



**PRINCE WILLIAM COUNTY
DEPARTMENT OF FIRE AND RESCUE
OFFICE OF THE FIRE MARSHAL**

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Phone: 703-792-6360 www.pwcgov.org/fire

CODE COMPLIANCE MANUAL

Supplemental Information intended for
Architects, Engineers, Designers, and Installers

2021 Edition USBC & SFPC

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 the Prince William County 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 the building and fire code requirements enforced.

The requirements set forth in this document **are not all inclusive**, as application of the Virginia State and Prince William County Fire Prevention Code and other nationally recognized codes and recommended practices are 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 Prince William County Fire Marshal's Office at 703-792-6360.

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Applicable Codes and Standards

1. Prince William County Design and Construction Standards Manual (DCSM)
2. Virginia Uniform Statewide Building Code – 2021 edition, which includes, but is not limited to the following:
 - Virginia Construction Code (VCC) 2018
 - IFC International Fire Code 2021
 - IMC International Mechanical Code 2021
 - IPC International Plumbing Code 2021
 - National Electrical Code 2020
3. Virginia Statewide Fire Prevention Code – 2021 edition, which includes the International Fire Prevention Code 2021 with Virginia and Prince William County amendments.
4. National Fire Protection Association (NFPA) standards – The most used that are referenced by the USBC or SFPC are as follows:
 - NFPA 10 (2021) Portable Fire Extinguishers
 - NFPA 12A (2018) Halon 1301 Fire Extinguishing Systems
 - NFPA 13 (2019) Installation of Sprinkler Systems
 - NFPA 13D (2019) Installation of Sprinkler Systems in One and Two-Family Dwellings and Mobile Homes
 - NFPA 13R (2019) Installation of Sprinkler Systems in Residential Occupancies up to Four Stories in Height
 - NFPA 14 (2019) Standpipe and Hose Systems
 - NFPA 16 (2019) Deluge Foam Water Sprinkler Systems and Foam-Water Spray Systems
 - NFPA 17 (2020) Dry Chemical Extinguishing Systems
 - NFPA 17A (2020) Wet Chemical Extinguishing Systems
 - NFPA 20 (2019) Centrifugal Fire Pumps
 - NFPA 22 (2018) Water Tanks for Private Fire Protection
 - NFPA 24 (2019) Installation of Private Fire Service Mains and their Appliances
 - NFPA 25 (2020) Inspection, Testing & Maintenance of Water-Based Fire Protection Systems
 - NFPA 30 (2021) Flammable and Combustible Liquids Code
 - NFPA 72 (2019) National Fire Alarm Code
 - NFPA 80 (2019) Fire Doors and Windows
5. Safety Code for Elevators and Escalators ASME A17.1-2019/CSA B44-19
6. Accessible and Usable Buildings and Facilities ICC A117.1-2017

| PLAN SUBMITTAL DEPARTMENT(S) | | | | |
|-------------------------------------|---------------------------|------------------------------------------------------------------|------------------------------|-----------------|
| TYPE OF PLAN | PRINCIPAL CODE | SUBMIT TO: | PHONE CONTACT(S) | SEE PAGE |
| Assembly/Exhibition | VCC/Fire Prevention Code | PWC Building Development / Plan Intake / Building Permits Office | 703-792-4040 703-792-6924 | N/A |
| Building (High-Rise) | VCC | PWC Building Development / Plan Intake / Building Permits Office | 703-792-4040 703-792-6924 | N/A |
| Building / Non-High-Rise | VCC | PWC Building Development / Building Permits Office | 703-792-4040 703-792-6924 | N/A |
| Building / Tenant | VCC | PWC Building Development / Building Permits Office | 703-792-4040 703-792-6924 | N/A |
| Fire Alarm (High-rise) | VCC 907 | *FMO | 703-792-6360 | 7 |
| Fire Alarm (Non-High rise) | VCC 907 | *FMO | 703-792-6360 | 7, 44-45 |
| Fire Alarm Tenant | VCC 907 | *FMO | 703-792-6360 | 7-8 |
| Fire Pump | NFPA 20 | *FMO | 703-792-6360 | 12 |
| Foam | NFPA 11 SERIES | *FMO | 703-792-6360 | N/A |
| Halon | NFPA 12A | *FMO | 703-792-6360 | N/A |
| Key Box Repository | Fire Prevention Code | *FMO | 703-792-6360 | 39-40 |
| Range Hood | Mechanical Code | *FMO | 703-792-6360 | 16 |
| Site Plans | PWC/DCSM/VCC | *FMO | 703-792-6360 | 33-35 |
| Sprinkler | NFPA 13 | *FMO | 703-792-6360 | 9-11 |
| Sprinkler Tenant | NFPA 13 | *FMO | 703-792-6360 | 43 |
| Tent/Temporary | VCC/ Fire Prevention Code | PWC Building Development / Building Permits Office / FMO | 703-792-6924 703-792-6360 | N/A |

***Note:** New Fire Protection system plans for Fire Marshal’s Office review are submitted electronically through the Building Development Plan Intake Office using their policy. Fire lanes are reviewed and approved during the Land Development site plan review process, resulting in an approved fire lane plan that can be used later to secure a Fire Lane permit.

Fire Alarm Systems

Minimum Requirements for Fire Protection Permit (FPP) Submissions

Plan submissions are made electronically through the Building Development plan intake office. The submission package must comply with the Building Department's electronic submission requirements before plans will be reviewed by Fire Marshal's Office reviewers.

1. Detailed construction documents/shop drawings and specifications must include, (but are not limited to) the following:
 - Shop drawings shall be drawn to an indicated scale on sheets of uniform 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).
 - Detailed 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.

2. 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 AND STANDARDS

2021 Uniform Statewide Building Code
NFPA 72 (2019)

Fire Alarm Express Permits

Fire Alarm Express Permit Requirements

1. Must obtain a Fire Protection Permit.
2. Scope of work shall be the following with a maximum of ten (10) devices and no fire pump devices:
 - Monitoring the sprinkler flow and tamper switches.
 - Adding a fire alarm panel.
 - One smoke detector above the FACP.
 - One alarm device on the exterior of the building.
3. Fire alarm installation is still required to comply with NFPA 72; equipment listed for fire protection use is required.
4. Fire inspection is required (Fire Alarm, Battery Test and Fire Alarm Final).
5. During the fire inspection, the contractor is required to provide the following, but not limited to:
 - All fire alarm manufacturers equipment cut sheets.
 - A riser diagram showing FACP and all devices.
 - The location of FACP in the sprinkler room showing the proper clearance for the FACP.
 - Detailed 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, wireless monitoring systems, 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. Plan submissions are made electronically through the Building Development plan intake office. The submission package must comply with the Building Department's electronic submission requirements before plans will be reviewed by Fire Marshal's Office reviewers.
2. Detailed construction documents/shop drawings must include, **(but are not limited to)** the following:
 - Shop drawings shall be drawn to an indicated scale on sheets of uniform 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. High-piled combustible storage buildings are required to comply with Chapter 32 of the IFC.
 - 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 a one-year period and available water supply shall be adjusted to low hydraulic gradient. *Note: Water supply data is available from the Prince William County Service Authority (PWCSA) and water supply data for most of the Dale City area can be obtained from the Virginia American Water Company.*
 - Location, size, and type of all pipes to be installed including sprinkler fittings.
 - Location, size, and type of all sprinkler heads to be installed; sprinkler legend shall include symbol, type, model number 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" screws 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, fireplaces, ovens, heat diffusers, fireplace 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 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 to areas that will not permit such distances and will be evaluated on a case-by-case basis.

3. Submit a copy of the PWC approved site plan, i.e., approved by the Land Development and other related details including, but not limited to the locations of fire hydrants and underground fire mains.

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 AND STANDARDS

2021 Uniform Statewide Building Code
NFPA 13 / 13R / 13D / 20 (2019 edition)

NFPA 14 (2019 edition) / 22 (2018 edition)
NFPA 25 (2020 edition) / 30 (2021 edition)

Sprinkler Express Permits

***** For Mercantile & Business Use Groups with Construction Modifications up to 10 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 need 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 10 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 the 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.
3. An adjusted water supply curve for the test hydrant shall be based on the low hydraulic grade line as provided by the water supplier. High and low hydraulic grade lines shall be obtained from the water supplier and shall be referenced to a specific date. Adjustment of the water supply curve at the test hydrant by use of the low hydraulic grade. The calculation shall consist of adjusting the **entire** water supply curve by subtracting the highest slab elevation (HSE) from the hydraulic grade converting the difference to PSI.
 - i. Example: $S = 97, R = 30, Q = 800$
 - ii. HSE 400 feet
 - iii. Low H.G.L. = 600 feet
 - iv. $600 - 400 = 200 \text{ feet} = 86.62 \text{ or } 87 \text{ PSI}$
 - v. Hence use $S = 87, R = 20, Q = 800$ as design curve at test hydrant location
4. A minimum safety factor (5 PSI) below the (adjusted) water supply curve must be provided. This safety factor will not necessarily accommodate all potential increases in water supply requirements due to tenant fit outs. Final responsibility for long-and-short-term system adequacy rests with the designer/contractor/installer.

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 for 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 consider 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 NFPA 14 (2019) 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, for non-sprinklered buildings, or a total of 1000 GPM for fully sprinklered buildings, in accordance with NFPA 13. A residual pressure of 100 PSI needs to be maintained at the topmost outlet of each riser while flowing the minimum quantities of water shown above.

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

Note: Detailed sprinkler calculations still need to be submitted along with these calculations. Sprinkler and standpipe calculations must consider the low JGL for the site and come in under the water supply curve.

Underground Fire Mains

Minimum Requirements for Fire Protection (FPP) Submissions

Plan submissions are made electronically through the Building Development plan intake office. The submission package must comply with the Building Department's electronic submission requirements before plans will be reviewed by Fire Marshal's Office reviewers.

