RMG SUSTAINABILITY COUNCIL

SUPPLEMENTARY PAPER ON DESIGN GUIDANCE VOICE ALARM SYSTEMS FOR EVACUATION

1. Background

Voice alarm system for evacuation signal has been discussed during the Technical Sub Committee (TSC) meeting where TSC has agreed on implementation guidance where it was decided that if it is operable with specified conditions and as NFPA accepts such options then it may be adopted as a remediation solution. The RSC has developed an independent implementation guidance based on the outcome of the discussion, which may aid industry in completing their remediation plan in a timely manner.

This paper is to address the desired acceptance level for Voice Alarm system & equipment for evacuation integrated with installed automatic fire alarm & detection system. Voice-evacuation fire alarm systems included by this guideline would be classified as one-way emergency communications systems.

2. Standard Requirement/s:

Accord Building Standard references the 2013 edition of NFPA 72 for installation and performance of fire alarm systems.
Voice evacuation systems for one-way emergency communications systems is provided in Chapter 24 Emergency Communications Systems of NFPA 72.

3. Implementation Guidance:

The following are key points from NFPA 72 Chapter 24.

24.1 Application

24.1.1 The application, installation, and performance of emergency communications systems and their components shall comply with the requirements of this chapter.

24.1.2 The requirements of this chapter shall apply to emergency communications systems within buildings and outdoor areas.

24.1.3 The requirements of Chapters 7 (Documentation), 10 (Fundamentals), 12 (Circuits & Pathways), 17 (Initiating Devices), 18 (Notification Appliances), 21 (Emergency Control Function Interfaces), 23 (Protected Premises Fire Alarm System), 26 (Supervising Station Alarm Systems) and 27 (Public Emergency Alarm Reporting Systems) shall also apply unless they are in conflict with this chapter.

24.1.4 Inspection, testing, and maintenance shall be performed in accordance with testing frequencies and methods in Chapter 14.

24.3 General

24.3.1 Intelligible Voice Messages Emergency communications systems shall be capable of the reproduction of pre-recorded, synthesized, or live (e.g., microphone, telephone handset, and radio) messages with voice intelligibility in accordance with Chapter 18.

24.3.2 Microphone Use

24.3.2.1*All users of systems that have microphones for live voice announcements shall be provided with posted instructions for using the microphone.

24.3.3*Required Emergency Communications Systems

An emergency communications system shall be installed in occupancies where required by the authority having jurisdiction or by other applicable governing laws, codes, or standards.

24.3.4 Nonrequired (Voluntary) Emergency Communications Systems.

24.3.4.1 Nonrequired emergency communications systems and components shall meet the requirements of this chapter.

24.3.4.2 Nonrequired emergency communications systems and components shall be identified on the record drawings.

24.3.9 Design documents in accordance with Section 7.3 Design (Layout) Documentation shall be prepared prior to installation of any new system.

24.4.3.23 Combination Emergency Communications Systems

24.4.3.23.1 When the mass notification system is integrated with the building fire alarm control unit to form one combined system that performs both functions, the system shall comply with this chapter.

24.4.3.23.2 All components that affect the operation of the fire alarm system shall be listed for fire alarm use and shall be in compliance with applicable standards such as ANSI/UL 864, Standard for Control Units and Accessories for Fire Alarm Systems.

24.4.3.25 Public Address (PA) System Interface with Facility Fire Alarm System.

24.4.3.25.1 When a public address system is used to deliver mass notification messages, the public address system shall provide (either internally as a design feature or with an approved or listed external controller) for a signal to control the facility's fire alarm system for the purpose of deactivating the fire alarm audible and visible notification appliances in accordance with 24.4.3.22.1 (Fire Alarm Control Interface).

24.4.3.25.2 All of the following features shall be provided in, or added to, the public address system:

(1) Emergency messages must have priority over nonemergency messages.

(2) All individual or zone speaker volume controls must default to the emergency sound level when used for an emergency mass notification message.

(3) When monitoring of circuit integrity is provided by the public address system, monitoring must continue, even if local loudspeaker volume controls are placed in the "off" position.

(4) The required visible notification appliance network (i.e., strobes and textual signs) must be provided where required.

24.4 One-Way Emergency Communications Systems

24.4.2.1 Automatic Response

The in-building fire emergency voice/alarm communications system shall be used to provide an automatic response to the receipt of a signal indicative of a fire alarm or other emergency.

24.4.2.2 Voice Evacuation Messages

24.4.2.2.1 Unless otherwise permitted by 24.4.2.8 (Relocation & Partial Evacuation), evacuation messages shall be preceded and followed by a minimum of two cycles of the emergency evacuation signal specified in 18.4.2 (Distinctive Evacuation Signal).

24.4.2.2.2.1 The following requirements shall be met for layout and design:

(1) The loudspeaker layout of the system shall be designed to ensure intelligibility and audibility.

(2) Intelligibility shall first be determined by ensuring that all areas in the building have the required level of audibility.

24.4.2.2.2.3 Audibility shall be required in all areas in accordance with Chapter 18 (Notification Appliances).

24.4.2.6 Loudspeakers

24.4.2.6.1 Loudspeakers and their enclosures shall be installed in accordance with Chapter 18.

4. Recommendation:

Accord Standard section 5.7.4.4 Evacuation refers to notification to be provided throughout the building for total evacuation, discouraging partial evacuation. But NFPA 72 Section 24.4.2.2 Voice Evacuation Messages stated above permits the voice evacuation messages for relocation & partial evacuation which should be restricted.

5. References:

The RSC Technical Guidelines (Standard)
Accord Building Standard V1.1
NFPA 72 National Fire Alarm and Signaling Code
Technical Guidance Notes for Fire and Building Safety Remediation in Bangladesh

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