2021 NFPA 1
SUMMARY OF KEY CHANGES

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AGENDA

Summary of Changes to 2021 Edition of NFPA 1:

- Carbon Monoxide Detection
- Low Frequency Audible Alarm Signal
- In-Building Emergency Responder Coverage

INTRODUCTION

Comments and opinions during the presentation are exclusively the presenter and do not reflect an official position of the National Fire Protection Association (NFPA), its employees, or any of the Technical Committees

This presentation will not cover all the revisions, editorial changes, details, requirements or exceptions

Highly recommend purchasing a copy of the NFPA Code or the Handbook for all the changes, requirements and details:

www.nfpa.org

INTRODUCTION

All changes in presentation will be referenced using legislative text

~~Red strike through~~ means text is being removed

Blue underline means text is being added

Black text means no changes

CARBON MONOXIDE DETECTION IN EXISTING HOTELS

13.7.2.16.6 Carbon Monoxide Alarms and Carbon Monoxide Detection Systems.

13.7.2.16.6.1 Carbon monoxide alarms or carbon monoxide detectors in accordance with 13.7.1.14 and 13.7.2.16.6 shall be provided in existing hotels and dormitories where either of the following conditions exists:

1) Guest rooms or guest suites with communicating attached garages, unless otherwise exempted by 13.7.2.16.6.3
2) Guest rooms or guest suites containing a permanently installed fuel-burning appliance or fuel-burning fireplace

13.7.2.16.6.2 Where required by 13.7.2.16.6.1, carbon monoxide alarms or carbon monoxide detectors shall be installed on every occupiable level of a guest room and guest suite and in the immediate vicinity of the sleeping rooms.

CARBON MONOXIDE DETECTION IN EXISTING HOTELS

13.7.2.16.6.3 Carbon monoxide alarms and carbon monoxide detectors as specified in 13.7.2.16.6.1(1) shall not be required in the following locations:

1) In garages
2) Within guest rooms or guest suites with communicating attached garages that are open parking structures as defined by the building code
3) Within guest rooms or guest suites with communicating attached garages that are mechanically ventilated in accordance with the mechanical code

CARBON MONOXIDE DETECTION IN EXISTING HOTELS

13.7.2.16.6.4 Where fuel-burning appliances or fuel-burning fireplaces are installed outside guest rooms or guest suites, carbon monoxide detectors shall be installed in accordance with the manufacturer's published instructions in the locations specified as follows:

1) On the ceilings of rooms containing permanently installed fuel-burning appliances or fuel-burning fireplaces
2) Centrally located within occupiable spaces served by the first supply air register from a permanently installed, fuel-burning HVAC system
3) Centrally located within occupiable spaces adjacent to a communicating attached garage

13.7.2.16.6.5 Where carbon monoxide detectors are installed in accordance with 13.7.2.16.6.4, the alarm signal shall be automatically transmitted to an approved on-site location or to an off-premises location in accordance with *NFPA 72*.

CARBON MONOXIDE DETECTION LARGE BOARD & CARE FACILITIES

13.7.2.20.9 Carbon Monoxide ~~**Alarms and Carbon Monoxide**~~ Detection ~~**Systems**~~.

13.7.2.20.9.1 Carbon ~~monoxide alarms or carbon~~ monoxide detectors in accordance with Section 9.12 and 32.3.3.4.9 shall be provided ~~in new large board and care facilities where either~~ where any of the following conditions ~~exists~~ exist:

1) Where ~~large board and care~~ facilities have communicating attached garages, unless otherwise exempted by 32.3.3.4.9.3
2) Where ~~sleeping rooms or sleeping room suites contain~~ fuel-burning appliances or fuel-burning fireplaces are in the facility

LOW FREQUENCY AUDIBLE ALARM SIGNAL

13.7.1.8.3 Smoke Alarms in Sleeping Rooms.

13.7.1.8.3.1 In new construction, where required by Chapters 11 through 43, the alarm notification signal in sleeping rooms resulting from activation of smoke alarms shall be a 520 Hz low-frequency signal complying with *NFPA 72*.

13.7.1.9.3 Where required by Chapters 11 through 43 of NFPA 101, the audible alarm notification signal provided in sleeping rooms resulting from the activation of the fire alarm system or sleeping room smoke detector shall be a 520 Hz **low-frequency** signal complying with *NFPA 72*.

LOW FREQUENCY AUDIBLE ALARM SIGNAL

13.7.2.15.3.2 In hotels and dormitories that are required by 13.7.2.15 to have a fire alarm system, the audible alarm notification signal provided in sleeping rooms of guest rooms or guest suites that is activated by the fire alarm system shall be a 520 Hz low-frequency signal in accordance with 13.7.1.8.3.

13.7.2.17.3.2 * In apartment buildings that are required by 13.7.2.17.1 to have a fire alarm system, the audible alarm notification signal provided in sleeping rooms of dwelling units that is activated by the fire alarm system shall be a 520 Hz low-frequency signal in accordance with 13.7.1.9.9

13.7.2.17.5.1 * In apartment buildings that are required by 13.7.2.17 to have a fire alarm system, the audible alarm notification signal provided in sleeping rooms that is activated by smoke alarms shall be a 520 Hz low-frequency signal in accordance with 13.7.1.8.3.