1. Detailed construction documents/shop drawings must include (but are not limited to) the following:
 - a. **PWC approved site plan** – i.e., approved by Land Development (which will have a perforated stamp) and other related details.
 - b. Designate the "Scope of Work" – 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.
 - c. Location of the underground fire line; type and size of all pipe being installed.
 - d. 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.
 - e. Mega-lugs and/or thrust blocking is for all piping.
 - f. Equipment specification sheets for all fire protection components.
 - g. Cross section showing entire length of the underground fire main relative to any exposure (e.g., storm water, sanitary lateral, etc.) that intersects with it.
 - h. All rods, nuts, bolts, washers, clamps, and other restraining devices shall be coated with a bituminous or other acceptable corrosion-retarding material.
2. Fire lines shall be designed and installed per NFPA 13.
3. No valves shall be installed in the fire line between street valve at water main and O.S. & Y. valve inside of building.
4. Electrical ground wires shall not be connected to underground fire lines.
5. Provide at least 36" of insulated earthen cover between the fire line and any exposure (e.g., storm water, sanitary lateral, etc.) that may subject the pipe to a temperature below 40°F and include a profile of the underground fire main with the site plan.
 - a. Exceptions can be applied related to depth of cover utilizing other materials approved by the Fire Marshal's Office. (Ex-Extruded Polystyrene or XPS) material Data Sheets **MUST** be submitted with the design/engineering plans and showing profiles and details I how it is to be installed at the time of site plan submission.
 - b. Underground Fire Mains at depths greater than 60" from finished grade, may be crossed by all utilities, **EXCEPT** those open to the atmosphere. (Ex-Storm water management and/or Roof drain lines.)
 - c. See the full PWC Design Construction Standards Manual (DCSM) for additional details and examples.

6. Show the location, types, and quantity of fittings to be installed. Provide elevation detail of all direction changes in piping.
7. Underground fire lines for fire sprinkler, fire sprinkler/standpipe, or fire standpipe systems shall be installed such that the underground line terminates in a riser room located immediately adjacent to an exterior wall with a personnel door, permitting immediate access to the main fire sprinkler, fire sprinkler/fire standpipe, or fire standpipe control valves, located in the riser room for use by Fire/Rescue personnel.

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 AND STANDARDS

2021 Uniform Statewide Building Code
Prince William County DCSM

NFPA 13 (2019 edition)
Section 303.05, Underground Fire Lines

Commercial Kitchen Hood Suppression Systems

Minimum Requirements for Fire Protection Permit (FPP) Submissions

Plan submissions are made electronically through the Building Development plan intake office. The submission package must comply with the Building Department's electronic submission requirements before plans will be reviewed by Fire Marshal's Office reviewers.

1. Detailed construction documents/shop drawings must include, (but are not limited to) the following:
 - a. Details and dimensions of the kitchen hood, cooking appliances, exhaust duct, plenum, etc.
 - b. Type and size of appliances must be identified.
 - c. Identify type and location of nozzles relative to each protected plenum, exhaust duct, and appliance (including the nozzle height above cooking surface).
 - d. Location, type, and function of detecting devices including temperature classification of fusible links, etc.
 - e. Type and quantity of extinguishing agent with complete calculations and manufacturer's data sheets to determine agent quantity.
 - f. Size, length, and arrangement of extinguishing system piping.
 - g. Location of the manual means of actuation.
 - h. Required alarms including a detailed sequence of operations.
 - i. Interconnection to exhaust fan, building fire alarm, gas shut-off and electric shunt-trip must be included.
2. Submit the fire suppression equipment specification manual which shows the system listing and pertinent sections that apply to the design.
3. 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 AND STANDARDS

2021 Uniform Statewide Building Code

NFPA 17 (2020) NFPA 17A (2020)

Fire Protection Permits for Emergency Repair

According to Section 108.1 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 and Development Services 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 e-Plan Review Process

The Fire Marshal's Office participates & performs fire protection plan reviews for the Planning Office, Land Development Services and Building Development Services.

Fire Protection Permits

Plans are submitted electronically to the Building Development Department via Plans Intake / Permits Office as a Fire Protection permit (FPP) in accordance with policies of the Building Development Office. Each submission should include a completed FPP application with signature and a completed FMO ePlan Checklist. Every submission, re-submission and revision **must** include the FMO ePlan Checklist or it will be denied.

The Fire Marshal's Office Electronic Plan Submission Manual can be found online at:

<https://www.pwcva.gov/department/fire-marshals-office/eplans>.

Submission requirements can be found on page 18. The FMO ePlan Submission Quality Control fillable Check List can be found online at:

<https://eservice.pwcgov.org/eBuildingDevelopmentForms/forms/FMOePlanQAChecklist.pdf>

Submission Requirements per FMO ePlan Review Checklist

- Address Validation/Assignment Approval shall be issued by GIS prior to acceptance by the Building Development Division for standalone Fire Protection Permits. Address validations are processed online, via email only. Please contact 703-792-6840 or PWCMaps@pwcgov.org.
- File names meet the File Naming Convention found in the Customer ePlans Guide.
- Plan set is in a single PDF file (plan, manufacturer cutsheets, etc).
- Plans and other required documents meet credentialing requirements.
- Files are not locked, or password protected.
- PDF files do not contain layers or comments.
- Plan sheets are bookmarked which include the sheet number and page title.
- Plan set is landscape and pages are aligned.
- An open 3" x 3" space for the County Reviewed stamp is provided at the top right corner on each sheet of the drawing.
- To allow for County digital review stamp on manufacturer cutsheets, provide a table of contents listing all materials and specifying manufacturers and models of all fire protection equipment.
- Plans are monochrome, not in color.
- Plan set is a PDF file in vector format to allow for measurement.
- Plan sets page size is not larger than 36 x 48 inches and minimum 1/8" = 1'0" scale.
- Drawings must be drawn to an indicated scale or dimension on sheets of uniform size and is readable; 1/8" scale is the smallest scale accepted for system design sheets; plan sets must not exceed a page size of 36 x 48.
- Resubmissions must be a complete set of plans.
- Revisions must include all affected pages and indicate changes using revision clouds.
- Name and address of premises where work is being performed.
- Name and address of contractor performing the work.
- Must include applicable code and standards, examples:
 - a. NFPA 72 2019 (Fire Alarm)
 - b. NFPA 13 2019 (Fire Sprinkler)
 - c. NFPA 13R 2019 (Residential Fire Sprinkler such as apartments, condos, etc.)
 - d. NFPA 13D 2019 (Residential Fire Sprinkler for single family homes or some R4s)
- Include equipment specification sheets for all equipment to be installed / altered or affected by the scope of work. Indicate if phased project (phases much match architectural plan phases)
- A summary / table of contents of all equipment, devices, etc. which include the specific description, details and model number shall be included.
- Symbols for fire alarm devices or sprinkler heads are clearly identified in the legend.
- Location, type and quantity of fire alarm devices or sprinkler heads shall be clearly indicated.
- PWC Approved Site Plan indicating location of Sprinkler Riser Room with an exterior door.
- Provide breezeway underground fire sprinkler piping details when applicable.
- Provide details for a remote Fire Department Connection (FDC), such as the vault, location, proper drainage, etc., where applicable.

Upon acceptance, Plan Intake uploads the electronic submission and administers an FPP number. The plan is assigned to an “FMO Reviewer” for review and approval or rejection. Review of new plans is done within twenty business days of acceptance. Targeted plans are completed within ten days of acceptance. Revisions are reviewed within 10 and 5 days, respectively.

When plans are approved, the disposition is recorded in EnerGov (Permit Processing computer system), and the permits Office advises the applicant. When the plans are rejected, the FMO Reviewer will contact the contractor, discuss the deficiencies in detail, and provide guidance on the process necessary for resolution and issue a rejection letter.

Fire Protection Plan Review Walk-Thru Program

DUE TO THE IMPLEMENTATION OF ePLAN REVIEW, THE FMO WALK THRU PROGRAM IS CURRENTLY SUSPENDED.

The Fire Marshal's Office provides an additional plan review service to developers and contractors to expedite the plan review process of less complicated fire protection plans. The walk-thru process allows contractors to get approved plans and a permit in the same day. The walk-thru process is held every Thursday from 8:30 am to 3:30 pm at the Development Services Building: Permit Counter (window 18).

Types of fire protection plans qualifying for a walk-thru:

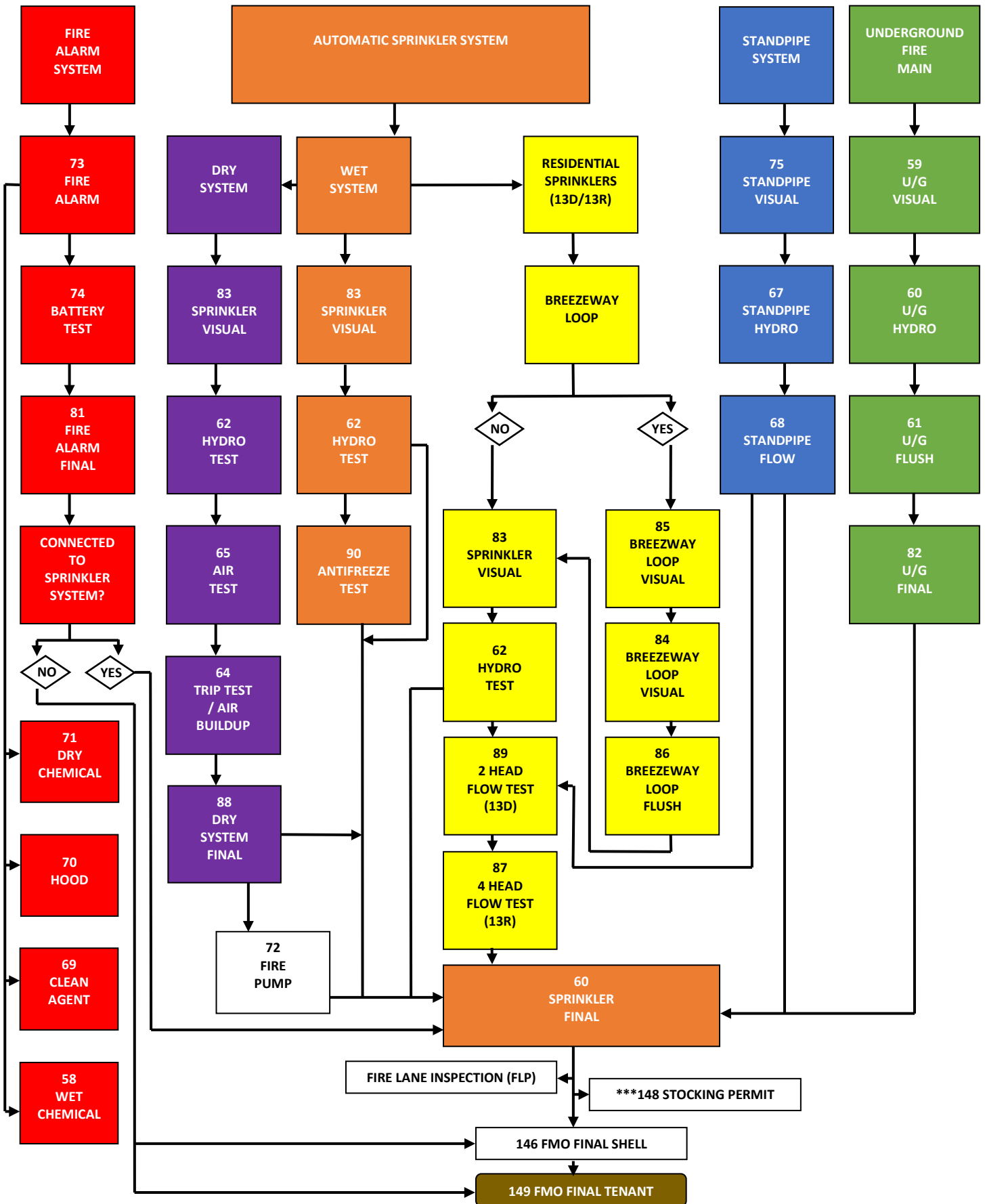
- Sprinkler modifications 40 heads or less; no hydraulic calculations.
- Fire alarm monitoring of a sprinkler system flow & tamper switch.
- Fire alarm plans involving 10 devices or less (note: the FACP counts as one device), fire alarm systems associated with an access-control device such as the use of magnetic locking devices.
- Underground fire lines.
- Range hood suppression systems.

