



UNION FIRE DISTRICT OFFICE OF THE FIRE MARSHAL

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Underground Piping – Private Hydrants & Sprinkler Supply

PURPOSE

The purpose of this guideline is to provide the basic information necessary to meet minimum requirements for the installation of private hydrant and sprinkler supply underground piping in accordance with the 2012 Rhode Island Uniform Fire Code (RIUFC), 2010 NFPA 24, 2010 NFPA 13, 13D, 13R and locally adopted amendments to these codes.

Fire Department approval of site, grading or improvement plans is not an approval to install private service underground systems. A separate plan review and permit is required prior to commencing the installation.

SCOPE

This guideline is applicable to private underground piping for hydrants and/or sprinkler supply lines within the jurisdiction of the Union Fire District (UFD). This guideline is not applicable to underground piping serving sprinkler systems designed in accordance with NFPA 13D and NFPA 13R systems that utilize combination fire and domestic water service.

PLAN SUBMITTAL

General

1. Plans for all underground piping for hydrants and/or sprinkler supply lines shall be submitted to the UFD for review and approval prior to installation. Plan review and approval is also required from the Water Department prior to connection.
2. Application will be made through the View Point Permitting system through the Town of South Kingstown. No Paper plans will be accepted.
3. Plans shall be legible, scaled to nationally recognized standards, and printed as a blue or black-line drawing. UFD does not accept pen and ink plans.
4. A current (within one year) completed Water Availability Form (fire flow letter) shall accompany plans.
5. Where underground plans are submitted as part of a building fire sprinkler system package the plans must comply with the requirements of this guideline. A separate underground permit will be issued and additional plan review fees will be charged.

Title Page Information

1. Applicable codes and standards used for the system design.
2. Project location including the full legal address of the facility, and building number(s) if applicable; tract or parcel number.
3. The installing contractor's name, telephone number, address and Rhode Island contractor license number. Plans may be prepared by a Registered Professional Engineer (RPE) or the installing contractor.

Note: If the piping plan is designed by the RPE, the plans shall contain the name and license number of the installing contractor along with the designers contact information and wet stamp.

Additional Required Information

1. Plan details shall be provided for all appliances installed as well as the sprinkler system point of connection.
2. Size and location of the public mains and whether project is connected to loop or a dead-end main.
3. Location of all public hydrants within 300 ft of the project site.
4. Location of all valves. Specify the type for each e.g., post indicator valve (PIV), key gate valve, system control valve, reduced pressure detector assembly (RPDA), outside stem and yolk (OS&Y) and fire department connection (FDC).

Note: An RPDA may be used as the control valve only with prior approval, provided that it does not serve a fire hydrant. The FDC may be co-located with the RPDA when approved as a control valve.

5. Pipe size, class, and type; specify lined or unlined if applicable.
6. Thrust block locations or means of restraint as approved by 2012 NFPA 24.
7. **Inspections are required by UFD personnel:**
 - 1) **Prior to pouring thrust blocks;**
 - 2) **Pipe installation and thrust blocks;**
 - 3) **For hydrostatic testing and**
 - 4) **Flush.**

Schedule all inspections by calling (401)789-8354. Coordination with the Water Company also required.

System Design Requirements

1. Any connection to the Water Department lines requires authorization, inspections and engineered improvement plans approved by the Water Department and the Fire Prevention Division, prior to the commencement of any installation and/or connection relating to fire services.
2. Minimum depth of bury to top of private fire service main is 54 inches per NFPA Standards. Bedding and backfill shall be to Water Department standard drawings and specifications and to manufacturers specifications.
3. All private fire service mains to be rated to NFPA 24 Standard.
4. Pipe joints shall not be located under foundation footings.
5. All fire hydrants must meet UFD standards, as well as those of the Water Department. Installation must be per Water and Fire Department criteria. Contact Water Department prior to purchase and installation.
6. On-site fire hydrants, post indicator valves and fire department connections located less than four (4) feet behind the face of a curb shall be protected by guard posts.
7. Where a PIV is required it shall be a minimum forty (40) feet from the structure or across the fire lane.
8. All fire sprinkler control valves shall be supervised for tamper.
9. PIVs or other approved indicating valves shall be located a minimum of 40 feet from the building served. Where it is impractical to locate a control valve 40 feet from the building, provisions may be made to allow the indicating valve to be located closer utilizing one of the following methods:
 1. Approved wall mounted indicating valves provided they are located on blank walls (ie., no glazed openings above or within 15 feet on either side of the valve).
 2. Approved indicating valves may be placed in valve rooms accessible from the exterior.
10. FDC shall be installed per NFPA 24 Standard with the thread and connection type and location to UFD approval.
11. UFD form ***Contractor's Material and Test for Underground Piping*** shall be completed and presented to the UFD prior to final approval of the installation.

