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SECTION 910

SMOKE AND HEAT VENTS

910.1 General. Where required by this code or otherwise installed, smoke and heat vents or mechanical smoke exhaust systems and draft curtains shall conform to the requirements of this section.

Exceptions:

1. Frozen food warehouses used solely for storage of Class I and II commodities where protected by an approved automatic sprinkler system.

2. Where areas of buildings are equipped with early suppression fast-response (ESFR) sprinklers, automatic smoke and heat vents shall not be required within these areas.

♦Smoke and heat vents must be provided in buildings, structures or portions thereof where required by Section 910.2. It should be noted that Chapter 32 would also be applicable (see commentary, Section 910.2.2). The systems must be designed, installed, maintained and operated in accordance with the provisions of this section.

The purpose of smoke and heat vents has historically been related to the needs of fire fighters. More specifically, smoke and heat vents, when activated, have the potential effect of lifting the height of the smoke layer and providing more tenable conditions to undertake fire-fighting activities. Other potential benefits include a decrease in property damage and the creation of more tenable conditions for occupants.

The purpose of draft curtains, as addressed in Section 910.3.5, is both to contain the smoke in certain areas and potentially increase the speed in the activation of the smoke and heat vents.

Exception 1 recognizes the “building-within-a-building” nature of typical frozen food warehouses. As such, smoke from a fire within a freezer would be contained within the freezer, thus negating the usefulness of smoke and heat vents at the roof level.

Exception 2 recognizes the negative effect that smoke and heat vents can have on the operation of early suppression fast response (ESFR) sprinklers.

Those negative effects include diverting heat away from the sprinklers, which could delay their activation or result in the activation of more

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sprinklers in areas away from the source of the fire, which may overwhelm the system. This section coordinates with the ESFR exception for draft curtains in Section 910.3.5. Both smoke and heat vents and draft curtains have a negative effect on ESFR sprinkler systems.

The intent of the code change that added this exception was to not require smoke and heat vents when ESFR sprinklers were used. The term “required” was used versus “prohibited” in an attempt to allow the installation of manual smoke and heat venting in some cases. Note j in Table 3206.2 correlates with this exception but has a slightly different applicability. First, Note j only applies to high-piled storage. Second, the footnote does not differentiate between automatic or manual smoke and heat vents; it simply does not require them when an ESFR system is used.

910.2 Where required. Smoke and heat vents shall be installed in the roofs of buildings or portions thereof occupied for the uses set forth in Sections 910.2.1 and 910.2.2.

Exception: In occupied portions of a building where the upper surface of the story is not a roof assembly, mechanical smoke exhaust in accordance with Section 910.4 shall be an acceptable alternative.

♦ Smoke and heat vents are required in buildings, but only by the provisions of Sections 910.2.1 and 910.2.2. It should be noted that smoke and heat vents are typically only of use in a single story or the top story of a building; therefore, the exception recognizes that in stories of buildings that do not have a roof should be able to use mechanical smoke exhaust. Note that in previous editions of the code the requirements were simply limited to one-story buildings. The current requirements are more restrictive since multistory buildings need to address smoke and heat venting as well. The fire-safety concerns that this section provides for should not be limited to one story buildings. The need for smoke and heat venting is more critical in multi-story buildings due to increased travel distances to an exit discharge and the additional time it takes firefighting crews to reach an area of high-pile combustible storage located above or below grade plane level within a building.

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Section 910.2.1 addresses Group F-1 or S-1 occupancies over 50,000 square feet (4656 m2) of undivided area (regardless of high-piled storage).

Section 910.2.2 addresses high-piled storage areas as required by Section 2306.7.

910.2.1 Group F-1 or S-1. Buildings and portions thereof used as a Group F-1 or S-1 occupancy having more than 50,000 square feet (4645 m2) of undivided area.

Exception: Group S-1 aircraft repair hangars.

♦ Large-area buildings with moderate to heavy fire loads present special challenges to the fire department in disposing of the smoke generated in a fire. In order to provide the fire department with the ability to rapidly and efficiently dispose of smoke in large-area Groups F-1 and S-1 buildings exceeding 50,000 square feet (4645 m2) in undivided area without the exposure of personnel to the dangers associated with cutting ventilation holes in the roof, smoke and heat vents (or, alternatively, mechanical smoke removal facilities) must be provided.

