



Editor - Mark Hopkins, P.E

Issue # 380

August 22, 2017

## **TechNotes Issue # 380 August 22, 2017**

Best of July 2017 Following are a dozen questions answered by the engineering staff as part of the NFSA's Expert of the Day (EOD) member assistance program during the month of July 2017. This information is being brought forward as the "Best of July 2017." If you have a question for the NFSA EOD (and you are an NFSA member), send your question to [eod@nfsa.org](mailto:eod@nfsa.org) and the EOD will get back to you.

It should be noted that the following are the opinions of the NFSA Engineering Department staff, generated as members of the relevant NFPA technical committees and through our general experience in writing and interpreting codes and standards. They have not been processed as formal interpretations in accordance with the NFPA Regulations Governing Committee Projects and should therefore not be considered, nor relied upon, as the official positions of the NFPA or its Committees. Unless otherwise noted the most recent published edition of the standard referenced was used.

### **Question 1: Residential calculations in NFPA 13**

You have described a project using the 2013 edition of NFPA 13 and residential sprinklers. There is a group of identical adjacent small rooms each having a single sprinkler. You have indicated that the walls and ceilings have a 1-hour fire resistance rating and  $\frac{3}{4}$  hour self-closing fire doors are used.

You have also indicated that in your opinion if a fire starts in a room with a rating greater than the water supply required, then it stands to reason only the sprinklers in that room are needed to flow in the calculation. You stated that there is tremendous benefit to compartmentalization. You have identified that in theory, the fire would be contained to the room before the required water supply has been depleted.



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You have asked two separate questions which are answered separately.

**Question 1a:** You have asked if a residential calculation would require 4 sprinklers to flow simultaneously from four adjacent rooms each separated by a 1-hour wall.

**Response 1a:** The answer to your question is "it depends, on which design method you are using." If the sprinkler system is protecting a residential occupancy and the residential design approach is being used, the answer is yes. Using the special design approach for residential sprinklers would require a minimum of four sprinklers per NFPA 13-2013, section 11.3.1.1. If there are unprotected combustible concealed spaces without sprinklers, a minimum of eight sprinklers would be required per NFPA 13-2013, section 11.3.1.2.

However, you could also choose to apply the room design method as described in section 11.2.3.3. If choosing to use the room design method, a density would be selected from Figure 11.2.3.1, in this case 0.1 gpm/ft<sup>2</sup>, which is the same density required per 11.3.1.3(2). Since the walls and ceilings have a 1 hour fire resistance rating exceeding the duration of the water supply (30 minutes) required by Table 11.2.3.1.2 this method would be permissible per section 11.2.3.3.3. Although the room is smaller than the minimum design area identified in Figure 11.2.3.1, section 11.2.3.3.4 identifies that the density of 0.1 gpm/ft<sup>2</sup> would be applied. The discharge density would be the greater of the identified flow rate for the listing of the sprinkler or the density applied to the area of the room. Since this would be considered a light hazard occupancy and self-closing doors are used, the application density would be applied to each individual room only per section 11.2.3.3.5(1). Otherwise, flow from additional sprinklers would be necessary per 11.2.3.3.5(2).

Use of the room design approach would be consistent with your statements regarding compartmentation. This would be useful for sizing the pipes supplying sprinklers with these rooms. The water supply requirements for the building or area where the room design approach is being used must meet the room creating the greatest demand. Use of other design approaches in other parts of the building might require a larger water supply. Insufficient information has been provided to give a specific opinion regarding this issue.

**Question 1b:** You have also asked if a four sprinkler calculation is necessary, then can 8.6.2.1.2.1 be applied to each room with the residential sprinklers to eliminate the S x L calculation per small room?

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**Response 1b:** The answer to your question is yes, if the residential sprinkler approach is used. NFPA 13, section 11.3.1.3 states that the demand for the hydraulically most demanding sprinklers shall be the greater of the identified flow rate for the listing of the sprinkler or the density applied to the area of the room using either the provisions of sections 8.5.2.1 (if greater than 800 square feet) or 8.6.2.1.2 (if less than or equal to 800 square feet). You stated that each room is adequately protected by one sprinkler and each room would meet the definition of a small room as defined in section 3.3.21. Therefore, determination of the coverage area per sprinkler in accordance with section 8.6.2.1.2 would be applicable. The determination of protection area of coverage per sprinkler in accordance with section 8.6.2.1.2 has been clarified in NFPA 13-2016 to no longer be optional, but rather to be required for rooms meeting the definition of a small room.