Special Notes:

- Minor revisions must meet the above criteria.
- Original approved plans including manufacturer cut sheets are required for reference.
- Designer of record must be present during the plan review process.
- All submitted plans must meet the minimum submission requirements.

Note: **Walk-thru's are processed by appointment only.** All appointments are made on a "first come, first served" basis for the available 30-minute appointment slots. An FPP number must be obtained prior to scheduling the walk thru appointment by calling plan intake at 03-792-4040. To schedule a walk thru appointment with the FMO, or if you have additional questions, please call 703-792-6360 or email: FMOPlanReview@pwcgov.org.

Fire Protection System Inspections Flow Chart



Notes Concerning Inspection Flow:

For an 88 or 66 sprinkler Final inspection, the U/G fire main must have an approved 82 Final inspection (if there was a fire line involved). There must also be approval of all sprinkler components and the Fire Alarm 73, 74 and 81.

An 82 inspection must have approved 59, 60, and 61 inspections to get a Final. The flush may come from another permit in the case of a split permit for the street valve to 10' outside the building and 10' outside the building to the sprinkler flange (spool).

For 146 (Shell Final) and 149 (FMO Final) inspections ALL fire protection systems must have been approved and finalized. A 149 cannot be scheduled until the 146 Inspection for the shell (if applicable) has a status of provisional approval (PAP) or approved (APP).

*Hydro (62) only required if: 1) 5 heads or more, 2) 10 or more fittings, 3) 20 or more feet of pipe, or any combination of the three.

**A fire alarm battery test may or may not be required on an existing system depending upon the scope of work being done. If the fire alarm is connected to emergency generator power, a battery test is not required.

***For an optional 148 (stocking) inspection, the fire protection systems (sprinkler, standpipe, and fire alarm) must be Finalized. Building concealment inspections must be approved. Shell buildings cannot have a 148 inspection as stocking of a shell is not permitted. If stocking is not needed, the inspections proceed directly to the 149 inspection.

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 7:30 am and 4:00 pm.

The request a Fire Marshal's Office fire protection system or building inspection, **the permit holder** must either 1) use the e-Portal by going to www.pwcgov.org/dms and enter the required information, or 2) call the IVR inspection line at 866-457-5280 and follow the prompts. Requests for inspections for the following date will not be approved after 3:00 pm the day prior to the inspection date requested. If you have problems using these systems, call 703-792-6360 between the hours of 7:30 am and 4:30 pm for assistance. If you are trying to cancel a scheduled inspection between the hours of 4:30 pm the day before and 8:00 am the day of the scheduled day, you must call 703-792-6360 prior to 8:00 am of the scheduled date. Failure to do so will cause a cancellation fee to be applied.

FMO Fire Lane inspections and stocking inspections are not available through the e-Portal or IVR. The permit holder must call 703-792-6360, between the hours of 8:00 am and 4:30 pm. The permit holder requesting the inspection will need to provide the FLP number for fire lane inspections or the BLD (building permit) number for stocking and storage inspections. Requests for inspections for the following day cannot be scheduled after 3:00 pm the day prior to the inspection date requested.

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 fire protection plans approved by the Fire Marshal's Office at the time of inspection, if any work was done on a fire protection system.

Fire protection permits may require one or more of the following inspections, depending on the scope of work being done. The numbers in parenthesis indicate the inspection number used when requesting a fire protection inspection.

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

- **UFM Visual (59)** – 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 (60)** – A 200 PSI 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 (61)** – 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 are requested for all sprinkler system water supplies. (NFPA 13, 13R, and 13D) Where there is not a separate fire protection permit number the inspection request is called in on the sprinkler fire protection permit number.
- **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 in accordance with NFPA 24 (2019). Private Fire Service Mains and Their Appurtenances. The tests/inspections can be done on separate days or on the same day if 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 markings 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.

| WATER FLOW RATE FOR LINE FLUSHING | | |
|-----------------------------------|------------------------------|------------------|
| Pipe Size Inches | Flush Orifice Size Inches | Flow Rate GPM |
| 2 | 2 | 60 |
| 4 | 3 | 400 |
| 6 | 4 | 750 |
| 8 | 4 | 1,000 |
| 10 | 6 | 1,500 |
| 12 | 6 | 2,000 |

*See Section 300, Table 3-5 of the PWC DCSM (revised June 26, 2018)

2. Fire Alarm:

- **Fire alarm (73)** – 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. **A Fire Alarm Record of Completion must be provided prior to the beginning of the test.**
- **Battery test (74)** – A test/inspection of the ability of the fire alarm system to sound all visual and audible horns for fire (5) minutes after the system has been on battery power for twenty-four (24) hours.
- **Fire Alarm Final (81)** – A test/inspection of the entire fire alarm system installation to assure that the central station connection is online and in service. This inspection cannot be performed until the fire alarm and fire alarm battery test inspections have passed.

The above tests/inspections are done in accordance with NFPA 72 (2019), National Fire Alarm Code. The test/inspections can be done on separate dates or on two dates if they are done in consecutive order as shown above.

3. **Fire Pump test (72)** – 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 (2016), 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 breezeway loop flush (86)** – A flush of the breezeway loop sprinkler piping and appurtenances until the water flowing from the piping is clear.
- **Sprinkler breezeway loop visual (85)** – A visual examination of the breezeway loop sprinkler piping before it is concealed. All piping and other appurtenances must be readily visible for the representative of the Fire Marshal’s Office to inspect from ground/floor level.

- **Sprinkler breezeway loop hydro (84)** – A hydrostatic test of all components of the breezeway loop sprinkler piping and appurtenances. The test is done at 200 PSI or 50 pounds over static pressure, whichever is greater, for a two (2) hour period. All piping and appurtenances must be readily visible for the representative of the Fire Marshal’s Office to inspect from ground/floor level.
- **Sprinkler hydro test/inspection (62)** – A hydrostatic test of all components of the automatic fire sprinkler system, including hangers and other appurtenances. The test is done at 200 PSI 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 where testing is being conducted. NFPA 1D system shall be Hydrostatically tested at normal operational pressure.
- **Sprinkler visual (83)** – 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 Marshal’s 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.

Code Modification – Sprinklers in Garage area

We have determined that we need two visual inspections for the situation where there are pendant fire sprinklers in the residential garages. The first visual is the status quo where you see the piping, hangers, etc. The second visual would be limited to the batt insulation that is tented below the pipe to prevent the cold air in the garage from freezing the sprinkler pipe.

To get this accomplished, there is additional responsibility on our office. The benefit will be to prevent the piping in the garage from freezing, minimized code compliance issues in the future, and reduce fire department responses. To be effective the process will be as follows:

1. Code Modification is approved by the Building Department and attached to the approved fire sprinkler plans.
2. The following comment will be added to the FMO approval letter: “Code Modification BLD20XX-XXXXX requires an additional visual fire inspection to assure the insulation is installed as specified”.
3. Once the plan is approved, the FPE plan reviewer will add a comment in EnerGov, “An additional visual inspection for the insulation in the garage ceiling is required due to the Code Modification”.
4. ASC/ASAs will notify the contractor to confirm an additional visual inspection will be required.
5. Fire inspectors will perform the initial visual inspection. Even if the inspection is approved, the inspection will still receive a REJ disposition with an added comment i.e., “Visual for the garage is approved; okay to install insulation according to the Code Modification: 2nd visual will be required”.
6. Once the insulation is installed correctly, the visual will be approved.

There is no additional fee charged for the additional visual, but that visual inspection will count toward their grace visual inspection. Therefore, if there are additional visual inspections needed beyond the two inspections, a fee of \$266.75 would be charged to the contractor.

- **Sprinkler Alarm/flow (63)** – A test/inspection of the automatic sprinkler system to assure proper flow rate is available at the designed flow pressure.
- **Sprinkler trip (64)** – 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. After successful completion of the sprinkler trip test the sprinkler system is reset and a pressure build up test of the air compressor is conducted. The air compressor must build up system air to normal pressure within thirty (30) minutes.
- **Sprinkler Antifreeze (90)** – 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 (89)** – A flow of the equivalent of two (2) sprinkler heads on a NFPA 13D automatic sprinkler system to determine if enough water is available at the required design water pressure.
- **Sprinkler 4 head flow 13R (87)** – A flow of the equivalent of four (4) sprinkler heads on a 13R automatic sprinkler system to determine if enough water is available at the required design water pressure.
- **Sprinkler air (65)** – A test/inspection of the dry automatic sprinkler system utilizing 40 PSI air pressure for 24 hours.
- **Wet Sprinkler Final (66)** – 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 online and in service to gain approval. This inspection cannot be performed until all 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. Prior to any connection of sprinkler piping to an underground fire main flush of the underground fire main must be witnessed by the Fire Marshal’s Office. **A contractor’s Material and Test Certificate for Aboveground Piping must be provided at Final.**
- **Dry Sprinkler Final (88)** - 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 online and in service to gain approval. The inspection cannot be performed until all 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. Prior to any connection of sprinkler piping to an underground fire main flush of the underground fire main must be witnessed by the Fire Marshal’s Office. **A contractor’s Material and Test Certificate for Aboveground Piping must be provided at Final.**

5. **Standpipe:**

- **Standpipe hydro (67)** – A test/inspection of all standpipe system components. The hydrostatic test is done at 200 PSI 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 where testing is being conducted.
- **Standpipe visual (75)** – 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 (68)** – A test/inspection to assure that enough water flow is available ALL hose connections of a standpipe system to meet the design requirements dictated by NFPA14.
- **Standpipe Final (55)** – A test/inspection of the standpipe system including the testing of all flow switches, tamper switches, and other connections that are required to be monitored. All other standpipe inspections must be approved for the Final to be approved. **A contractor’s Material and Test Certificate for underground Piping must be provided at Final.**

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 markings 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 (70)** - 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 if applicable, alarm operation. 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. **Clean Agent (69)** – 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 if applicable, alarm operation. This requires that documentation of a successful “integrity” test, referred to as a door test, was conducted to assure that the area being protected is free from any significant air leakage that would be detrimental to the effectiveness of the clean agent being used.
8. **Wet Chemical (58)** – 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 if applicable, alarm operation. 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).

