IS YOUR CAMPUS INFRASTRUCTURE EQUIPPED TO NOTIFY YOU OF AN EMERGENCY?

By Richard J. Roux, Senior Electrical Specialist - NFPA

Today, we would be hard pressed to find a building on a campus for students and faculty that is not protected with fire sprinklers or a fire alarm system.

Many buildings have electronic security measures like key cards enabling them to only be accessed by persons needing to be there. Access can be electronically controlled by individual, by time of day and by day of the week. Depending upon geographic location, many campuses are well-prepared to deal with drastic weather conditions such as tornados, hurricanes, river flooding or other events such as chemical spills or biological events. Depending upon their sports team, graduation ceremony, or the like, some are even faced with hundreds or thousands of visitors at an event, persons that may be unfamiliar with the buildings, streets, campus,

etc. The administration and its security personnel are challenged to address, prepare and cope with these situations on a regular basis.

What about when that emergency does occur? How quick is the response? Is the response correct? Are people effectively notified? Key personnel may be aware of the situation but unable to alert because of protocol or the person in charge cannot be located.

The National Fire Protection Association's (NFPA) *Life Safety Code*® 101® and other building codes provide building requirements for safety from fire. These usually require design, installation, testing and maintenance in strict compliance with NFPA 72®, *National Fire Alarm and Signaling Code*, often referred to as the *Code*.

The flexibility of NFPA 72 permits other building systems to share equipment and wiring with the fire alarm system. To name a few, these could include security and access control, emergency communications and notification messaging.

Emergency communications include fire alarm voice communications and mass notification. It is important to note that smaller or older fire alarm systems typically alert with bells or horns and are not provided with speakers permitting voice messages. We can well imagine the value and effectiveness of a voice communications system in a fire situation. People in the building are alerted by a fire alarm tone followed by a recorded message; emergency responders can use the system microphone to provide effective live information to the occupants. In this manner, messages can be in real-time and the information can facilitate actions contingent on the emergency.

Mass notification systems are used to alert occupants of non-fire emergency situations. NFPA 72 defines an in-building mass notification system as a system used to provide information and instructions to people in a building (s) or other space using intelligible voice communications and including visible signals, text, graphics, tactile, or other communication methods. In a similar manner, the Unified Facilities Criteria (UFC) explains that mass notification provides real-time information and instructions to people in a building, area, site, or installation using intelligible voice communications along with visible signals, text, and graphics, and possibly including tactile or other communications methods. The purpose of mass notification is for the protection of life by indicating the existence of an emergency situation and communicating information necessary to facilitate an appropriate response and action.

New technology is everywhere. Be cautious - a quick internet search yields all types of "mass notification systems"; there is one that lets anyone send voice or text message broadcasts to a phone list. They advertise that there is no hardware or equipment to buy. Anyone can record and send messages to upwards of 200,000 phone numbers. An upgrade lets you send short message service (SMS) messages to smart phones. Given examples of use include: $5.00 large pizza, Tickets go on sale at 2:00 pm, Today's scout meeting cancelled, Church meeting postponed to Tuesday. Another speaks

to a similar "mass notification" product; the site reads: Boost sales, Create new sales leads, Advise your reps of new sales opportunities and Keep in touch with customers. These mass notification systems do not fit the above definitions and do not comply with NFPA 72!

NFPA 72 provides the requirements for mass notification systems (MNS) for non-fire emergency use. Not only are these systems used to advise of weather conditions and alerting in emergencies but also for purposeful manmade disasters such as terrorist and hostile situations.

A distributed recipient mass notification system is a system meant to communicate directly to specific targeted individuals and groups that might not be in a contiguous area. A mass notification system distributed recipient option might be used to alert by telephone, cell phone or smart phone, SMS text, computer pop-ups, tone alert radios, email broadcast (Internet), automated voice dialing and text messaging, pager, satellite/AM/FM radio broadcasts, satellite/off-air TV broadcasts, etc. But primarily, and by definition, a mass notification system must alert by using intelligible voice communications and visible signals.

NFPA 72 provides that the mass notification system consist of alert speakers and strobe-type lights. These are controlled by amplifiers and power supplies and electronic switching in a control unit that is activated by a person or trigger event.

Mass notification systems must be code-compliant. Primarily, alerting must be immediate and intrusive; a distributed recipient option does not ensure message receipt. How would the system know whether a message was delivered to a designated individual if that individual's mobile phone or pager was not actually with him/her? How would the system know if a pop-up was delivered to a designated individual if that individual was not at his/her computer, or it was turned off or unplugged? What if an individual changed his/her phone number or email address and did not update their profile at the college?

