



**DPS**

**Montgomery County  
Department of Permitting Services**

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**REQUIREMENTS FOR THE SUBMITTAL OF COMBINED NFPA 13,  
NFPA 14 AND NFPA 20 FIRE PROTECTION SYSTEMS (ePlans)**

Effective: June 1, 2016

Supersedes: October 1, 2014

**A. GENERAL INFORMATION**

1. For systems designed using other standards or codes please refer to requirements as appropriate. (e.g. NFPA 13D, NFPA 13R, NFPA 14, and NFPA 20)
2. For projects within the [City of Gaithersburg](#), contact their Fire Marshal at (301) 258-6330
3. For projects within the [City of Rockville](#), contact their Fire Marshal at (240) 314-8240.
4. Prior to employing a fire pump in the design of the system it must be evidenced by means of calculation that the public water supply is inadequate to operate the system.

**B. GENERAL SUBMITTAL REQUIREMENTS**

1. Drawing files shall be submitted separately (one drawing per file). The site plans are drawings. All drawings shall be submitted in landscape format.
2. Equipment submittal files shall be combined into a PDF book and submitted together as a single file.
3. Calculation files shall be submitted separately. Provide a list showing the file number, area/floor, and the drawing number for plans with more than 5 calculation files.

**C. INFORMATION REQUIRED ON DRAWINGS (in addition to code requirements)**

**1. General-**

- a. The minimum acceptable scale for floor plans is 1/8" per foot.

**2. WSSC Approved Site Plan-**

- a. Must be to scale and/or dimensioned
- b. Size, type, and arrangement of feed mains.
- c. Test point, water supply, and low/high gradient info.
- d. Sea level elevations for supply point and building.
- e. Hydraulic Information Sheet (as applicable)

- f. For existing water service provide a flow test inside the building due to the unknown condition of the underground pipe(s) serving the building. DPS does not need to witness this test. The test shall be not more than 1 year old and must be adjusted for low gradient (information can be obtained from the local water authority). The test results shall accompany the plans submittal.

**3. System Layout-**

- a. Center to center dimensions or cutting lengths of pipe and distances of sprinklers to walls in all areas & rooms.
  - i. Sloped ceilings; give flat & sloped dimensions
  - ii. Above & below ceiling protection shall have dimensions for both above and below sprinklers.
- b. Pipe sizing shall be by pipe schedules or as proven by calculations.
- c. All ceiling obstructions such as lights, bulkheads, etc. shall be shown in detail on the plans.
- d. Residential sprinklers shall show and dimension all danger areas near heat producing devices with the more stringent of the manufacturer's recommendations or code required clearances governing sprinkler head placement.
- e. Residential and special coverage sprinkler plans shall provide coverage dimensions on the plans.
- f. Zoning shall be as follows:
  - i. By floor when required by Executive Regulation
  - ii. In coordination with fire alarm & smoke control zones. (Atriums will usually require independent zones)
  - iii. 2 story floor openings not classified as atriums: sprinklers at the top must be zoned with the lower level if enclosed on the upper level; otherwise sprinklers shall be zoned with the upper level.
- g. Sprinkler control valves (except elevator control valves) must be in stairs, valve rooms, or pump rooms for any building except schools.
- h. Fire department connection, check valve, ball drip inlets shall be as follows:
 

<u>System Demand (gpm)</u>	<u>Min.# of 2 ½" Inlets</u>
Up to 749	2
750 to 999	3
1000 and above	4
- i. Multiple fire department connections (FDCs) on the same bldg. must be interconnected.
- j. Sprinklers shall be provided under any canopy with the potential for extended vehicle standing or parking.
- k. The backflow preventer, detector check, and/or meter (as required) shall be shown on a riser diagram as a part of the plans.

