



# Plan Submittal and Inspection Requirements for Underground Fire Mains



**Permit/Design Standards:** Section 105.7.26 of the Washington State Fire Code requires a Construction Permit for the installation of a private underground water main supplying a water-based fire protection system. The scope of the permit shall cover from the first control valve on the service line off the distribution main to one foot above the facility’s finished floor including any backflow prevention device(s)/assemblies. Section 903.3.5.3 requires any work performed under said permit to conform with NFPA 24 and RCW chapter 18.160. The purpose of this document is to provide the reader with a summary of the information required to be included in any underground fire main plans submitted to this office and the inspection requirements. *Failure to include any/all information identified here may result in delays if the plans are incomplete and require resubmittal.*

**Designer Certification Requirements:** The Washington Administrative Code (WAC) 212-80-018 requires all construction documents to be reviewed by a designer possessing a *Level 3 or U State Fire Sprinkler Certificate of Competency* issued by the Washington State Patrol Fire Protection Bureau (WSPFPB) and all documents related to the system must bear this seal.

**Contractor Requirements:** Contractors shall possess a *Level 3 or U Contractor’s License* issued by the WSPFPB to install an underground fire main.

**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 main serving a riser is considered a single system and constitute one submittal.

### **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.

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

**Documentation:** U/G submittals shall include the following information and documents. Applicants are encouraged to use this standard as a checklist:

- A completed Mason County *Fire Protection System Permit Application* (available on the Mason County Fire Marshal’s website)
- A current copy of the WA State Patrol Level 3 Sprinkler or U License with expiration date
- A current copy of the Dept. of Labor and Industries contractor license
- A notice from the water purveyor of the adequacy of their system to support the required flows and pressures
- Water system calculations no more than a year old reflecting the worst-case demand scenario on the water supply taken as near to the point of connection of the sprinkler system as possible. If not current, a flow test conforming to NFPA 291 shall be performed by an approved firm or individual

STD: <b>6</b>	MASON COUNTY FIRE MARSHAL <a href="https://masoncountywa.gov/community-services/fire-marshal/index.php">https://masoncountywa.gov/community-services/fire-marshal/index.php</a>	Adopted: 12/5 /2023
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**Plans:** Underground Fire main Plans shall include the following information and applicants are encouraged to use the bullet points below as a checklist:

- Name of owner and occupant
- Location including street address.
- The Contractor’s name, address, phone number and email address
- Plans that include the stamp and signature of the designer and their Level 3 or U Certificate of Competency from WSFM
- Point of compass
- Scale used (generally 1/4”=1’) *shown on each sheet*
- Size and location of all water supplies
- Hydraulic calculations demonstrating the water main is able to supply the total demand at the appropriate pressure.
- Size and location of fire sprinkler and standpipe risers, fire department connections (FDC’s) hose outlets, and other related appliances.
- FDC’s shall reflect the installation of a 4” Storz connection and cap with 30-degree elbow (see Figure “A”)
- Type of system to be supplied (NFPA 13, 13R, Standpipe system, spray system, etc.).
- The size, length, and type of pipe material.
- Point of connection to the public main
- Size(s), types and locations of valves, valve indicators, regulators, meters and valve pits
- Depth at which top of pipe is laid below grade
- Method(s) of restraint used at the fittings
- Backflow prevention device listed for fire protection service (and approved by the water purveyor)
- Hydrant size and location including number of outlets/size and methods of restraint
- Size, location of hydrant/standpipe/riser/FDC vehicle protection devices

Plans shall also reflect the floor flange and FDC configurations displayed in *Figure A* in this standard. Once submitted plans have been approved, installation of the system may occur. Under no circumstances shall any work be performed until the applicant has received approved plans.

**Inspection Requirements:** A minimum of two inspections shall be required for an underground fire main; a piping/hydrostatic inspection and a flush. The procedures are as follows:

**Piping/Hydrostatic:** Once all trenches are dug, appropriate bedding material provided, piping and restraining devices installed, the piping shall be filled with water and hydrostatically tested per NFPA 24 (200 PSI for 2 hours). The test shall be witnessed by the Fire Marshal or his/her representative.

