F190–07/08
909.12.1 (IBC [F] 909.12.1)

Proponent: Masoud Sabounchi, PE, CBO, Advanced Consulting Engineers, Inc., representing Colorado Chapter of ICC

Revise as follows:

909.12.1 (IBC [F] 909.12.1) Wiring. In addition to meeting requirements of NFPA 70, ~~all~~ wiring to smoke detectors, heat detectors, manual fire alarm boxes and sprinkler system water-flow switches~~, regardless of voltage,~~ shall be fully enclosed within continuous raceways.

Reason: This section pertains to the fire alarm and detection system wiring associated with smoke control system. The presently used "all wiring" is ambiguous because the fire alarm and smoke detection system include wiring to speakers and strobes where survivability of wiring is addressed in the National Fire Alarm Code NFPA 72. This revision will clarify the requirements and help the code user better implement this provision.

Cost Impact: The code change proposal will reduce the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F191–07/08
910.1, 910.2, 910.2.1, 910.2.2, 910.2.3 (IBC [F] 910.1, [F] 910.2, [F] 910.2.1, [F] 910.2.2, [F] 910.2.3)

Proponent: Rick Thornberry, PE, The Code Consortium, representing AAMA Smoke Vent Task Group

Revise as follows:

910.1 (IBC [F] 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.~~

910.2 (IBC [F]910.2) Where required. Smoke and heat vents shall be installed in the roofs of one-story buildings or portions thereof occupied for the uses set forth in Sections 910.2.1 ~~through 910.2.3~~ and 910.2.2.

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.

910.2.1 (IBC [F] 910.2.1) Group F-1 or S-1. Buildings ~~and~~ or portions thereof used as a Group F-1 or S-1 occupancy having more than 50,000 square feet (4645 m^2) of undivided area.

Exception: Group S-1 aircraft repair hangars.

910.2.2 (IBC [F]910.2.2) High-piled combustible storage. Buildings ~~and~~ or portions thereof containing high-piled combustible stock or rack storage in any occupancy group when required by Section 2306.7.

910.2.3 (IBC [F]910.2.3) Exit access travel distance increase. Smoke and heat vents shall be installed in the roofs and draft curtains shall be installed on the underside of the roofs of buildings ~~and~~ or portions thereof used as a Group F-1 or S-1 occupancy where the maximum exit access travel distance is increased in accordance with Section 1016.2.

Reason: This reformats the exceptions to the General Section 910.1 and relocates them to Section 910.2 which specifies when the smoke and heat vents are required which is the more appropriate section for the exceptions. The exceptions are also modified to apply only to Sections 910.2.1 and 910.2.2 and not 910.2.3. That is because 910.2.3 is a provision that allows for an increased travel distance when smoke and heat vents are provided so there should be no exceptions for this particular application.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F192–07/08
910.1.1 (New), Chapter 45 (New) [IBC [F] 910.1.1 (New), Chapter 35 (New)]

Proponent: Rick Thornberry, PE, The Code Consortium, representing AAMA Smoke Vent Task Group

1. Add new text as follows:

910.1.1 (IBC [F] 910.1.1) Approved engineered design. Where approved, NFPA 204 shall be permitted to be used by a registered design professional for an alternative engineered design in lieu of complying with the requirements specified in Section 910 for smoke and heat vents.

2. Add standard to Chapter 45 (IBC Chapter 35) as follows:

NFPA

204-07 Smoke and Heat Venting

Reason: This code change provides for an approved engineering design alternative to the requirements currently in Section 910 for smoke and heat vents based on the use of NFPA 204 which is now a full standard for the design of smoke and heat vents using an engineered approach.

Cost Impact: The code change proposal will not increase the cost of construction.

Analysis: A review of the standard proposed for inclusion in the code, NFPA 204-07, for compliance with ICC criteria for referenced standards given in Section 3.6 of Council Policy #CP 28 will be posted on the ICC website on or before January 15, 2008.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F193–07/08
910.2 (IBC [F] 910.2)

Proponent: Rick Thornberry, PE, The Code Consortium, representing AAMA Smoke Vent Task Group

Revise as follows:

910.2 (IBC [F] 910.2) Where required. Smoke and heat vents shall be installed in the roofs and draft curtains shall be installed on the underside of roofs of one-story buildings or portions thereof occupied for the uses set forth in Sections 910.2.1 through 910.2.3.

Reason: This is an editorial clarification to provide for a charging requirement that draft curtains are required to be installed under the provisions of this section as are smoke and heat vents.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F194–07/08
Table 910.3 (IBC [F] Table 910.3)

Proponent: Rick Thornberry, PE, The Code Consortium, representing AAMA Smoke Vent Task Group

Revise table footnote as follows:

TABLE 910.3 (IBC TABLE [F] 910.3)
REQUIREMENTS FOR DRAFT CURTAINS AND SMOKE AND HEAT VENTS[a]

(Portions of table not shown remain unchanged)

For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929m^2.
a. ~~Requirements for rack storage heights in excess of those indicated shall be in accordance with Chapter 23.~~ For solid-piled storage heights in excess of those indicated, an approved engineered design shall be used.
b. The distance specified is the maximum distance from any vent in a particular draft curtained area to walls or draft curtains which form 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.

Reason: Chapter 23 does not contain specific requirements for smoke and heat vents. It refers to Section 910.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

F195–07/08
Table 910.3 (IBC [F] Table 910.3)

Proponent: Rick Thornberry, PE, The Code Consortium, representing AAMA Smoke Vent Task Group

Revise table column heading and footnote as follows:

TABLE 910.3 (IBC TABLE [F] 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 ~~TO~~ FROM VENTS ~~FROM~~ TO WALL OR DRAFT CURTAIN[b] (feet)

(Portions of table not shown remain unchanged)

For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929m^2.
a. Requirements for rack storage heights in excess of those indicated shall be in accordance with Chapter 23. For solid-piled storage heights in excess of those indicated, an approved engineered design shall be used.
b. ~~The distance specified is the maximum distance from any vent in a particular draft curtained area to walls or draft curtains which form the perimeter of the draft curtained area.~~ 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.

Reason: This proposal is for editorial clarity. Not every vent is required to be within the specified maximum distance from a wall or draft curtain. That limitation is only applicable to those vents adjacent to the walls or draft curtains and not to other vents located in the middle of the draft curtained area.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

F196–07/08

910.3.2, 910.3.2.2, 910.3.2.4 (New) [IBC [F] 910.3.2, [F] 910.3.2.2, [F] 910.3.2.4 (New)]

Proponent: Robert J. Davidson, Davidson Code Concepts, LLC, representing himself

Revise as follows:

910.3.2 (IBC [F] 910.3.2) Vent operation. Smoke and heat vents shall be capable of being operated by approved automatic ~~and~~ or manual means. Automatic or manual operation of smoke and heat vents shall conform to the provisions of Sections 910.3.2.1 through ~~910.3.2.3~~ 910.3.2.4.

910.3.2.1 (IBC [F] 910.3.2.1) Gravity-operated drop out vents. (No change to current text)

910.3.2.2 (IBC [F] 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~~ manually.

910.3.2.3 (IBC [F] 910.3.2.3) Nonsprinklered buildings. (No change to current text)

910.3.2.4 (IBC [F] 910.3.2.4) Increase in travel distance. Where installed in buildings to increase the maximum travel distance in accordance with Section 1016.2, smoke and heat vents shall be designed to operate automatically.

Reason: Since the initial drafting of the International Building and Fire Codes there have been numerous code changes submitted to eliminate the requirement for smoke and heat vents. The majority of the proposals to eliminate the requirement have argued that automatic smoke and heat vents have or may have a negative impact on the operation of automatic sprinkler systems. No definitive research has verified an overall negative effect on the operation of the sprinklers.

The key issue in the arguments appears to be the "automatic" operation of the smoke and heat vents, i.e., if they open too soon they may negatively affect sprinkler system operation. Based upon this issue, the proposals have sought to eliminate the smoke and heat vents altogether. This proposal offers a different solution. In buildings not protected with an automatic sprinkler system the smoke and heat vents shall be designed to operate automatically, in buildings protected with an automatic sprinkler system they shall be designed to operate manually unless installed for the purpose of increasing the maximum travel distance.

By making the proposed changes the basic argument against the installation of the smoke and heat vents is removed while leaving the vents in place for use by responding fire fighters. The 2006 IBC Commentary includes the following at Section 910.1:

> *"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."*

Smoke and heat vents are an important safety tool for fire fighters. They provide the opportunity to vent large buildings safely and quickly with a minimum of manpower as compared to attempting to cut large vent holes in a roof. They are a tool in the same manner as are fire hydrants required by IFC Section 508.5 or fire apparatus access roads required by IFC Section 503.1. The code does not completely eliminate the requirements for fire hydrants or fire apparatus access lanes just because a building is equipped with an automatic sprinkler system and the requirements for the smoke and heat vents should not be eliminated for that reason either.

Starting with the 2003 editions of the IBC and the IFC the following language was added:

International Building Code

> *"101.3 Intent.*
> *The purpose of this code is to establish the minimum requirements to safeguard the public health, safety and general welfare through structural strength, means of egress facilities, stability, sanitation, adequate light and ventilation, energy conservation, and safety to life and property from fire and other hazards attributed to the built environment and to provide safety to fire fighters and emergency responders during emergency operations."*

International Fire Code

> *"101.3 Intent.*
> *The purpose of this code is to establish the minimum requirements consistent with nationally recognized good practice for providing a reasonable level of life safety and property protection from the hazards of fire, explosion or dangerous conditions in new and existing buildings, structures and premises and to provide safety to fire fighters and emergency responders during emergency operations."*

Eliminating the provision for smoke and heat vents would be contrary to the stated intent of the two codes and will endanger fire fighters lives by leaving them no other option that to attempt difficult and time consuming manual roof venting operations.

Many items contained within the various I-Codes are the result of compromise, an attempt to obtain a middle ground that meets requirements for a minimum level of safety. This proposal is an example of that kind of compromise, it eliminates the potential conflict with the automatic sprinkler systems that is a concern for some but still maintains the installation of the smoke and heat vents for use by responding fire fighters.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F197–07/08
910.3.2.2.1 (New) [IBC [F] 910.3.2.2.1 (New)]

Proponent: Rick Thornberry, PE, The Code Consortium, representing AAMA Smoke Vent Task Group

Add new text as follows:

910.3.2.2.1 (IBC[F] 910.3.2.2.1) Ganged operation alternative. Where approved, all smoke and heat vents located within an automatic sprinkler system zone shall be designed to open simultaneously upon activation of the water flow detection alarm device provided for the automatic sprinkler system zone. The smoke and heat vents shall also be designed to operate in accordance with Section 910.3.2.3. Where the building contains only one automatic sprinkler system, the building shall be considered to be a single automatic sprinkler system zone. Where the building contains more than one automatic sprinkler system, each system shall be designated as a separate automatic sprinkler system zone within the building. Draft curtains complying with Section 910.3.5 shall be provided to separate each automatic sprinkler system zone in the building. Any other draft curtains required by Section 910.3.5 shall be allowed to be omitted. Electrical wiring for the operation and control of the smoke and heat vents shall comply with Section 910.4.4 or the wiring shall be installed in steel conduit. Where the automatic sprinkler system water flow detection alarm device is supplied with emergency or standby power, the activation system for the simultaneous operation of the smoke and heat vents shall also be supplied in the same manner. A manual override switch for use by the fire department for simultaneously activating all of the smoke and heat vents within each automatic sprinkler system zone shall also be provided for each zone in an approved location.

Reason: This code change provides for a new design alternative for sprinklered buildings using smoke and heat vents in what is called a ganged operation. This technology comes from Europe where it has been used successfully for many years. The AAMA Smoke Vent Task Group has also commissioned Hughes & Associates to conduct computer modeling studies to validate the performance of ganged operation of smoke and heat vents as prescribed in this new code section. We believe this alternate method is superior to the individual operation of smoke and heat vents, especially in sprinklered facilities.

The provisions we believe provide for a reliable operation of the gang system of smoke and heat vents and parallels the requirement for the protection of electrical wiring to that required for when mechanical smoke removal was used in lieu of smoke and heat vents. The operation of this system is triggered by the operation of the automatic sprinkler system water flow switch so that the smoke and heat vents will not open until after the sprinkler system has operated. Furthermore, the smoke and heat vents are also required to be able to be individually operated by thermally activated links as they would be under the traditional design approach. We consider this to be a fail safe approach so that should the sprinkler system not operate and trigger the water flow switch, then the smoke and heat vents will still be there to operate individually as they are triggered by heat from the growing fire.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F198–07/08
910.3.4 (IBC [F] 910.3.4)

Proponent: Rick Thornberry, PE, The Code Consortium, representing AAMA Smoke Vent Task Group

Revise as follows:

910.3.4 (IBC [F] 910.3.4) (Supp) 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. Vents shall be uniformly located within the roof area ~~above high-piled storage areas,~~ with consideration given to roof pitch, draft curtain location, sprinkler location and structural members.

Reason: Editorial clarification. This requirement should apply in all cases, not just for high piled storage areas.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F199–07/08
910.3.5 (IBC [F] 910.3.5)

Proponent: Edwin M. Berkel, CFI, Mehlville Fire Protection District, representing himself

Revise as follows:

910.3.5 (IBC [F] 910.3.5) Draft curtains. Where required, draft curtains shall be provided 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 ~~conventional~~ standard response sprinklers

Reason: The existing code text makes use of an undefined term, "conventional sprinklers". This code change corrects that by using "standard response sprinklers" which is the correct term utilized in the reference standards.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F200–07/08
910 (IBC [F] 910)

Proponent: Richard Schulte, Schulte & Associates

Revise section as follows:

SECTION 910
SMOKE ~~AND HEAT VENTS~~ REMOVAL SYSTEMS

910.1 (IBC [F] 910.1) General. Where required by this code or otherwise installed, smoke ~~and heat vents, or mechanical smoke exhaust systems, and draft curtains~~ removal systems 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~~ removal systems shall not be required within these areas.

910.2 (IBC [F] 910.2) Where required. Smoke ~~and heat vents~~ removal systems shall be ~~installed in roofs of~~ provided for one-story buildings or portions thereof occupied for the uses set forth in Sections 910.2.1 through 910.2.3.

910.2.1 (IBC [F] 910.2.1) Group F-1 or S-1. (No change to current text)

910.2.2 (IBC [F] 910.2.2) High-piled combustible storage. (No change to current text)

910.2.3 (IBC [F] 910.2.3) Exit access travel distance increase. (No change to current text)

910.3 (IBC [F] 910.3) Smoke removal systems. Smoke removal systems shall be of a type described in Section 910.3.1 or 910.3.2.

910.3.1 (IBC [F] 910.3.1) Sprinklered buildings. Smoke removal systems in buildings protected by a sprinkler system shall be permitted to be any one of the following types of systems, or a combination thereof:

1. Automatic smoke and heat vents
2. Manually-operated smoke and heat vents
3. Manually-activated mechanical smoke exhaust system

4. Manually openable louvers in the exterior walls
5. Manually openable doors and windows in the exterior walls.

910.3.2 (IBC [F] 910.3.2) Nonsprinklered buildings. Smoke removal systems in nonsprinklered buildings shall be automatic smoke and heat vents.

~~**910.3 (IBC [F] 910.3)**~~ **910.4 (IBC [F] 910.4)** ~~**Design and installation**~~ **Automatic and manually-operated smoke and heat vents.** The design and installation of automatic smoke and heat vents and draft curtains shall be as specified in Sections ~~910.3.1~~ 910.4.1 through ~~910.3.5.2~~ 910.4.5 and Table ~~910.3~~ 910.4. The design of manually-operated smoke and heat vents shall be as specified in Sections 910.4.1, 910.4.3 and 910.4.4 and Table 910.4.

~~**910.3.1 (IBC [F] 910.3.1)**~~ **910.4.1 (IBC [F] 910.4.1) Design.** Automatic and manually-operated smoke and heat vents shall be listed and labeled to indicate compliance with UL 793.

~~**910.3.2 (IBC [F] 910.3.2)**~~ **910.4.2 (IBC [F] 910.4.2) Automatic vent operation.** Automatic 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 Section ~~910.3.2.1~~ 910.4.2.1 through ~~910.3.2.3~~ 910.4.2.3.

~~**910.3.2.1 (IBC [F] 910.3.2.1)**~~ **910.4.2.1 (IBC [F] 910.4.2.1) 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.

~~**910.3.2.2 (IBC [F] 910.3.2.2)**~~ **910.4.2.2 (IBC [F] 910.4.2.2) Sprinklered buildings.** Where installed in buildings provided with an approved automatic sprinkler system, smoke and heat vents shall be designed to operate automatically by activation of a heat-sensing device with a temperature rating equal to or above the temperature rating of the sprinklers.

~~**910.3.2.3(IBC [F] 910.3.2.3)**~~ **910.4.2.3 (IBC [F] 910.4.2.3) Nonsprinklered buildings.** Where installed in buildings not provided with an approved automatic sprinkler system, smoke and heat vents shall be automatically operated by actuation of a heat-sensing device rated at between 100°F (38°C) and 220°F (104°C) above ambient.

~~**910.3.3 (IBC [F] 910.3.3)**~~ **910.4.3 (IBC [F] 910.4.3) Vent dimensions.** The effective venting area shall not be less than 16 square feet (1.5 m^2) with no dimension less than 4 feet (1219 mm), excluding ribs or gutters having a total width not exceeding 6 inches (152 mm).

~~**910.3.4 (IBC [F] 910.3.4)**~~ **(Supp) 910.4.4 (IBC [F] 910.4.4) Vent locations.** Automatic 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. Automatic and manually-operated vents shall be uniformly located within the roof area above high-piled storage areas, with consideration given to roof pitch, draft curtain location, sprinkler location and structural members.

~~**910.3.5 (IBC [F] 910.3.5)**~~ **910.4.5 (IBC [F] 910.4.5) Draft curtains.** Where required by Table 910.3, draft curtains shall be provided 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 conventional sprinklers.

~~**910.3.5.1 (IBC [F] 910.3.5.1)**~~ **910.4.5.1 (IBC [F] 910.4.5.1) Construction.** Draft curtains shall be constructed of sheet metal, lath and plaster, gypsum board or other approved materials which provide equivalent performance to resist the passage of smoke. Joints and connections shall be smoke tight.

~~**910.3.5.2 (IBC [F] 910.3.5.2)**~~ **910.4.5.2 (IBC [F] 910.4.5.2) Location and depth.** The location and minimum depth of draft curtains shall be in accordance with Table 910.3.

~~**910.4 (IBC [F] 910.4)**~~ **910.5 (IBC [F] 910.5) Manually-activated mechanical smoke exhaust system.** ~~Where approved by the fire code official, engineered mechanical smoke exhaust shall be an acceptable alternate to smoke and heat vents.~~ The design and installation of a mechanical smoke exhaust system shall be as specified in Sections 910.5.1 through 910.5.6.

~~**910.4.1 (IBC [F] 910.4.1)**~~ **910.5.1 (IBC [F] 910.5.1) Location.** Exhaust fans shall be uniformly spaced ~~within each draft curtained area~~ within the floor area served by the exhaust system and the maximum distance between fans shall not be greater than ~~100~~ 200 feet (~~30280~~ 60560 mm).

~~**910.4.2 (IBC [F] 910.4.2)**~~ **910.5.2 (IBC [F] 910.5.2) Size.** Fans shall have a maximum individual capacity of 30,000 cfm (14.2 m^3/s). The aggregate capacity of smoke exhaust fans shall be determined by the following equation:

C = A x ~~300~~ 100

where:

C = Capacity of mechanical ventilation required, in cubic feet per minute (m^3/s).
A = Area of roof vents provided in square feet (m^2) in accordance with Table 910.3.

~~**910.4.3 (IBC [F] 910.4.3)**~~ **910.5.3 (IBC [F] 910.5.3) 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 901.3.2~~ manual controls only. Individual manual controls for each fan shall also be provided. Automatic activation of the mechanical smoke exhaust system shall not be permitted.

~~**910.4.4 (IBC [F] 910.4.4)**~~ **(Supp) 910.5.4 (IBC [F] 910.5.4) 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°F) for a period of not less than ~~15~~ 5 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 706 or horizontal assemblies constructed in accordance with Section 711, or both.

~~**910.4.5 (IBC [F] 910.4.5)**~~ **910.5.5 (IBC [F] 910.5.5) 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 the required exhaust. Openings for supply air shall be uniformly distributed around the periphery of the area served.

~~**910.4.6 (IBC [F] 910.4.6)**~~ **910.5.6 (IBC [F] 910.5.6) Interlocks.** In 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.

910.6 (IBC [F] 910.6) Manually openable louvers in the exterior walls. Manually openable louvers in the exterior walls shall provide 100 square feet of clear opening for each 100 feet (30.5 m) of building perimeter.

910.6.1 (IBC [F] 910.6.1) Spacing. The spacing between louvers shall not exceed 200 feet (61 m).

910.7 (IBC [F] 910.7) Manually openable doors and windows in the exterior walls. Manually openable doors and windows in the exterior walls shall provide 100 square feet of opening for each 100 feet of building perimeter.

910.7.1 (IBC [F] 910.7.1) Spacing. The spacing between doors and windows shall not exceed 200 feet (61 m).

TABLE 910.3 (IBC [F] TABLE 910.3)
REQUIREMENTS FOR DRAFT CURTAINS AND SMOKE AND HEAT VENTS[a,b]

OCCUPANCY GROUP AND COMMODITY CLASSIFICATION	DESIGNATED STORAGE HEIGHT (feet)	MINIMUM DRAFT CURTAIN DEPTH (feet)	MAXIMUM AREA FORMED BY DRAFT CURTAINS (square feet)	VENT-AREA-T0 FLOOR-AREA RATIO[c]	MAXIMUM SPACING OF VENT CENTERS (feet)	MAXIMUM DISTANCETO VENTS FROM WALL OR DRAFT CURTAIN[b c] (feet)
Group F-1 and S-1	___	0.2 x H[d e] but ≥ 4	50,000	1:100	120	60

a. (No change to existing text)
b. Draft curtains are not required where manually-operated smoke and heat vents are provided.
~~b~~ c. (No change to existing text)
~~c~~ d. (No change to existing text)
~~d~~ e. (No change to existing text)

(Portions of table and footnotes not shown remain unchanged)

Reason: The purpose of this code change proposal is two-fold. First, this proposal incorporates the results of fire testing on the interaction of standard spray sprinklers and automatic smoke and heat (roof) vents conducted at Underwriters Laboratories (UL) in 1997 and 1998 into the provisions of this code section. Second, this proposal reflects changes in fire fighting operations recommended by the National Institute of Occupational Safety and Health (NIOSH) and also by FEMA Firefighter Life Safety Summit (held on April 14, 2004).

Special provisions which addressed the hazard of high-piled storage originated in the Uniform Building Code (UBC) and Uniform Fire Code (UFC). The requirements for high-piled storage contained in the 1979 edition of the UFC required that a manually-activated mechanical smoke removal system be provided in sprinklered buildings which contained high-piled storage. Further, the high-piled storage provisions contained in the 1979 UFC specifically prohibited the installation of smoke and heat vents in sprinklered buildings (due to concerns that the opening of automatic smoke and heat vents could adversely impact the operation of sprinklers and could cause the failure of the sprinkler system).

In the early 1980's, a UFC ad hoc committee on high-piled storage was formed. (The proponent of this proposal represented the Northern California Fire Prevention Officers (NCFPO) on the ad hoc committee until August, 1982.) This ad hoc committee recommended that the high-piled storage provisions contained in the UFC be modified to reverse the code provisions which prohibited the use of smoke and heat (roof) vents in sprinklered buildings and proposed that automatic smoke and heat vents be specifically required in sprinklered buildings containing high-piled storage.

The UFC ad hoc committee recommended that automatic smoke and heat vents be provided in sprinklered buildings for two basic reasons (and only two reasons). The first reason was to assist interior manual fire fighting operations and the second reason was to reduce property damage caused by smoke and heat. In effect, the committee decision to require roof vents in sprinklered buildings brushed aside the concern that the opening of roof vents could adversely affect the operation of the sprinkler system, however, the one issue that the ad hoc committee most certainly did not address (because it was not known at the time) was whether or not the operation of the sprinkler system would have an adverse impact on the opening of roof vents.

In the early 1990's, fire testing by Factory Mutual Research Corporation (FMRC) determined that draft curtains required to be utilized with smoke and heat vents could adversely affect the number and location of sprinklers which operated in a fire (depending upon where the fire was located with respect to the draft curtains). Based upon this finding, the requirements for draft curtains contained in the Uniform Fire Code were modified and, in most cases, the requirement for draft curtains were removed, when the International Fire Code was developed. (Since automatic roof vents and draft curtains are a "team", the removal of the requirement for draft curtains has a detrimental effect on the operation of roof vents.)

In 1997 and 1998, the National Fire Protection Research Foundation (NFPRF) sponsored testing on the interaction of sprinklers and smoke and heat vents at Underwriters Laboratories in an attempt to finally resolve the issue of whether or not open smoke and heat vents adversely affected the operation of sprinklers. While the NFPRF testing did not conclusively resolve this issue, the NFPRF tests supported FMRC's conclusion that draft curtains could negatively impact the operation of sprinklers and also determined that the operation of standard spray sprinklers negatively impacted the operation of roof vents. In fact, the NFPRF tests determined that automatic roof vents are unlikely to automatically open in buildings where the sprinkler system successfully or marginally controls a fire.

Excerpts from the report on the NFPRF tests (NISTIR 6196-1) addressing the impact of operating sprinklers on the opening of automatic roof vents include the following:

"*It had become clear by this time in the project that the vents were unlikely to open when the fire was ignited more than about 4.6 m (15 ft) away.*" (Page 54, NISTIR 6196-1)

"*. . . .it appears from the data below that the sprinkler spray influenced the thermal response characteristics of this particular vent, and it is believed that sprinklers could have a similar influence on similar vent designs.*" (Page 64, NISTIR 6196-1)

"*Six other tests were performed with the fire at this distance from the vent when the vent was equipped with a fusible link, and in none of these tests did the vent open. . . .Examination of the near-ceiling temperatures from all the tests indicates that sprinklers of this type* [standard spray sprinklers] *have a significant cooling effect, and this will certainly have an effect on thermally-responsive, independently-controlled vents.*" (Page 64, NISTIR 6196-1)

"*In Plastic Test P-2, the fire was ignited directly under a vent. In the experiment, flames reached the top of the central array at about 65 s and the vent cavity at about 70 s. The first sprinkler activated at 100 s. The vent did not open at any time during the 30 min test even though another vent 6 m (20 ft) to the west of the unopened vent opened at 6:04.*" (Page 64, NISTIR 6196-1)

"*This data, along with the plunge tunnel measurements reported in Section 3.1.4, suggests that the fusible link reached its activation temperature before or at about the same time as the first sprinkler activated, but the link did not fuse. It is not clear whether the link did not fuse because it was cooled directly by water drawn upwards into the vent cavity, or whether the sprinkler spray simply cooled the rising smoke plume enough to prevent the link from fusing. In any event, this phenomenon deserves further study.*" (Page 64, NISTIR 6196-1)

"*The mass flow rates* [through the vents] *for Test I-10 and P-5 are relatively low compared with the theoretical maximum because the near-ceiling gas temperatures are greatly reduced by the sprinklers.*" (Page 100, NISTIR 6196-1)

"*The significant cooling effect of sprinkler sprays on the near-ceiling gas flow often prevented the automatic operation of vents. This conclusion is based on thermocouple measurements within the vent cavity, the presence of drips of solder on the fusible links recovered from unopened vents, and several tests where vents remote from the fire and the sprinkler spray activated. In one cartoned plastic commodity experiment, a vent did not open when the fire was ignited directly beneath it.*" (Page 101, NISTIR 6196-1)

In addition to the excerpts from NISTIR 6196-1, Dr. Craig Beyler of Hughes Associates, Inc. (a consultant to the AAMA Smoke Vent Task Group) has also addressed the issue of the opening of roof vents in sprinklered buildings. The following are excerpts from Dr. Beyler's work:

"*The experimental studies have shown that . . . . .current design practices are likely to limit the number of vents operated to one and vents may in fact not operate at all in very successful sprinkler operations.*" (Page 1, "Interaction of Sprinklers with Smoke and Heat Vents")

"*Eliminates Need for Manual Venting? No*" (Page 42, "Sprinkler/Vent Interactions-What people think, what we know, and what we don't.")

