A fire fighter's smoke control station (FSCS) permits responding fire fighters to manually control the operation of fans, dampers, and other equipment installed for controlling smoke movement within the building.

21.7.7 Where interconnected as a combination system, a fire fighter's smoke control station (FSCS) shall be provided to perform manual control over the automatic operation of the system's smoke control strategy.

21.7.8 Where interconnected as a combination system, the smoke control system programming shall be designed such that normal HVAC operation or changes do not prevent the intended performance of the smoke control strategy.

21.8 Door and Shutter Release

21.8.1 The provisions of Section 21.8 shall apply to the methods of connection of door and shutter hold-open release devices and to integral door and shutter hold-open release, closer, and smoke detection devices.

21.8.2 All detection devices used for door and shutter hold-open release service shall be monitored for integrity in accordance with Section 12.6.

Exception: Smoke detectors used only for door and shutter release and not for open area protection.

Monitoring for integrity is not required for detectors integral to the door assembly or stand-alone detectors not connected to the fire alarm system.

21.8.3 All door and shutter hold-open release and integral door and shutter release and closure devices used for release service shall be monitored for integrity in accordance with Section 21.2.

Generally, magnetic door release appliances are installed so that they release on loss of power. Where Class D circuits or pathways are used in accordance with 21.2.6, fail-safe operation is provided and monitoring for integrity is not required. Refer to the commentary following 21.2.6.

21.8.4 Magnetic door and shutter holders that allow doors to close upon loss of operating power shall not be required to have a secondary power source.

The purpose of a magnetic door release appliance is to hold doors open under normal conditions and allow the doors to close during smoke and fire conditions. If the designer or the authority having jurisdiction wants the doors to remain open even under a primary power failure, the magnetic door holders must be connected to a circuit with secondary power. The Code does not require secondary power for this optional method of operation, as stated in 21.8.4. In addition, using this option increases the battery size and standby power requirements without providing additional fire safety. Exhibit 21.10 shows examples of typical magnetic door hold-open release appliances.

21.9 Electrically Locked Doors

21.9.1* Electrically locked doors in a required means of egress shall unlock in the direction of egress where required by other laws, codes, and governing standards.

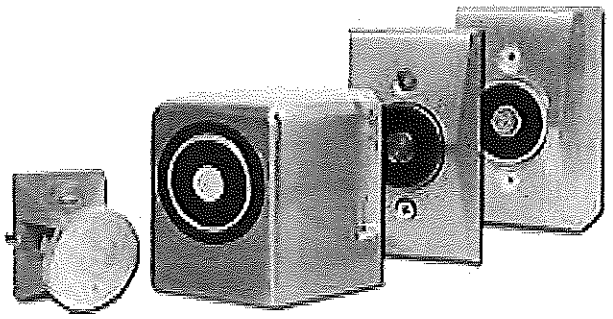

EXHIBIT 21.10

Magnetic Door Hold-Open Release Appliances. (Source: Edwards, Bradenton, FL)

Revisions have been made to Section 21.9 to correlate with the requirements of NFPA *101*. Prior to the 2010 edition of the Code, the requirements were expressed in terms of unlocking exits. The requirements are now expressed in terms of unlocking electrically locked doors in a required means of egress in the direction of egress. Means of egress doors are not limited to doors at exits.

NFPA *101* specifies the requirements for means of egress for each occupancy and defines and explains the term *means of egress* as follows:

> **3.3.170* Means of Egress.** A continuous and unobstructed way of travel from any point in a building or structure to a public way consisting of three separate and distinct parts: (1) the exit access, (2) the exit, and (3) the exit discharge. [*101*, 2012]
>
> **A.3.3.170 Means of Egress.** A means of egress comprises the vertical and horizontal travel and includes intervening room spaces, doorways, hallways, corridors, passageways, balconies, ramps, stairs, elevators, enclosures, lobbies, escalators, horizontal exits, courts, and yards. [*101*, 2012]

Additionally, editions of the Code prior to 2010 required unlocking of exits on any fire alarm signal unless permitted otherwise by the authority having jurisdiction. The Code was revised to require unlocking as prescribed by other laws, codes, and governing standards. Examples of how other laws, codes, and standards may prescribe unlocking requirements are provided in A.21.9.1. Other codes, standards, and authorities having jurisdiction may also include or provide specific permission for doors to remain locked in certain situations. Examples include detention and correctional facilities and psychiatric wards in a health care facility.

