provided by and attested to the water supplier providing water service, with date of flow test. The date of the flow test must be within one (1) year of the submittal date. If an on-site hydrant is not available for the test, the closest available hydrant shall be used.
2. The elevation and street location of the test hydrant.

## **Fire Pump Calculation Submission Requirements**

In all buildings requiring fire pumps, a set of fire pump calculations will be required to be submitted to the Fire Marshal's Office. The calculations must show that sufficient pressure is available to provide support of the fire protection system being served. The calculation must show that 20 PSI is available at the suction side of the fire pump while the pump is operating at 150 percent of its rated capacity. Fire pump calculations must take into account the low Hydraulic Gradient Line for the site and show that the fire protection system demand is under the fire pump test curve.

## **Standpipe Calculation Requirements**

To perform calculations for standpipes required by USBC, two sets of calculations are necessary to determine riser piping sizes, supply piping and the water service piping. According to USBC 905 and NFPA 14 (2010), the size of the supply piping to the standpipes must be sized to allow a minimum flow of 500 GPM for the first riser and 250 GPM for each additional riser up to a total of 1250 GPM. A residual pressure of 100 PSI needs to be maintained at the top most outlet of each riser while flowing the minimum quantities of water shown above.

In fully fire suppressed non hi-rise buildings the 100 PSI need not be maintained but is to be replaced with the fireman's hose demand pressure required at the top most outlet

of each riser. For standpipes in buildings of 150' or more standpipes must be supplied by an on-site fire pump.

The fireman's hose is to be supplied by the pumper having a pump curve using the following pressures and flows at the FDC: 200 PSI @ 0 GPM, 199 PSI @ 750 GPM, and 150 PSI @ 1250 GPM.

Please note that sprinkler calculations still need to be submitted along with these calculations. Sprinkler and standpipe calculations must take into account the low HGL for the site and come in under the water supply curve.

## Underground Fire Mains

### Minimum Requirements for Fire Protection Permit (FPP) Submissions

1. Submit completed FPP application form with plans.
  - FPP applications are available on line at the City of Danville Web Site <http://www.danville-va.gov/index.aspx?nid=315> or by contacting the Fire Marshal's office at 434-799-5226.
2. Submit a copy of current Virginia contractor's license.
3. Submit a copy of current Danville City business license.
4. Submit a minimum of two (2) copies of the **approved site plan** i.e., approved by the Planning Office and other related details to include, but not limited to the following:
  - Designate the "Scope of Work" i.e., the portion of pipe being installed i.e., from the street to within 5' of the building; from 5' within the building to the flange; the entire fire line, etc
  - Location of the underground fire line; type and size of all pipe to be installed
  - Show the depth of cover for underground fire lines which shall have **at least 42"** of compacted soil cover measured from the top of the pipe. Loose gravelly soil, rock, concrete, asphalt or similar is not considered part of the required depth of cover.
  - Mega-lugs and/or thrust blocking is for all piping
  - Equipment specification sheets for **all** fire protection components
  - All rods, nuts, bolts, washers, clamps, and other restraining devices shall be coated with a bituminous or other acceptable corrosion-retarding material
  - If using a vault with no post indicating valve, the valve in the vault **must** be monitored with a tamper switch.
5. Fire lines shall be designed and installed per NFPA 24.
6. No valves shall be installed in fire line between street valve at water main and O.S. & Y. valve inside of building.
7. Electrical ground wires shall not be connected to underground fire lines.

For underground fire lines less than 6-inches in diameter, hydraulic calculations are required to determine the water supply demand and the appropriate pipe size for the sprinkler system design.

Information included on this list is intended to represent the **minimum** requirements for fire protection plan submissions for Underground Fire Mains. Each fire protection plan is required to comply with all applicable codes and standards.

## **APPLICABLE CODES & STANDARDS**

### **2012 Uniform Statewide Building Code NFPA 13 (2010 edition)**

\* After initial plan submission, contact the Fire Marshal's Office for questions regarding plan status, plan revisions or inspection requests.

## **Commercial Kitchen Hood Suppression Systems**

### Minimum Requirements for Fire Protection Permit (FPP) Submissions

1. Submit completed FPP application form with plans.
  - FPP applications are available on line at the City of Danville Web Site <http://www.danville-va.gov/index.aspx?nid=315> or by contacting the Fire Marshal's office at 434-799-5226.
2. Submit a copy of current Virginia contractor's license.
3. Submit a copy of current Danville City business license.
4. Submit a minimum of two (2) sets of detailed construction documents/shop drawings to include, but not limited to the following:
  - Details and dimensions of the kitchen hood, cooking appliances, exhaust duct, plenum, etc.
  - Type and size of appliances must be identified
  - Identify type and location of nozzles relative to each protected plenum, exhaust duct, and appliance (including the nozzle height above cooking surface)
  - Location, type, and function of detecting devices including temperature classification of fusible links, etc.
  - Type and quantity of extinguishing agent with complete calculations and manufacturer's data sheets to determine agent quantity
  - Size, length, and arrangement of extinguishing system piping
  - Location of the manual means of actuation
  - Required alarms including a detailed sequence of operations
  - Interconnection to exhaust fan, building fire alarm, gas shut-off and electric shunt-trip must be included
5. Submit the fire suppression equipment specification manual which shows the system listing and pertinent sections that apply to the design.

6. Normal operating temperature shall be measured at the fusible link location above appliances and the appropriate link shall be selected. Provide verification of this reading at time of inspection.

Information included on this list is intended to represent the minimum requirements for fire protection plan submissions. Each fire protection plan is required to comply with all applicable codes and standards.

### **APPLICABLE CODES & STANDARDS**

2012 Uniform Statewide Building Code NFPA 17 (2009) NFPA 17A (2009)

*\*After initial plan submission, contact the Fire Marshal's Office for questions regarding plan status, plan revisions or inspection requests.*

## **Fire Protection Permit for Emergency Repair**

According to Section 108 of the USBC, an emergency repair can be made to a fire protection system provided that the licensed contractor proceeds to obtain an FPP permit by the end of the next day after the commencement of the repair. The Fire Marshal's Office has created a fast track emergency repair permit to meet the state requirements and expedite the permit process. Currently, there is an emergency repair permit for fire sprinkler systems and fire alarm systems. The permit fee consists of one fire inspection. If additional fire inspections are needed, an additional fire inspection fee will be added to the permit.

## **Fire Protection Plan Review Process**

The Fire Marshal's Office participates & performs fire protection plan reviews for the Building Inspection Department.

### **Fire Protection Permit**

Plans are submitted to the Building Inspection Office. FMO staff picks up the plans on a daily basis. Plan reviewers review the oldest dated plan first. The first review is typically reviewed within two weeks of receipt. Revisions are typically reviewed within one week of the re-submittal.

When plans are approved, the reviewer returns one set of approved plans to the submitter by mail. When the plans are rejected, the reviewer contacts the contractor, discuss the deficiencies in detail, and provide guidance on the process necessary for resolution.

## Fire Protection System Acceptance Inspections

Inspections for Fire Protection Permit Plans (FPP) are conducted by Fire Marshal's Office staff during normal working hours, Monday through Friday, between the hours of 8:30 A.M. and 4:00 P.M.

To request a Fire Marshal's Office fire protection system or building inspection the permit holder must call the Fire Marshals Office at 799-5226 and schedule an appointment. Appointments should be made at least 24 hours in advance. Cancellations shall be made within two hours of the scheduled inspection time. Cancellations made less than two hours of the time scheduled will be charged a fee of \$27.50.

A representative of the permit holder requesting the inspection must be at the job site to meet the Fire Marshal's Office inspector at the time of the inspection. The permit holder representative must provide a copy of the fire protection permit and the fire protection plans approved by the Fire Marshal's Office at the time of the inspection, if any work was done on a fire protection system.

### Overtime Inspections:

- Overtime fire inspections are limited by the availability of staff
- This is a voluntary program for the inspectors
- The hourly charge will be in accordance with the City of Danville Fire Watch rate which is \$30.00 an hour, (2) hour minimum for this service.