"*Not only is the fear of early operation not founded, current design practice will likely lead to 0-1 vents operating*" (Page 61, "Sprinkler/Vent Interactions-What people think, what we know, and what we don't.")

"*Revised design methods for early operation of vents are needed*" (Page 61, "Sprinkler/Vent Interactions-What people think, what we know, and what we don't.")

Obviously, if automatic roof vents do not operate automatically in sprinklered buildings where the sprinkler system is operative and effective, or marginally effective, then the roof vents do little to assist interior manual fire fighting operations and will do little to reduce heat and smoke damage caused by a fire. These points were clearly demonstrated in a fire in a bulk merchandise retail store in Tempe, Arizona on March 19, 1998.

In the bulk merchandise retail store fire in Tempe, the sprinkler system operated, but was inadequate for the hazard being protected and was failing. (A total of 66 large orifice sprinklers operated in the fire. The hydraulic calculations for the sprinkler system assumed that only 29 sprinklers would operate.) Even though the building was provided with smoke and heat vents per the UFC requirements, the building was filled with smoke from floor to the underside of the roof (with zero visibility at the floor) by the time the Phoenix Fire Department arrived at the building. Based upon the NFPA fire report, only 3 of the 29 roof vents (and one skylight) opened automatically and a ladder company had to be sent to the roof to open the other vents.

The NFPA report on this fire in Tempe indicates that the smoke and heat vents had been disabled (although 3 vents did operate automatically), however, this fire clearly shows that smoke and heat vents can be completely ineffective in providing visibility for fire fighters where too few vents open. This finding, coupled with the finding from the NFPRF tests that sprinkler operation will limit the maximum number of vents opening to one, if any vents open at all, indicates that the performance of automatic roof vents is essentially the same as manually-opened vents, except where the sprinkler protection is impaired and fails to discharge water (i.e. closed water supply control valve, broken piping or a pump fails to start).

Where a sprinkler system protecting a large single-story building is impaired and fails to discharge water, the recommendations contained in NIOSH 2005-132, "Preventing Injuries and Deaths of Fire Fighters due to Truss System Failures" are applicable. NIOSH 2005-132 contains the following recommendations regarding interior manual fire fighting operations in buildings constructed with trusses (and other light-weight roof construction typically used in large single-story storage and industrial buildings):

> "*Fire fighters should be discouraged from risking their lives solely for property protection activities.*" (Page 7)
>
> "*Lives will continue to be lost unless fire departments make appropriate fundamental changes in fire-fighting tactics involving trusses.*" (Page 8)
> "*NIOSH recommends that fire departments, fire fighters, building owners, and managers take steps to minimize the risk of injury and death to fire fighters during fire fighting operations involving structures with truss floor and roof systems. . . .*" (Page 8)
>
> "*Use defensive strategies whenever trusses have been exposed to fire or structural integrity cannot be verified. Unless life-saving operations are under way, evacuate fire fighters and use an exterior attack.*" (Page 9)

Comments contained in the initial report from the FEMA Firefighter Life Safety Summit held in Tampa on April 14, 2004 also address interior manual fire fighting in buildings both large and small. The following is an excerpt from the report:

> "*The willingness of firefighters to risk their own lives to save others must never be used as an excuse to take unnecessary risks. Firefighters are highly respected for being willing to risk their own lives to save others, but that cannot justify taking unnecessary risks in situations where there is no one to save and nothing to be gained. In too many cases firefighters lose their lives while trying to save property that is already lost or to rescue victims who are already dead. While these efforts are valiant, they are also futile. Individual firefighters who take unnecessary risks, or fail to follow standard safety practices, endanger their own lives as well as the lives of other fire fighters who are depending on them or who might have to try to rescue them.*"

Based upon the excerpts from NIOSH 2005-132 and the FEMA Firefighter Life Safety Summit above, it can be concluded that interior manual firefighting operations are no longer recommended in buildings with unprotected (non-rated) roof construction in the event the sprinkler system protecting the building is impaired and fails to discharge water. It can also be concluded that sending firefighters to the roof to open unopened automatic roof vents in buildings with unprotected (non-rated) roof construction is not recommended.

To summarize, fire testing conducted at Underwriters Laboratories in 1997 and 1998 determined that automatic roof vents will not automatically open in sprinklered buildings (if the sprinkler protection is effective or marginally effective in controlling the fire) and NIOSH 2005-132 recommends against interior manual firefighting in buildings with unprotected (non-rated) roof construction where the sprinkler protection is impaired and fails to discharge water. In other words, the two basic reasons why the UFC ad hoc committee on high-piled storage recommended that the installation of roof vents be mandated, to assist interior manual firefighting operations and to reduce heat and smoke damage, are no longer valid. Given this, the need to continue to mandate the installation of automatic roof vents is certainly questionable.

Two other issues which the code changes committee for the Fire Code requested to be addressed in the last code change cycle are fire extinguishment and occupant safety in large single-story buildings. The issue of fire extinguishment in large single-story buildings is addressed in two excerpts from NFPA 13:

> **"*Sprinkler protection installed as required in this standard is expected to protect the building occupancy without supplemental fire department activity.*"**
>
> **"*During the testing program, the installed automatic extinguishing system was capable of controlling the fire and reducing all temperatures to ambient within 30 minutes of ignition.*"**

Given the above, sprinkler protection which is properly designed, installed and maintained is capable of doing the firefighting in large manufacturing and storage buildings in 30 minutes or less. Fire fighters only need to support the sprinkler system by supplying the fire department connection. (It should be noted that no fire fighter fatalities occurred in buildings which were protected throughout by a sprinkler system in either 2005 or 2006.)

With respect to the occupant fire safety issue, large single-story storage and industrial buildings protected by a sprinkler system are extremely "safe" buildings. While fire fatalities have occurred in these types of facilities, the fatalities are typically due to either occupants being intimate with the fire source or due to explosions. Once again, the admonition from the Firefighter Life Safety Summit quoted above should be considered.

The code change proposal substantially modifies the provisions contained in Section 910. In buildings protected by a sprinkler system, five design options for providing (post-fire) ventilation for use by the fire service are provided. It is specifically intended that all five of these options be used after fire control and extinguishment by the sprinkler system. This proposal retains the requirement to provide automatic roof vents as previously required for buildings which are not protected by a sprinkler system.

The proposal for four new design options to provide ventilation for the building is based upon the fact that it is highly unlikely that automatic smoke and heat vents will operate in a building provided with sprinkler protection. Hence, automatic smoke and heat vents will actually function in the same manner as manually-operated roof vents.

The option to provide a mechanical smoke exhaust system is based upon the present provisions for such systems already included in section 910, however, the exhaust rate required has been reduced by two-thirds and the protection of the electrical power supply has been reduced from 15 minutes to 5 minutes. The required exhaust rate has been reduced because the efficiency of roof vents after the fire has been extinguished will be

reduced (due to the reduced temperature differential at the vent). The requirements for protection of the power supply for the exhaust fans from high temperatures has been reduced to 5 minutes because sprinkler operation should provide more than adequate protection for the power supply. If the operation of sprinklers can prevent automatic smoke and heat vents from opening, then the operation of sprinklers should provide more than adequate protection for a minimally protected power supply.

The other two options to provide post-fire ventilation consist of exterior wall openings. Again, the standard by which the effectiveness of exterior wall openings should be measured is the effectiveness of roof vents after the fire has been controlled and extinguished. Given that the entire building will be cooled to ambient temperatures after the operation of the sprinkler system, roof venting will not be a very efficient method of ventilating the building. The effectiveness of exterior wall openings to provide ventilation should be judged based upon the level of effectiveness provided by roof vents.

For over 20 years, owners of large warehouses and industrial buildings in the United States have been required by building and fire codes to provide a highly ineffective means of providing fire protection. Adoption of this code change will finally allow building owners to provide building fire protection based upon good fire protection practice, rather than fire protection practice based on myth. It is unfortunate that previous proposals to delete the requirement for roof vents and draft curtains were not approved due to a lack of understanding by the fire service on how roof vents function in sprinklered buildings. Over the years, billions of dollars have been wasted on providing automatic roof vents and draft curtains in sprinklered buildings. This is an excellent example of what can happen when code provisions are developed based upon emotion, rather than utilizing an engineering approach to building fire protection.

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5. "Firefighter Life Safety Summit Initial Report", National Fallen Firefighters Foundation and United States Fire Administration, April 14, 2004. http://www.firehero.org/s567/images/Initial_Summit_Report.pdf
6. Standard on Sprinkler Systems (NFPA 13), National Fire Protection Association.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F201–07/08
912.2.1 (IBC [F] 912.2.1)

Proponent: Tom Lariviere, Fire Department, Madison, MS, representing Joint Fire Service Review Committee

Revise as follows:

912.2.1 (IBC [F] 912.2.1) Visible location. Fire department connections shall be located on the street side of buildings, fully visible and recognizable from the street or nearest point of fire department vehicle access or as otherwise approved by the fire ~~code official~~ chief.

Reason: Item F132-06/07, Section 912.2 received a lengthy debate and committee modification which subsequently received membership approval at the final action hearings in NY. The final revision to IFC 912.2 requires that the FDC is located as required by the fire chief and reads as follows:

> **912.2 Location.** With respect to hydrants, driveways, buildings and landscaping, fire department connections shall be so located that fire apparatus and hose connected to supply the system will not obstruct access to the buildings for other fire apparatus. The location of fire department connections shall be approved by the fire chief.

The proposed revision to IFC 912.2.1 merely correlates with the revision to IFC 912.2 and eliminates conflict between the two sections.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F202–07/08
912.4 (IBC [F] 912.4)

Proponent: Tom Lariviere, Fire Department, Madison, MS, representing Joint Fire Service Review Committee

Revise as follows:

912.4 (IBC [F] 912.4) Signs. An ~~metal~~ approved permanent sign with ~~raised~~ letters at least 1 inch (25 mm) in size shall be mounted on ~~all~~ new and existing fire department connections serving automatic sprinklers, standpipes or fire pump connections. Such signs shall read: AUTOMATIC SPRINKLERS or STANDPIPES or TEST CONNECTION or a combination thereof as applicable. Where the fire department connection does not serve the entire building, a sign shall be provided indicating the portions of the building served.

Reason: Many sprinkler and standpipe systems where installed prior to current standards. Furthermore, standpipe systems are currently allowed to be manual or automatic in non high-rise buildings as well as many buildings have partial sprinkler or standpipe systems.

The purpose of the sign is to provide the responding firefighters with the correct information on which portions of a building are served by the fire department connection. Many buildings include multiple sets of fire department connections which are not interconnected. Some examples include:

1. Separate connections for the building sprinkler system and the dry standpipe system in open parking structures
2. Rehabilitated buildings where a sprinkler system is only installed on certain floors
3. A high-rise building constructed prior to the adoption of a building code that has a manual wet system

Signs are also required in NFPA 14, and this proposal will allow the raised letter sign to be provided as indicated in NFPA 14 or provide another sign. Many departments are requiring other signs which are more descriptive and provide more information than the minimal sign required in NFPA 14.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F203–07/08
913.2.1 (New) [IBC 913.2.1 (New)]

Proponent: Phillip Brazil, PE, Reid Middleton, Inc., representing himself

1. (IFC) Add new text as follows:

913.2 Protection against interruption of service. The fire pump, driver, and controller shall be protected in accordance with NFPA 20 against possible interruption of service through damage caused by explosion, fire, flood, earthquake, rodents, insects, windstorm, freezing, vandalism and other adverse conditions.

913.2.1 Protection of fire pump rooms. Rooms where fire pumps are located shall be separated from all other areas of the building in accordance with the *International Building Code*.

2. (IBC) Add new text as follows:

[F] 913.2 [Supp] Protection against interruption of service. The fire pump, driver, and controller shall be protected in accordance with NFPA 20 against possible interruption of service through damage caused by explosion, fire, flood, earthquake, rodents, insects, windstorm, freezing, vandalism and other adverse conditions.

[F] 913.2.1 Protection of fire pump rooms. Fire pumps shall be located in rooms that are separated from all other areas of the building by 2-hour fire barriers constructed in accordance with Section 706 or 2-hour horizontal assemblies constructed in accordance with Section 711, or both.

Exceptions:

1. In other than high-rise buildings, separation by 1-hour fire barriers constructed in accordance with Section 706 or 1-hour horizontal assemblies constructed in accordance with Section 711, or both, shall be permitted in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2.
2. Separation is not required for fire pumps physically separated in accordance with NFPA 20.

Reason: The Standard for the Installation of Stationary Pumps for Fire Protection, NFPA 20, specifies protection for indoor fire pumps by means of physical or fire separation. I assume the 2007 edition of NFPA 20 will be the edition that is referenced in the 2009 IBC and IFC. Section 5.12.1.1 of NFPA 20 specifies physical separation or protection by fire-rated construction. I interpret "fire-rated construction" to be a reference to separation by a fire barrier, horizontal assembly, or both. Section 5.12.1.1.1 specifies a 2-hour fire-resistance rating for the separation in high-rise buildings but is silent on the physical separation distance. Table 5.12.1.1.2 specifies the physical separation distances and fire-resistance ratings for nonhigh-rise buildings. A 2-hour fire-resistance rating for the separation is specified except for fully sprinklered buildings and pump rooms/houses (i.e., equipped throughout with an automatic sprinkler system complying with NFPA 13 or NFPA 13R). A minimum physical separation distance of 50 feet is specified in all cases and, presumably, would apply when physical separation is utilized in a high-rise building.

By referencing NFPA 20 in the IBC, the physical or fire separation specified in Section 5.12.1.1 of NFPA 20 becomes a construction requirement. The purpose of this proposal is to specify the fire separation as a requirement in the IBC so that designers and building officials are made aware of it. The proposed language will also clarify what is required. The reference to separation by "fire-rated construction" in NFPA 20 does not make it clear what is required for protection of the separating walls and horizontal assemblies at openings, penetrations, joints, ducts and air transfer openings. It is also silent on requirements for continuity, where one or more of the separating walls is an exterior wall, and where one of the horizontal assemblies is a roof assembly. Specifying fire barriers and horizontal assemblies makes it clear what is required by virtue of their provisions in Sections 706 and 711, respectively.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F204–07/08

915 (New), 902.1 (New) [IBC [F] 913 (New), 902.1 (New)]

Proponent: Scott L. Poster, Fire Department, Los Angeles County, CA

1. Add new section as follows:

SECTION 915 (IBC [F] 913)
PUBLIC SAFETY RADIO AMPLIFICATION SYSTEMS

915.1 General. The purpose of this section is to provide a regulatory frame work for the purpose of providing effective radio systems coverage for police and fire emergency services. No person shall maintain, own, erect, or construct, any building or structure or any part thereof, or cause the same to be done which fails to support adequate radio coverage for emergency service workers, including but not limited to firefighters, sheriffs, and local police officers.

Exceptions. This section shall not apply to the following:

1. Existing structures
2. Elevators
3. Group R occupancies
4. Structures that are three stories or less in height without subterranean storage or parking
5. Residential structures of Type V construction four stories or less in height without subterranean storage or parking

915.2. Public safety radio amplification systems. New buildings and structures of all occupancy groups that cannot support the required level of radio coverage shall be equipped with either of the following public safety radio amplification systems in order to achieve the required level of radio coverage:

1. A radiating cable system, or
2. An internal antenna system with or without FCC accepted bi-directional UHF or VHF amplifiers.

Where any part of the installed system or systems contains an electrically powered component, the system shall be capable of operating on an independent battery or generator system for a period of not less than least twelve (12) hours without external power input. The battery system shall automatically charge in the presence of an external power input.

Exception: Where buildings three stories or less in height include subterranean storage or parking, the provisions of this section shall apply only to the subterranean areas.

915.3 Testing procedures. Tests of radio coverage systems shall be conducted pursuant to the specifications in the local agency Public Safety Radio System Coverage Specifications and in accordance with Sections 915.3.1 and 915.3.2.

915.3.1 Initial tests. Initial tests shall be performed by FCC-certified technicians in accordance with test standards listed in the local agency Public Safety Radio System Coverage Specifications.

915.3.2 Annual Tests. Annual tests shall be performed by the local agency having jurisdiction, the local fire department personnel, or their agent in accordance with the test standards listed in the local agency Public Safety Radio System Coverage Specifications.

2. Add new definitions as follows:

902.1 Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

PUBLIC SAFETY RADIO SYSTEM COVERAGE SPECIFICATIONS. Specifications designed to provide optimum coverage and radio effectiveness within buildings and structures.

FCC-CERTIFIED TECHNICIAN. An individual who is qualified to review design plans and perform tests in affected structures to measure the Public Safety Radio System Coverage Specifications.

PUBLIC SAFETY RADIO AMPLIFICATION SYSTEM. A device that receives an incoming signal, amplifies it and retransmits it on the same frequency. Such devices are used to improve communications in locations within the normal coverage area of a radio system where the signal is blocked or shielded due to natural terrain or man-made obstacles.

Reason: Bi-directional radio amplifier systems will improve fire & life safety protection for building occupants and firefighter personnel. Jurisdictional Fire and Police services use portable radios as their primary communications device, with systems coverage being expected wherever handheld radios may be carried (i.e. basements, high rise buildings, etc.) Reliable wireless communications is an absolute necessity today. Radios are lifelines to first-responders. The public expects first responders to provide their services no matter where the citizen may be; on public and private property alike. The use of these amplification or signal booster systems is critical to the welfare of public safety personnel in the performance of their duties. The installation of such booster signal systems could potentially increase the value of the properties, improving property attractiveness to potential tenants, and can provide insurance savings to the owners.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F205–07/08
1027.1

Proponent: Tom Lariviere, Fire Department, Madison, MS, representing Joint Fire Service Review Committee

Revise as follows:

1027.1 General. Means of egress in existing buildings shall comply with ~~Sections 1003 through 1026, except as amended in Section 1027.~~ the requirements of Section 1027 and the building code that applied at the time of construction. Where these provisions conflict, the most restrictive provision shall apply.

For existing buildings that were not required to comply with a building code at the time of construction, such buildings shall comply with the requirements of Section 1027 and, in addition, shall have a life safety evaluation prepared, consistent with the requirements of Section 104.7.2. The life safety evaluation shall identify any changes to the means of egress that are necessary to provide safe egress to occupants and shall be subject to review and approval by the fire code official. The building shall be modified to comply with the recommendations set forth in the approved evaluation.

~~**Exception:** Mean of egress conforming to the requirements of the building code under which theywere constructed shall be considered as complying means of egress if, in the opinion of the fire code official, they do not constitute a distinct hazard to life~~.

Reason: Section 1027 is intended to provide a minimum level of safety in existing buildings. There are two separate issues that this proposal will correct.

First, the wording in the charging section indicates that an existing building needs to comply with all of Chapter 10 unless modified in Section 1027. This is backwards from the manner in which this should be applied, unless you want every building to comply with all of the egress code changes. For example, Section 1008.1.9 recently changed to require panic hardware on exit doors and exit access doors serving A and E over 50 occupants and all H occupancies. Panic hardware is not addressed in Section 1027, therefore the requirements in 1008.1.9 would apply to all existing occupancies. Additionally, Section 1003.2 recently changed to require a minimum ceiling height of 7'6". An exception to this section is not included in Section 1027, therefore this ceiling height requirement would apply to all existing occupancies. This was not the intent of that code change, therefore, this revision is proposed to the charging section to revise the method of application.

This is not the manner in which it was anticipated that Section 1027 would be applied. The intent was to have the building comply with the code under which it was constructed, and then there are some specific requirements in Section 1027 that would bring SOME of the egress components up to a minimum level of safety. These revisions will provide a consistent method of application of the egress requirements to existing buildings and establish a minimum level of safety in all existing structures.

Second, the provisions in this section are only intended to apply to existing buildings and regulate the egress components which are considered necessary to provide a minimum level for adequate evacuation. This section should not still be subject to the necessity of the code official making a determination of distinct hazard. Therefore, the exception is deleted.

When a building was constructed without compliance with a building code, then the building must comply with the requirements in Section 1027 and must also have an evaluation completed to determine if other modifications are necessary to provide a minimum level of egress safety.

Cost Impact: The code change proposal will not increase the cost of construction.

Analysis: This proposal is based on Section 1027 – Means of Egress for Existing Buildings of the IFC 2006 edition.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F206–07/08
1027.5

Proponent: Tom Lariviere, Fire Department, Madison, MS, representing Joint Fire Service Review Committee

Revise as follows:

1027.5 Illumination emergency power. The power supply for means of egress illumination shall normally be provided by the premises' electrical supply. In the event of power supply failure, illumination shall be automatically provided from an emergency system for the following occupancies where such occupancies require two or more means of egress:

1. Group A having 50 or more occupants.

   Exception: Assembly occupancies used exclusively as a place of worship and having an occupant load of less than 300.

2. Group B buildings three or more stories in height, buildings with 100 or more occupants above or below the level of exit discharge, or buildings with 1,000 or more total occupants.
3. Group E in interior stairs, corridors, windowless areas with student occupancy, shops and laboratories.
4. Group F having more than 100 occupants.

   Exception: Buildings used only during daylight hours which are provided with windows for natural light in accordance with the *International Building Code*.

5. Group I.
6. Group M.

   Exception: Buildings less than 3,000 square feet (279 m^2) in gross sales area on one story only, excluding mezzanines.

7. Group R-1.

   Exception: Where each sleeping unit has direct access to the outside of the building at grade.

8. Group R-2.

   Exception: Where each dwelling unit or sleeping unit has direct access to the outside of the building at grade.

9. Group R-4.

   Exception: Where each sleeping unit has direct access to the outside of the building at ground level.

1027.5.1 Emergency power duration and installation. In other than Group I-2, the emergency power system shall provide power for not less than 60 minutes and consist of storage batteries, unit equipment or an on-site generator. In Group I-2, the emergency power system shall provide power for not less than 90 minutes and consist of storage batteries, unit equipment or an on-site generator. The installation of the emergency power system shall be in accordance with Section 604.

Reason: Group I-2 occupancies contain patients who need additional time to evacuate. In many situations the patients are incapable of evacuation on their own and therefore become dependent on someone else to evacuate them.
This proposal takes that additional time into account by extending the duration of the secondary power supply for the emergency exitway lighting. This additional 30 minutes provides time to allow for staff to evacuate a patient on a gurney and then return to assist in the evacuation of the next patient. By providing this additional time, it ensures that the lighting system will be effective during the evacuation process.

This proposal will correlate the IFC with Federal regulations for these facilities.

Cost Impact: The code change proposal will increase the cost of construction.

Analysis: This proposal is based on Section 1027 – Means of Egress for Existing Buildings of the IFC 2006 edition.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F207–07/08
1027.17, 1027.17.1 (New), 1027.17.2 (New)

Proponent: Tom Lariviere, Fire Department, Madison, MS, representing Joint Fire Service Review Committee

Revise as follows:

1027.17 Corridors. Corridors in existing buildings shall comply with the requirements in 1027.17.1 and 1027.17.2.

1027.17.1 Corridors in other than Group I-2. In other than Group I-2 occupancies, ~~Corridors~~ corridors serving an occupant load greater than 30 and the openings therein shall provide an effective barrier to resist the movement of smoke. Transoms, louvers, doors and other openings shall be closed or be self-closing.

Exceptions:

1. Corridors in occupancies other than in Group H, which are equipped throughout with an approved automatic sprinkler system.
2. ~~Patient room doors in corridors in occupancies in Group I-2 where smoke barriers are provided in accordance with the International Building Code.~~
3. ~~3.~~ Corridors in occupancies in Group E where each room utilized for instruction or assembly has at least one-half of the required means of egress doors opening directly to the exterior of the building at ground level.
4. ~~4.~~ 3. Corridors that are in accordance with the *International Building Code*.

1027.17.2 Corridors in Group I-2. In Group I-2 occupancies, corridors and the openings therein shall provide an effective barrier to resist the movement of smoke. Transoms, louvers, doors and other openings shall be closed or be self-closing.

Exceptions:

1. Patient room doors in corridors are not required to be self-closing where smoke barriers are provided in accordance with the *International Building Code*.
2. Gift shops less than 500 square feet (46.5 m^2) in area shall be allowed to be open to the corridor provided the gift shop and storage areas are sprinklered in accordance with Section 903.
3. Spaces for doctors' and nurses' charting, communications and related clerical areas area allowed to be open to the corridor, when such spaces are constructed as required for corridors.
4. Areas wherein mental health patients who are not capable of self-preservation are housed, or group meeting or multipurpose therapeutic spaces other than incidental use areas as defined in IBC Section 508.2, under continuous supervision by facility staff, shall be allowed to be open to the corridor, where the following criteria are met:
   - 4.1. Each area does not exceed 1,500 square feet (140 m^2).
   - 4.2. The area is located to permit supervision by the facility staff.
   - 4.3. The area is arranged so as not to obstruct any access to the required exits.
   - 4.4. The area is equipped with an automatic fire detection system installed in accordance with Section 907.3.2.2 (Supp).
   - 4.5. Not more than one such space is permitted in any one smoke compartment.
5. Waiting areas and similar spaces constructed as required for corridors shall be permitted to be open to a corridor, only where all of the following criteria are met:

5.1. The spaces are not occupied for patient sleeping units, treatment rooms, hazardous or incidental use areas as defined in IBC Section 508.2.

5.2. The open space is protected by an automatic fire detection system installed in accordance with Section 907.3.2.2 (Supp).

5.3. The corridors into which the spaces open, in the same smoke compartment, are protected by an automatic fire detection system in accordance with Section 907, or the smoke compartment in which the spaces are located is equipped throughout with quick-response sprinklers in accordance with Section 903.3.2.

5.4. The space is arranged so as not to obstruct access to the required exits.

(Renumber subsequent sections)

Reason: This proposal applies only to existing Group I-2 occupancies. It will require that all corridors in existing I-2 occupancies be constructed as a smoke barrier. This requirement will resist the passage of smoke and maintain a higher level of safety in the I-2 occupancies.

According to a study completed in 2005 for the National Fire Protection Association, Kimberly D. Rohr and John R. Hall, Jr., of the Association's Fire Analysis and Research Division, the average number of civilian deaths in health care facilities for the aged or sick is 4.9 per one thousand fires. The increased level of protection for the corridor will allow more time for the staff to relocate and evacuate patients while the atmosphere is still tenable.

The requirements come from the IBC Section 407.2, but are not as restrictive as those for new construction. These provisions will provide for an increased level of life safety to protect the patients.

Cost Impact: The code change proposal will increase the cost of construction.

Analysis: This proposal is based on Section 1027 – Means of Egress for Existing Buildings of the IFC 2006 edition.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

F208–07/08
1027.17.2 (New), 1002.1 (New)

Proponent: John Williams, State of WA, Department of Health, Construction Review Services

Add new text as follows:

1027.17.2 Group I-2 corridor width. A minimum effective corridor width of 6 feet (1829 mm) shall be maintained in existing Group I-2 occupancies.

(Renumber subsequent section)

1002.1 Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

EFFECTIVE CORRIDOR WIDTH. The usable width of an existing Group I-2 corridor at any point in time. Effective width is equal to the clear width minus the width occupied by approved equipment essential to the function of the occupancy, including but not limited to, crash carts or resuscitation carts. Approved equipment shall be uniformly located on one side of the corridor.

Reason: The purpose of this code change is to clarify the code. This code section would provide additional resources for the fire code official when determining what constitutes a “distinct hazard to life” . Healthcare occupancies rely on immediate access to emergency medical equipment. Currently, this is a collection of equipment, drugs and resuscitation devices stored on a wheeled crash cart that can be readily relocated in an emergency. This is usually planned for in new facilities, however, older existing facilities may have been built before these practices were common. Access to this equipment is important on a common reoccurring basis. Due to the frequency of need, not having crash cart immediately accessible creates more of a hazard than reducing the usable width of a corridor. Seconds count when accessing this equipment to revive a patient.