9. **FMO Final Inspection – Occupancy Evaluation (145)** – 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. These inspections are coordinated through the Building Code Enforcement Office as part of the Joint Occupancy Evaluation (JOE) process.
10. **FMO Final Inspection – Shell (146)** - An inspection to assure that a “shell” building, or space is complete and ready for tenant layout work to commence.

After Hours (overtime) Fire Inspections

Overtime inspection(s) are limited by the availability of staff. It is a voluntary program for the FMO inspectors. The hourly charge will be in accordance with the Building Development Fee Schedule with two (2) hour minimum weekdays and three (3) hour minimum weekends for this service per permit. A minimum of 1 hour travel time expense will be incurred when travel is not directly from the Fire Marshal’s Office.

Stocking permit inspection (148) - 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. The responsibility for Final approval and issuance of a stocking permit lies with the Building Official.

Minimum Requirements for Fire Marshal's Office approval for Stocking – 148

The following **minimum** requirements must be met 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 the **minimum** requirement.

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
- Sprinkler hydrostatic test and inspection
- 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 stocking/storage permit inspection request must be made via e-Portal or IVR system **after all the above** tests and/or inspections have been completed and approved.

FMO Final inspection – Tenant (149) – 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.

Minimum Requirements for a FMO Final – Tenant Inspection Approval – 149

The following requirements must be met 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 the minimum requirements. 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. 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
- 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, Building Department Special Inspections, and the Mechanical Inspections Office.
- Testing of stair pressurization in high-rise buildings. (This inspection must be coordinated with both the Fire Marshal's Office and the Mechanical Inspections Offices)
- Fire Lane designation, inspection, and approval
- Emergency lighting test (where required by the Building Inspections Department)
- Stocking inspection
- Partial approval or approval of all construction trade Final inspections on the shell FMO Final inspection - shell (if appropriate)
- Partial approval or approval of all construction trade Final inspections on the TLO
- 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/tenant inspection is requested:

- In use groups A, B, E, F, H, I, M, R-1, R-4, and S portable fire extinguishers, distributed and comply 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. (2021 USBC 1004.9)
- All threads on FDC and fire hydrants compatible with 2½-inch National Standard Thread, 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 Prince William County standards and approved by the Fire Marshal's Office. A copy of the approved site plans shall be electronically submitted to the Fire Marshal's Office for designation of fire lanes, where required by the Fire Marshal's Office (See Fire Lanes Information, p. 35).
- 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 – tenant inspection request is to be made through the e-Portal or the IVR system after **all the above requirements** have been met.

| Fire Protection Permit Plan Review (7/1/2023) | |
|-------------------------------------------------------------------|-------------------|
| | Review Fee |
| Sprinkler System (Limited Area) | \$297.69 |
| Sprinkler Express | \$541.00 |
| Sprinkler Master Review | \$230.40 |
| Sprinkler Light Hazard-Occupancy – Minimum Fee | \$541.00 |
| 1-100 sprinkler heads, fee per head | 10.34 |
| 101-300 sprinkler heads, fee per head | 7.78 |
| 301-500 sprinkler heads, fee per head | 5.18 |
| 501+ sprinkler heads, fee per head | 5.18 |
| Sprinkler Ordinary Hazard & Rack Storage – Minimum Fee | \$541.00 |
| 1-100 sprinkler heads, fee per head | 10.34 |
| 101-300 sprinkler heads, fee per head | 7.78 |
| 301-500 sprinkler heads, fee per head | 5.18 |
| 501+ sprinkler heads, fee per head | 5.18 |
| Sprinkler Extra Hazard – Minimum Fee | \$541.00 |
| 1-100 sprinkler heads, fee per head | 10.34 |
| 101-300 sprinkler heads, fee per head | 7.78 |
| 301-500 sprinkler heads, fee per head | 5.18 |
| 501+ sprinkler heads, fee per head | 5.18 |
| NFPA 13D Systems (per system) | \$230.40 |
| NFPA 13R Systems – Minimum Fee | \$541.00 |
| 1-100 sprinkler heads, fee per head | 10.34 |
| 101-300 sprinkler heads, fee per head | 7.78 |
| 301-500 sprinkler heads, fee per head | 5.18 |
| 501+ sprinkler heads, fee per head | 5.18 |
| Dry Pipe Systems (per dry pipe valve) | \$230.40 |
| Sprinkler with Standpipe | \$155.32 |
| Standpipe Systems Only – Base Fee plus | \$411.67 |
| For each additional riser after one | 118.19 |
| Fire Pumps (per pump) | \$470.37 |
| Underground Fire Line (per fire line) | \$463.38 |
| Fire Alarms (First 10 fire alarm devices) | \$308.03 |
| For each additional fire alarm device | 7.78 |
| Hood Systems | \$520.95 |
| Carbon Dioxide Extinguishing System (per system) | \$352.62 |
| Clean Agent Extinguishing System (per system) | \$230.40 |
| Dry Chemical System (per system) | \$230.40 |
| Wet Chemical System (per system) | \$230.40 |
| Fire Safety Evacuation Plan Review | \$86.83 |
| Resubmissions/Revisions (per submittal) | \$234.39 |
| Resubmissions/ Revisions (per submittal) – 13D System | \$105.89 |

| Individual Fire Protection (FPP) Inspection Fees - Effective July 1, 2023 | |
|----------------------------------------------------------------------------------|---------------------|
| 55- Underground Fire Main | \$266.75 |
| 58- Wet Chemical | \$266.75 |
| 59- Underground Fire Main Visual Inspection | \$266.75 |
| 60- Underground Fire Main Hydrostatic test | \$266.75 |
| 61- Underground Fire Main Flush | \$266.75 |
| 62- Sprinkler system hydrostatic test | \$266.75 |
| 63- Sprinkler system alarm/flow | \$266.75 |
| 64- Sprinkler system dry system trip test/air pressure build up test | \$266.75 |
| 65- Sprinkler system 24-hour Air test | \$266.75 |
| 66- Sprinkler Final | \$266.75 |
| 67- Standpipe hydrostatic test | \$266.75 |
| 68- Standpipe system flow test | \$266.75 |
| 69- Clean agent test | \$266.75 |
| 70- Hood system test | \$266.75 |
| 71- Dry Chemical system test | \$266.75 |
| 72- Fire pump test | \$266.75 |
| 73- Fire alarm test | \$266.75 |
| 74- Fire alarm battery test | No charge |
| 75- Standpipe visual | \$266.75 |
| 76- Flow test | \$266.75 |
| 77- Alternative Suppression Final | \$266.75 |
| 81- Fire alarm Final | \$266.75 |
| 82- Underground fire main Final (administrative check only) | No charge |
| 83- Sprinkler system visual | \$266.75 |
| 84- Sprinkler system breezeway loop hydrostatic test | \$266.75 |
| 85- Sprinkler system breezeway loop visual | \$266.75 |
| 86- Sprinkler system breezeway loop flush | \$266.75 |
| 87- Sprinkler system 4 head flow 13R | \$266.75 |
| *Re-inspection fee (Inspection conducted, deficiencies noted) | \$266.75 |
| 89- Sprinkler 2 head flow 13D | \$266.75 |
| 90- Sprinkler Antifreeze | \$266.75 |
| Fire Marshal's Office BLD-related Inspection Fees | |
| 145- FMO Final – Occupancy Evaluation | \$266.75 |
| 146- FMO Final – Shell | \$266.75 |
| 148- Furniture storage/stocking | No charge |
| 149- FMO Final – Tenant | \$266.75 |
| Rejection Fee (not ready for inspection) | \$157.08 |
| Cancellation Fee (if canc. Before 8:00 am) | \$42.37 |
| After Hours Inspection Fee per hour per permit (minimum 3 hours) | \$179.37 |
| Fire Marshal's Office Fire Lane Fees | |
| Plan review / Inspection | \$327.68 / \$266.75 |
| Fire Safety / Evacuation Plan Review | \$86.83 |

*When the re-inspection fee is applied to an inspection, it will not be able to be re-scheduled for 24 hours. A re-inspection fee of \$266.75 will be charged for all follow-up inspections beyond the initial inspection.

Inspection Package Fees

Fees are charged by the Fire Marshal'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.

Additional fees will be incurred when large fire protection systems are being inspected. As an example, a sprinkler system in a large building that has multiple zones would have an additional inspection fee of \$266.75 for each type of inspection per sprinkler zone. \$533.50 per set for the visual and hydro inspections associated with the additional zone(s)).

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.

****See Fire Protection Permit fee schedule****

| FMO FPP and FEP Inspection Package Fee Schedule 7/1/2023 | | | |
|-------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| FMO Fee Package | Permit Type | Inspections | Fee |
| 1 | Wet or dry system 4 heads or less | <ul style="list-style-type: none"> • Visual • Final | \$533.50 |
| 2 | Wet system 5 or more heads | <ul style="list-style-type: none"> • Visual • Hydro • Final | \$800.25 |
| 3 | Breezeway loop | <ul style="list-style-type: none"> • Visual • Hydro • Flush | \$800.25 |
| 4 | 4 Head flow test & 2 Head flow test | <ul style="list-style-type: none"> • Visual • Final | \$266.75 |
| 5 | Dry System | <ul style="list-style-type: none"> • Visual • Hydro • Air • Trip • Final | \$1333.75 |
| 6 | Hood system or Clean Agent | <ul style="list-style-type: none"> • Test | \$266.75 |
| 7 | 13D Sprinkler System | <ul style="list-style-type: none"> • Visual • Hydro • Underground Flush • 2-head Flow • Final | \$1067.00 |
| 8 | Fire Alarm | <ul style="list-style-type: none"> • System test • Battery test-no charge • Final | \$533.50 |
| 9 | Underground Fire Main | <ul style="list-style-type: none"> • Visual • Hydro • Flush | \$800.25 |
| 10 | Standpipe | <ul style="list-style-type: none"> • Visual • Hydro • Flow | \$800.25 |
| Rejection fee for fire protection permit inspections/per rejection with fee | | | \$157.08 |
| Cancellation fee for cancellation of fire protection permit inspections after 8 am on the scheduled date of inspection/cancellation | | | \$42.37 |
| Joint Occupancy Evaluation (JOE) (Collected at time of JOE application) | | | \$266.75 |
| Final inspections for shell and TLO (Collected at time of building permit issuance) | | | \$266.75 |
| Review of a fire lane plan and associated inspection (Collected at the time of Fire Lane permit issuance) | | | \$594.43 |

Site Plan Review

The Fire Marshal's Office reviews site and subdivision plans as part of the County land Development site plan review process. This review checks for a submission's compliance with the requirements of the Prince William County Design and Construction Manual (DCSM), Section 300, Fire Safety Systems. Section 300 contains provisions concerning life safety, fire department operations, the current Virginia Statewide Fire Prevention Code, and other appropriate references, codes, and standards.