12. UFD and NFPA 24 Flushing Requirements:

The minimum rate of flow for flush shall not be less than one of the following:

- 1.) Hydraulically calculated water demand rate of the system, including any hose requirements
- 2.) Flow necessary to provide a velocity of 10 ft/sec (3.1 m/sec) in accordance with flows provided in underground certificate
- 3.) Maximum flow rate available to system under fire conditions

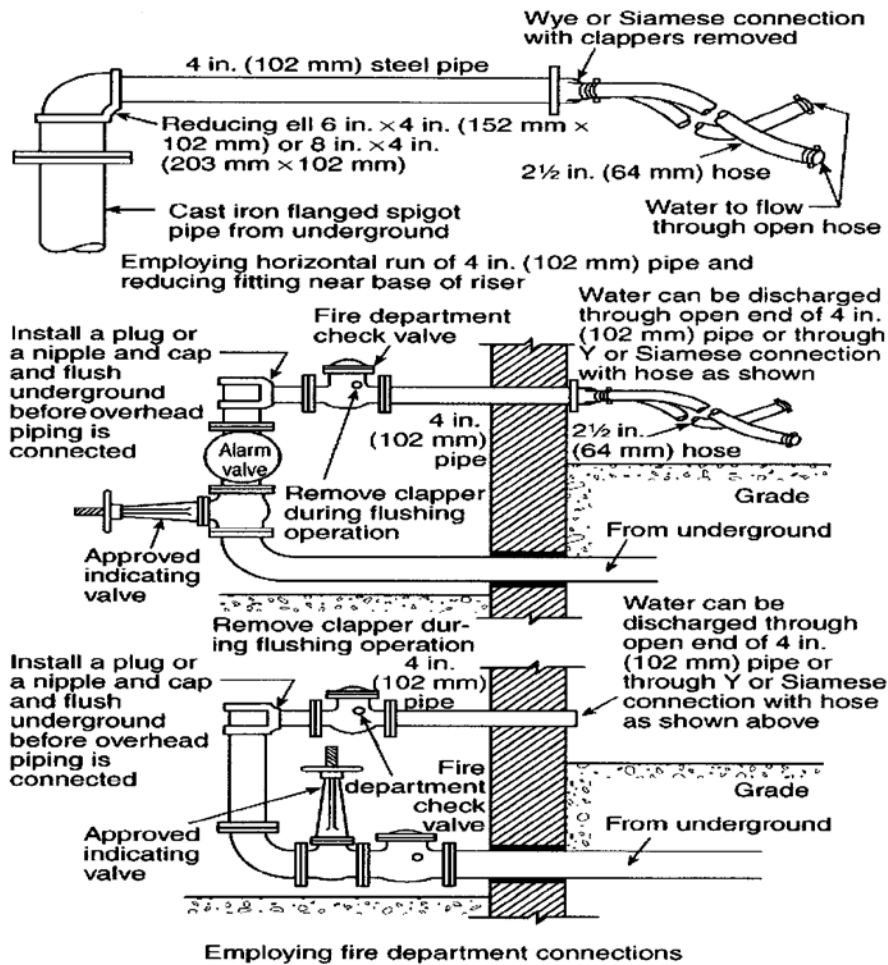


FIGURE A.10.10.2.1
Methods of Flushing Water Supply Connections. [24:Figure A.10.10.2.1]