In order to subdivide a more than 50,000-squarefoot (4645 m2) undivided area as one method of avoiding the use of smoke and heat vents, the dividing element would only need to be a partition constructed of materials equivalent to the construction of a draft curtain but that would extend from floor to ceiling in the space being separated. A fire barrier, smoke barrier, fire partition or smoke partition would be more than what is required and would therefore be an acceptable method of dividing the area.

This requirement is independent of the requirements related to high-piled storage in Section 910.2.2. Smoke and heat vent area requirements in Table 910.3 tend to be more restrictive for high-piled storage. High-piled storage is not occupancy specific.

910.2.2 High-piled combustible storage. Buildings and portions thereof containing high-piled combustible stock or rack storage in any occupancy group when required by Section 3206.7.

♦ This section alerts the code user to the specific highpiled combustible storage requirements contained in Chapter 32. High-piled storage,

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whether solid piled, palletized or in racks, in excess of 12 feet (3658 mm) in height [6 feet (1829 mm) for high-hazard commodities] requires specific consideration, including fire protection design features and smoke and heat vents in order to be adequately protected. Not all high-piled storage will require the use of smoke and heat vents and draft curtains. In fact, if the high-piled storage is properly sprinklered (in accordance with Chapter 32 and NFPA 13), draft curtains are not required (see commentary, Chapter 32 and Table 3206.2). In addition, where ESFR sprinklers are used smoke and heat venting is not required. See Section 910.1, Exception 2 and Note j to Table 3206.2.

910.3 Design and installation. The design and installation of smoke and heat vents and draft curtains shall be as specified in Sections 910.3.1 through 910.3.5.2 and Table 910.3.

♦Careful design and installation of smoke and heat vents is vital to their efficient operation in case of fire. The design criteria for these fire protection tools are organized for convenience and ready reference in Table 910.3, which is referenced by this section. TABLE 910.3. See page 9-119.

♦ When smoke and heat vents and draft curtains are required, Table 910.3 identifies the required vent area in terms of ratio of vent area to floor area and draft curtain area and depth requirements. The table is essentially divided into two parts. The first part is for Group F-1 and S-2 occupancies, while the second portion is for high-piled combustible storage (organized by commodity type).

In applying the provisions of the table, note that the term “high hazard” is only referring to the highpiled storage commodity type, not the occupancy group classification (see Section 3203.6). Smoke and heat venting requirements for high-piled storage are not occupancy specific and originate from Chapter 32. The focus is upon the commodity classification, configuration and the size of the high-piled storage area. Chapter 32 only requires smoke and heat venting and draft curtains for larger storage areas and areas that do not utilize ESFR sprinklers. The required vent areas vary based upon the commodity classification (I through IV or high hazard) and height of storage. The higher the storage, the higher the potential for a larger fire. Two options (“Option 1”

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and "Option 2") are given for commodity classifications I through IV and high hazard. The only significance to these options is that one option allows a lower ventto-floor area ratio if a deeper draft curtain is chosen, simply providing some credit for the fact that the deeper draft curtains are more likely to contain more smoke than a shorter draft curtain; thus, the area contained by the draft curtains also varies. If draft curtains are not required by Table 3206.2, then these options are not necessary and the lower vent/area ratio can be used. Note c specifically allows the use of the lower vent to floor ratio (Option 1) where smoke and heat vents are required and draft curtains are not. Note d simply explains what "H" stands for as used in column 3, row 1. The last column of the table provides the maximum distance from walls or draft curtains that a smoke and heat vent can be located when the vent is adjacent to a wall or draft curtain.

This would not apply to vents located in the middle of a curtained area. Footnote b addresses how this is to be measured.

910.3.1 Design. Smoke and heat vents shall be listed and labeled to indicate compliance with UL 793.

910.3.2 Vent operation. Smoke and heat vents shall be capable of being operated by approved automatic and manual means. Automatic operation of smoke and heat vents shall conform to the provisions of Sections 910.3.2.1 through 910.3.2.3.

