Shoreline Fire Department
Dedicated to the Protection of Life and Property

Serving the Shoreline Community for over 80 years, since 1939

Fire Prevention Division
17525 Aurora Ave N
Shoreline WA 98133
Tel. 206.533.6565

Shoreline Fire Department Standards

SHFDS 2.0
Fire Sprinkler Systems NFPA 13, 13R & 13D
Revised 11/17/2025

2.0 General

2.1.1 Scope:

This standard covers the permitting, installation and maintenance of fire sprinkler systems in the Cities of Shoreline, Kenmore Lake Forest Park and the Town of Woodway as administered by the Fire Code Official. Fire sprinkler systems shall meet the requirements of the currently adopted codes and standards, unless specifically amended or noted otherwise and as approved by the FCO.

Reverenced Codes and Standards

- The 2019 edition of NFPA 13, 13R and 2019 edition of NFPA 13D shall be used unless specifically noted otherwise.
- Currently adopted International Fire Code and Washington State Amendments.
- The Cities of Shoreline, Lake Forest Park, Kenmore and the Town of Woodway, adopted building codes, fire codes, municipal codes and this standard shall be used.
- Cities of Shoreline, Lake Forest Park, Kenmore and The Town of Woodway Fire Fee Schedule.
- Nationally recognized standards as accepted by the FCO (Fire Code Official).
- NFPA 13R systems shall be allowed to protect buildings that require fire sprinkler protection per the International Building Code, International Fire Code, the Cities of Kenmore and Shoreline Municipal Code or any other adopted codes. The use of NFPA 13R systems is at the discretion of the FCO.

Throughout this standard, the editions listed shall be the applicable code or standard in addition to other required codes and standards.

2.1.2 Conflicts

The most specific and/or restrictive provision shall apply if conflicts occur between the requirements found in these documents, as determined by the FCO.

2.1.3 Primary Reference

The Shoreline Fire Department Standard shall constitute the primary reference document for permitting, design, installation, testing, maintenance, and monitoring of all fire sprinkler system in the Cities of Shoreline, Lake Forest Park, Kenmore, and The Town of Woodway.

2.2 Definitions

2.2.1 Terms Not Defined

Where terms are not defined in this standard or a referenced code or standard, such terms shall have ordinally accepted meaning such as context implies.

2.1.2 Permit Required

A permit shall be obtained before any installation work begins. For work being conducted within the City of Shoreline, a permit will be applied for thru the City of Shoreline Permit Services Center. For work being conducted within the Cities of Kenmore or lake Forest Park, a permit will be required to be applied for thru the Shoreline Fire Department Website Fire System Permits - Shoreline Fire Department. before work commences. Permits are required for the following:

1. Installation of a new fire sprinkler system.
2. Modification of an existing fire sprinkler system

2.1.3 Permit Types

Permit Types: There are two types of sprinkler system permits issued by the Shoreline Fire Department or City of Shoreline:

1. Standard Sprinkler Permit: Shall be obtained for installation of new or modifications to existing systems when the modifications include one or more of the following:
    1. More than 20 heads
    2. A change in the design area
    3. A change in the flow or pressure of the system.
2. Over the counter permit: Shall be obtained for the installation or relocation of 20 fire sprinkler heads or less when all of the following apply:
    1. No pipe over 1-1/2 inch is altered or installed except for emergency break repairs
    2. There is no effect on, or degradation to, the hydraulically most remote area. This must be in writing and include a letter, stamped by the designer specifically stating that there will be no degradation of the existing hydraulic calculations. This letter shall be attached to the Over-the-Counter permit application.

An Over-the-Counter permit may be obtained by the contractor via the City of Shoreline Development Center online application or if work is being completed in Kenmore or Lake Forest Park, the Shoreline Fire Department Permitting page, Fire System Permits - Shoreline Fire Department.

2.1.4 Exceptions to the Permitting Process

2.1.4.1 Emergency Repair Work

"Emergency Repair Work" is defined as the minimum work necessary to return a damaged or impaired system to a satisfactory and fully functional status.

Emergency repair work may proceed without a permit provided all of the following conditions apply:

1. A letter or email from the contractor shall be required defining the scope of work required to restore the system.
2. The system is repaired to its original configuration.
3. A permit application is submitted by the end of the second working day after the work is completed (if required by the FCO).

