



First Revision No. 5258-NFPA 72-2022 [New Section after 3.3.37.2]

3.3.38 Carbon Monoxide Source.

Equipment or a permanently installed appliance, fireplace, or process used inside a building that produces or emits carbon monoxide gas. (SIG-IDS)

Submitter Information Verification

Committee: SIG-IDS

Submittal Date: Thu Jul 21 08:38:24 EDT 2022

Committee Statement

Committee Statement: The definition properly explains carbon monoxide source and clarifies that carbon monoxide can be produced from installed appliances, equipment, and processes other than fuel burning appliances.

Response Message: FR-5258-NFPA 72-2022

Public Input No. 538-NFPA 72-2022 [New Section after 3.3.37.2]



First Revision No. 5263-NFPA 72-2022 [Section No. 3.3.77 [Excluding any Sub-Sections]]

A device suitable for connection to a circuit that has a sensor that responds to a physical stimulus such as gas, heat, light, sound, or smoke. (SIG-IDS)

Submitter Information Verification

Committee: SIG-IDS

Submittal Date: Thu Jul 21 09:05:50 EDT 2022

Committee Statement

Committee Statement: Not all detectors require physical stimulus. Both video and certain types of smoke detectors sense light reflection.

Response Message: FR-5263-NFPA 72-2022

Public Input No. 180-NFPA 72-2022 [Section No. 3.3.77 [Excluding any Sub-Sections]]

**First Revision No. 5347-NFPA 72-2022 [New Section after 3.3.77.1]****3.3.78.1*** Acoustic Leak Detector.

A device which detects the presence of a gas leak through detection of the sound produced by a pressurized gas release from a choked flow condition. (SIG-IDS)

A.3.3.78.1 Acoustic Leak Detector.

These devices are also known as ultrasonic gas detectors.

Submitter Information Verification

Committee: SIG-IDS

Submittal Date: Fri Jul 22 08:42:43 EDT 2022

Committee Statement

Committee Statement: A new definition of acoustic leak detector is created to support the addition of these detectors to the scope of Chapter 17.

Response Message: FR-5347-NFPA 72-2022

**First Revision No. 5338-NFPA 72-2022 [Section No. 3.3.77.4]****3.3.78.5** Carbon Monoxide Detector.

A device ~~that responds to carbon monoxide~~ containing electrical components coupled with a carbon monoxide sensing means that has a provision for the connection of electrical power and signaling circuits . (SIG-IDS)

Submitter Information Verification

Committee: SIG-IDS

Submittal Date: Thu Jul 21 16:01:01 EDT 2022

Committee Statement

Committee Statement: The revised definition provides clarity on the function and operation of these devices.

Response Message: FR-5338-NFPA 72-2022



First Revision No. 5332-NFPA 72-2022 [New Section after 3.3.77.23]

3.3.78.25 Thermal Image Fire Detector.

An initiating device that senses overheated combustible material by imaging in the long-wave infrared wavelengths (i.e., far infrared) using a focal plane array. (SIG-IDS).

Submitter Information Verification

Committee: SIG-IDS

Submittal Date: Thu Jul 21 14:48:24 EDT 2022

Committee Statement

Committee Statement: Though thermal image fire detectors are technically radiant energy detectors, the current definition for radiant energy detectors was originally written for traditional (non-imaging) flame and spark detectors. New products are being developed with enhanced capabilities to look for overheated areas in a thermal imager field of view. Specific requirements for these detectors need to be added to the standard and they may be different than traditional flame detectors. This action aligns with the committee action on Public Input 178 to add a new section after 17.10.2.4 on thermal image fire detection.

Response Message: FR-5332-NFPA 72-2022

Public Input No. 177-NFPA 72-2022 [New Section after 3.3.77.23]



First Revision No. 5267-NFPA 72-2022 [New Section after 3.3.323]

3.3.328* Unconditioned Area.

An enclosed area, room, or space without climate or HVAC controls. (SIG-IDS)

A.3.3.328 Unconditioned Area.

Unconditioned areas are different from outdoor installations that are exposed to outside weather and environmental conditions. Examples of unconditioned areas include warehouses, attics, garages, and storage areas without HVAC systems.

Submitter Information Verification

Committee: SIG-IDS

Submittal Date: Thu Jul 21 09:21:18 EDT 2022

Committee Statement

Committee Statement: A definition is added to support the new requirement in Chapter 17 for carbon monoxide detectors in unconditioned areas. The annex material further explains what an unconditioned space is to eliminate confusion and make it more user friendly.

Response Message: FR-5267-NFPA 72-2022

Public Input No. 199-NFPA 72-2022 [New Section after 3.3.323]



First Revision No. 5268-NFPA 72-2022 [New Section after 3.3.331]

3.3.337 Waterflow Alarm Device.

An attachment to the sprinkler system that detects a predetermined water flow and is connected to a fire alarm system to initiate an alarm condition or is used to mechanically or electrically initiate a fire pump or local audible or visual alarm. [13, 2025] (SIG-IDS).

Submitter Information Verification

Committee: SIG-IDS

Submittal Date: Thu Jul 21 09:27:51 EDT 2022

Committee Statement

Committee Statement: The first revision extracts a definition from NFPA 13 to allow direct correlation between the NFPA 72 and NFPA 13.

Response Message: FR-5268-NFPA 72-2022

[Public Input No. 369-NFPA 72-2022 \[New Section after 3.3.331\]](#)

[Public Input No. 461-NFPA 72-2022 \[New Section after 3.3.332\]](#)

[Public Input No. 502-NFPA 72-2022 \[New Section after 3.3.332\]](#)



First Revision No. 5275-NFPA 72-2022 [Section No. 17.5.3.1.1]

17.5.3.1.1

Where inaccessible areas are constructed of or contain combustible material, unless otherwise specified in 17.5.3.1.2, ~~they shall be made accessible and shall be protected by a detector(s).~~ and 17.5.3.1.3, both of the following shall apply:

- (1) The areas shall be made accessible.
- (2) The areas shall be provided with detection.

Submitter Information Verification

Committee: SIG-IDS

Submittal Date: Thu Jul 21 09:53:49 EDT 2022

Committee Statement

Committee Statement: The revision corrects a NFPA Manual of Style issue by removing second “shall” and clarifying the existing requirement.

Response Message: FR-5275-NFPA 72-2022

[Public Input No. 436-NFPA 72-2022 \[Section No. 17.5.3.1.1\]](#)



First Revision No. 5277-NFPA 72-2022 [Section No. 17.5.3.1.2]

17.5.3.1.2

Detectors shall not be required in combustible blind spaces if where any of the following conditions exist:

- (1) ~~Where the~~ The ceiling is attached directly to the underside of the supporting beams of a combustible roof or floor deck.
~~Where the concealed space is entirely filled with a noncombustible insulation. (In solid joist construction, the insulation shall be required to fill only the space from the ceiling to the bottom edge of the joist of the roof or floor deck.)~~
- (2) ~~Where there are small~~ The space is concealed spaces over rooms, provided that any space in question above a room and does not exceed 50 ft² (4.6 m²) in area.
- (3) ~~In spaces~~ The space is formed by sets of facing studs or solid joists in walls, floors, or ceilings, ~~where~~ and the distance between the facing studs or solid joists is less than 6 in. (150 mm).

Submitter Information Verification

Committee: SIG-IDS

Submittal Date: Thu Jul 21 09:57:15 EDT 2022

Committee Statement

Committee Statement: The revision is for compliance with the NFPA Manual of Style. Subsection (2) is being removed and placed into another section.

Response Message: FR-5277-NFPA 72-2022

Public Input No. 437-NFPA 72-2022 [Section No. 17.5.3.1.2]



First Revision No. 5364-NFPA 72-2022 [New Section after 17.5.3.1.3]

17.5.3.1.4

Where the concealed space is entirely filled with noncombustible insulation in solid joist construction as described in 17.5.3.1.2 , the insulation shall be required to fill only the space from the ceiling to the bottom edge of the joist of the roof or floor deck.

Submitter Information Verification

Committee: SIG-IDS

Submittal Date: Fri Jul 22 14:19:37 EDT 2022

Committee Statement

Committee Statement: The first revision addresses a NFPA Manual of Style issue. Creating the second section of PI438 to address the two separate conditions in a single section, and revised to exclude an unnecessary article.

Response Message: FR-5364-NFPA 72-2022

Public Input No. 439-NFPA 72-2022 [New Section after 17.5.3.1.2]

**First Revision No. 5281-NFPA 72-2022 [Section No. 17.5.3.1.4]****17.5.3.1.6***

Where concealed accessible spaces above suspended ceilings are used as a return air plenum meeting the requirements of NFPA 90A, detection shall be provided in one of the following means:

- (1) Smoke detection in accordance with 17.7.5.2
- (2) Smoke detection at each connection from the return air plenum to the central air-handling system.

Submitter Information Verification

Committee: SIG-IDS

Submittal Date: Thu Jul 21 10:14:50 EDT 2022

Committee Statement

Committee Statement: The punctuation has been revised to clarify the requirement and the list items have been revised to comply with the NFPA Manual of Style. Relocate 17.5.3.1.4 to 17.5.3.1.6.

