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 Systems (EV/ACS) in public schools and community colleges is required and what portions of the system/design DSA will plan review.


INTERPRETATION:

1. GENERAL REQUIREMENTS:

1.1 EV/ACS 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 The EV/ACS shall be designed and installed in compliance with CBC and NFPA 72.

1.3 The voice instructions shall be automated when the EV/ACS 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: Emergency voice/alarm communication systems (EV/ACS) shall be provided in Group ‘A’ and ‘E’ occupancies, and high-rise buildings housing Group ‘A’ and/or ‘E’ occupancies in accordance with CBC/CFC section 907, except as modified herein.

2.1 Existing Campuses

Conditions that require retrofit for EV/ACS compliance:

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

2.1.1 Conditions that do not require retrofit for EV/ACS compliance:

- No work. If no work is performed.
- Alterations. Unless the alteration includes alteration to, or replacement of, the entire campus-wide fire alarm system.
- Reconstruction. Unless the reconstruction includes alteration to, or replacement of, the entire campus-wide fire alarm system.

2.2 Existing Campuses – New Buildings or Assembly Uses

All new buildings or Assembly uses must comply with the provisions of CBC/CFC section 907.

2.3 Existing Campuses – Existing Buildings or Assembly Uses

Conditions that require retrofit for EV/ACS compliance:

- Additions. The new area must comply, but the existing area is not required to be retrofitted.
- Alterations. Only if the entire campus-wide fire alarm system is altered or replaced.
2.3.1 Conditions that do not require retrofit for EV/ACS compliance:

- **No Work.** If no work is being performed.
- **Alterations.** Unless the alteration includes alteration to, or replacement of, the entire campus-wide fire alarm system.
- **Reconstruction.** Unless the alteration includes alteration to, or replacement of, the entire campus-wide fire alarm system.

2.4 Exceptions

2.4.1 The following buildings on new or existing campuses are exempt from EV/ACS requirements and thus do not require EVAC systems:

- **Short-term use relocatable buildings sited for less than three years.**
- **Buildings with no more than one classroom with an occupant load of 49 or less, as long as the building has a minimum separation of 20 feet from any adjacent building, or can otherwise be considered a separate building by code analysis.**
- **Buildings with an occupant load of 100 or less, provided that activation of the manual fire alarm system will initiate an approved occupant notification signal.**
- **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 or areas.

3. COMMUNITY COLLEGES:

3.1 **New Buildings:** EV/ACS systems shall be provided in new buildings containing Group ‘A’ occupancies, and high-rise buildings housing Group ‘A’ occupancies in accordance with CBC/CFC sections 907.2.1, 907.2.1.1, 907.2.1.2 and 907.2.13.

3.2 **Existing Buildings:** EV/ACS systems shall be provided in existing buildings containing Group ‘A’ occupancies and high-rise buildings housing Group ‘A’ occupancies in accordance with CBC/CFC sections 907.2.1, 907.2.1.1, 907.2.1.2 and 907.2.13 as follows:

3.2.1 Conditions that require retrofit for EV/ACS compliance:

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

3.2.2 Conditions that do not require retrofit for EV/ACS compliance:

- **No work.** If no work is being performed.
- **Alterations.** Unless the alteration includes the alteration or replacement of the entire campus-wide fire alarm system.
- **Reconstruction.** Unless the alteration includes the alteration or replacement of the entire campus-wide fire alarm system.
4.1 Items DSA Will Plan Review

DSA plan review will be limited to verifying that the following are correctly shown on the project drawings or within the specifications:

4.1.1 The Sequence of Operation matrix includes EV/ACS.

EV/ACS 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)

4.1.2 EV/ACS notifications take priority over non-emergency notifications. (NFPA 72, 24.3.5.1) Using one speaker system for multiple communication systems is acceptable when a risk analysis shows that emergency voice messages programmed for priority over fire alarm audible signals will revert back to fire alarm signals after the message cycle is complete. The best place to show these items is on the Sequence of Operation matrix.

4.1.3 State Fire Marshal (CSFM) listing numbers are listed on the drawings for EV/ACS equipment, appliances and devices. They should match the CSFM listing sheets.

4.1.4 EV/ACS 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 at maximum connected load.

4.1.5 The plans show EV/ACS speaker locations and power settings. Although it is important for EV/ACS 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 EV/ACS designer. DSA will not review or comment on intelligibility.

4.1.6 The plans show EV/ACS paging zones. (CBC 907.5.2.2) Paging zones must have one or more speakers provided throughout the building per paging zone:

- Elevator groups, i.e., elevators physically adjacent to each other that answer to common hall call buttons (but not elevator cabs; see NFPA 72, 24.4.8.4.1)
- Interior 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.

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

4.1.8 EV/ACS control location is indicated. (NFPA 72, 24.4.5.1) System controls must function properly during an emergency event. EV/ACS controls shall be located so they are accessible to authorized personnel and secure from tampering.

4.1.9 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, 24.3.13.9)

4.1.10 A note is provided that all notification appliances within a signaling zone are synchronized. (NFPA 72, 24.4.9.2)

4.1.11 A note is provided that all system documents must be collected and stored on site in a documentation cabinet. (NFPA 72, 7.7.2.3)

4.2 Items That Must Be Submitted As Supporting Documentation

4.2.1 The fire alarm control panel (FACP) has EV/ACS capability. Existing older model FACPs do not have this capability.

4.2.2 Cut sheets and State Fire Marshal (CSFM) listing sheets are provided showing UL/CSFM approved EVACS equipment, appliances and devices.

4.3 Items DSA Will Not Plan Review

4.3.1 Risk Analysis report

4.3.2 Acoustics Report

4.3.3 Acoustically Distinguishable Space (ADS) locations

4.3.4 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.

4.3.5 Circuit pathway survivability – Since schools are intended to be fully vacated, circuit survivability is not required except as noted in 4.1.9 above. (NFPA 72, 24.3.13)

4.3.6 Alternate uses of the EV/ACS – DSA reviews for code minimum. Code minimum use for EV/ACS 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.

5. TESTING AND INSPECTIONS

- Testing and Inspection shall be as required by 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:
2016 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 by 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 DSA’s website for currently effective IRs. Only IRs listed on the webpage at www.dgs.ca.gov/dsa/Resources/IRManual.aspx at the time of plan submittal to DSA are considered applicable.