If it is determined the repair meets the criteria for a standard or over the counter permit, a review will be required and an inspection shall be required subsequent to the issuance of the permit.

2.1.4.2 Recalled or Changed out Sprinkler Heads

When the system alteration consists solely of changing out sprinkler heads (i.e., standard response to quick response heads or replacement of recalled heads), the following applies:

1. An Over-the-Counter permit is acceptable for any number of heads replaced as long as a letter is provided from the sprinkler designer stating that there is no degradation of the sprinkler system's hydraulic calculations due to any changes in the K factor of the replacement heads or that the K factor has not changed. A reference set of plans is required showing the area where the heads are being changed out.
2. The fees associated with the number of recalled sprinkler heads to be changed out will be calculated by dividing the number of heads changed out by 50 and rounding up to the nearest whole number. This number will be used as the device count for purposes of calculating the permit fee.
3. A final Fire inspection is required.
4. Any replacement with heads that degrade the hydraulic calculations of the system will require plans and new calculations to be provided under the normal permit procedures and fees. Any additional piping or other modification to the system will be permitted under the normal permit procedures and fees.
5. Head replacement affecting more than 20 heads shall be hydrostatically tested in accordance with NFPA 13.

2.1.5 Permit Requirements

1. The installation contractor shall obtain the permit and the permit shall be valid only for the contractor identified on the permit application.
2. A minimum of one permit is required for each building of a multi-building project. A permit is only valid for the work and the contractor designated by the permit. The permit is not transferable.
3. All permits shall have the required documents on site after issuance of the permit until the final inspection.
4. New fire sprinkler systems shall not be installed nor shall modifications be made to existing systems until:
    a. A complete application has been submitted.
    b. Plans have been reviewed and approved.
    c. A permit has been issued for changes which may have been required as part of the review.
    d. A set of stamped, accepted plans and the permit inspection card must be on site for reference by the installer and Fire Code Official.

2.1.6 Penalties

Failure to obtain a permit prior to the installation or modification of any portion of a fire sprinkler system may result in the following penalties as described in the Shoreline Fire Department Code Enforcement Standard: SHFDS 14.0

1. First Offense:
    a. Permit fees will be doubled
    b. The contractor will be given written notice for failure to comply

2. Second Offense:
    a. Permit fees will be doubled.
    b. The contractor will be given written notice for failure to comply.
    c. Code Enforcement action will be initiated with the respective City the work was performed in which may result in a stop work order.

2.2 NFPA 13 System Commercial and Multi-Family Systems

2.2.1 Where Required

The current version of NFPA 13 shall govern the installation of fire sprinkler systems in buildings other than one- and two-family dwelling with the following changes:

An approved fire sprinkler system shall be required in the following commercial structures:

1. City of Shoreline
    a. In any commercial structure where the gross area, as defined in the International Building Code, is 4800 square feet or more.

b. All new commercial buildings requiring 2000 gallons per minute or more fire flow.
c. Existing buildings
    i. Additions or changes of use to existing buildings which would result in a nonconforming building shall be brought up to current code requirements for fire protection systems.
    ii. Commercial tenant improvements that result in a change of use shall comply with sections 903.2.1 through 903.2.12 of the SMC. Commercial additions shall comply with sections 903.2.1 through 903.2.13 of the SMC.
    iii. When the value of all alterations or repairs performed within a seventy-month period exceeds 50 percent of the value of the building, then fire sprinkler systems shall be installed throughout the building if one would otherwise be required for the building if of new construction.
d. As required by current IFC and Washington State Amendments.

2. City of Kenmore
    a. In any commercial structure where the gross area, as defined in the international building code, is 4800 square feet or more.
    b. All new commercial buildings requiring 2000 gallons per minute or more fire flow.
    c. All newly constructed buildings regardless of gross square footage shall be provided with an automatic fire sprinkler system if adequate fire flow, hydrant spacing, or approved fire department access is not provided as required in IFC section 503, Appendix B, and or Title 15 of the Kenmore Municipal Code.
    d. Existing buildings:
        i. Additions to existing buildings that would result in a gross floor area greater than 5,000 square feet.
    e. As required by current IFC and Washington State Amendments.