**Flush:** Once backfilling has occurred, the system shall be flushed to remove any debris. Flushing shall continue until the water flow is verified to be clear of debris and adhere to the following flow rates:

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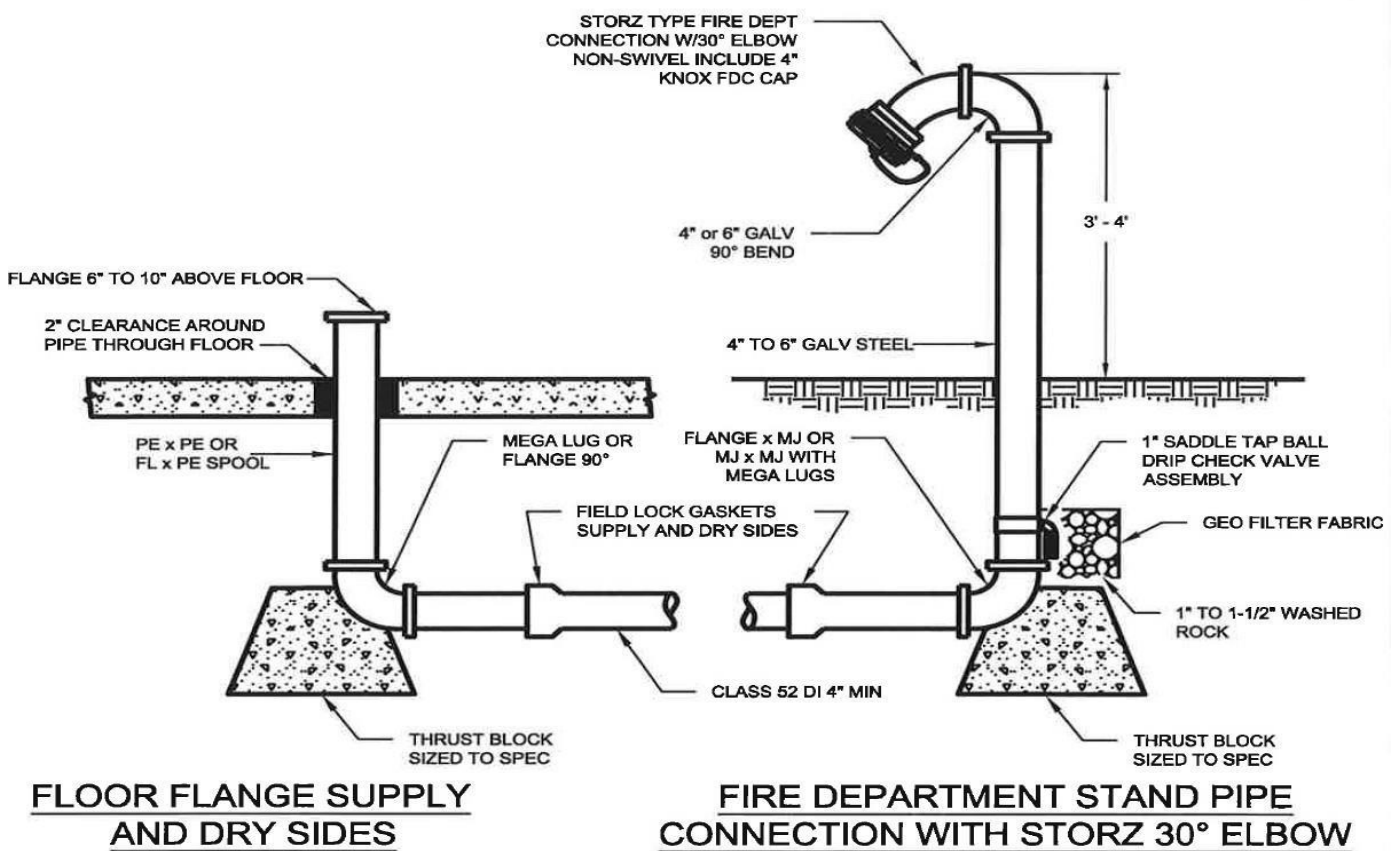
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- 4" Pipe – 390 GPM
- 5" Pipe – 610 GPM
- 6" Pipe – 880 GPM

Flush shall be witnessed by the Fire Marshal and burlap bags shall be used to collect any debris. A second flush may be required if excessive debris is witnessed during the flush.

## Figure A Flange/FDC Components and configuration



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