



BURGLAR ESTABLISHED 1981
& FIRE ALARM

ASSOCIATION OF MICHIGAN

APPRENTICESHIP PROGRAM

Period 3
Related Training Instruction (RTI)
Module 5 – Michigan Building Code (MBC), Chapter 9
Part 3

Reading material associated with this module:
Chapter 9
Michigan Building Code (MBC), 2021 Edition

**Michigan Building Code (MBC), 2021
Edition
Chapter 9 – Sections 907.3 to 907.8**

2021 Michigan Building Code (MBC)

Chapter 9 – Fire Protection and Life Safety Systems:

- Section 907 – Fire Alarm and Detection Systems:
 - Fire Safety Functions:
 - Automatic fire detectors utilized for the purpose of performing fire safety functions shall be connected to the building fire alarm system where a fire alarm system is required based upon the classification of Section 907.2.
 - Detectors shall perform their intended function **AND** activate the building notification appliances **OR** activate a visible and audible supervisory signal at a constantly attended location.
 - In buildings not equipped with a fire alarm system, the automatic fire detector shall be powered by normal electrical service and, upon actuation, perform the intended function. The detectors shall be located in accordance with NFPA 72.

907.3

2021 Michigan Building Code (MBC)

Chapter 9 – Fire Protection and Life Safety Systems:

- Section 907 – Fire Alarm and Detection Systems:
 - Fire Safety Functions (continued):
 - Duct smoke detectors shall be listed for the air velocity, temperature and humidity present in the duct and shall be connected to the building fire alarm system where a fire alarm system is required based upon the classification of Section 907.2.
 - Activation shall initiate a visible and audible supervisory signal at a constantly attended location and shall perform the intended fire safety function in accordance with this code and the International Mechanical Code (IMC).
 - In facilities required to be monitored by a supervising station, duct smoke detectors shall report only as a supervisory signal and not as a fire alarm.
 - Duct smoke detectors shall not be used as a substitute for required open area detection.

907.3.1

2021 Michigan Building Code (MBC)

Chapter 9 – Fire Protection and Life Safety Systems:

- Section 907 – Fire Alarm and Detection Systems:
 - Fire Safety Functions:
 - Duct smoke detector exceptions:
 - The supervisory signal at a constantly attended location is not required where duct smoke detectors activate the building’s alarm notification appliances.
 - In occupancies not required to be equipped with a fire alarm system, actuation of a duct smoke detector shall activate a visible and audible signal in an approved location. Duct smoke detector trouble conditions shall activate a visible or audible signal in an approved location and shall be identified as air duct detector trouble.

907.3.1

2021 Michigan Building Code (MBC)

Chapter 9 – Fire Protection and Life Safety Systems:

- Section 907 – Fire Alarm and Detection Systems:
 - Fire Safety Functions:
 - Where special locking systems (delayed egress locks) are installed on means of egress doors in accordance with Sections 1010.2.13 or 1010.2.14, an automatic smoke or heat detection system shall be installed as required by that section.
 - Automatic fire detectors installed for elevator emergency operation shall be installed in accordance with the provisions of ASME A17.1 and NFPA 72.
 - The wiring to the auxiliary devices and equipment used to accomplish the fire safety functions shall be monitored for integrity in accordance with NFPA 72.

907.3.2, 907.3.3, 907.3.4

2021 Michigan Building Code (MBC)

Chapter 9 – Fire Protection and Life Safety Systems:

- Section 907 – Fire Alarm and Detection Systems:
 - Initiating Devices:
 - Where a fire alarm system is required by another section of this code, occupant notification in accordance with Section 907.5 shall be initiated by one or more of the following:
 - Automatic fire detectors.
 - Automatic sprinkler system waterflow devices.
 - Manual fire alarm boxes.
 - Automatic fire-extinguishing systems.

907.4

2021 Michigan Building Code (MBC)

Chapter 9 – Fire Protection and Life Safety Systems:

- Section 907 – Fire Alarm and Detection Systems:
 - Initiating Devices:
 - In areas that are not continuously occupied, a single smoke detector shall be provided at the location of each fire alarm control unit, notification appliance circuit extender, and supervising station transmitting equipment.
 - Exception:
 - Where ambient conditions prohibit installation of a smoke detector, a heat detector shall be permitted.