## **Question 2: Fire Pump in Middle of a Building**

You have described an existing sprinkler system with a fire pump. This fire pump is located in the middle of the building. You have stated that the fire pump was at one point located at an exterior wall but an addition was added to the building and now the fire pump is in the middle of the building and does not have direct access to the outside. The building is fully sprinklered and the fire pump is in a pump room with a 2-hour fire rated enclosure

The existing sprinkler system and the fire pump are being updated and the fire marshal has stated that the fire pump room must be relocated to an exterior perimeter wall. Does NFPA 20 require the fire pump to be located on an exterior wall?

**Answer:** "No" but if the fire pump does not have direct access to the outside, a protected route from the exterior to the fire pump room is required. This requirement is found in section 4.13.2 of the 2016 edition of NFPA 20 (similar language in earlier editions). Specifically, section 4.13.2.1.1 reads as follows:

**4.13.2.1.1** Except as provided in 4.13.2.1.1.1, fire pump rooms not directly accessible from the outside shall be accessible through an enclosed passageway from an enclosed stairway or exterior exit.

Note that the exception (4.13.2.1.1.1) is in regard to local application systems and would not be applicable in this

case.

Section 4.13.2.1.2 goes on to state that the enclosed passageway shall have a fire resistance rating not less than the fire resistance rating of the fire pump room.

During operation, a fire pump is required to have personnel monitoring the fire pump (typically the fire dept.). This person must be protected from the fire in the building when at the fire pump and also when traveling to that fire pump. In cases where there is no direct access from the outside, the required enclosed passageway (with appropriate fire resistance rating) will provide protection for this person.

It should also be noted that as the building is fully sprinklered, a 1-hour fire rated separation is required for this pump room in accordance with Table 4.13.1.1.2.

### **Question 3: Floor Control Valves in Central Location**

NFPA 13 2013 Edition section 8.16.1.5 says that multistory buildings shall be provided with floor control valves.

Your question is: Are these floor control valve assemblies required to be installed on each floor level or can the valves for 2nd and 3rd floors be installed in a valve room on 1st floor?

**Answer:** The required floor control valve may be located in a valve room remote from the floor that they serve. However, this concept was added to the 2016 edition of NFPA 13 and is not included in the 2013 edition. NFSA proposed this change to allow that the floor control valves be located in a central location and not necessary on the floor that they serve.

The 2016 edition of NFPA 13, section 8.2.4.1 (relocated 8.16.1.5) reads:

**8.2.4.1\*** Multistory buildings exceeding two stories in height shall be provided with a floor control valve, check valve, main drain valve, and flow switch for isolation, control, and annunciation of water flow for each individual floor level.

The 2013 edition, section 8.16.1.5.1 reads:

**8.16.1.5.1\*** Multistory buildings exceeding two stories in height shall be provided with a floor control valve, check valve, main drain valve, and flow switch

for isolation, control, and annunciation of water flow on each floor level.

As you can see, the 2013 edition states "...on each floor level" and the 2016 language reads "...for each individual floor level.". This change was specifically made to permit all the floor control valves to be located remote from the floor that they serve.

As you are using the 2013 edition of NFPA 13, I would suggest that you discuss this change with the AHJ to allow the floor control valve to be located in a central valve room as specifically allowed by the 2016 edition.

The committee's intent is stated in the substantiation of this change (Second Revision No. 29) which reads as follows:

This proposed change of "on each floor level" to "for each floor level" would allow the required floor control valve assemblies to be located on a level remote from the level being served. It is, at times, more practical to locate all sprinkler equipment in a central

Committee location such as a riser room or another  
Statement: area remote from the floor being served.

This revision will not change the requirement that all floors in multistory building be equipped with a floor control valve but facilitate ease of installation and of inspection, test and maintenance of the systems.