Response: FR-5281-NFPA 72-2022

Message:

[Public Input No. 277-NFPA 72-2022 \[Section No. 17.5.3.1.4\]](#)

[Public Input No. 441-NFPA 72-2022 \[Section No. 17.5.3.1.4\]](#)



First Revision No. 5282-NFPA 72-2022 [Section No. 17.6.1.2]

17.6.1.2

Designs not in accordance with 17.6.1.3 shall be ~~deemed prescriptive designs and shall be designed in accordance with the prescriptive requirements of this chapter.~~ both of the following:

- (1) Deemed as prescriptive designs
- (2) Designed in accordance with the prescriptive requirements of this chapter-

Submitter Information Verification

Committee: SIG-IDS

Submittal Date: Thu Jul 21 10:19:39 EDT 2022

Committee Statement

Committee Statement: This first revision addresses a NFPA Manual of Style issue. Section 17.6.1.2 had shall in the normative texts two times. This revision aligns with the same revision made to Section 17.7.1.2.

Response Message: FR-5282-NFPA 72-2022

Public Input No. 529-NFPA 72-2022 [Section No. 17.6.1.2]



First Revision No. 5283-NFPA 72-2022 [Section No. 17.6.3.1.1]

17.6.3.1.1* Spacing.

~~One~~ Detectors shall be spaced in accordance with either of the following ~~requirements shall~~ apply :

(1) ~~The detectors shall comply with the following:~~

- (a) The distance between detectors shall not exceed their listed spacing, ~~and there shall be detectors within a distance of one-half the listed spacing, measured at right angles from all walls or partitions extending upward to within the top 15 percent of the ceiling height .~~
- (b) ~~There~~ shall be detectors within a distance of one-half the listed spacing, measured at right angles from all walls or partitions extending upward to within the top 15 percent of the ceiling height.

(2) All points on the ceiling shall have a detector within a distance equal to or less than 0.7 times the listed spacing (0.7S).

Supplemental Information

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
Chapter_17_17_6_3_1_1_FR5283.docx	Chapter 17 17_6_3_1_1 FR5283	

Submitter Information Verification

Committee: SIG-IDS

Submittal Date: Thu Jul 21 10:25:13 EDT 2022

Committee Statement

Committee Statement: The first revision addresses a NFPA Manual of Style issue. The existing text had both shall and shall not in normative text. In addition there was text that needed to be placed in another sub section. Also, added back in the heading, and updated the wording to be consistent with the recommended action.

Response FR-5283-NFPA 72-2022

Message:

Public Input No. 530-NFPA 72-2022 [Section No. 17.6.3.1.1]



First Revision No. 5346-NFPA 72-2022 [Section No. 17.6.3.5.2]

17.6.3.5.2

~~For line-type~~ Line-type electrical conductivity detectors (see 3.3.78.13) and pneumatic rate-of-rise tubing heat detectors (see 3.3.78.17), which rely on the integration effect, ~~the derating required by Table 17.6.3.5.1 shall not apply, and the manufacturer's published instructions shall be followed for appropriate alarm point and spacing.~~ shall comply with the following requirements:

- (1) The derating required by Table 17.6.3.5.1 shall not apply.
- (2) The manufacturer's published instructions shall be followed for appropriate identified alarm point threshold setting and spacing.

Submitter Information Verification

Committee: SIG-IDS

Submittal Date: Fri Jul 22 08:27:23 EDT 2022

Committee Statement

Committee Statement: The first revision addresses a NFPA Manual of Style issue. Section 17.6.3.5.2 has both "shall" and "shall not" in the normative text in addition to multiple requirements. Additional revisions have been made for more specificity on the alarm setting required by this section.

Response Message: FR-5346-NFPA 72-2022

Public Input No. 531-NFPA 72-2022 [Section No. 17.6.3.5.2]



First Revision No. 5345-NFPA 72-2022 [Section No. 17.7.1.2]

17.7.1.2*

Designs not in accordance with 17.7.1.3 shall be ~~deemed prescriptive designs and shall be designed in accordance with the prescriptive requirements of this chapter.~~ both of the following:

- (1) Deemed as prescriptive designs
- (2) Designed in accordance with the prescriptive requirements of this chapter:-

Submitter Information Verification

Committee: SIG-IDS

Submittal Date: Fri Jul 22 08:19:54 EDT 2022

Committee Statement

Committee Statement: This first revision addresses NFPA Manual of Style issue. Section 17.7.1.2 had shall in the normative texts two times. This revision aligns with the same revision made to Section 17.6.1.2.

Response Message: FR-5345-NFPA 72-2022

Public Input No. 532-NFPA 72-2022 [Section No. 17.7.1.2]



First Revision No. 5289-NFPA 72-2022 [Section No. 17.7.2.1]

17.7.2.1

~~Where detectors are Detectors installed for signal initiation during construction, they shall be cleaned and verified to be operating in accordance with the listed sensitivity, or they shall be replaced prior to the final acceptance test of the system. shall comply with one of the following:~~

- (1) Detectors shall be cleaned and verified to be operating in accordance with the listed sensitivity.
- (2) Detectors shall be replaced prior to the final acceptance test of the system.

Submitter Information Verification

Committee: SIG-IDS

Submittal Date: Thu Jul 21 11:32:22 EDT 2022

Committee Statement

Committee The first revision addresses a NFPA Manual of Style issue. Section 17.7.2.1 had two
Statement: separate “shalls” and requirements in a single section. The first revision provides MoS compliance.

Response FR-5289-NFPA 72-2022

Message:

Public Input No. 534-NFPA 72-2022 [Section No. 17.7.2.1]

**First Revision No. 5290-NFPA 72-2022 [Section No. 17.7.2.2]****17.7.2.2**

~~Where detectors are Detectors installed but not operational during construction, they shall be protected from construction debris, dust, dirt, and damage in accordance with the manufacturer's recommendations and verified to be operating in accordance with the listed sensitivity, or they shall be replaced prior to the final acceptance test of the system: comply with one of the following:~~

- (1) Detectors shall be protected from construction debris, dust, dirt, and damage in accordance with the manufacturer's recommendations and verified to be operating in accordance with the listed sensitivity.
- (2) Detectors shall be replaced prior to the final acceptance test of the system.

Submitter Information Verification

Committee: SIG-IDS

Submittal Date: Thu Jul 21 11:35:04 EDT 2022

Committee Statement

Committee Statement: The first revision corrects a NFPA Manual of Style issue. Section 17.7.2.2 contains two "shalls."

Response Message: FR-5290-NFPA 72-2022

Public Input No. 535-NFPA 72-2022 [Section No. 17.7.2.2]



First Revision No. 5296-NFPA 72-2022 [Section No. 17.7.4.2.3.1]

17.7.4.2.3.1*

In the absence of specific performance-based design criteria, ~~one of the following requirements~~ detectors shall ~~apply~~ be spaced in accordance with either of the following :

(1) The detectors shall comply with the following:

- (a) The distance between ~~smoke~~ detectors shall not exceed a nominal spacing of 30 ft (9.1 m) ~~and there shall be detectors within a distance of one-half the nominal spacing, measured at right angles from all walls or partitions extending upward to within the top 15 percent of the ceiling height .~~
- (b) There shall be detectors within a distance of one-half the nominal spacing, measured at right angles from all walls or partitions extending upward to within the top 15 percent of the ceiling height.

(2)* All points on the ceiling shall have a detector within a distance equal to or less than 0.7 times the nominal 30 ft (9.1 m) spacing (0.7S).

A.17.7.4.2.3.1(2)

This is useful in calculating locations in corridors or irregular areas [see 17.6.3.1.1 and Figure A.17.6.3.1.1(h)]. For irregularly shaped areas, the spacing between detectors can be greater than the selected spacing, ~~provided if~~ the maximum spacing from a detector to the farthest point of a sidewall or corner within its zone of protection is not greater than 0.7 times the selected spacing (0.7S).

Supplemental Information

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
Chapter_17_17_7_4_2_3_1_FR5296.docx	Chapter_17_17_7_4_2_3_1_FR5296.docx	

Submitter Information Verification

Committee: SIG-IDS

Submittal Date: Thu Jul 21 12:54:09 EDT 2022

Committee Statement

Committee Statement: The first revision addresses NFPA Manual of Style issues. The proposed change to the Annex 17.7.4.2.3.1 to 17.7.4.2.3.1(C) was not accepted as this Annex is applicable to A through C. The existing Annex of 17.7.4.2.3.1(2) will be renumbered to 17.7.4.2.3.1(C).

