FIRE PROTECTION SYSTEMS (FPS) PERMIT APPLICATION PROCESS AND REQUIREMENTS

INFORMATION REQUIRED ON ALL FPS PERMIT APPLICATIONS

SUBMITTAL REQUIREMENTS

1. Complete a Fire Protection Systems permit application. Fire Protection Systems permit applications are available online through APEX or using the Code Administration Permit Center kiosks located at 4850 Mark Center Dr.

2. The submittal package shall include system plans or shop drawings. Supporting documentation should include manufacturers' specifications for all equipment, parts, materials, hydraulic calculations, and procedural manuals.

3. All plans shall be in PDF format, fully dimensioned with a minimum scale of 1/8 inch = 1 foot.

4. All drawings shall be printed without handwritten changes.

INFORMATION REQUIRED ON A PERMIT REVISION APPLICATION

1. Submit a revision application with the appropriate information.

REVISED SUBMITTAL REQUIREMENTS

A revisions to an approved Fire Protection System permit require the following:

1. A **REVISION application** (available online through APEX) and the original set of plans.

2. All revised drawings, calculations, and manufacturer cut sheets, should be marked as "Revision" and dated. The original sets of drawings should be marked “For Reference” or Voided.

BASIC INFORMATION REQUIRED ON ALL DRAWINGS

1. Information and details for all submitted drawings shall be provided in accordance with the requirements from adopted model codes and referenced standards.

FIRE ALARM AND DETECTION SYSTEM SUBMITTALS

1. Alarm notification device circuit point-to-point wiring shall be shown on all floor plans.

2. 135ºF rate-of-rise heat detectors shall be installed to initiate elevator shunt trip and shall be coordinated with the location of sprinklers per NFPA 72.

3. Where a fire communication system is required, listed fire phones and 2-hr fire-rated cable shall be installed.

4. Where proposed work consists of the addition of notification devices to an existing fire alarm system, submit manufacturer specification sheets for the existing NAC power expander panel along with required voltage drop calculations.

FIRE ALARM SHOP DRAWINGS

Per VCC 907.1 the drawings submitted for alarm systems shall include all of the following:

1. Floor plan that indicate the use of all rooms
2. Location of all alarm initiating devices
3. Location of alarm notification appliances, including candela rating for visible notification appliances
4. Location of fire alarm control unit, transponders and notification power supplies
5. Annunciators
6. Power connections
7. Battery calculations
8. Conductor type and sizes
9. Voltage drop calculations
10. Manufacturers, data sheets indicating model numbers and listing information for equipment, devices and materials
11. Details of ceiling height and construction
12. Riser diagrams showing the interface of fire safety control functions
13. Classification of the supervisory station

NFPA 13, 13R & 13D FIRE SPRINKLER SYSTEM SUBMITTALS

1. Submit one copy of C**ity approved Site plan** for all new construction.

2. Submitted plans shall include all applicable information detailed in NFPA 13 Sec.22.1.

3. All plans shall be fully dimensioned to show the distance from sprinklers to walls, the distance between sprinklers on branch lines and the distance between branch lines. Pipe length center-to-center dimensions or cutting lengths of pipe may be provided but are not acceptable alternatives to full dimensioning.

4. When installing an underground fire service or underground piping to a freestanding fire department connection, where permitted by the city-approved site plan, the sprinkler contractor shall submit complete plans and installation details for the piping, fittings, and configuration. The design shall comply with NFPA 13 & NFPA 24.

5. For additions or modifications of an existing sprinkler system, please see applicable section of this guide.

6. Show the location and size of fire department connections and indicate the location of FDC check valve and automatic drain. FDC inlets shall be as follows:

System Demand (gpm)	**Inlet Size and Type**
Up to and including 250	Single 2-1/2” NST
Greater than 250 up to and including 1,000	Single 4” Storz
Greater than 1,000	Two single 4” Storz

7. When the standpipe demand for a building exceeds 500gpm, calculations shall be provided to demonstrate FDC pipe sizing will be adequate to deliver the required flow supplied by a city pumper truck using the following values:

250 psi @ zero gpm
249 psi @ 625 gpm
199 psi @ 937.5 gpm
150 psi @ 1250 gpm

8. Multiple fire department connections on the same building (high-rise) shall be interconnected.

9. Indicate the location of all alarm and supervisory devices.

NFPA 14 STANDPIPE SYSTEMS

1. Hose valves shall be located at the floor level landing, not the intermediate floor level landing between floors.

2. Hose valves outside stairs shall not be considered a substitute for hose valves required inside stairs.

3. Pressure-reducing, restricting or link-type fire hose valves shall be installed to control pressures at the fire hose valve if the water pressure value exceeds 175 psi. A sign shall be posted at each fire hose valve where pressure is known to exceed 150 psi. The sign shall be composed of white letters not less than 1 inch tall on a contrasting background.

4. When pressure-reducing or restricting hose valves are installed, the water pressure and flow rate shall be noted on the riser diagram plan at the valve location on each floor.

NFPA 20 FIRE PUMP INSTALLATIONS

1. Provide details and sections to illustrate clearly the fire pump suction/discharge/bypass piping and valve arrangement.

