

CHAPTER 20

EMERGENCY NOTIFICATION, ACCESS AND FACILITIES

Inevitably, various emergencies, including medical emergencies, occur at buildings and facilities. This chapter deals with notification of appropriate individuals that an emergency exists and that suitable access and facilities for emergency operations and responders are provided. The intent of this section is to address the need for some manual action to preserve the safety of people and limit damage to a building or structure, and its contents.

Some of the conditions that might warrant emergency response and action include fires, storms (tornadoes, hurricanes, severe thunderstorms), bomb threats, hazardous materials releases, hazardous conditions from utilities, medical emergencies, or any other condition that can lead to injury or property damage. To achieve these objectives, three components were felt to be important: notification, access, and facilities.

Chapter 21 specifically addresses emergency responder safety. This chapter focuses on the tools needed to appropriately undertake emergency response.

Emergency notification

Determining who should be notified will depend on the nature of the facility and actions to be taken that are necessary to deal with the emergency. For instance, in a hospital, only staff, and not all occupants, would be notified. Notification should occur in a timely fashion so that manual action can be taken without harming those taking the action. Means of notification needs to be effective for everyone intended to be notified.

Thus, if people with hearing limitations are among those to be notified or if high ambient sound levels are expected, the means of notification must not depend solely on audible information. If the egress plan involves phased evacuation or relocation to areas of refuge or other safe places within the building, means must be provided to maintain communication to all those who may have to be evacuated later. In some occupancies, people are expected to be sleeping at times, and notification systems must be designed so that there is reasonable assurance that these people will be awakened. Notification may, for example, consist of the odor built into liquefied petroleum gas.

Not all buildings warrant the use of a notification device or system. In many cases within the prescriptive building and fire codes, alarm systems are not required. This is an indication that those buildings and occupants are at a lower risk due to the occupants' familiarity with the building, the capabilities of the occupants, or the level of hazard that is present. Sometimes the type of building has an effect. As an example, take a business occupancy from a 2-level office building and place it in a high-rise building. The 2-story building would not require sprinklers, an alarm system, or fire resistive construction, but the high-rise building would. These differences are related to the increased difficulty related to egress and the increased difficulty related to the search, rescue, and fire fighting activities. See Section 806 for more detail on notification.

Exterior access and facilities

The emergency response capability of communities varies greatly from jurisdiction to jurisdiction. The complement of apparatus and staffing that might respond to an emergency will vary by jurisdiction and by the reported type of emergency incident.

In such instances, it is essential that emergency response units and crews be able to rapidly access the property or building. Additionally, units and crews must both be able to reach and utilize facilities provided about or within the property to specifically aid emergency responders and facilitate management of an emergency at or within a property.

Accordingly, designers of buildings and facilities must communicate with the appropriate public safety officials to ascertain what will happen when the inevitable emergencies occur at or within the property. The needs and expectations of those officials and the capabilities of the emergency response forces that will be called upon to manage or assist in the management of the incident must be incorporated into the design and standard operating procedures for the property. Agreed-upon methodologies to accomplish fire safety objectives will be incorporated into the approved design, and the mutually established procedures must be incorporated into both the property's "owner's manual" and the public safety agencies' operating procedures. A design that depends heavily upon emergency response must provide for changing capabilities of the emergency responders over time, which may be very difficult. This chapter establishes performance criteria for (1) access to properties by the units/apparatus that transport the emergency response staff; (2) the deployment of units/apparatus and equipment utilized by the emergency response forces in responding to and managing the emergency; and (3) the staging of apparatus, equipment, staff, and facilities that might ultimately need to be deployed or utilized in management of an emergency at a property or building.

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Public safety forces usually respond to emergencies on specialized apparatus/units designed and equipped to support personnel in management of an emergency. As an example, urban communities will usually provide aerial ladder (or tower ladder) apparatus equipped with specially designed, hydraulically operated, multisectioned ladders with a vertical reach of 100 feet (30 480 mm) or more to enable firefighters to effect rescues from several stories above grade level or operate water streams into upper portions of low-rise buildings. Rural communities may provide water tenders or tankers with 2,000 gallons or more of water designed to quickly dump the water into fold-up tanks so that, oftentimes, in conjunction with multiple tenders, water can be shuttled from a source (lake or pond) to the fire scene. Typically, all fire apparatus carry large complements of tools and equipment that are removed and carried by emergency responders to various locations around or within the facility to aid in the management of the emergency.

