Fire Sprinkler Plan Submittal Requirements for NFPA 13 & 13R Systems

Permit/Design Standards: Section 105.7.1 of the Washington State Fire Code requires a Construction Permit to install or modify a Fire Sprinkler System. Section 903.3.1.1 requires any work performed under said permit to conform with NFPA 13 or 13R. The purpose of this document is to provide the reader with a summary of that information required to be included in any fire sprinkler plans submitted to this office and the installation requirements. For the underground piping associated with fire sprinkler systems, please refer to the Mason County *Underground Fire Main Standard. Failure to include any/all information identified here may result in delays if the plans are incomplete and require resubmittal.*

Designer Certification Requirements: The Revised Code of Washington (RCW) 18.160.040 requires all construction documents be reviewed by a designer possessing a *Level 3 State Fire Sprinkler Certificate of Competency (or Level 2 for 13R systems only)* issued by the Washington State Patrol Fire Protection Bureau (WSPFPB) prior to being submitted. All documents related to the system must bear the seal of the *Certificate of Competency* holder.

Contractor Requirements: All contractors installing NFPA 13 or 13R fire sprinkler systems shall possess a *Level 3 Contractors License (or Level 2 for 13R systems only)* issued by the WSPFPB. RCW 18.270.020 requires Fitters working on NFPA 13 systems to possess a *Journey Level Sprinkler Fitter Certificate* issued by the WSPFPB. Fitters possessing a *Residential Sprinkler System Certificate* may work on NFPA 13-D or 13-R systems.

Submitting Plans: The preferred method for submitting plans is through the County SMARTGOV portal however, plans may also be submitted in person. If so, one paper copy and one flash drive of all documents shall be provided. Each building with its own fire sprinkler riser shall be considered a single system and constitute one submittal except for large warehouse style buildings which require multiple risers due to exceeding the system protection area limitations as found in NFPA 13, chapter 4.

Electronic Submittal File Standards:

Acceptable File Types: Plans, calculations, specifications and supporting documents shall be up-loaded as a PDF file.
Document Orientation: All plans shall be up-loaded in the “Landscape” format in the horizontal position. All other documents may be submitted in the “Portrait” format.

Over the Counter Permits: The project is eligible for an “Over-the-Counter” permit if the scope of work includes the addition, replacement, relocation, or removal of 10 fire sprinkler heads or less. Submittals must include:

- A completed *Mason County Fire Protection System Permit Application*
- No new or relocated risers, mains or cross-mains
- A stamped letter from the designer stating the proposed changes will not adversely affect the hydraulic calculations.
- A set of plans showing the proposed area of work

Once the permit is issued, work may proceed. All work shall require at a minimum, two field inspection to be signed off (refer to the Inspection Requirements section below).

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Plans and Documentation: Fire sprinkler plans shall provide the following information and applicants should use this standard as a checklist:

- Name of owner and occupant
- Location including street address
- The Contractor's name, address, phone number and email address
- Point of compass
- A graphic representation of the scale used (generally 1/8"=1') *shown on each sheet*
- Stamp and signature of system designer on all drawings and calculations
- Code edition utilized for the system design
- Type of system being installed (NFPA 13 or 13R)
- A plan for each floor where work is being conducted
- A full height cross section or schematic diagram including structural member information as required for clarity, ceiling construction including slopes (to adhere to 27.2.4.6.5) and method for protection of non-metallic piping (if used)
- Location and height of partitions
- Location of fire walls
- Occupancy classification of each room or area
- Location and size of concealed spaces, closets, attics and bathrooms
- Any enclosures where sprinklers are omitted
- Explanation of why omissions are being proposed (if any) with the appropriate code reference.
- Distances between fire sprinklers, walls and any other obstructions
- Location of all bracing and hangers
- The location of any riser(s) and valves including an illustrated riser diagram
- The make, model, type, temperature rating and nominal K-Factor of all sprinklers including the sprinkler identification number.
- The total area protected by each system on each floor
- The number of sprinklers on each riser per floor
- The total number of sprinklers on each dry pipe system, pre-action system, combined dry pipe pre-action system or deluge system
- The approximate capacity (in gallons) of each dry-pipe system
- Pipe type and schedule of wall thickness
- Nominal pipe size and cutting lengths of pipe (or center to center dimensions). Where typical branch lines prevail, sizing of only one line is necessary
- Types and locations of hangers, sleeves, braces and any other methods of securing sprinklers
- All control valves, check valves, drainpipes and test connections
- The make, model, type of the backflow prevention assembly and the means to forward flow test at the system demand
- Make, model, type and size of alarm or dry pipe valve

- Make, model, type and size of pre-action or deluge valve
- Make, model and location of alarm bells
- Size and location of standpipe risers, hose outlets, hand hose, monitor nozzles and related equipment
- Piping provisions for flushing
- Where components are being installed as an addition to an existing system, enough of the existing system shown on the plans to make all conditions clear.
- For hydraulically designed systems, the information on the hydraulic data nameplate
- Hydraulic reference points shown on the plans that correspond with comparable reference points on the hydraulic calculation sheets
- The minimum rate of water application (density, flow, and discharge pressure), the design area of water application, in-rack sprinkler demand, and water required for hose streams (inside and out).
- The total quantity of water and the pressure required noted at common reference point for each system
- Available waterflow information (static PSI, flow and residual PSI) from the water purveyor (no more than 12 months old). If waterflow information is not current, a flow test conforming to NFPA 291 shall be performed by an approved firm or individual
- The relative elevation of sprinklers, junction points and supply or reference points for each system
- The calculation of loads for pipe sizing and details of sway bracing
- The setting for pressure-reducing valves (if applicable)
- FDC details complying with the County Standard

Once submitted plans have been approved, installation of the system may occur. Under no circumstances shall any work be performed until this occurs.

Inspection Requirements: A minimum of two inspections shall be required for a NFPA 13 or 13R sprinkler system. A “Rough-In” (also known as a Hydrostatic or “Hydro”) and a Final. If welded steel pipe is used, a weld inspection shall also be required prior to hanging any pipe. Note: Inspections for underground piping are covered under a separate permit issued by this office

Rough-In: To verify the system has been installed in accordance with the approved plans, a rough-in inspection shall be required prior to any sprinkler piping being covered by sheet rock or other building materials. At the time of the inspection, the system shall also be pressure tested at 200 PSI for 2 hours and be pumped up two hours prior to the scheduled inspection. A time-stamped photograph shall be available to the inspector to confirm this. For any sprinkler piping in open (attic) spaces below roof assemblies, insulation (min. R-13) shall be “tented” (or draped) over piping to protect it from freezing. Tented insulation shall be in addition to any other insulation required under the State Energy Code.

Final: Once all building surfaces are finished and any fire alarms required under a separate permit are complete, a final inspection shall be performed which includes:

- Completion of a *Contractor’s Material and Test Certificate for Aboveground Piping* form (NFPA Figure 28.1)

- Performing a Main Drain Valve test in accordance with 28.2.3.4
- Ensuring all control valves have a means to secure in the open position
- Presence of a *Hydraulic Data Nameplate*
- Test all flow and tamper switches to ensure they activate the appropriate alarms
- Verifying all sprinkler heads, trim and escutcheon are installed per manufacturer's instructions and heads are unobstructed and free from paint.
- Verifying a *Spare Head Box* is installed with an adequate number (and type) of sprinklers (and wrenches)
- Checking the FDC to ensure it is capped, unobstructed and in good condition