Corridor width in hospitals are quite large to accommodate two way bed movement and gurney travel. However, in a evacuation scenario there is no need for two way bed traffic. All beds are moving in the same direction. A 6 foot effective width provide sufficient space to permit bed and gurney traffic, including turning radii for beds into doorways off of the corridor. If a bed needs to reverse direction, it does not need to be turned around – you just push it in a different direction.

Practically, the overall clear width required when the building is constructed is maintained. If these carts become a nuisance during everyday bed movement, the facility will remove them of their own accord. The definition further restricts the location of these carts to one side of the corridor, so that the usable width is continuous.

Cost Impact: The code change proposal will not increase the cost of construction.

Analysis: This proposal is based on Section 1027 – Means of Egress for Existing Buildings of the IFC 2006 edition.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

F209–07/08
Table 1027.17.2

Proponent: William E. Koffel, Koffel Associates, Inc.

Revise table as follows:

TABLE 1027.17.2
COMMON PATH, DEAD-END AND TRAVEL DISTANCE LIMITS (by occupancy)

OCCUPANCY	COMMON PATH LIMIT		DEAD-END LIMIT		TRAVEL DISTANCE LIMIT	
	Unsprinklered (feet)	Sprinklered (feet)	Unsprinklered (feet)	Sprinklered (feet)	Unsprinklered (feet)	Sprinklered (feet)
Group E	75	75	20	~~20~~ 50	200	250
Group I-1	75	75	20	~~20~~ 50	200	250
Group U	75	75	20	~~20~~ 50	200	250

(Portions of table and footnotes not shown remain unchanged)

Reason: The allowance of 50 foot dead-end corridors in fully sprinkler protected Group E, Group I-1, and Group U buildings is consistent with other national codes, including the 2006 Edition of NFPA 101 Table A.7.6, the 2006 Edition of NFPA 5000, the 2006 Edition of the International Existing Building Code (2006 IEBC), and Section 1017.3 of the 2007 Supplement to the 2006 International Fire Code (IFC) and the 2006 International Building Code (IBC). In other than Group A and H occupancies, the 2006 IEBC permits newly created dead-end corridors of 50 feet on floors protected with an automatic sprinkler system in accordance with the 2006 International Building Code (IBC) for Alterations – Level 2 (605.6 exc. 4) and Alterations – Level 3 (705.1). In addition, Section 812.4.1.1 (Means of egress for change in occupancy to higher hazard) of the 2006 IEBC references Section 605.6 for existing dead-end corridors. Further, when the change of occupancy complies with Section 812.3 of the 2006 IEBC, Section 812.4.1.2 (Means of egress for change of use to equal or lower hazard category) of the 2006 IEBC allows existing dead-end corridors no matter what length to remain regardless of the presence of an automatic sprinkler system. Further, because of the 2007 Supplement language to Section 1017.3 of the 2006 IFC, there is now a conflict within the IFC itself for means of egress. The Supplement language for Section 1017.3 of the IFC and for Section 1017.3 of the IBC permits dead-end corridors of 50 feet in Group E, Group I-1, and Group U buildings with an automatic sprinkler system in accordance with Section 903.3.1.1 of both codes, respectively.

Once a new building is given its Use & Occupancy approval, any future work in the building can reference the 2006 IEBC and 2006 IFC requirements. The lack of conformity between the dead-end corridor requirements of the 2006 IFC and the 2006 IEBC creates a conflict when future Alteration level work occurs. Amending Table 1027.17.2 of the 2006 IFC to allow 50 foot dead-end corridors in Group E, Group I-1 and Group U buildings, where the building is protected throughout with an automatic sprinkler system in accordance with NFPA 13 requirements allows for consensus between the IFC, the IBC, and the IEBC.

Group U buildings historically do not have significant occupant loads. Occupant load factors and travel distance limitations are consistent with Group F and S occupancies as indicated in Table 1004.1.1 and Table 1016.1 of the 2006 IFC. Further, Table 1027.17.2 of the 2006 IFC permits 50 foot dead-end corridors for Group F and S occupancies regardless of the presence of an automatic sprinkler system. Group U buildings also tend to be smaller than Group F and S buildings.

No new standard is referenced. Existing national standards are referenced. The code change proposal is meant to bring the IFC into consensus with the 2007 Supplement to the IBC, and other national codes.

Cost Impact: The code change proposal will not increase the cost of construction.

Analysis: This proposal is based on Section 1027 – Means of Egress for Existing Buildings of the IFC 2006 edition.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

F210–07/08
Table 1027.17.2

Proponent: Tom Lariviere, Fire Department, Madison, MS, representing Joint Fire Service Review Committee

Revise table as follows:

TABLE 1027.17.2
COMMON PATH, DEAD-END AND TRAVEL DISTANCE LIMITS (BY OCCUPANCY)

Occupancy	Common Path Limit		Dead-End Limit		Travel Distance Limit	
	Unsprinklered (feet)	Sprinklered (feet)	Unsprinklered (feet)	Sprinklered (feet)	Unsprinklered (feet)	Sprinklered (feet)
Group I-2 (Health Care)	NR[e]	NR[e]	NR	NR	150	200[c]

a. through d. (No change to current text).

e. Any patient sleeping room, or any suite that includes patient sleeping rooms, of more than 1,000 square feet (93 m^2) shall have at least two exit access doors separated by one-third the diagonal.

(Portions of table and footnotes not shown remain unchanged)

Reason: This proposal only addresses existing Group I-2 facilities. For new construction, 2 exit access doors are required within any room or suite exceeding 1,000 square feet. This proposal will require that existing facilities also provide two paths of egress from these larger areas within the I-2 occupancy.

As the rooms expand in size, egress and travel path becomes more critical. This is only compounded more when there a room that is larger than 1,000 square feet and may contain multiple bed-ridden, or confined patients. This will facilitate removing the patients from the room through a 2nd exit access door.

This requirement will establish the minimum acceptable level of safety for egress from these larger patient rooms. The proposal is consistent with federal regulations for these facilities.

Cost Impact: The code change proposal will increase the cost of construction.

Analysis: This proposal is based on Section 1027 – Means of Egress for Existing Buildings of the IFC 2006 edition.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F211–07/08
1027.22 (New)

Proponent: Gary Lewis, City of Summit, NJ, representing ICC Ad-Hoc Committee on Terrorism Resistant Buildings

Add new text as follows:

1027.22 Exit path markings. Existing buildings of Group A ,B, E, I, M, and R-1 having occupied floors located more than 75 feet (22 860mm) above the lowest level of fire department vehicle access shall have exit path markings in accordance with Section 1027 (Supp).

Reason: The membership, at the final hearings of the 2006/2007 code development cycle, overturned the committee action on E84-06/07 with a two-thirds majority vote to include requirements in the IBC and the IFC for luminous exit path markings. The TRB Ad Hoc committee was the original proponent to this code change and it was our intent to make these requirements retroactive for existing buildings. Our intent was not clear in the original proposal, so, at this time, the TRB Ad Hoc committee is proposing to make these requirements applicable to existing buildings.

The proposed new section on exit path markings will require luminescent exit path markings be provided in existing buildings. This proposal will facilitate rapid egress and assist in full building evacuation and is drawn from Recommendations 17 and 18 of the National Institute of Standards and Technology's (NIST) report on the World Trade Center tragedy.

Up to this point, code requirements for high rise buildings were written under the assumption that the building would be evacuated floor by floor. In most instances, in a building with a full suppression system, only the floor where the fire is located and the floors immediately above and below would be evacuated. Acts of terrorism and accidental incidents like power failures have made it necessary to consider design for full building evacuation that is as rapid as possible. This may be made necessary in response to an event within the building or an event outside the building. The proposed code change to require exit path markings is intended to facilitate the most rapid possible full building evacuation.

In the City of New York, after the first bombing of the WTC, requirements were instituted to require exit path markings in vertical exit enclosures in new and existing buildings. This proposal is taken directly from those requirements.

Bibliography:

1. Reference Standard 6-1, Photoluminescent exit path markings as required by Local Law 26 of 2004, New York City Building Code, § 27-383(b)
2. National Institute of Standards and Technology. Final Report of the National Construction Safety Team on the Collapses of the World Trade Center Towers. United States Government Printing Office: Washington, D.C. September 2005.

Cost Impact: The proposal will increase the cost of construction however, the life safety benefit is great.

Analysis: This proposal is based on Section 1027 – Means of Egress for Existing Buildings of the 2006 edition, which will be renumbered to be 1028 in the 2009 edition (due to the addition of new Section 1027 - Exit Path Markings in the 2006/2007 cycle). The reference in this proposal to Section 1027 (Supp) will be to the new Section 1027 in the 2009 edition.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F212–07/08
1028.2

Proponent: John Woestman, The Kellen Company, representing Door Safety Council

Revise as follows:

1028.2 Reliability. Required exit accesses, exits or exit discharges shall be continuously maintained free from obstructions or impediments to full instant use in the case of fire or other emergency when the areas served by such exits are ~~occupied~~ subject to normal use and occupancy. Security devices affecting means of egress shall be subject to approval of the fire code official.

Reason: This proposal clarifies the requirements to ensure emergency escape in the event of a fire or other emergency.

One of the most common violations of the IFC is exits that have impediments to full instant use. For example, it is not unheard of for building managers to "lock in" the night shift custodial crew or the restocking crew with ad-hoc devices which impede full instant use in the event of a fire emergency. Individuals have the same right to emergency egress as those within the building at other times. Custodial work and restocking activities, and other similar activities, should always be considered normal use and occupancy of the building. The unintended consequences of the current language have allowed secondary devices that impede full instant use of exits.

This code change is not intended to result in compromises in building security. This proposal is intended to help ensure security devices affecting the means of egress be subject to approval by the fire code official to enable all individuals in the building to have full instant use of exits in case of fire or other emergency.

The term "occupied" occurs frequently in the IFC and is used in various contexts. Unfortunately, "occupied" is not defined in the IFC. Granted, a definition of "occupied" would not be brief because of the multiple contexts of the use of the term. Without an explicit definition of "occupied" in the code, a common English definition should be the default. However, an outstanding factor of interpretation and compliance may be the use of "occupied" from NFPA 101 which defines a building as occupied "any time it is open for general occupancy, any time it is open to the public, or at any other time it is occupied by more than 10 persons."

Our proposal removes the potentially ambiguous term "occupied" in favor of "subject to normal use and occupancy".

This proposal will clarify the requirement for means of egress maintenance. The IFC text has been the subject of several recent proposals and public comments due to the apparent contradiction in the existing language. The modification addresses committee and stakeholder concerns regarding occupied vs. unoccupied buildings.

Cost Impact: The code change proposal will not increase the cost of construction.

Analysis: This proposal is based on Section 1028 – Maintenance of the Means of Egress of the IFC 2006 edition.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F213–07/08
1028.8 (New)

Proponent: Wayne R. Jewell, Chair, Hazard Abatement in Existing Buildings Committee

Add new text as follows:

1028.8 Unsafe conditions. The following conditions shall be deemed unsafe and shall be replaced or repaired to comply with Section 1003 through 1026, except as amended in Section 1027:

1. The width of a means of egress is reduced such that it inhibits safe passage;
2. Ceiling surfaces have evidence of wear, improper height or deterioration such that they inhibit safe passage;
3. Protruding objects of improper height such that they inhibit safe passage;
4. Floor surfaces that have evidence of wear or deterioration such that they inhibit safe passage;
5. Exit signs and markings that are not functioning or have become dislodged or obstructed;
6. Means of egress illumination that is not functioning or has become dislodged or obstructed;
7. Guards or handrails that have evidence of wear or deterioration such that they inhibit safe passage;
8. Means of egress components, including but not limited to, doors, gates, stairs, ramps and exterior balconies that are not capable of providing safe passage.

Reason: The ICC Board approved the development of new code requirements in the I-Codes which address hazards, such as those from fire, as well as, the development of requirements relative to issues such as hazardous conditions due to structural issues. This would provide code requirements for all disciplines to be used by building owners to bring their existing building stock up to minimum standards and enforcing agencies when performing inspections of existing buildings. The Hazard Abatement of Existing Buildings Committee (HAEB) was formed to develop these requirements.

During this 07/08 cycle, the HAEB committee is proposing several unsafe conditions requirements for inclusion within the text of the existing International Codes, predominately the *International Property Maintenance Code* and the *International Fire Code*.
The purpose of this proposal is to add a new section that is intended to clarify to fire code officials, designers, contractors and property owners the minimum maintenance requirements for all components of the means of egress and if they are not maintained they should be considered unsafe conditions as inadequate means of egress. These unsafe conditions require a fire code official to issue a notice or order as stated by the current language in Section 110.1. That order is requiring corrective actions on the part of the owner, operator, occupant, or other person responsible for the condition or violation. Presence of violations in these portions of a building could represent such significant hazard that their presence makes occupancy of the building or portion there of unsafe. If this were the case it is possible that all or a portion of the building or structure might need to be evacuated as provided by Section 110.2.

During the 06/07 code change hearings it was argued that the provisions outlined above were subjective and unenforceable. Currently there is no basis to determine what Section 110.1.1 declares as inadequate means of egress. The above enumerated conditions do have a basis to be evaluated based on current provision in the IBC and can be determined by a code official. As example:

1. Width of a means of egress should be clearly evident and if it has been narrowed that also should be clearly evident. It is possible that alteration without permit has occurred to such an extent that the narrowing of a corridor, aisle or passageway is not readily evident, but minimum widths are not present or required widths to accommodate the occupant load within the building no longer exist. The width of a means of egress may also be reduced by the placement of furniture or other objects in the required width of the exit path.
2. Minimum ceiling height is clearly stated within the provisions of Section 1003.2. A deteriorating ceiling can be a ceiling that has hanging or loose assemblies could or are likely to fall. These hanging objects could not be low enough to be considered protruding objects. A deteriorated ceiling could allow the corridor to become an element of the ventilation system, Section 1017.4.
3. Limits of what is protruding are identified in various Sections of the code such as 1003.3 and 1008.1.1.1.
4. Floor surfaces are to be level, slip resistant and securely attached. Those that don't meet those provisions are deteriorated and create unsafe conditions by creating a tripping hazard.
5. The failure of bulbs or batteries that result in exit signs not being illuminated removes an essential notification of exit direction for occupants. Certain older signs also include arrow inserts for direction that can be dislodged.
6. See item 5.
7. Loose guards and handrails do not provide the intended level of support for occupants. Deterioration may be such that occupants would avoid grasping railings for support.

This sampling of code provisions that support this listing should be evidence that the provisions are not subjective and reflect requirements of the code without creating a laundry list of code sections. Further these provisions provide a objective basis for the determination of what is or isn't "inadequate means of egress" as stated in Section 110.1.1 Unsafe Conditions.

Cost Impact: The code change proposal will not increase the cost of construction.

Analysis: This proposal is based on Section 1028 – Maintenance of the Means of Egress of the IFC 2006 edition.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F214– 07/08
1206.2, 1206.3, 1206.4

Proponent: James E. Schulte, R.R. Street & Co., Inc.

Revise as follows:

1206.2 ~~Type~~ Class I solvents. The maximum quantity of ~~Type~~ Class I solvents permitted at any work station shall be 1 gallon (4 L). Class I solvents used for spotting or pre-spotting shall be stored in and dispensed from approved safety cans or ~~in~~ sealed DOTn-approved metal shipping containers of not more than 1-gallon (4 L) capacity. ~~Dispensing shall be from approved safety cans.~~

Exception: Class I solvents used for spotting or pre-spotting applied from approved plastic containers of not more than 1 pint (0.5 L) capacity.

1206.3 ~~Type~~ Class II and III solvents. Scouring, brushing, and spotting and pretreating shall be permitted to be conducted with Class II or III solvents. The maximum quantity of ~~Type~~ Class II or III solvents permitted at any work station shall be 1 gallon (4 L). In other than a Group H-2 occupancy, the aggregate quantities of solvents shall not exceed the maximum allowable quantity per control area for use-open system.

Exception: Class I solvents shall be permitted to be used for spotting or pre-spotting where applied from approved plastic containers of not more than 1 pint (0.5 L) capacity.

1206.4 Type IV systems. Flammable and combustible liquids used for spotting operations shall be stored in approved safety cans or in sealed DOTn-approved ~~metal~~ shipping containers of not more than 1 gallon (4 L) in capacity. ~~Dispensing shall be from approved safety cans.~~ Aggregate amounts shall not exceed 10 gallons (38 L).

Reason: The purpose of the change to Section 1206.2 is to revise outdated material. The proposed wording is intended to recognize the wide use of DOT-approved plastic containers to ship, store and dispense chemicals used in dry cleaning plants, including spotting chemicals. Use of these containers is permitted by OSHA for the storage of flammable and combustible liquids under conditions described in OSHA Directive STD 01-05-014. Equivalent changes have been accepted in principle for publication in NFPA 32.

The purpose of the exception proposed for 1206.3 is to make this section consistent with section 1206.2, which allows the use of Class I solvents for spotting and pre-spotting.

The purpose of the change to section 1206.4 is to make this section consistent with section 1206.2.

The purpose of changing "Type" to "Class" when referring to solvents is to maintain consistency with the terminology in section 1203.2, i.e., "Type" refers to dry cleaning "systems" and "Class" refers to dry cleaning "solvents".

Bibliography: 29 CFR 1910.106 Flammable and combustible liquids; OSHA Directive STD-01-05-014; NFPA 32 Report on Proposals A2006.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F215–07/08
1208.2

Proponent: James E. Schulte, R.R. Street & Co., Inc.

Revise as follows:

1208.2 Automatic sprinkler system. An automatic sprinkler system shall be installed in accordance with Section 903.3.1.1 throughout dry cleaning plants containing Type II, Type III-A or Type III-B dry cleaning systems.

Exceptions:

1. An automatic sprinkler system shall not be required in Type III-A dry cleaning plants where the aggregate quantity of Class III-A solvent in dry cleaning machines and storage does not exceed 330 gal (1250 L) and dry cleaning machines are equipped with a feature that will accomplish any one of the following:

   1.1. Prevent oxygen concentrations from reaching 8 percent or more by volume.
   1.2. Keep the temperature of the solvent at least 30ºF (16.7ºC) below the flash point.
   1.3. Maintain the solvent vapor concentration at a level lower than 25 percent of the lower explosive limit (LEL).
   1.4. Utilize equipment approved for use in Class I, Division 2 hazardous locations in accordance with NFPA 70.
   1.5. Utilize an integrated automatic fire-extinguishing system complying with Section 4.6 of NFPA 32.

2. An automatic sprinkler system shall not be required in Type III-B dry cleaning plants where the aggregate quantity of Class III-B solvent in dry cleaning machines and storage does not exceed 3300 gal (12,490 L).

Reason: The purpose of this proposed code change is eliminate the overly restrictive requirements for automatic sprinkler systems in dry cleaning facilities using modern dry cleaning equipment. Modern Type IIIA dry cleaning machines have intrinsic safety features that prevent fires from starting within the dry cleaning machine. It is preferable to prevent fires from starting in the first place, rather than extinguishing ones that have already started. NFPA 32 already allows these safety features to be used in lieu of automatic sprinkler systems.

Bibliography: NFPA 32

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F216–07/08
1414.1

Proponent: Anthony C. Apfelbeck, City of Altamonte Springs, FL

Revise as follows:

1414.1 Completion before occupancy. In buildings where an automatic sprinkler system is required by this code or the *International Building Code*, it shall be unlawful to occupy any portion of a building or structure until the automatic sprinkler system installation has been tested and approved~~, except as provided in Section 105.3.3~~.

Reason: The intent of the "except as provided in Section 105.3.3" language in 1414.1 is unclear. Section 105.3.3 requires a permit prior to occupancy and states:

105.3.3 Occupancy prohibited before approval. The building or structure shall not be occupied prior to the fire code official issuing a permit that indicates that applicable provisions of this code have been met.

There does not appear to be any condition where a permit to occupy would be, or should be, granted prior to a required fire sprinkler system being tested and approved. Section 105.3.3 does not authorize the action that the exception language in 1414.1 appears to contemplate.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F217–07/08
1501.2 (New)

Proponents: Lynne M. Kilpatrick, Fire Department, Seattle, WA, representing Washington State Association of Fire Marshals; Tom Lariviere, Fire Department, Madison, MS, representing Joint Fire Service Review Committee

Add new text as follows:

1501.2 Nonapplicability. This chapter shall not apply to spray finishing utilizing flammable or combustible liquids which do not sustain combustion, including:

1. Liquids that have no fire point when tested in accordance with ASTM D 92.
2. Liquids with a flashpoint greater than 95°F (35°C) in a water-miscible solution or dispersion with a water and inert (noncombustible) solids content of more than 80 percent by weight.

Reason: There are a variety of water-based paint products available on the market today that have a flash point and meet the definition of a flammable or combustible liquid but cannot sustain combustion due to the sheer quantity of inert solids and water present in their composition. Many consumer latex paints fall into this category. Chapter 15 currently regulates spray finishing of any material defined as a flammable or combustible liquid by requiring that the spraying operation be confined to either a spray booth or an approved spray room. This proposed code change clarifies for the reader that liquids that do not have a fire point are not regulated by Chapter 15. This proposal also exempts water-miscible liquids with a flash point over 95ºF (35ºC) having an aggregate water and inert solid content by weight of at least 80 percent from regulation under Chapter 15. Materials meeting these same criteria are currently exempted from the storage and use requirements in Chapter 34 (see Sec. 3401.2) but it has been unclear to code users, including jurisdictions having authority, whether the same two exemptions should apply when these products are used in spray finishing operations. Currently it is common practice to apply these water-based paint products for interior and exterior finishing without additional controls. This proposal provides consistency between the real world use of these products and the regulatory requirements by clarifying when Chapter 15 does not apply.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F218–07/08
1801.4

Proponent: Sheila Lee, City of Santa Clara, CA, representing International Code Council, Peninsula, Monterey and East Bay Chapters

Revise as follows:

1801.4. Existing buildings and existing fabrication areas. Alterations or additions to existing buildings and existing fabrication areas shall comply with this chapter. ~~,except that transportation and handling of HPM in exit access corridors and exit enclosures shall be allowed when in compliance with Section 1805.3.2 and the International Building Code.~~

Reason: The existing requirement is in conflict with the provision in the building code that states "Portions of the structure not altered and not affected by the alteration are not required to comply with the code requirements for a new structure." Besides, this is not a practical or economically feasible regulation for jurisdictions in the Silicon Valley to enforce on existing semiconductor facilities.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F219–07/08
1802.1 (IBC [F] 415.2), 2703.2.2.1

Proponent: Doug Hall, Fire Department, City of Westminster, CO, representing Fire Marshal's Association of Colorado

Revise as follows:

SECTION 1802
DEFINITIONS

1802.1 (IBC [F] 415.2) Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

HAZARDOUS PRODUCTION MATERIAL (HPM). A solid, liquid or gas associated with semiconductor manufacturing that has a degree-of-hazard rating in health, flammability or ~~reactivity~~ instability of Class 3 or 4 as ranked by NFPA 704 and which is used directly in research, laboratory or production processes which have as their end product materials that are not hazardous.

2703.2.2.1 Design and construction. Piping, tubing, valves, fittings and related components used for hazardous materials shall be in accordance with the following:

1. Piping, tubing, valves, fittings and related components shall be designed and fabricated from materials that are compatible with the material to be contained and shall be of adequate strength and durability to withstand the pressure, structural and seismic stress and exposure to which they are subject.
2. Piping and tubing shall be identified in accordance with ASME A13.1 to indicate the material conveyed.
3. Readily accessible manual valves or automatic remotely activated fail-safe emergency shutoff valves shall be installed on supply piping and tubing at the following locations:
   3.1. The point of use.
   3.2. The tank, cylinder or bulk source.
4. Manual emergency shutoff valves and controls for remotely activated emergency shutoff valves shall be identified and the location shall be clearly visible, accessible and indicated by means of a sign.
5. Backflow prevention or check valves shall be provided when the backflow of hazardous materials could create a hazardous condition or cause the unauthorized discharge of hazardous materials.
6. Where gases or liquids having a hazard ranking of:

   Health hazard Class 3 or 4
   Flammability Class 4
   ~~Reactivity~~ Instability Class 3 or 4

in accordance with NFPA 704 are carried in pressurized piping above 15 pounds per square inch gauge (psig) (103 kPa), an approved means of leak detection and emergency shutoff or excess flow control shall be provided. Where the piping originates from within a hazardous material storage room or area, the excess flow control shall be located within the storage room or area. Where the piping originates from a bulk source, the excess flow control shall be located as close to the bulk source as practical.

Exceptions:

1. Piping for inlet connections designed to prevent backflow.
2. Piping for pressure relief devices.

Reason: NFPA 704 no longer recognizes the "Reactivity" label for the applicable classification of hazardous materials. Revising the classification to the current 2007 edition of NFPA 704 terminology reflects exactly what the IFC standards reference states. The use of the term "reactivity" misinforms the intent of this specific classification. Appropriate use of the term "instability" reflects the intent of the current NFPA 704 classification system for fire personnel and industrial emergency responders.

"Reactivity" has been erroneously taught to thousands of emergency responders and private industry users that the numeric rating system quantified the degree of reactivity a chemical might have with other chemicals, i.e. how reactive a chemical is to something else.

Instability directly correlates to the degree of intrinsic susceptibility of materials to release energy when exposed to thermal or mechanical shock and/or elevated temperatures or pressure. There is no direct correlation with a chemical's compatibility to another chemical substance.

There are approximately 16 references in the 2007 IFC to the NFPA 704 standard. The IFC should accurately reflect the information from a standard.

Cost Impact: No direct cost impact to facility users as the NFPA 704 numeric rating system has not changed for instability.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F220–07/08

1803.16 (New), 1803.16.1 (New), 1802.1 (New), 3704.1.2, 3704.1.3

Proponent: Ron Fuhrhop, Praxair, Inc.

1. Add new text as follows:

1803.16 Subatmospheric Gas Delivery Systems. Subatmospheric Gas Delivery Systems (SAGDS) shall meet all of the requirements for HPM gases, except as provided for in Section 1803.16.1.

1803.16.1 Ventilation. Ventilation inside an exhausted enclosure or gas cabinet containing SAGDS shall be sufficient to maintain vapors within the enclosure or cabinet below 25 percent of the lower explosive limit (LEL) and below IDLH, based on approved release rate calculations provided by the SAGDS manufacturer.

1802.1 Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

SUBATMOSPHERIC GAS DELIVERY SYSTEM (SAGDS). A system that includes a gas container which under normal operating conditions allows for gas flow only when the container outlet is exposed to subatmospheric pressure.

2. Revise as follows:

3704.1.2 Gas cabinets. Gas cabinets containing highly toxic or toxic compressed gases shall comply with Section 2703.8.6 and the following requirements:

1. The average ventilation velocity at the face of gas cabinet access ports or windows shall not be less than 200 feet per minute (1.02 m/s) with a minimum of 150 feet per minute (0.76 m/s) at any point of the access port or window.

   Exception: For Subatmospheric Gas Delivery Systems (SAGDS) in accordance with Section 1803.16.1.

2. Gas cabinets shall be connected to an exhaust system.
3. Gas cabinets shall not be used as the sole means of exhaust for any room or area.
4. The maximum number of cylinders located in a single gas cabinet shall not exceed three, except that cabinets containing cylinders not over 1 pound (0.454 kg) net contents are allowed to contain up to 100 cylinders.

5. Gas cabinets required by Section 3704.2 or 3704.3 shall be equipped with an approved automatic sprinkler system in accordance with Section 903.3.1.1. Alternative fire-extinguishing systems shall not be used.

3704.1.3 Exhausted enclosures. Exhausted enclosures containing highly toxic or toxic compressed gases shall comply with Section 2703.8.6 and the following requirements:

1. The average ventilation velocity at the face of the enclosure shall not be less than 200 feet per minute (1.02 m/s) with a minimum of 150 feet per minute (0.76 m/s).