907.4.1

2021 Michigan Building Code (MBC)

Chapter 9 – Fire Protection and Life Safety Systems:

- Section 907 – Fire Alarm and Detection Systems:
 - Initiating Devices:
 - Where a manual fire alarm system is required by another section of this code, it shall be activated by fire alarm boxes installed in accordance with Sections 907.4.2.1 through 907.4.2.6
 - Manual fire alarm boxes shall be located not more than 5 feet from the entrance to each exit. Additional boxes shall be located so that the travel distance to the nearest box does not exceed 200 feet.
 - The height of the box shall be a minimum of 42” and a maximum of 48” from the floor level to the activating handle or lever of the box.

907.4.2, 907.4.2.1, 907.4.2.2

2021 Michigan Building Code (MBC)

Chapter 9 – Fire Protection and Life Safety Systems:

- Section 907 – Fire Alarm and Detection Systems:
 - Initiating Devices:
 - Manual fire alarm boxes shall be red in color.
 - Where fire alarm systems are not monitored by an approved supervising station, an approved permanent sign shall be installed adjacent to each manual fire alarm box that reads: WHEN ALARM SOUNDS, CALL FIRE DEPARTMENT.
 - The fire code official is authorized to require the installation of listed manual fire alarm box protective covers to prevent malicious false alarms or to provide protection from physical damage. The protective cover shall be transparent or red with a transparent face to permit visibility of the manual fire alarm box. Each cover shall include proper operation instructions. A protective cover that emits a local alarm signal shall not be installed unless approved. Protective covers shall not project more than 4” for post mounted objects or 4” over any walking surface per Section 1003.3.3. 907.4.2.3, 907.4.2.4, 907.4.2.5

2021 Michigan Building Code (MBC)

Chapter 9 – Fire Protection and Life Safety Systems:

- Section 907 – Fire Alarm and Detection Systems:
 - Initiating Devices:
 - Manual fire alarm boxes shall be provided with ready access, unobstructed, unobscured, and visible at all times.
 - Where an automatic smoke detection system is required, it shall use smoke detectors unless the ambient conditions prohibit such an installation. In spaces where smoke detectors cannot be used due to ambient conditions, approved automatic heat detectors shall be permitted.
 - For conditions other than specific fire safety functions noted in Section 907.3, in areas where ambient conditions prohibit the installation of smoke detectors, an automatic sprinkler system installed in accordance with this code and connected to the fire alarm system, shall be approved as automatic heat detection.

907.4.2.6, 907.4.3, 907.4.3.1

2021 Michigan Building Code (MBC)

Chapter 9 – Fire Protection and Life Safety Systems:

- Section 907 – Fire Alarm and Detection Systems:
 - Occupant Notification:
 - Occupant notification by fire alarms shall be in accordance with Sections 907.5.1 through 907.5.2.3.3. Occupant notification by smoke alarms in Group R-1 and R-2 occupancies shall comply with Section 907.5.2.1.3.2.
 - Upon activation, fire alarm systems shall initiate occupant notification and shall annunciate at the fire alarm control unit, or where allowed elsewhere by Section 907, at a constantly attended location.
 - A presignal feature shall be provided only where approved. The presignal shall be annunciated at an approved, constantly attended location, having the capability to activate the occupant notification system in the event of fire or other emergency.

907.5, 907.5.1, 907.5.1.1

2021 Michigan Building Code (MBC)

Chapter 9 – Fire Protection and Life Safety Systems:

- Section 907 – Fire Alarm and Detection Systems:
 - Occupant Notification:
 - Alarm notification appliances shall be provided and shall be listed for their purpose.
 - Audible alarm notification appliances shall emit a distinctive sound that is not to be used for any other purpose other than that of a fire alarm.
 - Exceptions for Group I-2, Condition 2 occupancies in accordance with Section 907.2.6 Exception 2.
 - *907.2.6: Private mode signaling installed in accordance with NFPA 72, approved by the AHJ, and staff evacuation responsibilities are included in the fire safety and evacuation plan as required by Section 404 of the IFC.*

