Fire Systems, Residential Fire Sprinkler Submittal Information

If you need to install a fire suppression sprinkler system in your new single-family home or addition this document guides you through current state adopted codes, plan submittal requirements, when to apply, how to apply, pipe tenting requirements, and required acceptance inspections.

Adopted Codes:

Your plans must meet the following code requirements before submittal.

1. International Fire Code (IFC) with Washington State Amendments, 2021 edition.
2. National Fire Protection Association (NFPA) 13D, 2019 edition.
3. Revised Code of Washington (RCW).
4. King County Code (KCC) Title 17.

Plan Submittal Requirements:

King County is a paperless organization. Your application materials must be electronic and submitted via MyBuildingPermit. See below for more on how to apply. Plans, hydraulic calculations, and material specifications are required for each submittal. Below are general requirements needed to deem your application submission complete upon intake:

1. Minimum allowed scale for submittal drawings is ¼ inch = 1 inch.
2. Minimum sheet size of 11 inch by 17 inch.
3. Name of owner along with street address.
4. Name, address, and phone number(s) of installing contractor.
5. Full height cross section or schematic diagram, including structural member information if required for clarity and including ceiling construction and method of protection for nonmetallic piping.
6. Ceiling/roof heights and slopes not shown in the full height cross section.
7. Label each room and use for clarity.
8. Location and size of concealed spaces, closets, attics, and bathrooms.
9. Label any small enclosures in which no sprinklers are to be installed.
10. Make, type, model, and nominal K-factor of sprinklers, including sprinkler identification number.
11. Temperature rating and location of high-temperature sprinklers.
12. Location of riser, providing appropriate working space.

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13. Make, type, model, and size of backflow prevention assembly.
14. Hydraulic reference points shown on the plan that correspond with comparable reference points on the hydraulic calculation sheets.
15. System showing a design buffer being 5 pounds per square inch (PSI) for static pressures less than or equal to 50 PSI and 10 PSI for static pressures above 50 PSI.
16. Additional hose steam for second dwelling units.
17. Edition year of NFPA 13D to which the sprinkler system is designed to.
18. Material specifications for all components/appurtenances being installed.
19. Construction and hydraulic documents must bear the seal of the Certificate of Competency holder. Level 1, 2, or 3 State Fire Sprinkler Certificate of Competency issued by the Washington State Patrol Fire Protection Bureau per RCW §18.160.040.

When to apply for your permit:

Submit your fire sprinkler plans only after your building permit is approved. The fire sprinkler submittal will not be reviewed until the associated building permit is approved. Please provide adequate time prior to your framing inspection to allow for submittal, review and approval of your fire sprinkler permit. Our office typically reviews residential fire sprinkler submittals within 2-3 weeks of intake acceptance, depending on staffing and workload levels. A premature submittal may result in delays with processing or accepting the application.

To apply for the residential fire sprinkler permit:

Apply On-Line at MyBuildingPermit.com

Select: (Jurisdiction) King County | (Application Type) Fire | (Project Type) Single Family Residential | (Activity Type: Select One) | Fire Sprinkler Systems

MyBuildingPermit

If you have questions regarding the submittal process, please contact PermitServices@kingcounty.gov.

Wondering what the status of your application is? Go to Check Permit Status for more.

Why Pipe Tenting?

Sprinkler piping is typically installed in areas where your home is unheated, such as attics or crawlspaces. The pipe will FREEZE unless the heat from the room or space below is able to rise through the sheetrock and keep the pipe warm and above 40 degrees Fahrenheit. Blown-in insulation underneath the pipe prevents the heat from reaching the pipe. Improper protection of the sprinkler pipe will damage your home due to the bursting of the pipe leading to possibly costly repairs.

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To prevent such damage to your home, the sprinkler pipe must be covered in all unheated spaces with "tented" batt insulation. Please see the included diagrams for examples directly from the NFPA 13D, 2019 Edition. By tenting the pipe as shown, heat from the area below is allowed to rise and be trapped around the pipe.

The objective of sprinkler tenting is to capture the warm air coming through the sheetrock to keep the sprinkler pipe warm and to seal out cold attic air and protect from blown in insulation getting between sprinkler pipe and sheetrock.

Pipe Tenting Requirements:

Use these batt insulation installation techniques:

1. Secure batts in place.
2. Staple batts a minimum of every 6 in.
3. Where joist widths exceed 4 ft., extend insulation 2 ft on both sides of the water-filled pipe
4. Extend insulation 6 in. from the ends of the water-filled pipe
5. Where multiple layers of batt insulation are installed, it is most effective to cross-link batts to cover gaps

Please ensure your insulation contractor reviews this document. Best practice is to have someone designated to conduct a pre-inspection to verify the proper tenting has been completed.

Prior to covering of framing, a Deputy Fire Marshal must approve the tenting/sprinkler piping insulation. The insulation/tenting must be installed according to one of the diagrams located at the end of this document.

Failure to meet the requirements in this document will result in construction delays and may result in a re-inspection fee.