Fire Protection Permits may require one or more of the following inspections depending upon the scope of work being done.

### 1. Underground Fire Main (UFM):

- **UFM visual** - A visual inspection of the piping, connections, thrust blocks, threaded rods, and/or mega lug connectors from the street water valve to the base of the flange for the connection to piping of the automatic sprinkler and/or standpipe system.
- **UFM hydrostatic test and inspection** - A 200 P.S.I. or 50 pounds over static water pressure, whichever is greater, hydrostatic test for a two (2) hour period of UFM components from the street water valve to the base of the flange for the connection to the automatic sprinkler and/or standpipe system. The test pressure for a UFM connected to 13D sprinkler system is street pressure.
- **UFM flush test and inspection** - A flush of the UFM piping between the street water valve and the base of the automatic sprinkler and/or standpipe system flange. This test and inspection is required for **all** sprinkler system water supplies. (NFPA 13,13R, and 13D)
- **UFM final inspection (82)** - A review of the UFM system including tests and inspection records to assure that all the required system tests/inspections on the underground fire main are code compliant and have been approved.

The above tests/inspections are done in accordance with NFPA 24 (2010), Private Fire Service Mains and Their Appurtenances. The tests/inspections can be done on

separate days or on the same day provided that they are performed in the proper sequence that is visual, hydrostatic, and flush.

Gauges used in performing acceptance tests on fire suppression systems witnessed by the Fire Marshal's Office must meet the following criteria:

- The gauge shall be appropriate for the type of test; i.e., air gauge for an air pressure test, a water gauge for a hydrostatic test.
- Air gauges shall have increment markings of two pounds or less. Water gauges must have increment marking of ten pounds or less.
- The gauge shall be capable of registering pressures above the minimum pressure required during the test. (0 PSI to 300 PSI) The pressure registered during the actual test shall be at least the minimum required for the test and less than the maximum of the gauge register.
- Gauges must be marked as accepted by UL and/or FM testing laboratories.
- The test gauge(s) must "zero" out at the end of a test to pass the inspection.

## 2. Fire Alarm:

- **Fire alarm** - A test/inspection of all fire alarm system components, including all manual and automatic activation/initiation devices, visual and audible warning devices. This is a 100% test of all devices according to the manufacturer's recommended method. The fire alarm control panel must be clear of any trouble signals (clear panel) prior to the start of this inspection. Certificate of Completion shall be on hand prior to the beginning of test.
  - **Battery test** - A test/inspection of the ability of the fire alarm system to sound all visual and audible horns for five (5) minutes after the system has been on battery power for twenty-four (24) hours.
  - **Fire Alarm Final** - A test/inspection of the entire fire alarm system installation to assure that all parts of the system are working properly and the central station connection is on line and in service. This inspection cannot be performed until the fire alarm and fire alarm battery test inspections have passed.
- A Fire Alarm Record of Completion must be provided at final.**

The above tests/inspections are done in accordance with NFPA 72 (2010), National Fire Alarm Code. The test/inspections can be done on separate dates or on two dates as long as they are done in order: Fire alarm, battery test, fire alarm final.

- **3. Fire Pump Test** - A test of the fire pump and associated control equipment. This test will not be witnessed until 1) the underground fire main is completed and has final inspection, 2) all associated sprinkler piping, including the fire pump test header, and other components have final inspection, and 3) there is an approval by the electrical inspections division of the wiring to the fire pump driver, the fire pump controller, and secondary source of power, such as a generator and associated electrical transfer equipment (if provided). The above test/inspection is conducted in accordance with NFPA 20 (2010), Centrifugal Fire Pumps. Arrangements must be made by the contractor to supply sufficient approved equipment to conduct the necessary flow tests.



#### 4. Automatic Fire Sprinkler:

- ***Sprinkler hydro test/inspection*** - A hydrostatic test of all components of the automatic fire sprinkler system, including hangers and other appurtenances. The test is done at 200 P.S.I. or 50 pounds over static pressure, whichever is greater, for a two (2) hour period. All piping and other appurtenances must be readily visible for the representative of the Fire Marshal's Office to inspect from ground/floor level. A temperature of at least 40 degrees Fahrenheit must be maintained in the area testing is being conducted. *NFPA13D system shall be hydrostatically tested at normal operational pressure*
- ***Sprinkler visual*** - A visual inspection of all components of the automatic sprinkler system, including hangers and their appurtenances. This inspection can be conducted at the same time as the sprinkler hydrostatic test when a hydrostatic test is required. All piping and hangers must be readily visible for the representative of the Fire Marshal's Office to inspect from ground/floor level. For sprinkler systems utilizing plastic piping, the Fire Marshals Office inspector will require random removal of a representative number of sprinkler heads to visually inspect the sprinkler head and confirm that excess glue has not compromised the sprinkler's ability to function. Also any installations utilizing "Sammy" screws, or similar methods of hanging sprinkler piping, must have written documentation from the truss manufacturer or structural engineer to certify that the truss point load limits are not exceeded. The F.D.C. shall be a 4" Storz sexless coupling with a 32 degree turn down.
- ***Sprinkler Alarm/flow*** - A test/inspection of the automatic sprinkler system to assure proper flow rate is available at the designed flow pressure.
- ***Sprinkler trip*** - A test/inspection of a dry pipe fire sprinkler system to assure water reaches the inspector's test valve in sufficient quantity of flow within sixty (60) seconds of opening the inspector's test valve.
- ***Sprinkler Antifreeze***-- A test of the antifreeze solution in an automatic sprinkler system that uses antifreeze to prevent the sprinkler water from freezing. Minimum requirement is -20 degrees F.
- ***Sprinkler 2 head flow 13D*** – A flow of the equivalent of two (2) sprinkler heads on a NFPA 13D automatic sprinkler system to determine if sufficient quantity of water is available at the required design water pressure.
- ***Sprinkler 4 head flow 13R*** – A flow of the equivalent of four (4) sprinkler heads on a 13R automatic sprinkler system to determine if sufficient quantity of water is available at the required design water pressure.
- ***Sprinkler air*** - A test/inspection of the dry automatic sprinkler system utilizing 40 P.S.I. air pressure for 24 hours.
- ***Wet Sprinkler final*** - A test/inspection of the automatic wet fire sprinkler system, including testing of all flow switches, tamper switches, and other connections that are required to be monitored. Ceiling systems must be

complete and connection to the central monitoring system must be on line and in service to gain approval. This inspection cannot be performed until the all of the applicable wet sprinkler inspections/tests shown above have passed. If there is a standpipe system associated with the automatic wet sprinkler system it must pass the standpipe flow test/inspection also prior to approval of the sprinkler final. The Fire Alarm Final must be approved prior to the Wet Sprinkler Final. **A contractor's Material and Test Certificate for Aboveground Piping must be provided at final.**

- ***Dry Sprinkler final*** - A test/inspection of the dry automatic sprinkler system including the testing of all flow switches, tamper switches, and other connections that are required to be monitored. Ceiling systems must be complete and connection to the central monitoring system must be on line and in service to gain approval. This inspection cannot be performed until the all of the applicable dry sprinkler inspections/tests shown above have passed. If there is a standpipe system associated with the automatic dry sprinkler system it must pass the standpipe flow test/inspection also prior to approval of the sprinkler final. **A contractor's Material and Test Certificate for Aboveground Piping must be provided at final.**

## 5. Standpipe

- ***Standpipe hydro*** - A test/inspection of all standpipe system components. The hydrostatic test is done at 200 P.S.I. or 50 pounds over static pressure, whichever is greater, for a two (2) hour period. A temperature of at least 40 degrees Fahrenheit must be maintained in the area testing is being conducted.
- ***Standpipe visual*** – An inspection of all standpipe components, including hangers and other appurtenances. All piping and hangers must be readily visible for the representative of the Fire Marshal's Office to inspect from ground/floor level. All discharges must be at the intermediate landing level. The Hydro and Visual test/inspections may be performed at the same time.
- ***Standpipe flow*** - A test/inspection to assure that a sufficient quantity of water flow is available at the most hydraulically remote point of a standpipe system to meet the design requirements.

