
EMERGENCY VOICE/ALARM COMMUNICATION SYSTEMS

Disciplines: Fire/Life Safety**History:** Revised 10-01-15Issued 06-23-15

PURPOSE: This Interpretation of Regulations (IR) is being issued by the Division of the State Architect (DSA) to clarify when the installation of Fire Emergency Voice/Alarm Communication (EVAC) systems in public schools is required and what portions of the system/design DSA will plan review.

BACKGROUND: The 2013 California Code of Regulations, Title 24 Part 2 California Building Code (CBC) Section 907 and Part 9 California Fire Code (CFC) Section 907 require EVAC systems in Group E occupancies and some specific Group A occupancies.

INTERPRETATION:**1. GENERAL REQUIREMENTS:**

- 1.1 EVAC systems are dedicated systems for originating and distributing voice instructions and alert/evacuation signals **pertaining to fire emergencies**. Alternate uses other than for fire emergencies are allowed in compliance with CBC/CFC 907.5.2.2.3.
- 1.2 EVAC systems shall be designed and installed in compliance with NFPA 72.
- 1.3 The EVAC voice instructions shall be automated when the EVAC is activated by fire/smoke detection devices, sprinkler waterflow devices or manual fire alarm boxes. There shall also be a manual override and live voice message capability in compliance with CBC/CFC 907.5.2.2.1 and 907.5.2.2.2.

2. REQUIREMENTS BY OCCUPANCY GROUPS:**2.1 Assembly Group A**

EVAC systems are required for Group A occupancies as follows:

- Any Group A occupancy with an occupant load of 1000 or more (CBC/CFC 907.2.1.1).
- Any Group A occupancy when located in a Group E occupancy campus or building (CBC/CFC 907.2.3.2).

2.2 Educational Group E

EVAC systems are required for Group E occupancies as follows:

- Any Group E occupancy with an occupant load of 50 or more (CBC/CFC 907.2.3).
- Any Group E occupancy containing more than one room used for Group E, regardless of total occupant load (CBC/CFC 907.2.3).
- Any Group E occupancy containing more than one room used for Group I-4 day care, regardless of total occupant load (CBC/CFC 907.2.3).

2.3 Other Occupancy Groups

EVAC systems are not required for other occupancy groups except as noted in Section 4 of this IR.

3. REQUIREMENTS FOR K-12 SCHOOLS**3.1 New Campuses**

All buildings or assembly uses (all occupancy groups) on a new campus, except as identified in Section 3.5 below, must comply with the EVAC requirements in Section 907

EMERGENCY VOICE/ALARM COMMUNICATION SYSTEMS

of the CBC/CFC.

3.2 Existing Campuses

EVAC requirements in Section 907 of the CBC/CFC are applicable to all existing buildings or assembly uses, except as identified in Section 3.5 below, on an existing campus as follows:

3.2.1 Conditions that require retrofit for EVAC compliance:

- **Alterations or replacement** of the entire campus-wide fire alarm system.

3.2.2 Conditions that do not require retrofit for EVAC compliance:

- **No work.** If no work is being performed then retrofit is not required.
- **Alterations.** Unless the alteration includes the alteration or replacement of the entire campus wide fire alarm system.
- **Reconstruction.** Unless the reconstruction includes the alteration or replacement of the entire campus-wide fire alarm system.

3.3 New Buildings or Assembly Uses on Existing Campuses

All new buildings or assembly uses, except as identified in Section 3.5 below, must comply with the EVAC requirements in Section 907 of the CBC/CFC.

3.4 Existing Buildings or Assembly Uses on Existing Campuses

EVAC requirements in Section 907 of the CBC/CFC are applicable to individual buildings or assembly uses, except as identified in Section 3.5 below, as follows:

3.4.1 Conditions that require retrofit for EVAC compliance:

- **Additions.** The new area must comply but the existing area is not required to be retrofitted.
- **Alterations.** Only if the entire fire alarm system is being altered/replaced.
- **Reconstruction.** Only if the entire fire alarm system is being altered/replaced.
- **Rehabilitation** of non-conforming buildings/facilities.

