CAMPUS FIRE SAFETY CODE TALK

Campus Fire Safety e-NewZone

Fire Protection of Information Technology Equipment
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Introduction

As a society we have continued to become increasingly reliant on technology and that is showing no sign of slowing down anytime soon. This is as true on college campuses as it is anywhere else. This reliance on technology means that we have more equipment, such as computers, servers, and data storage devices, that are used to create and manipulate data, voice, video, and similar signals. The failure of this equipment has the potential to cause serious interruptions in the processes that the equipment serves, and fire is one of the threats that could lead to significant interruption for different operations. There are some unique considerations that must be given to the fire protection of these spaces.

Applicable NFPA Codes and Standards

There are several NFPA codes and standards that apply to the areas including, NFPA 13, Standard for the Installation of Sprinkler System, NFPA 70, National Electric Code, and NFPA 72, National Fire Alarm and Signaling Code, to name a few. These documents will apply to these spaces in all buildings that information technology equipment (ITE) is present where referenced by the applicable building and fire codes.

NFPA 75, Standard for the Fire Protection of Information Technology Equipment, is a more specific occupancy document that may also apply to these spaces in your facilities depending on the risk determined by a fire risk analysis. This standard is now referenced by NFPA 1, Fire Code. While specifically designed to address anywhere that ITE is present, NFPA 75 clearly states that the mere presence of ITE does not constitute the need to invoke the requirements of the standard. Instead, the implementation of a risk assessment that considers the following as the basis for implementation of the standard:

-Life safety aspects of the function (e.g., process controls, air traffic controls)

-Fire threat of the installation to occupants or exposed property

-Economic loss from loss of function or loss of records

-Economic loss from value of equipment

-Regulatory impact

-Reputation Impact

-Redundant off-site processing systems

While a risk analysis might find that the majority of ITE spaces and areas around campus are not necessary to be protected in accordance with NFPA 75, some of them may benefit from added protection and a discussion of the applicable requirements of that standard have been included in this discussion as the provisions of this document should be worth consideration even in spaces not required to be in complete compliance with the document.

Sprinklers

One of the most asked questions we receive regarding IT equipment rooms, through NFPA's Advisory Service, is whether or not sprinklers can be omitted. This is a question that we receive over concerns believing that it is more likely that a potential leak or accidental activation of a sprinkler will be more likely to cause damage than the chances of it controlling a fire in the space. There are different allowances in both NFPA 13 as well as NFPA 75 that do allow this omission, however it is only under specific circumstances. In order to avoid the fear of water damage, noncombustible hoods or shields are permitted to protect important electrical equipment.

NFPA 13 starts by stating that sprinklers are required in electrical equipment rooms except where permitted by one exception. In order to omit them from the space it must be dedicated to electrical equipment only, use only dry-type electrical equipment, is a 2-hour fire-rated enclosure, and no combustible storage is allowed in the room.

NFPA 75 requires that IT equipment room located in a sprinklered building be provided with sprinklers. The only time where time sprinklers are not required by NFPA 75 is in an unsprinklered building, and the room is provided with another type of extinguishing system.

Other Suppression Systems

While NFPA 75 requires IT equipment rooms to be sprinklered if in a sprinklered building, it allows for alternatives to sprinklers if in a nonsprinklered building and also allows for the

installation of these alternatives even if the room is sprinklered. Those specifically permitted are gaseous total flooding systems in accordance with NFPA 12A, NFPA 12, and NFPA 2001, as well as water mist systems in accordance with NFPA 750.

These systems can provide benefits in these spaces as they are less damaging to the equipment, are non-conductive (even water mist to some extent), and can be activated when a fire is in its earliest (incipient) stages as opposed to a standard sprinkler which will activate once the fire produces enough heat increase the temperature at the sprinkler. This last reason is why it can be beneficial to provide the alternative suppression systems in rooms that are already sprinklered.

Detection

Automatic detection is required per the local building code and fire code and will more than likely require detectors and systems to be in accordance with NFPA 72. Where NFPA 75 is applied, it requires smoke detection-type systems at the ceiling level and below any raised floors also in accordance with NFPA 72.

Portable Extinguishers

Fire extinguishers located either in or near the IT equipment room should be classified for use on energized electrical fires (Class C) per NFPA 10. NFPA 75 specifically requires that they be of the carbon dioxide type or halogenated agent type and prohibits the use of dry chemical extinguishers due to the damage they can cause to the equipment.

Emergency and Recovery Procedures

An aspect that should not be overlooked for these areas is the development of emergency and recovery procedures. NFPA 75 requires that there be a written emergency fire plan as well as a plan covering recovery procedures for continued operations. While preparing these for all ITE spaces may not be appropriate, their development assists in understanding the effects that would result from a fire and allows for consideration of how to keep disruptions to a minimum.

Closing

ITE rooms and areas are present in most buildings. While they vary in their size, functionality, and criticality, they do present many of the same fire risks. Not all of these spaces need

protection in accordance with NFPA 75, but all of them should be properly protected with the other NFPA standards that apply. Where there is greater risk from fire affecting the ITE, then the added provisions of NFPA 75 can be applied to help maintain the continuity of the operations even when a fire occurs.

Jonathan Hart is a Fire Protection Engineer for the NFPA. In this role he serves as staff liaison to NFPA 99, Health Care Facilities Code, as well as documents addressing the fire protection of information technology equipment and telecommunications facilities. He is a co-developer and instructor of the 2-day NFPA 99 Seminar and is the technical editor of the Health Care Facilities Code Handbook. Mr. Hart has a B.S. in Mechanical Engineering and a M.S. in Fire Protection Engineering, both from Worcester Polytechnic Institute.