The *Code* addresses scenarios where both the fire alarm system and the mass notification system are activated and sounding. Consider the confusion and danger that would ensue with the fire alarm speakers echoing an alert tone followed by a message to evacuate the build-

ing and simultaneously, MNS speakers are blurting out a message to hunker down and not use the main entrance as a sniper has zoomed in on the main entrance. Further adding to the confusion is the fact that both the fire alarm strobe lights are flashing indicating FIRE and the MNS strobes are flashing indicating a non-fire emergency.

Every mass notification system is unique in operation and to the building it protects. It is required to be provided with sufficient and suitable standby power in the event of power failure; its wiring must be monitored for failure and installed in accordance with the electrical code. Both speaker and strobe light placement are required to be in accordance with the *Code*. Equipment must be suitable and the required interface between the fire alarm system and the mass notification system must be listed for the purpose and installed in accordance with the manufacturer's instructions. Control units installed as part of a mass notification system must be in compliance with the *Code* and applicable standards such as: ANSI/UL 864, *Standard for Control Units and Accessories for Fire Alarm Systems;* UL 2572, *Standard for Communication and Control Units for Mass Notification Systems* or UL 2017, *Standard for General-Purpose Signaling Devices and Systems.*

The *Code* requires the design, application, installation, inspection and testing and maintenance be performed by persons who are experienced and qualified. Priority of fire alarm over mass notification or mass notification over fire alarm is established by the emergency response plan. Only recorded messages determined by the emergency response plan to be of higher priority than fire alarm are permitted to override the fire alarm notification. Activation of any other recorded message is not permitted to interfere with the operation of fire alarm notification.

Fire alarm strobes are required to be clear or nominal white and could be marked with the word "FIRE". MNS strobes are required to have the word "ALERT" stamped or imprinted on the unit. If strobes are combination units, the fire alarm strobe must not be marked with the word "FIRE" while the MNS strobe may or may not be marked with the word "ALERT". Today, most fire alarm strobes are synchronized, that is, they all flash together. Like fire strobes, MNS strobes are required to

be synchronized. All strobes (regardless of color) must be marked with their listed effective intensity; this enables the system design to ensure that strobe light intensity in the space is adequate and complies with the strobe placement requirements of NFPA 72.

NFPA 72 requires each mass notification system application to be specific as to the nature and anticipated risks of the facility. All threats must be identified to ensure the scope of the threat assessment is viable. The risk analysis should include an assessment of the threats considering all situations where the facility could become vulnerable. The evaluation of the risk analysis should be a collaborative process among stakeholders. In reviewing the risk analysis, check to ensure whether the assumptions, building characteristics, occupant characteristics, and fire and threat characteristics used in the analysis acceptably reflect the actual conditions.

The designer is required to consider both fire and non-fire emergencies when determining risk tolerances for survivability of the mass notification system. To this end, the risk analysis is used as the basis for development of the emergency response plan. The *Code* requires "a well-defined emergency response plan shall be developed in accordance with NFPA 1600, *Standard on Disaster/Emergency Management and Business Continuity Programs,* and NFPA 1620, *Recommended Practice for Pre-Incident Planning*, as part of the design and implementation of a mass notification system."

Successful integration must ensure system redundancy and layering. This is accomplished by using multiple technologies and eliminating single points of failure. It ensures the best method for reaching the largest audience when it is most important. Consider what is best for the facility to best reach the largest audience.

The mass notification system control unit is referred to as the autonomous control unit (ACU) and serves as the primary control unit; reduced function slave units called local operating consoles (LOCs) may be installed. The LOC is a control station used by authorized personnel and emergency responders to activate and operate an in-building mass notification system. The ACU and the LOCs are required to be secured and can only be operated by authorized personnel. Only where identified by the risk analysis can the mass notification system have the capability for authorized personnel to remotely activate live

and prerecorded emergency messages. When multiple control locations are provided, only one can be in control at any given time. A visible indication must be provided at all other control locations indicating that another control location is in use.

The code requirements of NFPA 72 establish the bar for design, installation and testing and maintenance of fire alarm and mass notification systems. A mass notification system must alert by using intelligible voice communications and visible signals. Supplementary, the

Code permits a distributed recipient mass notification system to be used to alert individuals when it is code-compliant and the mass notification system meets the requirements of NFPA 72®, *National Fire Alarm and Signaling Code*.

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