3. City of Lake Forest Park
    a. All occupancies requiring 2000 gallons per minute or more fire flow, or where the gross square footage exceeds 5000 square feet. This applies to all buildings regardless of type or use as well as townhouses with an aggregate area of 5,000 square feet or greater.
    b. All newly constructed buildings regardless of gross square footage shall be provided with an automatic fire sprinkler system if adequate fire flow, hydrant spacing, or approved fire department access is not provided as required in the IFC section 503, appendix B, and/or title 15 of the Lake Forest Park Municipal Code.
    c. One- and two-family structures were there is not a hydrant capable of providing at least 1,500 gallons per minute of water with 20PSI residual pressure and located within 300 feet of the structure, or without approved emergency vehicle access.
    d. Existing Buildings

i. Were the total cost of the work performed exceeds 50% of the King County Assessor's Office valuation of the structure. Where subsequent alterations, repairs, modifications or similar improvements occur within five years of the first permitted work, the original building valuation shall be used, and the total costs of the improvements shall be accumulative.
ii. Where the gross floor area of the building is increased that would result in a gross floor area greater than 5,000 square feet shall be retrofitted throughout with an approved automatic sprinkler system.

2.2.3 Designer Qualifications

1. All fire sprinkler systems shall be designed and installed in a professional manner.
2. Contractors must be licensed in the State of Washington for the type of work to be performed. (U = Underground; Level 1 = 13D; Level 2 = 13R & 13D; Level 3 = 13, 13D & Underground).

2.2.4 Plans

1. All plans and calculations shall be stamped with a valid Washington State certificate seal identifying the appropriate level of competency.
2. An approved set of stamped plans shall be onsite from issuance of permit until completion of final inspection for both Standard and Over-the Counter permits.
3. If the designer is other than the installation contractor, the designer shall be identified in the plans and the professional relationship between the contractor and the designer shall be described. The designers written authorization shall be attached to the plans for any field changes requiring re-submittal of plans.
4. Plans shall include all required design information as require by NFPA 13 chapter 27 *Plans and Calculations*.
5. All plans shall be submitted electronically following the current permit application process for the jurisdiction the work is being performed in.

2.2.5 Design Requirements

The currently adopted version of NFPA 13 as adopted by the current International Fire Code in the State of Washington shall govern the design and installation of sprinkler systems in buildings other than in one- and two-family dwelling.

2.2.5.1 General Design Requirements

1. The following regulations from SMC sections 903.2 through 905.4 constitute general requirements for fire sprinkler systems installed within the Cities of Shoreline, Lake Forest Park and Kenmore.

a. All approved fire sprinkler systems shall meet the requirements of the Shoreline Fire Department Standards, Cities of Shoreline, Kenmore and Lake Forest Park Municipal Code and the applicable NFPA standards.
b. All systems shall have an adequate water supply, system of piping, and sprinkler heads designed to discharge water on a fire at an appropriate time and in an effective manner.
c. All underground sprinkler supply piping shall be included on civil drawings and shall be approved by the water supplier and the Shoreline Fire Department.
d. An area separation wall or fire wall, or occupancy separation or fire barrier wall, or a distance of 10 feet or less shall not constitute a separation between two structures on the same property.

2. When a building is required to be equipped with fire sprinklers, they shall be provided throughout the structure. Fixed automatic extinguishing systems (i.e., Carbon Dioxide, FM 200, Halon) are not acceptable in lieu of fire sprinkler protection.

3. Antifreeze systems are prohibited.

4. Rooms or areas where pipe systems or sprinkler supplies are installed shall be maintained at a minimum of 40 degrees Fahrenheit and be two-hour rated per Shoreline Fire Department Standards.

    a. Exception: When allowed by the fire code official, heat tracing may be used. The heat tracing shall be listed for fire sprinkler piping an shall be installed and tested in accordance with the manufacturer's specifications. All heat tracing circuits shall be supervised by the building fire alarm system for power supply and temperature. A special inspection shall be required by a manufacturer's representative to verify that the heat trace is installed per the manufacturer's specifications and listing.

2.2.5.2 **Hydraulic Calculations**

1. Available flow information shall be obtained from the water purveyor that services the area in which the work is being completed.
2. All new systems shall be hydraulically calculated.
3. All additions to existing systems shall be hydraulically calculated.
4. Hydraulic calculations shall include a 10% or 10 PSI safety factor, whichever is greater. Exception: For existing structures when allowed by the Fire Code Official.
5. Hydraulic calculations shall include all underground piping from the public water supply main.
6. When the addition or modification involved only "arm-over" or "drop" type installation, and will not degrade the performance of the system, no new calculations are required. A letter from the designer attesting to this shall be submitted with the permit. The letter shall also bear the

contractor's competency stamp, signature and existing system design criteria.