Site and subdivision plans utilize the Development Services Land Development Division (LDD) process, where they assign a case number to the submission and a copy of the plan is forwarded to the Fire Marshal's Office and other review agencies for review and comment. After review, the Fire Marshal's Office comments are sent to the Engineer of Record (EOR) and the LDD project manager via "electronic" communications and are placed in the case record in EnerGov. This process allows the EOR early access to the Fire Marshal's Office review comments and provides them the ability to provide resolutions to the issues found during the review.

During the review process the Fire Marshal's Office will accept electronic revisions concerning review comments for review and comment to assist the applicant in gaining approval where deficiencies were found during the review.

The following are review areas that are commonly found deficient during reviews by the Fire Marshal's Office. This list is not all inclusive but provides guidance on where the most correct comments are provided to the designers.

SITE AND SUBDIVISION PLAN CHECK LIST

Cover Sheet

- **Address and fire flow information –**
 - The address of the facility and the available fire flow at 20 PSI residual pressure.
 - If the facility is in an area that does not have public water a DCSM technical waiver is required to be submitted providing the details alternative fire protection measures that will be provided to satisfy the fire flow requirement.
 - The fire flow available must be in addition to the domestic and other service requirements for facility.

Site Plan

- **Fire Department Access –**
 - All portions of the exterior wall(s) are within 150 feet of an access point and have unobstructed travel path. It is helpful to provide a sheet showing compliance with this requirement especially if equipment and similar yards are involved that have fences and gates.
 - The emergency fire vehicle access provided has minimum 20-foot-width, ability to support a 45-foot, three-tandem axle, 80,000-pound vehicle and has a 13-foot 6-inch clear vertical clearance.

- The emergency EMS vehicle access provided has a minimum of 10-foot-width, ability to support a 40,000-pound vehicle and has a 13-foot, 6-inch clear vertical clearance.
 - The entrance for single-family dwellings is a maximum distance of 75-feet from the curb line or emergency access point.
 - The entrance for multi-family dwellings is a maximum of 50 feet from the emergency access point. If unable to meet the requirements a DCSM technical waiver is required which must include a plan showing how access is attained, details of the access (door, changes in elevation via ramp, and any obstructions encountered) on an architectural-type plan.
 - Any fences and/or gates in the access path are shown.
- **Fire hydrant coverage –**
 - All portions of the exterior wall(s) are within 300 feet (as a fire hose would be laid not by arc) or a fire hydrant. This distance is increased to 500 feet for single family dwellings and is measured along the centerline of the street.
 - All fire hydrants used for fire protection of the structure are a minimum of 50 feet from the exterior wall.
- **Fire Department Connections –**
 - Where a sprinkler or standpipe system is present in the building the location of the Fire Department Connection for the system is shown.
 - The fire department location is shown on the front of the building.
 - A fire hydrant is provided within 100 feet of the Fire Department connection and has a line of sight clear of obstructions or obstacles.
 - The supply fire hydrant is a minimum of 50 feet from the structure.
- **Sprinkler Rooms –**
 - Where a sprinkler system is present in a building the location and extent of the required sprinkler room is shown.
 - Where a sprinkler system is present in a building the location of an exterior door leading directly into the sprinkler room is shown.
- **Underground Fire Lines –**
 - Underground Fire Lines for sprinkler systems are labeled and shown as to location and size.
 - The underground fire line does not extend more than 10 feet past the exterior wall into the building.
 - The underground fire line has a 36-inch clearance from the other conduits containing water or air of 40 degrees F or less. A fireline profile must be provided if the required clearance is not provided. The details of the insulation package, including material sheets for materials used and Rr value (minimum R value 9) calculations are provided when necessary.
- **Fire Lanes –**
 - A fire lane plan showing all signs, sign types, and curb markings for the facility is provided. If stenciling is to be used in lieu of a type B fire lane sign, the fire lance plan must indicate such.

- **Electric Security Gates –**
 - A connection to “Click to Enter” is required for ALL electric vehicular access gates. If a 24/7/365 staffed guard shack is shown on the plan, a DCSM technical waiver must be submitted to request exception from the “Click to Enter” requirement.

- **Underground Storm Water management facilities –**
 - An underground storm water management device, within 100 feet of a building or that is in a fire lane, has approved signage indicating its presence and load carrying capacity.

- **Waivers**
 - Waivers of requirements found in Section 300 are considered Technical Waivers of the DCSM and are submitted through the Land Development Division for review and approval. The Fire Marshals will accept draft waiver proposals to review and comment to assist the applicant in being successful in a waiver request. Final approval of Section 300 waivers requires Final approval by Land Development after recommendation of such by the Chief Fire Marshal or his/her designee.
 - Waiver requests must include all applicable information such as the DCSM section the waiver is being requested for, the detailed alternative measures provided to replace the deficient requirement, and other relevant details.

Fire Lane Plan Submission Requirements

Fire Lane plans are reviewed and approved electronically. The following are the minimum requirements for fire lane plan (FLP) submissions made to the Fire Marshal's Office.

1. Submission of a completed FLP submission form.
2. Submission of a minimum of one set of the Prince William County approved site plan that has an image of the approved perforation stamp.
3. Plans being submitted must be drawn to a scale of 1:50 or less.
4. The turning radius of all curves must be shown in feet.
5. The distance to swimming pools from the point of vehicle access must be shown in feet.
6. Any overhangs or other obstructions emergency apparatus will need to pass under shall be shown with the vertical distance from the road surface to the underside of the overhang or obstruction must be shown in feet.
7. The type and location of each fire lane sign to be installed must be shown on the submitted plan.
8. The location of access gates or other restrictive devices in or at the entrance to a fire lane must be shown.
9. The submittal must comply with the most recent Virginia Statewide Fire Prevention Code and Prince William County DCSM Section 300.
10. Fire Lane Plan submissions can be made through the Fire Marshal's Office if not submitted with the site plan previously to Planning/Zoning.

Requirements for Installation of Fire Lane Markings and Signs

The Prince William County Design and Construction Manual (DCSM) requires the installation of fire lanes as part of the fire safety system requirements. The 2021 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 2021 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, a Fire Lane Permit must be acquired. One copy of the site plans (to scale) along with the Application for Fire Lane form should be submitted through email PWCFMOFLP@pwcgov.org. 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 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 | Parking Condition |
| Less than 28 Feet | No parking permitted on either side of street |
| 28 to 36 feet | Parking permitted on one side as determined by the Fire Marshal's Office |
| 36 feet or greater | No fire lane will be established |




1. HYDRANTS

- a. Parking is prohibited within 15 feet 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-inch, "OR" – 1-inch, "STANDING" – 2-inch, "FIRE LANE" - 2.5-inch, 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, one at each end facing inwards, are required to establish a fire lane. When there are breaks in the curbing along the length of the fire lane, such as inlands in a parking lot, bump outs for traffic easing or embedded parking spaces, additional signs, with appropriate arrows, shall be added as needed to maintain the continuity of the fire lane. Additional signs, having appropriate arrows, shall also be installed as needed to maintain the spacing between the signs to 100' (30.48 m) or less.

SIGN TYPES AND DESIGN

| SIGN TYPE "A": | SIGN TYPE "B": | SIGN TYPE "C": | SIGN TYPE "D": |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| NO PARKING OR STANDING FIRELANE  | NO PARKING OR STANDING FIRELANE  | NO PARKING OR STANDING FIRELANE  | NO PARKING OR STANDING FIRELANE |
| 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. | Standard wording with two directional arrows. One sign mounted parallel to the line of curbing or pavement edge at end of painted area. | 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. | Standard wording with no arrows. Two signs mounted perpendicular to the line of curbing or pavement edge at end of painted area. |

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

3. CURB DESIGNATION

- a. When curbing is provided adjacent to the fire lane, it must be painted yellow within the limits of the fire lane.
- b. In lieu of "B" signs, curbing shall be painted yellow with "Fire Lane" stenciled in black on the curbing every 50 feet of the fire lane in 4-inch letters.

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' from fire hydrant to any structure. (PWC DCSM 303.07.C)
2. Maximum 100' from fire hydrant to the fire department connection and the fire department connection must be visible from the fire hydrant. (PWC DCSM 303.08.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 DCSM Sect. 303.07 (PWC DCSM Table 3-2).

| Use | Distance |
|--------------------------------------------------------|----------|
| F, H, S, U – Industrial building and storage buildings | 300 |
| E, I – School and institutional buildings | 300 |
| A, B, M – Offices, commercial, church | 300 |
| R1, R2, R3, R4 – Motels, apartments, multi-family | 300 |
| R5 – Single family dwellings, detached | 500 |

4. No obstructions 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.

****Note**** Other requirements for fire hydrants may be found in the Prince William County Design and Construction Manual.

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 feet require a turnaround at the end.
3. Emergency vehicle access to within 150 feet of all portions of the building.
4. Swimming pool access – to be within 50 feet of the edge of pool, 10 feet wide access lane (must be posted fire lane) with 8-foot-wide personnel gates.
5. Height restrictions blocking emergency access (low overhead like a canopy). A 13-foot, 6-inch clearance is required.
6. Emergency vehicle access roads must be capable of supporting 80,000 pounds and be all weather in nature.

7. Buildings more than 5 stories need front and rear access.
8. Must be maintained clear and accessible all year.
9. Must have a mountable curb at entrance.
10. 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.
11. Provide approximately 4-foot-high bollards with steel chain locked in between at curbside.
12. Entrances to access roads must be identified as a fire department access road at the road access point. Access lanes must be clearly delineated for the entire length and at the ends by bollards every 20 feet (10 feet on curves), or in another manner approved by the Fire Marshal.