907.5.2, 907.5.2.1

2021 Michigan Building Code (MBC)

Chapter 9 – Fire Protection and Life Safety Systems:

- Section 907 – Fire Alarm and Detection Systems:
 - Occupant Notification:
 - The audible notification appliances shall provide a sound pressure level of 15 dBA above the average ambient sound level or 5 dBA above the maximum sound level having a duration of more than 60 seconds, whichever is greater, in every occupiable space within the building.
 - The total sound pressure level produced by combining the ambient sound pressure level with all audible notification appliances operating shall not exceed 110 dBA at the minimum hearing distance from the audible appliance. Where the average ambient noise level is greater than 105 dBA, visible alarm notification appliances shall be provided in accordance with NFPA 72, and audible appliances shall not be required.

907.5.2.1.1, 907.5.2.1.2

2021 Michigan Building Code (MBC)

Chapter 9 – Fire Protection and Life Safety Systems:

- Section 907 – Fire Alarm and Detection Systems:
 - Occupant Notification:
 - Audible signal frequency in Group R-1 and R-2 occupancies shall be in accordance with the following:
 - In sleeping rooms of Group R-1 and R-2 occupancies, the audible signal activated by a fire alarm system shall be a 520-Hz low-frequency signal complying with NFPA 72.
 - In sleeping rooms of Group R-1 and R-2 occupancies that are required by Sections 907.2.8 or 907.2.9 to have a fire alarm system, the audible alarm signal activated by the single- or multiple-station smoke alarms in the dwelling unit or sleeping unit shall be a 520-Hz signal complying with NFPA 72. Where a sleeping room smoke alarm is unable to produce a 520-Hz signal, the 520-Hz signal shall be provided by a listed notification appliance or a smoke detector with an integral 520-Hz sounder.

2021 Michigan Building Code (MBC)

Chapter 9 – Fire Protection and Life Safety Systems:

- Section 907 – Fire Alarm and Detection Systems:
 - Occupant Notification:
 - EVACS required by this code shall be designed and installed per NFPA 72. The operation of any automatic fire detector, sprinkler waterflow or manual fire alarm box shall automatically sound an alert tone followed by voice instructions giving approved information and directions for a general or staged evacuation. In high-rise buildings, the system shall operate on a minimum of the alarming floor, the floor above and the floor below. Speakers shall be provided throughout the building by paging zones. At a minimum, paging zones shall be:
 - Elevator groups
 - Interior exit stairways
 - Each floor
 - Areas of refuge as defined in Chapter 2.

907.5.2.2

2021 Michigan Building Code (MBC)

Chapter 9 – Fire Protection and Life Safety Systems:

- Section 907 – Fire Alarm and Detection Systems:
 - Occupant Notification:
 - A manual override for emergency voice communication shall be provided on a selective and all-call basis for all paging zones.
 - The EVACS shall also have the capability to broadcast live voice messages by paging zones on a selective and all-call basis.
 - The EVACS shall be allowed to be used for other announcements, provided the manual fire alarm use takes precedence over any other use.
 - EVACS shall be provided with standby power in accordance with Section 2702.
 - Where stadiums, arenas, and grandstands have $\geq 15,000$ fixed seats and provide audible public announcements, the EVACS shall provide prerecorded or real-time captions from an approved constantly attended location with trained personnel.
907.5.2.2.1, 907.5.2.2.2, 907.5.2.2.3, 907.5.2.2.4, 907.5.2.2.5

2021 Michigan Building Code (MBC)

Chapter 9 – Fire Protection and Life Safety Systems:

- Section 907 – Fire Alarm and Detection Systems:
 - Occupant Notification:
 - Visible alarm notification appliances shall be provided in accordance with Sections 907.5.2.3.1 through 907.5.2.3.3
 - Exceptions:
 - Not required in alterations, except where an existing fire alarm system is upgraded or replaced, or a new system is installed.
 - Not required in exits as defined in Chapter 2.
 - Not required in elevator cars.
 - Additional exceptions provided for Group I-2, Condition 2 occupancies.

