

DESIGN CRITERIA

1. Related Sections:
 - A. Division 08 Section Door Hardware for Delayed Exit Door Alarm/Lock
 - B. Division 21 Fire Suppression Sprinkler Systems
 - C. Division 23 Section Heating Boilers
 - D. Division 26 Section Common Work Results for Electrical
2. Scope: This section covers a complete fully-addressable Fire Alarm/Mass Notification System with a reporting system compatible with the base-wide network in accordance with Referenced Standards with system and equipment listed by U.L. and with approvals by Factory Mutual. Per UFC 3-600-01 Section 5-5.1, Non-Addressable fire alarm systems are to be replaced when a project includes fire alarm work.
3. Referenced Standards: NFPA 70 National Electrical Code, NFPA 72 National Fire Alarm Code, NFPA 90A Installation of Air-Conditioning and Ventilating Systems, NFPA 96 Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations, NFPA 101 Life Safety Code, UFC 3-600-01 Fire Protection Engineering for Facilities, UFC 4-021-01 Design and O&M: Mass Notification Systems, UL 2572, ABA Accessibility Standard for Department of Defense Facilities as adopted by the Deputy Secretary of Defense memorandum dated October 31, 2008.
4. Design shall coordinate with the Host Military Installation fire and security, communications, and engineering personnel to ensure system is compatible with the existing system and that any requirements unique to the Military Installation are considered. Determine the identity of the site Authority Having Jurisdiction (AHJ), and ensure that the design is acceptable to the AHJ.
5. Fire Alarm/Mass Notification Systems use a combination of synchronized strobe lights and speakers for voice messages to alert occupants of any emergency or threat condition. See the most recent version of UFC4-021-01 and Guide Specification 28 39 00 for additional details. Read the UFC for Mass Notification carefully and coordinate design with local authorities. Each military service has unique requirements noted in the UFC. Each installation may have particular requirements for interface and testing with local mass notification systems which must be complied with. Unless the installation specifically prohibits this, the Fire Alarm and Mass Notification functions shall be a combined system controlled by a single panel.
6. New commissaries must include a Mass Notification System in accordance with UFC4-021-01, providing an emergency announcement capability to the entire interior and near exterior of the store.
7. System shall be connected to the existing Installation-Wide fire reporting system and provide interface thereto. If the Host Military Installation has an Installation-wide mass notification system, the commissary mass notification system shall be connected to it.
8. Commissary remodel projects shall include a mass notification system only when identified in the individual project guidance or if the value of the project exceeds 50% of the value of replacement.
9. Major add / alter projects and new commissaries require Fire Alarm/Mass Notification systems to be designed by a registered Fire Protection Engineer (FPE). The FPE must be involved in the design process from the beginning. Minor modifications to existing Fire Alarm/Mass Notification systems such

as refrigeration upgrade projects may, with prior approval of the AHJ, be designed by a registered Electrical Engineer experienced in the design of such systems. See requirements listed in UFC 3-600-01.

10. The Fire Alarm/Mass Notification System for all projects shall be arranged to distribute emergency messages to all commissary areas. Speakers shall be provided at all locations in the building and also around the building at entrances/exits and other outdoor areas (such as courtyards) commonly used by the building occupants.
11. Design Modeling: The Mass Notification shall be designed for audio intelligibility to comply UFC 4-021-01 and NFPA 72, whichever is more stringent. Analysis shall be provided to demonstrate compliance and submitted during design review.
 - A. Minimum CIS for Army and Air Force projects to be 0.8. Minimum CIS for Navy and Marine projects to be 0.7.
 - B. Per NFPA 72, Places of Assembly and Business Occupancies have an Ambient SPL of 55dBA. SPL shall be 70dBA at the minimum and no higher than 110dBA as an absolute maximum at the minimum hearing distance.
12. The Fire Alarm/Mass Notification System shall be interfaced with the PA / Music System so that messages initiated by the mass notification system will have priority over all other PA / Music system programs, and will automatically mute any other music, pages or announcements that might be in progress. The location of the Fire Alarm/Mass Notification Panel (FMCP) shall be coordinated with the AHJ for each project.
13. Fire Alarm/Mass Notification messages shall sound based on a hierarchy of message priority. Verify the message priority and voice direction that shall be programmed into the panel with the Installation or Fire Department. Messages that have a higher priority will override those of a lower priority. Non-Fire messages shall last until manually ended, or shall automatically cease after 10 minutes. Fire messages shall latch. If different colored strobes are used to differentiate fire messages and mass notification messages, the fire strobes shall remain active if a fire signal has been received. If a fire and non-fire signal is received at the panel, both strobes shall then be active and synchronized. If a non-fire message has overridden a fire message due to priority and that message has ended, manually or automatically, the fire message shall resound. Fire messages shall never automatically end.
14. Determine if the Host Military Installation has or is developing an Installation-wide mass notification system and the type of emergency message transmission it uses (telephone line, radio transmitter, fiber optic, etc). Include provisions for connecting to the Installation-wide system in the drawings and specifications for the mass notification system. If there is no Installation-wide system in place or in planning, make general provisions for adding the connection in the future, including an input point at the main control panel.
15. Fire Alarm/Mass Notification Control Panel (FMCP):
 - A. Install in an environmentally controlled room. Maintain 40°F to 86°F with Relative Humidity below 50%. Show the locations of the main panel, power supplies, strobes, and PA/Music system panel on the drawings.
 - B. Features:
 - 1). Audible and visual signals.