Site Requirements for Buildings Under Construction

Chapter 33 of the VSFPC applies to buildings under construction. Below are **some** requirements:

1. Approved vehicle access for firefighting shall be provided to all construction or demolition sites. Vehicle access shall be provided to within 10 feet (3,048 mm) of temporary or permanent fire department connections. Vehicle access shall be provided by either temporary or permanent roads, capable of supporting 80,000 pounds 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. If the building is 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 feet** 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 flooring. The maximum travel distance from interior standpipe connections to the most remote area is 200 feet.

Electronic Access Gate

Access Gate (Click2Enter) – Gate permits (BLD) must be obtained through the Building Department:

The receiver box must be mounted in a manner that allows approaching Police vehicles and F&R apparatus to visually see the activated LED light.

- Unit should include the optional Heater Kit

There are 2 passwords that are used to protect programming information. Level 1 and 2.

Level 1 is typically used by the installer. A Level 2 password must be provided to allow for reprogramming (such as when the radios are re-banded). Level 2 password must be the same on all devices (ex: C2Epassword1).

- A master list of all C2E gates will be kept so that maintenance checks can be performed on them.
- The following settings must be verified:
 - Double pulse activation.
 - Non-override Latch back must be set at 15 minutes.
 - Range of Operation must be set for line of sight.

If there is a power failure, the gate must default to OPEN.

Upon completion, the gate must be inspected by the Fire Marshal's Office. Inspections are scheduled by requesting a **143 Electronic Gate Inspection on the BLD permit**.

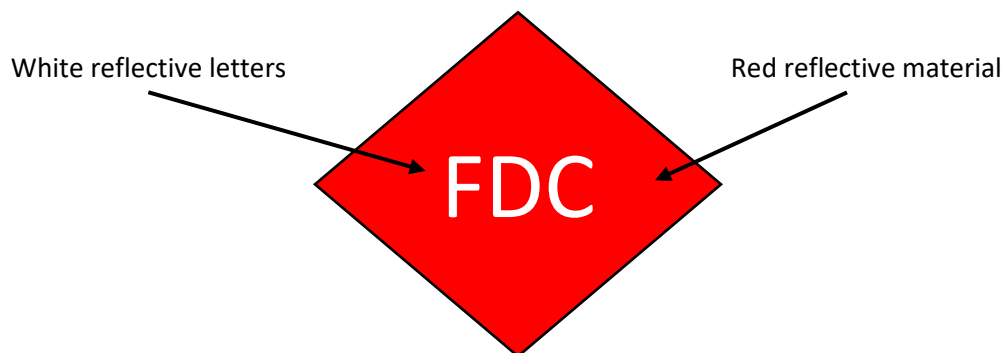
Signage

I. SITE

- A. Building Address – Arabic numerals at location legible from street or road fronting property, ½-inch stroke and 6-inch in height.
- B. Fire Lanes – See Fire Lanes Designation Section.
 - 1. Fire Apparatus Access Roads – marked by signs approved by fire official (2018 VSFPC 503.3).

II. BUILDING EXTERIOR

- A. Exterior Doors
 - 1. “Exit Door Do Not Block” – ¾-inch stroke, 4-inch height.
 - 2. “Not An Exit, This Door Blocked” – ¾-inch stroke, 6-inch height (2021 VSFPC 504.2).
 - 3. “Sprinkler Room Control Valves” – ½-inch stroke, 4-inch height.
- B. Fire Department Connection
 - 1. Collar – identified as “Automatic Sprinklers”, “Standpipes”, “Test Connection” – ¼-inch stroke, 1-inch height (VSFPC 912.5).
 - 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 Marshal’s Office, mounted on point, and meet the following requirements:
 - a. The letters “FDC” shall have a minimum ¾-inch stroke and be of a minimum of 4-inch 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-inch in height.
 - c. Arrows indicating the location of the FDC shall be of a minimum width of ½-inch stroke.
 - d. The sign shall be of a minimum of 18 inches on each side and of durable construction.



- C. Sprinkler Water flow Alarm
 - 1. Shall read “Sprinkler Fire Alarm – When Bell Rings Call 9-1-1 – ½-inch stroke, 1-inch high.
 - 2. Must be located near the device in a conspicuous position.

III. BUILDING INTERIOR

- A. Interior Doors That Are Blocked
 - 1. “Not An Exit” – ¾-inch stroke, 4-inch height.
- B. Cabinets containing firefighting equipment such as standpipes, fire hose, fire extinguishers or fire department valves, must not be blocked or obscured from view – ¼-inch stroke, 2-inch height in a color that contrasts with background color (2021 USBC and VSFPC 905.7.1).
- C. Manual Fire Alarm Boxes on fire alarm systems not monitored by a supervising station – sign installed adjacent to each manual fire alarm box that reads “WHEN ALARM SOUNDS CALL FIRE DEPARTMENT” – ¼-inch stroke, 1-inch height (2018 USBC and VSFPC 907.4.2.4).

Emergency Access Key Box Repositories

The Virginia Statewide Fire Prevention Code, Section 506, authorizes the Fire Official to require the installation of an approved emergency access building entrance system (key box repository box) for all buildings except for single-family dwellings. The policy in Prince William County is that the provision of key box repositories is **voluntary** on the part of the owner of a building, tenant space, or other similar secured (locked) area. Currently, key box repositories manufactured by the Knox Company (3200 series) are the only ones that are approved for use. Key box repositories manufactured by other companies will be considered, upon submission for approval, if they are compatible with the Knox company system.

- 1. Prince William County is now using the e-Approval system for Knox Boxes. Everything is done online at www.knoxbox.com.
- 2. The key box repository shall be installed at a height of no less than 42 inches or no more than 54 inches above the ground.
- 3. 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 703-792-6360.
- 4. The key box repository shall be installed according to the manufacturer’s recommendations in a location that is easily visible and accessible.
- 5. All access mechanisms in the key box repository shall be clearly labeled as to their purpose.
- 6. It shall be the responsibility of the key box repository holder to update all access mechanisms as necessary.
- 7. Only key boxes that are accessible using an approved key shall be permitted.
- 8. 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.
- 9. 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.
- 10. Boxes shall be installed prior to occupancy.
- 11. 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. This is important as Prince William County's key is different from the surrounding jurisdictions, such as the City of Manassas Park or City of Manassas.

12. When a key box repository is installed, the installer will need to contact the Fire Marshal's Office at 703-792-6360 to set up an appointment to have the key box locked, as it will be shipped in an "unlocked" status, and installation inspected (**142 inspection**).

Knox boxes to be installed in Prince William County can be purchased from the Knox Company via the internet. Failure to comply with this method of purchasing a key box may result in the incorrect key cylinder being furnished by the vendor. Literature on key box repositories may be obtained from the Fire Marshal's Office at 703-792-6360 or picked up at the Fire Marshal's Office located at 5 County Complex Court, Suite 160, Woodbridge, Virginia 22192.

Hydrostatic Testing of Automatic Sprinkler System Tenant Work Policy

The Prince William County 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) feet 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 of 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 markings 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 Policy for Non-High-Rise Buildings

1. Prior to installation of fire alarm systems, three sets of complete fire alarm system plans must be submitted for approval to the Prince William County 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 to help alleviate rejections that will result in retesting.
3. To set up fire alarm acceptance tests, please call the IVR Number 1-866-457-5280 or schedule through your e-portal account www.pwcva.go/ePortal.
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 unit 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 be "running" during duct smoke detector test to allow the inspector to witness "shut down" of unit when duct smoke detector activate. The duct smoke detector shall annunciate as a supervisory alarm.
 - All smoke removal systems shall be tested to ensure 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 on 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, 3rd floor hallway or flow alarm, loading dock. Identification such as “A1” or “Z3” is not acceptable.
- Any concealed detector must have a readily visible remote red LED light and descriptive label.
- Floor call buttons for elevators shall be tested while elevators are 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 the 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/ow 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 NFPA72 (2019).
- 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 Prince William County (NFPA 14-2019).

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 manufacturer on testing and pressure settings using 1 3/4-inch hose with a 100 PSI tip pressure.
 - c. Valves are tested on site by the installation 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 the 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 in Elevator Hoist Ways and Machine Rooms

To satisfy the requirement of ASME A17.1, 2019 Edition, 2017 NEC, USBC 2021, and NFPA72-2019, the following method of removing electrical power from elevator machinery prior to the activation of hoist way or machine room sprinklers are acceptable:

1. Install heat detectors with a lower temperature rating and higher sensitivity as compared to the sprinklers, 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 (NFPA 72, 2019).
2. Place ordinary or intermediate temperature rated, standard response sprinkler heads near the heat detectors at the top of the hoist way and/or in the machine room (NFPA 13-2019).

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 2018 Virginia Uniform Statewide Building Code.

Note: See NFPA 13-2019 for an exception which allows omission of head at top of hoist way (not machine room). Also, see NFPA 13-2019 for elevator pit sprinkler and exceptions to same.

The above assumes that smoke detectors per ASME A17.1 2019 and NFPA 72-2019 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 passageways clear and free of storage and obstructions.
- Elevator shaft enclosures free of trash and construction debris.
- Mechanical shaft enclosures completed and intact.
- Required exit lights and emergency lighting in place and operable.
- Required fireproofing 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 compliant with Sections C1 through C6 below.

A. Construction Materials Storage

1. Non-combustible storage (see table below) shall be unlimited; however, storage **shall not exceed** the structural load design of the floor.
2. 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 2021 Virginia Statewide Fire Prevention Code.
3. Storage, combustible or non-combustible, 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 2-feet below ceilings or the lowest member of the floor/ceiling or roof/ceiling assembly.
4. 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:

| Non-combustible Storage | Combustible Storage |
|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| 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 | Any item “non-combustible storage” where the quantity of combustible packaging or storage aids is deemed excessive by the building or fire official |
| Non-combustible insulation | |

B. Construction Materials Sprinkler Requirements

1. In fully sprinklered buildings, sprinkler protection shall be maintained at all times.
2. 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.
3. 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.
4. 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.

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

1. 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.).
2. **Approved** construction drawings are required on the job site for all inspection disciplines.
3. This includes FMO approved shop drawings for any sprinkler, fire alarm, or other fire protection systems.
4. 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.
5. The Prince William County Public Safety 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 703-792-6500.

6. 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 Prince William County Fire Marshal's Office for Fire Watch procedures.
7. 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 (see item 6 above). See Fire Watch requirements for more information.
8. See Sections A and B above for construction materials storage requirements.

The criteria set forth in this document should cover most 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 703-792-6360.

Placing Fire Protection Systems Out of Service

During any construction or remodeling operation, it is important that the fire protection system remains 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 Virginia Statewide 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 Prince William County Public Safety Communications Center **shall be notified**, prior to disabling any system, by calling 703-792-6500.

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.
- 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.

The Prince William County Public Safety Communications Center **shall be notified**, upon the fire protection system being placed back in service, by calling 703-792-6500.