2.2.5.3 **Valves**

2.2.5.4 **Control Valves**

1. Multi-story buildings shall have at least one approved supervised and indicating control valve, drain, and waterflow switch for each floor.
    a. Exception: In buildings without stair enclosures, the location of the floor control valves shall be determined by the Fire Code Official.
2. Control valves shall be located in approved locations. They shall not be more than six feet above finished floor to the top of the valve.
3. Above ground backflow prevention valves shall have supervised tamper switches.
4. If a valve is installed in the connection between an alarm-initiating device intended to signal activation of a fire suppression system and the fire suppression system, the valve shall be supervised in accordance with NFPA 72, chapter 17. Sealing or locking such a valve in the open position or removing the handle from the valve does not meet the intent of the supervision requirements as detailed in NFPA 72.
5. Both interior and exterior control valves shall be marked.

2.2.5.4 **Fire Department Connections (FDCs)**

1. All NFPA 13 fire sprinkler and standpipe systems shall have a fire department connection (FDC). FDCs shall be located and installed in conformance with SHFDS 9.0 in a location approved by the Fire Code Official as shown on the approved civil plans.
2. Signage for FDC shall be in accordance with SHFDS 9.0.
3. The FDC shall be located at within 75 feet or less from a hydrant or an approved distance by the FCO.

2.2.5.5 **Underground Fire Service Main**

1. Underground Fire Service Mains shall be installed in accordance with Shoreline Fire Department Standard SHFD 5.0, Underground Fire Service Mains and currently adopted NFPA 24, Standard for the Installation of Private Fire Service Mains and Their Appurtenances.

2.2.6 Fire Sprinkler Riser room/Fire Control Room

The Fire Sprinkler Riser room will be referenced as the "Fire Control Room"

1. Risers shall be located in a separate room from the general occupancy. The main fire sprinkler riser, its appurtenances, the buildings fire alarm control panel, fire fighter smoke control panel and fire pump/control panel shall be located in this room. A 3-foot clearance in front of the entire width of the fire sprinkler equipement and 1 foot clearance on the remaining 3 sites shall be provided for all equipement, as required by other codes or the FCO.
2. The location of the fire sprinkler riser room shall be determined during the site plan approval process and be identified on the architectural drawing. The Fire Control Room shall have direct exterior access with the minimum dimensions of 100 square feet or an approved size by the FCO.
3. The Fire Control Room shall be two-hour rated per this standard.
4. Phone, electrical, or other water systems may be allowed in the fire control room, provided it does not interfere with the operation of, or access to, the fire alarm control panel, fire sprinkler system components or any other fire system component required for the building, housed in the fire control room.
5. Interior drains required in rooms containing fire riser system shall be sized to accept the flow from the system drain when fully opened. Exterior drains shall be directed and or protected so as not to disrupts landscaping, etc. from the system drain when fully open. Plans shall be made for drainage from testing volumes.
6. Fire Control rooms shall be locked at all time and openable with the building master key secured in a Knox Box. See SHFDS 12.0 Access and Addressing Standards for additional details.
7. Fire Control Room doors shall be rated per the exterior assembly requirements as required by currently adopted IBC and contain no windows.
8. To maintain security, no windows are allowed in walls that make up the rated assembly of the Fire Control Room.
9. All fire control rooms shall be provided with zone maps showing what areas of the building are covered by the system(s) installed. These maps shall be accurate as to the building layout, the location of all sprinkler zones, standpipes outlets/FDC's, control valves, and water-flow alarm devices and remote drains. All maps shall be legible and easily understood. They shall be laminated and permanently attached to the wall in the riser room near the FACU. When the system is modified, it is the responsibility of the installing contractor to update the maps.
10. Storage is prohibited in fire sprinkler Riser rooms. Signs stating: "NO Storage" (4" letters) shall be provided on at least one wall.
11. Signage requirements: please refer to SHFDS 12.0 for sign requirements for fire control rooms.
12. All sprinkler system flows shall be monitored in accordance with NFPA 72 Chapter 17. Flows shall be detected by a paddle type flow switch (wet systems only) or a pressure switch (dry systems only). These devices shall detect a flow from one sprinkler, and trigger a local alarm within 90 seconds of opening the inspectors test valve. Additionally, a signal shall be

received at the central station monitoring company within the same amount of time.

