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The *Design Standards* were developed to work in conjunction with the requirements of the Construction and Professional Services Manual (CPSM) of the State of Virginia. This Bulletin is for the *Old Dominion University Design Standards* only and will not address any revisions associated with the CPSM.

This Bulletin is being issued as an interim change to the standards which cannot wait for the annual updates. It will be officially incorporated into the standards at the next published update.

8 5H9` F9E I 9GH98. July 22, 2020

H@9.`University Architect`

B I` 89D5FHA9BH.`Facilities Management & Construction

Section of the Design Standards Being Considered:

Appendix Section Addition, to be referenced in Chapter 4 – Division 21: Fire Protection

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*The following information is shared as part of Old Dominion University's Design Standards in an effort to improve ODU project submissions to the Department of Engineering and Buildings, an ongoing overall effort. A/E's are encouraged to read and understand this guidance carefully. This is subject to change and is provided in addition to the requirements stated in the current edition of the CPSM.*

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Suggested Wording for the Proposed Addition / Deletion / Change:

*Appendix AO Fire Alarm + Fire Sprinkler Guidance*

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Date Issued: July 22, 2020

Issued To: Dave Robichaud, Mike Brady, Willie Spencer, Christopher Pewterbaugh, John Hasher, Jay Graven, Mike Craig, Craig Marshal

cc: CannonDesign, DJG, Moseley Architects, RRMM, VMDO

Attachments: Appendix AO Fire Alarm + Fire Sprinkler Guidance

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  - F )LUHVSULQOHUVVHPVGRMZORFDWRDSSURY HENORFDOL UH6SDUPHQ
  - G 1R3,9RUVVLSULQOHUVVW HP3URVBDUHPRW3,9ZOO 3,9RUR0q6qrE HBUDOPLVBUVDGRL/SULQOHUVVHP
  - L 1RRRULUHDODUPEHOO
  - M 3,9LVRRORUHE\ WLUHDODUPVWHP
  - N )LUHDODUPVGRWY HVUREHFRMUDH
  - O 1RSURVLRBUHFHODOVDWRORU ULQWLUHDOD
  - P HBUDOPLVBUVDGRL UHDODUPVDLUUR
  - Q 7HVRDQPHVRURD OOVSDFHVGRHHS
  - 1RSURGRV
  - 1RSURMHFRHU
  - RSULBWFH0VRE/ HHQHPRMBUVDWZUN
  - UDZKHVPLVVLQ
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**UNDERSTANDING FIRE ALARM AND FIRE SPRINKLER  
REQUIREMENTS FOR ELEVATORS**

*By Michael Christensen, RA  
April 24, 2019, Revised October 18, 2019*

With elevator technology continuously changing, coordinating the pertinent codes that govern the installation of elevators is a challenging task. The principal codes currently governing elevator installations in Virginia are the 2015 Virginia Construction Code, the 2013 ASME A17.1 Safety Code for Elevators and Escalators, the 2013

Smoke detectors are not required in hoistways that do not have sprinkler head(s). *NFPA 72-21.3.6 and ASME A17.1-2.27.3.2.1(c)*. Existing elevators that have ventilation are allowed to have a smoke detector at the top of the hoistway.

A sprinkler head at the elevator pit requires a fire detector near the hazard. *NFPA 72-17.4.10 and 21.3.14.1 (3)*. According to *ASME A17.1 Safety Code for Elevators and Escalators*, the elevator pit is part of the hoistway.

Where the environmental conditions may cause false alarms such as elevators that open into kitchens or parking garages, then automatic fire detection such as heat detectors are permitted. *NFPA 72-21.3.9*. Smoke detectors may not be used for elevator shunt trip, as they would activate more quickly than a heat detector and thus create the possibility of disconnecting the main line power and potentially trapping occupants before the elevator could be recalled to the designated floor. *ASME A17.1 - 2.8.3.3.3*.

A change to the 2013 *NFPA 72* states that a smoke detector shall not be installed in the elevator pit unless it is listed for the environment. *NFPA 72-21.3.8*.

Where buildings are not equipped with fire alarm systems, a “dedicated function fire alarm system” shall be provided in order to provide elevator recall. *NFPA 72-21.3.1 and 21.3.2*. This type of system might also include the monitoring of the fire sprinkler system.

#### **HEAT DETECTORS ARE USED TO INITIATE SHUNTING THE MAIN POWER TO THE ELEVATOR WITH SOME EXCEPTIONS**

Where sprinkler heads are present, heat detectors that are located in the hoistway and the machine room/control room shall be used for elevator shut down. These heat detectors shall have both a lower temperature rating and a higher sensitivity (response time index-RTI) than the sprinkler head (*NFPA 72-21.4.1*) and shall be located within 24 inches of the sprinkler head. *NFPA 72-21.4.2*. There shall be enough of a time delay to recall the elevator from the top of the hoistway to the designated floor before the elevator power is disconnected. When elevator recall is accomplished prior to main line power being disconnected the occupants will be able to successfully egress the elevator and avoid being trapped inside. *ASME A17.1-2.8.3.3.2*.

Elevator hoistways and machine rooms containing control equipment that have sprinkler protection shall have an approved means of shunting the power per the requirements of *NFPA 72-21.4*. The main line power shall be disconnected prior to the application of water to the fire.