**4. Speculative Spaces (subject to tenant changes regardless of lease term)**

- a. New speculative spaces shall be designed per our [Executive Regulations](#) for adequate system flexibility (worst case potential usage, height, aisles, commodity, etc.).
- b. If project covers common areas, but not tenant areas, provide phantom calculations to establish sizing & spacing for future tenant work.
- c. Room design method & small room exception (head omission in calcs) will not be permitted due to potential for future wall demolition.
- d. Piping layout must be a tree or looped system; grids not allowed.
- e. Sprinklers: Types must not be mixed (such as EC & SSP). If possible, use solely 1/2" or 17/32" standard spray sprinklers in office & ord. gr. 2 retail occupancies.
- f. Include elevation loss in calcs to roof deck for future tenants without ceilings.
- g. If using QR area reduction, use full height to roof deck for future tenants without ceilings.
- h. Minimum 1" outlets shall be provided. Face bushings are not permitted.

## **5. Tenant Plans**

- a. Tenant location shall be clearly defined.
- b. All information noted in the [Montgomery County Tenant Plan Requirement Template](#) shall be clearly shown on the plans.
- c. Original design criteria shall be adhered to on any given floor unless calculations are provided.
- d. Arm-over and tie-in details shall be provided on the plans.
- e. Show enough of adjacent area(s) to enable verification of pipe sizing.
- f. Change to a lesser hazard must use the same pipe sizing as shell calculations; spacing may be increased by density conversion. Example: Orig. head flow 20.0 gpm for 100 SF spacing at ordinary group 2 density of 0.20. New spacing for light hazard will be  $20.0 \text{ gpm} / 0.10 \text{ density} = 200 \text{ SF}$ .
- g. Change to a higher hazard must be recalculated except rooms with 6 or less sprinklers. These small rooms may use the same pipe sizing with a decrease in sprinkler spacing by density conversion. Example: Orig. head flow 16.8 gpm for 168 SF spacing at light hazard density of 0.10. New spacing for small mechanical room (ord. gr. 1) will be  $16.8 \text{ gpm} / 0.15 \text{ density} = 112 \text{ SF}$ .
- h. Existing unused outlets must be utilized prior to installing new outlets. Original design pipe schedule must be maintained.

## **6. Standpipe/Equipment Information**

- a. Plans shall include all information required by NFPA 14 Section 8.1 in addition to all requirements noted herein.
- b. All parking spaces shall be on plans in garages. Hose valves in garages shall not be obstructed by parking.
- c. Standpipes shall be automatic wet type.
- d. Standpipes in unheated areas must be automatic dry type.
- e. Standpipe systems in detached open parking garages may be of the manual dry type provided the piping is air supervised for breaks and/or open valves.
- f. Occupant use hose is prohibited in both new and existing buildings
- g. New standpipe systems shall be Class I only.

- h. Each fire hose valve must have a 2 ½” to 1 ½” reducer, cap and chain.
- i. Fire department connection (FDC) must be location within 100’ of a fire hydrant, and between 18 and 48” above finished grade level to the centerline of the inlets.
- j. Number of 2 ½” inlets required for FDC shall be as follows:
 

System Demand (GPM)	No. of Inlets:
Up to 749	2
750-999	3
1000 and above	4
- k. Multiple connections for the same building shall be interconnected.
- l. When a section of the building is fed by a connection (e.g. partial systems) permanent all weather identification signs must be provided on connections.
- m. The FDC must be sized at least as large as the main sprinkler system riser or the fire pump discharge line, whichever is larger.
- n. Any heat trace or similar equipment shall be listed for fire protection service and shall be electrically supervised by the fire alarm system.

**7. Fire Pump Details Required With Submittal**

- a. A floor elevation and the building section elevation (in relation to sea level) shall be provided on the plans. This information shall correspond to the gradient information.
- b. A cross section of the pump shall be provided on the plans.
- c. The pump bypass arrangement shall be in scalable or dimensioned form on the plans.
- d. The relief valve when allowed by [NFPA 20](#). Please note that Montgomery County permits the use of relief valves to reduce the operating pressure below 175 psi. at high gradient. Relief valves (other than for static water supplies) shall not be piped back into the source of the supply.
- e. Submittal shall include the high hydraulic gradient (can be obtained from the appropriate water authority) on the plans.