3.4.2 Conditions that do not require retrofit for EVAC compliance:

- **No work.** If no work is being performed then retrofit is not required.
- **Alterations.** Unless the alteration includes the alteration or replacement of the entire fire alarm system.
- **Reconstruction.** Unless the alteration includes the alteration or replacement of the entire fire alarm system.

3.5 Exceptions**3.5.1** The following are exempt from EVAC requirements and thus do not require EVAC systems:

- Short-term use relocatable buildings intended to be sited for less than three years.
- Buildings with no more than one classroom and an occupant load of 49 or less as long as the building has a minimum 20-foot separation from any adjacent building or can otherwise be considered a separate building by code analysis.
- Detached buildings used for non-instructional purposes or incidental to instruction purposes. Such buildings include but are not limited to:
Concession stands, snack bars, ticket booths, press boxes, dugouts, batting cages, shade structures, storage buildings, agricultural buildings, barns, greenhouses, pump stations, mechanical buildings, and other similar buildings and areas.

EMERGENCY VOICE/ALARM COMMUNICATION SYSTEMS

3.5.2 The exception listed in CBC/CFC Section 907.2.3.3 (occurs in the 2013 CBC/CFC prior to July 1, 2015) is not applicable since the system listed therein was not explicitly DSA-approved.

4. REQUIREMENTS FOR COMMUNITY COLLEGES:**4.1 New Buildings or Assembly Uses**

Section 2 of this IR applies to new facilities/buildings.

4.2 Existing Buildings or Assembly Uses

Section 2 of this IR is applicable to individual buildings or assembly areas as follows:

4.2.1 Conditions that require retrofit for EVAC compliance:

- **Additions.** The new area must comply but the existing area is not required to be retrofitted.
- **Alterations.** Only if the entire fire alarm system is being altered/replaced.
- **Reconstruction.** Only if the entire fire alarm system is being altered/replaced.
- **Rehabilitation** of non-conforming buildings/facilities.

4.2.2 Conditions that do not require retrofit for EVAC compliance:

- **No work.** If no work is being performed then retrofit is not required.
- **Alterations.** Unless the alteration includes the alteration or replacement of the entire fire alarm system.
- **Reconstructon.** Unless the alteration includes the alteration or replacement of the entire fire alarm system.

5. DSA PLAN REVIEW**5.1 Items DSA Will Plan Review**

DSA plan review will be limited to verifying the following are correctly shown/specified in the project drawings or specifications:

5.1.1 The Sequence of Operation matrix includes EVACS.

EVACS shall be activated by “any automatic fire detector, sprinkler waterflow device or manual fire alarm” and shall sound an alert tone followed by voice instructions. (CBC 907.5.2.2)

5.1.2 EVACS notifications take priority over non-emergency notifications. *(NFPA 72, 24.3.5.1) Using one speaker system for multiple communication systems is acceptable. Risk analysis may determine that an EVACS notification shall have priority over the fire alarm if, for example, there is an emergency event and the fire alarm system is in alarm mode when the EVACS is activated, the fire alarm system shall automatically return to alarm mode after EVACS notification is complete. The best place to show these items is on the Sequence of Operation matrix.*

5.1.3 CSFM listing numbers are listed on the drawings for EVACS equipment, appliances and devices. *They should match the CSFM listing sheets.*

5.1.4 EVACS voltage drop/battery calculations are provided. *NFPA 72, 10.6.7.2.1(2) requires emergency power backup capable of 24 hours quiescent load and 15 minutes connected load.*

5.1.5 The plans show EVACS speaker locations and power settings. *Although it is*

EMERGENCY VOICE/ALARM COMMUNICATION SYSTEMS

important for EVACS speaker locations to provide a “distributed sound level with minimal sound intensity variation to achieve an intelligible voice message,”
intelligibility is a design/inspection issue, not a plan check issue. *The intelligibility of the system is required per NFPA 72, 24.3.1 and is the responsibility of the EVACS designer. DSA will not review or comment on intelligibility.*

5.1.6 The plans show EVACS paging locations. *(CBC 907.5.2.2) Paging locations must have, at a minimum, one speaker at:*

- *Elevator groups, i.e., elevators physically adjacent to each other that answer to common hall call buttons (but not elevator cabs; see NFPA 72, 24.4.2.8.4.1)*
- *Exit stairways (but not in enclosed stairways; see NFPA 72, 23.8.6.2)*
- *Each E and A occupancy room on each floor*
- *Areas of refuge*

At areas for Assisted Rescue, speakers in addition to those listed above may be required to achieve intelligibility but DSA will not review their number or location.