IN-BUILDING EMERGENCY RESPONDER COVERAGE

11.10* ~~Two-Way Radio~~ In-Building Emergency Responder Communication Enhancement Systems.

11.10.1 Permits.

11.10.1.1 Where required by the AHJ, an installation permit shall comply with Section 1.12.

11.10.1.2 Where required by the AHJ, a renewable permit in accordance with 9.6.6.2 of NFPA 1221 shall be issued at the conclusion of successful acceptance testing.

11.10.~~1.~~2 General. In all new and existing buildings, minimum radio signal strength for emergency services department communications shall be maintained at a level determined by the AHJ.

IN-BUILDING EMERGENCY RESPONDER COVERAGE

11.10.3 In-building emergency responder communication enhancement systems shall comply with the design, installation, testing, inspection, and maintenance requirements in Section 9.6 of NFPA 1221 and 11.10.3.1 through 11.10.5 of this *Code*.

11.10.3.1 Listed and Labeled. In-building emergency responder communication enhancement systems installed within buildings shall be listed and labeled in accordance with UL 2524, *In-building 2-Way Emergency Radio Communication Enhancement Systems*.

11.10.3.2* In-building emergency responder communication enhancement systems capable of operating on frequencies licensed to any public safety agency by the Federal Communications Commission (FCC) or other radio licensing authority shall not be installed without prior coordination and approval of the AHJ.

IN-BUILDING EMERGENCY RESPONDER COVERAGE

11.10.4* Lightning Protection. Systems shall have lightning protection that complies with NFPA 780.

11.10.5 Enclosures. All repeater, transmitter, receiver, signal booster components, optical-to-RF and RF to- optical converters, external filters, batteries, and battery system components shall be contained in a NEMA4- or NEMA 4X-type enclosure(s).

11.10.5.1 Batteries that require venting shall be stored in NEMA3R-type enclosures.

11.10.6 Oscillation Detection and Control. Bi-directional amplifiers (BDAs) used in in-building emergency responder radio communication enhancement coverage systems shall have oscillation detection and control circuitry.

IN-BUILDING EMERGENCY RESPONDER COVERAGE

11.10.7* Minimum Signal Strength into the Building. In addition to the requirements in 9.6.8.1 of NFPA 1221, the inbound signal strength shall be a minimum of -95 dBm throughout the coverage area and sufficient to provide not less than a delivered audio quality (DAQ) of 3.0 or an equivalent signal-to-interference-plus-noise ratio (SINR) applicable to the technology for either analog or digital signals.

11.10.8.1 To maintain proper alignment with the system designed donor site, donor antennas shall meet one of the following:

1) Antennas shall be permanently affixed on the building.
2) Where approved, antennas shall be mounted on a movable sled with a visible sign stating “Movement or repositioning of this antenna is prohibited without approval from the AHJ.”

IN-BUILDING EMERGENCY RESPONDER COVERAGE

11.10.8.2 The antenna installation shall also be in accordance with the applicable requirements of the building code for weather protection of the building envelope.

11.10.9.1* In-building emergency responder communication enhancement systems shall be engineered to minimize the near-far effect.

11.10.11 Acceptance Test Procedure. Where an in-building emergency responder communication enhancement system is required, the building owner shall have the system tested on completion of installation to verify that two-way coverage on each floor of the building is not less than the coverage specified in 9.6.7.3 or 9.6.7.4 of NFPA 1221 as applicable.

IN-BUILDING EMERGENCY RESPONDER COVERAGE

11.10.11.1 Test Procedure. The test procedure, as required by 11.10.11, shall be conducted as follows:

1) Each floor of the building shall be divided into a grid of 20 approximately equal test areas.
2) The test shall be conducted using a calibrated portable radio of the latest brand and model used by the agency talking through the agency's radio communications system or equipment approved by the AHJ.
3) Failure of more than one test area shall result in failure of the test.
4) A test location approximately in the center of each test area shall be selected for the test, with the radio enabled to verify two-way communications to and from the outside of the building through the public agency's radio communications system, as follows:
   a) Once the test location has been selected, that location shall represent the entire test area
   b) Failure in the selected test location shall be considered to be a failure of that test area and additional test locations shall not be permitted.

IN-BUILDING EMERGENCY RESPONDER COVERAGE

5) All signal boosters or amplifiers shall be tested to verify that the gain is the same as it was upon initial installation and acceptance or set to optimize the performance of the system under all operating conditions.
6) At the time of installation and at subsequent annual inspections, a spectrum analyzer or other suitable test equipment shall be utilized to ensure spurious oscillations are not being generated by the subject signal booster.
7) Systems shall be tested using two portable radios simultaneously conducting subjective voice quality checks, as follows:

a) One portable radio shall be positioned not more than 10 ft (3048 mm) from the indoor antenna.
a) The second portable radio shall be positioned at a distance that represents the farthest distance from any indoor antenna
b) With both portable radios simultaneously keyed up on different frequencies within the same band, subjective audio testing shall be conducted and comply with DAQ levels as specified in 9.6.8.1 or 9.6.8.2 of NFPA 1221 as applicable.

Time for Questions!

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