Gauges used in performing acceptance tests on fire suppression systems witnessed by the Fire Marshal's Office must meet the following criteria:

- The gauge shall be appropriate for the type of test; i.e., air gauge for an air pressure test, a water gauge for a hydrostatic test.
- Air gauges shall have increment markings of two pounds or less. Water gauges must have increment marking of ten pounds or less.
- The gauge shall be capable of registering pressures above the minimum pressure required during the test. (0 PSI to 300 PSI) The pressure registered during the actual test shall be at least the minimum required for the test and less than the maximum of the gauge register.



- Gauges must be marked as accepted by UL and/or FM testing laboratories.
6. **Hood** - A test/inspection of the hood fire suppression system, including the “dumping” of the extinguishment agent, or test medium, to assure proper operation, flow, fan, and alarm operation. **Test balloons** are required to be placed over each nozzle to assure that there is equal and proper flow through each. A second test will be performed by **cutting a link** to assure proper system actuation. Alarm horn/strobes connected to hood are required and **shall** be located in the kitchen and dining area. Prior to scheduling this inspection any gas piping or electrical wiring to appliances located under the hood must have the final by the appropriate inspection agency (gas, mechanical, plumbing or electrical department finals).
  7. **FMO Final Inspection- Occupancy Evaluation** - An inspection to assure that an **existing** building or space meets all applicable codes and ordinances for occupancy by persons for permanent occupancy and operation.
  8. **FMO Final Inspection- Shell** - An inspection to assure that a “shell” building or space is complete and ready for tenant layout work to commence.

## **Fire Marshals Office Approval for Temporary Certificate of Occupancy— Minimum Requirements**

The following **minimum** requirements must be met in order to secure a recommendation of approval from the FMO to the Building Official for stocking of a building, tent, or other structure. Responsibility for final approval and issuance of the stocking permit lies with the Building Official. This list is not all inclusive and should be considered to be the **minimum** requirements.

All tests/inspections for fire protection plan permits that have been issued must be completed and the installation of fire protection systems at such a stage that they will provide an acceptable degree of fire protection as determined by the Fire Marshal’s Office. These inspections may include one or more of the following, depending upon the scope of fire protection system work that has been done:

- Underground fire main visual inspection
- Underground fire main hydrostatic test and inspection
- Underground fire main flush inspection
- Underground fire main final
- Fire pump test
- Sprinkler hydrostatic test and inspection
- Wet Sprinkler final inspection
- Dry Sprinkler final inspection
- Standpipe flow test

- Fire alarm inspection
- Fire alarm battery test inspection
- Fire alarm final inspection

A temporary certificate of occupancy permit inspection request must be made to the Fire Marshal's Office **after all of the above** tests and/or inspections have been completed and approved.

***Temporary Certificate of Occupancy Inspection-*** An inspection to assure that fire protection systems and other fire prevention code/fire protection related items, affecting a building or space, are in place and at a state of completion to allow the storage or installation of interior furnishings, such as office furniture, goods for sale, or similar items to enable an occupant to stock or install such furnishings, goods, or similar materials. Approval of this inspection will result in a recommendation to the Building Official to permit stocking operations.

Responsibility for final approval and issuance of the temporary certificate of occupancy permit lies with the Building Official.

## **FMO Final Certificate of Occupancy Inspection Approval— Minimum Requirements**

The following requirements must be met in order to secure a recommendation of approval from the FMO to the Building Official for occupancy of a building, tent, or other structure. This list is not all inclusive and should be considered to be the **minimum** requirements. Approval of this inspection will result in a recommendation to the Building Official to issue a Certificate of Occupancy. Responsibility for final approval and issuance of the Certificate of Occupancy permit lies with the Building Official. All fire protection plans that have been approved must have the associated fire inspection/test approved by the Fire Marshal's Office prior to the FPP permit being finalized and final approval issued. These inspections may include one or more of the following, depending upon the scope of fire protection system work that has been done:

- Underground fire main visual, fire main hydrostatic test, and fire main flush inspections
- Underground fire main final
- Sprinkler hydrostatic test and inspection
- Wet Sprinkler final inspection
- Dry Sprinkler final inspection
- Hood system inspection (suppression chemical dump test)
- Fire alarm inspection
- Fire alarm battery test inspection
- Testing of all elevators for compliance with fireman's recall and fireman's use, phase I and phase II.
- Fire alarm final inspection

- Testing of smoke removal systems. This is an inspection that must be coordinated with the Fire Marshal's Office and the Mechanical Inspections Office.
- Fire Lane designation, inspection, and approval
- Emergency lighting test (where required by the Building Inspections Department)
- Stocking inspection
- FMO final inspection- shell (if appropriate)
- FMO final inspection- tenant inspection

The following is a minimum list of fire prevention code requirements that must be met at the time a FMO final- C of O inspection is requested:

- In use group A, B, E, F, H, I, M, R-1, R-4, and S portable fire extinguishers, distributed and complying with NFPA 10, must be provided. There are additional areas where portable extinguishers must be provided which are listed in Table 906.1 of the SFPC.
- Provide special signage (sprinkler room, electric room, no smoking, stairwell, etc.) as required.
- Post occupancy load in areas when required. (USBC 1004.3)
- All FDC are 4" Storz sexless couplings accessible, and in service.
- Fire hydrants compatible with 4" storz, are accessible, and in service.
- Exit access, exit, exit discharge, and other exit provisions completed and serviceable.
- Street address visible from street side of building in minimum 6" tall numerals.
- Any applicable Operational Permits required by the Virginia Statewide Fire Prevention Code must be applied for prior to approval for occupancy.
- Fire lanes shall be installed per Danville City standards and approved by the Fire Marshal's Office. Two (2) sets of approved site plans shall be submitted to the Fire Marshal's Office for designation of fire lanes, where required by the Fire Marshal's Office. (See Fire Lanes Information)
- Fire doors, lock assemblies, panic hardware, exit signs, emergency lighting, etc. must be operable, in sufficient quantity, and of approved type.

A FMO final inspection- certificate of occupancy inspection request is to be made to this the Fire Marshal's Office **after all of the above** have been completed.

***FMO Final inspection- Certificate of Occupancy*** - An inspection to assure that a **new** building or **new** space meets all applicable codes and ordinances for occupancy by persons for permanent occupancy and operation. (Open for business)

| <b>FIRE PROTECTION PERMIT PLAN REVIEW</b>          | <b>Review Fee</b> |
|--|-------------------|
| • Sprinkler System (Limited Area)                  | \$30.00           |
| • Sprinkler System - Ordinary                      | \$30.00           |
| • Sprinkler System - NFPA 13D                      | \$30.00           |
| • Sprinkler System - NFPA 13R                      | \$30.00           |
| • Sprinkler System - Dry Pipe                      | \$30.00           |
| • Sprinkler System with Stand Pipe                 | \$30.00           |
| • Standpipe Systems Only                           | \$30.00           |
| • Fire Pumps (per pump)                            | \$30.00           |
| • Underground Fire Line (per line)                 | \$30.00           |
| • Fire Alarms                                      | \$30.00           |
| • Hood Systems (per system)                        | \$30.00           |
| • Carbon Dioxide Extinguishing System (per system) | \$30.00           |
| • Clean Agent Extinguishing System (per system)    | \$30.00           |
| • Dry Chemical System (per system)                 | \$30.00           |
| • Wet Chemical (per system)                        | \$30.00           |

