Boulder County

Boulder County Land Use Department Publications

Fire Sprinkler System Plan

Land Use Department
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8 a.m. to 4:30 p.m. M, W, TH, F
10 a.m. to 4:30 p.m. Tuesday

Building Permits can be applied for and issued until 4 p.m.

Fire Sprinkler System Plan

Per section R313 of the 2015 IRC and section R313 of the Boulder County Building Code.

Automatic Fire Sprinkler System Required

An automatic sprinkler system designed to conform to the provisions of NFPA 13D or IRC P2904, as applicable, is required to be installed throughout this structure. The system is to be plan-reviewed and inspected by the local fire district or a state-certified inspector.

Plans:

Plans are to be submitted to the fire district or other certified sprinkler inspector for review and approval. The reviewer is to notify the Building Safety Team of the plan approval before any rough inspections may be scheduled.

Inspections:

A rough sprinkler inspection is to be made by the fire district or other certified inspector. The Building Safety Team is to be notified of the sprinkler inspection approval before the other rough inspections may be requested and performed by the building safety division. A final sprinkler inspection is to be performed by the fire district and notice of approval is to be received by the Building Safety Team before a Certificate of Occupancy ("C.O.") or other final inspection approval may be issued.

Residential Fire Sprinkler Requirements

History

Boulder County's residential fire sprinkler requirements have been in place since January 1, 1995. At that time, there was a concern that a large number of relatively large dwellings were being constructed in the unincorporated area of the county, an area served by up to 25 volunteer fire departments.

Response Times

When notified of a fire, volunteer fire fighters need to first leave wherever they might be at the time, travel to the nearest fire station and pick up the fire equipment. It is only then that they can proceed to the scene of the fire. Where urban fire departments may often have response times in the 4- to 5-minute range, response times for rural volunteer fire departments are often much longer. Both response times and firefighting efficiency can also be adversely impacted by distances, weather, terrain, road conditions and the lack of adequate firefighting water supplies in most rural areas.

Level of Service Issues

Residential fire sprinklers are most often promoted for life safety purposes. Sprinklers can either extinguish or contain a fire long enough for the occupants to safely exit the home before being overcome by smoke, heat or flames. In rural Boulder County, the need for sprinklers is also seen as a "level of service" issue as well as a way to reduce wildfire hazards. A fire sprinkler system can give the volunteer fire department the time they need to arrive upon the scene and, hopefully, save the structure. In addition, the sprinkler system can prevent the fire from spreading to adjacent forests or grasslands or other homes.

Fire Sprinkler Operation

If a fire starts in a home, typically in the kitchen, next to a space heater or other heat-producing appliance, or in a wastebasket or on a couch or chair, the nearest fire sprinkler head activates and flows water as soon as the temperature at the head exceeds its design rating. For residential sprinklers, this is typically 155 degrees Fahrenheit (155°F.). An additional head will not activate until the temperature at that head also exceeds 155°F. Most residential fires are extinguished or contained by the operation of one or two heads. The two most remote sprinkler heads are required to have a total flow of 26 gallons per minute (gpm) for a duration of ten minutes, for a combined total water supply of less than 300 gallons. Residential fire sprinkler system water supplies are permitted to be part of the domestic water supply system, the same piping system that supplies showers, sinks, toilets and tubs.

Requirements for New Homes

Prior to 2013, the fire sprinkler "trigger" for new homes was a total floor area, including the garage, of 3,600 sq. ft. The International Fire Code ("IFC") (as well as the Uniform Fire Code (UFC) that preceded it) requires a fire hydrant flow of 1,500 gallons per minute (gpm) for dwellings up to 3,600 sq. ft. in total floor area. For homes larger than 3,600 sq. ft., hydrant fire flow requirements are the same as those required for commercial buildings. Thus, the fuel load contained in larger homes is considered to be the same as for commercial buildings. This is why the 3,600-sq.-ft. area was selected for the first sprinkler requirement back in 1995.

Section R313 of the 2009 and 2012 editions of the published International Residential Code ("IRC") includes requirements that an automatic residential fire sprinkler system be installed in all new one- and two-family dwellings and townhomes, regardless of size. The Colorado Joint Ad-Hoc Residential Sprinkler Committee, after reviewing the new code requirements and the circumstances in Colorado, recommended that the effective date for the sprinkler requirements be delayed until January 1, 2013. When Boulder County adopted the 2009 IRC, effective January 1, 2011, this delayed effective date for the residential sprinkler requirements was incorporated into the adoption. Thus, with the adoption of the 2012 IRC, effective January 1, 2013, the sprinkler requirements for all new one- and two-family dwellings is in effect.

Requirements for Additions

In 1997, the fire sprinkler trigger for additions to existing structures was increased to a total of 4,800 square feet for the existing structure plus the addition. This was felt to be a reasonable accommodation for existing dwellings, where both the existing structure and the addition are required to be sprinklered. The 2012 IRC adoption adds an exception that permits a one-time addition of up to 200 sq. ft. to be built without requiring sprinklering. Remodels and renovations of existing homes 4,800 sq. ft. and larger where more than 50% of the floor area within the structure is being remodeled/ renovated are also required to be sprinklered. The previous exception that did not require sprinklers if IFC hydrant fire flow rates are met has been deleted, recognizing that 1) the published model codes require both sprinklers and adequate water supplies for firefighting, and 2) no one is there to apply the water from any available hydrants or other water supplies until the volunteer fire department arrives on the scene.