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. 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 the 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 except for 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.

High Rise Central Fire Control System Requirements

Fire Control Rooms (Fire Command Centers) are required in all buildings having floors used for human occupancy which are greater than 75-feet above the lowest level of Fire Department vehicle access. All fire alarm and detection systems, fire and life safety system controls and system supervision must conform to the "High-Rise Buildings" section of the current Virginia Statewide Building Code (2021, USBC Sections 403 and 911) and to the referenced editions of applicable NFPA documents including but not limited to: 13, 14, 20, 37, 70, 72, 110.

I. Fire Control Room (Fire Command Center)

- A. Construction and Size - minimum 96-foot² and minimum 8-feet in any direction (may be increased to 200-foot² and 10-feet when determined by the FMO).

1. One (1) hr. rated enclosure.
2. Sized to allow minimum of 3-foot working clearance to front of panels (NEC 110).
3. Clearance at rear and top of panels per equipment manufacturer's recommendations.
4. Provided with adequate ventilation necessary for removal of heat generated by equipment.
5. Electrical, mechanical, or plumbing equipment other than those associated with the system shall not be in the Fire Control Room.
6. One (1) copy of building plans to be in Fire Control Room.
7. Must be sprinklered.
8. Provide smoke detector.
9. Layout must be approved and equipment in the Fire Control Room shall be located as specified by the Fire Marshal's Office. The following layout is provided as the "standard" for Prince William County:
 - Wall distance from access door will have the Fire Alarm Control panel (or similar equipment) directly in line with the access door. If so equipped, this panel will include the mechanical system status information.
 - To the left of the Fire Alarm Control panel (or similar equipment) will be the voice communication controls.
 - To the right of the Fire Alarm Control panel (or similar equipment) will be the elevator status panel.
 - A table or similar provision shall be provided for fire department use within the Fire Control Room.
10. Provide five (5) sets of master keys in room.

B. Location

1. Located at the main lobby entrance.
2. Preferably located on an outside wall.
3. Not located next to or adjacent to boiler rooms, transformer rooms, etc.

- II. Shop Drawings and Specifications** – A minimum of 3 sets of drawings and specifications shall be submitted for review and approval. All equipment shall be listed by a recognized testing authority for its intended use. The submittal shall include the following:
- A.** Quantity, manufacture, model number, of each device to be installed (Materials list).
 - B.** Engineering cut sheets and specifications for each type of device. Specifications on type of wire to be used (NEC 760).
 - C.** Wiring diagrams, annunciator panel detail, fan control panel detail, voice/paging panel detail.
 - D.** Scaled floor plans showing the location of each device including legend.
 - E.** Operational description of system, including overall program matrix.
 - F.** Any mechanical reference sheets (e.g., riser diagrams, fan schedules, etc.) pertaining to the system.
 - G.** A complete operational description, including volume calculations, for all smoke control and pressurization systems, including a proposed test protocol and testing measurement locations.
 - H.** Provide generator load breakdown/summary and battery calculations.

It is suggested that submittal of atrium or other smoke control design calculations and sequences be submitted prior to or simultaneously with building permit drawings to insure timely feedback to the designer.

III. Central Control Station: Alarm Detection, Communication and Status Indication

- A. Receive fire alarm indication and annunciation from:
 - 1. Manual fire alarm stations
 - 2. Heat detectors
 - 3. Smoke detectors (by location and zone: elevator/lobby detectors and atrium detectors to be on individual zones: see NFPA 72-2019, 21.3 ASME A17.1 2019).
 - 4. Sprinkler flow switch (atrium sprinkler to be on separate zone).

- B. Receive or transmit communications from:
 - 1. Fireman's 2-way telephone (dedicated phones, NOT jacks).
 - 2. Public telephone – in Fire Control Room.
 - 3. Voice alarm and public address systems.

- C. Receive status indication from:
 - 1. Fire pump (run or fault).
 - 2. Emergency power system (run or fault).
 - 3. Elevators (recalled or not) (status and location).
 - 4. Stairway pressurization system (on, off).
 - 5. Smoke control systems (on, off).
 - 6. Air handling systems (on, off).
 - 7. Stairway door(s) unlock (open=green, locked=red).
 - 8. The above shall be provided with a status indicator light as follows: ON (green); OFF (red); Elevator Emergency Recall (yellow).

- D. Receive and annunciate supervisory and/or trouble indications:
 - 1. Tamper switches on sprinkler, fire pump and standpipe water control valves (supervisory).
 - 2. Duct detectors.
 - 3. Electrical circuits and wiring.
 - 4. A, B, C above except public telephone
 - 5. Voice alarm system and all components.
 - 6. Standpipe flow switch (trouble light).
 - 7. Fire pump flow switch (trouble light).
 - 8. Generator (trouble light).
 - 9. Hi/Lo air pressure for dry pipe systems (supervisory signal).

- E. Operational controls shall be provided for and located in the Fire Control Room for the following:
 - 1. Voice alarm and Public Address System.
 - 2. Fireman's 2-way communications system.
 - 3. Fire pump (ON, auto only).
 - 4. Emergency generator (ON, auto only).
 - 5. Stairwell pressurization system (separate controls for each stairwell required) (H-O-A).
 - 6. Smoke control systems (H-O-A) (separate controls required for each system, on a per floor basis).
 - 7. Off normal conditions on H.O.A.'s shall sound a trouble buzzer.
 - 8. Air handling systems (separate controls required for each system, on a per floor basis (H-O-A)).
 - 9. Elevators.

IV. Operational Requirements

- A. Receipt of any alarm signal shall:
1. Initiate a signal to an approved Central Station or to a system conforming to NFPA 72 (2019).
 2. Activate the voice alarm system and the visual fire alarm indicators on the floor level where the alarm was initiated, the floor directly above and below, and the elevator car and stairwell speakers.
 3. Activate the stairwell pressurization system.
 4. Activate mechanical smoke control (if provided) on the fire floor, except if signal originates from a manual pull station. (NOTE: Per floor smoke control is often not found today; AHU controls are still necessary).
 5. If the signal originates from an elevator machine room or elevator lobby smoke detector, activate the elevator recall system. If the primary floor level of return is the floor of alarm origin, the elevators shall be automatically directed to the secondary floor level of return.
- B. Design and Installation
1. Voice Alarm and Public Address System
 - a. The alarm and communication system shall be designed and installed so damage to any terminal unit or speaker will not render more than one zone of the system inoperative.
 - b. The system shall be continuously electrically supervised against component failure of the audio path including amplifiers, speaker wiring, switches, and electrical contacts and shall detect opens, shorts and grounds which might impair the function of the system. Both a visual and audible trouble signal shall operate at a location as indicated in Section VI A-1 above.
 - c. All wiring shall be installed in metallic tubing or approved equivalent. The installation shall be in a manner which will afford the maximum protection against the effects of fire and other which will facilitate repair or replacement.
 - d. The system shall be installed so trouble can be readily detected by floor and device.
 - e. There shall be a maintained contact push button and visual indicator for each floor level or zone. An "all call" position is also required. Operation shall be by selective basis, i.e., one zone, any combination of zones, or by all zones. One set of maintained push buttons for the fire alarm system and one set for the public address system is required.
 - f. Zones shall be limited to a maximum of 22,500 square feet. In no instance shall a zone encompass more than one floor level. Floors shall alarm on a per floor basis and alarms shall annunciate by floor, zone, and device.
 - g. Speakers shall be installed in the following locations: elevators, elevator lobbies, corridors, exit stairwells at every 3rd level, rooms or tenant spaces exceeding 1,000 square feet, dwelling units in apartments, and hotel guest rooms or suites.
 - h. Speakers shall be listed by a recognized testing authority for fire alarm use. Speakers shall provide the sound levels specified in NFPA 72 (2019) at all locations in the structure.
 - i. Wall mounted speakers shall be installed so sound reproduction is in one direction only. In no instance shall corridor speakers be installed so sound reproduction is directed towards the opposite wall.
 - j. Speaker spacing shall be in accordance with the recommendation of the manufacturer, the listing authority, and above all, to provide the required sound reproduction listed under item 'h'.
 - k. The pre-taped message shall be: "There is a fire emergency in the building. You are to

leave the building by the nearest exit or exit stair. Do not use the elevators.” Visual indication that the message is being delivered to the required zones shall be installed at the control panel.

- l. Failure of the pre-taped message for any reason shall cause the fire alarm signal to sound continuously in the required zones until the system has been restored to normal or is silenced at the control panel.
 - m. The alarm signal shall be the slow whoop signal. The alarm signal shall sound for a maximum of 15 seconds followed by the pre-taped message. Both shall sound alternately in sequence until silenced at the control panel or when the fire alarm panel is restored to normal. There shall be no more than a 5 second pause between the alarm signal and the pre-taped message for each revolution.
 - n. Upon activation of any manual alarm or automatic fire detection or suppression device the fire alarm system shall operate on the floor level of origin, the floor level directly above and below, in all elevators and in the stairwells. Atriums shall be alarmed as one space, including all levels open to the atrium.
 - o. The system shall be designed so the fire alarm signal and pre-taped message may be transmitted to any floor while voice messages are being transmitted to other floors. If the voice instructions are required to be transmitted to any floor, the fire alarm signal and pre-taped message shall automatically restart or continue in the required sequence after the voice transmission is completed.
 - p. The microphone for the transmission of voice messages shall be hand-held type with a 5-foot cable. The cable shall be permanently connected at both ends with the microphone hanger mounted on the front of the control panel.
 - q. Visual indicators (flashing lights) with the word “FIRE” shall be installed above each manual fire alarm station, in elevator lobbies, and exit corridors. Letters shall be a minimum of 1/2-inch block letters on a contrasting background.
 - r. Alarm tone generators, preamplifiers, power amplifiers and power supplies shall be continuously supervised. Backup units shall automatically provide the required signaling in the event of component failure.
2. Fire Department Communication System
- a. Fixed telephone (NOT jacks) shall be located at the following locations: each elevator car, elevator lobbies, and the entry inside the stair enclosure at each floor level (also Fire Pump Room and Elevator Machine Room).
 - b. Telephone shall be of the press-to-talk type and located in a locked telephone cabinet with breakaway safety glass or Plexiglas panel. Cabinets may be wall mounted or recessed. Cable shall be capable of withstanding elevated temperatures.
 - c. Each cabinet shall be provided with an engraved or permanently attached sign reading, “FIREMAN’S TELEPHONE – FIREMAN’S USE ONLY”. Letters shall be a minimum of 2-inch block letters on a contrasting background.
 - d. The phone at the Fire Control Room shall be mounted on the front of the control panel without any enclosure.
 - e. Removal of any telephone from its cradle will activate an audible and visual indicator shall remain lit until the telephone is returned to the cradle in a normal position. The fireman’s telephone shall be annunciated by floor level and zone (See item “f” under Voice Alarm and Public Address Systems).
 - f. The control unit and all wiring for the system shall be continuously supervised for power failure, open, shorted, or grounded conditions which would affect the intended