## Individual Fire Protection Inspection Fees Effective 7/1/2011

|   |                         |
|---|-------------------------|
| Underground Fire Main Visual Inspection                 | \$100.00 per inspection |
| Underground Fire Main Hydrostatic Test                  | \$100.00 per inspection |
| Underground Fire Main Flush                             | \$100.00 per inspection |
| Sprinkler System Hydrostatic Test                       | \$100.00 per inspection |
| Sprinkler System Alarm/Flow                             | \$100.00 per inspection |
| Sprinkler System Dry System Trip Test                   | \$100.00 per inspection |
| Sprinkler System 24 Hour Air Test                       | \$100.00 per inspection |
| Sprinkler Final   | \$100.00 per inspection |
| Standpipe Hydrostatic Test                              | \$100.00 per inspection |
| Standpipe System Flow Test                              | \$100.00 per inspection |
| Clean Agent Test  | \$100.00 per inspection |
| Hood System Test  | \$100.00 per inspection |
| Dry Chemical System Test                                | \$100.00 per inspection |
| Fire Pump Test  | \$100.00 per inspection |
| Fire Alarm Test   | \$100.00 per inspection |
| Fire Alarm Battery Test                                 | No Charge               |
| Fire Alarm Final  | \$100.00 per inspection |
| Underground Fire Main Final (Administrative Check only) | No Charge               |
| Sprinkler System Visual                                 | \$100.00 per inspection |
| Sprinkler System 4 head flow 13R                        | \$100.00 per inspection |
| Sprinkler 2 head flow 13D                               | \$100.00 per inspection |
| Sprinkler Antifreeze                                    | \$100.00 per inspection |
| Re-inspection Fee*                                      | \$27.50                 |

## Fire Marshal's Office Building Related Inspection Fees

|                                 |                         |
|---------------------------------|-------------------------|
| FMO Final- Occupancy Evaluation | \$100.00 per inspection |
| FMO Final- Shell                | \$100.00 per inspection |
| Furniture Storage/ Stocking     | No Charge               |
| FMO Final- Tenant               | \$100.00 per inspection |
| Re-inspection Fee*              | \$27.50                 |

## **Fire Marshal's Office Fire Lane Plan Review / Inspections**

|                               |           |
|-------------------------------|-----------|
| Plan Review/ Final Inspection | No Charge |
|-------------------------------|-----------|

\* When the re-inspection fee is applied an inspection will not be performed and the inspection will not be able to be rescheduled for 24 hours.

\*A re-inspection fee of \$27.50 will be charged for follow up inspections performed beyond the first follow up inspection. (Original inspection and first follow up inspection are free, after that a re-inspection fee will be charged for any additional inspections required.)

# Inspection Packaged Fees

Fees are charged by the Fire Marsha’s Office for Fire Protection Permit inspection activities. The fee packages shown below provide for payment of the initial inspections done for each of the various types of fire protection systems.

To expedite and streamline the inspection fee process the appropriate fee package will be added to the fire protection permit fee and collected at the time the fire protection permit is issued. Additional fees not collected at that time must be paid **prior to the scheduling** of any fire protection permit final inspection. This includes any rejection or cancellation fees involving fire protection permit inspections.

## FMO FPP and FEP Inspection Package Fee Schedule

| Permit Type                       | Inspections   | FEE      |
|-----------------------------------|---|----------|
| Wet or dry system 4 heads or less | <ul style="list-style-type: none"> <li>• Visual</li> <li>• Final</li> </ul>   | \$100.00 |
| Wet System 5 or more heads        | <ul style="list-style-type: none"> <li>• Visual</li> <li>• Hydro</li> <li>• Final</li> </ul>                                | \$100.00 |
| 4 Head Flow Test                  | <ul style="list-style-type: none"> <li>• Visual</li> <li>• Final</li> </ul>   | \$100.00 |
| Dry System 5 heads or more        | <ul style="list-style-type: none"> <li>• Visual</li> <li>• Hydro</li> <li>• Air</li> <li>• Trip</li> <li>• Final</li> </ul> | \$100.00 |
| Hood System                       | <ul style="list-style-type: none"> <li>• Test</li> </ul>  | \$100.00 |
| Clean Agent System                | <ul style="list-style-type: none"> <li>• Test</li> </ul>  | \$100.00 |
| Fire Alarm                        | <ul style="list-style-type: none"> <li>• System Test</li> <li>• Battery Test</li> <li>• Final</li> </ul>                    | \$100.00 |
| Underground Fire Main             | <ul style="list-style-type: none"> <li>• Visual</li> <li>• Hydro</li> <li>• Flush</li> </ul>                                | \$100.00 |
| Standpipe                         | <ul style="list-style-type: none"> <li>• Visual</li> <li>• Hydro</li> <li>• Flow</li> </ul>                                 | \$100.00 |

|  |           |
|--|-----------|
| Rejection fee for fire protection permit inspections/ per rejection with fee   | \$27.50   |
| Cancellation fee for cancellation of fire protection permit inspections less than two hours of scheduled inspection time | \$27.50   |
| Final Inspections for shell (Collected with building permit)   | \$100.00  |
| Review of a fire lane plan and associated inspection   | No Charge |

## Indication of Fire Lane Markings and Signs—Requirements

The Virginia Statewide Fire Prevention Code governs the designation of the fire lane as well as the installation and sign specifications.

Under Section 503.1 of the Virginia Statewide Fire Prevention Code, the Fire Marshal is authorized to designate fire lanes on public streets and on private property where necessary. This is to prevent parking in front of, or adjacent to, fire hydrants and to provide for the required fire apparatus access road. Markings and signs are to be provided by the owner or agent of the property involved. Parking or otherwise obstructing such areas is prohibited.

Posting and marking of fire lanes must be established only where designated by the Fire Marshal's Office.

To establish fire lanes, two sets of a scale site plan must be submitted to the Fire Marshal's Office. These shall include all street names, building addresses, and building access points. One copy of the approved plans will be retained by the Fire Marshal's Office for future reference. Plans submitted will be marked by the Fire Marshal's Office to indicate where fire lanes are to be established by the painting of curbs and posting of signs. The following is summary of the criteria used to create fire lanes:

### Standard Requirements

| Width Curb to Curb | One-Way Traffic                                  | Two-Way Traffic   |
|--------------------|--|---|
| Less than 20'      | No Parallel parking on either side of street     | No Parking  |
| 20' to 30'         | Parking on one side                              | No parking  |
| 30' to 35'         | Parallel parking allowed on both sides of street | Parallel parking on one side as determined by the Fire Marshal's Office |
| 35' or greater     | No Fire Lane will be established                 | No Fire Lane will be established  |

#### 1. Hydrants




- a. Parking is prohibited within 15' of a fire hydrant located along the curb line or edge of any public or private roadway. No special curb marking is required for enforcement.
- b. Fire hydrants installed in parking lots or are located within a fire lane. Curb and/or roadway marking are required in accordance with section 3 below.



**2. Sign Specifications**

- a. Metal construction, 12" X 15"
- b. Red letters on reflective white background with 3/8" red trim strip around entire outer edge of sign.
- c. Lettering on sign to be: "NO PARKING OR STANDING FIRE LANE".
- d. Lettering size to be as follows: "NO PARKING"- 2", "OR" - 1" "STANDING" - 2", "FIRE LANE" -2.5", arrows 1" X 6" solid shaft with a solid head 1.5" wide and 2" deep.
- e. Signs are to be mounted with the bottom no less than 6' from the ground and the top no more than 8' to the ground unless otherwise directed by the Fire Marshal's Office.
- f. Posts for signs, when required, shall be metal and securely mounted, unless written permission for alternatives is obtained prior to installation from the Fire Marshal's Office.
- g. A minimum of two signs, with appropriate arrows, are required to establish a fire lane. Additional signs, having appropriate arrows, must be installed as needed to keep the spacing between the signs 100' (30.48 m) or less.

**Sign Types and Design**

| Sign Type "A"  | Sign Type "B"  | Sign Type "C"  |
|--|--|--|
| <p style="text-align: center;"><b>No Parking<br/>OR<br/>Standing<br/>Fire Lane</b></p>  | <p style="text-align: center;"><b>No Parking<br/>OR<br/>Standing<br/>Fire Lane</b></p>  | <p style="text-align: center;"><b>No Parking<br/>OR<br/>Standing<br/>Fire Lane</b></p>  |
| <p>Standard wording with an arrow at bottom pointing to the right. One sign mounted parallel to the line of curbing or pavement edge at end of painted area.</p>           | <p>Standard wording with two directional arrows. One sign mounted parallel to the line of curbing or pavement edge at the end of painted area.</p>                         | <p>Standard wording with an arrow at bottom pointing to the left. One sign mounted parallel to the line of curbing or pavement edge at end of painted area.</p>              |

Fire Lane markings, types of signs, locations, etc. are subject to the approval by the Fire Marshal's Office.