#### **Question 4: Curtain Pockets**

You describe an arrangement in a hotel lobby with curtain pockets along the exterior walls. The pockets are 1-foot wide (horizontal) and 42 inches deep (height); exceeding the 36-inch limit permitted for unsprinklered ceiling pockets in NFPA 13 (2016) 8.6.7.2(2) for standard pendent and upright sprinklers. The sprinklers in the ceiling provide full coverage of the floor below and none of the pockets in a space exceed 1000 ft<sup>3</sup>. You note that sprinklers in these ceiling pockets would be unlikely to provide better coverage than sprinklers located in the ceiling level. Section 8.6.7.2 reads as follows:

**8.6.7.2** Sprinklers shall not be required in ceiling pockets where all of the following are met:

- (1) The total volume of the unprotected ceiling pocket does not exceed 1000 ft<sup>3</sup> (28 m<sup>3</sup>).
- (2) The depth of the unprotected ceiling pocket does not exceed 36 in. (900 mm).

- (3) The entire floor under the unprotected ceiling pocket is protected by sprinklers at the lower ceiling elevation.
- (4)\*The total size of all unprotected ceiling pockets in the same compartment within 10 ft (3 m) of each other does not exceed 1000 ft<sup>3</sup> (28 m<sup>3</sup>).
- (5) The unprotected ceiling pocket has noncombustible or limited-combustible finishes.
- (6) Quick-response sprinklers are utilized throughout the compartment.

You ask if there is an exception that would permit sprinklers to be omitted from these ceiling pockets.

**Answer:** "No, there is no exception provided in the prescriptive standard". Alternatives would include reconfiguring the ceiling level or providing infill in the ceiling pocket to limit its depth to 36 inches or less. Another alternative would be to propose a solution providing equivalent protection as permitted by 1.5 Equivalency.

The concern is that smoke and heat will accumulate in the ceiling pocket and delay sprinkler activation. Providing that the ceiling pockets in question meet all the other requirements to eliminate sprinkles in these ceiling pockets, a fire protection engineer may be able to demonstrate that the depth of the pockets will not adversely delay sprinkler activation in this particular configuration.

### **Question 5: Window Protection**

You described a situation where standard spray sprinklers have been installed on either side of an indoor window assembly separating a 2-story gym from adjacent areas in a New York City School. You indicated that sprinklers would be installed 12 inches above the windows. You have also indicated that the 2007 edition of NFPA 13 would be applicable. You have asked for clarification of the NFPA 13 window sprinkler protection requirements.

**Answer:** As discussed, NFPA 13-2007 provides limited guidance for window protection. Section 21.20.1.2.1 provides basic protection requirements for use of window sprinklers for atrium glass walls. NFPA 13, section 21.20.1.2.1 provides the following requirements.

- 21.20.1.2.1 Atriums.** Glass walls and inoperable windows shall be permitted in lieu of the fire barriers where all the following are met:
- (1) Automatic sprinklers are spaced along both sides of the glass wall and the inoperable window at

intervals not to exceed 72 in. (1830 mm).

(2) The automatic sprinklers specified in 21.20.1.2.1 (1) are located at a distance from the glass wall not to exceed 12 in. (305 mm) and arranged so that the entire surface of the glass is wet upon operation of the sprinklers.

(3) The glass wall is of tempered, wired, or laminated glass held in place by a gasket system that allows the glass framing system to deflect without breaking (loading) the glass before the sprinklers operate.

(4) The automatic sprinklers required by 21.20.1.2.1(1) are not required on the atrium side of the glass wall and the inoperable window where there is no walkway or other floor area on the atrium side above the main floor level. [101:8.6.7(1) (c)]

Section 21.20.1.2.1 (2) identifies that sprinklers are permitted to be located up to 12 inches from the window. The text in Section 21.20.1.2.1 is an extraction from the Life Safety Code (NFPA 101) and is intended to apply to atriums. However, no additional guidance is provided in NFPA 13-2007. Section 1.5, equivalency would permit the use of newer version of the standard.

NFPA 13-2016 has added requirements for sprinkler protected glazing. Section 8.15.26 provides the following requirements:

**8.15.26\* Sprinkler-Protected Glazing.** Where sprinklers are used in combination with glazing as an alternative to a required fire-rated wall or window assembly, the sprinkler protected assembly shall comply with the following:

(1) Sprinklers shall be listed as specific application window sprinklers unless the standard spray sprinklers are specifically permitted by the building code.

(2) Sprinklers shall be supplied by a wet-pipe system.

(3) Glazing shall be heat-strengthened, tempered, or glass ceramic and shall be fixed.

(4) Where the assembly is required to be protected from both sides, sprinklers shall be installed on both sides of the glazing.

(5) The use of sprinkler-protected glazing shall be limited to non-load-bearing walls.