Required Acceptance Inspections:

Your sprinkler system needs certain inspections to ensure it meets minimum IFC, NFPA, and King County codes. These inspections are at the same time as with the construction inspections and must be approved before advancement of certain construction inspections.

There are a few ways to schedule an inspection: through the King County Permitting Portal, through MyBuildingPermit, by phone or by text. For instructions, visit our Inspections Scheduling page.

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There are a total of five inspections that are required. However, your permit fee covers two site inspections, so multiple inspections can be grouped together. The first three inspections below are required to be approved by the fire code official prior to covering the fire sprinkler system with sheetrock. The flow/trip test (or bucket test) can be performed during the first inspection, or second (final acceptance) inspection, but must be approved before approval of the final acceptance inspection.

If using phone or text to schedule, use the three-digit codes below when requesting the inspection:

Nozzle/Head Placement	(283)
Pressure Test	(168)
Insulation Cover	(280)
Flow/Trip Test	(273)
Final Acceptance	(077)

If you need more than two site inspections, a reinspection fee will be assessed and must be paid prior to the next inspection. If a reinspection fee is assessed, you will be notified by the inspector or permitting staff.

Once you have received a final approval of your permit, your building permit will reflect the fire system approval, which advises the building inspector that you are ready to schedule a final building inspection.

Questions? Please email fmo.dper@kingcounty.gov.

Additional Resources:

King County – Department of Local Services, Permitting Division

MyBuildingPermit

Where's My Permit?

Inspections Scheduling

National Fire Protection Association - Home Fire Sprinklers | NFPA

National Fire Protection Association – NFPA 13D (UpCodes free version)

National Fire Sprinkler Association - Sprinkler Insulation: A Literature Review, April 2020

Washington State Patrol - Fire Protection Bureau *Note: This website also provides a list of licensed contractors with their certificate level of competency.*

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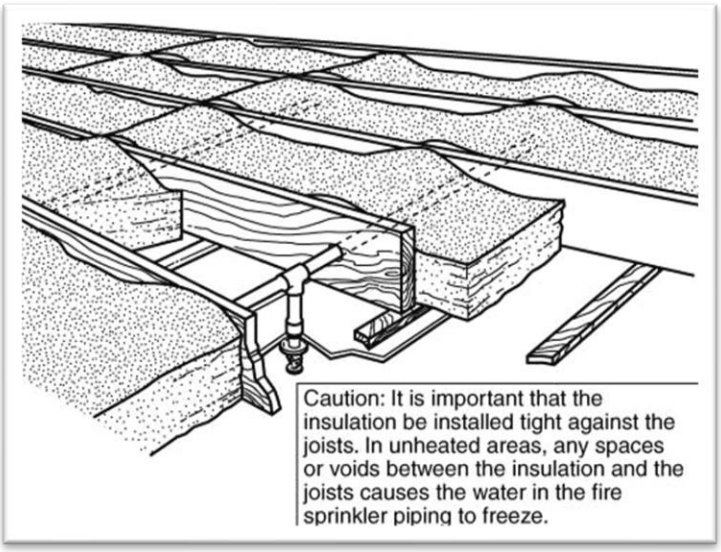
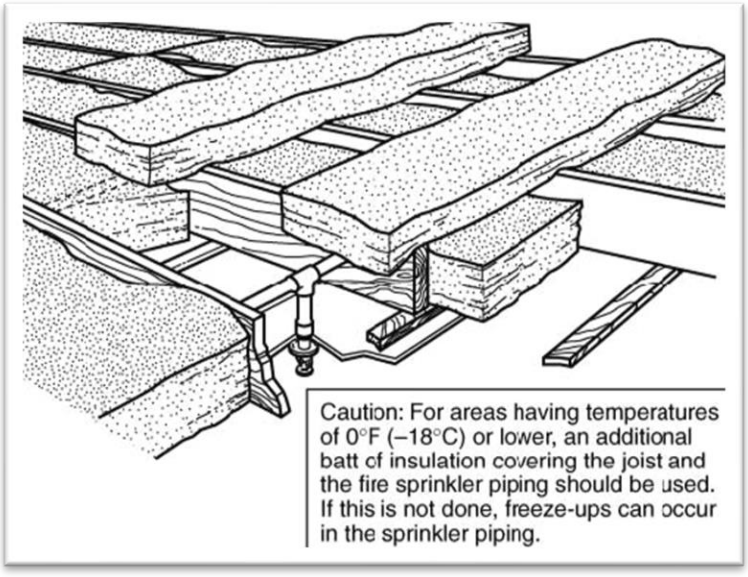
Tenting Figures from NFPA 13D, 2019 Edition:

NFPA 13D, 2019 Edition
FIGURE A.9.1.1(a) INSULATION RECOMMENDATIONS - ARRANGEMENT 1.



NFPA 13D, 2019 Edition
FIGURE A.9.1.1(b) INSULATION RECOMMENDATIONS - ARRANGEMENT 2.