5.1.7 A permanent sign is affixed next to the microphone with instructions on its proper use. *(NFPA 72, 24.3.2)*

5.1.8 EVACS control location is indicated. *(NFPA 72, 24.4.2.5.1) System controls must function properly during an emergency event. EVACS controls shall be located so they are accessible to authorized personnel and secure from damage due to tampering.*

5.1.9 UL/CSFM listed wiring is provided. *Shielded wire is required; fire protected wire is not required except to connect control equipment to Areas of Refuge and Areas for Assisted Rescue. (NFPA 72, 24.3.6.9)*

5.1.10 A note is provided that all notification appliances within a signaling zone are synchronized. *(NFPA 72, 24.4.2.9.2)*

5.1.11 A note is provided that all System Documents must be collected and stored on site in a documentation cabinet. *(NFPA 72, 7.7)*

5.2 Items That Must Be Submitted As Supporting Documentation

5.2.2 The FACP has EVACS capability. *Existing older model FACPs do not have this capability.*

5.2.3 Cut sheets and CSFM Listing sheets are provided *showing UL/CSFM approved EVACS equipment, appliances and devices.*

5.3 Items DSA WILL NOT Plan Review

5.3.2 Risk Analysis report

5.3.3 Acoustics Report

5.3.4 Acoustically Distinguishable Space (ADS) locations

5.3.5 Speaker spacing – *DSA will not review speaker spacing and its impact on intelligibility. A proper design will depend on the engineer’s clear understanding of the interior finish materials and the volumetric geometry of every space.*

EMERGENCY VOICE/ALARM COMMUNICATION SYSTEMS

- 5.3.6** Circuit survivability – *Since schools are intended to be fully vacated, circuit survivability is not required except as noted in 5.1.9 above. (NFPA 72, 24.4.2.8)*
- 5.3.7** Alternate uses of the EVAC system. *DSA reviews for code minimum. Code minimum use for EVAC systems is for originating and distributing voice instructions and alert/evacuation signals pertaining to fire emergencies. Therefore, DSA will not plan review alternate uses of the system.*

6. TESTING AND INSPECTIONS

- Testing and Inspection shall be as required by the NFPA-72. The “System Record of Completion” and other NFPA-72 forms and documents shall be utilized as applicable.
- The Inspector of Record shall witness the tests and sign forms as the “AHJ representative.”
- Noncompliant tests shall be reported by the Inspector of Record as a deviation.
- Documentation of the installation and testing of the EVAC, and Fire Alarm system, shall be attached to the NFPA-72 Record of Completion and a copy shall be placed in the Inspector of Record’s job file.
- All documents shall be stored in the Documentation Cabinet as required by NFPA-72.
- Documentation of the installation and testing is not required to be submitted to DSA unless requested in writing by a DSA supervising Structural Engineer or Supervising Architect.

REFERENCES:

2013 California Code of Regulations (CCR) Title 24
Part 2, California Building Code, Section 907
Part 9, California Fire Code, Section 907
NFPA 72, Section 24

This Interpretation of Regulations (IR) is intended for use by the Division of the State Architect (DSA) staff, and as a resource for design professionals, to promote more uniform statewide criteria for plan review and construction inspection of projects within the jurisdiction of DSA which includes State of California public elementary and secondary schools (grades K-12), community colleges, and state-owned or state-leased essential services buildings. This IR indicates an acceptable method for achieving compliance with applicable codes and regulations, although other methods proposed by design professionals may be considered by DSA.

This IR is reviewed on a regular basis and is subject to revision at any time. Please check the DSA website for currently effective IRs. Only IRs listed in the document at <http://www.dgs.ca.gov/dsa/Resources/IRManual.aspx> at the time of plan submittal to DSA are considered applicable.