



# Residential Fire Sprinkler Systems

## Overview

This handout outlines the conditions under which an automatic residential fire sprinkler system is required. The requirements for installation of an automatic residential fire sprinkler system is intended to mitigate certain life-safety issues relating to emergency access, water supply where required and anticipated response times.

Apply On-Line at [MyBuildingPermit.com](http://MyBuildingPermit.com)

Select: King County | Fire | Single Family | (Activity Type) | Fire Sprinkler Systems



## Requirements for Residential Properties<sup>1</sup>

Residential structures with habitable spaces, including adult family homes, are required to have an automatic residential fire sprinkler system in the following conditions:

- A. Residential structures on properties over 35,000 sq. ft. in rural zones without adequate Fire apparatus access.
- B. Residential structures on properties under 35,000 sq. ft. in rural zones, and all properties in urban zones, that are not provided with all of the following:
  - 1. The minimum fire department apparatus access road as defined by the International Fire Code.
  - 2. Water supply from a utility providing a 1,000 gallons a minute (GPM).
  - 3. A fire hydrants within 350 feet of the property line, as measured by vehicular travel.
- C. Residential structures that are not allowed under the International Residential Code.
- D. Residences over 10,000-square-feet in floor space regardless of acceptable access and water availability.
- E. Residential structures that are located in dead end areas, having more than 100 lots or living units, and are served by only one approved fire apparatus access road (minimum of two is required).

Residential remodels requiring the installation of a sprinkler system will also require that the existing portion of the residence be retrofitted with sprinklers.

Temporary and medical hardship mobile homes may be exempt from water, access and sprinkler conditions for a period of one year.

<sup>1</sup> Residential property includes single family, duplexes and townhomes (up to four units).

# Residential Fire Sprinkler Systems, continued

## Fire Access Road Requirements

A fire apparatus access road/fire lane can be a driveway, easement, public or private road that meets all the following requirements:

- A. 20-foot wide unobstructed permanent all-weather driving surface with 25-ton (52,000 lbs.) loading capacity.
- A. All portions of the exterior walls of residential structures (at grade) must be within 150 feet (as a person would walk via an approved route around the building) from an approved fire apparatus access road/fire lane.
- B. Maximum grade of 15-percent at all locations.
- C. Vertical clearance of 13 feet 6 inches.
- D. Minimum of 20-foot inside turning radius and 40-foot outside turning radius at all bends and turns. A fire apparatus access road/fire lane or driveway over 150 feet long is required to have an approved hammer head turn-around configuration. In some cases, a circular 80 foot diameter turn-around may be acceptable.

## Water Availability

Applicants may obtain information regarding fire hydrant distances and water supply (fire flow) from the local Water District or utility in the form of a [Water Availability Certificate](#).

A water supply (fire flow) of 1,000 gallons-per-minute or more at 20-pounds per-square-inch pressure for two hours or more.

Parcels that rely on well water, where a water supply from a water utility is not available and the lot is less than 35,000 sq. ft. in a rural area will be required to install an automatic residential fire sprinkler system. For rural area lots over 35,000 sq. ft. a water supply for fire flow will not be required and shall only be required to meet the fire apparatus access road requirements.

## Fire Access Road Improvements v. Sprinkler System Installation

It may be possible to perform road and driveway improvements to meet King County standards, however property owners must obtain a grading permit before any work is performed.

When applicants revise a plot plan to meet fire access requirements, a revision must be submitted for review and approval. Fire apparatus access road improvements may trigger additional permit requirements, such as clearing, critical areas review, wetland mitigation, drainage improvements, and/or impervious surface limitations. Additional permits, reviews and conditions may delay the permitting process and add to the cost of the project.

## Automatic Residential Sprinkler System Requirements

If an automatic sprinkler system is to be installed in the residence, then compliance with fire apparatus access and water supply (fire flow) is not required.

## Residential Fire Sprinkler Systems, continued

Residential fire sprinkler systems must be designed by a Washington State certified sprinkler designer and installed in accordance with the National Fire Protection Standard (NFPA) 13D. A separate permit is required for the sprinkler system. The sprinkler condition on the residential building permit will not hold up the building permit review process.

At-the-factory installation of systems in mobile and modular homes is possible.

### Sprinkler System Inspections

The inspection and functional flow test for the fire sprinkler system must be completed before the framing inspection is allowed. All structures having installed residential fire sprinklers including mobile and modular homes, shall have all inspections and flow tests before a Certificate of Occupancy may be issued.

### Residential Automatic Sprinkler System Submittal Requirements

- A. [Fire Permit Application, Sprinkler, Residential](#)
- B. Two sets of paper plans **or** one electronic plan set in PDF format. [Electronic submittal standards.](#)
  - a. Plan cover sheets should include the following information:
    - i. A statement of the scope of work that this permit is intended to cover;
    - ii. Summary of the number of zones, systems, and sprinkler heads;
    - iii. The fire and water districts serving the proposed site.
    - iv. Water supply information.
- C. Plans must include the following information:
  - a. Site plans including the following:
    - i. Outside hookups to utilities, including the underground sprinkler supply line; either from the meter or well serving the property.
  - b. Floor plans, including the following:
    - i. The location of risers, piping, and heads;
    - ii. Show all room designations (examples: kitchen, stairwells, bedrooms);
  - c. Complete riser details;
  - d. Details and legends for the hangars and sprinklers, including sway bracing;
  - e. Cross-sections showing trusses framing, ceilings, stairs and location of sprinklers;
  - f. Hydraulic calculations;
  - g. If this is an addition to an existing system, show existing risers, piping, and heads in enough detail to allow Permitting to determine the adequacy of the existing system;
  - h. For a single-family residence served by a well, a holding tank and a pump may be necessary;
  - i. If sprinklers are being installed within an existing structure, provide verification that the structure can support the weight of the proposed system; and

## Residential Fire Sprinkler Systems, continued

- j. Plans and hydraulic calculations shall be stamped by a person holding a current [Sprinkler Certificate of Competency issued by the State of Washington](#).

### Obtaining a Residential Automatic Fire Sprinkler Permit

#### Online:

Go to [MyBuildingPermit.com](http://MyBuildingPermit.com) The permit type selections are:

*Jurisdiction: King County*

*Application Type: Fire*

*Project Type: Single Family*

*Activity Type: (Choose one)*

*Scope of Work: Fire Sprinkler Systems*

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#### Walk-in:

Applications and payment by check, cash or credit card (VISA or MasterCard), may be submitted in person at the Local Services, Permitting office. No appointment is necessary.

#### [Location and office hours](#)

#### Mail-in:

A residential sprinkler permit application along with payment, may be mailed to the King County Department of Local Services, Permitting Division.

#### Additional Resources

King County [Department of Local Services, Permitting Division](#)

[Permit Fees](#)

[Fire Permit Application, Sprinkler, Residential](#)

Inspection Scheduling line: 1-888-546-7728 ([IVR Inspection Codes](#)), or [Online](#)

[Online Permit Status and Invoice Payment](#)

State of Washington

Washington State Patrol, Fire Marshal's Office

[Fire Sprinklers, List of Sprinkler Certificate Holders](#)