♦ Since vents are used as a component of an active venting system, the releasing device is required to be automatic, such as a fusible link. The next several subsections of this section provide requirements for automatic activation of smoke and heat vents. The fusible link ratings are prescribed for nonsprinklered buildings but the strategy will vary in sprinklered buildings.

In addition to automatic operation of the vents, a manual means of operating them by the fire department during fire suppression operations must also be provided. It should be remembered that one of the main reasons smoke and heat vents were initially introduced was to reduce the need for fire fighters to have to ventilate the fire by getting on the roof of the burning building, often having to traverse

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large expanses of roof in order to get to the area over the fire and breaching the roof manually. Accordingly, the mechanisms for release and the needs of the fire department should be carefully considered.

910.3.2.1 Gravity-operated drop out vents. Automatic smoke and heat vents containing heat-sensitive glazing designed to shrink and drop out of the vent opening when exposed to fire shall fully open within 5 minutes after the vent cavity is exposed to a simulated fire represented by a time-temperature gradient that reaches an air temperature of 500°F (260°C) within 5 minutes.

♦This section establishes minimum performance criteria for drop-out

TABLE 910.3
REQUIREMENTS FOR DRAFT CURTAINS AND SMOKE AND HEAT VENTS[a]

OCCUPANCY GROUP AND COMMODITY CLASSIFICATION	DESIGNATED STORAGE HEIGHT (feet)	MINIMUM DRAFT CURTAIN DEPTH (feet)	MAXIMUM AREA FORMED BY DRAFT CURTAINS (square feet)	VENT-AREA-TO FLOOR-AREA RATIO[c]	MAXIMUM SPACING OF VENT CENTERS (feet)	MAXIMUM DISTANCE FROM VENTS TO WALL OR DRAFT CURTAIN[b] (feet)
Group F-1 and S-1	—	$0.2 \times H^d$ but ≥ 4	50,000	1:100	120	60
High-piled storage (see Section 910.2.2) Class I-IV Commodities (Option 1)	≤ 20	6	10,000	1:100	100	60
	> 20 ≤ 40	6	8,000	1:75	100	55
High-piled storage (see Section 910.2.2) Class I-IV Commodities (Option 2)	≤ 20	4	3,000	1:75	100	55
	> 20 ≤ 40	4	3,000	1:50	100	50
High-piled storage (see Section 910.2.2) High-hazard Commodities (Option 1)	≤ 20	6	6,000	1:50	100	50
	> 20 ≤ 30	6	6,000	1:40	90	45
High-piled storage (see Section 910.2.2) High-hazard Commodities (Option 2)	≤ 20	4	4,000	1:50	100	50
	> 20 ≤ 30	4	2,000	1:30	75	40

For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929 m^2.

a. Additional requirements for rack storage heights in excess of those indicated shall be in accordance with Chapter 32. For solid-piled storage heights in excess of those indicated, an approved engineered design shall be used.

b. Vents adjacent to walls or draft curtains shall be located within a horizontal distance not greater than the maximum distance specified in this column as measured perpendicular to the wall or draft curtain that forms the perimeter of the draft curtained area.

c. Where draft curtains are not required, the vent area to floor area ratio shall be calculated based on a minimum draft curtain depth of 6 feet (Option 1).

d. "H" is the height of the vent, in feet, above the floor.

vents, which include a nonmetallic, clear or opaque glazing element designed to shrink from its frame and fall away when exposed to heat from a fire. Such vent design must be capable of completely opening the roof vent within 5 minutes of exposure to a simulated fire represented by a time temperature gradient that reaches an air temperature of 500°F (260°C) within 5 minutes. Drop-out vents tested in accordance with UL 793 must begin to operate at a maximum temperature of 286°F (141°C) in order to be labeled.

910.3.2.2 Sprinklered buildings. Where installed in buildings equipped with an approved automatic sprinkler system, smoke and heat vents shall be designed to operate automatically.