   Exception: Subatmospheric Gas Delivery Systems (SAGDS) in accordance with Section 1803.16.1.

2. Exhausted enclosures shall be connected to anexhaust system.
3. Exhausted enclosures shall not be used as the sole means of exhaust for any room or area.
4. Exhausted enclosures required by Section 3704.2 or 3704.3 shall be equipped with an approved automatic sprinkler system in accordance with Section 903.3.1.1. Alternative fire-extinguishing systems shall not be used.

Reason: Item **1** - This code change proposal adds a definition to address the technology of sub-atmospheric gas delivery systems (SAGDS). The proposed definition is consistent to that contained in the 2006 Edition of NFPA 318, Standard for the Protection of Semiconductor Fabrication Facilities. The definition can be found in Section 3.3.27.5.

A primary goal of a SAGDS is to improve safety by reducing the risk of a gas release. The risk is reduced, because SAGDS only deliver gas when a vacuum is applied to the outlet connection. In a SAGDS, the outlet valve can be opened, but no gas is released until the pressure at the outlet connection is below atmospheric pressure. This is in contrast to a typical gas cylinder, which releases gas when the cylinder valve is opened. The semiconductor industry has used SAGDS successfully for ten years.

Importantly, this definition allows the use of all technologies currently available as SAGDS. Each type of SAGS technologies has risks and benefits; however, they all have a significant benefit over typical gas cylinders, which is subatmospheric delivery. All types SAGS can contain HPM's and need to be treated as such.

Further, this definition captures the practical need for SAGDS to deliver gas below atmospheric pressure under the range of normal operating conditions that would be encountered in a fab use environment.

SAGDS technology is designed such that there is little to no gas release under upset conditions (i.e. line break). For this reason lower ventilation rates are acceptable and prescribed values are not appropriate. Instead of using a one case fits all approach to ventilation, the requirement is performance based. This proposal requires that the ventilation needed to maintain safe conditions be calculated for each type of SAGDS. The method used to do the calculations has to be approved by the fire code official. With the exception of this modification, the safety requirements for SAGDS are the same as for HPM gases.

Item 2 – These changes eliminate a conflict in Chapter 37 that would be created by adopting Part 2. They refer the code user back to Chapter 18 to determine exhaust requirements for SAGDS.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F221–07/08

1803.16 through 1803.16.5 (New), 1802.1 (New)

Proponent: Jim McManus, Advanced Technology Materials, Inc. (ATMI, Inc.), representing ATMI, Inc. and Matheson Tri-Gas, Inc.

1. Add new text as follows:

1803.16 Sub-atmospheric gas systems (SAGS). General safety provisions specific to sub-atmospheric gas systems (SAGS) containing HPM gases shall be in accordance with Sections 1803.16.1 through 1803.16.5.

1803.16.1 Location. SAGS gas delivery systems shall not be restricted as to location in a fabrication area except as required by 1803.16.2.

1803.16.2 Exhausted enclosures. Storage or use of SAGS in a fabrication area shall be within exhausted enclosures of noncombustible construction. Ventilation inside the enclosure shall be not less than 50 cfm and shall be sufficient to maintain vapors within the enclosure below 25% of the lower flammable limit (LFL) and below immediately dangerous to life and health concentration (IDLH).

1803.16.2.1 Continuous gas detection. A continuous gas detection system shall be provided in exhausted enclosures containing SAGS in accordance with section 1803.13.

1803.16.3 Treatment systems. Treatment systems for Type 1 SAGS containing highly toxic and toxic gases are not required.

1803.16.4 Purge gas. Purge gas used for Type 1 SAGS gas delivery systems shall be allowed to be supplied from either a house system or from dedicated purge gas cylinders.

1803.16.5 Shut-off of gas supply. An automatic shutoff valve shall be installed to isolate a Type 2 SAG cylinder from the gas distribution system in the event the internal pressure reduction device of the SAG cylinder fails.

2. Add new definitions as follows:

1802.1 Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in this Code, have the meanings shown herein.

SUB-ATMOSPHERIC GAS SYTEMS (SAGS). Sub-atmospheric gas system types are as follows:

TYPE 1: SUB-ATMOSPHERIC GAS STORAGE AND DELIVERY SYSTEM. A gas source package that stores and delivers gas at sub-atmospheric pressure. The system includes a container (e.g. gas cylinder and outlet valve) that stores and delivers gas at a pressure of less than 14.7 psia at NTP.

TYPE 2: SUB-ATMOSPHERIC GAS DELIVERY SYSTEM. A gas source package that stores compressed gas and delivers gas sub-atmospherically. The system includes a container (e.g. gas cylinder and outlet valve) that stores gas at a pressure greater than 14.7 psia at NTP and delivers gas at a pressure of less than 14.7 psia at NTP.

Reason: SAGS are HPM gas storage and delivery systems that store and/or deliver gas at pressures below 0 psig. SAGS can be used in place of traditional compressed gas cylinders that normally store and operate at pressures as high as 2200 psig. The reduced pressure of the SAGS system decreases the risk of hazardous gas leakage when compared to compressed gas cylinders. Since the hazards of SAGS are different than compressed gases, specific classification and installation requirements are necessary in the code. SAGS have been in use since 1994 by semiconductor manufacturing companies and have significantly improved the efficiency and safety of modern wafer fabrication operations. The proposed code change provides new language that properly defines the types of SAGS in use and lists general safety provisions for use of these systems consistent with best practices developed by the semiconductor industry.

There are two types of SAGS systems as follows:

Type 1 SAGS include a container and outlet valve containing gas in a chemically or physically altered state which removes the pressure normally associated with the gas. The material (e.g. phosphine gas) is stored sub-atmospherically (< 14.7 psia). Whereas a standard compressed gas cylinder containing phosphine gas would normally be at a pressure of 590 psig in a liquefied state. The Type 1 SAGS has changed the physical state of the gas to that of one more like a solid. By removing the pressure normally associated with the gas, the risk of a hazardous gas release during storage or use is significantly reduced. Gas is dispensed from the cylinder by applying vacuum to the cylinder valve outlet.

Type 2 SAGS are compressed gas containers containing compressed gas under pressure, with an integral mechanical device (e.g. regulator) that reduces the pressure at the cylinder valve outlet to less than 14.7 psia. As a standard compressed gas cylinder containing phosphine gas would normally be at a pressure of 590 psig in a liquefied state, the Type 2 SAGS would also exhibit the same 590 psig internal pressure. However, by reducing the pressure at the cylinder valve outlet the risk of a hazardous gas release during delivery to process equipment is significantly reduced. Gas is dispensed from the cylinder by applying vacuum to the cylinder valve outlet.

Specific justifications for the new general safety provisions are as follows:

1803.16.1 – The current code specifies the location for HPM gases in a semiconductor fabrication area to comply with section 1804.2.1 and 1805.2.1. The inherent safety of SAGS when compared to compressed gases has allowed users of these systems to specify locations with less restrictive requirements than 1804.2.1 and 1805.2.1. By assuring exclusion of SAGS from the requirements of 1804.2.1 and 1805.2.1, and inclusion of 1803.16.2, the code becomes consistent with how SAGS are used.

1803.16.2 – Specifies the requirement of exhausted enclosures for SAGS systems consistent with prudent usage.

1803.16.3 – Low gas release rates for SAGS Type 1 cylinders justify the avoidance of treatment systems.

1803.16.4 – Since SAG Type 1 systems do not pressurize the gas distribution system the risk of contaminating the house purge gas supply is reduced to an acceptable level.

1803.16.5 – Defines a safety requirement designed to mitigate the hazard associated with failure of the internal pressure reducing device within the SAG Type 2 cylinder. If the SAG Type 2 pressure reducing device fails, the gas distribution system could be exposed to full cylinder pressure potentially causing system component failure resulting in a gas release. Since the failure of a mechanical pressure reducing device such as a regulator is not uncommon this requirement seems prudent. This method of protection is normally implemented in gas distribution systems utilizing SAGS Type 2 systems and should become a standard requirement to assure safe usage.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F222–07/08
Table 1805.2.2

Proponent: Patrick A. McLaughlin, McLaughlin & Associates, representing The Semiconductor Industry Association

Revise table by adding footnote as follows:

TABLE 1805.2.2 (Supp)
MAXIMUM QUANTITIES OF HPM AT A WORKSTATION[e]

HPM CLASSIFICATION	STATE	MAXIMUM QUANTITY
Flammable	Liquid [g] Solid	15 gallons [a,b] 5 pounds [a,b]

(Portions of table (Supp) not shown remain unchanged)

For SI: 1 pound = 0.454 kg, 1 gallon = 3.785 L.

a. Maximum allowable quantities shall be increased 100 percent for closed system operations. When Note b also applies, the increase for both notes shall be allowed.
b. Quantities shall be allowed to be increased 100 percent when workstations are internally protected with an approved automatic fire-extinguishing or suppression system complying with Chapter 9. When Note b also applies, the increase for both notes shall be allowed. When Note e also applies, the maximum increase allowed for both Notes b and e shall not exceed 100 percent.
c. Allowed only in workstations that are internally protected with an approved automatic fire-extinguishing or fire protection system complying with Chapter 9 and compatible with the reactivity of materials in use at the workstation.
d. The quantity limits apply only to materials classified as HPM.
e. Quantities shall be allowed to be increased 100 percent for nonflammable, noncombustible corrosive liquids when the materials of construction for workstations are listed or approved for use without internal fire-extinguishing or suppression system protection. When Note b also applies, the maximum increase allowed for both Notes b and e shall not exceed 100 percent.
f. A maximum quantity of 5.3 gallons shall be allowed at a workstation when conditions are in accordance with Section 1805.2.3.5.
g. Liquids which have a flammability ranking of 1 or 2 in accordance with NFPA 704 shall not be included.

Reason: The definition of HPM [materials having a degree-of-hazard rating in health, flammability or reactivity of Class 3 or 4] conflicts with the definition of HPM Flammable Liquid that includes not only Class 3 flammability ranked liquids but also Class 2 flammability ranked liquids. As a result, Table 1805.2.2 seems to require that materials having hazard ranking of Class 2, i.e. Class II and IIIA combustible liquids, are limited to an individual or aggregate maximum of 15 gallons at a workstation. There does not appear to be any data supporting that Class II or IIIA combustible liquids with a flammability hazard level ranking 2 justify such a restriction and our experience is that many local jurisdictions agree that the definition of HPM Flammable Liquid is inconsistent and conflicts with the definition of HPM and thus only apply the limit to Class I liquids.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

F223–07/08
1805.2.3.4

Proponent: Patrick A. McLaughlin, McLaughlin & Associates, representing The Semiconductor Industry Association

Delete without substitution:

~~**1805.2.3.4 Clearances.** Workstations where HPM is used shall be provided with horizontal servicing clearances of not less than 3 feet (914 mm) for electrical equipment, gas-cylinder connections and similar hazardous conditions. These clearances shall apply only to normal operational procedures and not to repair- or maintenance-related work.~~

Reason: This proposal deletes an outdated and confusing tool clearance requirement from the code. Clean room cost in excess of $4000/ft2, so maximizing this space without introducing occupant safety hazards is a goal of the device manufacturer. Clearance requirements for equipment should be driven by the activities that take place in the space, and 36" is arbitrary clearance dimension. Also, as written it causes confusion within both the industry and enforcement community and as a result is erroneously applied. In addition, the NEC for energized electrical work already

includes these requirements and OSHA has other clearance requirements. Lastly, ergonomic requirements for safe operator work space define these dimensions. The current requirement in the section adds another constraint to space planning of the user, with no real benefit to the occupants or emergency responders.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F224–07/08
1805.3.1 through 1805.3.4; IBC [F] 415.8.3

Proponent: Patrick A. McLaughlin, McLaughlin & Associates, representing The Semiconductor Industry Association

Revise as follows:

1805.3 Transportation and handling. The transportation and handling of hazardous materials shall comply with Sections 1805.3.1 through 1805.3.4.1 and other applicable provisions of this code.

1805.3.1 Exit access corridors and exit enclosures. Exit access corridors and exit enclosures in new buildings or serving new fabrication areas shall not contain HPM, in quantities greater than the maximum allowable quantity per control area, except as permitted for exit access corridors by Section 415.8.6.3 of the *International Building Code.*

1805.3.2 Transport in ~~existing~~ exit access corridors. Transport in exit access corridors shall be in accordance with Sections 1805.3.2.1 and 1805.3.2.2.

1805.3.2.1 Fabrication area alterations. When existing fabrication areas are altered or modified in existing buildings, HPM is allowed to be transported in existing exit access corridors when such exit access corridors comply with Section 415.8.3 of the *International Building Code*~~. Transportation in exit access corridors shall comply with~~ and Section 2703.10 of this code.

1805.3.2.2 HPM quantity limitation. HPM in quantities not greater than the maximum allowable quantity per control area is allowed to be transported in exit access corridors when the transportation is in accordance with Section 2703.10.

1805.3.3 Service corridors. When a new fabrication area is constructed, a service corridor shall be provided where it is necessary to transport HPM, in quantities greater than the maximum allowable quantity per control area, from a liquid storage room, HPM room, gas room or from the outside of a building to the perimeter wall of a fabrication area. Service corridors shall be designed and constructed in accordance with the *International Building Code*.

1805.3.4 Carts and trucks. Carts and trucks used to transport HPM in exit access corridors and exit enclosures ~~in existing buildings~~ shall comply with Section 2703.10.3.

IBC [F] 415.8.3 Corridors. Corridors shall comply with Chapter 10 and shall be separated from fabrication areas as specified in Section 415.8.2.2. Corridors shall not contain HPM and shall not be used for transporting such materials, in quantities greater than the maximum allowable quantity per control area, except through closed piping systems as provided in Section 415.8.6.3.

Exception: Where existing fabrication areas are altered or modified, HPM is allowed to be transported in existing corridors, subject to the following conditions:

1. Corridors. Corridors adjacent to the fabrication area where the alteration work is to be done shall comply with Section 1017 for a length determined as follows:
   1.1. The length of the common wall of the corridor and the fabrication area; and
   1.2. For the distance along the corridor to the point of entry of HPM into the corridor serving that fabrication area.
2. Emergency alarm system. There shall be an emergency telephone system, a local manual alarm station or other approved alarm-initiating device within corridors at not more than 150-foot (45 720 mm) intervals and at each exit and doorway. The signal shall be relayed to an approved central, proprietary or remote station service or the emergency control station and shall also initiate a local audible alarm.

3. Pass-throughs. Self-closing doors having a fire protection rating of not less than 1 hour shall separate pass-throughs from existing corridors. Pass-throughs shall be constructed as required for the corridors and protected by an approved automatic fire-extinguishing system.

Reason: Section 1805.3 places limitations on the use of egress corridors for chemical transport that when first required, the industry was heavily utilizing and dependant on chemical transport from the HPM storage area to the fabrication area. Due to the increased scale in these operations, bulk chemical delivery is more the standard and the transport of chemicals in carts is much more infrequent and volumes are smaller. In fact, small quantities from labs are the biggest issue for the industry. The current restriction limits facilities design flexibility and costs without adding to the safety of the occupants or emergency responders. The industry feels this requirement should be reevaluated. In addition, for non-H5 occupancies, chemical transport of hazardous materials is allowed by the requirements of Section 2703.10 in corridors or exit enclosures. By definition, Hazardous Materials include all materials that are defined by the code in Chapter 18 as HPM's. The non-H areas allow for transport of chemistries when conditions in 2703.10 are met as well as IBC 414.7.2. Areas that are not H Occupancy do not have the requirement to use service corridor for the transport of HPM.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F225–07/08

2201.1, 2202.1 (New), 1103.5, 1106.1; IBC 412.1 (New)

Proponent: Tom Lariviere, Fire Department, Madison, MS, representing Joint Fire Service Review Committee

1. Revise as follows:

2201.1 Scope. Automotive motor fuel-dispensing facilities, marine motor fuel-dispensing facilities, fleet vehicle motor fuel-dispensing facilities aircraft motor-vehicle fuel-dispensing facilities and repair garages shall be in accordance with this chapter and the *International Building Code, International Fuel Gas Code* and the *International Mechanical Code*. Such operations shall include both operations that are accessible to the public and private operations.

1103.5 Dispensing of flammable and combustible liquids. The dispensing, transferring and storage of flammable and combustible liquids shall be in accordance with this chapter and Chapter 34. Aircraft motor vehicle fuel-dispensing ~~stations~~ facilities shall be in accordance with Chapter 22.

1106.1 Aircraft motor vehicle fuel-dispensing ~~stations~~ facilities. Aircraft motor vehicle fuel-dispensing ~~stations~~ facilities shall be in accordance with Chapter 22.

2. Add new definition as follows:

2202.1 Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

AIRCRAFT MOTOR-VEHICLE FUEL-DISPENSING FACILITY. That portion of property where flammable or combustible liquids or gases used as motor fuels are stored and dispensed from fixed equipment into the fuel tanks of aircraft.

3. Add new text as follows:

IBC 412.1 General. Aircraft related occupancies shall comply with this section and the *International Fire Code*.

(Renumber subsequent sections)

Reason: The IFC has construction requirements for aircraft related facilities in Chapter 11 Aviation Facilities, however, Section 412 Aircraft-related Occupancies in the IBC does not direct the user to the fire code other than for aircraft paint hangers. The new language proposed for Section 412.1 will provide that reference.

Additionally, IFC Chapter 11 Aviation Facilities requires “Aircraft Motor-Vehicle Fuel-Dispensing Stations” to be installed in accordance with Chapter 22 of that code, however, of all the different types of motor vehicle facilities defined by Chapter 22 and listed in Section 2201.1 Scope, aircraft motor-vehicle fuel-dispensing stations are not included. The proposed language clarifies that these facilities are within the scope of Chapter 22 and provides a definition.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F226–07/08
2204.4.1, 2210.3.4

Proponent: Jeffrey M. Shapiro, PE, International Code Consultants, representing himself

Revise as follows:

2204.4.1 Approved containers required. Class I, II and IIIA liquids shall not be dispensed into a portable container unless such container does not exceed 5 gallons (18.9 L) capacity, is listed or of approved material and construction, and has a tight closure with screwed or spring-loaded cover so designed that the contents can be dispensed without spilling. Liquids shall not be dispensed into portable tanks or cargo tanks.

2210.3.4 Portable containers. Dispensing of Class I, II or IIIA liquids into containers, other than fuel tanks, shall be in accordance with Section 2204.4.1. ~~Class I, II or IIIA liquids shall not be dispensed into a portable container unless such container is approved.~~

Reason: The revision to Section 2204.4.1 is intended to prohibit filling of a new class of portable gasoline containers that have entered the marketplace. These cans, some of which hold as much as 14 gallons and weigh over 100 pounds when full, often include integrated hoses and dispensing nozzles, yet they do not comply with any UL, ASTM or similar recognized standard.

Apparently, they are certified by the manufacturer as meeting UN/DOT standards for transportation, but it is questionable whether the safety standards required for transportation are adequate for storage and use of these products. For example, there are concerns about the ability of users to safely hoist these containers off of and on to vehicles to avoid static accumulation during filling, and the static charge will be greater than that experienced with smaller cans because there is more fuel transferred during filling. Given that UL30, UL1313 and ASTM F852 or F976 (the recognized standards for construction of portable gas containers) all limit container capacities to approximately 5 gallons, it makes sense for the IFC to reflect this limitation.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F227–07/08
2205.1, 2206.2, 2206.2.2, 2206.2.3, 2206.2.5, 2206.6.2, 2206.7.6, 2206.7.6.1, Table 2206.2.3

Proponent: Lynne M. Kilpatrick, Fire Department, Seattle, WA, representing Washington State Association of Fire Marshals

Revise as follows:

2205.1 Tank filling operations for Class I, II or ~~IIIA~~ III liquids. Delivery operations to tanks for Class I, II or ~~IIIA~~ III liquids shall comply with Sections 2205.1.1 through 2205.1.3 and the applicable requirements of Chapter 34.

2206.2 Method of storage. Approved methods of storage for Class I, II and ~~IIIA~~ III liquid fuels at motor fuel-dispensing facilities shall be in accordance with Sections 2206.2.1 through 2206.2.5.

2206.2.2 Above-ground tanks located inside buildings. Above-ground tanks for the storage of Class I, II and ~~IIIA~~ IIII iquid fuels are allowed to be located in buildings. Such tanks shall be located in special enclosures complying with Section 2206.2.6, in a liquid storage room or a liquid storage warehouse complying with Chapter 34, or shall be listed and labeled as protected above-ground tanks.

2206.2.3 Above-ground tanks located outside, above grade. Above-ground tanks shall not be used for the storage of Class I, II or ~~IIIA~~ III liquid motor fuels except as provided by this section.

1. Above-ground tanks used for outside, above-grade storage of Class I liquids shall be listed and labeled as protected above-ground tanks and shall be in accordance with Chapter 34. Such tanks shall be located in accordance with Table 2206.2.3.
2. Above-ground tanks used for outside, above-grade storage of Class II or IIIA liquids ~~are allowed to~~ shall be listed and labeled as protected above-ground tanks and shall be in accordance ~~, or, when approved by the fire code official, other above-ground tanks that comply~~ with Chapter 34. Tank locations shall be in accordance with Table 2206.2.3.

   Exception: Where approved by the fire code official, other aboveground tanks that comply with Chapter 34 shall be allowed.

3. Tanks containing fuels shall not exceed 12,000 gallons (45 420 L) in individual capacity or 48,000 gallons (181 680 L) in aggregate capacity. Installations with the maximum allowable aggregate capacity shall be separated from other such installations by not less than 100 feet (30 480 mm).
4. Tanks located at farms, construction projects, or rural areas shall comply with Section 3406.2.
5. Above-ground tanks used for outside above-grade storage of Class IIIB liquid motor fuels shall be listed and labeled in accordance with UL 142 or listed and labeled as protected aboveground tanks in accordance with UL 2085 and shall be installed in accordance with Chapter 34. Tank locations shall be in accordance with Table 2206.2.3.

2206.2.5 Portable tanks. Where approved by the fire code official, portable tanks are allowed to be temporarily used in conjunction with the dispensing of Class I, II or ~~IIIA~~ III liquids into the fuel tanks of motor vehicles or motorized equipment on premises not normally accessible to the public. The approval shall include a definite time limit.

2206.6.2 Piping, valves, fittings and ancillary equipment for above-ground tanks for Class I, II and ~~IIIA~~ IIII liquids. Piping, valves, fittings and ancillary equipment for above-ground tanks shall comply with Sections 2206.6.2.1 through 2206.6.2.6.

2206.7.6 Fuel delivery nozzles. A listed automatic-closing- type hose nozzle valve with or without a latch-open device shall be provided on island-type dispensers used for dispensing Class I, II or ~~IIIA~~ III liquids. Overhead-type dispensing units shall be provided with a listed automatic-closing-type hose nozzle valve without a latch-open device.

Exception: A listed automatic-closing-type hose nozzle valve with latch-open device is allowed to be used on overhead-type dispensing units where the design of the system is such that the hose nozzle valve will close automatically in the event the valve is released from a fill opening or upon impact with a driveway.

2206.7.6.1 Special requirements for nozzles. Where dispensing of Class I, II or ~~IIIA~~ III liquids is performed, a listed automatic-closing-type hose nozzle valve shall be used incorporating all of the following features:
1. The hose nozzle valve shall be equipped with an integral latch-open device.
2. When the flow of product is normally controlled by devices or equipment other than the hose nozzle valve, the hose nozzle valve shall not be capable of being opened unless the delivery hose is pressurized. If pressure to the hose is lost, the nozzle shall close automatically.

   Exception: Vapor recovery nozzles incorporating insertion interlock devices designed to achieve shutoff on disconnect from the vehicle fill pipe.

3. The hose nozzle shall be designed such that the nozzle is retained in the fill pipe during the filling operation.
4. The system shall include listed equipment with a feature that causes or requires the closing of the hose nozzle valve before the product flow can be resumed or before the hose nozzle valve can be replaced in its normal position in the dispenser.

TABLE 2206.2.3
MINIMUM SEPARATION REQUIREMENTS FOR ABOVE-GROUND TANKS

CLASS OF LIQUID AND TANK TYPE	INDIVIDUAL TANK CAPACITY (gallons)	MINIMUM DISTANCE FROM NEAREST IMPORTANT BUILDING ON SAME PROPERTY (feet)	MINIMUM DISTANCE FROM NEAREST FUEL DISPENSER (feet)	MINIMUM DISTANCE FROM LOT LINE THAT IS OR CAN BE BUILT UPON, INCLUDING THE OPPOSITE SIDE OF A PUBLIC WAY (feet)	MINIMUM DISTANCE FROM NEAREST SIDE OF ANY PUBLIC WAY (feet)	MINIMUM DISTANCE BETWEEN TANKS (feet)
Class I protected above-ground tanks	Less than or equal to 6,000	5	25[a]	15	5	3
	Greater than 6,000	15	25[a]	25	15	3
Class II and III protected above-ground tanks	Same as Class I	Same as Class I	Same as Class I[c]	Same as Class I	Same as Class I	Same as Class I
Tanks in vaults	0-20,000	0[b]	0	0 [b]	0	Separate compartment required for each
Other tanks	All	50	50	100	50	3

a. At fleet vehicle motor fuel-dispensing facilities, no minimum separation distance is required.
b. Underground vaults shall be located such that they will not be subject to loading from nearby structures, or they shall be designed to accommodate applied loads from existing or future structures that can be built nearby.
c. For Class IIIB liquids in protected above-ground tanks, no minimum separation distance is required.

Reason: An increasing number of facilities are establishing motor vehicle fuel-dispensing stations for dispensing B100/B99 bio-diesel, a Class IIIB liquid, into motor vehicles. In many cases these fueling stations are not set up as traditional gas stations but rather they consist of a small stand alone fuel dispensing operation using a 500-3,000 gallon fuel tank located near a drive-through espresso stand or mini market. Chapter 22 has only minimal requirements for the installation of tanks and fueling operations for dispensing Class IIIB liquids into motor vehicles and it does not adequately address the potential hazards associated with this increasing trend. This proposal will add the following new requirements for dispensing Class IIIB liquids into motor vehicles:

1. tanks for dispensing Class IIIB liquids into the fuel tanks of motor vehicles will need to be listed to UL 142 or UL 2085 to eliminate the common practice of dispensing directly from plastic Intermediate Bulk Container (IBC) totes,
2. the driver or operator of the fuel delivery vehicle will be required to gauge the tank to determine how much fuel is needed before filling the tank,
3. an approved method of storage will have to be provided for the Class IIIB fuel in accordance with the MAQ allowed in Chapter 27 for storage in a single control area (13,200 gallons in an unsprinklered building and unlimited in a sprinklered building) when dispensing from tanks located inside buildings,
4. fueling Class IIIB liquids into motor vehicles from portable tanks will only be allowed on a temporary basis,
5. piping, valves, fittings and ancillary equipment will need to comply with the same requirements that currently apply to Class I, II and IIIA liquid fuel dispensing operations, including but not limited to, proper tank fill openings and connections, approved method to prevent overfilling and anti-siphon systems, and
6. fuel delivery nozzles will be required to be the listed automatic-closing type.

Table 2206.2.3, which appears to already regulate Class IIIB liquids even though the corresponding Section 2206.2.3 makes reference only to Class II and IIIA liquids, has also been modified by adding a new footnote c. The footnote is added to eliminate the 50 foot separation that is required between protected (UL 2085) tanks containing Class IIIB liquids and the fuel dispenser. Note that even with this change Class IIIB liquids in non-protected tanks (UL 142) will be required to comply with Table 2206.2.3 requirements for "other tanks" which still requires a 50 foot separation between that tank and the dispenser.

We believe that these proposed changes provide for prudent controls for Class IIIB tank systems at motor vehicle fueling stations which currently are largely unregulated.

Cost Impact: The code change proposal will increase the cost of construction.

