



COLORADO SPRINGS FIRE DEPARTMENT

Alternative Materials and Methods Guidance Document for Multipurpose Fire Sprinkler System Protection of Composite Wood Joists in Residential Homes

This guidance document is intended to assist you in the submittal of an Alternative Materials and Methods request when applying 2021 IRC 302.13 Exception 1 “other approved equivalent sprinkler system” to protect exposed composite wood joists in basements of new single-family homes. This method is not allowable in lieu of single family homes requiring a full fire sprinkler system per the development plan.

This protection scheme shall consist of a piping system that connects the basement sprinklers to the piping feeding the other plumbing fixtures in the home. Be sure to complete the questions at the end of this document and include it as part of your AMM submittal to PPRBD.

Installation and Licensing Requirements:

1. The piping and components used must be listed for exposed installation below composite wood joists. In addition, the piping and components must be listed for use in residential fire sprinkler systems and domestic water piping. See the product manufacturer’s website for listing documentation.
2. Unless the brand of piping and components has different listing requirements, the fire sprinkler heads utilized in these fire sprinkler systems shall be 4.9 K-factor residential pendant sprinklers with an activation temperature of 155° F, see Figure 1 for an example. Since these sprinklers are being installed in an exposed application, sprinkler escutcheons are not required for the fire sprinkler heads. The fire sprinklers shall have a maximum spacing of 16’-0” x 16’-0” (8’-0” maximum off of a wall), and a minimum of 8’-0” between sprinkler heads. The sprinkler deflector distance below the wood joist shall be per the listing of the piping system being used. The sprinkler spacing shall meet the obstruction criteria of NFPA 13D and its listing.



Figure 1 Pendant residential sprinkler head



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The mission of the Colorado Springs Fire Department is to provide fire, emergency and prevention services with professionalism, compassion, and excellence.

3. The type and spacing of hangers shall be per the listing of the brand of piping and components or the manufacturer's installation manual. Check the exposed installation listing to ensure that there are not specific hanger requirements for this type of installation.
4. The piping arrangement feeding the sprinklers in the basement shall either be a looped (figure 2) or gridded (figure 3) pipe layout.