Response: FR-5296-NFPA 72-2022

Message:

Public Input No. 536-NFPA 72-2022 [Section No. 17.7.4.2.3.1]



First Revision No. 5297-NFPA 72-2022 [Section No. 17.7.4.2.4.2]

17.7.4.2.4.2

For level ceilings, the following shall apply:

- (1) For ceilings with beam depths of less than 10 percent of the ceiling height ($0.1 H$), the following shall apply:
 - (a) Smooth ceiling spacing shall be permitted.
 - (b) Spot-type smoke detectors shall be permitted to be located on ceilings or on the bottom of beams.
- (2) For ceilings with beam depths equal to or greater than 10 percent of the ceiling height ($0.1 H$), the following shall apply:
 - (a) Where beam spacing is equal to or greater than 40 percent of the ceiling height ($0.4 H$), spot-type detectors shall be located on the ceiling in each beam pocket.
 - (b) Where beam spacing is less than 40 percent of the ceiling height ($0.4 H$), the following shall be permitted for spot detectors:
 - i. Smooth ceiling spacing in the direction parallel to the beams and at one-half smooth ceiling spacing in the direction perpendicular to the beams
 - ii. Location of detectors either on the ceiling or on the bottom of the beams
- (3)* For beam pockets formed by intersecting beams, including waffle or pan-type ceilings, the following shall apply:
 - (a) For beam depths less than 10 percent of the ceiling height ($0.1 H$), spacing shall be in accordance with 17.7.4.2.4.2(1).
 - (b) For beam depths greater than or equal to 10 percent of the ceiling height ($0.1 H$), spacing shall be in accordance with 17.7.4.2.4.2(2).
- (4)* For corridors 15 ft (4.6 m) in width or less having ceiling beams or solid joists perpendicular to the corridor length, the following shall apply:
 - (a) Smooth ceiling spacing shall be permitted.
 - (b) Location of spot-type smoke detectors shall be permitted on ceilings, sidewalls, or the bottom of beams or solid joists.
- (5) For rooms of 900 ft² (84 m²) or less, the following shall apply:
 - (a) Use of smooth ceiling spacing shall be permitted.
 - (b) Location of spot-type smoke detectors shall be permitted on ceilings or on the bottom of beams.
- (6) For ceilings with beams, where there is a gap greater than 15 percent of the ceiling height above the beam, smooth ceiling spacing shall be permitted.

Supplemental Information

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
Chapter_17_17_7_4_2_4_2_FR_5297.docx	Chapter 17 17_7_4_2_4_2 FR 5297.docx	

Submitter Information Verification

Committee: SIG-IDS

Submittal Date: Thu Jul 21 12:56:37 EDT 2022

Committee Statement

Committee Statement: This first revision addresses the case where there is a gap above a beam traversing a ceiling. Using 15% represents a conservative approach constant with 17.7.4.2.3.1 .

Response Message: FR-5297-NFPA 72-2022

Message:

[Public Input No. 279-NFPA 72-2022 \[Section No. 17.7.4.2.4.2\]](#)



First Revision No. 5298-NFPA 72-2022 [Section No. 17.7.4.6.2.2]

17.7.4.6.2.2

Sampling pipe networks shall be designed on the basis of, and ~~shall be~~ supported by, computer-based fluid dynamics design calculations to ensure required performance.

Submitter Information Verification

Committee: SIG-IDS

Submittal Date: Thu Jul 21 12:59:14 EDT 2022

Committee Statement

Committee Statement: The first revision provides compliance with the NFPA Manual of Style.

Response Message: FR-5298-NFPA 72-2022

[Public Input No. 539-NFPA 72-2022 \[Section No. 17.7.4.6.2.2\]](#)



First Revision No. 5299-NFPA 72-2022 [Section No. 17.7.4.6.4.1]

17.7.4.6.4.1 Air Duct Applications.

(A)

The air sampling system shall ~~be listed for air duct applications and shall be installed in accordance with the manufacturer's published instructions.~~ comply with the following:

- (1) It shall be listed for air duct applications.
- (2) It shall be installed in accordance with the manufacturer's published instructions.

(B)

The inlet and exhaust sections of pipe that are installed inside the air duct shall ~~be air-tight and shall exhaust the sampled air in accordance with the manufacturer's published instructions.~~ comply with the following:

- (1) They shall be air-tight.
- (2) They shall exhaust the sampled air in accordance with the manufacturer's published instructions.

Supplemental Information

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
Chapter_17_17_7_4_6_4_1_FR_5299.docx	Chapter 17 17_7_4_6_4_1 FR 5299	

Submitter Information Verification

Committee: SIG-IDS

Submittal Date: Thu Jul 21 13:00:31 EDT 2022

Committee Statement

Committee Statement: The first revision provides compliance with the NFPA Manual of Style.

Response Message: FR-5299-NFPA 72-2022

Public Input No. 470-NFPA 72-2022 [Section No. 17.7.4.6.4.1]



First Revision No. 5300-NFPA 72-2022 [Section No. 17.7.6.5.4]

17.7.6.5.4 Detector Installation.

~~Detectors shall be mounted in accordance with the manufacturer's published instructions and shall be accessible for cleaning by providing access doors or panels in accordance with NFPA 90A.~~

17.7.6.5.4.1

Detectors shall be mounted in accordance with the manufacturer's published instructions.

17.7.6.5.4.2

Detectors shall be accessible for cleaning ~~by providing~~ through access doors or panels provided in accordance with NFPA 90A.

Submitter Information Verification

Committee: SIG-IDS

Submittal Date: Thu Jul 21 13:02:25 EDT 2022

Committee Statement

Committee Statement: The first revision provides compliance with the NFPA Manual of Style.

Response Message: FR-5300-NFPA 72-2022

Public Input No. 449-NFPA 72-2022 [Section No. 17.7.6.5.4]

**First Revision No. 5301-NFPA 72-2022 [Section No. 17.7.6.6.4.2]****17.7.6.6.4.2**

If door release is intended to prevent smoke transmission from one space to another in one direction only, ~~detectors located in the space to which smoke is to be confined, regardless of the depth of wall section above the door, shall be in accordance with 17.7.6.6.5. Alternatively, a smoke detector conforming with 17.7.6.6.4.1(D) shall be permitted to be used; either the requirements of 17.7.6.6.4.2(A) or 17.7.6.6.4.2(B) shall apply.~~

(A)

Regardless of the depth of wall section above the door, detectors located in the space to which smoke is to be confined, ~~regardless of the depth of wall section above the door,~~ shall be in accordance comply with 17.7.6.6.5.

(B)

A smoke detector ~~conforming~~ complying with 17.7.6.6.4.1(D) shall be permitted to be used.

Submitter Information Verification

Committee: SIG-IDS

Submittal Date: Thu Jul 21 13:03:40 EDT 2022

Committee Statement

Committee Statement: The first revision provides compliance with the NFPA Manual of Style.

Response Message: FR-5301-NFPA 72-2022

Public Input No. 448-NFPA 72-2022 [Section No. 17.7.6.6.4.2]

**First Revision No. 5309-NFPA 72-2022 [Section No. 17.7.6.6.5.1]****17.7.6.6.5.1**

If ceiling-mounted smoke detectors are to be installed on a smooth ceiling for a single or double doorway, they shall be located in accordance with Figure 17.7.6.6.4.3(A) and as follows ~~{ Figure 17.7.6.6.4.3(A) shall apply }~~ :

- (1) ~~On~~ Within 1 ft (0.3 m) of either side of the centerline of the doorway
- (2) No more than 5 ft (1.5 m), measured along the ceiling and perpendicular to the doorway ~~{ Figure 17.7.6.6.4.1(A) shall apply }~~ in accordance with Figure 17.7.6.6.4.1(A).
- (3) No closer than shown in Part B, Part D, and Part F of Figure 17.7.6.6.4.1(A), ~~parts B, D, and F~~

Submitter Information Verification

Committee: SIG-IDS

Submittal Date: Thu Jul 21 13:26:20 EDT 2022

Committee Statement

Committee Statement: The requirement of being on the centerline had no tolerance associated with it. The first revision add a tolerance to provide for a more enforceable requirement.

Response Message: FR-5309-NFPA 72-2022

Public Input No. 172-NFPA 72-2022 [Section No. 17.7.6.6.5.1]

**First Revision No. 5311-NFPA 72-2022 [Section No. 17.7.7.1.2]****17.7.7.1.2***

Holes in the back of a The detector shall be covered by a gasket, sealant, or equivalent means, and the detector shall be mounted and designed so that airflow from inside or around the housing does not prevent the entry of smoke during a fire or test condition.

A.17.7.7.1.2

Airflow Air through holes in the rear of a smoke detector can interfere with smoke entry to the sensing chamber. Similarly, air from the conduit system can flow around the outside edges of the detector and interfere with smoke reaching the sensing chamber. Additionally, holes in the rear of a detector the conduit system might provide a means for entry of dust, dirt, and insects, each of which can adversely affect the detector's performance into the back of the detector.

Submitter Information Verification

Committee: SIG-IDS

Submittal Date: Thu Jul 21 13:31:03 EDT 2022

Committee Statement

Committee The first revision addresses a NFPA Manual of Style issue. The MoS issue is addressed
Statement: by eliminating the first requirement that implies that the installer modify the smoke detector. The annex material was revised to align with the revised requirement.