♦Where smoke and heat vents are installed in sprinklered buildings, their operation must be automatic and coordinated with the operation of the sprinkler system. Caution should be exercised in the design of smoke and heat vents and the required draft curtains so that the draft curtains do not interfere with the operation of the automatic sprinklers, since locating a draft curtain too close to a sprinkler head could prevent proper water distribution over the fire. Additionally, draft curtains will contain smoke and hot gases and can direct them away from the area where the fire is actually burning, thus activating sprinklers in the wrong area. This has the potential of overwhelming the sprinkler system.

More specifically, the fusible link operating temperatures should be coordinated with sprinkler head operating temperatures. The premature operation of a vent-opening mechanism could retard the operation of higher temperature-rated sprinkler heads by dissipating the level of heat needed to make the fusible link of the sprinkler(s) operate.

Delaying the operation of sprinklers can have the negative effect of causing an excessive number of sprinklers to operate, including some located outside the immediate area of fire danger. Concern over this issue has increased with the introduction of new sprinkler technology, such as the use of ESFR sprinklers, which are designed to act quickly to apply larger volumes of water to extinguish rather than simply control the fire. For that reason, ESFR

sprinklers are specifically exempted in Section 910.1 from the smoke and heat vent requirements.

910.3.2.3 Nonsprinklered buildings. Where installed in buildings not equipped with an approved automatic sprinkler system, smoke and heat vents shall operate automatically by actuation of a heat-responsive device rated at between 100°F (56°C) and 220°F (122°C) above ambient.

Exception: Gravity-operated drop out vents complying with Section 910.3.2.1.

♦ Where smoke and heat vents are installed in buildings that are not equipped with an automatic sprinkler system, their operation must be automatic, with their operating elements set at between 100°F and 220°F (38°C and 104°C) above the ambient temperature of the area in which they are installed. Smoke and heat vents in nonsprinklered buildings do not have concerns with sprinkler interaction; therefore, the operation is specifically prescribed. The exception indicates that gravity-operated drop-out vents are not subject to this requirement because of their higher required operating temperatures and unique design.

910.3.3 Vent dimensions. The effective venting area shall not be less than 16 square feet (1.5 m2) with no dimension less than 4 feet (1219 mm), excluding ribs or gutters having a total width not exceeding 6 inches (152 mm).

♦ This section prescribes the minimum clear area required for each individual smoke and heat vent, exclusive of any obstructions (see Figure 910.3.4).

The design of the aggregate vent area actually needed is based, in part, on the area defined by the draft curtains and the depth of the curtained area, the objective of the design being to prevent either smoke from spilling out of the curtained area or the smoke interface from interfering with egress visibility. It has also been argued that draft curtains are intended to speed the operation of the smoke and heat vents by keeping the smoke in a smaller area.

910.3.4 Vent locations. Smoke and heat vents shall be located 20 feet (6096 mm) or more from adjacent lot lines and fire walls and 10 feet (3048 mm) or more from fire barriers.

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Vents shall be uniformly located within the roof in the areas of the building where the vents are required to be installed by Section 910.2, with consideration given to roof pitch, draft curtain location, sprinkler location and structural members.

♦ This section has two functions, the first being a focus on hazards to adjacent buildings and the second being proper function of smoke and heat vents through proper placement.

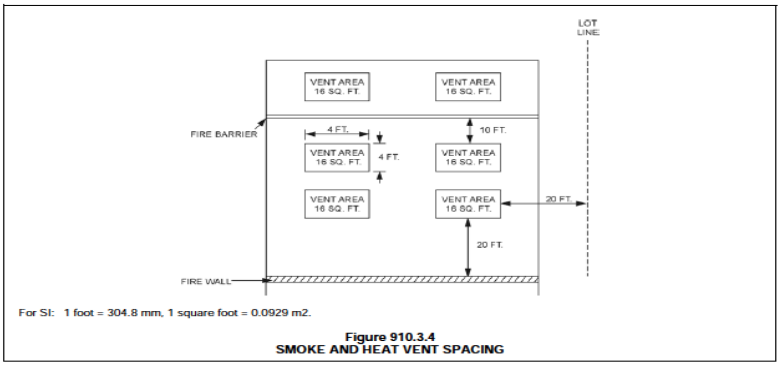
In terms of adjacent properties, this section requires a minimum distance to lot lines and fire walls and then a minimum distance to fire barriers. The first set of distances focuses upon separate buildings and exposures, whereas the distance to fire barriers is less restrictive since it focuses upon different uses and occupancies within the same building (see Figure 910.3.4).