(6) The glazed assembly shall not have any horizontal members that would interfere with uniform distribution of water over the surface of the glazing, and there shall be no obstructions between sprinklers and glazing that would obstruct water distribution.

(7) The water supply duration for the design area that includes the window sprinklers shall not be less than the required rating of the assembly"

Section 8.15.2.6 identifies that window sprinklers are required unless spray sprinklers are permitted by the building code. If standard spray sprinklers are permitted, the sprinkler locations will not be installed in accordance with the requirements of the NYC building code.

### **Question 6: Area Adjustment for Single Interlock**

You have indicated that you have run across a single interlock sprinkler system where the Quick Response (QR) area reduction was applied to the design area, per section 11.2.3.2.3.1 of NFPA 13-2007. You have noted that this reduction can only be applied to wet pipe systems. However, you have also pointed out that the dry pipe sprinkler area increase only applies to double interlock sprinkler systems and not to single interlock sprinkler systems. Specifically, you have asked if there are any exceptions which would allow the QR area reduction to be applied to a single interlock system.

**Answer:** A single interlock system will only release water into the system upon receiving a signal from some fire detector (pilot line, smoke, heat, optic sensors) and the single interlock valve will not open simply under a drop in pressure undergone in the system when a single sprinkler operates. This allows the sprinkler system to become pre-charged with water such that when a sprinkler does operate, the water is already at, or on its way, to the discharging sprinkler.

This is different from a double-interlock sprinkler system which will have a valve open only when both the sprinkler operates, dropping the pressure on the system side of the interlock valve, as well as when it receives a signal from a secondary means of detection. Because of this, the double interlock sprinkler system has a delayed water delivery time similar to dry pipe sprinklers.

Therefore, you are unable to apply the QR area reduction to a single-interlock sprinkler system, while you are also not required to increase the area due to the dry pipe area increase.

### **Question 7: Private Water Supply**

You have indicated that you have a project where you will be supplying water for two separate buildings. No city water is available for the project and you will be providing a tank. You have also indicated that you are determining



whether or not fire hydrants are required. Specifically, you have asked how to properly size the tank.

**Answer:** Fire hydrants are installed as part of the fire apparatus access road requirements in Section 503 of the IFC. When the IFC is adopted, apparatus roads are installed, where required, to be within 150 feet of the facility. Fire hydrants are installed with the fire apparatus access road through Section 507.5.1. When a facility is sprinklered with an NFPA 13 or NFPA 13R system, the hydrant is permitted to be up to 600 feet away. These hydrants should not be confused by the hydrants at the city street attached to the city water utilities. Hydrants at the street are installed through the zoning ordinance or through the water authority. Appendix C and D could also be used to install hydrants either at the city and/or the fire apparatus access road. However, Appendix C and D have to be specifically adopted by the jurisdiction in order to use the requirements within Appendix C and D. Without the specific adoption of Appendix C and D, the IFC hydrant requirements come from Section 503 and 507.

In regards to the sizing of a tank for these two buildings fire protection system, you are allowed to use a common water supply to supply multiple buildings. NFPA 13-2016 and all previous editions of the standard are written on the concept that a single fire event will occur at a given time. Therefore, if you have two buildings being protected by a common supply, that supply only needs to be sized to the greater of the two building demands. If there is a fire hydrant system supplied to this water supply, then the tank should be sized to supply both the fire hydrant demand as well as the greater of the two fire sprinkler demands.

### **Question 8 - NFPA 13R Garage Criteria**

The garages in a residential building protected under NFPA 13R are separated from the dwelling units by 1-hour fire resistance-rated construction. Access to the garages is not direct from each unit but through a common hallway. The governing standard is NFPA 13 (2010).

If residential sprinklers are used to protect these garages, what design criteria should be applied?

**Answer:** "Garages serving a single dwelling unit within a building protected with an NFPA 13R system may be protected using residential sprinklers installed as per the 'Inside Dwelling Unit'". A garage meeting the

requirements of 7.3.3 is permitted the option of using residential sprinklers as per 7.3.3.1(1) following the same criteria required in the dwelling itself as per 7.1.

### **7.3 Design Criteria - Garages**

**7.3.1** Garages that are completely separated from the residential portion of the building by fire-resistive construction sufficient to have them considered separate buildings under the local code shall be protected in accordance with NFPA 13.