Response FR-5311-NFPA 72-2022

Message:

Public Input No. 447-NFPA 72-2022 [Section No. 17.7.7.1.2]



First Revision No. 5316-NFPA 72-2022 [Section No. 17.7.7.3.3.2]

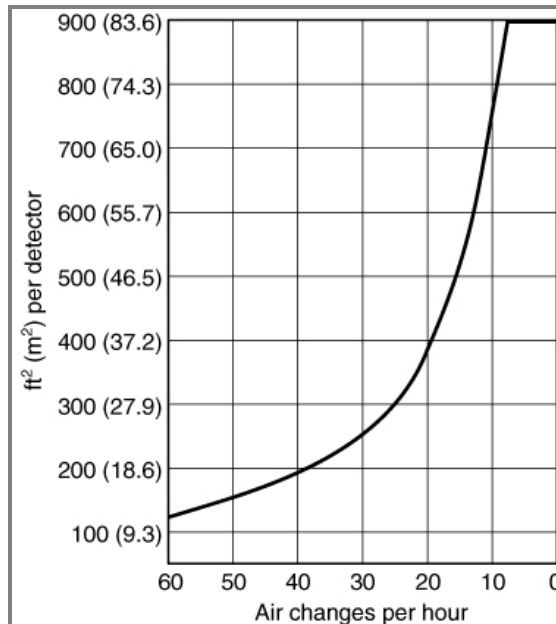
17.7.7.3.3.2

Where spacing must be adjusted for airflow, spot-type smoke detector spacing shall be adjusted in accordance with Table 17.7.7.3.3.2 or Figure 17.7.7.3.3.2 before making any other spacing adjustments required by this Code.

Table 17.7.7.3.3.2 Spot-Type Smoke Detector Spacing Based on Air Movement (Not to Be Used for Under-Floor or Above-Ceiling Spaces)

<u>Minutes per Air Change</u>	<u>Air Changes per Hour</u>	<u>Spacing per Detector</u>	
		<u>ft²</u>	<u>m²</u>
1	60	125	12
2	30	250	23
3	20	375	35
4	15	500	46
5	12	625	58
6	10	750	70
7	8.6	875	81
8	7.5	900	84
9	6.7	900	84
10	6	900	84

Figure 17.7.7.3.3.2 High Air Movement Areas (Not to Be Used for Under-Floor or Above-Ceiling Spaces).



Submitter Information Verification

Committee: SIG-IDS

Submittal Date: Thu Jul 21 13:35:34 EDT 2022

Committee Statement

Committee Statement: The first revision adds language to align the table title with the type of detector covered by the requirement.
Response Message: FR-5316-NFPA 72-2022

[Public Input No. 106-NFPA 72-2022 \[Section No. 17.7.7.3.3.2\]](#)



First Revision No. 5367-NFPA 72-2022 [Section No. 17.7.7.3.3.3]

17.7.7.3.3.3*

Air sampling or projected beam smoke detectors shall be installed in accordance with the manufacturer's published instructions.

A.17.7.7.3.3.3

Data has not yet been presented that would enable the technical committee to determine the effect of high air movement on projected beam or air sampling detectors. The designer must depend on data provided in the manufacturer's published instructions.

Submitter Information Verification

Committee: SIG-IDS
Submittal Date: Thu Aug 11 13:03:16 EDT 2022

Committee Statement

Committee Statement: The annex information provides direction on implementation of projected beam or air-sampling detectors in high air movement areas.
Response Message: FR-5367-NFPA 72-2022

[Public Input No. 107-NFPA 72-2022 \[New Section after A.17.7.7.3.3\]](#)



First Revision No. 5328-NFPA 72-2022 [Section No. 17.8.3.2.3]

17.8.3.2.3*

In applications where the fire to be detected could occur in an area not on the optical axis of the detector, the distance shall be reduced or detectors ~~shall be~~ added to compensate for the angular displacement of the fire in accordance with the manufacturer's published instructions.

Submitter Information Verification

Committee: SIG-IDS

Submittal Date: Thu Jul 21 14:31:52 EDT 2022

Committee Statement

Committee Statement: The first revision corrects a NFPA Manual of Style issue by removing the unnecessary second "shall".

Response Message: FR-5328-NFPA 72-2022

[Public Input No. 446-NFPA 72-2022 \[Section No. 17.8.3.2.3\]](#)



First Revision No. 5329-NFPA 72-2022 [Section No. 17.8.3.3.5]

17.8.3.3.5*

In applications where the sparks to be detected could occur in an area not on the optical axis of the detector, the distance shall be reduced or detectors ~~shall be~~ added to compensate for the angular displacement of the fire in accordance with the manufacturer's published instructions.

Submitter Information Verification

Committee: SIG-IDS

Submittal Date: Thu Jul 21 14:33:55 EDT 2022

Committee Statement

Committee Statement: The first revision corrected a NFPA Manual of Style issue by removing the unnecessary second "shall".

Response Message: FR-5329-NFPA 72-2022

[Public Input No. 445-NFPA 72-2022 \[Section No. 17.8.3.3.5\]](#)



First Revision No. 5348-NFPA 72-2022 [Section No. 17.10.1]

17.10.1 General.

The purpose and scope of Section 17.10 shall be to provide requirements for the selection, installation, and operation of gas detectors other than carbon monoxide detectors and acoustic leak detectors .

Submitter Information Verification

Committee: SIG-IDS

Submittal Date: Fri Jul 22 08:47:17 EDT 2022

Committee Statement

Committee Statement: Section 17.10 includes requirements that are not applicable to acoustic leak detectors, which are a form of gas detector. Acoustic leak detectors must be excluded from the requirements of Section 17.10.

Response: FR-5348-NFPA 72-2022

Message:



First Revision No. 5331-NFPA 72-2022 [New Section after 17.10.2.4]

17.12 Thermal Image Fire Detection.

17.12.1

Thermal image fire detection systems and all the components thereof, including hardware and software, shall be listed for the purpose of fire detection.

17.12.2

Thermal image fire detection systems shall comply with the applicable requirements of Chapters 1, 10, 11, 14, 17, and 23.

17.12.2.1

Systems shall be designed in accordance with the performance-based requirements of Section 17.3.

17.12.2.2

The location and spacing of thermal image fire detectors shall comply with the requirements of 17.13.5.

17.12.2.3

A thermal image fire detector shall have clear line-of-sight to the hazard it is protecting.

17.12.2.4

A thermal image fire detector shall not be used with a pan-tilt mount unless specifically listed for moveable operation.

17.12.3

Signals generated by thermal imagers that are components of thermal image fire detection systems shall be permitted to be transmitted to other systems for other uses only through output connections provided specifically for that purpose by the system manufacturer.

17.12.4

All thermal image fire detection system component controls and software shall be protected from unauthorized changes.

17.12.5

All changes to thermal image fire detection system software or component settings shall be tested in accordance with Chapter 14.

17.12.6

A thermal image fire detector shall produce a supervisory signal if the lens is blocked or dirty enough to impede proper operation.

17.12.7

A thermal image fire detector shall be capable of producing an alarm due to a temperature rate of rise within its field of view.

Submitter Information Verification

Committee: SIG-IDS

Submittal Date: Thu Jul 21 14:45:09 EDT 2022

Committee Statement

Committee Statement: A new section on thermal imaging was added to address the technology's specific requirements. The remaining sections will need to be renumbered.

Response Message: FR-5331-NFPA 72-2022

[Public Input No. 178-NFPA 72-2022 \[New Section after 17.10.2.4\]](#)



First Revision No. 5360-NFPA 72-2022 [New Section after 17.10.2.4]

17.11 Acoustic Leak Detection.

17.11.1 General.

17.11.1.1

The design documentation for an acoustic leak detector shall state the required performance objective of the system.

17.11.1.2

The purpose and scope of Section 17.11 shall be to provide requirements for the selection, location, and spacing of acoustic leak detectors.

17.11.2 Leak Characteristics and Detector Selection.

17.11.2.1*

Acoustic leak detectors shall only be used where the leak source to be detected is a single-phase gas flow.

A.17.11.2.1

Acoustic leak detectors rely on ultrasonic sound generated when high-pressure gas is released from a choked flow orifice. When liquids are present in the flow, ultrasonic sound waves might not be generated from the release.

17.11.2.2

Acoustic leak detectors shall only be used when the leak condition results in a choked flow that generates ultrasonic energy.

17.11.2.3

Acoustic gas detectors intended to function as part of a safety related function, and which are installed on fire alarm and signaling systems shall comply with the applicable requirements of Chapters 1 , 10 , 14 , 17 , and 23 .

17.11.3 Spacing and Layout.

17.11.3.1

The placement of acoustic leak detectors shall be based on an engineering evaluation.

17.11.3.2

The coverage area and spacing of acoustic leak detectors shall be based on approved tests.

17.11.3.3

The coverage area established by approved testing shall be adjusted according to the manufacturer's recommendations to meet the performance objective identified in 17.11.1.1 .

17.11.3.4

The coverage area and spacing of acoustic leak detectors shall be adjusted to account for background noise.