To enhance vent performance within the area containing the smoke and heat vents, such vents need to be uniformly spaced. Consideration of issues such as sprinkler location and roof pitch are also essential to proper vent location.

910.3.5 Draft curtains. Where required by Table 910.3, draft curtains shall be installed on the underside of the roof in accordance with this section.

Exception: Where areas of buildings are equipped with ESFR sprinklers, draft curtains shall not be provided within these areas. Draft curtains shall only be provided at the separation between the ESFR sprinklers and the non-ESFR sprinklers.

♦ Draft curtains (sometimes termed "curtain boards") are required to be installed in conjunction with smoke and heat vents in accordance with Table 910.3 and as required by Section 413 of the IBC and Chapter 32. They are installed within and at the



For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929 m2.

Figure 910.3.4
SMOKE AND HEAT VENT SPACING

perimeter of a protected area to restrict smoke and heat movement beyond the area of fire origin or the protected area and enhance smoke and heat removal through the roof vents. Table 3206.2 does not require draft curtains in sprinklered buildings. Instead, only smoke and heat vents are required in certain cases (larger areas of high-piled storage). The extent of the protection is addressed in Chapter 32. If draft curtains are required by Chapter 32, they need only extend 15 feet (4572 mm) beyond the high-piled storage area.

This section also contains an exception for draft curtains when ESFR sprinklers are used. This exception would only apply to Group S-1 and F-1 occupancies as required in Section 910.2.1 because as noted, Chapter 23 only requires draft curtains in unsprinklered buildings (see commentary, Table 3206.2). It should be noted that draft curtains are required between areas containing ESFR sprinklers and areas containing standard response sprinklers.

910.3.5.1 Construction. Draft curtains shall be constructed of sheet metal, lath and plaster, gypsum board or other approved materials that provide equivalent performance to resist the passage of smoke. Joints and connections shall be smoke tight.

♦ In order not to contribute to the fire load of a building and to increase the likelihood that draft curtains will remain intact under fire conditions, they must be constructed of noncombustible materials or an approved equivalent (see the commentary to Section 703.5 of the IBC for further information on noncombustibility), but are not required to possess a fire-resistance rating.

Draft curtains need only be capable of resisting the passage of smoke.

910.3.5.2 Location and depth. The location and minimum depth of draft curtains shall be in accordance with Table 910.3.

♦ The requirements for depth and location of draft curtains are provided in Table 910.3 based on the occupancy being Group S-1 or F-1 or, in the case of highpiled storage, the commodity classification of the stored materials and the height of the storage. Highpiled storage areas would only be subject to these requirements when a building exceeds a certain minimum high-piled

storage area threshold and not sprinklered.

See the commentary to Table 910.3 for an explanation of how the options presented in the table should be applied.

910.4 Mechanical smoke exhaust. Where approved by the fire code official, engineered mechanical smoke exhaust shall be an acceptable alternative to smoke and heat vents.

♦ This section recognizes that providing a mechanical smoke exhaust system may, under certain circumstances, be more desirable, practical or efficient than installing automatic smoke and heat roof vents. The intent of Sections 910.4.1 through 910.4.6 is to create a mechanical system that performs at least as efficiently as smoke and heat vents designed in accordance with Section 910.3. Installation of an alternative mechanical smoke exhaust system is subject to the specific approval of the building official and fire code official so that the design can be reviewed and the operational sequence and control information can be shared with the fire department. Note that this smoke exhaust system is not considered a smoke control system. As discussed earlier, Section 910 is focused upon the needs of fire fighters in fighting a fire and the overhaul after the fire is extinguished.

Section 909 addresses smoke control systems that focus upon tenable conditions for evacuation. Smoke control more specifically looks at the fire hazard and provides a system focused upon achieving certain life safety goals. The smoke exhaust system in this section is simply exhausting smoke at a rate that is not linked to a particular fire size.