907.5.2.3

2021 Michigan Building Code (MBC)

Chapter 9 – Fire Protection and Life Safety Systems:

- Section 907 – Fire Alarm and Detection Systems:
 - Occupant Notification:
 - Visible alarm notification appliances shall be provided in public use areas and common use areas.
 - Definition of common use (Chapter 2): *Interior or exterior circulation paths, rooms, spaces or elements that are not for public use and are made available for the shared use of two or more people.*
 - Where employee work areas have audible alarm coverage, the notification appliance circuits serving the employee work areas shall be initially designed with a minimum of 20% spare capacity to account for the potential of adding visible notification appliances in the future to accommodate hearing impaired employees.

907.5.2.3.1

2021 Michigan Building Code (MBC)

Chapter 9 – Fire Protection and Life Safety Systems:

- Section 907 – Fire Alarm and Detection Systems:
 - Occupant Notification:
 - Habitable spaces in Group I-1 and R-1 dwelling or sleeping units, in accordance with Table 907.5.2.3.2 shall be provided with visible alarm notification, activated by both the in-room smoke alarm and the building fire alarm system.
 - In Group R-2 dwelling occupancies required to have a fire alarm system, each story that contains dwelling units and sleeping units shall be provided with the capability to support future visible alarm notification appliances in accordance with Chapter 11 of ICC A117.1 (Accessible and Usable Buildings and Facilities). Such capability shall accommodate wired or wireless equipment.
 - Definition of habitable spaces (Chapter 2): *Spaces in a building for living, sleeping, eating, or cooking. Bathrooms, toilet rooms, closets, halls, storage or utility spaces, and similar areas are not considered habitable spaces.*

2021 Michigan Building Code (MBC)

Chapter 9 – Fire Protection and Life Safety Systems:

- Section 907 – Fire Alarm and Detection Systems:
 - Occupant Notification:
 - Where wired equipment is used to comply with the future capability required for Group R-2 occupancies by Section 907.5.2.3.3, the system shall include one of the following capabilities:
 - The replacement of audible appliances with combination audible visual appliances or additional visible notification appliances.
 - The future extension of the existing wiring from the unit smoke alarm locations to required locations for visible appliances.

907.5.2.3.3.1

2021 Michigan Building Code (MBC)

Chapter 9 – Fire Protection and Life Safety Systems:

- Section 907 – Fire Alarm and Detection Systems:
 - Occupant Notification:
 - Where wired equipment is used to comply with the future capability required for Group R-2 occupancies by Section 907.5.2.3.3, the system shall include one of the following capabilities (continued):
 - The fire alarm power supply and circuits shall have not less than 5% excess capacity to accommodate the future visible alarm notification appliances with a single point of access to such circuits on each story. Such circuits shall not be required to be extended beyond a single access point on a story. The fire alarm system shop drawings required by Section 907.1.2 shall include the power supply and circuit documentation to accommodate the future addition of visible notification appliances.

907.5.2.3.3.1

2021 Michigan Building Code (MBC)

Chapter 9 – Fire Protection and Life Safety Systems:

- Section 907 – Fire Alarm and Detection Systems:
 - Installation and Monitoring:
 - A fire alarm system shall be installed and monitored in accordance with this section and NFPA 72.
 - Wiring shall comply with the requirements NFPA 70 and NFPA 72. Wireless protection systems utilizing RF transmitting devices shall comply with the special requirements of low-power wireless systems in NFPA 72.
 - The fire alarm system primary and secondary power supply shall be provided in accordance with NFPA 72
 - Exception: Back-up power for single- and multiple-station smoke alarms as required in Section 907.2.11.6.

907.6, 907.6.1, 907.6.2

2021 Michigan Building Code (MBC)

Chapter 9 – Fire Protection and Life Safety Systems:

- Section 907 – Fire Alarm and Detection Systems:
 - Installation and Monitoring:
 - The fire alarm system shall identify the specific initiating device address, location, device type, floor level where applicable, and status including indication of normal, alarm, trouble, and supervisory status, as appropriate.
 - Exceptions:
 - Fire alarm systems in single-story buildings less than 22,500sf in area.
 - Fire alarm systems that only include manual fire alarm boxes, waterflow initiating devices, and not more than 10 additional alarm-initiating devices.
 - Initiating devices that do not support individual device identification.
 - Fire alarm systems or devices that are replacing existing equipment.