**3. Curb Designation**

- a. When curbing is provided adjacent to the fire lane it must be painted red within the limits of the fire lane.
- b. Where curbing is not provided adjacent to the fire lane, a red line must be painted on the pavement along the edge of the paved surface. A second parallel red line must be painted 2' away from the first line. The two lines are to be connected by intersecting diagonal lines at 3' intervals.

**4. Inspection Notice**

A field inspection is necessary for final approval of fire lanes. Fire lanes must have final approval prior to request for a preoccupancy inspection. It is incumbent upon the installer to provide plans for establishment of fire lanes and to notify the Fire Marshal's Office when fire lanes have been installed per the approved plans.

## Fire Hydrant Coverage and Locations

- 1. Minimum of 50' of distance from fire hydrant to any structure.
- 2. Maximum 100' from fire hydrant to the fire department connection and the fire department connection must be visible from the fire hydrant. A fire department connection for an automatic sprinkler system or standpipe system shall be located on as to be readily visible from the street. The location for this fire department connection must be approved by the Fire Marshal's Office.
- 3. Fire hydrant coverage: Should comply with:

### Use Distance

|  |          |
|--|----------|
| Industrial building and storage buildings  | 300 feet |
| School and institutional buildings         | 300 feet |
| Offices, commercial, church                | 300 feet |
| Motels, Apartments, multi-family dwellings | 300 feet |
| Single family dwellings- detached          | 500 feet |

- 4. No obstructions of are permitted within 3' of a fire hydrant (plantings, fences, retaining wall, etc.) or 10' of an automatic sprinkler system or standpipe system fire department connection.
- 5. All fire hydrants and water mains located in or on parking structures shall be protected from freezing (no heat tape).
- 6. Fire hydrants in single family dwelling areas shall be located as follows:
  - (a) lot line and/or
  - (b) curve of pavement

7. Fire hydrants subject to impact by vehicles must be protected by guard posts or other approved means.
8. Fire Hydrants must be painted Vermilion Red
9. Fire Hydrants must be equipped with one 4" storz sexless coupling, "steamer Connection", and two connections with 2-1/2" National Standard Threads.



The Hydrant Storz adapters permanently change main hydrant outlet from threads to Storz. This picture Includes hard anodized adapter and cap with chain and stainless steel set screws to prevent unscrewing from the hydrant.

### **Fire Flow**

1. Adequate fire flow (2500 gpm @ 20 psi minimum residual pressure) must be available on site.
2. Fire line properly sized. (minimum 6" in diameter)

## Emergency Vehicle Access

- 1) Adequate emergency vehicle access must be provided. If turns are included within the emergency vehicle access provide the turning radii.
- 2) Dead-end fire lanes greater than 150' require a turnaround at the end.
- 3) Emergency vehicle access to within 150' of all portions of the building.
- 4) Height restrictions blocking emergency access (low overhead like a canopy). 13 foot 6 inches clearance is required.
- 5) Emergency vehicle access roads must be capable of supporting 76,000 pounds and be all weather in nature.
- 6) Buildings more than 5 stories need front and rear access.
- 7) Must be maintained clear and accessible all year.
- 8) Must have a mountable curb at entrance.
- 9) If a commercially available substitute for paving is used, (i.e. Grasscrete), the manufacturer's specifications and installation instructions for this item must be supplied to the Fire Marshal's Office for approval prior to installation.
- 10) Provide approximately 4' high bollards with steel chain locked in between at curbside entrances to access roads must be identified as a fire department access road at the road access point.
- 11) Access lanes must be clearly delineated for the entire length and at the ends by bollards every 20' (10' on curves), or in another manner approved by the Fire Marshal's Office.

## Site Requirements for Buildings Under Construction or Demolition

Chapter 14 of the VSFPC applies to buildings under construction and demolition. Below are **some** requirements:

1. *Approved* vehicle access for firefighting shall be provided to all construction or demolition sites. Vehicles access shall be provided to within 10' (30 480 mm) of temporary or permanent fire department connections. Vehicle access shall be provided by either temporary or permanent roads, capable of supporting 76000lbs vehicle loading under all weather conditions. Vehicle access shall be maintained until permanent fire apparatus access roads are available.
2. An approved water supply for fire protection, either temporary or permanent, shall be made available as soon as combustible material arrives on the site.

3. In buildings required to have standpipes, not less than one standpipe shall be provided for use during construction. Such standpipes shall be installed when the progress of construction is **not more than 40'** (12 192 mm) in height above the lowest level of the fire department vehicle access. Such standpipe shall be provided with fire department hose connections at accessible locations adjacent to usable stairs. Such standpipes shall be extended as construction progresses to within one floor of the highest point of construction having secured decking or flooring. Maximum travel distance from interior standpipe connections to the most remote area is 200'
4. Where a building is being demolished and a standpipe is existing within such a building, such standpipe shall be maintained in an operable condition so as to be available for use of the fire department. Such standpipe shall be demolished with the building but shall not be demolished more than one floor below the floor being demolished.
5. A **Fire Prevention Program Superintendent** shall be appointed by the owner. A **HOT WORK PROGRAM** shall be implemented and followed. Chapter 26 of the Virginia Statewide Fire Prevention Code contains the guidelines for the program.

## Signage

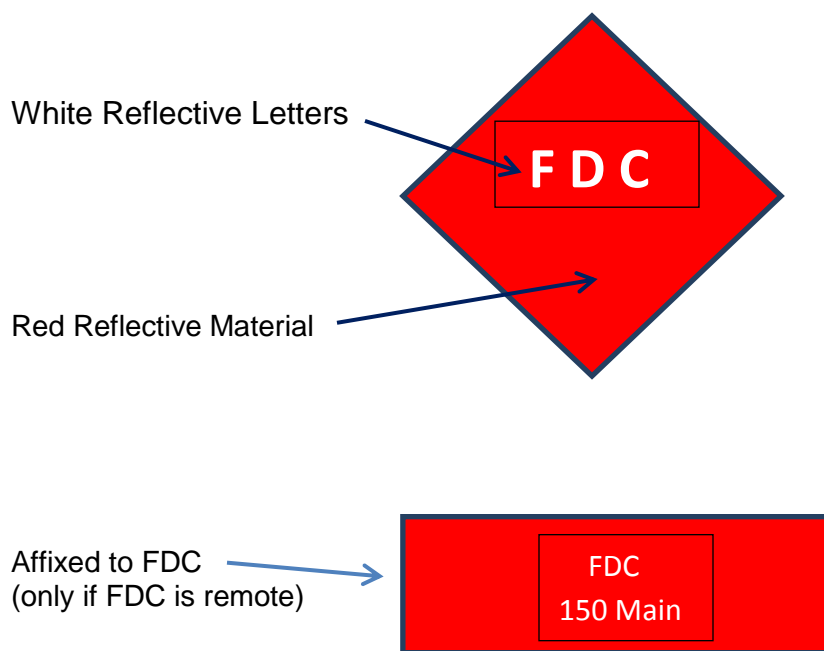
### I. SITE

- A. Building Address – Arabic numerals at location legible from street or road fronting property, 0.50 in. stroke, 6 in. height.
- B. Fire Lanes – See Fire Lanes Designation Section
  1. Fire Apparatus Access Roads – marked by signs approved by fire official (2009 *SFPC* 503.3)

### II. BUILDING EXTERIOR

- A. Exterior Doors
  1. “Exit Door Do Not Block” – 0.75 in. stroke, 4 in. height
  2. “This Door Blocked” - 0.75 in. stroke, 6 in. height (2009 *SFPC* 504.2)
  3. “Sprinkler Room Control Valves” – 0.50 stroke, 4 in. height
- B. Fire Department Connection
  1. Collar – identify as “Automatic Sprinklers”, “Standpipes”, “Test Connection”, 0.25 in. stroke, 1 in. height (2009 *SFPC* 912.4)
  2. Must be readily visible, free of obstruction and approved by Fire Marshal’s Office

3. Location Signage - wherever the Fire Department Connection is not readily visible. Such signs shall be readily visible from the street in a location approved by the Fire Marshals Office, mounted on point, and meet the following requirements:
  - A. The letters "FDC" shall have a minimum 0.75 in. stroke and be of a minimum of 4 in. in height and shall be visible from the street
  - B. Letters or other words to indicate location of the FDC shall be at least 4 in. in height
  - C. Arrows indicating the location of the FDC shall be of a minimum width of 0.50 in. stroke
  - D. The sign shall be of a minimum of 18 in. on each side and of durable construction
4. If the FDC is not located on the building a sign shall be affixed to the FDC. The address that the FDC serves shall be on the sign.



