DSA IR 9-1

EMERGENCY VOICE/ALARM COMMUNICATION SYSTEMS: 2022 CBC

Disciplines: Fire and Life Safety

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Division of the State Architect (DSA) documents referenced within this publication are available on the DSA Forms or DSA Publications webpages.

PURPOSE

This Interpretation of Regulations (IR) clarifies when the installation of Fire Emergency Voice/Alarm Communication Systems (EV/ACS) is required on construction projects under the jurisdiction of the Division of the State Architect (DSA), and what portions of the system/design DSA will plan review.

BACKGROUND

Section 907 of California Code of Regulations, Title 24, Part 2, California Building Code (CBC) and Part 9, California Fire Code (CFC), require EV/ACS systems in Group E occupancies and some specific Group A occupancies.

1. GENERAL REQUIREMENTS

1.1 EV/ACS are dedicated systems for originating and distributing voice instructions and alert and or evacuation signals pertaining to fire emergencies. Alternate uses other than for fire emergencies are allowed when in compliance with CBC Section 907.5.2.2.3.

1.2 The system shall be designed as a one-way, in-building emergency voice/alarm communication system and installed in accordance with CBC Section 907, and NFPA 72: National Fire Alarm and Signaling Code, as adopted and amended in CBC Chapter 35.

1.3 The operation of any fire detector, waterflow device or manual fire alarm box shall automatically initiate an alert tone followed by prerecorded or live voice instructions giving information and directions for general or staged evacuation. The system shall also be provided a manual override and live voice message capability in compliance with CBC Sections 907.5.2.2.1 and 907.5.2.2.2

2. REQUIREMENT BY OCCUPANCY GROUP

2.1 New Campuses

2.1.1 Fire alarm systems capable of occupant notification utilizing EV/ACS shall be provided in Group ‘A’ occupancies, Group ‘E’ occupancies with one or more classrooms or one or more rooms used for Group E or I-4 child-care purposes, and high-rise buildings housing Group ‘A’ and or ‘E’ occupancies in accordance with CBC/CFC Section 907.

2.2 Existing Campuses

2.2.1 Fire Alarm System

Where the campus existing fire alarm system is upgraded or replaced in its entirety, the new system design shall include occupant notification utilizing EV/ACS.

2.2.2 New Buildings and Assembly Uses

New buildings classified as Group E or Group A assembly constructed on an existing campus shall be provided with fire alarm systems capable of occupant notification utilizing EV/ACS.

2.2.3 Additions

For additions to existing buildings classified as Group E and or Group A, the fire alarm system serving the addition shall be capable of occupant notification utilizing EV/ACS.

2.2.4 Alteration Projects

Alteration projects where the scope includes alteration to, or replacement of, an entire campus-wide fire alarm system, the system shall be capable of occupant notification utilizing EV/ACS.

2.2.5 Change of Occupancy

Fire alarm systems serving buildings or areas subjected to a change of occupancy, use or character, to an occupancy classification of Group E or Group A, shall include occupant notification utilizing EV/ACS.

2.2.6 Reconstruction Projects

A building reconstructed using the original DSA approved drawings is exempt from EV/ACS requirements. Reconstruction projects where the design professional does not use the original drawings but prepares new drawings in compliance with current Title 24 provisions, shall include a fire alarm system capable of occupant notification utilizing EV/ACS.

2.2.7 Rehabilitation Projects

Where nonconforming buildings with occupancy classification(s) of Group E or Group A are subjected to rehabilitation, the project shall include a fire alarm system capable of occupant notification utilizing EV/ACS.

2.3 Exceptions

2.3.1 The following buildings are exempt from EV/ACS requirements:

- Relocatable buildings sited on a campus for not more than three years.
- Buildings containing no more than one classroom with an occupant load of 49 or less, where the building has a minimum separation of 20 feet 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, agricultural buildings, barns, greenhouses, pump stations, mechanical buildings, and other similar buildings or areas.

3. DESIGN

3.1 EV/ACS shall be designed in accordance with CBC section 907, and NFPA 72 as adopted and amended.

3.2 The operation of any automatic fire detector, waterflow device or manual fire alarm box shall automatically initiate an alert tone followed by a prerecorded or live voice instructions

giving information and directions for general or staged evacuation.

4. PLAN SUBMITTAL

Plans for EV/ACS shall include the following minimum information:

- Include a general note stating that upon completion of acceptance testing, approved plans and supporting documentation are to be collected and stored on site, in a document cabinet (NFPA 72, 7.7.2.3).
- A sequence of operations matrix in tabular or written descriptive format.
- A tabular equipment list indicating the component, manufacturer, model (part) number, CSFM listing number, operating voltage range, speaker settings, and candela settings for visible notification appliances.
- Standby battery calculation designed for a minimum of 24 hours under quiescent load, plus 15 minutes of alarm at maximum connected load.
- Voltage drop calculations for each circuit.
- Circuit layout inclusive of designation.
- Individual circuits to be coordinated with the voltage drop calculations.
- Identification of circuit pathway survivability level (NFPA 72, 24.3.14).
- Locations of visible notification appliances, inclusive of candela setting.
- Include a note that all visible notification appliances within a room or adjacent space are to be synchronized (NFPA 72, 24.4.9.2).

4.1 Speaker location

The design layout for speakers shall be based on a distributed sound level with minimum sound intensity variation to achieve an intelligible voice message. Intelligibility is a design function requiring confirmation at time of acceptance testing. (NFPA 72, 24.3.1)

4.2 Paging zones to be provided. Paging zones must include one or more speakers provided throughout the building by paging zone. At a minimum, paging zones shall be provided in elevator groups, interior exit stairways, on each floor, and areas of refuge. (CBC, 907.5.2.2)

4.3 Plans to indicate the EV/ACS operating control location. The control location must be clearly identified and accessible to authorized personnel, and be secured from tampering. (NFPA 72, 24.4.5)

4.4 Microphone

The microphone shall be located in the campus administrative space, accessible to staff, and include permanently mounted operating instructions for its use.

4.5 Supporting Documentation

4.5.1 Plan submittals shall, at a minimum, include the following:

- Copy of the current and complete manufacturer's listing and data sheet for the FACU indicating that it is EV/ACS capable.
- Copies of current and complete manufacturer's listings and data sheets for all equipment and components. Information to be coordinated with the equipment list on the plan.
- Copies of CSFM listing sheets for all equipment and components. Listing numbers to be coordinated with the equipment list on the plan.

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5. ACCEPTANCE TESTING AND INSPECTION

Acceptance testing shall be performed in accordance with the manufacturer's instructions and NFPA 72 Chapter 14, by qualified individuals. (NFPA 72, 10.5.3)

5.1 Upon completion, the installing contractor shall provide to the building owner, a completed "System record of Completion" form. (NFPA 72, 7.5.6, 7.8)

5.2 The school district project inspector (PI) shall witness all acceptance testing, and upon completion shall sign the record of completion as the owner representative.

5.3 All approved plans and documentation shall be placed in the documentation cabinet.

5.4 Testing documentation is not required to be provided to DSA, unless requested in writing by a DSA supervising structural engineer or supervising architect.

REFERENCES:

2022 California Code of Regulations (CCR) Title 24
Part 2: California Building Code (CBC), Section 907 (907.2.1.1, 907.2.1.3), 907.2.3)
Part 9: California Fire Code (CFC), Section 907 (907.2.1.1, 907.2.1.3, 907.2.3)
2022 NFPA 72, National Fire Alarm and Signaling Code, as adopted and amended