Public Hearing:				
	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F228–07/08
2205.2.1 (New), 2205.2.2 (New)

Proponents: Bob Eugene/Ken Boyce, Underwriters Laboratories, Inc., representing UL, US Department of Energy, National Renewable Energy Laboratory, Clean Vehicle Education Foundation

Add new text as follows:

2205.2.1 Inspections. Flammable and combustible liquid fuel dispensing and containment equipment shall be periodically inspected where required by the fire code official to verify that it is in proper working order and not subject to leakage.

2205.2.2 Repairs and service. The fire code official is authorized to require damaged or unsafe containment and dispensing equipment to be repaired or serviced in an approved manner, including, but not limited to, equipment that shows signs of physical damage, internal and external corrosion, leakage, brittleness, aging or undue wear and tear.

(Renumber subsequent sections)

Reason: This proposal provides basic provisions for the inspection, repair and servicing of flammable and combustible liquid dispensing system equipment, which are not currently covered in this code or in NFPA 30A. The proposed requirements constitute good practice, and will also help to proactively mitigate potential leakage of fuel dispensing system components, including those for use with E85.

Proposed Section 2205.2.1 authorizes the fire code official to require inspection of equipment on a periodic basis, and identifies that the inspection is to verify the equipment is in proper working order and isn't leaking. This inspection is supported by an operational permit in Section 105.6.16 (9) for the dispensing of flammable and combustible liquids into motor vehicles. The frequency and nature of the inspections is up to the discretion of the fire code official. Proposed Section 2205.2.2 authorizes the fire code official to require damaged or leaking equipment to be serviced or repaired in an approved manner. Together the new proposed provisions work well with the other requirements in Section 2205.

The proposal reinforces development of a comprehensive set of requirements covering the inspection and testing of motor vehicle fuel containment and dispensing system components, similar to requirements in place for fire alarm systems.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:				
	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F229–07/08
2206.2.2

Proponent: Lynne M. Kilpatrick, Fire Department, Seattle, WA, representing Washington State Association of Fire Marshals

Revise as follows:

2206.2.2 Above-ground tanks located inside buildings. Above-ground tanks for the storage of Class I, II and III~~A~~ liquid fuels are allowed to be located in buildings. Such tanks shall be located in special enclosures complying with Section 2206.2.6, or in a liquid storage room or a liquid storage warehouse complying with Chapter 34~~, or shall be listed and labeled as protected above-ground tanks~~.

Exceptions:

1. Protected aboveground tanks storing Class I liquids, having an aggregate capacity not exceeding 1,500 gallons (454 L) and located in a room or rooms protected by an automatic sprinkler system complying with Section 903.3.1.1 are not required to be located in a special enclosure, liquid storage room or warehouse.
2. Protected aboveground tanks storing Class II or IIIA liquids, having an aggregate capacity not exceeding 3,000 gallons (908 L) and located in a room or rooms protected by an approved automatic sprinkler system complying with Section 903.3.1.1 are not required to be located in a special enclosure, liquid storage room or warehouse.
3. Aboveground tanks storing Class IIIB liquids in quantities not greater than the maximum allowable quantity per control area indicated in Table 2703.1.1(1).

Reason: Currently Section 2206.2.2 appears to allow an unlimited quantity of Class I, II and IIIA liquids inside buildings for fueling motor vehicles as long as the fuel is stored in a protected aboveground tank listed to UL 2085. This proposal establishes reasonable limits for the aggregate quantity of fuel in protected aboveground tanks that can be installed inside buildings for fueling motor vehicles. The 3,000 gallon limit proposed for Class II and IIIA liquids in Exception 2 is consistent with the maximum quantity currently allowed in Section 603.3 for protected tanks installed inside buildings supporting fuel-burning equipment. Exception 3 of the proposal defaults to the MAQ per control area set forth in Chapter 27 for Class IIIB liquids which effectively allows for 13,200 gallons per control area in unsprinklered buildings and an unlimited quantity in sprinklered buildings. Since there is no code precedent for limiting Class I flammable liquids in protected aboveground tanks inside buildings Exception 1 of the proposal establishes a limit of 1,500 gallons. It is necessary to approve this code change in order to establish some quantity limits for flammable and combustible liquids in protected aboveground tanks installed inside buildings. Without this change, an unlimited quantity of Class I, II and IIIA liquids is allowed inside buildings in protected tanks located outside of a liquid storage room.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F230–07/08
2206.8 through 2206.8.5 (New), 2206.7, 2202.1 (New)

Proponent: Bob Eugene/Ken Boyce, Underwriters Laboratories, Inc., representing UL, US Department of Energy, National Renewable Energy Laboratory, Clean Vehicle Education Foundation

1. Add new text as follows:

2206.8 Alcohol blended fuel-dispensing operations. The design, fabrication and installation of alcohol blended fuel-dispensing systems shall also be in accordance with Sections 2206.7 and Sections 2206.8.1 through 2206.8.5..

2206.8.1 Approval of equipment. Dispensers, hoses, nozzles, breakaway fittings, swivels, flexible connectors or dispenser emergency shutoff valves, vapor recovery systems and pumps used in alcohol blended fuel-dispensing systems shall be listed or approved for the specific purpose.

2206.8.2 Change of system contents. Fuel dispensing systems subject to change in contents from gasoline to alcohol blended fuels shall be subject to fire code official review and approval prior to commencing dispensing operations.

2206.8.3 Facility identification. Facilities dispensing alcohol blended fuels shall be identified by an approved means.

2206.8.4 Marking. Dispensers shall be marked in an approved manner to identify the types of alcohol blended fuels to be dispensed.

2206.8.5 Maintenance and inspection. Equipment shall be maintained and inspected in accordance with Section 2205.2.

2. Revise as follows:

2206.7 Fuel-dispensing systems for flammable or combustible liquids. The design, fabrication and installation of fuel-dispensing systems for flammable or combustible liquid fuels shall be in accordance with Sections 2206.7.1 through 2206.7.9.2.4. Alcohol blended fuel dispensing systems shall also comply with Section 2206.8.

3. Add new definition as follows:

2202.1 Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

ALCOHOL BLENDED FUELS. Alcohol blended fuels, including those containing 85% ethanol and 15% unleaded gasoline (E85), are flammable liquids consisting of ethanol or other alcohols blended greater than 15% by volume. Alcohols are polar compounds that exhibit increased moisture absorption, water solubility, polar solvency and solution conductivity relative to gasoline. Alcohol-gasoline blended fuels have unique properties that may affect material compatibility and fire response.

Reason: This proposal includes provisions covering dispensing of alcohol blended fuels, including E85. The code change is needed because section 2206.7.1 currently requires certain dispensing system components to be listed, and these listings are not yet available from nationally recognized testing laboratories. These organizations are currently working with stakeholders to address corrosion and material compatibility issues associated with E85 and other alcohol blended fuels.

Section 2206.8.1 allows the dispensing equipment to be approved by the fire code official and identifies dispensing system components that should be listed or approved for use with alcohol blended fuels. The code official will base approval of equipment not listed for use with alcohol blended fuels on prevailing regulations where established. In the absence of prevailing regulations it is anticipated that the code official will base acceptance on additional documentation provided by the manufacturer confirming equipment compatibility with alcohol blended fuels, and other applicable information.

Section 2206.8.2 allows the code official the ability to re-approve installations that convert from gasoline dispensing to alcohol blended fuel dispensing; this allows for verification that the installation complies with the new requirements. It also ensures that the fire officials know the new fuels will be present on site, which might impact local fire suppression operations, and the proposed provision would permit the necessary coordination.

Sections 2206.8.3 and 2206.8.4 address facility and equipment identification, respectively, for alcohol blended fuel. Identification of the facility is intended to promote first responder awareness of the presence of alcohol blended fuels. Identification of the equipment for the specific alcohol blended fuels communicates the intended use of the installed equipment.

Section 2206.8.5 is intended to help direct the fire code official to provisions for maintenance and inspection of equipment, since one of the concerns with alcohol blended fuels is its potentially degrading effects on system components.

Cost Impact: The code change proposal will increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F231–07/08
2209.2.1

Proponent: Robert J. Davidson, Davidson Code Concepts, LLC, representing himself

Revise as follows:

2209.2.1 Approved equipment. Cylinders, containers and tanks; pressure relief devices, including pressure valves; hydrogen vaporizers; pressure regulators; and piping used for gaseous hydrogen systems shall be designed and constructed in accordance with ~~Section 3003, 3203 or NFPA 55~~ Chapters 30 and 32.

Reason: The use of the term “or” implies a choice of which section of the IFC to comply with and a choice to not comply with either section of the IFC and to comply with NFPA 55 instead. This causes difficulty in applying the requirements, which one do you choose? Is it the regulators choice or that of the designer?

The implied choice also creates a conflict with other sections of the fire code such as Section 3201.1 which requires compliance with Chapter 32 and NFPA 55.

Changing the language to refer to Chapters 30 and 32 maintains the requirements and eliminates the confusion. Both Chapter 32 as now referenced and Chapter 35 which is referenced in Section 220.1 have a reference to NFPA 55, so the application of that standard is maintained.

This proposed change correlates the section with the manner in which the code applies, i.e., comply with the requirements of the code and the referenced standard.

The need for this clarification was identified during a "Hydrogen Fueling Station Permitting Workshop" held on July 10, 2007 that was co-sponsored by the United States Department of Energy and the National Association of State Fire Marshals. Building and fire code officials participating in the workshop believe the use of the "or" created confusion in applying the code section.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

F232–07/08
Table 2209.3.1

Proponent: Robert J. Davidson, Davidson Code Concepts, LLC, representing himself

Revise table as follows:

TABLE 2209.3.1
MINIMUM SEPARATION FOR GASEOUS HYDROGEN DISPENSERS, COMPRESSORS, GENERATORS AND STORAGE VESSELS

OUTDOOR EQUIPMENT OR FEATURE	DISTANCE (feet)
~~Outdoor public assembly~~	~~25~~[b]

(Portions of table and footnotes not shown remain unchanged)

Reason: This proposal is intended to address an enforcement problem. Table 2209.3.1 provides a minimum distance to an "Outdoor public assembly". To apply that requirement the designer and the code official need to know what an outdoor public assembly is. A search of the code identifies that the International Mechanical Code provides a description of what a "public assembly occupancy" is but limits that to locations from which occupants cannot quickly vacate.

> *International Mechanical Code*
> *1103.2 Occupancy classification.Locations of refrigerating systems are described by occupancy classifications that consider the ability of people to respond to potential exposure to refrigerants. Where equipment or appliances, other than piping, are located outside a building and within 20 feet (6096 mm) of any building opening, such equipment or appliances shall be governed by the occupancy classification of the building. Occupancy classifications shall be defined as follows:*
>
> *2. Public assembly occupancy is that portion of premises where large numbers of people congregate and from which occupants cannot quickly vacate the space. Public assembly occupancies include, among others, auditoriums, ballrooms, classrooms, passenger depots, restaurants and theaters.*

The *International Fire Code* uses the term "public assembly" in Section 2403.10.4 in reference to tents; in Table 3203.6.1 in reference to "Places of Public Assembly" and in Section 403.2.1 in relation to large gatherings of persons necessitating the development of a public safety plan. The *International Building Code* uses the term "public assembly" in Chapter 16 Structural Design and relates it use to buildings and structures.

In viewing those code sections it is clear that there is no concise concept of what a "public assembly" is, much less an "outdoor public assembly".

This is further complicated by the concept of an "assembly use" applied when determining Group classifications. The most notable difference is that the term "public" is not applied. The use is activity based, not whether or not it is open to the public or to private groups. If the use has less than 50 persons involved we don't classify it as an assembly use.

If we can't clearly define what is meant by an "outdoor public assembly" there is no way for the requirement to be consistently applied.

The other difficulty presented by the distance restriction for "outdoor public assemblies" is that if we locate the hydrogen equipment 10 feet from the lot line as permitted by Table 2209.3.1, the other 15 feet of separation is on the next lot potentially under different ownership. Outdoor assembly activities are not necessarily static. At the time of design, installation, and acceptance there may be no outdoor assembly use in place on the neighboring lot and the location for the hydrogen related equipment was permissible. At some point later the neighboring property owner may wish to have an outdoor assembly activity. How would that activity be regulated? How can a code official stop a property owner from a lawful use of their property based upon what we allowed the neighboring property owner to install? Keeping in mind that a civic event or celebration that encourages the community to participate can cause the establishment of temporary outdoor assembly activities on lots where the owners participate, or on the public streets and sidewalks. Would parades be banned from streets where hydrogen fueling stations are located?

A closer look at the requirement identifies that it doesn't make sense that a permanent or temporary outdoor public assembly gathering is not permitted within 25 feet, but an outdoor play area for a school or daycare operation would be. There also could be large amounts of people on the sidewalk or the public way if a popular commuter bus or rail stop exists.

The proposal is to simply delete the requirement from the table since the term is not clearly defined and the issues outlined in this proposal prevent consistent application of this particular distance restriction. This change will leave the distance from lot lines and the distances from public sidewalks as the default exposure protection factor for outdoor assembly or other activities and uses.

The need for this clarification was identified during a "Hydrogen Fueling Station Permitting Workshop" held on July 10, 2007 that was co-sponsored by the United States Department of Energy and the National Association of State Fire Marshals. Building and fire code officials participating in the workshop identified the difficulty of trying to apply the undefined term and questioned how they could enforce a distance restriction on a neighboring property owner.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F233–07/08

2209.5.1.1, Chapter 45 (New); IBC 406.5.2, Chapter 35 (New)

THESE PROPOSALS ARE ON THE AGENDA OF THE IFC AND THE IBC GENERAL CODE DEVELOPMENT COMMITTEES AS 2 SEPARATE CODE CHANGES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Thomas Joseph, Chair, Hydrogen Industry Panel on Codes (HIPOC)

1. PART I – IFC

Revise as follows:

2209.5.1.1 (Supp) Vehicle fueling pad. The vehicle ~~fueling pad~~ shall be fueled on non-coated ~~of~~ concrete or ~~a~~ other approved paving material having a ~~resistivity~~ resistance not exceeding one megohm as determined by ~~an approved method~~ the methodology specified in DIN EN 1081.

2. Add standard to Chapter 45 as follows:

European Committee for Standardization (EN)
Central Secretariat
Rue de Stassart 36
B-10 50 Brussels

European Standard EN 1081: 1998 Resilient Floor Coverings – Determination of the Electrical Resistance

PART I – IBC GENERAL

406.5.2 (Supp) Vehicle fueling pad. The vehicle ~~fueling pad~~ shall be fueled on non-coated ~~of~~ concrete or ~~a~~ other approved paving material having a ~~resistivity~~ resistance not exceeding 1 megohm as determined by ~~an approved method~~ the methodology specified in DIN EN 1081.

2. Add standard to Chapter 35 as follows:

European Committee for Standardization (EN)
Central Secretariat
Rue de Stassart 36
B-10 50 Brussels

European Standard EN 1081: 1998 Resilient Floor Coverings – Determination of the Electrical Resistance

Reason: The proposed changes retain the original intent of this section while correcting some incorrect language and providing additional guidance for the code official. These changes address concerns voiced by ICC members during the last code cycle regarding the specified units and the request for additional guidance for the code official by using a referenced standard.

Units: Megohms are the appropriate measurement of resistance, not resistivity.

Referenced Standard: The referenced EN standard 1081:1998, which now has DIN status, is the best available standard that is applicable to measuring resistance of vehicle fueling pads. With this change the official still has the option to use another approved method, but DIN EN 1081:1998 is the referred method for measurement if non-coated concrete is not used. It may be worth noting that DIN EN 1081:1998 was created using an open, transparent and consensus-based process similar to the procedures used by ANSI-approved standard development organizations. Considering Standard 1081 also bares the EN designation, the U.S. building regulatory community should be comfortable that it has been, and will continue to be, carefully scrutinized and representative of the work of a true consensus body that we Americans are familiar with.

These proposed changes will retain the original intent of this section to dissipate static electricity built up on the vehicle from driving before the driver's door is opened--with corrected language and better guidance. The overall goal is to increase the safety of vehicle fueling. Concrete is allowed for the fueling pad with no resistance measurements needed; if an alternate material is desired, it can be used as long as it has a resistance less than or equal to 1 megohm. Both the concrete and 1 megohm criteria are cited from the American Petroleum Institute (API) 2003 Recommended Practices (RP), section 4.6.9.2. NFPA 77: *Recommended Practice on Static Electricity,* section 7.4.1.3 also points out that a resistance of 1 megohm or less is considered adequate to dissipate any charges. Additionally, the proposed language has been proposed by the State of Michigan, Department of Environmental Quality – Waste and Hazardous Materials Division for Michigan's *Hydrogen Storage and Dispensing Rules*, and is consistent with changes proposed under the current cycle to NFPA 55-2005, *Standard for the Storage, Use, and Handling of Compressed Gasses and Cryogenic Fluids in Portable and Stationary Containers, Cylinders, and Tanks*.

Cost Impact: The code change proposal will increase the cost of construction.

Analysis: A review of the standard proposed for inclusion in the code, EN 1081: 1998, for compliance with ICC criteria for referenced standards given in Section 3.6 of Council Policy #CP 28 will be posted on the ICC website on or before January 15, 2008.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F234–07/08

2209.5 through 2209.5.8 (New), 2202.1, 2209.3.2.3, 907.2.23 (New) [IBC [F] 907.2.23 (New)], 2703.2.9.1; IFGC [F] 706.2

Proponent: Thomas Joseph, Chair, Hydrogen Industry Panel on Codes (HIPOC)

1. Add new text as follows:

2209.5 Indoor fast-fill hydrogen fuel-dispensing. Indoor fast-fill hydrogen fuel-dispensing shall be conducted by a qualified operator and in accordance with Sections 2209.5.1 through 2209.5.8, Chapters 30 and 35 and the *International Fuel Gas Code*.

2209.5.1 Location of ancillary equipment. Liquid storage, vaporization and gas storage equipment shall be located outdoors in accordance with Section 2209.3.2.1. Gas compression and processing equipment shall be listed or approved for indoor use or located outdoors in accordance with Section 2209.3.2.1.

2209.5.2 Safety precautions. In addition to the requirements of Section 2209.5 safety precautions shall be provided in accordance with Section 2209.6 for dispensing into motor vehicles at self-service hydrogen motor fuel dispensing facilities

2209.5.2.1 Fire alarm and detection system. An approved manual and automatic fire alarm system shall be installed in indoor fast-fill hydrogen fuel-dispensing areas in accordance with Sections 907.2 and 2209.5.7. Activation of the system shall shut down the dispenser, stop flow of gas into the room and where mechanical ventilation is provided, and activate the ventilation system.

2209.5.3 Ventilation. Ventilation systems for indoor fast-fill hydrogen fuel- dispensing shall be in accordance with the *International Mechanical Code,* the *International Fuel Gas Code* and Sections 2209.5.3.1 and 2209.5.3.2.

2209.5.3.1 Design. Indoor locations shall be ventilated utilizing air supply inlets and exhaust outlets arranged to provide uniform air movement to the extent practical. Inlets shall be uniformly arranged on exterior walls near floor level. Outlets shall be located at the high point of the room in exterior walls or the roof.

Exception: Specially engineered installations as allowed by the *International Fuel Gas Code*.

2209.5.3.1.1 Room ventilation rate. The ventilation rate provided to the room in which the fast-fill hydrogen fuel-dispensing area is located shall be not less than 1 cubic foot per minute per 12 cubic feet (0.00139 m^3/s m^3) of room volume.

Exception: Indoor fast-fill hydrogen fuel-dispensing areas exceeding the room volume but not the maximum fuel delivery mass per refueling event as depicted in Figure 2209.5.3.1.1 shall not require room ventilation beyond that required for the location in accordance with Section 703.1 of the *International Fuel Gas Code*.

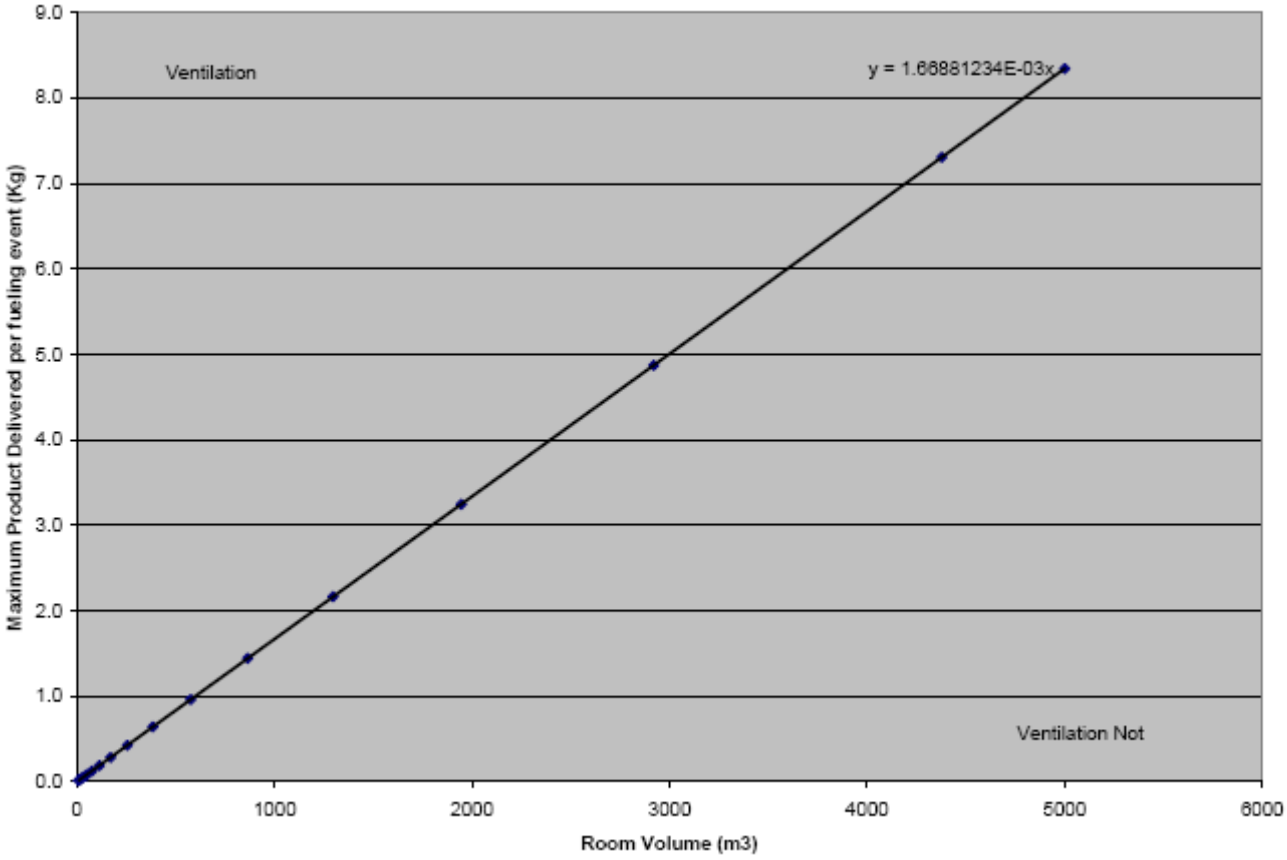

FIGURE 2209.5.3.1.1
INDOOR ATTENDED "FAST-FILL" HYDROGEN FUEL-DISPENSING LIMITATIONS

2209.5.3.1.2 Dedicated dispensing area ventilation rate. The ventilation system serving the dispensing area shall be at least 1 cubic foot per minute (0.00047 m^3/s) per 12 cubic feet (0.34 m^3) of the Class 1, Division 2 cylinder volume (0.00139 $m^3/s/m^3$) defined in Section 2209.5.6. The ventilation system serving the dispensing area shall be directed to the outside in accordance with Section 501.3 of the *International Mechanical Code*.

2209.5.3.2 Operation. Room ventilation shall be provided by a continuous mechanical ventilation system or by a mechanical ventilation system activated by a continuously monitoring hydrogen gas detection system set to activate when a gas concentration exceeds 25 percent of the lower flammable limit (LFL). In either case, the system shall shut down the fueling system in the event of failure of the ventilation system.

The dedicated mechanical ventilation system serving the dispensing area shall operate continuously for not less than ten (10) seconds prior to dispenser operation, during fueling, and for not less than one minute after fueling has been completed. Failure of either the room ventilation system or the dedicated dispensing area ventilation system shall shut down the dispenser.

2209.5.4 Gas detection system. Indoor fast-fill hydrogen fuel- dispensing areas shall be provided with an approved flammable hydrogen gas detection system. The system shall be tested and maintained in accordance with Section 2703.2.9.

2209.5.4.1 System design. The hydrogen gas detection system shall be designed to activate when the level of flammable gas exceeds 25 percent of the lower flammable limit (LFL).

2209.5.4.2 Operation. Activation of the gas detection system shall result in all of the following:

1. Initiation of distinct audible and visual alarm signals throughout the fire area in which indoor fast fuel-dispensing occurs.
2. Deactivation of all heating systems located in the Indoor fast-fill hydrogen fuel-dispensing area.
3. Activation of the mechanical ventilation system, when the system is interlocked with gas detection.
4. The dispenser shall be shut down and the flow of hydrogen fuel into the building shall be stopped.

2209.5.4.3 Failure of the gas detection system. Failure of the gas detection system shall result in the following:

1. Deactivation of the heating system,
2. Shut down of the fuel-dispensing system,
3. Activation of the mechanical ventilation system, and
4. Where the mechanical ventilation system is interlocked with gas detection, failure of the gas detection system shall cause a trouble signal to sound in an approved location.

2209.5.4.4 Reactivation. Reactivation of fueling equipment or dispensing operations, including gas flow or gas venting into or out of the building shall be by manual restart and conducted by trained personnel.

2209.5.5 Dispenser control system. The dispensing device shall provide a means to prevent over pressurization of the on-board storage container and in accordance with the following:

1. The maximum pressure of the vehicle fuel storage system shall not exceed 125% of the on-board storage container service pressure.
2. The on-board storage container and its integral appurtenances shall not exceed 185^{o}F (85C) during the fueling operation.
3. The hydrogen content of the on-board storage container shall not exceed the gas density of hydrogen at the service pressure and 59^{o}F (15C).
4. An over-pressure relief device [Pressure Relief Valve (PRV)] shall be provided for the dispenser, set at no greater than 140% of the service pressure of the on-board, vehicle fuel storage container.

2209.5.5.1 Fueling system integrity. The dispensing device shall include provisions to check that there are no leaks in the fueling system including the connecting hose and nozzle used to connect the vehicle to the dispenser prior to fueling.

2209.5.5.1.1 Loss of fueling system integrity. The following actions shall occur automatically in the event that a system leak is detected:

1. The dispenser shall be shut down,
2. The flow of gas into the room shall be stopped, and
3. Where mechanical ventilation is provided, room ventilation and dedicated dispensing area ventilation systems shall both be activated.

2209.5.6 Electrical area classification. The area classification for the dispenser shall be Class 1, Division 2 within 15 feet of the point of transfer to the onboard fuel storage system during filling. The area classification shall extend outward in the shape of a cylinder from the point of transfer and from floor to ceiling in accordance with NFPA 70

Exceptions:

1. Vehicles located within the refueling area.
2. Vehicles containing fuel-fired auxiliary equipment where such equipment is shut off completely before entering an area in which ignition sources are not permitted.

2209.5.7 Types I and II construction. Buildings in which indoor fast fuel-dispensing operations take place shall be of Type I or Type II construction. Building construction within 15 feet of the point of transfer to the onboard fuel storage system during filling shall have a fire-resistance rating of not less than 2 hours. Such construction shall be assembled as fire barriers in accordance with Chapter 7 of the *International Building Code*.

2209.5.8 Fire extinguishing systems. Indoor attended fast-fill fuel-dispensing areas designed for maximum fuel delivery masses per refueling event which exceed 2 kg, shall be equipped throughout with an approved automatic

sprinkler system in accordance with Section 903.3.1.1. The design of the sprinkler system shall not be less than that required for Ordinary Hazard Group 2 with a minimum design area of 3,000 square feet (279 m^2).