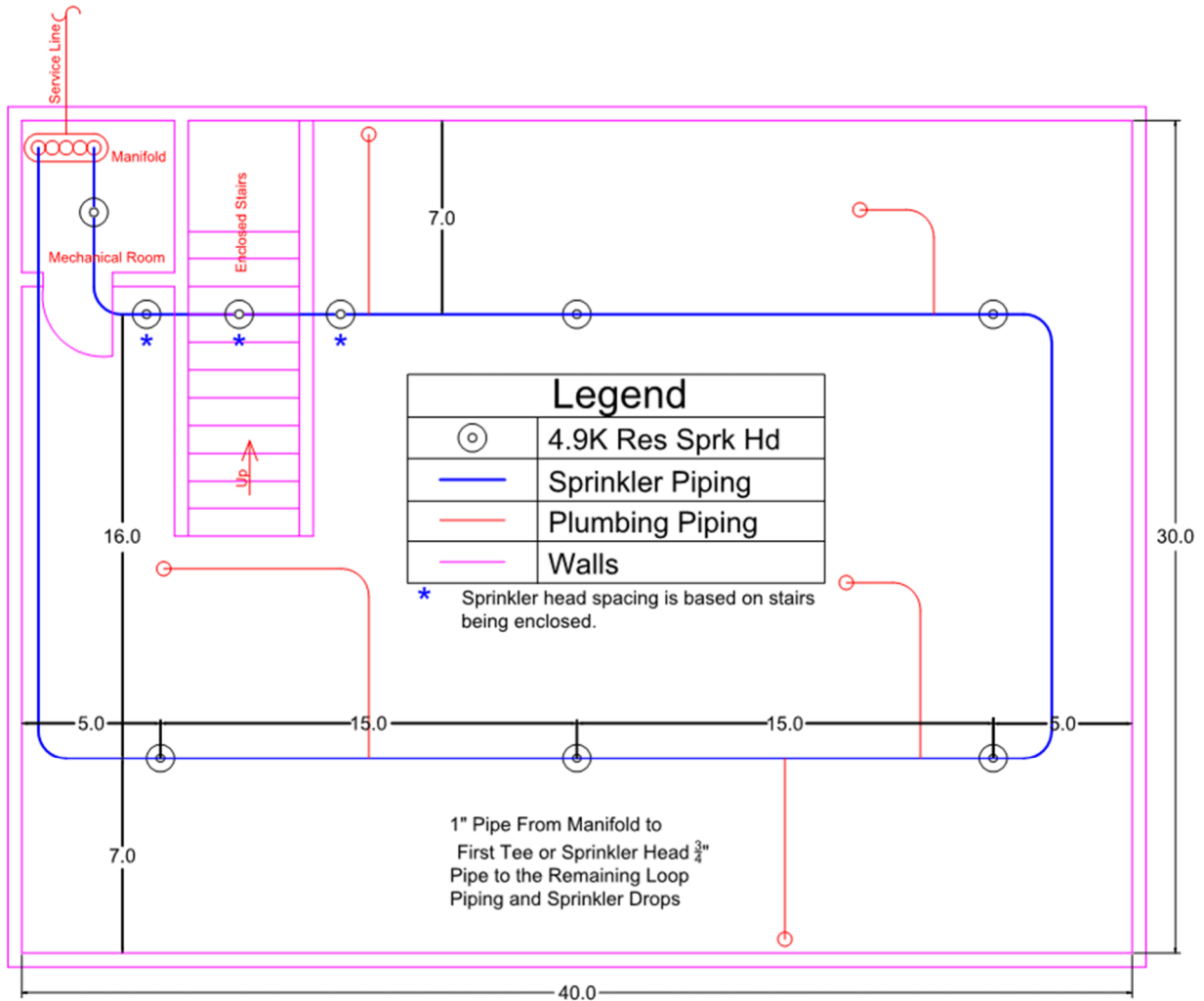


Figure 2 Looped pipe layout

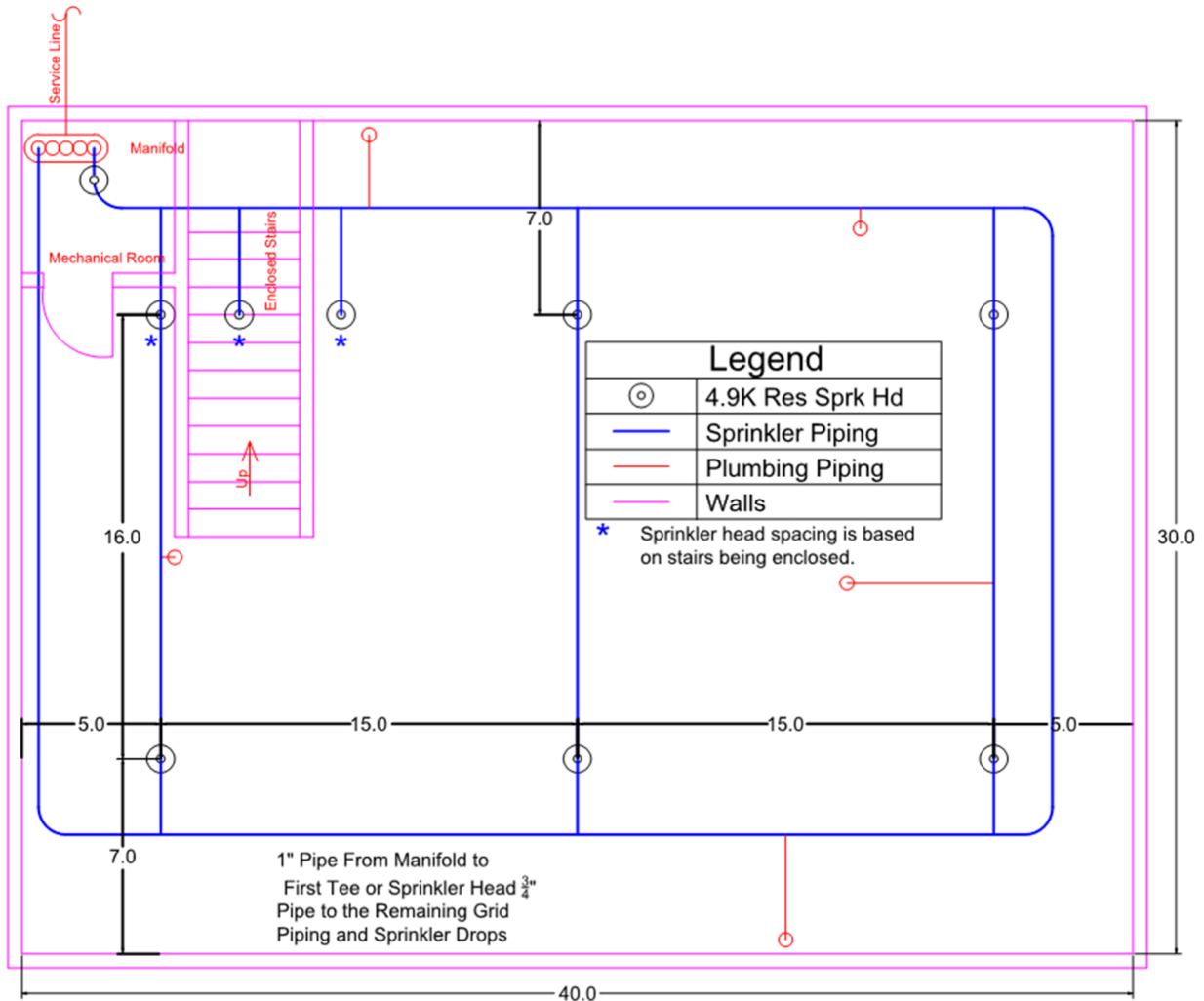


Figure 3 Gridded pipe layout

5. The sprinkler piping shall consist of a minimum of $\frac{3}{4}$ " pipe from the service line entry to the main cold water manifold, a minimum of 1" pipe from the main cold water manifold to the connection point of the looped or gridded piping. The looped or gridded piping shall be a minimum of $\frac{3}{4}$ " pipe. The sprinkler piping can contain tees feeding plumbing fixtures.
6. PPRBD Plan Review will review the AMM request, with input from CSFD, for compliance with minimum material and installation standards. PPRBD Inspections will review the plumbing aspects of installation, including joints and connections of pipes. Colorado Springs Fire Department will not require plan review, permitting, or inspections, however CSFD reserves the right to perform spot inspections of these installations to ensure that the proper guidelines are being followed.
7. If the homeowner decides to finish the basement at a later date, the fire sprinkler heads and associated piping can be removed. Care should be taken in the removal of the fire sprinkler piping to ensure that this piping does not also supply any plumbing fixtures.

8. Any licensed plumber may install this protection scheme. Contractor and installers are encouraged to obtain training on the pipe and fitting system being utilized. Further information on training can be found at the following websites:

<https://homefiresprinkler.org/>

<http://www.uponor-usa.com/>

<http://www.watts.com/>

<https://www.bc.com/resources/awc-partial-sprinkler-guide/>

9. Provide the following information as part of the AMM submittal per RBC 104.7:

Type of piping to be used: _____

Sprinkler Information: Manufacturer: _____

K-Factor: _____ Listed Coverage area: _____ # Heads: _____

Please include cut sheets for piping and sprinklers as part of your AMM submittal package along with a dimensioned sprinkler installation diagram or sketch similar to Figure 2 or 3.