910.4.1 Location. Exhaust fans shall be uniformly spaced within each draft-curtained area and the maximum distance between fans shall not be greater than 100 feet (30 480 mm).

♦ One or more smoke exhaust fans must be provided in each area defined by draft curtains, and when more than one fan is provided in a curtained area the fans must be spaced uniformly within that area, no more than 100 feet (30 480 mm) apart. Locating fans in this manner will enhance the uniform removal of smoke from curtained areas and reduce the likelihood of smoke spillage under the draft curtains. If draft curtains are not required, the fans simply need to meet the

maximum separation distances and be uniformly distributed.

910.4.2 Size. Fans shall have a maximum individual capacity of 30,000 cfm (14.2 m3/s). The aggregate capacity of smoke exhaust fans shall be determined by the equation:

C = A Å~ 300 (Equation 9-4) where:

C = Capacity of mechanical ventilation required, in cubic feet per minute (m3/s).

A = Area of roof vents provided in square feet (m2) in accordance with Table 910.3.

♦ The intent of the sizing requirements of this section is to provide a smoke exhaust rate at least equivalent to the venting capacity provided by roof vents. The exhaust rate required by this section, based on Equation 9-10, is equivalent to 300 cubic feet per minute per square foot (153 m3 /s · m2) of the roof vent area required by Table 910.3, with no single fan exceeding a 30,000 cfm (14.2 m3 /s) rate.

For example, a Group F-1 factory with maximumsized draft-curtained areas of 50,000 square feet (4545 m2) would be required to have a total vent area of 500 square feet (46 m2) in each curtained area in accordance with Table 910.3. The mechanical exhaust rate required based on Equation 9-4 would then be 500 x 300 = 150,000 cfm (70.8 m3 /s), which could be supplied by five 30,000 cfm (14.2 m3 /s) fans spaced in accordance with Section 910.4.1 in each curtained area.

910.4.3 Operation. Mechanical smoke exhaust fans shall be automatically activated by the automatic sprinkler system or by heat detectors having operating characteristics equivalent to those described in Section 910.3.2. Individual manual controls for each fan unit shall also be provided.

♦ The activation of the mechanical smoke exhaust system must be capable of being accomplished by actuation of the automatic sprinkler system or, in nonsprinklered buildings, by heat detectors with a temperature rating of between 100 and 220°F (38 and 104°C) as required for smoke vents in Section 910.3.2.3 and manual controls. The manual control is for fire department use to increase the reliability of the system and to allow the fire department to

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activate the exhaust system to assist in the removal of smoke during or after a fire. Since manual control of the system is primarily for fire department use, the location of the controls should be subject to approval by the fire department. While not specifically stated in this section, a manual fire alarm system, if provided, can be more prone to intentional false activations; therefore, activation of the smoke exhaust system should not be allowed by this means. In addition, such systems should not be operated by the activation of smoke detection because the system may be activated before the sprinklers operate, which could be detrimental to the success of the sprinklers in suppressing the fire.

910.4.4 Wiring and control. Wiring for operation and control of smoke exhaust fans shall be connected ahead of the main disconnect and protected against exposure to temperatures in excess of 1,000°F (538°C) for a period of not less than 15 minutes. Controls shall be located so as to be immediately accessible to the fire service from the exterior of the building and protected against interior fire exposure by not less than 1-hour fire barriers constructed in accordance with Section 707 of the International Building Code or horizontal assemblies constructed in accordance with Section 711 of the International Building Code, or both.

♦ Unless the mechanical smoke exhaust system also functions as a component of a smoke control system, standby power is not specifically required (see commentary, Sections 909.11 and 2702 of the IBC). In order to provide an enhanced level of operational reliability, this section requires that the power supply to smoke exhaust fans must be provided from a circuit connected on the supply side (i.e., ahead of) the building's main electrical service disconnecting means. Note that this is one of the sources of standby power recognized by NFPA 70 Section 701.11(E).

Such a circuit connected "ahead of the main" must still have its own approved overcurrent protection.