13. Location of interior and exterior alarm sounding devices shall be per be per NFPA 72 and this standard.
    a. An exterior visual and audible device will be required and placed in an approved location by the FCO.

2.2.6.1 **Special Design Requirements.**

1. When attached to a fire sprinkled building, overheads shall be protected as follows:
    a. In all M, S, and H occupancies (as defined in the International Building Code), canopies and overhangs that exceed 4 feet in width shall be provided with fire sprinkler protection regardless of construction type.
    b. Canopies or attached walkway covers greater than 4 feet and associated with occupancies where combustibles are stored, handled or used under such canopies or attached walkway covers, shall be provided with fire sprinklers regardless of construction type.
    c. Decks on multi-family buildings 2 feet or longer shall be required to be sprinkled regardless of construction type.
        i. Exception: decks that are not directly over one another or exceed 20 feet in distance above are not required to be sprinkled.
    d. All parking garages shall be equipped with quick response fire sprinklers.
        i. An exception may be applied for in an "open" parking garage to use other than quick response heads at discretion of the fire code official.
    e. All dry systems, regardless of size, shall provide a continuous stream of water to the inspector's test within 60 seconds of the opening of the inspector's test valve.

2.2.7 Acceptance Testing & Inspections

2.2.7.1 **Responsibility**

1. Within the Cities of Shoreline, Kenmore, Lake Forest Park and the Town of Woodway, the responsibilities for inspection of fire sprinkler systems are as follows:
    a. Commercial and multi-family underground fire service mains from the water purveyor connection/vault to riser room: Shoreline Fire Department
    b. Commercial and multi-family from inlet in riser room to overhead system: Shoreline Fire Department.
2. The contractor shall be responsible for ensuring that all test water is safely disposed of and does not create a safety hazard or damage property. The

contractor shall provide and oversee the operation of all equipment and be responsible for damages.

3. The installing contractor shall pretest all system components as required by Shoreline Fire Department and NFPA 13 prior to requesting an inspection.
4. The installing contractor shall perform all pretest and acceptance tests (i.e. flush, purity, hydrostatic, and flows). At their expense and with their own or rented equipment.
5. Existing systems (all types): If code violations are noted in existing systems during inspection, correction may be required immediately or prior to final inspection. These violations include, but are not limited to: incorrect hangers, earthquake bracing, sprinkler spacing, design criteria, etc.

2.2.7.2 **Underground Fire Service Main**

1. Underground fire service mains shall be tested in accordance with SHFDS 5.0 and NFPA 24 standards.

2.2.7.3 **Overhead**

Overhead sprinklers shall be installed per approved plans and current NFPA 13 Standards.

1. Cover Inspection
    a. Hydrostatic test: Shoreline Fire Department Inspector shall witness a hydrostatic test on all new systems or work involving more than 20 sprinklers being added or relocated per NFPA 13.
        i. System will be pressurized at 200 psi for two hours. No leaks or drops in pressure shall be observed during the hydrostatic test.
        ii. Dry pipe systems shall be air tested for 24 hours at 40 psi in accordance with current NFPA 13 standards. Testing shall be recorded on materials test and acceptance form for FCO approval.
            1. Exception: Modifications that cannot be isolated, such as relocated drops, shall not require testing in excess of system working pressure.
    b. Coverage inspection: verifies that the system is installed per NFPA 13 and as designed on approved plans. Items to be inspected include:
        i. Appropriate bracing and hangers
        ii. Correct head placement per plans and NFPA 13.
    c. Final Inspection
        i. Verify proper head placement, protection in place, with no obstructions.
        ii. Verify no panted heads and trim rings/escutcheon plates are installed.

iii. Collect all required paperwork (contractors' materials and test certificate for above and below ground piping).
iv. Verify proper mounting of spare head box with heads, wrench, and calculation plates.
v. Test all fire alarm devices located on sprinkler system.
vi. Other tests as required by NFPA 13 chapter 24.
vii. At the completion of commissioning and acceptance testing, the contractor/s responsible for commissioning shall upload all required documentation and commissioning reports to The Compliance Engine (Brycer) before the permit will be finaled and closed out.