Where proximate materials or storage arrangements are regulated by other provisions of this code such that a higher level of sprinkler system protection is required, the higher level of sprinkler system protection shall be provided.

2. Add new definitions as follows:

2201.1 Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

FAST-FILL FUEL-DISPENSING SYSTEM. A storage and dispensing system designed to fill motor vehicle fuel tanks with compressed hydrogen. The vehicle fuel tank is filled by connecting to a system designed to provide a fuel fill rate greater than 12 Standard Cubic Feet per Minute (SCFM).

HYDROGEN FUEL-DISPENSING AREA. A Class 1, Division 2 area defined within 15 feet of the point of transfer to the onboard hydrogen fuel storage system during filling, and extending outward in the shape of a cylinder from the point of transfer and from floor to ceiling in accordance with NFPA 70.

TIME-FILL FUEL-DISPENSING SYSTEM. A storage and dispensing system designed to fill motor vehicle fuel tanks with compressed hydrogen. The vehicle fuel tank is filled by connecting to a system designed to provide a fuel fill rate 12 Standard Cubic Feet per Minute (SCFM) or less.

3. Revise as follows:

2209.3.2.3 Indoors. Generation, compression, storage and dispensing equipment shall be located in indoor rooms or areas constructed in accordance with the requirements of the *International Building Code*, the *International Fuel Gas Code* and the *International Mechanical Code* and one of the following:

1. Inside a building in hydrogen cutoff room designed and constructed in accordance with Section 420 of the *International Building Code*.
2. Inside a building not in a hydrogen cutoff room where the gaseous hydrogen system is listed and labeled for indoor installation and installed in accordance with the manufacturer's installation instructions.
3. Inside a building in a dedicated, time-fill hydrogen fuel dispensing area and designed and constructed in accordance with Section 703.1 of the *International Fuel Gas Code*.
4. Inside a building in a dedicated fast-fill hydrogen fuel dispensing area designed and constructed in accordance with Section 2209.5.

IFGC [F] 706.2 Indoor gaseous hydrogen systems. Gaseous hydrogen systems shall be located in indoor rooms or areas in accordance with one of the following:

1. Inside a building in a hydrogen cutoff room designed and constructed in accordance with Section 420 of the *International Building Code*;
2. Inside a building not in a hydrogen cutoff room where the gaseous hydrogen system is listed and labeled for indoor installation and installed in accordance with the manufacturer's installation instructions; and
3. Inside a building in a dedicated hydrogen fuel dispensing area having an aggregate hydrogen delivery capacity not greater than 12 SCFM and designed and constructed in accordance with Section 703.1.
4. Inside a building in a dedicated, time-fill hydrogen fuel dispensing area and designed and constructed in accordance with Section 703.1 and Section 2209 of the *International Fire Code*.
5. Inside a building in a dedicated fast-fill hydrogen fuel dispensing area designed and constructed in accordance with Section 2209.5.

4. Add new text as follows:

907.2.23 (IBC [F] 907.2.23) Indoor fast-fill hydrogen fuel-dispensing areas. An approved manual and automatic fire alarm system shall be installed in fire areas in which indoor fast-fill fuel-dispensing occurs. Manual fire alarm boxes shall be installed in accordance with Section 907.4.1 in the fast-fill hydrogen fuel-dispensing area.The detection system shall be supervised by an approved central, proprietary, or remote station service or shall initiate an audible and visual signal at a constantly attended on site location.

5. Revise as follows:

2703.2.9.1 Equipment, devices and systems requiring testing. The following equipment, systems and devices shall be tested in accordance with Sections 2703.2.9 and 2703.2.9.2.

1. Gas detection systems, alarms and automatic emergency shutoff valves required by Section 3704.2.2.10 for highly toxic and toxic gases.
2. Limit control systems for liquid level, temperature and pressure required by Sections 2703.2.7, 2704.8 and 2705.1.4.
3. Emergency alarm systems and supervision required by Sections 2704.9 and 2705.4.4.
4. Monitoring and supervisory systems required by Sections 2704.10 and 2705.1.6.
5. Manually activated shutdown controls required by Section 4103.1.1.1 for compressed gas systems conveying pyrophoric gases.
6. Gas detection systems, alarms and automatic emergency shutoff valves required by Section 2209 for hydrogen motor fuel dispensing and generation facilities.

Reason: (2209.5) The term "attended" has been replaced with "qualified operator." ICC identifies the term "attended" with the type of fuelling that is done in NJ and OR where a paid attendant is present and others are not permitted to fuel a vehicle. Fuelling operations should be performed by a **"qualified operator"** (that has been qualified through appropriate training) to ensure that proper safeguards are followed. The term "attended" has also been stricken throughout the document for consistency.

(2209.5.1) The term "listed" equipment should only be used 1) when there is in fact a listing standard, and 2) when listed equipment is available. Unless these conditions are met the requirements for items of equipment should either be 1) not specified, 2) "approved," or 3) "listed or approved."

(2209.5.2) The change is editorial in nature. The section on indoor fast fueling is not intended to replace Section 2209.5.

(2209.5.2.1) Fire alarm boxes (pull stations or alarm initiating devices) should be installed in the area in which fueling occurs. The term INDOOR FAST-FILL HYDROGEN FUEL-DISPENSING AREA is defined by this proposal. The term limits applicability of the requirements to the fueling area.

(2209.5.3) Note the exception to Section 2209.5.3.1.1, Room ventilation rate. The IFGC should be referenced as it sets the fundamental requirements for indoor operation and detection.

(2209.5.3.1) The IFGC allows ventilation to be by natural or mechanical means. Provisions are made for the use of "specially engineered installations." The requirements for indoor fast fueling should be correlated with the IFGC. If specially engineered installations are to be prohibited then a statement along with justification is needed to prohibit them, otherwise they are needed for correlation purposes.

(2209.5.3.1.1 & Figure 2209.5.3.1.1) The proposed change is to establish and clarify two distinct ventilation rates for these operations, a general room ventilation rate, and a dedicated, localized dispensing area ventilation rate. Ventilation rates to be consistent with industry practice by reference to the IFGC.

(2209.5.3.1.2) The proposed change is to establish and clarify two distinct ventilation rates for these operations, a general room ventilation rate, and a dedicated, localized dispensing area ventilation rate. Ventilation rates to be consistent with industry practice by reference to the IFGC.

(2209.5.3.2) This change proposes hydrogen gas monitoring as a safety measure which is consistent with industry practice.

(2209.5.4) Detection (and alarm) systems are to be tested and maintained such that they operate as intended when required. Section 2703.2.9 provides the means to address requirements for testing and maintenance for a wide array of alarm and detection systems. The use of Section 2703.2.9 will provide a consistent approach in control. A modification to Section 2703.2.9 has also been proposed..

(2209.5.4.1) Gas detection systems, when provided to monitor hydrogen fueling systems, should be hydrogen specific. Alternatively a flammable gas detector could be used in circumstances where hydrogen is blended with other fuel gases. Specifying the use of a natural gas detection system is not appropriate for hydrogen based fuels.

(2209.5.4.2) With the exception of item 1 all other changes are editorial in nature. The audible and visual alarm signals should be limited to the fire area in which fueling occurs.

(2209.5.4.3) When any other control system is dependent on the operation of the gas detection system, failure of the gas detection system should prevent dispensing from occurring.

(2209.5.4.4) Editorial. Defueling is not the subject of this code section.

(2209.5.4) The required controls for dispensing systems should prevent the on-board storage container from being overfilled (or over-pressurization).

(2209.5.5.1) A means shall be provided to detect a leak should a leak occur. When leaks are detected fueling should be prevented until leaks are repaired.

(2209.5.5.1.1) Editorial clarity.

(2209.5.6) gnition source control is required by Section 2209.3.2.3.3, 2703.7, and 3503.1.4; as well as coordination with analogous provisions in NFPA 52 Section 9.2.5.

(2209.5.7) The construction of buildings used for indoor fast-fueling of hydrogen should limit the effects of fire and its spread through the use of one or more of the following: 1) Non-combustible construction, 2) a means to provided the spread of a fire by passive measures such as fire-resistive construction, or 3) the use of an automatic fire sprinkler system in the hydrogen fuel-dispensing area in which the fueling occurs. Being that construction as a fire barrier is specified, any proposed openings therein are inherently subject to the provisions of IBC Section 706.7.

(2209.5.8) This provision is designed to address the targeted fleet of indoor fast fill operations such as small lift truck applications.

(2202.1 Definitions) The term "gasified fuels" includes CNG and LNG as well as hydrogen. Section 2209 is specific to hydrogen. Fast fill systems include any system that is designed to flow gas at a rate exceeding 12 scfm. The filling rate of a fast flow system need not exceed the 12 scfm, rather if the capability is there to do so, the system is a fast fill system by definition.

The term "gasified fuels" includes CNG and LNG as well as hydrogen. Section 2209 is specific to hydrogen. To be qualified as a time-fill system it should not be necessary to fill the vehicle overnight or while parked in a fleet yard. The code permits filling at rates less than 12 cfm in indoor locations.

(2209.3.2.3) To correlate with the requirements of new Section 2209.5.

(IFGC [F] 706.1) To correlate with the requirements of new IFC Section 2209.5 and corresponding revisions to IFC Section 2209.3.2.3.

(907.2.23) Fire alarm boxes (pull stations or alarm initiating devices) should be installed in the area in which fueling occurs. Fire areas are bounded by fire-resistive construction. If, for example, a large warehouse is involved and the fueling area is not isolated, audible and visible alarms will be required throughout the building. A "fire area" is the aggregate floor area enclosed and bounded by fire walls, fire barriers, exterior walls or fire-resistance-rated horizontal assemblies of a building. The term fire area confines the requirements to the fueling area.

(2703.2.9.1) To correlate with the requirements of new Section 2209.5.4.

Cost Impact: The code change proposal will increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F235–07/08
2211.7.2.1, Chapter 45 (New)

Proponent: Bob Eugene, Underwriters Laboratories

1. Revise as follows:

2211.7.2.1 (Supp) System design. The flammable gas detection system shall be listed or approved and shall be calibrated to the types of fuels or gases used by vehicles to be repaired. Gas detectors or sensors shall be listed in accordance with UL 2075 and shall indicate the gases they are intended to detect. The gas detection system shall be designed to activate when the level of flammable gas exceeds 25 percent of the lower flammable limit (LFL). Gas detection shall also be provided in lubrication or chassis repair pits of repair garages used for repairing nonodorized LNG-fueled vehicles.

2. Add standard to Chapter 45 as follows:

UL

2075-2007 Standard for Gas and Vapor Detectors and Sensors

Reason: The flammable gas detection system is design to produce an alarm or signal when exposed to different concentrations of gases or vapor. As part of that system, the gas detectors or gas sensor is an import part of the system for the detection of these different gasses. The proposal provides direction on the standard and proper marking for the different fuels. Under ANSI/UL 2075, a set flammable gases and concentrations (PPM) is developed for each detector or sensor and the manufacturer is required to provide what gases and the concentration the device is designed to detect. ANSI/UL 2075 verifies performance of each detector or sensor for each gas it is designed to detect. The manufacturer determines what gas their product is designed to detect and will now mark the device with what gases it is design to identify. The intended gases may be in the manufacturer's instructions rather than on the product.

Cost Impact: The code change proposal will not increase the cost of construction.

Analysis: A review of the standard proposed for inclusion in the code, UL 2075-2007, for compliance with ICC criteria for referenced standards given in Section 3.6 of Council Policy #CP 28 will be posted on the ICC website on or before January 15, 2008.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F236–07/08
2301.1, 2308.4, 2310.1, 2501.1, 3404.3.3.9

Proponent: Philip Brazil, PE, Reid Middleton, Inc., representing himself

1. Revise as follows:

2301.1 Scope. High-piled combustible storage shall be in accordance with this chapter. In addition to the requirements of this chapter, the following material-specific requirements shall apply:

1. Aerosols shall be in accordance with Chapter 28.
2. Flammable and combustible liquids shall be in accordance with Chapter 34.
3. Hazardous materials shall be in accordance with Chapter 27.
4. Storage of combustible paper records shall be in accordance with NFPA 13 ~~and NFPA 230~~.
5. Storage of combustible fibers shall be in accordance with Chapter 29.
6. Storage of miscellaneous combustible material shall be in accordance with Chapter 3.

2. Delete without substitution:

~~**2308.4 Column protection.** Steel building columns shall be protected in accordance with NFPA 230.~~

(Renumber subsequent sections)

3. Revise as follows:

2310.1 General. Records storage facilities used for the rack or shelf storage of combustible paper records greater than 12 feet (3658 mm) in height shall be in accordance with Sections 2306 and 2308 and NFPA 13~~ and NFPA 230~~. Palletized storage of records shall be in accordance with Section 2307.

2501.1 Scope. Tire rebuilding plants, tire storage and tire byproduct facilities shall comply with this chapter, other applicable requirements of this code and NFPA 13~~ and NFPA 230~~. Tire storage in buildings shall also comply with Chapter 23.

3404.3.3.9 Idle combustible pallets. Storage of empty or idle combustible pallets inside an unprotected liquid storage area shall be limited to a maximum pile size of 2,500 square feet (232 m2) and to a maximum storage height of 6 feet (1829 mm). Storage of empty or idle combustible pallets inside a protected liquid storage area shall comply with NFPA 13~~ and NFPA 230~~. Pallet storage shall be separated from liquid storage by aisles that are at least 8 feet (2438 mm) wide.

Reason: NFPA 230 has been discontinued by NFPA. NFPA 230 was incorporated into NFPA 1 in 2006.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F237–07/08

2301.1, 2308.4, 2310.1, 2501.1, 3404.3.3.9, Chapter 45 (New)

Proponent: Tom Lariviere, Fire Department, Madison, MS, representing Joint Fire Service Review Committee

1. Revise as follows:

2301.1 Scope. High-piled combustible storage shall be in accordance with this chapter. In addition to the requirements of this chapter, the following material-specific requirements shall apply:

1. Aerosols shall be in accordance with Chapter 28.
2. Flammable and combustible liquids shall be in accordance with Chapter 34.
3. Hazardous materials shall be in accordance with Chapter 27.
4. Storage of combustible paper records shall be in accordance with NFPA 13 and NFPA ~~230~~ 232.
5. Storage of combustible fibers shall be in accordance with Chapter 29.
6. Storage of miscellaneous combustible material shall be in accordance with Chapter 3.

2308.4 Column protection. Steel building columns shall be protected in accordance with NFPA ~~230~~ 13.

2310.1 General. Records storage facilities used for the rack or shelf storage of combustible paper records greater than 12 feet (3658 mm) in height shall be in accordance with Sections 2306 and 2308 and NFPA 13 and NFPA ~~230~~ 232. Palletized storage of records shall be in accordance with Section 2307.

2501.1 Scope. Tire rebuilding plants, tire storage and tire byproduct facilities shall comply with this chapter, other applicable requirements of this code and NFPA 13 ~~and NFPA 230~~. Tire storage in buildings shall also comply with Chapter 23.

3404.3.3.9 Idle combustible pallets. Storage of empty or idle combustible pallets inside an unprotected liquid storage area shall be limited to a maximum pile size of 2,500 square feet (232 m^2) and to a maximum storage height of 6 feet (1829 mm). Storage of empty or idle combustible pallets inside a protected liquid storage area shall comply with NFPA 13 ~~and NFPA 230~~. Pallet storage shall be separated from liquid storage by aisles that are at least 8 feet (2438 mm) wide.

2. Revise Chapter 45 standards as follows:

NFPA

~~230—03~~	~~Fire Protection of Storage~~
232-07	Protection of Records

Reason: NFPA 230 has been eliminated as a standard. The various references throughout the code are being revised in this proposal as appropriate. Some of the references now refer to NFPA 232 *Protection of Records*, and some refer to NFPA 13 *Installation of Sprinkler Systems* as the appropriate standard.

Cost Impact: The code change proposal will not increase the cost of construction.

Analysis: A review of the standard proposed for inclusion in the code, NFPA 232-07, for compliance with ICC criteria for referenced standards given in Section 3.6 of Council Policy #CP 28 will be posted on the ICC website on or before January 15, 2008.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F238–07/08
2305.6

Proponent: Michael E. Dell'Orfano, South Metro Fire Rescue, representing Fire Marshal's Association of Colorado

Add new text as follows:

2305.6 Designation of storage heights. Where required by the fire code official, a visual method of indicating the maximum allowable storage height shall be provided.

(Renumber subsequent sections)

Reason: The purpose of this code change proposal is to add new requirements to allow the fire code official to designate the maximum storage height allowed for a high-piled combustible storage area. Often rooms or buildings have ceiling heights that would allow storage heights beyond that allowed by the fire code or beyond the limits of the fire protection systems. Designating the maximum storage height would allow business owners and fire code officials to visually identify these requirements easily. Examples may include striping the wall or rack uprights, hanging markers from the ceiling, posting signs stating the maximum allowable storage heights, or displaying a floor plan with storage heights indicated. A list of possible methods to indicate maximum storage heights is not included in the code language in order to avoid a "laundry list approach" that may limit creativity for a particular storage area. Improper storage heights appear to be a common issue amongst fire departments across the country and this code change will help to bring uniformity, along with a specific code section to clarify the fire code official's authority.

Cost Impact: The code change proposal will increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F239–07/08
2306.7, Table 2306.2

Proponent: Richard Schulte, Schulte & Associates

1. Revise as follows:

2306.7 Smoke ~~and heat~~ removal system. Where a smoke ~~and heat~~ removal system ~~are~~ is required by Table 2306.2, ~~smoke and heat vents~~ the system shall be provided in accordance with Section 910. Where draft curtains are required by Table 2306.2, they shall be provided in accordance with Section 910~~.3.4~~.

2. Revise column heading as follows:

TABLE 2306.2
GENERAL FIRE PROTECTION AND LIFE SAFETY REQUIREMENTS

	ALL STORAGE AREAS (See Sections 2306, 2307 and 2308)[b]				
COMMODITY CLASS	**Automatic fire-extinguishing system (see Section 2306.4)**	**Fire detection system (see Section 2306.5)**	**Building access (see Section 2306.6)**	**Smoke ~~and heat~~ removal system (see Section 2306.7)**	**Draft curtains (see Section 2306.7)**

(Portions of table and footnotes not shown remain unchanged)

Reason: The purpose of this proposal is to coordinate proposed changes to Section 910 with the provisions contained in Chapter 23 in the IFC.
The code change proposal which addresses Section 910 contains extensive modifications to the provisions for ventilation in large one-story industrial and storage buildings and in buildings which contain high-piled storage. The proposed changes to Table 2306.2 and Section 2306.7 are necessary for coordination with the changes proposed to Section 910.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

F240–07/08
2309.4 (New), 2302.1 (New)

Proponent: Tom Lariviere, Fire Department, Madison, MS, representing Joint Fire Service Review Committee

1. Add new text as follows:

2309.4 Automated rack storage. High-piled storage areas with automated rack storage shall be provided with a manually activated emergency shut down switch for use by emergency personnel. The switch shall be clearly identified and shall be in a location approved by the fire code official.

2. Add new definition as follows:

2302.1 Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

AUTOMATED RACK STORAGE. Automated rack storage is a stocking method whereby the movement of pallets, products, apparatus, or systems are automatically controlled by mechanical or electronic devices that take the place of human labor.

Reason: This proposal will provide that if an emergency is to occur in an automated rack storage facility the remotely controlled pallet moving equipment can be manually shut-down. This shut down accomplishes two objectives. First, the potential to either move additional product into the fire or move burning product through the storage area via remotely controlled pallet movers is ceased. Secondly, it is not safe to place emergency personnel within the automated storage area when the system is still active. Many of these automated devices move much faster than personnel can get out of the way, and there is a physical danger to personnel. This shut-down will eliminate danger to personnel and reduce property damage.

Cost Impact: The code change proposal will increase the cost of construction.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

F241–07/08
2403.8.4 (New); IBC 3102.1

Proponent: Daniel E. Nichols, PE, NY State Division of Code Enforcement and Administration

THESE PROPOSALS ARE ON THE AGENDA OF THE IFC AND THE IBC GENERAL CODE DEVELOPMENT COMMITTEES AS 2 SEPARATE CODE CHANGES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IFC

Add new text as follows:

2403.8.4 Membrane structures on buildings. Membrane structures that are erected on buildings, balconies, decks, or other structures shall be regulated as permanent membrane structures in accordance with Section 3102 of the *International Building Code*.

(Renumber subsequent sections)

PART II – IBC GENERAL

3102.1 General. The provisions of this section shall apply to air-supported, air-inflated, membrane-covered cable and membrane-covered frame structures, collectively known as membrane structures, erected for a period of 180 days or longer. Those erected for a shorter period of time shall comply with the *International Fire Code*. Membrane structures covering water storage facilities, water clarifiers, water treatment plants, sewage treatment plants, greenhouses and similar facilities not used for human occupancy, are required to meet only the requirements of Sections 3102.3.1 and 3102.7. Membrane structures erected on a building, balcony, deck or other structure for any period of time shall comply with this section.

Reason: The purpose of this code proposal is to limit the location where temporary membrane structures can be erected, based on regulations already found in the temporary membrane structure requirements.

Temporary membrane structures that are placed in a field or parking lot are afforded several safety features including fire separation distance from other hazards (buildings, vehicles), separation from other tents, and provide an unobstructed means of egress path for the uniformly located exits. When a membrane structure is placed upon a building or deck, the temporary membrane structure requirements do not currently regulate exiting from the temporary membrane structure to a set of stairs or door nor do they regulate the hazards that could be below the temporary membrane structure. Furthermore, the temporary membrane structure section does not contain requirements on the regulation of the loads temporary membrane structures would have on a structure below.

With the means of egress, fire separation, and structural issues, it is best for temporary membrane structures to be regulated as permanent membrane structures and subject to the International Building Code.

Cost Impact: The code change proposal will not increase the cost of construction.

PART I – IFC

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

PART II – IBC GENERAL

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F242–07/08
2403.12.6.1

Proponent: Bob Eugene, Underwriters Laboratories

Revise as follows:

2403.12.6.1 (Supp) Exit sign illumination. Exit signs shall be either listed and labeled in accordance with UL 924 as ~~a self-luminous~~ the internally illuminated type ~~having a minimum duration of 90 minutes luminosity~~ and used in accordance with the listing or shall be ~~internally or~~ externally illuminated by luminaires supplied in the following manner:

1. Two separate circuits, one of which shall be separate from all other circuits, for occupant loads of 300 or less; or
2. Two separate sources of power, one of which shall be an approved emergency system, shall be provided when the occupant load exceeds 300. Emergency systems shall be supplied from storage batteries or from the on-site generator set, and the system shall be installed in accordance with NFPA 70. The emergency system provided shall have a minimum duration of 90 minutes when operated at full design demand.

Reason: Internally illuminated exit signs Listed in accordance with UL 924 include electrically powered, self-luminous and photoluminescent types, each of which provide for a minimum of 90 minutes luminosity upon loss of normal power. The proposed change complements IBC/IFC section 1011.4.

> ***IBC 1011.4 Internally illuminated exit signs.*** *Electrically powered, self-luminous and photoluminescent exit signs shall be listed and labeled in accordance with UL 924 and shall be installed in accordance with the manufacturer's instructions and Section 2702. Exit signs shall be illuminated at all times.*

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F243–07/08

Chapter 24, 105.6.43, 105.7.13, 202 (IBC 202); Table 906.1 (IBC Table [F] 906.1)

Proponent: Tom Lariviere, Fire Department, Madison, MS, representing Joint Fire Service Review Committee

THESE PROPOSALS ARE ON THE AGENDA OF THE IFC AND THE IBC GENERAL CODE DEVELOPMENT COMMITTEES AS 2 SEPARATE CODE CHANGES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IFC

1. Revise Chapter 24 as follows:

CHAPTER 24
TENTS, CANOPIES AND
OTHER MEMBRANE STRUCTURES

SECTION 2401
GENERAL

2401.1 (Supp) Scope. Tents~~, canopies~~ and membrane structures shall comply with this chapter. The provisions of Section 2403 are applicable only to temporary tents~~, canopies~~ and membrane structures. The provisions of Section 2404 are applicable to temporary and permanent tents~~, canopies~~ and membrane structures.

SECTION 2402
DEFINITIONS

~~**CANOPY.** A structure, enclosure or shelter constructed of fabric or pliable materials supported by any manner, except by air or the contents it protects, and is open without sidewalls or drops on 75 percent or more of the perimeter~~

TENT. A structure, enclosure or shelter, with or without sidewalls or drops, constructed of fabric or pliable material supported by any manner except by air or the contents that it protects.

SECTION 2403
TEMPORARY TENTS, CANOPIES AND MEMBRANE STRUCTURES

2403.1 General. All temporary tents~~, canopies~~ and membrane structures shall comply with this section.

2403.2 Approval required. Tents and membrane structures having an area in excess of ~~200~~ 400 square feet (~~19~~ 37 m^2) ~~and canopies in excess of 400 square feet (37 m^2)~~ shall not be erected, operated or maintained for any purpose without first obtaining a permit and approval from the fire code official.

Exceptions:

1. Tents used exclusively for recreational camping purposes.
2. ~~Fabric canopies~~ Tents open on all sides which comply with all of the following:
   2.1. Individual ~~canopies~~ tents having a maximum size of 700 square feet (65 m^2).
   2.2. The aggregate area of multiple ~~canopies~~ tents placed side by side without a fire break clearance of 12 feet (3658 mm), not exceeding 700 square feet (65 m^2) total.
   2.3. A minimum clearance of 12 feet (3658 mm) to all structures and other tents.

2403.3 Place of assembly. (No change to current text)
2403.4 Permits. (No change to current text)

2403.5 Use period. Temporary tents, air-supported, air-inflated or tensioned membrane structures ~~and canopies~~ shall not be erected for a period of more than 180 days within a 12-month period on a single premises.

2403.6 Construction documents. A detailed site and floor plan for tents~~, canopies~~ or membrane structures with an occupant load of 50 or more shall be provided with each application for approval. The tent~~, canopy~~ or membrane structure floor plan shall indicate details of the means of egress facilities, seating capacity, arrangement of the seating and location and type of heating and electrical equipment.

2403.7 Inspections. (No change to current text)
2403.7.1 Inspection report. (No change to current text)

2403.8 Access, location and parking. Access location and parking for temporary tents~~, canopies~~ and membrane structures shall be in accordance with this section.

2403.8.1 Access. (No change to current text)

2403.8.2 Location. Tents~~, canopies~~ or membrane structures shall not be located within 20 feet (6096 mm) of lot lines, buildings, other tents~~, canopies~~ or membrane structures, parked vehicles or internal combustion engines. For the purpose of determining required distances, support ropes and guy wires shall be considered as part of the temporary membrane structure~~,~~ or tent ~~or canopy~~.

Exceptions:

1. Separation distance between membrane structures~~,~~ and tents ~~and canopies~~ not used for cooking, is not required when the aggregate floor area does not exceed 15,000 square feet (1394 m^2).
2. Membrane structures~~,~~ or tents ~~or canopies~~ need not be separated from buildings when all of the following conditions are met:
   2.1. The aggregate floor area of the membrane structure~~,~~ or tent ~~or canopy~~ shall not exceed 10,000 square feet (929 m^2).
   2.2. The aggregate floor area of the building and membrane structure~~,~~ or tent ~~or canopy~~ shall not exceed the allowable floor area including increases as indicated in the *International Building Code*.
   2.3. Required means of egress provisions are provided for both the building and the membrane structure~~,~~ or tent or ~~canopy,~~ including travel distances.
   2.4. Fire apparatus access roads are provided in accordance with Section 503.

2403.8.3 Location of structures in excess of 15,000 square feet in area. (No change to current text)
2403.8.4 Connecting corridors. (No change to current text)

2403.8.5 Fire break. An unobstructed fire break passageway or fire road not less than 12 feet (3658 mm) wide and free from guy ropes or other obstructions shall be maintained on all sides of all tents~~, canopies~~ and membrane structures unless otherwise approved by the fire code official.