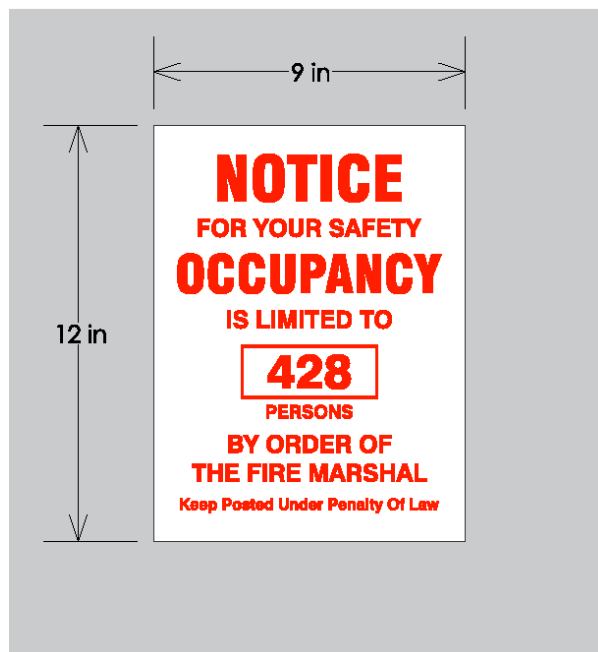
C. Sprinkler Water flow Alarm

1. Shall read "Sprinkler Fire Alarm – When Bell Rings Call 9-1-1,"  
0.50 in. stroke, 1 in. high
2. Must be located near the device in a conspicuous position

**III. BUILDING INTERIOR**

- A. Cabinets containing firefighting equipment such as standpipes, fire hose, fire extinguishers or fire department valves, must not be blocked or obscured from view, 0.25 in. stroke, 2 in. height in a color that contrasts with background color (2009 USBC 905.7.1)

- B. Manual Fire Alarm Boxes on fire alarm systems not monitored by a supervising station – sign installed adjacent to each manual fire alarm box the reads “WHEN ALARM SOUNDS CALL FIRE DEPARTMENT”, 0.25 in. stroke, 1in. height (2009 SFPC 907.5.2.4)
- C. Occupancy Load Sign
- (a) Shall read “Notice for your safety Occupancy is limited to \_\_\_ Persons by the order of the Fire Marshal Keep posted under the penalty of law”
  - (b) Shall be placed in every room or space that is an assembly in a conspicuous place near a main exit.
  - (c) Sign shall be 9” by 12”. Notice shall be 1.34 in, Occupancy 1.12, and the number 1” in size. The sign shall be white and the letters will be bold red with the numbers black.



- D. Floor identification signs. A sign shall be provided at each floor landing in exit enclosures connecting more than three stories designating the floor level, the terminus of the top and bottom of the exit enclosure and the identification and the identification of the stair or ramp. The signage shall also state the story of, and the direction to, the exit discharge and the availability of roof access from the enclosure for the fire department. The sign shall be located 5 feet above the floor landing in a position that is readily visible when the doors are in the open and closed positions. Floor level identification signs in tactile characters complying with ICC A117.1 shall be located at each floor level landing adjacent to the door leading from the enclosure into the corridor to identify the floor level.

- E. Stairway identification signs shall comply with all of the following requirements:
1. The signs shall be a minimum size of 18 inches by 12 inches.
  2. The letters designating the identification of the stair enclosure shall be a minimum of 1 ½ inches in height.
  3. The number designating the floor level shall be a minimum of 5 inches in height and located in the center of the sign.
  4. All other lettering and numbers shall be a minimum of 1 inch in height.
  5. Characters and their background shall have a nonglare finish. Characters shall contrast with their background, with either light characters on a dark background or dark characters on a light background.
  6. The sign needs to be illuminated by a reliable light source (the stairwell illumination light should be sufficient for this requirement)
  7. The floor level designation needs to be tactile in accordance with ADA requirements
  8. The sign may be painted or stenciled on the wall, or if a separate sign, it needs to be fastened to the wall
  9. The stairwell identification lettering is required to be at the top of the sign, in minimum 1 inch tall letters
  10. Stairwells that do not provide roof access must have the words 'NO ROOF ACCESS' and must be located underneath the stairwell identification lettering in minimum 1 inch tall lettering
  11. The floor level number must be in the middle of the sign, and be a minimum 5 inches tall. Mezzanine levels must have the letter 'M' (or other appropriate identification letter) preceding the floor number, and basements must have the letter 'B' (or other appropriate identification letter) preceding the floor level number
  12. Identification of the lower and upper terminus of the stairwell must be located at the bottom of the sign and in minimum 1 inch tall letters and/or numbers.

Also all new stairwells serving 3 or more stories are required to have stairwell identification signs.





## Key Box Repositories for Emergency Access

The Uniform Statewide Fire Prevention Code, Section 506, requires the installation of an approved emergency access building entrance system (key box repository box) for all buildings with the exception of single family dwellings. The policy in Danville City is that the provision of key box repositories are required by the owner of a building, tenant space, or other similar secured (locked) area that has a fire alarm or is deemed to be need by the Fire Marshal. Currently, key box repositories manufactured by the Knox Company are the only ones that are approved for use. The (3200) Series are the most widely used key box within the city.

1. The key box repository shall be installed at a height of no less than 72 inches above the finished floor surface.
2. The key box repository shall be installed just outside the primary fire department entrance to the building or facility in a visible location and readily accessible. Any question regarding the location of the box should be directed to the Fire Marshal's Office at 434-799-5226.
3. The key box repository shall be installed according to the manufacturer's recommendations in a location that is easily visible and accessible.
4. All access mechanisms in the key box repository shall be clearly labeled as to their purpose.
5. It shall be the responsibility of the key box repository holder to update all access mechanisms as necessary.
6. Only key boxes that are accessible by the use of an approved key shall be permitted.
7. All key box repositories shall be keyed as required by the Fire Official and shall be listed and approved by a nationally recognized testing laboratory.
8. All key box repositories shall, at a minimum, contain the keys, electronic access cards, floor plans, HAZMAT data, and other vital building information as required by the Fire Official.
9. Boxes shall be installed prior to occupancy.
10. When a key box repository is received from the vendor, the installer should contact the Fire Marshal's Office to set up an appointment to verify the correct lock cylinder has been supplied by the vendor.
11. When a key box repository is installed, the installer will need to contact the Fire Marshal's Office at 434-799-5226 to set up an appointment to have the key box locked as it will be shipped in an "unlocked" status.

Knox boxes to be installed in the City of Danville can be purchased from the Knox Company via internet or through a Knox box order form provided by the Fire Marshal's Office. Failure to comply with this method of purchasing a key box may result in the incorrect key cylinder being furnished by the vendor. Applications for installation and literature on key box repositories may be obtained from the Fire Marshal's Office at (434) 799-5226 or picked up at the Fire Marshal's Office.

## Hydrostatic Testing Of Automatic Sprinkler System Tenant Work Policy

The Danville City Fire Marshal's Office policy governing hydrostatic testing for automatic sprinkler work in tenant spaces follows the guidelines shown below. A hydrostatic test will be required for tenant work involving:

1. The addition or relocation of five (5) heads or more,
2. The addition of ten (10) or more new fittings,
3. The addition of twenty (20)' or more of pipe (nipples shall not be counted as pipe length).
4. Or any combination of the above items.