Submitter Information Verification

Committee: SIG-IDS

Submittal Date: Fri Jul 22 10:28:15 EDT 2022

Committee Statement

Committee Statement: Acoustic leak detectors are becoming more readily available and are being installed on fire alarm and signaling systems. Existing chapter 17 requirements on gas detection do not apply to this technology and as such a gap currently exists.

Response Message: FR-5360-NFPA 72-2022



First Revision No. 5333-NFPA 72-2022 [Section No. 17.12.1]

17.14.1*

Where carbon monoxide protection of a building is required by laws, codes, or standards, carbon monoxide detectors shall be installed sited in accordance with all of the following; unless a performance-based design in accordance with Section 17.3 is used:

- (1)* On the ceiling or on the wall with the top of the detector within 12 in. (300 mm) of the ceiling, where installed in the same room as the permanently installed ~~fuel-burning appliances~~ carbon monoxide source

A.17.14.1(1)

~~Both permanent and temporary carbon-monoxide-producing devices need to be considered when locating carbon monoxide detectors. This includes accounting for all carbon-monoxide-producing appliances and equipment and temporary/mobile equipment, including vehicles, generators, machinery, engines, internal combustion engines, propane equipment, space heaters, engine-driven tools, grills, fire pits, systems used to generate hydrogen, fuel-burning equipment, and any other permanent and/or transient-type equipment and appliances that can be sources of carbon monoxide.~~

By placing carbon monoxide detectors close to all permanent ~~as well as all~~ and temporary carbon monoxide-~~producing~~ sources, early detection of carbon monoxide is more likely to occur. Detectors should therefore be located as close as practicable to the carbon monoxide-~~producing~~ source, ~~taking into account~~ considering such factors as detector accessibility for inspection, testing, and maintenance; potential sources of detector damage or contamination; potential nuisance alarm sources; transient backdrafting spillage of flue gases during startup and operation; and ventilation supply and exhaust vents. For early detection, carbon monoxide detectors should be located on the ceiling over carbon monoxide-~~producing~~ sources. There is often some buoyancy of the heated combustion gases that can ~~help~~ carry the carbon monoxide to the detector.

Carbon monoxide detectors should also be considered throughout the room/ or space that contains the carbon monoxide-~~producing~~ source to ~~help~~ address either limited or no buoyancy of the carbon monoxide, adverse impacts by HVAC systems, ~~as well as and~~ ambient airflows in the space that can carry carbon monoxide away from the source rather than up to the ceiling directly over the source.

- (2)* Centrally located ~~on every habitable level and~~ in every HVAC zone of the building areas required by laws, codes, or standards

A.17.14.1(2)

Detectors that are “centrally located” should be installed near the geometric center of a physical area (i.e., the centroid).

Carbon monoxide can follow flow paths from its original source to adjacent areas in the building, including moving horizontally and vertically throughout the space, building, and structure, and where carbon monoxide detectors should be located in these adjacent areas needs to be considered. Detector location and spacing should be based on an engineering evaluation that considers potential sources and migration of carbon monoxide, including through exhaust ductwork, HVAC equipment, openings in walls and floors, unprotected penetrations, and elevator shafts.

As some of the higher carbon monoxide concentrations are often at the source and within the exhaust ductwork and venting equipment, carbon monoxide detectors should be located along the exhaust path of any carbon monoxide-producing equipment, appliances, and so forth, extending from the source of the carbon monoxide through the building to the termination of the exhaust at an exterior wall or roof. This should include detectors along any duct branch lines and interconnections to any ductwork and piping used in the exhaust system so carbon monoxide that might exist outside the exhaust path (due to leaks, damage, obstructions, rust, corrosion, etc.) can be detected.

An HVAC zone is an area that is independently climatically controlled from other areas. The impact of HVAC systems should be ~~taken into account~~ considered when locating carbon monoxide detectors. HVAC systems can transport as well as mix and dilute carbon monoxide. ~~Consideration should be given to the~~ The layout and operation of the HVAC system and whether the HVAC is constantly running or only ~~runs~~ running for a portion of the time and, therefore, ~~is~~ not constantly distributing or mixing air in the building should also be considered. When locating carbon monoxide detectors, other considerations include the presence and impact of closed doors and walls. These can compartmentalize areas within an individual HVAC zone or floor and prevent spread. Their presence can also allow carbon monoxide to accumulate more rapidly in given areas if doors are closed to contain it and not allow it to spread and dilute the concentration.

Carbon monoxide can potentially enter the building from an exterior source, such as through make-up air systems. Some of the external sources that should be considered when locating carbon monoxide detectors include adjacent structures, exterior systems, equipment such as vehicles and generators, and interconnections to underground spaces or parking garages.

- (3) Outside of each separate ~~dwelling unit~~ sleeping area, guest room, and guest suite ~~sleeping area~~ within 21 ft (6.4 m) of any door to a sleeping room, with the distance measured along a path of travel

A.17.12.1(3)

Carbon monoxide detectors should be considered within each bedroom, dwelling unit, guest room, guest suite, and sleeping area, as well as the potential for multiple detectors in multiroom suites. Additional detectors in these spaces can provide more appropriate protection for people while awake or asleep.

- (4)* Other locations where required by applicable laws, codes, or standards

A.17.14.1(4)

Carbon monoxide detectors should also be located and installed as recommended by the manufacturer's published instructions, including those specific requirements for the spacing between detectors, minimum/maximum spacings to walls and obstructions, minimum/maximum height of a detector in a space, minimum/maximum distances to HVAC vents, reductions in spacing required for high ceilings, and other pertinent information required to help properly design, assess, and install detectors to achieve their intent of detecting carbon monoxide early on to warn occupants of a hazard. Other considerations when locating carbon monoxide detectors include the presence and impact of closed doors and walls, which can compartmentalize areas within an individual HVAC zone or floor and prevent spread. The presence of doors can also allow carbon monoxide to accumulate more rapidly in certain areas if the doors are closed to contain the carbon monoxide and not allow it to spread and dilute the concentration.

(5) In accordance with the manufacturer's published instructions

A.17.14.1

Additional documents such as NEMA SB-7, *Applications Guide for Carbon Monoxide Alarms and Detectors*, and the NFPA Fire Protection Research Foundation (FPRF) technical report, *Development of a Technical Basis for Carbon Monoxide Detector Siting*, can also be used as supplemental resources to help with risk assessment, siting, and application considerations.

Supplemental Information

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
Annex_A_A_17_12_1_FR5337.1658433589688_1_.docx		

Submitter Information Verification

Committee: SIG-IDS

Submittal Date: Thu Jul 21 15:01:28 EDT 2022

Committee Statement

Committee Statement: The installation requirements for carbon monoxide detectors have been updated to correlate with the requirements of the model codes and are based on the 2007 FPRF report "Development of a Technical Basis for Carbon Monoxide Detector Siting". The annex language removes conflicts between the model codes and NFPA 72. The body and annex were rewritten to focus on how to install carbon monoxide detectors when they are required by adopted codes. These changes are based on the 2007 FPRF report "Development of a Technical Basis for Carbon Monoxide Detector Siting". The committee notes that there is a continuing need for research on the dominant transport mechanisms for carbon monoxide.

Response Message: FR-5333-NFPA 72-2022

[Public Input No. 517-NFPA 72-2022 \[Section No. 17.12.1\]](#)

[Public Input No. 397-NFPA 72-2022 \[Section No. 17.12.1\]](#)

[Public Input No. 541-NFPA 72-2022 \[Section No. 17.12.1\]](#)

[Public Input No. 516-NFPA 72-2022 \[Sections A.17.12.1, A.17.12.1\(1\), A.17.12.1\(2\), A.17.12.1\(3...\]](#)

[Public Input No. 398-NFPA 72-2022 \[Section No. A.17.12.1\(2\)\]](#)

[Public Input No. 485-NFPA 72-2022 \[Section No. A.17.12.1\(2\)\]](#)

[Public Input No. 400-NFPA 72-2022 \[New Section after A.17.12.1\(3\)\]](#)

[Public Input No. 399-NFPA 72-2022 \[Section No. A.17.12.1\(3\)\]](#)

[Public Input No. 486-NFPA 72-2022 \[Section No. A.17.12.1\(3\)\]](#)

[Public Input No. 487-NFPA 72-2022 \[Section No. A.17.12.1\(4\)\]](#)



First Revision No. 5365-NFPA 72-2022 [Section No. 17.12.2]

17.14.2*

Carbon monoxide detectors shall meet the following requirements:

- (1) Carbon monoxide detectors shall be listed in accordance with applicable standards, such as UL 2075, *Gas and Vapor Detectors and Sensors*.
- (2) Carbon monoxide detectors shall be set to respond to the sensitivity limits specified in UL 2034, *Single and Multiple Station Carbon Monoxide Alarms*.

A.17.14.2

Carbon monoxide detectors installed in unconditioned areas should be listed for the environment in accordance with 10.4.3 . Unconditioned areas are intended to apply to enclosed areas, rooms, or spaces without continuous climate or HVAC controls.

Submitter Information Verification

Committee: SIG-IDS

Submittal Date: Fri Jul 22 14:57:12 EDT 2022

Committee Statement

Committee Statement: An annex note is provided for the listing requirements for carbon monoxide detectors to emphasize the requirement in 10.4.3 to list devices for the environments where they are installed.

