



### Introduction

This fifth installment of the **Fire Protection System Basics** white paper series seeks to outline the type of fire sprinkler system you choose for your building. As discussed in previous white papers, there are several types of fire sprinkler systems to select from for the protection of your building. The *International Building Code (IBC)*, *National Fire Protection Association (NFPA)* and Local building and fire codes will be a guideline to select the system required for your building. Typical considerations for you to take into account are:

- What is the occupancy of your building?
- What is the category of construction of the building?
- Is the building in an area of cold climate?
- What types of areas will need protection?
- Are there special insurance requirements?

### Occupancy

What is the building being used for? From an individual house to a major skyscraper, code classifies all the ways a building is occupied. IBC describes the different classifications of occupancy for your building, while NFPA 13 is the standard for which the sprinkler system shall be designed and installed. Different occupancy types may have different sprinkler system requirements.

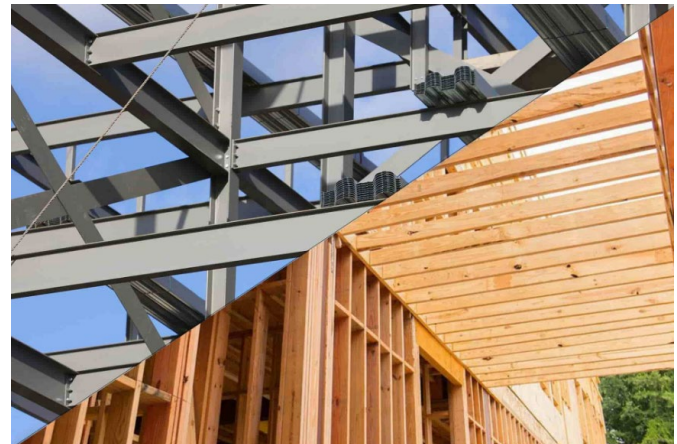
Occupancy Classification	
Description	Group(s)
Assembly	A-1, A-2, A-3, A-4 and A-5
Business	B
Educational	E
Factory and Industrial	F-1 and F-2
High Hazard	H-1, H-2, H-3, H-4 and H-5
Institutional	I-1, I-2, I-3 and I-4
Mercantile	M
Residential	R-1, R-2, R-3, R-3.1 and R-4
Storage	S-1 and S-2
Utility and Miscellaneous	U

The type of sprinkler system required and installed may also affect the requirements for the type of fire alarm system. If the size of your building does not require fire

sprinkler protection, then a more robust fire alarm system may be required. If there is a fire sprinkler system in your building, then the fire alarm system may just be there to monitor the system and send an alarm to the monitoring company. The local jurisdiction, IBC, and NFPA 101, Life Safety Code, will determine what type of fire alarm system will be required in your building.

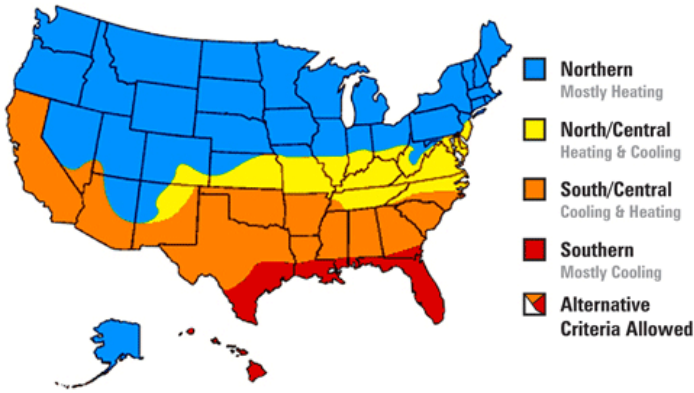
### Building Construction

Is your building constructed of wood, steel, or a different material? The construction of your building can have a major impact to the requirements of the fire sprinkler system. Combustible construction, or wood construction, will require fire protection in concealed spaces. Whereas non-combustible construction, or steel construction, would not require this protection. This is just the main difference between the two types of construction materials; however, the codes go into much more detail about different requirements between the two construction material types.