2.3 NPFA 13 D Single- and two-Family Residential Sprinkler Systems

Where required:

City of Shoreline: as of February 1st 2021, all new one and two-family dwellings including detached accessory dwellings and adult family homes (new or converted) shall have a sprinkler system installed in accordance with NFPA 13D, Shoreline Municipal Code and Shoreline Fire Standards.

> Exceptions: Existing buildings undergoing renovation or additions – refer to municipal code section 102.5.2 exceptions and 901.4.3.

City of Kenmore: as of 2021, all new one- and two-family dwellings shall have a sprinkler system installed in accordance with NFPA 13D, Kenmore Municipal code requirements and Shoreline Fire Standards. Adult family homes shall install an NFPA 13D system as required by currently adopted International Fire Code, Washington State Amendments.

> Exceptions: Existing buildings undergoing renovation or additions – refer to Kenmore municipal code section 903.2.13 (existing buildings).

City of Lake Forest Park: Please refer to City of Lake Forest Park Municipal code section 903.2.13 for fire sprinkler requirements for one and two-family dwellings.

The Town of Woodway: Please refer to The Town of Woodway Municipal code section 12.13 and Appendix B, table B105.1 (1) of the currently adopted International Fire Code for residential Sprinkler Requirements.

2.3.1 Design Requirements

All systems installed within the Cities served by the Shoreline Fire Department (Cities of Shoreline, Kenmore, Lake Forest Park and The Town of Woodway) shall meet the following requirements.

2.3.1.1 **General**

1. Systems shall be installed as NFPA 13D multipurpose piping sprinkler systems designed and installed per current NFPA 13D standards.

2. Multipurpose piping sprinkler systems shall not be installed on dedicated or non-domestic/fire sprinkler water meters.
3. Anti-freeze systems are not allowed
4. Water supplied for residential sprinkler systems shall be from the public main.

   Exception: Tank and pump systems may be used when approved by the Fire Code Official.

2.3.1.2 **Special Design Requirements**

1. Arm over extensions shall not exceed 4 feet.
2. Tree systems shall have a domestic connection at the end of each branch line.
3. One domestic appliance shall be connected to the system on each floor.
4. A single control valve shall be arranged to shut off both the domestic system and the sprinkler system and shall include a pressure gauge.
5. A drain shall be installed on the system side of the domestic shot-off to allow maintenance of the system.
6. A minimum of one head shall be installed on the garage side of the door leading into the residence from an attached garage. This head must also be able to protect the riser if placed in the garage. If one head is not able to accomplish this a second head shall be added.
7. Under stair compartments that are enclosed with a door and able to be used for under-stair storage shall be protected with a sprinkler head/s.
8. If the system has a fire compartment with a slope greater than 8:12 (8 units of rise per 12 units of run), and more than two heads are installed, a separate calculation shall be done to prove the design is able to flow all heads in the fire compartment containing the slope. The heads used in this area shall be listed for a maximum slope of at least 8:12. All other design approaches for fire compartment with a slope greater then 8:12 shall be proposed too, and approved by, the Fire Code Official.
9. If mixed head spacing is used, a separate calculation shall be done to prove the design is able to flow all heads.
10. A cabinet containing a minimum of two spare heads of each type and a sprinkler wrench shall be provided.
11. 6” Bell required for all town home and adult family home containing a 13D sprinkler system. A homeowner can elect to install a 6” bell in which case it will be installed and inspected as required by this standard. Placement: 6” bells are required to be installed on the address side of the building.

2.3.1.3 **Underground (exterior)**

1. Pipe size shall be a minim of 1” inside diameter, I.D.

2. Pipe type shall be copper or high molecular polyethylene, (or alternate material as approved by the Fire Code Official.
3. Meters shall be installed per the water utility district division standards for which the work is being performed (Northshore Utility, North City Water Utility, Seattle Pacific Utility, Highlands Water District).