2021 Michigan Building Code (MBC)

Chapter 9 – Fire Protection and Life Safety Systems:

- Section 907 – Fire Alarm and Detection Systems:
 - Installation and Monitoring:
 - Each floor shall be zoned separately and a zone shall not exceed 22,500 sq. ft. The length of any zone shall not exceed 300 feet in any direction.
 - Exception: Automatic sprinkler zones shall not exceed the area permitted by NFPA 13.
 - A zoning indicator panel and associated controls shall be provided in an approved location, shall lock in the zone display until the system is reset, and shall not be cancelled by the operation of an audible alarm silencing switch.

907.6.4, 907.6.4.1

2021 Michigan Building Code (MBC)

Chapter 9 – Fire Protection and Life Safety Systems:

- Section 907 – Fire Alarm and Detection Systems:
 - Installation and Monitoring:
 - High-rise buildings shall have a separate zone by floor for each of the following types of devices where provided:
 - Smoke detectors.
 - Sprinkler waterflow devices.
 - Manual fire alarm boxes.
 - Other approved types of automatic fire protection systems.

2021 Michigan Building Code (MBC)

Chapter 9 – Fire Protection and Life Safety Systems:

- Section 907 – Fire Alarm and Detection Systems:
 - Installation and Monitoring:
 - Access shall be provided to each fire alarm device and notification appliance for periodic inspection, maintenance and testing.
 - Fire alarm systems required by this chapter or the IFC shall be monitored by an approved supervising station in accordance with NPFA 72.
 - Monitoring by a supervising station is not required for:
 - Single- and multiple-station smoke alarms required by 907.2.11 in Groups R-1, R-2, R-3, R-4, and I-1 occupancies.
 - Smoke detectors in Group I-3 (correctional) facilities.
 - Automatic sprinkler systems in one- and two-family dwellings.

2021 Michigan Building Code (MBC)

Chapter 9 – Fire Protection and Life Safety Systems:

- Section 907 – Fire Alarm and Detection Systems:
 - Installation and Monitoring:
 - Transmission of alarm signals to a supervising station shall be in accordance with NFPA 72.
 - Direct transmission of alarms associated with monitor-it-yourself (MIY) transmitters to a public safety answering point (PSAP) shall not be permitted unless approved by the fire code official.
 - Termination of fire alarm monitoring services shall be in accordance with Section 901.9 of the International Fire Code which requires notice, in writing by the provider of the monitoring services to the fire code official, whenever alarm monitoring services are terminated.

907.6.6.1, 907.6.6.2, 907.6.6.3

2021 Michigan Building Code (MBC)

Chapter 9 – Fire Protection and Life Safety Systems:

- Section 907 – Fire Alarm and Detection Systems:
 - Acceptance Tests and Completion:
 - Upon completion of the installation, the fire alarm system and all components shall be tested in accordance with NFPA 72.
 - When the installation of single- and multiple-station alarms is complete each device and interconnecting wiring shall be tested in accordance with the smoke alarm provisions of NFPA 72.
 - A record of completion in accordance with NFPA 72 verifying that the system has been installed and tested in accordance with the approved plans and specifications shall be provided.
 - Operating, testing, and maintenance instructions, record drawings, and equipment specifications shall be provided at an approved location.

2021 Michigan Building Code (MBC)

Chapter 9 – Fire Protection and Life Safety Systems:

- Section 907 – Fire Alarm and Detection Systems:
 - Inspection, Testing, and Maintenance:
 - The maintenance and testing schedules and procedures for fire alarm and fire detection systems shall be in accordance with Section 907.8 of the IFC
 - The building owner shall be responsible for ensuring that the fire and life safety systems are maintained. Service personnel shall meet the qualification requirements of NFPA 72 for maintaining, inspecting and testing such systems.

907.8, IFC 907.8

END OF PERIOD 3 – MODULE 5