A.21.9.1 Doors are commonly locked for various security reasons. Though doors are permitted to be locked to prevent ingress, doors are generally not permitted to be locked to restrict egress unless specifically permitted by governing laws, codes, and standards. Examples of special locking arrangements include delayed egress locking and access control locking. Approved locking requirements by governing laws, codes, and standards can vary extensively. For example, some might require all fire alarm initiating devices to immediately unlock electrically locked egress doors, while others might permit such doors to remain locked when a single manual fire alarm box is activated. Some codes might also permit electrically locked doors to remain locked when a single smoke detector has activated. These allowances are typically permitted only in sprinklered buildings and are generally used as additional safeguards to counter efforts to breach security, without compromising occupant safety.

21.9.2 For all means of egress doors connected in accordance with 21.9.1 where fire alarm control unit batteries are used, they shall comply with 10.6.7.

21.9.3* Fire alarm control unit batteries shall not be utilized to maintain means of egress doors in the locked condition unless the fire alarm control unit is arranged with circuitry and sufficient secondary power to ensure the means of egress doors will unlock within 10 minutes of loss of primary power.

A.21.9.3 A problem could exist when batteries are used as a secondary power source if a fire alarm control unit having 24 hours of standby operating power were to lose primary power and be operated for more than 24 hours from the secondary power source (batteries). It is possible that sufficient voltage would be available to keep the doors locked, but not enough voltage would be available to operate the fire alarm control unit to release the locks.

Subsection 21.9.3 and A.21.9.3 discuss the requirement for fire alarm system control unit batteries to be designed with sufficient capacity in order to ensure that the means of egress doors will unlock within 10 minutes of loss of primary power. Without this requirement in the Code, batteries in a fire alarm control unit could be undersized and not have enough voltage to release the door locks when required.

Under what circumstances does *NFPA 72* permit the use of the fire alarm system secondary power supply batteries to maintain doors in a locked condition?

In general, life safety concerns dictate that means of egress doors unlock immediately on actuation of the fire alarm system as prescribed in other laws, codes, or standards. However, circumstances sometimes exist where unlocking the doors (e.g., unlocking cell doors in a jail) could cause a security problem that poses a greater life safety risk than maintaining the exit doors locked. A change in the 2007 edition of the Code permitted batteries used as the secondary power supply in accordance with 10.5.6.1.1(1) [10.6.7 in the 2013 edition] to maintain the doors locked as long as sufficient power is provided to unlock the doors within 10 minutes. This time period is intended to permit security or other personnel to investigate the situation and take appropriate action to ensure an adequate level of security before the doors are unlocked.

21.9.4 Locks powered by independent power supplies dedicated to lock power and access control functions, and that unlock upon loss of power, shall not be required to comply with 21.9.2.

21.9.5 If means of egress doors are unlocked by the fire alarm system, the unlocking function shall occur prior to, or concurrent with, activation of any public-mode notification appliances in the area(s) served by the normally locked means of egress doors.

The intent of 21.9.5 is to prevent a possible panic situation where the fire alarm system has actuated and notification appliances are signaling the occupants to evacuate, but they cannot exit because the doors are still locked.

21.9.6 All doors that are required to be unlocked by the fire alarm system in accordance with 21.9.1 shall remain unlocked until the fire alarm condition is manually reset.

21.10* Exit Marking Audible Notification Systems

A.21.10 When a fire alarm evacuation signal activates, the exit marking system will be activated. In some cases, the activation might be sequenced to meet the fire safety plan of the property.