**7.3.2** Garages that are accessible by people from more than one dwelling unit, and are not covered by 7.3.1, shall be considered part of the building and shall be protected in accordance with Section 7.2.

**7.3.2.1** Garage doors shall not be considered obstructions and shall be permitted to be ignored for placement and calculation of sprinklers.

**7.3.3\*** Garages that are accessible only from a single dwelling unit shall be considered as part of that dwelling unit.

**7.3.3.1** Garages that meet the criteria of 7.3.3 shall be protected in accordance with one of the following:

- (1) Use of a residential sprinkler in accordance with Section 7.1
- (2) Use of an extended coverage sprinkler discharging water not less than its listed flow rate for light hazard
- (3) Quick-response spray sprinkler at light hazard spacing in accordance with NFPA 13 designed to discharge at 0.05 gpm/ft<sup>2</sup> (2.04 mm/min) density

**7.3.3.2** The system demand shall be permitted to be limited to the number of sprinklers in the compartment but shall not exceed four sprinklers.

**7.3.3.3** Garage doors shall not be considered obstructions and shall be permitted to be ignored for placement and calculation of sprinklers.

### **7.1 Design Criteria - Inside Dwelling Unit.**

#### **7.1.1\* Residential Sprinklers.**

**7.1.1.1** The system shall provide at least the flow required for the multiple and single sprinkler operating criteria specified by the sprinkler listing.

**7.1.1.2\*** The system shall provide at least the flow required to produce a minimum discharge density of 0.05 gpm/ft<sup>2</sup> (2.04 mm/min) to the design sprinklers.

**7.1.1.3\*** Number of Design Sprinklers. The number of design sprinklers under flat, smooth, horizontal ceilings shall include all sprinklers within a compartment, up to a maximum of four adjacent sprinklers, that requires the greatest hydraulic demand.

Note that a First Revision of the draft NFPA 13R (2019) document, First Revision No. 40-NFPA 13R-2016,

has clarified the committee's intent that private garages accessed via a common corridor should still be treated as part of the dwelling unit:

**7.3.3** Garages that serve only a single dwelling unit shall be considered as part of that dwelling unit.

Committee Statement: A garage accessible from a single dwelling unit or from a shared hallway are no different. They are generally one or two car garages and the makeup of what is put in that garage is the same regardless of how it is accessed.

### **Question 9 - Wet System Waterflow Alarm Time**

Referencing NFPA 13 (2016) 6.8.1 regarding maximum permissible time to an audible alarm sounding and NFPA 72 (2016) 17.12.2\* regarding sprinkler system water flow alarm initiating devices, note that 6.8.1 permits a maximum of 5 minutes while 17.12.2\* only permits 90 seconds.

**6.8.1 General.** Waterflow alarm devices shall be listed for the service and so constructed and installed that any flow of water from a sprinkler system equal to or greater than that from a single automatic sprinkler of the smallest K-factor installed on the system will result in an audible alarm on the premises within 5 minutes after such flow begins and until such flow stops.

**17.12.2\*** Activation of the initiating device shall occur within 90 seconds of waterflow at the alarm-initiating device when flow occurs that is equal to or greater than that from a single sprinkler of the smallest orifice size installed in the system.

Is there is a conflict between these two requirements?

**Answer:** "No, these two requirements refer to different actions". NFPA 13 is concerned with the maximum time from waterflow until the sounding of an audible alarm on the premises; 5 minutes. NFPA 72 is concerned with the maximum permissible time from waterflow until the alarm-initiating device activates to signal an alarm condition; 90 seconds.

### **Question 10 - NFPA 20 Testing**

NFPA 20 (2016) 14.2.11 establishes fire pump acceptance test duration.

**14.2.11\* Test Duration.** The fire pump or foam concentrate pump shall be in operation for not less than 1 hour total time during all of the foregoing tests.

Is it the intent of this section to require the fire pump to be operated at its rated pressure for one hour?

Answer: "No, the intent is to run the pump for a full hour as one component of the acceptance test; not to run it at any particular flow for an hour". In order to verify the performance curve of the fire pump being tested it is necessary to measure flow and pressure at no-load (zero flow), rated flow (100%), and peak load (150%) conditions. It is only necessary to run the pump at its rated and peak flows long enough to develop and measure steady flows at those approximate test points. Once measurements have been taken at those points, flowing water is optional for the rest of the required hour as long as conditions are monitored to ensure that the pump does not overheat. This is clarified to some extent in the annex commentary at A.14.2.11.

