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Minutes

**Board of Building Regulations and Standards
Fire Prevention Fire Protection (FPFP) Advisory Committee
Franklin Fire Department – Conference Room
June 25, 2015 - 10:00 a.m.**

1. Roll Call - Call to Order 1:34 pm

- | | | | |
|----------------------------------|---|-------------------------------------|---|
| a. Robert Carasitti Chair (RC) | <input checked="" type="checkbox"/> present <input type="checkbox"/> absent | g. Chief Gary McCarraher (GM) | <input checked="" type="checkbox"/> present <input type="checkbox"/> absent |
| b. Dave LeBlanc V-Chair (DL) | <input type="checkbox"/> present <input checked="" type="checkbox"/> absent | h. Boston Fire Commissioner | <input checked="" type="checkbox"/> present <input type="checkbox"/> absent |
| c. Walter Adams (WA) | <input checked="" type="checkbox"/> present <input type="checkbox"/> absent | Paul Donga for BFD (PD) | |
| d. Don Contois (DC) | <input type="checkbox"/> present <input checked="" type="checkbox"/> absent | i. State Fire Marshal (or designee) | <input checked="" type="checkbox"/> present <input type="checkbox"/> absent |
| e. Harold Cutler (HL) | <input checked="" type="checkbox"/> present <input type="checkbox"/> absent | Jen Hoyt for the SFM | |
| f. Rob Anderson (RA or designee) | <input type="checkbox"/> present <input checked="" type="checkbox"/> absent | j. Kurt Ruchala (KR) | <input checked="" type="checkbox"/> present <input type="checkbox"/> absent |
| | | k. Louise Vera (LV) or Alternate | <input checked="" type="checkbox"/> present <input type="checkbox"/> absent |
| | | Jeff Putnam (JP) for LV | |

The chair noted that 6 members were present to begin the meeting so a quorum was achieved. Mr. Adams and Mr. Donga arrived at 10:15 am raising the attendance to 8.

General note on format: votes are noted as (Motion by: XX, Second by: XX, Vote: In Favor-Opposed- Abstaining).

2. Review and approval of minutes from April 23, 2015

The April 23 minutes were reviewed. No comments were made and a motion to accept the minutes was made.

Motion: HC 2nd: JH Vote: 6-0-0 Mr. Adams and Mr. Donga were not yet present for the vote.

3. Review and approval of minutes from April 29, 2015

The April 29 minutes were reviewed. One comment was made noting a clarification of a person's title in Item 3. b. A motion to accept the minutes with the noted correction was made.

Motion: HC 2nd: JH Vote: 6-0-0 Mr. Adams and Mr. Donga were not yet present for the vote.

4. The committee next took up Agenda Item 4 out of order: Review of draft MA amendment on common area detection in two family dwellings and audibility criteria.

a. The discussion noted several considerations for Section R314.9:

- i. This is a Massachusetts unique requirement for 2 family buildings with common areas.
- ii. The resolution of this approach should be applied to common areas of unsprinklered 3 families as well.
- iii. Intent – The intent of the provision is to provide early warning to residents, including those sleeping, of an event prior to the exits becoming unusable.
- iv. The originally proposed language in the current version was vague and unenforceable: i.e. “clearly audible” and “background noise”
- v. The revised language (as voted by BBRS to Public Hearing) attempted to resolve the issue by noting the audibility level in the bedrooms should be consistent with the commercial code and its standard which requires compliance with NFPA 72 Section 18.4.5.
- vi. It was noted that there was an industry issue with the lack of available devices which could comply with Section 18.4.5.3.
- vii. It was noted that the reference to “smoke detector protection” should be changed to “smoke alarm protection” because of specifically defined terminology in NFPA 72 and the industry.
- viii. It was noted that reference to the NFPA 72 provision may unintentionally lead people to believe a fire alarm system is required.
- ix. Each dwelling unit is required to have interconnected smoke alarms 1) outside of each sleeping area, 2) in each room used for sleeping purposes (bedrooms) and 3) on each level of the dwelling unit including basements (but excluding crawl spaces and uninhabitable attics).