Response Message: FR-5365-NFPA 72-2022

Message:

[Public Input No. 198-NFPA 72-2022 \[New Section after 17.12.2\]](#)



First Revision No. 5272-NFPA 72-2022 [Section No. 17.17.4.2]

17.19.4.2

One signal shall indicate a decrease in water temperature to 40°F (4.4°C), and the other ~~shall~~ indicate its restoration to above 40°F (4.4°C).

Submitter Information Verification

Committee: SIG-IDS

Submittal Date: Thu Jul 21 09:43:36 EDT 2022

Committee Statement

Committee Statement: The existing text is revised to remove the duplicate “shall” to meet the NFPA Manual of Style.

Response Message: FR-5272-NFPA 72-2022

[Public Input No. 444-NFPA 72-2022 \[Section No. 17.17.4.2\]](#)



First Revision No. 5285-NFPA 72-2022 [Section No. A.17.6.3.1.1]

A.17.6.3.1.1

Maximum linear spacings on smooth ceilings for spot-type heat detectors are determined by full-scale fire tests. [See Figure A.17.6.3.1.1(c).] These tests assume that the detectors are to be installed in a pattern of one or more squares, each side of which equals the maximum spacing as determined in the test, as illustrated in Figure A.17.6.3.1.1(a). The detector to be tested is placed at a corner of the square so that it is positioned at the farthest possible distance from the fire while remaining within the square. Thus, the distance from the detector to the fire is always the test spacing multiplied by 0.7 and can be calculated as shown in Table A.17.6.3.1.1. Figure A.17.6.3.1.1(b) illustrates the smooth ceiling spacing layout for line-type heat detectors.

Table A.17.6.3.1.1 Test Spacing for Spot-Type Heat Detectors

<u>Test Spacing</u>		<u>Maximum Test Distance from Fire to Detector (0.7D)</u>	
<u>ft</u>	<u>m</u>	<u>ft</u>	<u>m</u>
50 × 50	15.2 × 15.2	35.0	10.7
40 × 40	12.2 × 12.2	28.0	8.5
30 × 30	9.1 × 9.1	21.0	6.4
25 × 25	7.6 × 7.6	17.5	5.3
20 × 20	6.1 × 6.1	14.0	4.3
15 × 15	4.6 × 4.6	10.5	3.2

Once the correct maximum test distance has been determined, it is valid to interchange the positions of the fire and the detector. The detector is now in the middle of the square, and the listing specifies that the detector is adequate to detect a fire that occurs anywhere within that square — even out to the farthest corner.

In laying out detector installations, designers work in terms of rectangles, ~~as~~ since building areas are generally rectangular in shape. The pattern of heat spread from a fire source, however, is not rectangular in shape. On a smooth ceiling, heat spreads out in all directions in an ever-expanding circle. Thus, the coverage of a detector is not, in fact, a square, but rather a circle whose radius is the linear spacing multiplied by 0.7.

This is graphically illustrated in Figure A.17.6.3.1.1(d). With the detector at the center, by rotating the square, an infinite number of squares can be laid out, the corners of which create the plot of a circle whose radius is 0.7 times the listed spacing. The detector will cover any of these squares and, consequently, any point within the confines of the circle.

So far, this explanation has considered squares and circles. In practical applications, very few areas turn out to be exactly square, and circular areas are extremely rare. Designers deal generally with rectangles of odd dimensions and corners of rooms or areas formed by wall intercepts, where spacing to one wall is less than one-half the listed spacing. To simplify the rest of this explanation, the use of a detector with a listed spacing of 30 ft × 30 ft (9.1 m × 9.1 m) should be considered. The principles derived are equally applicable to other types.

Figure A.17.6.3.1.1(g) illustrates the derivation of this concept. In Figure A.17.6.3.1.1(g), a detector is placed in the center of a circle with a radius of 21 ft (0.7 × 30 ft) [6.4 m (0.7 × 9.1 m)]. A series of rectangles with one dimension less than the permitted maximum of 30 ft (9.1 m) is constructed within the circle. The following conclusions can be drawn:

- (1) As the smaller dimension decreases, the longer dimension can be increased beyond the linear maximum spacing of the detector with no loss in detection efficiency.
- (2) A single detector covers any area that fits within the circle. For a rectangle, a single, properly located detector should be permitted, ~~provided if~~ the diagonal of the rectangle does not exceed the diameter of the circle.
- (3) Relative detector efficiency actually is increased, because the area coverage in square meters is always less than the 900 ft² (84 m²) permitted if the full 30 ft × 30 ft (9.1 m × 9.1 m) square were to be ~~utilized~~ used. The principle illustrated here allows equal linear spacing between the detector and the fire, with no recognition for the effect of reflection from walls or partitions which, ~~which~~ in narrow rooms or corridors, is of additional benefit. For detectors that are not centered, the longer dimension should always be used in laying out the radius of coverage.

Areas so large that they exceed the rectangular dimensions given in Figure A.17.6.3.1.1(g) require additional detectors. Often, proper placement of detectors can be facilitated by breaking down the area into multiple rectangles of the dimensions that fit most appropriately [see Figure A.17.6.3.1.1(e) and Figure A.17.6.3.1.1(f)]. For example, refer to Figure A.17.6.3.1.1(h). A corridor 10 ft (3.0 m) wide and up to 82 ft (25.0 m) long can be covered with two 30 ft (9.1 m) spot-type detectors. An area 40 ft (12.2 m) wide and up to 74 ft (22.6 m) long can be covered with four spot-type detectors. Irregular areas need more careful planning to make certain that no spot on the ceiling is more than 21 ft (6.4 m) away from a detector. These points can be determined by striking arcs from the remote corner. Where any part of the area lies beyond the circle with a radius of 0.7 times the listed spacings, additional detectors are required.

Figure A.17.6.3.1.1(h) illustrates smoke or heat detector spacing layouts in irregular areas.

Figure A.17.6.3.1.1(a) Spot-Type Heat Detectors.

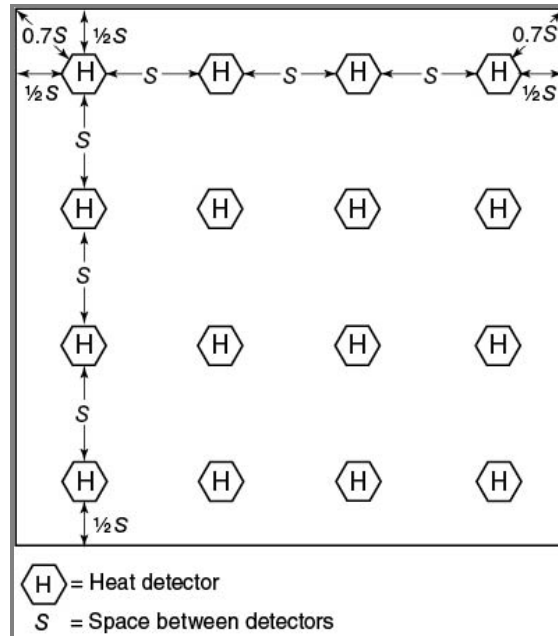


Figure A.17.6.3.1.1(b) Line-Type Detectors — Spacing Layouts, Smooth Ceiling.

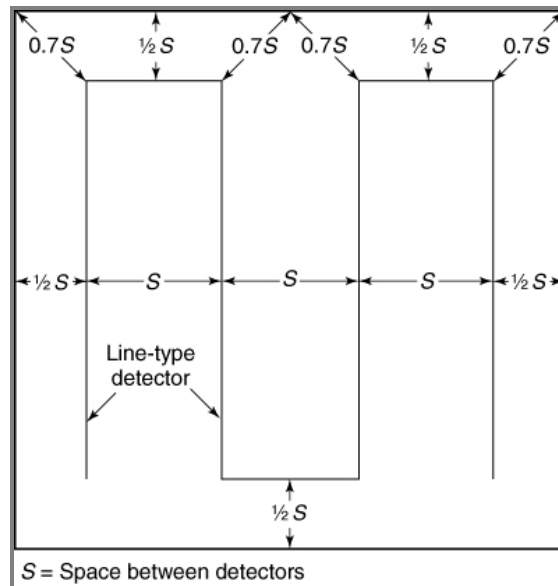


Figure A.17.6.3.1.1(c) Fire Test Layout.