**D. INFORMATION REQUIRED ON CALCULATIONS**

**1. General**

- a. Area per sprinkler as calculated
- b. If pumps and/or tanks are used in areas with a public water supply calculations shall be submitted evidencing that the system cannot be designed to function on the public water supply system. All design variations including head spacing, orifice size, pipe sizing, looping, and gridding (owner occupied only) must be ruled out prior to employing pumps and/or tanks into the design.
- c. Residential and special coverage sprinkler designs shall include coverage dimension(s) on calculations.

**2. Standpipe Design/Calculation Specific Information**

- a. Travel distance measurements shall be parallel or at right angles to walls.
- b. Supplemental hose valves outside of stairs shall not be located within tenant spaces unless hose reach requirements cannot be met by placement of valves in

public corridors or by the use of wall hydrants for spaces opening to the exterior. Hose valve locations must be marked by the placement of signs, the striping of columns, or other approved methods.

- c. The following exceptions, as noted in the [Montgomery County Executive Regulations](#) shall apply amending [Paragraph 7.8.1 of NFPA 14](#):
- i. Exception 1: In high rise buildings, where booster pumps are necessary to produce the required residual pressures, pumps and piping systems must be sized to provide for the demand of the hydraulically most remote hose station, or the sprinkler system demand, whichever is greater. The standpipe system must also be sized to provide the required flow and pressure for all hose stations required to be flowing, when supplied by 150 psi at 1000 gpm at the FDC(s). Two sets of calculations will therefore be required under this exception.
  - ii. Exception 2: Systems in buildings that are not high-rise, and dry systems with no automatic water supply, may be sized to obtain the required flows and pressures, when supplied by 150 psi at 1000 gpm at the FDC(s).
  - iii. Exception 3: In existing buildings, after shell occupancy, hose valves added to correct hose reach violations created by tenant modifications may be supplied by 3” pipe without recalculation.



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**NOTES TO BE SHOWN ON TENANT SPRINKLER DRAWINGS**

Original hazard occupancy per calc: \_\_\_\_\_ calc area \_\_\_\_\_ density \_\_\_\_\_ safety factor \_\_\_\_\_

Original calculated pipe sizing: \_\_\_\_\_ sprinklers on \_\_\_\_\_ pipe  
\_\_\_\_\_ sprinklers on \_\_\_\_\_ pipe  
\_\_\_\_\_ sprinklers on \_\_\_\_\_ pipe  
arm-over length \_\_\_\_\_  
arm-over size \_\_\_\_\_

Original calculated sprinkler head spacing: \_\_\_\_\_ SF max.

Original pipe type: \_\_\_\_\_ original fitting type: \_\_\_\_\_

Original sprinkler information (SIN#, symbol, make, model, orifice, temp):

New pipe type: \_\_\_\_\_ new fitting type: \_\_\_\_\_

New sprinkler information (symbol, make, model, orifice, temp): -  
\_\_\_\_\_

Number of new sprinklers \_\_\_\_\_ relocated sprinklers (off original outlets) \_\_\_\_\_

Density conversion to higher hazard: ( \_\_\_\_\_ SF orig. flow) / ( \_\_\_\_\_ new density) = \_\_\_\_\_ new spacing to be used in all rooms of \_\_\_\_\_ hazard, group \_\_\_\_\_, with 6 or less heads.

Density conversion to lower hazard: ( \_\_\_\_\_ SF orig. flow) / ( \_\_\_\_\_ new density) = \_\_\_\_\_ new spacing to be used in all rooms of \_\_\_\_\_ hazard, group \_\_\_\_\_.

All rooms are \_\_\_\_\_ occupancy unless noted otherwise (indicate room name, not hazard class).

Ceiling height is \_\_\_\_\_ unless noted otherwise.

Laboratories are class per NFP A 45 according to owner rep \_\_\_\_\_

Hangers to be installed as required by NFPA 13; See detail # \_\_\_\_\_ for types of hangers.

Access a fillable PDF copy of this information below:

[www.montgomerycountymd.gov/DPS/Resources/Files/FPCC/TenantSprinklerNotes.pdf](http://www.montgomerycountymd.gov/DPS/Resources/Files/FPCC/TenantSprinklerNotes.pdf)