- 2). Red alarm and amber trouble lights.
 - 3). When alarm is activated, emits audible signal.
 - 4). Permits separate manual turn-off of any audible or visual signal in store.
 - 5). Resetting of the control panel must not clear the memory from being retrieved on the integral LCD display.
 - 6). Back-up battery in separate enclosure.
 - 7). Fully supervised circuits and devices.
 - 8). Non-volatile programming.
 - 9). Standby battery power:
 - a. Combined FA/MNS – Both conditions must be satisfied separately:
 - (1). 48 hours under supervisory condition, plus 15 minutes in alarm.
 - (2). 60 minutes of alarm at the maximum connected load.
 - b. Fire Alarm System only: 48 hours under supervisory condition, plus 10 minutes in alarm.
 - 10). RS-232-C output for remote CRTs and/or printers.
 - 11). History logging: 400 events.
16. Local Operating Console:
- A. Features:
 - 1). Indicates addresses activated.
 - 2). Supervised.
 - 3). Test and drill capability.
 - 4). Microphone for live voice paging as well as a minimum of eight buttons for prerecorded voice announcements.
 - 5). Protective cover shall be transparent safety glazing, such as Lexan.
 - 6). Door shall be secured with a thumb latch or lock depending on Installation preference.
 - B. Locate inside commissary near front entrance and as per UFC 4-021-01, unless otherwise directed by the Host Military Installation Fire Marshall or other AHJ.
17. Smoke Detectors: Use as required by NFPA 72, NFPA 101 and UFC 3-600-01, (e.g. at FMCP, Elevator Lobbies, etc.), and in certain HVAC ducts as required by NFPA 90A. Be aware of UFC 3-600-01 section 5-4.6 that cautions against detectors in non-required locations.

18. Heat Detectors: Use in areas such as the top of elevator shafts and elevator machine rooms if required, and areas that require detection, do not have wet-pipe sprinklers, and the environment is not appropriate for smoke detectors.
19. Water Flow Switches:
 - A. Connect to FA/MNS as an alarm signal.
 - B. Provide a separate address for each flow switch.
20. Valve Supervisory Switches:
 - A. Connect to FA/MNS as a supervisory signal.
 - B. Provide a separate address for each supervisory switch.
21. Manual Pull Stations:
 - A. Readily recognizable and readily accessible.
 - B. Provide hinged covers made of clear, unbreakable plastic in areas accessible to the public. Covers shall have the word "FIRE" factory imprinted in red letters. Covers shall not have audible sounders when lifted as this may give the impression that a fire alarm has sounded when it has not.
 - C. Provide at exit doors and space throughout the store as required by UFC or NFPA standards.
22. Wireless interior fire alarms are not normally permitted. Special situations that would benefit from wireless devices this must have prior authorization from the DeCA Project Manager. Devices used must use a "Mesh Net" or a "Class A" style network where the loss of one device does not prevent communication with downstream devices.
23. Audible and Visual Notification:
 - A. Comply with NFPA 72 for spacing and audibility requirements.
 - B. Use Clear strobes, marked "ALERT" with an integrated speaker.
 - C. Strobes shall be synchronized if they are in the same field of view.
24. Interlock exhaust hood fire suppression systems with fire alarm, hood fan, electrical equipment below hood, and fuel source per NFPA 96.
25. Fan Shut-Down Relays: Provide shut-down relays for HVAC Air Handling Units per NFPA 72.
26. High-Volume Low Speed (HVLS) Fans: The FMCP shall stop all HVLS fans immediately upon receipt of a water flow alarm. A Class "D" circuit or Output Modules shall interlock the fan controller with the fire alarm.
27. Delayed Egress Locks: Provide contacts and wiring to Delayed Egress Locks on emergency exit doors to bypass the delay when the Fire Alarm system is in alarm status.

28. Contractor shall test complete Fire Alarm/Mass Notification system in the presence of, and to the satisfaction to, the Host Military Installation Fire Marshall or other AHJ. Demonstrate system operation at final inspection.
29. Training on system operation for commissary and fire department personnel by installing contractor is required.
30. Project Drawings: Show on a dedicated floor plan proposed locations of all panels, detection devices, notification devices and other components of the fire alarm system and Mass Notification System (if provided or existing); show telephone and/or data connection points for alarm transmission if applicable.
31. Project Specifications: Edit DeCA Guide Specification 28 31 76, Mass Notification Systems, for the requirements and conditions of the individual project.

END OF SECTION