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Nicet practice questions

If you install fire alarm system in the residential vertical market, you need to keep reading.When designing and pricing a new fire alarm system for group R-1 (hotels and motels) and R-2 (apartments, townhomes, and condos) you need to factor in 520Hz low frequency sounders for sleeping rooms. this is found in the 2021 International Fire Code (IFC) and 2022 NFPA 72 standard as follows:2021 IFC Section 907.4.2.1.3Audible signal frequency in Group R-1 and R-2 occupancies shall be in accordance with Sections 907.5.2.1.3.1 and 907.5.2.1.3.22021 IFC Section 907.5.2.1.3.1In sleeping rooms of Group R-1 and R-2 occupancies, the audible alarm activated by the fire alarm system shall be 520-Hz low frequency signal complying with NFPA 72. 2022 NFPA 72 Section 18.4.6.3*Audible appliances provided for the sleeping areas to awaken occupants shall produce a low frequency alarm signal that complies with the following:(1) The waveform shall have a fundamental frequency of 520 Hz +/- 10 percent.(2) The notification equipment shall be listed for producing the low frequency waveform.To answer this question, you need to consult NFPA 72 2022 Annex A.18.4.6.3."The intent of this section is to require the use of the low frequency signal in areas intended for sleeping and in areas that might reasonably be used for sleeping. For example this section requires a low frequency audible signal in a bedroom of an apartment and also in the living room area of an apartment as it might have sleeping occupants. However, it would not be required to use low frequency signal in the hallways, lobby, an other tenantless spaces. In hotels, the quest rooms would require audible signals could use any listed audible appliances regardless of the frequency content of the signal being produced. This chapter of the code addresses notification appliances connected to and controlled by a fire alarm or emergency communications system. This chapter does not address dwelling unit protection such as smoke alarms and their audible signal characteristics. Requirements for single and multiple station alarms and household fire alarm systems can be found in chapter 29. To sum this up, NFPA 72 considers sleeping areas as bedrooms and living rooms.Up to point, nothing has changed in the way we design and price new fire alarm systems in group R-1 occupancies and group R-2 occupancies. With that being said, lets get to the important code change noted above.Here is where we get to the update!2021 International Fire Code (IFC) Section 907.5.2.1.3.2In sleeping rooms of Group R-1 and R-2 occupancies that are required by Section 907.2.8 or 907.2.9 to have a fire alarm system, the audible alarm signal activated by single or multiple-station smoke alarms in the dwelling unit or sleeping units 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 alarm signal shall be provided by a listed notification appliance or a smoke detector with an integral 520-Hz sounder.Here is the kicker. There are NO listed 120 VAC single or multiple station smoke alarms on the market with an integral 520 Hz sounder.We all knew this was coming and surprise, here it is! If we simply the above code language, it states that the 120 VAC single and multiple station smoke alarms of group R-1 and Group R-2 occupancies must now produce a 520 Hz low frequency audible tone. _____(1) Use a listed 520 Hz low frequency notification applianceIf this option is selected, you can utilize the wall or ceiling mounted 520 Hz low frequency notification appliances required by the 2021 IFC section 907.5.2.1.3.1 for occupant notification in group R-1 and and Group R-2 occupancies. These should already be captured by your minimum code design. However, with a standard design in mind, these appliances will only activate via a general alarm signal. This new 2021 code section 907.5.2.1.3.2 is requiring the single and multiple smoke alarms to sound these low frequency appliances. To accomplish this an addressable monitor module could be connected to a contact on the residential unit smoke alarms. This has been done for quite some time in Group R-2 occupancies used for university dorms or specific design criteria such a Marriott's Module 14. In these cases, the addressable monitor module is in lace to supervise the in room smoke alarms. If these alarms activate, the fire alarm control unit (FACU) would receive a non-latching supervisory alarm without the activation of any occupant notification appliances. To insure the low frequency notification appliances activate via general alarm in addition to in-unit smoke alarm activation, you would need an addressable control module to isolate each residential units notification appliance circuit (NAC). This way the system can be programmed to activate the in-unit NAC control module upon general alarm (corridor, smoke detectors, elevator lobby smoke