**A.14.2.11** It is not the intent to discharge water for the full 1-hour test duration, provided all flow tests can be conducted in less time and efforts are taken to prevent the pump from overheating.

### **Question 11 - NFPA 13R Elevator with Combustible Suspension**

A building is protected with an NFPA 13R (2013) sprinkler system. The building includes a noncombustible elevator shaft but the elevator itself uses combustible elastomeric-coated suspension. The inspectors have expressed concern on omitting sprinklers in the elevator shaft as permitted by NFPA 13 Section 6.6.6. The inspector is citing NFPA 13R Section 6.6.8 which states:

**6.6.8.** All situations regarding sprinkler location and position that are not directly discussed in NFPA 13R shall be in accordance with NFPA 13.

Based upon this section (6.6.8), the inspector is stating that the elevator (with combustible elastomeric-coated suspension) needs to be protected in accordance with NFPA 13 Section 8.15.5.7.

Does this elevator shaft need to be protected in accordance with NFPA 13 Section 8.15.5.7 based upon the combustible suspension?

**Answer:** "No". As long as the elevator complies with the elevator safety code (ANSI A17.1) sprinklers protection in the elevator shaft is not required by NFPA 13R. Section 6.6.8 would not apply because this is a situation that is directly discussed in NFPA 13R. The residential committee has clearly stated that sprinklers are not required in elevator shafts complying with the elevator safety code. The fact that the elevator in question includes combustible suspension does not change this requirement in NFPA 13R Section 6.6.6.

In fact, this section has been modified in the 2016 edition of NFPA 13R to remove the requirement that the shaft be noncombustible. This section now reads, "elevator shafts where the elevator installation complies with ANSI A17.1, Safety Code for Elevators and Escalators". The word noncombustible was removed because A17.1 allows the shaft to be of wood frame construction as long as there is noncombustible sheathing with the appropriate fire resistance rating.

The fact that this elevator is open to the public also does not change the requirements of NFPA 13R Section 6.6.6.

## **Question 12 - Radiation Chambers**

A facility radiates medical equipment using cobalt radiation. The room where the cobalt is located has walls and ceiling constructed of solid concrete. When not in use, the cobalt sits in a water pool and is raised up when needed. It appears that the radiation and/or environmental conditions of this room causes corrosion of the sprinkler piping leading to inadvertent water discharge.

It has been stated that there is no risk of fire in this area and, if there was a fire, it would be contained by the concrete construction.

The question is: Since the water can actually do more harm in this case, then good, would it be possible to remove the pipes and sprinklers from this room?

**Answer:** "Yes, it is within the AHJ's authority to allow the omission of sprinklers in this area." This decision, however, needs to be done with due consideration of the risk and benefits of omitting sprinklers in this area. It would be outside the scope of the EOD service to advise on if removing this sprinkler coverage is warranted.

The 2015, international Building Code/ Fire Code in section 903.3.1.1.1 does provide guidance for situations where sprinklers may be omitted. This section states that

sprinklers may be omitted from certain areas, where these areas are protected with a fire detection system. Subsection 2 and 4 of this section may be applicable to the situation described. This section reads as follows:

**[F] 903.3.1.1.1 Exempt locations.** Automatic sprinklers shall not be required in the following rooms or areas where such rooms or areas are protected with an approved automatic fire detection system in accordance with Section 907.2 that will respond to visible or invisible particles of combustion. Sprinklers shall not be omitted from a room merely because it is damp, of fire-resistance-rated construction or contains electrical equipment.

1. A room where the application of water, or flame and water, constitutes a serious life or fire hazard.
2. A room or space where sprinklers are considered undesirable because of the nature of the contents, where approved by the fire code official.
3. Generator and transformer rooms separated from the remainder of the building by walls and floor/ceiling or roof/ceiling assemblies having a fire-resistance rating of not less than 2 hours.
4. Rooms or areas that are of noncombustible construction with wholly noncombustible contents.

Additionally, NFPA 801, Standard for Fire Protection for Facilities Handling Radioactive Materials may provide guidance for this situation. This standard basically states that sprinklers are to be provided unless the fire hazard analysis dictates otherwise. Section 4.2 of the 2014 edition of NFPA 801 provides guidance on performing this fire hazards analysis which should be prepared under the supervision of a fire protection engineer.

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