- operation or performance. Detection of any fault in the system shall activate an audible and visual trouble signal.
- g. The system shall be designed to provide power for the simultaneous use of 4 telephones while maintaining an audible level of communication.
 - h. There shall be provided a minimum of 25 keys to the telephone cabinets which shall be in the Fire Control Room. Locks shall be uniform and require the use of one key to unlock any telephone cabinet.
3. Fire Detection and Alarm System Annunciator Panels – Sprinkler Valve and Water Flow Detector Panels.
- a. Panels may be the graphic annunciator type or labeled device type with adjacent fixed building diagram.
 - b. Annunciator panel or individual device panels shall clearly indicate the type of initiating device, the floor level of alarm, and the zone (See item “f” under Voice Alarm and Public Address Systems).
 - c. Stairwells shall be clearly shown and labeled on graphic or building diagram. “You are here” shall be shown and labeled on graphic or diagram. If stairs discharge at other than entrance level, so indicate.
 - d. All manual or automatic fire detection or suppression devices shall be annunciated including the following: fire alarm stations, smoke detectors, heat detectors, elevator lobby smoke detectors, duct smoke detectors, atrium smoke detectors, sprinkler flow switches, standpipe flow switches (1 required at the base of each standpipe riser), fire pump flow switch, and tamper switches.
 - e. Activation of any of the above listed devices, except for the standpipe flow switches, fire pump low switch, and tamper switches, shall cause the activation of the stairwell pressurization system and the fire alarm signal and pre-tape message to the required zones.
 - f. Activation of the standpipe flow switches, fire pump flow switch, or tamper switches shall initiate an audible and visual trouble signal at the Fire Control Panel and to a central station or continuously manned station.
 - g. All wiring and power supply shall be continuously supervised. Detection of any fault shall initiate a visual and audible trouble signal at the control panel and to a location as indicated in Section III A-1.
 - h. The system shall be designed and installed so trouble conditions may be readily detected by floor level and/or zone. Visual trouble indicators at the control panel shall indicate type of device.
4. Status Indicator for Elevators
- a. Status indicators shall be provided for each elevator car. A green light for normal operations, red light for power off, and a yellow light for emergency recall shall be provided.
 - b. Activation of any elevator lobby smoke detector shall initiate elevator recall (Machine Room Detector included).
 - c. The elevator emergency recall system shall be programmed to return all elevators to the main lobby floor level or return. There shall be a secondary floor level of return in the event the primary floor is in alarm. The secondary floor shall be as directed by the Fire Marshal.
 - d. The elevator emergency controls are to be located at the main lobby. This shall be a

three-position switch – normal operation – manual override – emergency recall. It is recommended that an additional control be in the Fire Control Room which shall have a permanently attached key.

5. Status Indicators and Controls for the Fire Pump, Emergency Generator, Air Handling Systems, Smoke Removal Systems, Stairwell Pressurization Systems.
 - a. Status indicators, green light – on, red light – off, and operational controls shall be provided for each of the above in the Fire Control Room.
 - b. Where there is more than one system, i.e., air handling systems, smoke removal systems or stairwell pressurization systems, status indicators and controls shall be provided for each separately, on a per floor basis (H-O-A's) or per stair basis.
 - c. Labeling shall clearly show any system integrated with smoke control.
6. Stairway Door Unlocking Systems
 - a. Controls shall be provided to unlock all stairwell doors simultaneously from the Fire Control Room (stairwell doors shall automatically unlock upon a Fire Alarm, no door may be locked in the direction of egress travel except under provisions of USBC).
 - b. Telephones shall be provided inside the stairwell at a minimum of every 5th floor. They shall provide direct communication to the Fire Control Room, and to an approved emergency service.
 - c. Telephone communication wiring and power supplies shall be continuously supervised for open, short, or ground conditions. Detection of any trouble fault shall initiate a visual and audible trouble signal at the Control Panel and at the central station.
7. Public Telephone
 - a. A public telephone shall be provided inside the Fire Control Room. The telephone shall not be coin operated. It is suggested that the telephone be an extension of the building owner or management telephone rather than a separate telephone number.

V. Emergency Power Requirements

A. Standby Power

The following systems or equipment shall be connected to the standby power system:

- All fire alarm equipment.
- All stairwell pressurization systems.
- Elevator designated for fireman's use.
- Emergency lighting and exit lights.
- Fire pump.

Note: Stairwell pressurization systems do require standby power. Likewise, atrium and floor opening smoke control do require standby power.

B. Emergency Systems

Egress lighting, exit signs, elevator car lighting, and door unlocking are emergency systems and shall be supplied with backup power within 10 seconds of primary power failure.

C. Load Acquisition for Standby Power

The following systems shall be supplied with standby power within 60 seconds of loss of primary power: fire alarm and voice communication systems, fire pump, fireman's elevator, stairwell pressurization.

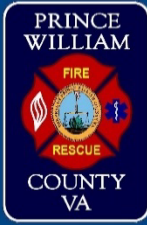
Note: Neither standby nor emergency power for a high-rise building may be provided by connecting ahead of the main disconnects. Options 700-12(e)/701-11(e) of NEC are not permitted for high-rise buildings.

VI. Test and Inspection Requirements

- A. No inspection or tests shall be made without an approved stamped plan on the job site.

VII. Test and Inspection Requirements

- A. No inspection or tests shall be made without an approved stamped plan on the job site.
- B. Tests and inspection shall be made by appointment only.
- C. Each component shall be tested.
- D. Spot checks of the system shall be made while operating on the emergency power system.
- E. A representative of the equipment supplier shall be present during all tests and inspections of the system.
- F. A sound pressure level meter shall be provided by the contractor for use in testing the system.
- G. The system **must** be pre-tested by the contractor to assure proper operation prior to requesting inspection by the Fire Marshal.
- H. Tests and inspections of the system should commence no later than 30 days prior to anticipated or desired occupancy. Experience indicates the time required to complete inspections and tests takes a staff or four (4) approximately one (1) week.
- I. The supplier shall furnish complete operating instructions and personnel necessary to instruct and train fire department personnel in the operation of the system.
- J. Areas with smoke detectors shall be free of dirt, dust, and sanding residue.



Fire Alarm Express Permit



Fire Alarm Express Permit Requirements

- Must obtain a fire protection permit.
- Scope of work shall be 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.
- Fire alarm installation is still required to comply with **NFPA 72**; equipment listed for fire protection use is required.
- 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 cutsheets**
 - ✓ **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**

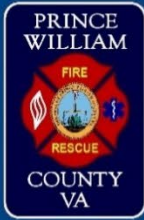
Note: The Fire Alarm Express Permit does not apply to existing fire alarm systems that need to modify the fire alarm panel or any similar alterations. This option will be allowed for all occupancies that only need a fire alarm sprinkler monitoring system.

For more information please visit
our website below or contact us at

<http://www.pwcgov.org/FMOPlanReview>

Fire Marshal's Office

Prince William County
Department of Fire & Rescue
5 County Complex Court
Prince William, VA 22192
703-792-6360



Sprinkler Express Permits



Are you looking for a speedy sprinkler permit? Here's what you can do!



- Prince William County Fire Marshal's Office offers an option to obtain permits for mercantile and business use groups with construction modifications to ten sprinkler heads or less.



What is in it for me?

- Fire Sprinkler plans are not required to be submitted for review, but need to be on job-site for inspection.
- The process is intended to speed the permit process for contractors who are doing relatively minor sprinkler changes.



How do I Qualify?

- Must obtain a fire protection permit
- Sprinkler plans must show scope of work during inspection.
 - ✓ *Scope of work must be clearly defined on the plans and permit.*
 - ✓ *Explanations for all sprinkler modifications must be included.*
- May add or relocate a combined total of ten(10) heads or less
 - ✓ *Sprinkler heads must be the same type, k-factor, temperature, style, etc.*
- Sprinkler installation must comply with **NFPA 13**.
- Sprinkler head spacing and pipe must be consistent with existing design.
- No modifications to the sprinkler cross-mains or risers are allowed.
- New hangers must comply with the spacing requirement in **NFPA 13**.
- Customers must complete fire inspections.

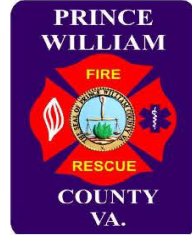
For more information please visit
our website below or contact us at

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Fire Marshal's Office

Prince William County
Department of Fire & Rescue
5 County Complex Court
Prince William, VA 22192



Master Plans On File (POF) Process

Development Community:

The FMO has started a Master Plans on File (POF) process for FPPs for single family home models with NFPA 13D systems. This process allows the fire sprinkler systems for each house model to be approved and placed in the master file to be used repeatedly without submitting the same plan each time. This is how it works: for the Master POF, the sprinkler contractor essentially designs the fire sprinkler system inside the house and stops the hydraulic calculations at the base of the riser for the incoming water supply. When the builder determines the house model and site they are going to build the house, the sprinkler contractor will use the approved Master POF and only submit a Site Review Sheet (SRS) to prove the water supply on the site is adequate to supply the fire sprinkler system. In order to do that, the sprinkler contractor applies for a FPP for the address and fills out a SRS that our office created for the POF process. Our FMO plan reviewers review the SRS and when approved, the contractor would schedule the sprinkler inspections.

This new process will save the sprinkler contractor's significant time for plan submittals which will in turn save the FMO plan review time. We anticipate the normal review time of 30 days will be decreased to 7 days. Without a POF process, it is anticipated that with projects like Potomac Shores who anticipate building 380 houses per year, the plan review times would eventually increase due to the pure volume of plans and inevitably not allow us to meet our 30 day plan review goal. The increased plan review time would create a negative effect on the construction industry as a whole.

The current fire sprinkler contractor designers who have submitted POF plans are seeing the benefits of the new process. The home builders typically need the sprinkler contractor to be installing the fire sprinkler system approximately three weeks after they start building the house. The POF process will allow the sprinkler contractor to get their fire protection permits to start work within that timeline. This new process is a win-win situation for the builders, contractors, homeowners and the County. The residual plan review time saved will also benefit all other contractors, owners, customers, etc. related to construction projects in the County.

For more information please visit our website link here: <http://www.pwcgov.org/FMOPlanReview> or contact the FMO at 703-792-6360