2.3.1.4 **Acceptance Test & Inspections**

1. The contractor shall be responsible for ensuring that all test water is safely disposed of and does not create a safety hazard or damage property. The contractor shall provide and oversee the operation of all equipment and be responsible for damages.
2. The installing contactor shall pretest all system prior to requesting an inspection. The contractor should allow for a minimum of 48 hours (2 working days) for the request to be filled. The Shoreline Fire Department Fire Mashal's Office will confirm an appointment with the contractor prior to arriving on site.
3. The installing contractor shall perform all pretests and acceptance tests (i.e., flush, hydrostatic and flow testing) at their expense and with their own or rented equipement.
4. Existing systems (all types): If code violations are noted in existing systems during inspection, the contractor may be required to correct the condition immediately and prior to final inspection. These violations include, but are not limited to; incorrect hangers, earthquake bracing, sprinkler spacing, design criteria, etc.
5. Shoreline Fire Department 13D sprinkler system acceptance test process includes the following inspections:
    a. Cover inspection: This inspection confirms that the system was installed per the approved plans, meets the requirements of 13D and operates as designed. The system must pass this inspection prior to covering walls and ceilings. There are six components to the cover inspection.
        i. Connect a hose to the water supply line at the point it connects to the sprinkler system.
        ii. Connect a porous bag to the end of the hose.
        iii. Flow water and inspect bag for debris. If debris is evident, continue to flush until system is clean.
    b. Hydrostatic Test
        i. Hydro test shall be witnessed by the inspector.
        ii. Pressurize the system for a minimum of two hours at 150 PSI.
    c. Head placement and piping
        i. Sprinkler coverage is adequate based on designed head spacing, sprinkler head specifications, NFPA 13D and SHFD Standards.
        ii. System connected to fixtures as required (valves, gauges, PRV's, etc.) and gauges.
    d. Flow Test – A functional flow test of the system verifies that proper flow and pressure is present in the system's most hydraulically demanding area. The procedure and specific requirements for the system are as follows:
        i. Locate and replace the two most hydraulically demanding heads in the system with test assemblies identified on the approved plans. The test assemblies shall consist of:

1. Sprinkler Pipe (same interior diameter as system pipe).
2. In-line gauge (accurate and readable to within one PSI and in good working order).
3. In-line valve
4. Test head (same make and model as installed heads with the fusible element and deflector removed).
5. Place a pipe over the orifice of each test head. Direct each discharge into its own container.
6. Record the static pressure prior to flow. Flow the two heads for 30 seconds and record the residual pressure during flow.
7. Measure the volume of water in each container individually and multiply x2 to determine gpm. Record the result
    a. Note: Measurement container must be calibrated and clearly marked to within ½ gallon.
8. Verify that the test flow rates and pressures conform to the manufacturers specifications for the designed head spacing(s).
9. A separate bucket test is required for each of the head spacings.

e. Tenting - All sprinkler pipe and connections to domestic plumbing must be protected from freezing temperatures in attic spaces and tented per NFPA 13D standards.
    i. Buildings that will require spray in insulation foam in attic space or must wrap and protect fire sprinkler lines from all spray foams. Sprinkler line piping found to be in contact with any spray foams used for insulation will be required to be replaced.

f. Hangers/Bracing/Nail Plating - All sprinkler pipe is braced, hung and protected from nail penetration per code.

NOTE: new commercial building fire sprinkler final inspections shall be scheduled congruently with fire alarm system and/or other fire system testing as required by Shoreline Fire Department scheduling requirements. For scheduling questions contact the Shoreline Fire Marshal's Office (206) 533-6565.

6. **Final Inspection**
    a. Test Fire Alarm devices connected to sprinkler system, if any.
    b. Verify proper head placement, head protection in place (if required and no obstructions to water distribution.
    c. Verify proper installation
        i. All sprinkler trim in place
        ii. No Painted heads
        iii. Protective plastic caps removed
    d. Collect all required paperwork (contractors' materials and test certificates for above and below ground piping.

e. Verify all required signage in place
    i. Warning signs
f. Verify proper mounting of spare head box
        1. Minimum two spare heads of each type
        2. Sprinkler head wrench
        3. Calculation plate
g. Ensure 6” bell operates on waterflow (if applicable)

2.3.2 Maintenance

2.3.2.1 **Maintenance Requirements**

NFPA 13D systems shall be maintained in accordance with the instructions provide to the owner from the installing company per chapter 12 of the current adopted NFPA 13D standard.

2.3.2.2 **Backflow devices**

All backflow devices installed on fire sprinkler supply lines shall be inspected for proper operation annually. A certified backflow assembly tester shall test this assembly. After this test is complete, the completed backflow assembly test form shall be submitted to the water purveyor that system resides in (Seattle Pacific Utility, North City Water or Northshore Utility District, Highlands Water District).