This section also requires that the wiring for smoke exhaust fans be thermally protected in a manner approved by the building official that will protect the wiring from heat damage in the event of an

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interior fire. This protection could be provided by an approved wiring material listed for the temperature application, by physical protection with approved materials or assemblies or by installation outside of the building.

Since smoke exhaust systems are a vital fire-fighting tool, their operating controls are also required to be protected from interior fire exposure by 1-hour fire barriers constructed in accordance with Section 707 of the IBC or horizontal assemblies constructed in accordance with Section 711 of the IBC or both. Exterior access to the controls allows fire department personnel to promptly operate the system from a protected area without entering the building. Controls should also be clearly identified in an approved, permanent manner.

910.4.5 Supply air. Supply air for exhaust fans shall be provided at or near the floor level and shall be sized to provide a minimum of 50 percent of required exhaust. Openings for supply air shall be uniformly distributed around the periphery of the area served.

♦ The introduction of makeup air is critical to the proper operation of all exhaust systems. Too little makeup air will cause a negative pressure to develop in the area being exhausted, thereby reducing the exhaust flow.

This section requires that makeup air be introduced to the area equipped with a mechanical smoke exhaust system in order to maintain the required exhaust flow. Since the system can only exhaust as much air as is introduced into the area, and this section allows mechanical or gravity makeup air openings to provide only 50 percent of the required makeup air, this section allows the designer to rely upon infiltration air to provide up to the remaining 50 percent of the design makeup air required to allow the system to perform. Although not specifically stated in this section, where a mechanical makeup air source is utilized, it should be electrically interlocked and controlled by a single start switch, such that makeup air is always being supplied when the smoke exhaust system is in operation.

The even distribution of makeup air is important because if too much air is coming from one particular direction, it has

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the potential to vary the dynamics of the fire and the ability of the system to capture the smoke.

910.4.6 Interlocks. On combination comfort air-handling/smoke removal systems or independent comfort air-handling systems, fans shall be controlled to shut down in accordance with the approved smoke control sequence.

♦ This section was created to reduce the likelihood that the HVAC system will interfere with the proper function of the smoke exhaust system. It is important to emphasize that the system described in Section 910.4 is a smoke exhaust system and not a smoke control system; therefore, the actual fire performance is not as clearly understood. The concern is that HVAC systems should not work against the intended operation of the smoke exhaust system. In some case, the system may be a combination system where shutdown is not necessary or appropriate. It really depends on how the smoke exhaust system has been designed.

910.5 Maintenance. Smoke and heat vents and mechanical smoke exhaust systems shall be maintained in an operative condition in accordance with NFPA 204. Fusible links shall be promptly replaced whenever fused, damaged or painted.

Smoke and heat vents and mechanical smoke exhaust systems shall not be modified.

♦ This section requires smoke and heat vents to be maintained in operating condition in accordance with NFPA 204. Maintenance provisions for these systems are included within Section 910 to provide clarity for the end-user of the code. This section incorporates NFPA 204 as the referenced standard for the maintenance of smoke and heat vents and mechanical smoke exhaust systems. Routine inspection, testing and maintenance of these devices is essential since these devices are typically only found in the largest commercial structures, and the amount of fire loading is usually very high (i.e., high-piled combustible storage). Ensuring that these devices are inspected, tested and maintained in proper working order by the building's owner has positive effects on fire-fighter safety. These benefits include:

• Easy identification of the location of the fire within the structure.

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• Release of excess heat within the structure.

• Decreasing fire severity.

• Increased visibility for fire fighters within the structure.

• Reduction of toxic products of combustion within the structure.

Additionally, the maintenance of these devices will have a mitigating effect on damage to the structure and/or its contents should a fire occur. These benefits include decreased likelihood of structural failure from heat retained within the structure and reduced damage to the structure and stored materials from smoke.

Next Month … SECTION 911

EXPLOSION CONTROL (page 436)

The International Code Council, a membership association dedicated to building safety and fire prevention, develops the codes used to construct residential and commercial buildings, including homes and schools. Most U.S. cities, counties and states that adopt codes choose the International Codes developed by the International Code Council.

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