This arrangement meets the intent of providing notification to sleeping residents.

- x. The method used in past editions of 780 CMR was to provide a separate interconnected system of smoke alarms in the common areas connected to 1 heat detector with a sounder base just inside the dwelling unit entry door.

This method does not provide the level of protection intended to sleeping residents who could be several rooms away from the sounding heat detector base.

The “old” method was deemed a compromise that also addressed the electrical code criteria of separate circuits needed between common areas and dwelling units.

b. After some discussion, and in consideration of the above points, the following proposed language was developed:

R314.9 Common Areas. *Each common area including basements, hallways and stairways in two family dwellings shall have smoke alarm protection by adding one smoke alarm per unit in the common area that is connected to each unit’s respective interconnected smoke alarms.*

The above language achieves the intent with minimal additional devices and complies with the electrical code criteria for separate circuits.

c. A motion was made to recommend the revised language for inclusion in the 9th Edition.

Motion: GM 2nd: WA Vote: 8-0-0

5. Review and discussion of DFS proposed amendment on Section 915 Emergency Responder Radio Coverage.

Considerable discussion took place on the “intent” of providing Emergency Responder Radio Coverage and addressing the “need” to provide criteria that is equally applicable across the Commonwealth’s 351 cities and towns. Some points of discussion included:

- Future federal changes on the horizon
- The number of frequencies to be included in such required systems
- Permitting: Building Permit versus installation and consideration of the FCC licensee in each community
- Required testing to determine when a system is not required
- Required testing when a system is required
- Coverage
- Signal Strength
- Installation standard for such systems
- Standby power criteria
- Monitoring

The DFS proposal is a first pass and includes various provisions from various editions of NFPA 72 and the International Fire Code.

Given the complexity of the issue, and after considerable discussion, the committee members agreed that the issue would be taken up again at a future meeting. In the interim, members will study the issue as “homework assignments” and reach out to stakeholders to identify as much information on the concerns as possible.

6. Matters not reasonably anticipated within two business days of the meeting.

There were no other new matters presented. The Chair reiterated that new matters should be submitted to the BBRS in writing.

7. Approval to adjourn the meeting

A motion was made to adjourn.

Motion: GM 2nd: HC Vote: 8-0-0

Exhibits

- A. Smoke Alarm Protection in 1 & 2 Family Common Areas (1 page summary memo prepared by the Chair)
- B. DFS proposed Section 916.1 through 9916.6 submitted June 25, 2015

Smoke Alarm Protection in 1 & 2 Family Common Areas

1. Original Proposed Language

R314.9 Common areas. All common areas including basements and hallways/stairways in two family dwellings shall have smoke detector protection. Each detection device shall activate an alarm that is clearly audible in all bedrooms over background noise levels with all intervening doors closed. Such devices shall be installed in accordance with NFPA 72.

2. Comment and Edited Language (Voted by BBRs to Public Hearing)

The terminology "clearly audible" and "background noise" are subjective and unenforceable. It would be better to use prescriptive language and reference to NFPA 72 audibility criteria for sleeping areas if the intent is the same.

18.4.5 Sleeping Area Requirements.

18.4.5.1* Where audible appliances are installed to provide signals for sleeping areas, they shall have a sound level of at least 15 dB above the average ambient sound level or 5 dB above the maximum sound level having a duration of at least 60 seconds or a sound level of at least 75 dBA, whichever is greater, measured at the pillow level in the area required to be served by the system using the A-weighted scale (dBA).

18.4.5.2 If any barrier, such as a door, curtain, or retractable partition, is located between the notification appliance and the pillow, the sound pressure level shall be measured with the barrier placed between the appliance and the pillow.

18.4.5.3* Effective January 1, 2014, audible appliances provided for the sleeping areas to awaken occupants shall produce a low frequency alarm signal that complies with the following:

- (1) The alarm signal shall be a square wave or provide equivalent awakening ability.
- (2) The wave shall have a fundamental frequency of 520 Hz \pm 10 percent.