2. Show test header piping and valve arrangement, including manifold size, type and configuration.

3. Show main relief valve piping and valve arrangement for diesel pumps and when required for electric motor-driven pumps. Relief valve discharge shall not be piped to re-circulate.

5. Show fire, jockey pump controller, and associated sensing lines.

6. Provide a plan view of the fire pump room showing clearances, fire rating of walls assembly and door, location of fire pump and its controller.

SPRINKLER PROTECTION OF HIGH PILED AND RACK STORAGE OF MATERIALS

1. Indicate on the plans storage height, shelve arrangement, and aisle widths.

2. Specify commodity classification, shelve type and hose valves location.

3. Provide information about the automatic sprinkler system (type and configuration).

4. Multiple-level storage with open grated flooring and walkways shall be designed for the entire storage height.

5. High Piled and Rack Storage system remote areas should be accompanied by a narrative listing design analysis referencing figures, curves and area/density modifications where appropriate.

6. Provide material data sheet and manufacturers specifications as necessary.

FIRE SPRINKLER SYSTEMS MODIFICATIONS

1. Provide a floorplan showing the limits of work area in the scope of the permit and the location of newly installed/relocated sprinkler heads.

2. Provide original sprinkler system **design criteria** by indicating on plans the following information:
a. Occupancy hazard group
b. Sprinkler system water density
c. Sprinklers type and their temperature rating
d. Maximum calculated area per sprinkler
e. Location of structural members and other obstructions
f. Specify ceiling construction and ceiling height
g. Full height vertical section
h. Show the number of sprinklers on each pipe size or indicate calculated pipe schedule

3.Clarify the location of design areas used for original sprinkler system

4.Hydraulic calculations shall be submitted for changes made to a sprinkler system components located inside the system design area or for modification of a preaction, dry pipe, or limited area sprinkler system.

Also, when additional sprinkler piping is added to an existing system, the existing piping does not have to be increased in size to compensate for the additional sprinklers, provided the new work is hydraulically calculated, in accordance with NFPA 13 Sec. 22.4.1.

5. All new relocates shall be piped from existing original branch line tee outlets or weld-o-lets. Compound (new relocate piped from existing relocate piping) relocates are not permitted.

NFPA 24 FIRE HYDRANTS & UNDERGROUND FIRE SERVICE MAINS

1. For new developments, provide two copies of the **Transportation and Environmental Services approved fire service site plan** and highlight fire service lines, waterlines, hydrants, and control valve locations.

2. For new hydrants or waterlines indicate pipe sizes, pipe material, depth of cover, locations of hydrant and valve.

3. In the case of multiple fire service mains for townhouse projects, indicate the address of each townhouse inside the footprint of each townhouse on the plan.

4. Clearly state the scope of work on the plan. For example, "Install 2" fire service from the City main to curb".

NFPA 17, 17A & 2001 SUPPRESSION SYSTEMS

1. Indication that the system operation signaling device will be connected to an approved fire alarm system (existing or new) or will operate an approved local alarm provided by the contractor.

2. Provide a sequence of operations including alarm initiation and the shutdown of fuel, power, and fans.

3. Plan shall be suitably dimensioned showing appliances, hoods, duct dimensions, pipe sizes, pipe lengths, piping arrangement, location of detection devices, location of operating or actuation devices, nozzle type, hazard, proximity requirement, height, flow points, chemical cylinders, manual release, exit and local alarm device, and graphic location of the hood (particularly back-to-back hoods).

4. Provide manufacturer pipe size schedule per nozzle flow number load and manufacturer schedule for chemical cylinder capacity versus total system flow.

ACCESS-CONTROLLED EGRESS

1. Provide a narrative indicating the specific section of the Building Code that proposed locking will comply with. The narrative must also describe the sequence of operation of the system and the methodology of compliance with the building code.

2. Provide a floor plan showing the location of all access-controlled doors and controlling devices to be installed.

3. Provide a symbol legend on each drawing assigning a unique symbol to each access-control device. These symbols are to be used to show the equipment complement at each controlled location (see item #2).

4. Provide a directional arrow at each door to be controlled showing the direction of egress.

5. Manufacturer specifications for devices to be installed.

HYDRAULIC CALCULATIONS

1. Where hydraulic calculations are required, submit two physical copies of the VAWC water flow test report. The water flow test report data shall not be over one year old. The recommended pressure safety margin is 10% of residual pressure or 10psi. Hydrant flow test results may be obtained from:

Virginia-American Water Company
2223 Duke Street
Alexandria, Virginia 22314
(703) 549-7080

2. Systems protecting movable shelving (i.e. space-saver files) that closes against one another resulting in a shielded fire shall be designed for Extra Hazard (Group I).

3. Systems equipped with a fire pump, submit a calculation showing pump run with no flow (churn) and pump run with flow at 150% of rated capacity through the test header piping.

4. Calculations for systems employing a pressure-reducing or relief valve shall be performed in accordance with device manufacturer recommended practices and procedures to reflect the pressure and

flow available to the system on the discharge side of the device. Submit, along with the calculation package, manufacturer calculation procedures, guidelines and device friction loss / equivalent length information for review.

5. For systems supplied by an existing fire pump, the available water supply for calculations shall be the pump output (recorded during annual testing) that is not more than one (1) year old.