Union Fire District

Contractor's Material and Test Certificate for Underground Piping



Date:	Property Name:
Property Address:	

Procedure:

Upon completion of work, inspection and tests shall be made by the contractor's representative and witnessed by an owner's representative. All defects shall be corrected and the system left in service before contractor's personnel finally leave the job. A certificate shall be filled out and signed by both representatives. Copies shall be prepared for approving authorities, owners, and contractors. It is understood that the owner's representative's signature in no way prejudices any claim against contractor for faulty material, poor workmanship, or failure to comply with approving authority's requirements or local ordinances.

Plans:

Accepted by [approving authority's name(s)] _____

Address _____

Installation conforms to accepted plans? YES NO

Equipment used is approved? YES NO

If no, explain deviations.

Instructions:

Has person in charge of fire equipment been instructed as to location of control valves and care and maintenance of this new equipment? YES NO

If no, explain.

Have copies of appropriate instructions and care and maintenance charts been left on premises? YES NO

If no, explain.

Location:

Supplies bldgs. _____

Test Description:

FLUSHING: Flow the required rate until water is clear as indicated by no collection of foreign material in burlap bags at outlets such as hydrants and blow-offs.

Flush at flows not less than

390 gpm (1476 L/min) for 4-in. (102-mm) pipe,

600 gpm (2271 L/min) for 5-in. (127-mm) pipe,

880 gpm (3331 L/min) for 6-in. (152-mm) pipe,

1560 gpm (5905 L/min) for 8-in. (203-mm) pipe,

2440 gpm (9235 L/min) for 10-in. (254-mm) pipe and

3520 gpm (13323 L/min) for 12-in. (305-mm) pipe.

When supply cannot produce stipulated flow rates, obtain maximum available.



Contractor's Material and Test Certificate for Underground Piping



Test Description (cont.)

HYDROSTATIC: Hydrostatic tests shall be made at not less than 200 psi (1 3.6 bar) for two hours or 50 psi (3.4 bar) above static pressure in excess of 150 psi (10.2 bar) for two hours.

LEAKAGE: New pipe laid with rubber gasketed joints shall, if the workmanship is satisfactory, have little or no leakage at the joints. The amount of leakage at the joints shall not exceed 2 qts per hr. (1.89 L/h) per 100 joints irrespective of pipe diameter. The leakage shall be distributed over all joints. If such leakage occurs at a few joints the installation shall be considered unsatisfactory and necessary repairs made. The amount of allowable leakage specified above may be increased by 1 fl oz per in. valve diameter per hour (30 mL/25 mm/h) for each metal-seated valve isolating the test section. If dry barrel hydrants are tested with the main valve open, so the hydrants are under pressure an additional 5 oz per minute (150 mL/min) leakage is permitted for each hydrant.

Flushing Tests:

New underground piping flushed according to _____ standard. YES NO
 By (company): _____
 If no, explain. _____

How flushing flow was obtained: Public water Tank or reservoir Fire pump
 Through what type opening: Hydrant butt Open pipe
 Lead-ins flushed according to _____ standard. Yes No
 BY (company): _____
 If no, explain. _____

Hydrostatic Test:

All new underground piping hydrostatically tested at _____ psi (bar) for _____ hours
 Joints covered? Yes No

Leakage Test:

Total amount of leakage measured: _____ gals (liters) _____ hours
 Allowable leakage: _____ gals (liters) in _____ hours

Hydrants:

Number installed: _____ Type and make: _____
 All operate satisfactorily? Yes No

Control Valves:

Water control valves left wide open? Yes No
 If no, state reason. _____
 Hose threads of fire department connections and hydrants interchangeable with those of fire department answering alarm? Yes No

Remarks: Date left in service with all control valves open: _____

Installing Contractor:

Signatures of Test Witnesses:
 For property owner: _____ Title _____ Date _____
 For sprinkler contractor: _____ Title _____ Date _____