R314.9 Common areas. All common areas including basements and hallways/stairways in two family dwellings shall have smoke detector protection. Each detection device shall activate an alarm that provides audible notification installed in accordance with NFPA 72-2013: 18.4.5.

3. Additional comment

Section 18.4.5.3 is problematic due to lack of available equipment. It may be better to reference only 18.4.5.1 and 18.4.5.2.

4. Additional comment

In the first sentence "...**smoke detector protection.**" should be changed to "...smoke alarm protection." So that terminology is consistent with national standards.

916.1 Delete Exception.

916.1 through 916.3 Delete and replace

916.1 Emergency responder radio coverage in new buildings.

All new buildings shall have *approved* radio coverage for emergency responders within the building based upon the existing coverage levels of the public safety communication systems of the jurisdiction at the exterior of the building. This section shall not require improvement of the existing public safety communication systems.

Exceptions:

1. Where *approved* by head of the fire department, a wired communication system in accordance with Section 907.2.13.2 shall be permitted to be installed or maintained instead of an *approved* radio coverage system.
2. Where it is determined by the head of the fire department that the radio coverage system is not needed.
3. In facilities where emergency responder radio coverage is required and such systems, components or equipment required could have a negative impact on the normal operations of that facility, the head of the fire department shall have the authority to accept an automatically activated emergency responder radio coverage system.

916.2 The emergency responder radio coverage shall be installed in accordance with this Section and NFPA 72.

916.3 Permit required. A construction permit for the installation of or modification to emergency responder radio coverage systems and related equipment is required as specified in Section 105. Maintenance performed in accordance with this code is not considered a modification and does not require a permit.

916.4 Technical requirements. Systems, components and equipment required to provide the emergency responder radio coverage system shall comply with Sections 916.4.1 through 916.4.2.5.

916.4.1 Radio signal strength. The building shall be considered to have acceptable emergency responder radio coverage when signal strength measurements in 90 percent of all areas on each floor of the building meet the signal strength requirements in Sections 916.4.1.1 and 916.4.1.2. Critical areas, Such as the fire command center(s), the fire pump room(s), exit stairs, exit passageways, elevator lobbies, standpipe cabinets, sprinkler sectional valve locations, and other areas deemed critical by the Fire Chief, shall be provided with 99 percent floor area radio coverage.

916.4.1.1 Minimum signal strength into the building.

A minimum signal strength of -95 dBm shall be receivable within the building.

916.4.1.2 Minimum signal strength out of the building.

A minimum signal strength of -95 dBm shall be received by the agency's radio system when transmitted from within the building.

916.4.2 System design. The emergency responder radio coverage system shall be designed in accordance with Sections 916.4.2.1 through 916.4.2.5.

916.4.2.1 Amplification systems allowed. Buildings and structures that cannot support the required level of radio coverage shall be equipped with a radiating cable system, a distributed antenna system with Federal Communications Commission (FCC)-certified signal boosters, or other system approved by the head of the fire department in order to achieve the required adequate radio coverage.

916.4.2.2 Technical criteria. The head of the fire department shall maintain a document providing the specific technical information and requirements for the emergency responder radio coverage system. This document shall contain, but not be limited to, the various frequencies required, the location of radio sites, effective radiated power of radio sites, and other supporting technical information.

916.4.2.3 Standby power. Emergency responder radio coverage systems shall be provided with standby power in accordance with Section 604 527 CMR 1.00. The standby power supply shall be capable of operating the emergency responder radio coverage system for a duration of not less than 24 hours.

916.4.2.4 Signal booster requirements. If used, signal boosters shall meet the following requirements:

1. All signal booster components shall be contained in a National Electrical Manufacturer's Association (NEMA) 4-type waterproof cabinet.
2. Battery systems used for the emergency power source shall be contained in a NEMA 4-type waterproof cabinet.
3. The signal booster system and battery system shall be electrically supervised and monitored by a supervisory service, or when *approved* by the head of the fire department, shall sound an audible signal at a constantly attended location
4. Equipment shall have FCC certification prior to installation.