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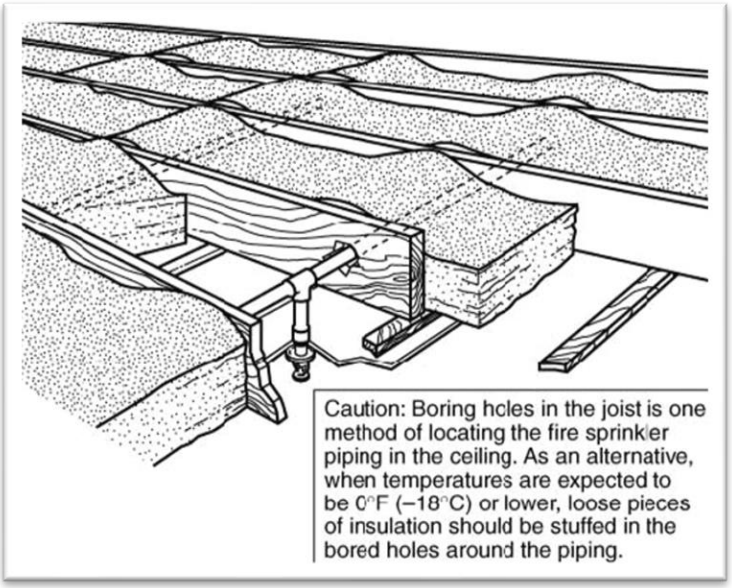
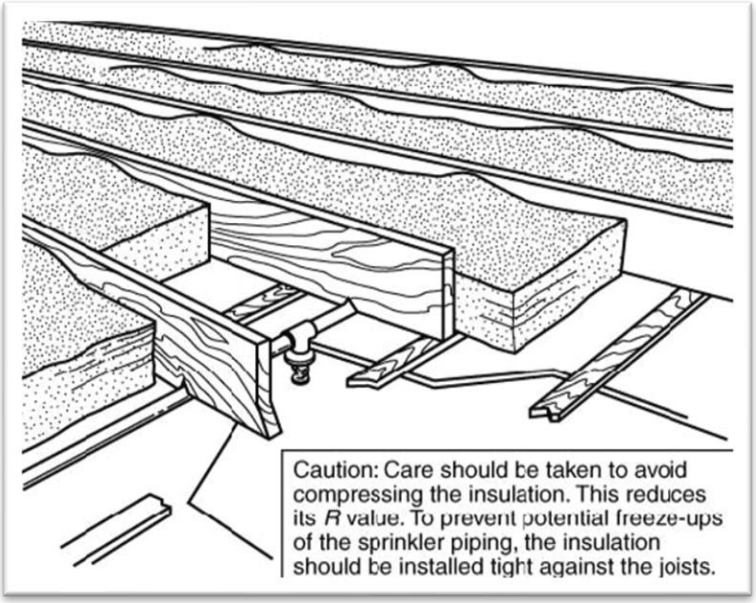
NFPA 13D, 2019 Edition
FIGURE A.9.1.1(c) INSULATION RECOMMENDATIONS - ARRANGEMENT 3.



NFPA 13D, 2019 Edition
FIGURE A.9.1.1(d) INSULATION RECOMMENDATIONS - ARRANGEMENT 4.



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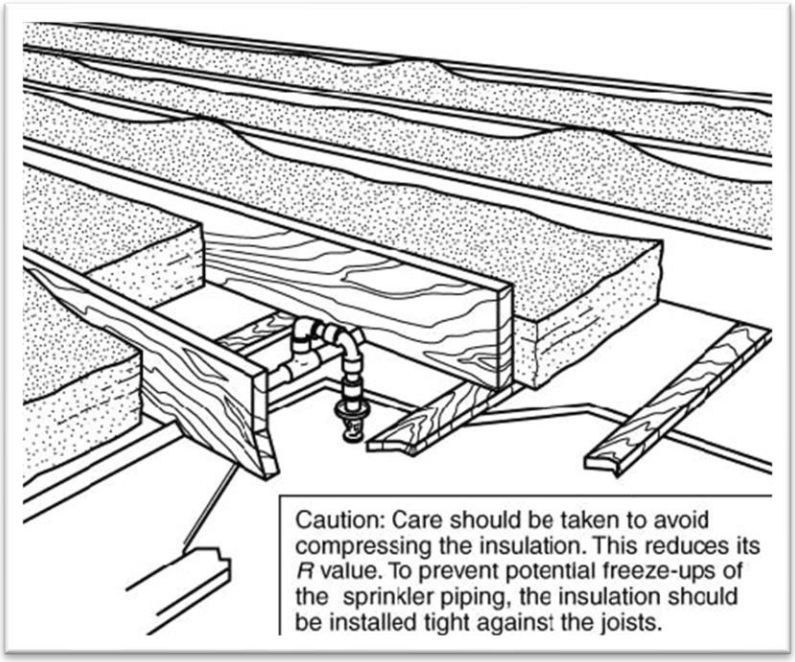
NFPA 13D, 2019 Edition
FIGURE A.9.1.1(e) INSULATION RECOMMENDATIONS - ARRANGEMENT 5.



Example of tenting:

End of handout.