Most emergency situations will involve the response of several emergency vehicles or apparatus. It may be necessary for some of those vehicles to leave and return to the incident scene one or more times in the course of the management of the emergency. For example, a water tender may make many trips back and forth from the water supply source to the scene of a fire to provide the water necessary to meet the fire-flow demand. In site planning it is important for designers to carefully research and consider the potential emergency services response complements and the type(s) of apparatus that will respond to the facility. Designers must ensure that those units will be able to adequately access the site or facility and take the tactical positions that provide optimum advantage of the capabilities of the emergency response complement. To accomplish this, designers must consider such things as the number, type, size (length, width, and height), weight [gross vehicle weight (GVW)], turning radius, operational features (width of an aerial apparatus with stabilizing jacks deployed), and tool and equipment inventory of the apparatus complement that reasonably can be expected to respond and operate at a major emergency at the site or facility.

Accordingly, clearances must be provided that allow the ingress and egress of emergency vehicles. There must be sufficient access and space for those vehicles to stage, park, pass, and deploy in tactically advantageous locations and positions. Apparatus carrying special equipment and tools that will be carried into or deployed around the structure must be able to park near entrances or deployment points. The roadways, lanes, staging areas, and parking surfaces must be able to carry the load imposed by the specialized apparatus used by the emergency response forces and be traversable in all seasons or reasonably expected weather conditions. Care must be taken to ensure that appurtenances and protrusions from buildings and structures will not impede access and that, as necessary for life-safety, accommodation is made to ensure that aerial apparatus can deploy to reach the maximum height and sweep of a building side or face.

Grades and slopes must accommodate the apparatus and facilitate accessibility by emergency response forces and deployment of their equipment; i.e., the placement of ground ladders. Once parked at the scene of an emergency, emergency response forces will deploy and utilize equipment brought to the scene on large apparatus, and equipment and systems installed or provided at the facility, in the management of the emergency. In the early moments after arrival, emergency responders will be concerned with establishing a supply of water to sustain an attack on the fire (usually by connecting hose lines from a fire hydrant to a fire pumper) and stretching or extending hoselines from pumpers or standpipe systems to the area of the fire. Such operations require the commitment of a substantial number of personnel from the emergency response force and take valuable time in the early moments after arrival when many priority tasks must be completed in as short a time as possible.

Interior access and facilities

Once the exterior staging is underway, interior operations become important for emergency responders. There might be many instances where an exterior attack is all that is required or possible, based on the hazard present. The requirements relating to interior access and facilities address such buildings and facilities where it is reasonable to expect that the emergency responders will need to mitigate a hazard from the interior. Some of the main issues addressed in this chapter in this regard include the interaction of the occupants' egress and emergency responders' access; necessary equipment and building or facility layout; and for larger, taller buildings, features such as elevators.

A performance requirement that specifically deals with the interaction of the means of egress and the emergency responder access is included to ensure that the two functions do not conflict with one another. In many cases the occupants will likely egress before the fire department arrives, but in cases such as high-rise buildings, the egress process can take much longer. It would be unrealistic for certain building features such as a stairway to be available for both activities at the same time.

The second aspect addressed with regard to interior access and facilities is related to providing appropriate equipment for emergency response such as standpipes, Self-Contained Breathing Apparatus (SCBA), and staging areas. The level of need in this area is heavily dependent on the building itself and the needs of the emergency responders, related to their abilities. This kind of information is obtained through interaction with the emergency responders during the design of a building or facility.

Finally, in large, tall buildings, a means might be necessary to move emergency responders and their equipment vertically and in some cases horizontally within buildings. This usually involves the use of elevators for vertical movement. Self-propelled vehicles such as golf carts might be provided for facilitating horizontal movement. The prescriptive codes typically have requirements for elevator recall, fire department overrides, and standby power.