2403.9 Anchorage required. Tents~~, canopies~~ or membrane structures and their appurtenances shall be adequately roped, braced and anchored to withstand the elements of weather and prevent against collapsing. Documentation of structural stability shall be furnished to the fire code official on request.

2403.10 Temporary air-supported and air-inflated membrane structures. (No change to current text)
2403.10.1 Door operation. (No change to current text)
2403.10.2 Fabric envelope design and construction. (No change to current text)
2403.10.3 Blowers. (No change to current text)
2403.10.4 Auxiliary power. (No change to current text)

2403.11 Seating arrangements. Seating in tents~~, canopies~~ or membrane structures shall be in accordance with Chapter 10.

2403.12 Means of egress. Means of egress for temporary tents~~, canopies~~ and membrane structures shall be in accordance with Sections 2403.12.1 through 2403.12.8.

2403.12.1 Distribution. (No change to current text)
2403.12.2 Number. (No change to current text)

TABLE 2403.12.2
MINIMUM NUMBER OF MEANS OF EGRESS AND MEANS OF EGRESS WIDTHS FROM TEMPORARY MEMBRANE STRUCTURES~~,~~ AND TENTS ~~AND CANOPIES~~

OCCUPANT LOAD	MINIMUM NUMBER OF MEANS OF EGRESS	MINIMUM WIDTH OF EACH MEANS OF EGRESS (inches)	MINIMUM WIDTH OF EACH MEANS OF EGRESS (inches)
		Tent ~~or Canopy~~	Membrane Structure
10 to 199	2	72	36
200 to 499	3	72	72
500 to 999	4	96	72
1,000 to 1,999	5	120	96
2,000 to 2,999	6	120	96
Over 3,000[a]	7	120	96

For SI: 1 inch = 25.4 mm.
a. When the occupant load exceeds 3,000, the total width of means of egress (in inches) shall not be less than the total occupant load multiplied by 0.2 inches per person.

2403.12.3 Exit openings from tents. (No change to current text)
2403.12.4 Doors. (No change to current text)
2403.12.5 Aisle. (No change to current text)
2403.12.5.1 Arrangement and maintenance. (No change to current text)
2403.12.6 Exit signs. (No change to current text)
2403.12.6.1 (Supp) Exit sign illumination. (No change to current text)
2403.12.7 Means of egress illumination. (No change to current text)
2403.12.8 Maintenance of means of egress. (No change to current text)

SECTION 2404
TEMPORARY AND PERMANENT TENTS~~, CANOPIES~~ AND MEMBRANE STRUCTURES

2404.1 General. All tents~~, canopies~~ and membrane structures, both temporary and permanent, shall be in accordance with this section. Permanent tents~~, canopies~~ and membrane structures shall also comply with the *International Building Code*.

2404.2 Flame propagation performance treatment. Before a permit is granted, the owner or agent shall file with the fire code official a certificate executed by an approved testing laboratory certifying that the tents; ~~canopies and~~ membrane structures and their appurtenances; sidewalls, drops and tarpaulins; floor coverings, bunting and combustible decorative materials and effects, including sawdust when used on floors or passageways, shall be composed of material meeting the flame propagation performance criteria of NFPA 701 or shall be treated with a flame retardant in an approved manner and meet the flame propagation performance criteria of NFPA 701, and that such flame propagation performance criteria are effective for the period specified by the permit.

2404.3 Label. Membrane structures~~,~~ or tents ~~or canopies~~ shall have a permanently affixed label bearing the identification of size and fabric or material type.

2404.4 Certification. An affidavit or affirmation shall be submitted to the fire code official and a copy retained on the premises on which the tent or air-supported structure is located. The affidavit shall attest to the following information relative to the flame propagation performance criteria of the fabric:

1. Names and address of the owners of the tent~~, canopy~~ or air-supported structure.
2. Date the fabric was last treated with flame-retardant solution.
3. Trade name or kind of chemical used in treatment.
4. Name of person or firm treating the material.
5. Name of testing agency and test standard by which the fabric was tested.

2404.5 (Supp) Combustible materials. Hay, straw, shavings or similar combustible materials shall not be located within any tent~~, canopy~~ or membrane structure containing an assembly occupancy, except the materials necessary for the daily feeding and caring of animals. Sawdust and shavings utilized for a public performance or exhibit shall not be prohibited provided the sawdust and shavings are kept damp. Combustible materials shall not be permitted under stands or seats at any time.

2404.6 Smoking. Smoking shall not be permitted in tents~~, canopies~~ or membrane structures. Approved "No Smoking" signs shall be conspicuously posted in accordance with Section 310.

2404.7 Open or exposed flame. Open flame or other devices emitting flame, fire or heat or any flammable or combustible liquids, gas, charcoal or other cooking device or any other unapproved devices shall not be permitted inside or located within 20 feet (6096 mm) of the tent~~, canopy~~ or membrane structures while open to the public unless approved by the fire code official.

2404.8 Fireworks. Fireworks shall not be used within 100 feet (30 480 mm) of tents~~, canopies~~ or membrane structures.

2404.9 Spot lighting. (No change to current text)

2404.10 Safety film. Motion pictures shall not be displayed in tents~~, canopies~~ or membrane structures unless the motion picture film is safety film.

2404.11 (Supp) Clearance. (No change to current text)
2404.12 Portable fire extinguishers. (No change to current text)
2404.13 Fire protection equipment. (No change to current text)
2404.14 Occupant load factors. (No change to current text)
2404.15 Heating and cooking equipment. (No change to current text)
2404.15.1 Installation. (No change to current text)

2404.15.2 Venting. Gas, liquid and solid fuel-burning equipment designed to be vented shall be vented to the outside air as specified in the *International Fuel Gas Code* and the *International Mechanical Code*. Such vents shall be equipped with approved spark arresters when required. Where vents or flues are used, all portions of the tent~~, canopy~~ or membrane structure shall be not less than 12 inches (305 mm) from the flue or vent.

2404.15.3 Location. (No change to current text)
2404.15.4 Operations. (No change to current text)

2404.15.5 Cooking tents. Tents where cooking is performed shall be separated from other tents~~, canopies~~ or membrane structures by a minimum of 20 feet (6096 mm).

2404.15.6 Outdoor cooking. Outdoor cooking that produces sparks or grease-laden vapors shall not be performed within 20 feet (6096 mm) of a tent~~, canopy~~ or membrane structure.

2404.15.7 Electrical heating and cooking equipment. (No change to current text)

2404.16 LP-gas. (No change to current text)
2404.16.1 General. (No change to current text)

2404.16.2 Location of containers. LP-gas containers shall be located outside. Safety release valves shall be pointed away from the tent~~, canopy~~ or membrane structure.

2404.16.2.1 Containers 500 gallons or less. (No change to current text)
2404.16.2.2 Containers more than 500 gallons. (No change to current text)

2404.16.3 Protection and security. Portable LP-gas containers, piping, valves and fittings which are located outside and are being used to fuel equipment inside a tent~~, canopy~~ or membrane structure shall be adequately protected to prevent tampering, damage by vehicles or other hazards and shall be located in an approved location. Portable LP-gas containers shall be securely fastened in place to prevent unauthorized movement.

2404.17 Flammable and combustible liquids. (No change to current text)
2404.17.1 Use. (No change to current text)

2404.17.2 Flammable and combustible liquid storage. Flammable and combustible liquids shall be stored outside in an approved manner not less than 50 feet (15 240 mm) from tents~~, canopies~~ or membrane structures. Storage shall be in accordance with Chapter 34.

2404.17.3 Refueling. Refueling shall be performed in an approved location not less than 20 feet (6096 mm) from tents~~, canopies~~ or membrane structures.

2404.18 Display of motor vehicles. Liquid- and gas-fueled vehicles and equipment used for display within tents~~, canopies~~ or membrane structures shall be in accordance with Sections 2404.18.1 through 2404.18.5.3.

2404.18.1 Batteries. (No change to current text)

2404.18.2 Fuel systems. Vehicles or equipment shall not be fueled or defueled within the tent~~, canopy~~ or membrane structure.

2404.18.2.1 Quantity limit. (No change to current text)
2404.18.2.2 Inspection. (No change to current text)
2404.18.2.3 Closure. (No change to current text)
2404.18.3 Location. (No change to current text)
2404.18.4 Places of assembly. (No change to current text)

2404.18.5 Competitions and demonstrations. Liquid and gas-fueled vehicles and equipment used for competition or demonstration within a tent~~, canopy~~ or membrane structure shall comply with Sections 2404.18.5.1 through 2404.18.5.3.

2404.18.5.1 Fuel storage. (No change to current text)
2404.18.5.2 Fueling. (No change to current text)
2404.18.5.3 Spills. (No change to current text)

2404.19 Separation of generators. Generators and other internal combustion power sources shall be separated from tents~~, canopies~~ or membrane structures by a minimum of 20 feet (6096 mm) and shall be isolated from contact with the public by fencing, enclosure or other approved means.

2404.20 Standby personnel. When, in the opinion of the fire code official, it is essential for public safety in a tent~~, canopy~~ or membrane structure used as a place of assembly or any other use where people congregate, because of the number of persons, or the nature of the performance, exhibition, display, contest or activity, the owner, agent or lessee shall employ one or more qualified persons, as required and approved, to remain on duty during the times such places are open to the public, or when such activity is being conducted.

Before each performance or the start of such activity, standby personnel shall keep diligent watch for fires during the time such place is open to the public or such activity is being conducted and take prompt measures for extinguishment of fires that occur and assist in the evacuation of the public from the structure.

There shall be trained crowd managers or crowd manager supervisors at a ratio of one crowd manager/supervisor for every 250 occupants, as approved.

2404.21 (Supp) Combustible vegetation. Combustible vegetation that could create a fire hazard shall be removed from the area occupied by a tent~~, canopy~~ or membrane structure, and from areas within 30 feet (9144 mm) of such structures.

2404.22 (Supp) Combustible waste material. The floor surface inside tents~~, canopies~~ or membrane structures and the grounds outside and within a 30 foot (9144 mm) perimeter shall be kept clear of combustible waste and other combustible materials that could create a fire hazard. Such waste shall be stored in approved containers and shall be removed from the premises at least once a day during the period the structure is occupied by the public.

2. Revise as follows:

105.6.43 Temporary membrane structures~~,~~ and tents ~~and canopies~~. An operational permit is required to operate an air-supported temporary membrane structure or a tent having an area in excess of ~~200~~ 400 square feet (~~19~~ 37 m^2)~~, or a canopy in excess of 400 square feet (37 m^2)~~.

Exceptions:

1. Tents used exclusively for recreational camping purposes.
2. ~~Fabric canopies~~ Tents open on all sides which comply with all of the following:
   2.1. Individual ~~canopies~~ tents having a maximum size of 700 square feet (65 m^2).
   2.2. The aggregate area of multiple ~~canopies~~ tents placed side by side without a fire break clearance of not less than 12 feet (3658 mm) shall not exceed 700 square feet (65 m^2) total.
   2.3. A minimum clearance of 12 feet (3658 mm) to structures and other tents shall be provided.

105.7.13 Temporary membrane structures~~,~~ and tents ~~and canopies~~. A construction permit is required to erect an air-supported temporary membrane structure or a tent having an area in excess of ~~200~~ 400 square feet (~~19~~ 37 m^2)~~, or a canopy in excess of 400 square feet (37 m^2)~~.

Exceptions:

1. Tents used exclusively for recreational camping purposes.
2. Funeral tents and curtains or extensions attached thereto, when used for funeral services.
3. ~~Fabric canopies~~ Tents and awnings open on all sides which comply with all of the following:
   3.1. Individual ~~canopies~~ tents shall have a maximum size of 700 square feet (65 m^2).
   3.2. The aggregate area of multiple ~~canopies~~ tents placed side by side without a fire break clearance of not less than 12 feet (3658 mm) shall not exceed 700 square feet (65 m^2) total.
   3.3. A minimum clearance of 12 feet (3658 mm) to structures and other tents shall be maintained.

SECTION 202
GENERAL DEFINITIONS

CANOPY. ~~See Section 2402.1.~~ A structure or architectural projection of rigid construction over which a covering is attached that provides weather protection, identity or decoration, and may be structurally independent or supported by attachment to a building on one end and by not less than one stanchion on the outer end.

TABLE 906.1 [IBC [F] TABLE 906.1 (Supp)]
ADDITIONAL REQUIRED PORTABLE FIRE EXTINGUISHERS

SECTION	SUBJECT
2404.12	Tents~~, canopies~~ and membrane structures

(Portions of table not shown remain unchanged)

PART II – IBC GENERAL

Revise definitions as follows:

SECTION 202
DEFINITIONS

CANOPY. ~~An~~ A permanent structure or architectural projection of rigid construction over which a covering is attached that provides weather protection, identity or decoration, and shall be structurally independent or ~~and is~~ supported by ~~the~~ attachment to a building ~~to which it is attached and at the outer~~ on one end and by not less than one stanchion on the outer end. ~~A canopy is comprised of a rigid structure over which a covering is attached.~~

TENT (Supp). A structure, enclosure or shelter, with or without sidewalls or drops, constructed of fabric or pliable material supported in any manner except by air or the contents it protects.

Reason: General:
The pivot point of this proposed code change affecting tents and canopies is the major difference in the way "tents" and "canopies" are defined between the building and fire codes. If it's agreed the difference is significant and that the two codes need to be correlated, then the majority of changes needed are to be made to the fire code.

With some minor differences in the respective wording, a tent is a tent in either code. But that's not the case with canopies.

To date, the building code definition of a canopy has been broad and general enough to encompass most everything thought of in the vernacular, be it a covered walkway or the structure that stands over fuel dispensing islands.

Using the current fire code verbiage of a tent or canopy, the following fits the definition of a tent:

This photo fits the definition of a canopy, and at the same time, fits the building code definition of a tent:

In the vernacular, the following are examples of canopies in the building code:

The above photo is also addressed in the fire code as a canopy but it doesn't fit the fire code definition.

Definitions:

The proposed change to the definition of canopy in both codes is to ensure what's being described still includes everything previously thought of in the vernacular but to the exclusion of the fire code's current definition of a canopy which is essentially a tent without sidewalls. Therefore, the definition of canopy is proposed for deletion and relocation in the fire code so as to cover the multiple applications currently found in the code.

By example, while the current definition of canopy in the fire code is found in Chapter 24 Tents, Canopies and Other Membrane Structures, the context and application of a canopy is totally out sync with how canopies are addressed in Chapter 22, Motor Fuel-Dispensing Facilities and Repair Garages. Unlike the temporary nature of tents and canopies in an unchanged Chapter 24, through Chapter 22, canopies are basically independent structures with some permanence expected. In addition, the building code uses the fire code as a reference for the design and construction of canopies at fueling stations. (See IBC Sections 406.5.2, 406.5.2.1 and 2606.10.) By redefining canopies as proposed and locating the revised definition in IFC Chapter 2, it will apply to all sections of the code where canopies are addressed.

Through this proposal, there is no attempt to change the current numerical values found in the code as they relate to exit discharge capacity, the number of exits, occupancy load, etc. What is desired is to change the definitions in both codes to ensure both codes comport with each other.

Code side-by-side comparison:

Attached is a comparison of the building and fire code to help illustrate the need to revise and correlate the definitions of tents and canopies, and how the technical applications of the codes get applied.

IBC Definition	IFC Definition	Permit Thresholds		Proposed change to IBC and IFC	Webster's 3rd New International Dictionary (as referenced in IFC Section 201.4)
		IBC	IFC		
AWNING. An architectural projection that provides weather protection, identity or decoration and is wholly supported by the building to which it is attached. An awning is comprised of a lightweight, rigid skeleton structure over which a covering is attached.	Silent. Not defined.				
CANOPY. An architectural projection that provides weather protection, identity or decoration and is supported by the building to which it is attached and at the outer end by not less than one stanchion. A canopy is comprised of a rigid structure over which a covering is attached.	**CANOPY.** A structure, enclosure or shelter constructed of fabric or pliable materials supported by any manner, except by air or the contents it protects, and is open without sidewalls or drops on 75 percent or more of the perimeter.	>0 sq. ft.	>400 sq. ft.	**Canopy.** A structure or architectural projection of rigid construction over which a covering is attached that provides weather protection, identity or decoration, and may be structurally independent or supported by attachment to a building on one end by not less than one stanchion on the outer end.	**Canopy. 1:** a covering usu. For shelter or protection **a:** a covering usu. of cloth suspended from the four high posts of a bed **d:** a temporary or permanent cover providing shelter and decoration (as over a door or window) **f:** an awning or marquee often stretching from doorway to curb or covering a section of grandstand.
TENT. Any structure, enclosure or shelter which is constructed of canvas or pliable material supported in any manner except by air or the contents it protects.	**TENT.** A structure, enclosure or shelter constructed of fabric or pliable material supported by any manner except by air or the contents that it protects.	>120 sq. ft. (Sec. 3103.1.1)	>200 sq. ft. Exception: Aggregate (w/ less than 12 ft. fire break) or individual fabric canopies = or <700 sq. ft.	**TENT.** A structure, enclosure or shelter, with or without sidewalls or drops, constructed of fabric or pliable material supported by any manner except by air or the contents that it protects.	**Tent. 1:** a collapsible shelter of canvas or other material stretched and sustained by poles, usu. made fast by ropes attached to pegs hammered into the ground, and used for camping outdoors (as by soldiers or vacationers) or as a temporary building (as for theatrical performance) **3:** something that resembles a tent or that servers as a shelter

LIST OF CODE SECTIONS AND TOPICS ADDRESSING TENTS OR CANOPIES									
IBC Chapter and Subject	**IBC**				**IFC Chapter and Subject**	**IFC**			
	Canopy		**Tents**			**Canopy**		**Tents**	
1 Administration					1 Administration	105.6.43	Operational permit threshold	105.6.43	Operational permit threshold
						105.7.13	Construction permit threshold	105.7.13	Construction permit threshold
2 Definitions	202	Definition of canopy	202	Definition of tent	2 Definitions				
3 Use and Occupancy Classification					3 General precautions against fire	315.3.1	Storage prohibitions under unsprinklered “eaves, canopies or other projections or overhangs”.		
4 Special detailed requirements based on use and occupancy	406.5.2	Motor fuel dispensing facilities							
	406.5.2.1	Motor fuel dispensing facilities for hydrogen							
					6 Building services and systems			604.2.9	Emergency power for exit signs in temporary tents
7 Fire-resistance rated construction	705.5.2	Fire walls to extend to outer edge of canopies							
					9 Fire protections systems	T903.2.13	Cross ref for add req fire ext for Hydrogen fueling area canopies		
						T906.1	Additional required fire extinguishers	T906.1	Additional required fire extinguishers
10 Means of egress	1025.6.2.2	Smoke protected seating; roof height			10 Means of egress	1025.6.2.2	Smoke protected seating; roof height		
16 Structural design	T1607.1 (30)	Uniform and concentrated live loads from canopies							
	1607.11.2.4	Ref to T1607.1, Sec 1608 &1609 for uniform live loads of canopies							
					22 Motor fuel-dispensing and repair garages	2202.1	Motor fuel-dispensing facilities; definition of “dispensing device, overhead type” under canopies		
						2203.1(2) Exce	Location of fuel dispensing devices		
						2207.4 Excep	LP dispensing		

LIST OF CODE SECTIONS AND TOPICS ADDRESSING TENTS OR CANOPIES									
IBC Chapter and Subject	IBC				IFC Chapter and Subject	IFC			
	Canopy		Tents			Canopy		Tents	
							under canopies		
						2208.3.1 Excep	CNG dispensing under canopies		
						T2209.3.1 Note c	Minimum separation for gaseous dispensers from other features		
						2209.3.2.6	Motor fuel-dispensing facilities; canopy tops – hydrogen		
						2209.3.2.6.1	Motor fuel-dispensing facilities; canopy top construction – hydrogen – refers to IBC 406.5		
						2209.3.2.6.2	Required automatic fire extinguishing system under fueling canopies		
						2209.3.2.6.2.1	Motor fuel-dispensing facility; Emergency hydrogen discharge from canopy		
						2209.3.2.6.3	Motor fuel-dispensing facility; hydrogen canopy signage		
						2209.3.3	Canopy design to prevent hydrogen gas accumulation		
						2209.5.4.1	Location of hydrogen vent not to be under canopy		
					24 Tents, canopies and other membrane structures	2401.1	Scoping of Canopies	2401.1	Scoping of Tents
						2402.1	Definition of canopy	2402.1	Definition of tent
						2403.1	General statement of compliance to section	2403.1	General statement of compliance to section
						2403.2	Approval threshold and exceptions	2403.2	Approval threshold and exceptions
						2403.5	Limitation of 180 days for temporary canopies	2403.5	Limitation of 180 days for temporary tents
						2403.6	Construction documents	2403.6	Construction documents
						2403.8	Access location and parking for temporary canopies	2403.8	Access location and parking for temporary tents
						2403.8.2	Canopy location with	2403.8.2	Tent location with

LIST OF CODE SECTIONS AND TOPICS ADDRESSING TENTS OR CANOPIES									
IBC Chapter and Subject	IBC				IFC Chapter and Subject	IFC			
	Canopy		Tents			Canopy		Tents	
							exceptions		exceptions
								2403.8.4	Connecting corridors between tents
						2403.8.5	Required fire break around canopies	2403.8.5	Required fire break around tents
						2403.9	Adequate anchorage requirement	2403.9	Adequate anchorage requirement
						2403.11	Seating in canopies to comply w/ Chap 10	2403.11	Seating in tents to comply w/ Chap 10
						2403.12	Means of egress	2403.12	Means of egress
						2403.12.1	Means of egress distribution	2403.12.1	Means of egress distribution
						2403.12.2 & T 2403.12.2	Number of means of egress	2403.12.2 & T 2403.12.2	Number of means of egress
						2404.1	Temp canopies to comply w/ IFC Permanent canopies to also comply w/ IBC	2404.1	Temp tents to comply w/ IFC. Permanent tents to also comply w/ IBC
						2404.2	Canopy material to comply w/ 701	2404.2	Tent material to comply w/ 701
						2404.3	Canopy material label requirement	2404.3	Tent material label requirement
						2404.4	Certification requirement about fabric treatment	2404.4	Certification requirement about fabric treatment
						2404.5	Proximity of combustible materials	2404.5	Proximity of combustible materials
						2404.6	Smoking prohibition	2404.6	Smoking prohibition
						2404.7	Proximity of open flames	2404.7	Proximity of open flames
						2404.8	No fireworks w/in 100 feet of canopy	2404.8	No fireworks w/in 100 feet of tent
						2404.10	Restriction against showing movies under canopies unless using safety film	2404.10	Restriction against showing movies under tents unless using safety film
						2404.15.2	Venting of heating & cooking equip.	2404.15.2	Venting of heating & cooking equip.
						2404.15.5	Canopy separation from cooking tents	2404.15.5	Cooking tent separation from other tents
						2404.15.6	Proximity of outdoor cooking (grease & sparks)	2404.15.6	Proximity of outdoor cooking (grease & sparks)
						2404.16.2	Location of LP-gas	2404.16.2	Location of LP-gas

LIST OF CODE SECTIONS AND TOPICS ADDRESSING TENTS OR CANOPIES									
IBC Chapter and Subject	IBC				IFC Chapter and Subject	IFC			
	Canopy		Tents			Canopy		Tents	
							containers		containers
						2404.16.3	LP-gas container security	2404.16.3	LP-gas container security
						2404.17.1	Prohibition against using flammable liquid fueled equipment in canopies	2404.17.1	Prohibition against using flammable liquid fueled equipment in tents
						2404.17.2	Separation requirement between canopy and flammable liquid storage	2404.17.2	Separation requirement between tent and flammable liquid storage
						2404.18	Display of motor vehicles	2404.18	Display of motor vehicles
						2404.18.2	Prohibition of fueling vehicles in canopies	2404.18.2	Prohibition of fueling vehicles in tents
						2404.18.5	Fuel-fired vehicle competitions & demo under canopy	2404.18.5	Fuel-fired vehicle competitions & demo under tent
						2404.19	Separation of generators from canopies	2404.19	Separation of generators from tent
						2404.20	Standby personnel; fire watch	2404.20	Standby personnel; fire watch
						2404.21	Vegetation removal	2404.21	Vegetation removal
						2404.22	Required removal or clearance of waste material from canopies	2404.22	Required removal or clearance of waste material from tent
26 Plastic	2606.10	Criteria for light-transmitting plastics used in canopies at motor fuel-dispensing facilities							
			2702.2.9	Emergency power for exit signs					
31 Special construction	3101.1	Scoping for canopies							
			3103.1	Temp tents (<180 days) to comply w/ IFC. Permanent tents to comply w/ IBC provisions.					
			3103.4	Temporary structures to comply with Chap 10					
	3105.1	General reference for canopy requirements							

LIST OF CODE SECTIONS AND TOPICS ADDRESSING TENTS OR CANOPIES									
IBC Chapter and Subject	IBC				IFC Chapter and Subject	IFC			
	Canopy		Tents			Canopy		Tents	
	3105.3	Reference to Chap 16 for wind or lateral loads and live loads for canopies							
	3105.4	Canopy materials; flame spread							
32 Encroachments into the public right-of-way	3201.4	Limit of drainage water from canopy to encroach upon public right-of-way							
	3202.3.1	Limit of encroachment of canopy structure to public right-of-way							
33 Safeguards during construction	3306.7	Canopy height over walkway							
Appendix D Fire Districts	D102.2.8	Permanent canopies in fire districts							

Cost Impact: The code change proposal will not increase the cost of construction.

PART I – IFC

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

PART II – IBC GENERAL

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

F244–07/08
2502.2

Proponent: Tom Lariviere, Fire Department, Madison, MS, representing Joint Fire Service Review Committee

Revise as follows:

2505.2 Separation of piles. Individual tire storage piles shall be separated ~~from other piles of salvage~~ by a clear space of at least 40 feet (12 192 mm).

Reason: This code change proposes to remove these words, and as a result clear up the confusion in this section. The separation distances are intended to apply to all tires, new, used or otherwise and provide a separation distance between piles. The word salvage limits the application of this section to only salvage tire piles. The fire load is as significant in the salvage pile as it is in the new tire piles. This proposal will provide for application of the 40 foot separation distance to all piles.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

F245–07/08
2701.2.2.1, 2702.1 (IBC [F] 307.2)

Proponent: Larry Fluer, Fluer, Inc., representing Compressed Gas Association

1. Revise as follows:

2701.2.2.1 Physical hazards. The material categories listed in this section are classified as physical hazards. A material with a primary classification as a physical hazard can also pose a health hazard.

1. Explosives and blasting agents.
2. Flammable and combustible liquids.
3. Flammable solids ~~and gases~~.
4. Organic peroxide materials.
5. Oxidizer materials.
6. Pyrophoric materials.
7. Unstable (reactive) materials.
8. Water-reactive solids and liquids.
9. Cryogenic fluids.
10. Compressed gases.

2. Revise definition as follows:

2702.1 (IBC [F] 307.2) Definitions. The following words and terms shall, for the purposes of this chapter, Chapters 28 through 44 and as used elsewhere in this code, have the meanings shown herein.

PHYSICAL HAZARD. A chemical for which there is evidence that it is a combustible liquid, compressed gas, cryogenic, explosive, ~~flammable gas,~~ flammable liquid, flammable solid, organic peroxide, oxidizer, pyrophoric or unstable (reactive) or water-reactive material.

Reason: All compressed gases are physical hazards by definition. Those gases that are regulated as either physical or health hazards within the context of Chapter 27 are identified in Tables 2703.1.1(1) through 2703.1.1(4). Compressed gases with no listed MAQ are not regulated within Chapter 27; however, they are regulated by Chapter 30.

Deleting the term "and gases" from item 3 of Section 2701.2.2.1 and adding a general category of "compressed gases" and deleting the term "flammable gas" from the definition will correlate this section with the definition of physical hazard.

Revision of the term physical hazard has been made to delete "flammable gas" as it is redundant to the category of "compressed gas."