Any work that meets the criteria of items 1 through 4 **will require a visual inspection, prior to any close-in, and a sprinkler final upon completion of the job.** For example the addition of 4 sprinkler heads would not require a hydrostatic test. Only a visual inspection, prior to any close-in and a sprinkler final would be required.

Gauges used in performing acceptance tests on fire suppression systems witnessed by the Fire Marshal's Office must meet the following criteria:

- The gauge shall be appropriate for the type of test; i.e., air gauge for an air pressure test, a water gauge for a hydrostatic test.
- Air gauges shall have increment markings of two pounds or less. Water gauges must have increment marking of ten pounds or less.
- The gauge shall be capable of registering pressures above the minimum pressure required during the test. (0 PSI to 300 PSI) The pressure registered during the actual test shall be at least the minimum required for the test and less than the maximum of the gauge register.
- The pitot tube and gauge must be capable of providing accurate readings to determine actual flow conditions.
- Gauges must be marked as accepted by UL and/or FM testing laboratories.

## Fire Alarm Testing Of Non High-Rise Buildings Policy

1. Prior to installation of fire alarm systems, two sets of complete fire alarm system plans must be submitted for approval to the Danville City Fire Marshal's Office.
2. The fire alarm system must be pre-tested by the installing contractor or representative prior to scheduling the Fire Marshal's Office acceptance test inspection. This is help to alleviate rejections that will result in retesting.
3. To set up fire alarm acceptance tests, please call the Danville City Fire Marshal's Office at 434-799-5226 to schedule a fire alarm test.
4. All fire alarm annunciator panels, control panels, and associated equipment are to be "buttoned up" with no loose wire hanging before the Fire Marshal's acceptance test will be conducted.
5. During testing of the fire alarm systems the following installers or representatives should be present to assist in testing the fire alarm systems if applicable:
  - Fire Alarm installer
  - Sprinkler installer
  - Elevator installer
  - Air handling units installer (duct smoke detector(s))
  - Fire alarm control panel representative
  - Fire alarm panel programmer, where required.
6. The acceptance test will not be conducted without the **approved** fire alarm plans and submittals (cut sheets and electrical floor plans, etc.) on site.
7. All permit and any rejection fees must be paid before the test.
8. The Fire Marshal's acceptance test will include but is not limited to the following:
  - All smoke detectors will be tested by the manufacturer's recommended method.
  - All heat detectors will be tested.
  - All manual pull stations will be tested.
  - All flow switches (I.E., sprinkler, standpipe, and main fire line) will be tested by the actual flowing of water. Sprinkler flow alarm switches will be tested through a test orifice equal in size to the smallest sprinkler orifice in the system. **SPRINKLER RETARD FLOW SWITCHES MUST BE ADJUSTED TO A DELAY OF BETWEEN 45- 60 SECONDS TO AVOID NUISANCE ALARMS.**
  - All tamper switches on any fire protection systems shall be tested. **Tamper switches on OSY and similar control valves must operate within 2 full turns of the fully opened position.**
  - All duct smoke detectors will be tested. Air handling units must "running" during duct smoke detector test to allow the inspector to witness "shut down" of unit when duct smoke detector activates. The duct smoke detector shall annunciate as a supervisory alarm.
  - All smoke removal systems shall be tested to assure the system operates per the approved method.
  - Trouble circuits will be "spot checked" periodically during the tests, and the alarm system will be checked with the system in "trouble".

- All devices connected to the fire alarm system shall be properly identified at the fire alarm control panel and fire alarm annunciator panel. Proper identification is defined as a descriptive label of the type of device and its location. i.e. smoke detector, 3<sup>rd</sup> floor hallway or flow alarm, loading dock. Identification such as “A1” or “Z3” are not acceptable.
- Any concealed detector must have a readily visible remote red LED light and descriptive label.
- Floor call buttons for elevator shall be tested while elevator is in Phase I and Phase II.
- If the sprinkler System is divided by zone, annunciation of sprinklers will be by floor, device, (sprinkler flow), and proper zone. If the sprinkler is a "looped" system covering an entire floor no zone annunciation will be accepted. Only floor level and device (sprinkler flow) shall annunciate. If system is zoned, the sprinkler zones shall correspond with fire alarm zones.
- High/low air pressure in the dry sprinkler system shall set off a trouble light and a buzzer on the annunciator panel. A separate circuit shall be on the control panel showing hi/low air pressure.
- All suppression, detection devices, and equipment in the building shall be tied to the fire alarm system and tested.
- All Digital Alarm Communication Transmitters (Dialers) shall be tested. A copy of the approved plans shall be on site for the test. The fire alarm system will be tested with the alarm “on-line” with no trouble reports within the prior 24 hour period.
- All testing equipment shall be supplied by the contractor.
- Detection devices shall not be installed until after construction clean-up of all trades is complete. Any contaminated devices must be cleaned or replaced in accordance with NFPA 72-2010
- All ceiling tile, floor covering, and interior finish must be in place for testing of audibility and visibility of the fire alarm system. Visual appliance coverage must be complete before the test takes place. For fire alarm inspections in shell buildings the floor must be broom swept to keep dust at a minimum.

## **Installation of Pressure Reducing Regulating Valves On Standpipe Fire Hose Outlets**

The following policy is adopted to define the type of fire hose pressure reducing valves to be installed in Danville City. (NFPA 14-2010)

1. Pressure reducing/regulating fire hose valves shall be capable of delivering a residual flow pressure between 150 PSI to 170 PSI, at 250 gallons per minute. This standard shall be applied to all class I and III systems.
2. Pressure reducing/regulating fire hose valves shall be capable of external adjustment to higher pressures by the fire department. The external mechanism for reducing or regulating shall be capable of being removed completely, allowing the fire hose valve to function fully open.
3. Installation of pressure reducing/regulating valves shall not occur until:
  - (a) Approved by the engineering plans review section of the fire marshal's office.
  - (b) Certification is received from the manufacture on testing and pressure settings using 1-3/4" hose with a 100 PSI tip pressure.
  - (c) Valves are tested on site by the installing contractor and witnessed by the Fire Marshal's Office.
  - (d) Valves, once adjusted and approved, shall be fixed with a plastic break-away seal. This seal shall contain the date of test, valve identification and contractor conducting test.
4. Once installation has occurred, the installing contractor shall forward a report to the Fire Marshal's Office with valve identification (I.E. Numbering system), set points, location and floor level.
5. Valves shall be inspected visually each year to ensure that the settings have not changed and there is no damage to the valves. If there is a question due to damage, change of settings, missing tag, etc., the valve shall be removed and retested.

## **Sprinkler Protection Elevator Hoist Ways and Machine Rooms**

To satisfy the requirements of ASME A17.1, 2010 Edition, 2010 NEC, IBC 2012, and NFPA 72-2010, the following method of removing electrical power from elevator machinery prior to the activation of hoist way or machine room sprinklers are acceptable:

1. Place 160 degree or 190 degree F rated heat detectors at the top of the hoist way and/or in the machine room. These heat detectors will be part of the building fire alarm system and will be connected directly to the shunt trip disconnect(s) to the affected elevator(s). Activation of these heat detectors will disconnect power to the affected elevator(s). It should be noted that the fire alarm system will supervise the elevator power circuit as well as the initiating device circuit.
2. Place 212 degree F rated, standard response sprinkler heads near the heat detectors at the top of the hoist way and/or in the machine room with a control valve outside of the hoist way or machine room. (NFPA 13-2010)

This procedure allows for adequate sprinkler protection to elevator hoist ways and machine rooms as well as meeting the concerns associated with water application to live elevator machinery. It is applicable to structures built under the 2012 Virginia Uniform Statewide Building Code.

Note: See NFPA 13-2010 for an exception which allows omission of head at top of hoist way (not machine room). Also see NFPA 13-2010 for elevator pit sprinkler and exceptions to same.

The above assumes that smoke detectors per ASME A17.1 and NFPA 72-2010 are present for elevator recall.