detectorss, manual pull stations, waterflow, etc.) or the addressable monitor module connected to the 120 VAC single and multiple station smoke alarms. Remember to program the control module for latching upon general alarm activation and non-latching for the in-unit residential single and multiple station smoke alarms. Another scenario that will come up with this approach is audible tones synchroning as well as conflicting tones. If this method is used, an activated smoke alarm would sound it's internal sounder as well as the in room 520 Hz low frequency sounders. This would produce both the standard 3 KHz and 520 Hz tones in the space. Not sure if it is possible to disable the local piezo or sounder on a 120 VAC smoke alarm as this would rectify the conflicting tone issue. To top this off the new 2022 NFPA 72 standard requires audible tones to be synchronized. See section 18.4.3.3. We feel as though this could definitely produce an issue as the audible tones are produced from two different sources. Synchronizing the audible tones may be difficult or impossible. Key takeaways for option number one:Requires at least one addressable monitor module for each residential unit.Requires one addressable control module for each residential unitRequires a signaling line circuit (SLC) ran to each residential unit monitor module and control module.Requires a 24VDC power circuit to the addressable control module.Design the system so that each residential unit receives a separate isolated notification appliance circuit (NAC) fed from the control module noted above. Confirm the electrical contractor is providing 120VAC single and multiple smoke alarms with dry contacts for the the capability to trip the addressable monitor module noted above. Possible need for additional power supplies and signaling line circuit (SLC) cards depending on the base system.Ensure the audible tones from the single and multiple stations smoke alarm internal piezo and the fire alarm system low frequency Sounders are synchronized. Per 2022 NFPA 72 section 18.4.3.3Look into the issue of conflicting audible tones. As stated above there may be a method to disable the local piezo or sounder on the single or multiple stations smoke alarms. _____(1) Use an addressable system smoke detector with an integral 520 Hz low frequency sounder base.If this option is selected for your design, you can replace the standard ceiling or wall mounted 520 Hz low frequency notification appliances with a low frequency sounder base connected to an addressable system smoke detector. As noted above per 2022 NFPA 72 Section A.18.4.6.3, these smoke detectors and 520 Hz low frequency sounder bases will be required in all sleeping areas which are considered bedrooms and living rooms. Like any other sounder base installation, make sure to account for the addition of a signaling line circuit (SLC) and sounder base notification appliance circuit. With this option, the electrical contractor can remove all power wiring, back boxes and single or multiple smoke alarms from their bid and installation. Key takeaways for option number two:Requires at least one addressable smoke detector with integral low frequency sounder base in each bedroom and Livingroom.Requires a signaling line circuit (SLC) ran to each residential unit smoke detector.Requires a 24VDC power circuit or notification appliance circuit (NAC) to the integral low frequency sounder base.Depending on your fire alarm system, you may need end of line power supervision modules to supervise the loss of sounder base power. Confirm the electrical contractor is NOT providing 120VAC single and multiple smoke alarms, 120 VAC power circuits and back boxes as this will be covered in your fire alarm design. Possible need for additional power supplies and signaling line circuit (SLC) cards depending on the base system._____Author note: Make sure if option number two is selected for you redesign, you still incorporate the necessary 110CD or 177CD visual appliances in the ADA (Americans with Disabilities Act) units. This is a HUGE change to the code and we suggest you start the conversation with your architects, general contractors and electrical contractors so everyone is on the same page moving forward. Unlock your potential with our newly written NICET Study Guides, designed to give you the edge you need to succeed on your NICET certification exam. Each guide features over 200 carefully written practice exam questions that mirror the format and difficulty of the actual NICET tests. Our goal is to provide you with a thorough understanding of the material, helping you identify your strengths and areas for improvement.What sets our study guides apart is the detailed explanations accompanying each question. After you answer, you'll gain insights into the correct response and an in-depth analysis of the underlying concepts. 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