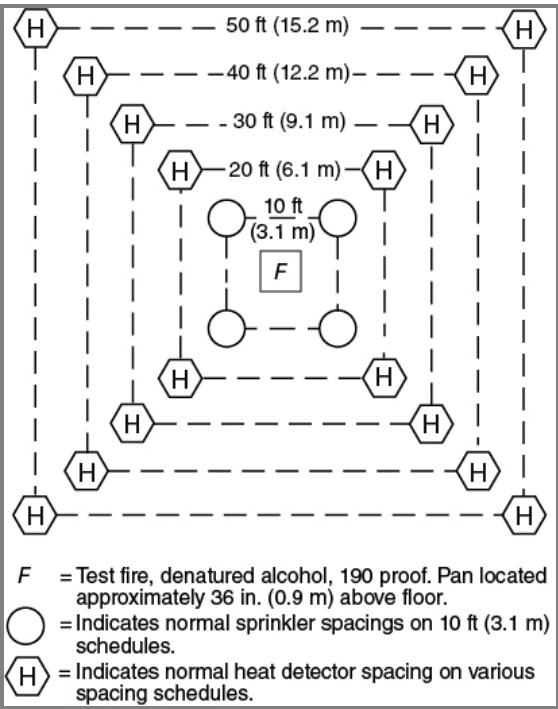


Figure A.17.6.3.1.1(d) Detector Covering any Any. Square Laid Out in Confines of Circle in Which Radius Is 0.7 Times Listed Spacing.

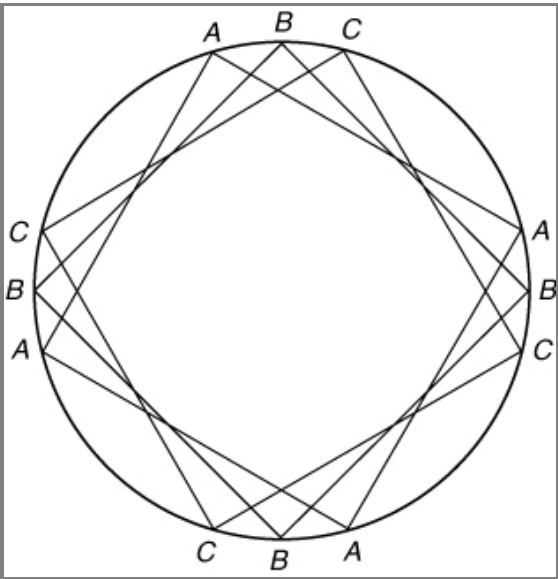


Figure A.17.6.3.1.1(e) Typical Rectangles for Detector Curves of 15 ft to 50 ft.

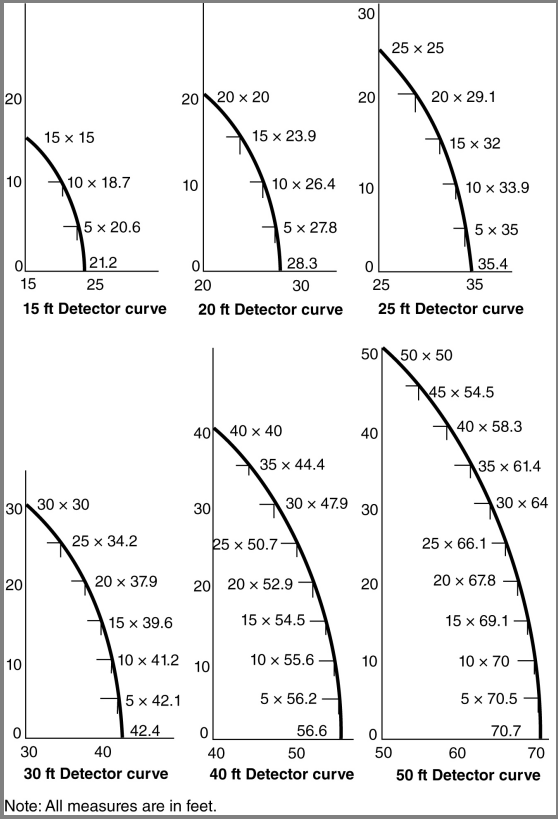
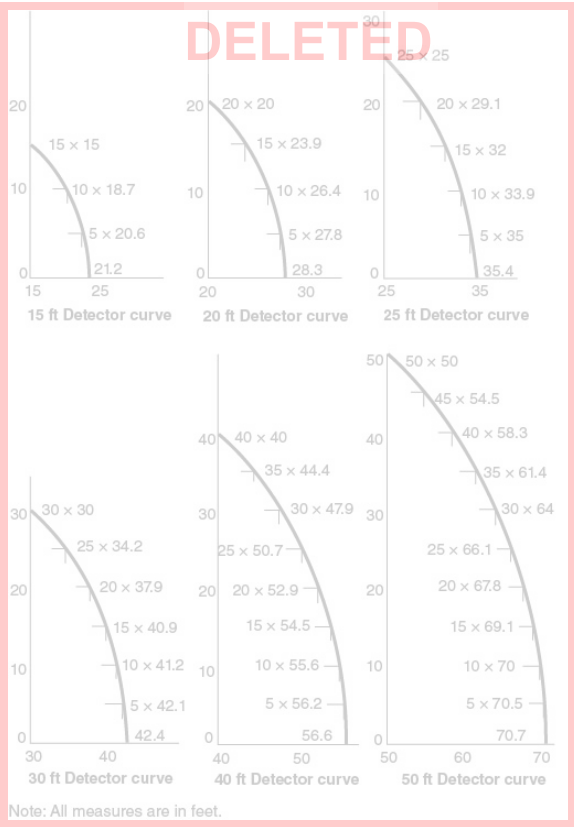


Figure A.17.6.3.1.1(f) Typical Rectangles for Detector Curves of 4.6 m to 15.2 m.

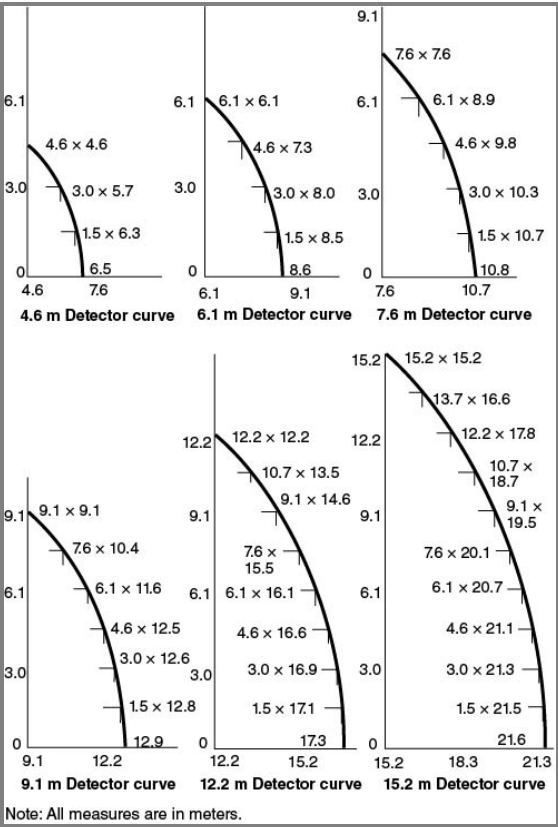


Figure A.17.6.3.1(g) Detector Spacing, Rectangular Areas.

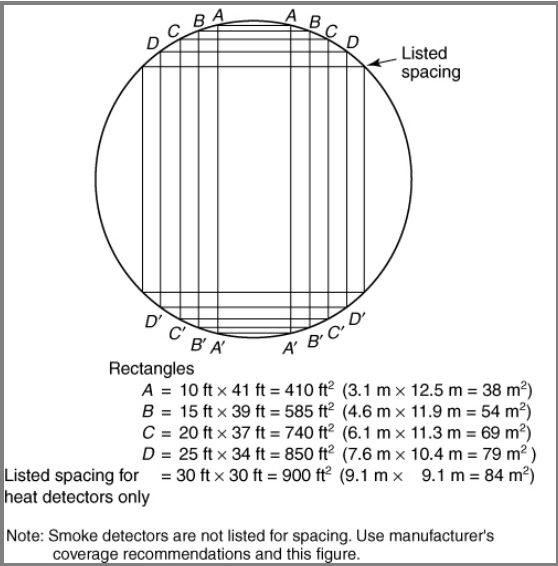
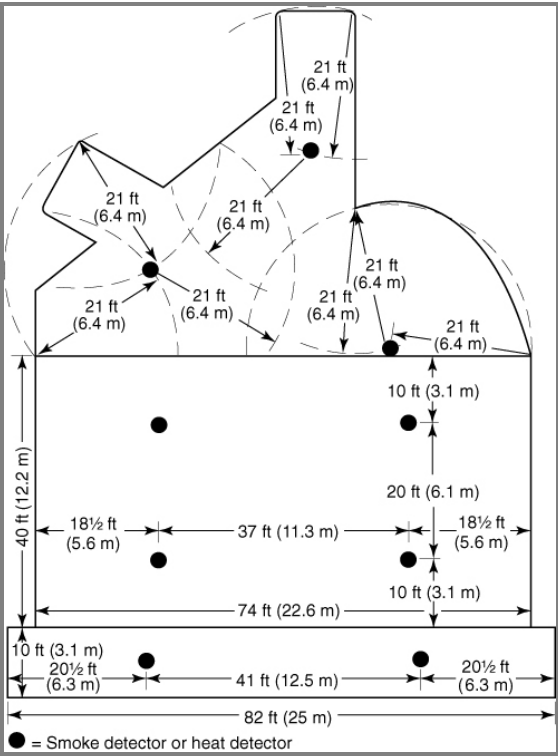


Figure A.17.6.3.1(h) Smoke or Heat Detector Spacing Layout in Irregular Areas.