916.4.2.5 Additional frequencies and change of frequencies.

The emergency responder radio coverage system shall be capable of modification or expansion in the event where the fire department changes or adds frequencies, frequency changes are required by the FCC or additional frequencies are made available by the FCC.

916.4.2.6 System Monitoring. The emergency responder radio coverage shall be monitored by the fire alarm system in accordance with NFPA 72.

916.5 Installation requirements. The installation of the public safety radio coverage system shall be in accordance with Sections 916.5.1 through 916.5.4.

916.5.1 Approval prior to installation. Amplification systems capable of operating on frequencies licensed to any public safety agency by the FCC shall not be installed without prior coordination and approval of the head of the fire department.

916.5.2 Minimum qualifications of personnel. The minimum qualifications of the system designer and lead installation personnel shall include both of the following:

1. A valid FCC-issued general radio operators license.
2. Certification of in-building system training issued by a nationally recognized organization, school or a certificate issued by the manufacturer of the equipment being installed.

These qualifications shall not be required where demonstration of adequate skills and experience satisfactory to the *head of the fire department* is provided.

916.5.3 Acceptance test procedure. Where an emergency responder radio coverage system is required, and upon completion of installation, the building *owner* shall have the radio system tested to verify that two-way coverage on each floor of the building is not less than 90 percent. The test procedure 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.
3. Failure of not more than two nonadjacent test areas shall not result in failure of the test.
4. In the event that three of the test areas fail the test, in order to be more statistically accurate, the floor shall be permitted to be divided into 40 equal test areas.
1. Failure of not more than four nonadjacent test areas shall not result in failure of the test. If the system fails the 40-area test, the system shall be altered to meet the 90-percent coverage requirement.
5. 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. Once the test location has been selected, that location shall

represent the entire test area. Failure in the selected test location shall be considered failure of that test area. Additional test locations shall not be permitted.

6. The gain values of all amplifiers shall be measured and the test measurement results shall be kept on file with the building *owner* so that the measurements can be verified during annual tests. In the event that the measurement results become lost, the building *owner* shall be required to rerun the acceptance test to reestablish the gain values.
7. As part of the installation a spectrum analyzer or other suitable test equipment shall be utilized to ensure spurious oscillations are not being generated by the subject signal booster. This test shall be conducted at the time of installation and subsequent annual inspections.

916.5.4 FCC compliance. The emergency responder radio coverage system installation and components shall also comply with all applicable federal regulations including, but not limited to, FCC 47 CFR Part 90.219.

916.6 Maintenance. The emergency responder radio coverage system shall be maintained operational at all times in accordance with Sections 916.6.1 through 916.6.3.

916.6.1 Testing and proof of compliance. The emergency responder radio coverage system shall be inspected and tested annually or where structural changes occur including additions or remodels that could materially change the original field performance tests. Testing shall consist of the following:

1. In-building coverage test as described in Section 916.5.3.
2. Signal boosters shall be tested to verify that the gain is the same as it was upon initial installation and acceptance.
3. Backup batteries and power supplies shall be tested under load of a period of 1 hour to verify that they will properly operate during an actual power outage. If within the 1-hour test period the battery exhibits symptoms of failure, the test shall be extended for additional 1-hour periods until the integrity of the battery can be determined.
4. Other active components shall be checked to verify operation within the manufacturer's specifications.
5. At the conclusion of the testing, a report, which shall verify compliance with Section 916.5.3, shall be submitted to the head of the fire department.

916.6.2 Additional frequencies. The building *owner* shall modify or expand the emergency responder radio coverage system at his or her expense in the event frequency changes are required by the FCC or additional frequencies are made available by the FCC. Prior approval of a public safety radio coverage system on previous frequencies does not exempt this section.

916.6.3 Field testing. Agency personnel shall have the right to enter onto the property at any reasonable time to conduct field testing to verify the required level of radio coverage.