## **Fire Protection and Life Safety Provisions Buildings Under Construction or Renovation**

The following fire protection and life safety provisions must be implemented in all buildings after any portion of a building or structure is occupied. The following building fire and life safety provisions must be completed, inspected, and approved prior to the issuance of the shell Certificate of Occupancy for initial tenant occupancy.

- Means of egress, such as the exit stairs, must be clear and free of storage and obstructions.
- Grade exit lobbies clear and free of storage and obstructions.
- Grade exit corridors or passage ways clear and free of storage and obstructions.
- Elevator shaft enclosures clear of trash and construction debris.
- Mechanical shaft enclosures completed and intact.
- Required exit lights and emergency lighting in place and operable.
- Required fire proofing for structural members in the core and occupied areas must be completed
- All fire stopping of wiring, piping or other penetrations through floors, ceilings and walls, both vertical and horizontal, in place.
- Combustible tank and construction debris must be removed.
- Storage shall comply with Section A1 through A4 below.
- Firefighting, fire detection, and suppression systems shall be in compliance with sections C1 through C6 below.

### **1. Construction Materials Storage**

- a. Noncombustible storage (See table below) shall be unlimited; however, storage **shall not exceed** the structural load design of the floor.
- b. Combustible storage (See table below) shall be limited to 2500 cubic feet or 10 percent of the floor area. Storage exceeding 2500 cubic feet will require a Fire Prevention Code Operational Permit in accordance with the Danville City Fire Prevention Code.
- c. Storage, combustible or noncombustible, shall be arranged in organized piles with the floor kept broom clean and free of trash and construction debris. Storage shall be kept a minimum of two (2)' below ceilings or the lowest member of the floor/ceiling or roof/ceiling assembly.
- d. Combustible storage areas located on an occupied floor shall be separated from the occupied areas by a one-hour fire rated partition. For purposes of this section the following table is used for defining combustible and non-combustible materials:

| <b>Noncombustible Storage</b>   | <b>Combustible Storage</b>  |
|---|---|
| Metal Studs or Fire-retardant-Pressure Treated Lumber, Steel or Other Metal Doors, Sheet Metal Duct | Hollow Core Wood Doors, Wood Studs, Paneling and Other Wood Products, Carpet and Padding, VCT and Base  |
| Light Fixtures Wrapped in Light Plastic   | Insulation with Combustible Vapor Facing, Flammable and Combustible Liquids, Adhesives and Paints, etc.   |
| Masonry Products<br><br>Noncombustible Insulation   | Any item “noncombustible storage” where the quantity of combustible packaging or storage aids is deemed excessive by the building or fire official. |

## 2. Construction Materials Sprinkler Requirements

- a. In fully sprinklered buildings, sprinkler protection **shall be maintained** at all times.
- b. In non-sprinklered buildings, an approved limited area sprinkler system shall be provided for combustible storage if an adequate water supply is available, i.e. standpipe system.
- c. Unless the manufacturer’s listing requirements are more restrictive, sprinkler heads shall be located within 12 inches of the underneath side of the floor or roof deck above in either the pendent or upright position. If the ceiling grid and tile are in place the sprinkler shall be installed in the pendent position and above the ceiling grid if required.
- d. Where in the opinion of Building Inspections or the Fire Marshal’s Office, the type or quantity of combustible storage exceed the limitations of the existing sprinkler system design, the sprinkler system in these areas shall be modified to conform to the fire hazard posed by the combustible storage.

## 3. Operational Maintenance of Fire Protection Systems, Exit Ways, and Occupancy Permit Requirements

- a. Prior to any tenant occupancy, a Building Shell occupancy inspection and approval is required by all inspection disciplines including, Building, Electrical, Mechanical, Plumbing, and the Fire Marshal’s Office (Health Department is required for food service establishments, medical buildings etc.)



- b. **Approved** construction drawings are required on the job site for all inspection disciplines. This includes FMO approved shop drawings for any sprinkler, fire alarm, or other fire protection systems.
- c. The entire core, including exit corridors, passageways, stairs, and elevator shafts and doors **must be completed** throughout the building. The elevator must be inspected, approved and operational. Any work required in any part of the exit way system, after the first tenant move-in, shall be conducted after normal business hours or the building will be ordered evacuated.
- d. The Danville Emergency Communications Center shall be notified when any fire suppression, detection, or firefighting system is placed out of service and when placed back in service. The telephone number for making these notifications is (434)799-5229.
- e. All sprinklers, standpipes, fire alarm systems and other required fire suppression or firefighting systems shall be in-service throughout the entire structure for first tenant occupancy. Under no conditions shall any fire suppression or firefighting system be shut off to any **occupied area** unless the valve or other activation control mechanism is continuously manned, during the period the system(s) are shut off. If this provision is deemed unworkable, any work shall be done after normal business hours. A documented fire watch shall be instituted during the time any fire suppression or firefighting system is out of service. Contact the Danville City Fire Marshal's Office for fire watch procedures.
- f. If any fire protection system must be taken out of service during normal business hours, a documented fire watch shall be instituted during this time period. (See item 5 below.) See fire watch requirements for more information.
- g. See sections A and B above for construction materials storage requirements. The criteria set forth in this document should cover the majority of field conditions. It is conceivable that individual situations may arise which must be evaluated for compliance on a case-by-case basis. Please call the Fire Marshal's Office for any related questions at (434)799-5226.

## Placing Fire Protection Systems In-service or Out of Service

During any construction or remodeling operation, it is important that the fire protection system remain operable. Any existing system scheduled for removal, shall not be removed until the new system is installed, tested and, approved. When it becomes necessary to disable any system, it must only be done under the following condition: Anytime a fire protection system is taken out of service the Danville City Fire Prevention Code requires the building owner to designate an impairment coordinator who is responsible for coordinating restoration or repair efforts to the fire protection system, assuring the life safety of affected occupants is not compromised, and assuring that all required tests are conducted prior to returning the system back in-service. The Danville City Emergency Communications Center **shall be notified**, prior to disabling any system, by calling 434-799-5229.

The following information will be provided:

- The name of the person calling;
- Provide a telephone number where they can be reached;
- The reason the system is disabled; and
- The anticipated time and date the system will be returned to service
- Establish a documented fire watch, which will tour the building continuously, recording the date, time and area checked in a notebook that can be visually inspected; and notification to the Emergency Operation Center dispatcher when the system is returned to service.

The Danville City Public Safety Communications Center **shall be notified**, upon the fire protection system being placed back in service, by calling 434-799-5226.

Repairs or modifications to existing systems will be allowed during normal business hours to individual tenant spaces, provided there are supervised control valves to each space, and there is no combustible storage in that space. In addition, responsible personnel shall remain in that area until the system is restored to service. Exceptions to the above will be allowed for emergency repairs only, and those repairs will be diligently pursued.

## Fire Watch

A Fire watch is a temporary measure intended to ensure continuous and systematic surveillance of a building or portion thereof by one or more qualified individuals for the purposes of identifying and controlling fire hazards, detecting early signs of unwanted fire, raising an alarm of fire and notifying the fire department.

The following guidelines shall be used in commercial and multi-family residential occupancies when a fire watch is ordered by the Fire Marshal's Office:

1. A fire watch shall be established and maintained throughout the building. The fire watch shall be performed by responsible individuals designated by facility management.
2. All areas within every building shall be visually surveyed and inspected for any visual evidence of heat, smoke, or fire at intervals not to exceed the table below.
3. The number of persons required will be such that the entire building can be checked every hour with the exception of Residential (Use Groups R-1 or R-2) Institutional (I-1, I-2 and I-3) and Education (Use Group E) which must be checked every half-hour.
4. The fire watch shall be staffed by a minimum of one person per floor in health care occupancies, and one person per every three floors in all other occupancies.
5. All personnel assigned to fire watch responsibilities shall not have any other responsibilities other than that of conducting the fire watch.
6. Management shall verify that **all** exit doors, exit access aisles, and exit discharges are unobstructed and functional.
7. Personnel performing the fire watch shall have a means of communication that will allow them to immediately convey an alarm condition to the other member (s) of the fire watch and the Impairment Coordinator.
8. A written record, including date, time, and the person(s) conducting the fire watch is required.