Supplemental Information

File Name	Description	Approved
Annex_A_A_17_6_3_1_1_e.pdf	Annex A A_17_6_3_1_1_e.pdf	

Submitter Information Verification

Committee: SIG-IDS
Submittal Date: Thu Jul 21 10:35:48 EDT 2022

Committee Statement

Committee Statement: Revised 30 ft Detector curve with updated spacing for 15 ft dimension matching Figure A.17.6.3.1.1(g) letter B Rectangle and following the "0.7 times" rule.
Response Message: FR-5285-NFPA 72-2022

Public Input No. 249-NFPA 72-2022 [Section No. A.17.6.3.1.1]



First Revision No. 5321-NFPA 72-2022 [Section No. A.17.7.1.11]

A.17.7.1.11



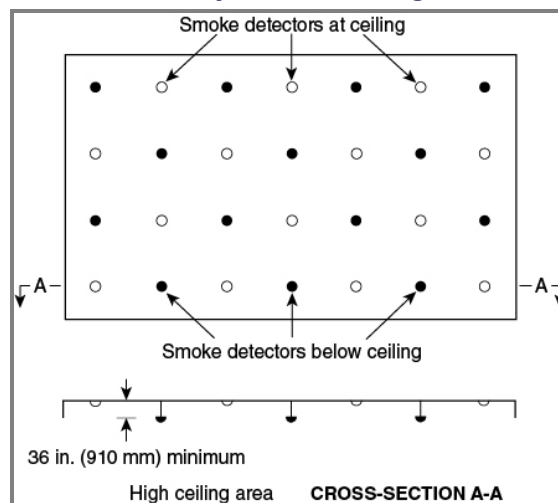
Stratification of air in a room can hinder air containing smoke particles or gaseous combustion products from reaching ceiling-mounted smoke detectors or fire-gas detectors.

Stratification occurs when air containing smoke particles or gaseous combustion products is heated by smoldering or burning material and, becoming less dense than the surrounding cooler air, rises until it reaches a level at which there is no longer a difference in temperature between it and the surrounding air.

Stratification also can occur when evaporative coolers are used; because moisture introduced by these devices can condense on smoke, causing it to fall toward the floor. Therefore, ~~to ensure rapid response,~~ it might be necessary to install smoke detectors on sidewalls or at locations below the ceiling to ensure rapid response.

In installations where detection of smoldering or small fires is desired and where the possibility of stratification exists, ~~consideration should be given to~~ mounting a portion of the detectors below the ceiling should be considered. In high-ceiling areas, projected beam-type or air sampling-type detectors at different levels also should be considered. (See Figure A.17.7.1.11.) Video image smoke detectors can overcome the effects of stratification when they are capable of detecting any smoke within their field of view. That is, the smoke does not need to rise to the level of the detector for effective sensing.

Figure A.17.7.1.11 Smoke Detector Layout Accounting for Stratification.



Submitter Information Verification

Committee: SIG-IDS

Submittal Date: Thu Jul 21 14:05:02 EDT 2022

Committee Statement

Committee Statement: Video image smoke detectors are uniquely able to detect smoke plumes where stratification may be an issue because the smoke need not rise to the level of the detector for sensing. It is only required that the smoke be able to be imaged and appear in the field of view of the camera.

Response FR-5321-NFPA 72-2022

Message:

[Public Input No. 184-NFPA 72-2022 \[Section No. A.17.7.1.11\]](#)



First Revision No. 5326-NFPA 72-2022 [Section No. A.17.7.7.2]

A.17.7.7.2

For the most effective detection of fire in high-rack storage areas, detectors should be located on the ceiling above each aisle and at intermediate levels in the racks. This is necessary to detect smoke that is trapped in the racks at an early stage of fire development when insufficient thermal energy is released to carry the smoke to the ceiling. Earliest detection of smoke is achieved by locating the intermediate level detectors adjacent to alternate pallet sections as shown in Figure A.17.7.7.2(a) and Figure A.17.7.7.2(b). The detector manufacturer's published instructions and engineering judgment should be followed for specific installations.

A projected-beam-type detector can be permitted to be used in lieu of a single row of individual spot-type smoke detectors.

Sampling ports of an air-sampling-type detector can be permitted to be located above each aisle to provide coverage that is equivalent to the location of spot-type detectors. The manufacturer's published instructions and engineering judgment should be followed for the specific installation.

Video smoke detectors can be a suitable option in rack storage if the manufacturer's recommendations for ambient lighting and other guidelines can be met. Smoke need not rise to the level of the detector to be sensed.

Figure A.17.7.7.2(a) Detector Location for Solid Storage (Closed Rack) in Which Transverse and Longitudinal Flue Spaces Are Irregular or Nonexistent, as for Slatted or Solid Shelved Storage.

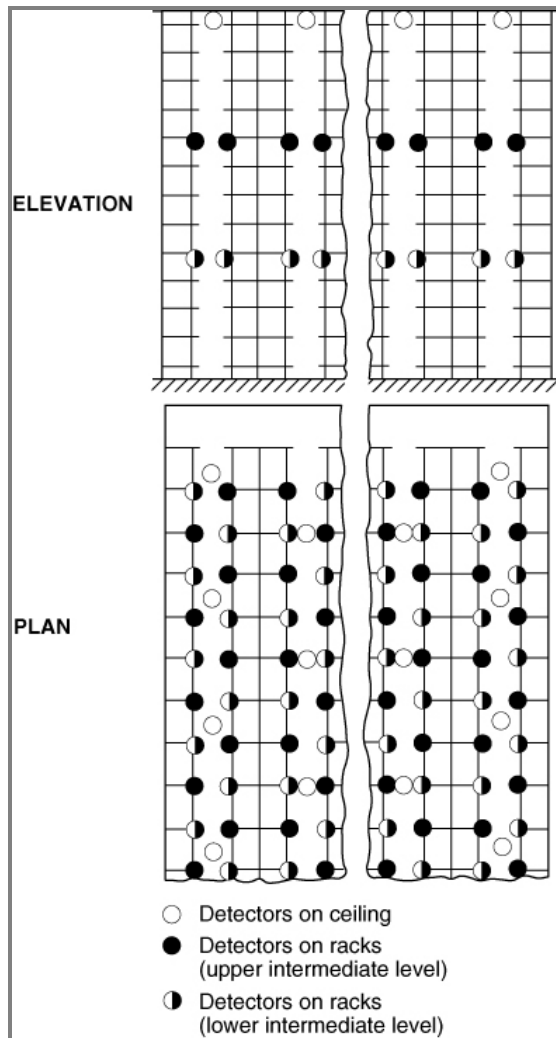
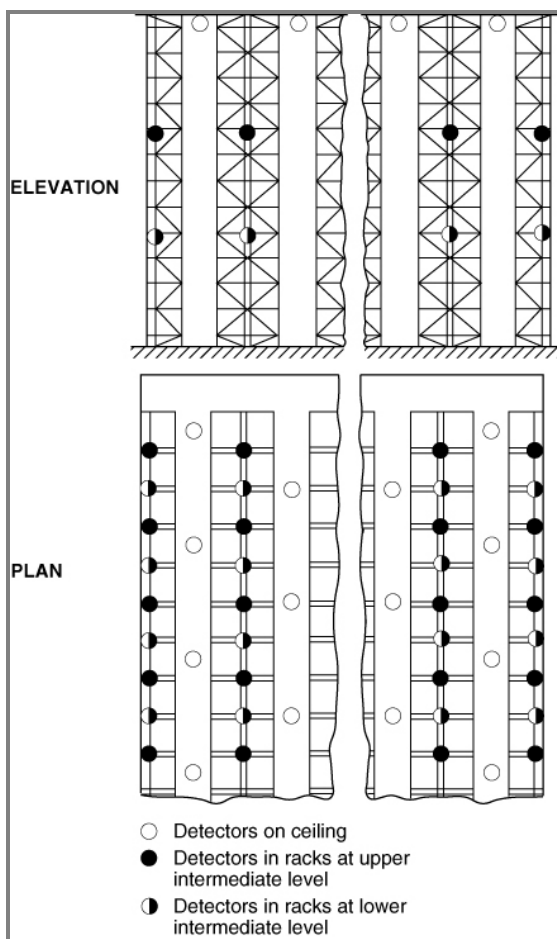


Figure A.17.7.7.2(b) Detector Location for Palletized Storage (Open Rack) or No Shelved Storage in Which Regular Transverse and Longitudinal Flue Spaces Are Maintained.



Submitter Information Verification

Committee: SIG-IDS

Submittal Date: Thu Jul 21 14:20:45 EDT 2022

Committee Statement

Committee The existing annex material specifically mentions beam and air sampling-type detectors.

Statement: Video smoke detection is also a viable technology as long as manufacturer's published instructions are followed.

Response FR-5326-NFPA 72-2022

Message:

[Public Input No. 181-NFPA 72-2022 \[Section No. A.17.7.7.2\]](#)