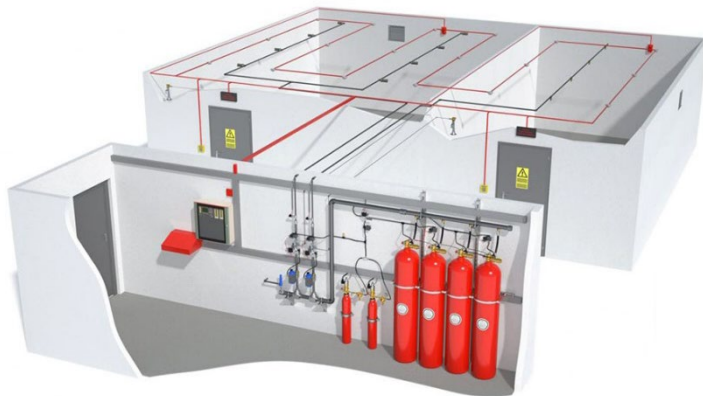
### Cold Climate

What part of the country is your building being constructed? This is the simplest of the decisions when it comes to requirements for your sprinkler system. If there is an area in your building that is being protected by a fire sprinkler system, the area must be maintained at or above 40 degrees. If this temperature cannot be maintained, then a dry sprinkler system would be required, which has additional equipment associated with it.



### Types of Areas or Rooms

Does your building have mission critical equipment, or rooms you want to make sure are protected? One area that is commonly worried about is computer server rooms. These types of rooms house expensive equipment which would be damaged, likely beyond repair, if a standard fire sprinkler system was installed in the area and the system was triggered. There are a number of different options for systems that can be installed in these types of areas to avoid damaging the equipment in the event of a fire. This can range from multi-activation systems, up to special chemical gas systems to control a fire. These types of specialty systems have code sections dedicated to each system and require a high level of knowledge to design.



### Special Insurance Requirements

Who is your insurance carrier? If you have decided to have FM Global as your insurance carrier, then a more robust system may be required. FM Global has performed their own testing of fire protection systems and come up with a

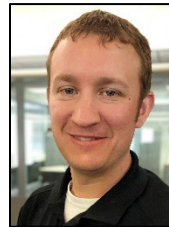
more stringent set of requirements for fire sprinkler systems. This is another area which a fire sprinkler system expert, who knows FM Global's requirements, would be recommended.

### Conclusion

As discussed in all of the previous chapters, fire sprinkler systems can be simple gridded systems or a very complex array of different systems combined together. There are intricate details about the construction of the building and the use of the building required for a fire protection engineer to determine the required fire sprinkler system for your building. Fire sprinkler systems are critical to the life safety of the building occupants, allowing them time to exit unharmed. They also provide substantial protection for your investment in your facilities and may lower your insurance rates.

[Contact](#) Schnackel Engineers today if you have questions or need help with selecting the right fire sprinkler system for your project.

### About Layne



Layne Micek, P.E., Vice President of Plumbing Engineering, has been involved in the design of plumbing and fire protection systems for malls, mixed-use developments, corporate offices, national retail rollouts, schools, hospitals, medical facilities, commercial and institutional

buildings for over 19 years with Schnackel Engineers. Email Layne at [lmicek@schnackel.com](mailto:lmicek@schnackel.com).

### About Greg



Gregory Schnackel, P.E., LEED AP has been involved in the design of mechanical, electrical, plumbing, fire protection and information technology systems for malls, mixed-use developments, corporate offices, national retail rollouts, schools,

hospitals, medical facilities, commercial and institutional buildings for over 40 years with Schnackel Engineers. Email Greg at [gschnackel@schnackel.com](mailto:gschnackel@schnackel.com).