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F246–07/08
2701.5.1, 2701.5.2, Appendix H

Proponents: William Winslow, representing Washington State Association of Fire Marshals; Pat McLaughlin, representing Sherwin Williams Company

1. Revise as follows:

2701.5.1 Hazardous Materials Management Plan. Where required by the fire code official, ~~each~~ an application for a permit shall include a Hazardous Materials Management Plan (HMMP). The HMMP shall include a facility site plan designating the following:

1. Access to each storage and use area~~s~~.
2. ~~Maximum amount of each material stored or used in each area.~~ Location of emergency equipment.
3. ~~Range of container sizes.~~ Location where liaison will meet emergency responders.
4. ~~Locations of emergency isolation and mitigation valves and devices.~~ Facility evacuation meeting point locations.

5. ~~Product conveying piping containing liquids or gases, other than utility-owned fuel gas lines and low-pressure fuel gas lines.~~ The general purpose of other areas within the building.
6. ~~On and off positions of valves for valves that are of the self-indicating type.~~ Location of all aboveground and underground tanks and their appurtenances including, but not limited to, sumps, vaults, below-grade treatment systems, and piping.
7. ~~Storage plan showing the intended storage arrangement, including the location and dimensions of aisles.~~ The hazard classes in each area.
8. ~~The location and type of emergency equipment. The plans shall be legible and drawn approximately to scale. Separate distribution systems are allowed to be shown on separate pages.~~ Show locations of all control areas and Group H occupancies.
9. The emergency exits.

2701.5.2 Hazardous Materials Inventory Statement (HMIS). Where required by the fire code official, an application for a permit shall include ~~a~~n HMIS, such as SARA (Superfund Amendments and Reauthorization Act of 1986) Title III, Tier II Report, or other approved statement. The HMIS shall include the following information:

1. ~~Manufacturer's~~ Product name.
2. ~~Chemical name, trade names, hazardous ingredients~~ Component.
3. ~~Hazard classification~~ Chemical Abstract Service (CAS) Number.
4. ~~MSDS or equivalent~~ Location where stored or used.
5. ~~United Nations (UN), North America (NA) or the Chemical Abstract Service (CAS) identification number~~ Container size.
6. ~~Maximum quantity stored or used on-site at one time~~ Hazard classification.
7. Amount in storage ~~conditions related to the storage type, temperature and pressure~~.
8. Amount in use-closed systems.
9. Amount in use-open systems.

2. Delete Appendix H (Supp) in its entirety and substitute a new Appendix H, including Instructions and Figures 1 through 6 as follows:

APPENDIX H
HAZARDOUS MATERIALS MANAGEMENT PLAN (HMMP) AND HAZARDOUS MATERIALS INVENTORY STATEMENT (HMIS) INSTRUCTIONS

SECTION H101 – HMMP

1.1 Part A (See Example Format in Figure 1)

1.1.1 Fill out items and sign the declaration.

1.1.2 Part A of this section is required to be updated and submitted annually, or within 30 days of a process or management change.

1.2 Part B – General Facility Description / Site Plan (See Example Format in Figure 2)

1.2.1 Provide a site plan on 8½- by 11-inch (215 mm by 279 mm) paper, showing the locations of all buildings, structures, outdoor chemical control or storage and use areas, parking lots, internal roads, storm and sanitary sewers, wells, and adjacent property uses. Indicate the approximate scale, northern direction and date the drawing was completed.

1.3 Part C – Facility Storage Map - Confidential Information (See Example Format in Figure 3)

1.3.1 Provide a floor plan of each building identified on the site plan as containing hazardous materials on 8½- by 11-inch (215 mm by 279 mm) paper, identifying the northern direction, and showing the location of each storage and use area.

1.3.2 Identify storage and use areas, including hazard waste storage areas

1.3.3 Show the following:

1.3.3.1 Accesses to each storage and use area.

1.3.3.2 Location of emergency equipment.

1.3.3.3 Location where liaison will meet emergency responders.

1.3.3.4 Facility evacuation meeting point locations.

1.3.3.5 The general purpose of other areas within the building.

1.3.3.6 Location of all aboveground and underground tanks to include sumps, vaults, below-grade treatment systems, piping, etc.

1.3.3.7 Show hazard classes in each area.
1.3.3.8 Show locations of all H occupancies, control areas, and exterior storage and use areas.
1.3.3.9 Show emergency exits.

SECTION H102 – HMIS

2.1 Inventory Statement

2.1.1 HMIS Summary Report (See Example Format in Figure 4).
2.1.1.1 Complete a summary report for each control area and H occupancy.
2.1.1.2 The storage summary report includes the HMIS Inventory Report amounts in storage, use-closed, and use-open conditions.
2.1.1.3 Provide separate summary reports for storage, use-closed and use-open conditions.
2.1.1.4 IBC/IFC Hazard Class.
2.1.1.5 Inventory Amount. (Solid (lb), Liquid (gal), Gas (cu ft, gal or lbs)).
2.1.1.6 IBC/IFC Maximum Allowable Quantity. (If applicable, double MAQ for sprinkler protection and/or storage in cabinets. For wholesale and retail sales occupancies, go to Tables 2703.11.1 and 3404.3.4.1 for MAQs.).

2.1.2 HMIS Inventory Report (See Example Format in Figure 5).
2.1.2.1 Complete an inventory report by listing products by location.
2.1.2.2 Product Name
2.1.2.3 Components (For mixtures specify percentages of major components if available)
2.1.2.4 CAS Number. (For mixtures list CAS Numbers of major components if available).
2.1.2.5 Location. (Identify the control area or, if it is an H occupancy, provide the classification, such as H-2, H-3, etc).
2.1.2.6 Container > 55 gal. (If product container, vessel or tank could exceed 55 gallons, indicate yes in column).
2.1.2.7 Hazard Classification. (List applicable classifications for each product).
2.1.2.8 Stored. (Amount of product in storage conditions).
2.1.2.9 Closed. (Amount of product in use-closed systems).
2.1.2.10 Open. (Amount of product in use-open systems).

SECTION H103 – EMERGENCY PLAN

3.1 Emergency Notification (See Example Format in Figure 6)
3.2 Where OSHA or State regulations require a facility to have either an Emergency Action Plan (EAP) or an Emergency Response Plan (ERP), the EAP or ERP shall be included as part of the HMMP.

FIGURE 1
HAZARDOUS MATERIALS MANAGEMENT PLAN
SECTION I: FACILITY DESCRIPTION

PART A – GENERAL INFORMATION

1. Business Name: _____Phone: _____
   Address:_____
   _____

2. Person Responsible for the Business:

Name	Title	Phone
_____	_____	_____

3. Emergency Contacts:

Name	Title	Home Number	Work Number
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

4. Person Responsible for the Application/Principal Contact:

Name	Title	Phone
_____	_____	_____

5. Principal Business Activity:
   _____
   _____
   _____

6. Number of Employees: _____

7. Number of Shifts: _____
   a. Number of Employees per Shift:
      _____
      _____
      _____

8. Hours of Operation:

FIGURE 2
HAZARDOUS MATERIALS MANAGEMENT PLAN
SECTION I: FACILITY DESCRIPTION

PART B – GENERAL FACILITY DESCRIPTION/SITE PLAN

_____
_____
_____
_____
_____
_____
_____
_____
_____

FIGURE 3
HAZARDOUS MATERIALS MANAGEMENT PLAN

SECTION I: FACILITY DESCRIPTION

PART C – FACILITY MAP

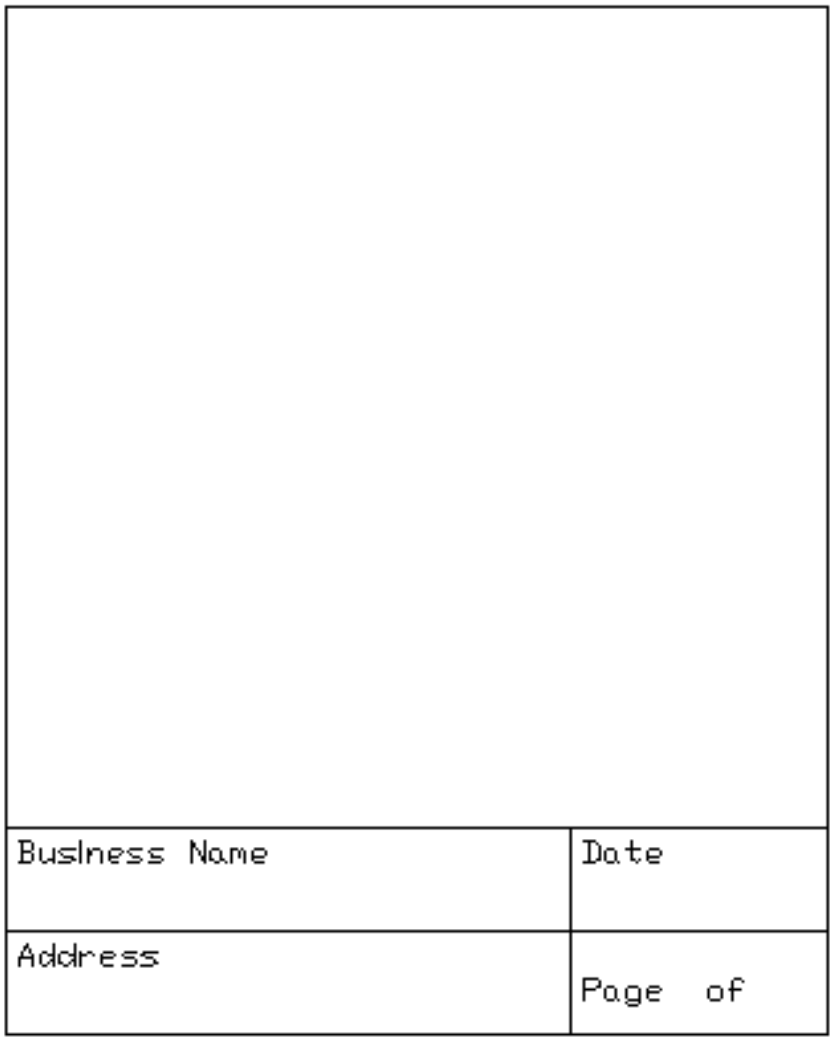

FIGURE 4

SECTION II - HAZARDOUS MATERIALS INVENTORY STATEMENT (HMIS)

HMIS SUMMARY REPORT [1]

(Storage [2] Conditions)[3]

IBC/IFC HAZARD CLASS	HAZARD CLASS	INVENTORY AMOUNT			IBC/IFC MAXIMUM ALLOWABLE QUANTITY[4]		
	(Abbrev)	Solid (lb)	Liquid (gal)	Gas (cu ft, gal, lb)	Solid (lb)	Liquid (gal)	Gas (cu ft, gal, lb)
Combustible Liquid	C2		5			120	
	C3A					330	
	C3B		6			13200	
Combustible Fiber	Loose Baled						
Cryogenics, Flammable	CryO-Flam					45	
Cryogenics, Oxidizing	CryO-Ox					45	
Flammable Gas	FLG						
(Gaseous)				150			1000
(Liquefied)						30	
Flammable Liquid	F1A					30	
	F1B & F1C		5			120	
Combination (1A, 1B, 1C)			5			120	
Flammable Solid	FLS				125		
Organic Peroxide	OPU				0		
	OP1				5		
	OP2				50		
	OP3				125		
	OP4				NL		
	OP5				NL		
Oxidizer	OX4				0		
	OX3				10		
	OX2				250		
	OX1				4000		

(1) Complete a summary report for each control area and H occupancy.

(2) Storage = storage + use-closed + use-open systems

(3) Separate reports are required for use-closed and use-open systems

(4) Include increases for sprinklers or storage in cabinets, if applicable

(This is an example, add additional hazard classes as needed)

FIGURE 5
SECTION II - HAZARDOUS MATERIALS INVENTORY STATEMENT (HMIS)
HMIS INVENTORY REPORT

(Sort Products Alphabetically by Location of Product and then Alphabetically by Product Name)

Product Name (Components)[3]	CAS Number	Location [1]	Container > 55 gal [2]	Haz Class 1	Haz Class 2	Haz Class 3	Stored (lbs)	Stored (gal)	Stored gas[4]	Closed (lbs)	Closed (gal)	Closed gas[4]	Open (lbs)	Open (gal)
ACETYLENE (Acetylene gas)	74-86-2	Control Area 1		FLG	UR2				150					
BLACK AEROSOL SPRAY PAINT (Mixture)	Mixture	Control Area 1		A-L3			24							
GASOLINE, UNLEADED (Gasoline-Mixture (Methyl-t-Butyl Ether-15%; Diisopropyl Ether-7%; Ethanol-11%; Toluene-12%; Xylene-11%))	8006-61-9 1634-04-4 108-20-3 64-17-5 108-88-3 1330-20-7	Control Area 1		F1B				5						
MOTOR OIL 1040 (Hydrotreated Heavy Paraffinic Distillate-85%; Additivies-20%)	64742-54-7 Mixture	Control Area 1		C3B				3						
DIESEL (Diesel - 99-100%; Additives)	68476-34-6 Proprietary	Control Area 2	Yes	C2				225						
TRANSMISSION FLUID (Oil-Solvent Neutral; Performance Additives)	64742-65-0	Control Area 2		C3B				3						
OXYGEN, GAS (Oxygen)	7782-44-7	H-3		OXG					5000					

(1) Identify the control area or, if it is an H occupancy, provide the classification, such as H-2, H-3, etc.
(2) If the product container, vessel, or tank could exceed 55 gallons, indicate yes in the column.
(3) Specify percentages of main components if available
(4) In cubic feet, gallons, or pounds

FIGURE 6
HAZARDOUS MATERIALS MANAGEMENT PLAN
SECTION III: EMERGENCY PLAN

1. In the event of an emergency, the following shall be notified:
a. Facility Liaison

Name	Title	Home Phone	Cell Phone
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

b. Agency

Agency	Contact	Phone Number
Fire Department	_____	_____
LEPC	_____	_____
Other	_____	_____

Reason: IFC Sections 2701.5.1 and 2701.5.2 specify the contents of a Hazardous Materials Management Plan and a Hazardous Materials Inventory Statement when these documents are required by the Fire Code Official. In the 2006 – 2007 code development cycle, Appendix H, covering HMMPs and HMISs, was added to the IFC. The materials in this appendix were taken from the Uniform Fire Code. At the time of its adoption, there was broad agreement among fire service and industry representatives that Sections 2701.5.1, 2701.5.2 and Appendix H needed modifications to make them useful for the code official and cost effective for businesses. These new Sections 2701.5.1, 2701.5.2 and Appendix H were the result of a collaborative effort by the Washington State Association of Fire Marshals and Sherwin Williams Company. They focus on three important goals. First, the HMMP includes information that fire department operations personnel need before and during an emergency response. Second, the HMMP and HMIS provide hazardous materials storage and use information necessary for inspectors. Third, the HMIS is formatted so that plan reviewers can determine the correct occupancy classifications. The amounts of each hazard class in storage and use and the applicable Maximum Allowable Quantities are provided in the HMIS. This coordinates with IFC code change proposal F22306/07, which was approved as modified at the final action hearings in Rochester, New York. This proposal requires the total of each hazard class to be provided in the HMIS.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

F247–07/08
Table 2703.1.1(1) [IBC [F] Table 307.1(1)], Table 2703.1.1(3)

Proponent: Larry Fluer, Fluer, Inc., representing Compressed Gas Association

Revise tables as follows:

TABLE 2703.1.1(1) [IBC [F] 307.1(1)](Supp)
MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA OF HAZARDOUS MATERIAL POSING A PHYSICAL HAZARD[a,j,m,n,p]

MATERIAL	CLASS	GROUP WHEN THE MAXIMUM ALLOWABLE QUANTITY IS EXCEEDED	STORAGE[b]			USE-CLOSED SYSTEMS[b]			USE-OPEN SYSTEMS[b]	
			Solid pounds (cubic feet)	Liquid gallons (pounds)	Gas cubic feet at NTP	Solid pounds (cubic feet)	Liquid gallons (pounds)	Gas cubic feet at NTP	Solid pounds (cubic feet)	Liquid gallons (pounds)
Inert gas	Gaseous	Not Applicable	Not Applicable	Not Applicable	Not Limited	Not Applicable	Not Applicable	Not Limited	Not Applicable	Not Applicable
	Liquefied	Not Applicable	Not Applicable	Not Applicable	Not Limited	Not Applicable	Not Applicable	Not Limited	Not Applicable	Not Applicable
Cryogenic Inert	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Limited	Not Applicable	Not Applicable	Not Limited	Not Applicable	Not Applicable

(Portions of table and footnotes not shown remain unchanged)

TABLE 2703.1.1(3) (Supp)
MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA OF HAZARDOUS MATERIAL POSING A PHYSICAL HAZARD IN AN OUTDOOR CONTROL AREA[a,b,c]

MATERIAL	CLASS	GROUP WHEN THE MAXIMUM ALLOWABLE QUANTITY IS EXCEEDED	STORAGE[b]			USE-CLOSED SYSTEMS[b]			USE-OPEN SYSTEMS[b]	
			Solid pounds (cubic feet)	Liquid gallons (pounds)	Gas cubic feet at NTP	Solid pounds (cubic feet)	Liquid gallons (pounds)	Gas cubic feet at NTP	Solid pounds (cubic feet)	Liquid gallons (pounds)
Inert gas	Gaseous	Not Applicable	Not Applicable	Not Applicable	Not Limited	Not Applicable	Not Applicable	Not Limited	Not Applicable	Not Applicable
	Liquefied	Not Applicable	Not Applicable	Not Applicable	Not Limited	Not Applicable	Not Applicable	Not Limited	Not Applicable	Not Applicable
Cryogenic Inert	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Limited	Not Applicable	Not Applicable	Not Limited	Not Applicable	Not Applicable

(Portions of table and footnotes not shown remain unchanged)

Reason: Permits are required for inert gases when exceeding the amounts indicated in Tables 105.6.8 and 105.6.10; however, occupancy is not determined based on a quantity of inert gas. With respect to the table inert gases should be treated in a manner similar to Unstable Reactive or Water Reactive Class 1 materials where the quantity is indicated as "unlimited." This change will coordinate the MAQ tables with Section 2701.2.2.1 which lists cryogens and the definition of physical hazard in Section 2702.1 which lists definitions and includes all "compressed gases."

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

F248–07/08
Table 2703.1.1(3), Table 2703.1.1(4)

Proponent: John Anicello, Airgas, Inc.

Delete tables without substitution:

~~**TABLE 2703.1.1(3)** **(Supp)**~~
~~**MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA OF HAZARDOUS MATERIAL POSING A PHYSICAL HAZARD IN AN OUTDOOR CONTROL AREA** a,b,c~~

~~**TABLE 2703.1.1(4)** **(Supp)**~~
~~**MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA OF HAZARDOUS MATERIAL POSING A HEALTH HAZARDIN AN OUTDOOR CONTROL AREA**a,b,c~~

Reason: Outdoor maximum allowable quantities per control areas are useless and should be deleted. Outdoor storage and use provisions are general in nature and apply to all quantities of hazardous materials. By removing outdoor MAQs it will remove confusion, as they are often confused with quantities located in distance to exposure tables that have been established for various hazardous materials.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

F249–07/08
2703.2.1, Chapter 45

Proponent: Jeffrey M. Shapiro, PE, International Code Consultants, representing Steel Tank Institute

1. Revise as follows:

2703.2.1 Design and construction of containers, cylinders and tanks. Containers, cylinders and tanks shall be designed and constructed in accordance with approved standards. Containers, cylinders, tanks and other means used for containment of hazardous materials shall be of an approved type. Pressure vessels shall comply with the ASME *Boiler and Pressure Vessel Code*.

2. Revise Chapter 45 as follows:

ASME

BPVC-~~2001~~ 2004 ASME Boiler and Pressure Vessel Code

Reason: Although the ASME Boiler and Pressure Vessel Code is the nationally recognized general standard for construction of pressure vessels, there is no direct link to this standard as a basis for constructing pressure vessels containing hazardous materials. The shortcoming of such a general reference for pressure vessel construction was noted in a recent U.S. Chemical Safety Board report on a 2004 explosion at Marcus Oil in Houston, Texas.

Likewise, a similar is also missing for vessels that do not contain hazardous materials, which are regulated in the IMC. A separate proposal has been submitted to the IMC to accomplish that change.

For specific cases where alternative standards may be appropriate, such as DOT standards for compressed gases as an example, material or process specific chapters provide these alternatives, and the code will recognize the hierarchy of specific provisions trumping general provisions to permit these alternatives.

The referenced edition of the BPVC has been updated to 2004, which is the most current edition. This correlates with the edition adopted by the IMC.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F250–07/08

2703.2.2, Chapter 45 (New)

Proponent: William Winslow, representing Washington State Association of Fire Marshals

1. Revise as follows:

2703.2.2 Piping, tubing, valves and fittings. ~~Piping, tubing, valves and fittings conveying hazardous materials shall be designed and installed in accordance with approved standards and shall be in accordance with Sections 2703.2.2.1 and 2703.2.2.2.~~ Piping and tubing shall be designed and installed in accordance with the applicable standard listed in Table 2703.2.2. Valves and fittings shall be in accordance with approved standards. Piping, tubing, valves, and fittings shall also be in accordance with Sections 2703.2.2.1 and 2703.2.2.2.

TABLE 2703.2.2
PIPING STANDARDS

PIPING USE	STANDARD
Power piping	ASME B31.1
Process Piping	ASME B31.3
Liquid Transportation Systems for Hydrocarbons, Liquid Petroleum Gas, Anhydrous Ammonia, and Alcohols	ASME B31.4
Refrigeration Piping	ASME B31.5
Gas Transmission and Distribution Piping	ASME B31.8
Building Services Piping	ASME B31.9
Slurry Transportation Piping Systems	ASME B31.11

2. Add standards to Chapter 45 as follows:

ASME

B31.1-04 Power Piping
B31.4-06 Liquid Transportation Systems for Hydrocarbons, Liquid Petroleum Gas, Anhydrous Ammonia, and Alcohols
B31.5-06 Refrigeration Piping
B31.8-03 Gas Transmission and Distribution Piping
B31.11-02 Slurry Transportation Piping Systems

Reason: This code change proposal is simply a clarification. AMSE B31 is the code for pressure piping. It includes 7 standards, each regulating a different type of piping. For instance, ASME B31.3 covers process piping and ASME B31.5 covers ammonia refrigeration piping. The new table will help the code user and code official determine the correct ASME pressure piping standard for his or her application. Chapter45 is updated to include all of the pressure piping standards listed in Table 2703.2.2.

Cost Impact: The code change proposal will not increase the cost of construction.

Analysis: A review of the standard proposed for inclusion in the code, ASME B31.1-04, B31.4-06, B31.5-06, B31.8-03 and B31.11-02 for compliance with ICC criteria for referenced standards given in Section 3.6 of Council Policy #CP 28 will be posted on the ICC website on or before January 15, 2008.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F251–07/08
2703.2.2.2

Proponent: William Winslow, representing Washington State Association of Fire Marshals

Revise as follows:

2703.2.2.2 Additional regulations for supply piping for health-hazard materials. Supply piping and tubing for gases and liquids having a health-hazard ranking of 3 or 4 in accordance with NFPA704 shall be in accordance with ASME B31.3, Category M and the following:

Exception: Where approved for Normal Fluid Service as defined in ASME B31.3 based on specific hazard information provided for the installation.

1. Piping and tubing utilized for the transmission of highly toxic, toxic or highly volatile corrosive liquids and gases shall have welded, threaded or flanged connections throughout except for connections located within a ventilated enclosure if the material is a gas, or an approved method of drainage or containment is provided for connections if the material is a liquid.
2. Piping and tubing shall not be located within corridors, within any portion of a means of egress required to be enclosed in fire-resistance-rated construction or in concealed spaces in areas not classified as Group H occupancies.

   Exception: Piping and tubing within the space defined by the walls of corridors and the floor or roof above or in concealed spaces above other occupancies when installed in accordance with Section 415.8.6.3 of the *International Building Code* for Group H-5 occupancies.

Reason: This code change proposal is simply a clarification. ASME B31.3 has 3 classes of piping services based on the degree of hazard. They include Category D, Normal Fluid Service, and Category M. Category M is, "a fluid service in which the potential for personnel exposure is judged to be significant and in which a single exposure to a very small quantity of a toxic fluid, caused by leakage can produce serious irreversible harm to persons on breathing or bodily contact, even when prompt restorative measure are taken." Category M is the most appropriate piping classification for health hazard 3 and 4 materials. The exception allows the fire code official to approve the less restrictive classification of Normal Fluid Service, where it is warranted by hazard information.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F252–07/08
2703.2.9

Proponent: Tom Lariviere, Fire Department, Madison, MS, representing Joint Fire Service Review Committee

Revise as follows:

2703.2.9 Testing. The equipment, devices and systems listed in Section 2703.2.9.1 shall be tested at the time of installation and at one of the intervals listed in Section 2703.2.9.2. Written records of the tests conducted or maintenance performed shall be maintained in accordance with the provisions of Section 107.2.1.

Exceptions:

1. Testing shall not be required where approved written documentation is provided stating that testing will damage the equipment, device or system and the equipment, device or system is maintained as specified by the manufacturer.
2. Testing shall not be required for equipment, devices and systems that fail in a fail-safe manner.
3. Testing shall not be required for equipment, devices and systems that self-diagnose and report trouble. Records of the self-diagnosis and trouble reporting shall be made available to the fire code official.
4. Testing shall not be required if system activation occurs during the required test cycle for the components activated during the test cycle.
5. Approved maintenance in accordance with Section 2703.2.6 that is performed not less than annually or in accordance with an approved schedule shall be allowed to meet the testing requirements set forth in Sections 2703.2.9.1 and 2703.2.9.2.

Reason: This code change proposal is a clarification. New equipment, systems, and devices regulated by 2703.2.9 need to be tested at the time of installation to ensure that they operate as intended. It is standard practice to test new fire detection and alarm systems. This should be the same for new hazardous materials safety systems, equipment, and devices.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F253–07/08
2703.2.9.2

Proponent: William Winslow, representing Washington State Association of Fire Marshals

Revise as follows:

2703.2.9.2 Testing frequency. The equipment, systems and devices listed in Section 2703.2.9.1 shall be tested at one of the frequencies listed below:

1. Not less than annually;
2. In accordance with the approved manufacturers' requirements;
3. In accordance with approved recognized industry standards; or
4. In accordance with an approved schedule.

Exception: New equipment, systems, and devices shall be tested at the time of installation in accordance with an approved method. Where required, such testing shall be witnessed by the fire code official.

Reason: This code change proposal is a clarification. New equipment, systems, and devices regulated by 2703.2.9 need to be tested at the time of installation to ensure that they operate as intended. It is standard practice to test new fire detection and alarm systems. This should be the same for new hazardous materials safety systems, equipment, and devices.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F254–07/08
2704.7; IBC [F] 414.5.4

Proponent: Lance H. Edwards, The National Paint & Coatings Association

Revise as follows:

2704.7 (Supp) Standby or emergency power. Where mechanical ventilation, treatment systems, temperature control, alarm, detection or other electrically operated systems are required, such systems shall be provided with an emergency or standby power system in accordance with NFPA 70 and Section 604.

Exceptions:

1. Standby or emergency power for mechanical ventilation for storage of flammable and combustible liquids in single story occupancies.
~~1.~~ 2. Storage areas for Class 1 and 2 oxidizers.
~~2.~~ 3. Storage areas for Class II, III, IV and V organic peroxides.
~~3.~~ 4. Storage areas for asphyxiant, irritant and radioactive gases.
~~4.~~ 5. For storage areas for highly toxic or toxic materials, see Sections 3704.2.2.8 and 3704.3.2.6.
~~5.~~ 6. Standby power for mechanical ventilation, treatment systems and temperature control systems shall not be required where an approved fail-safe engineered system is installed.

[F] 414.5.4 (Supp) Standby or emergency power. Where mechanical ventilation, treatment systems, temperature control, alarm, detection or other electrically operated systems are required, such systems shall be provided with an emergency or standby power system in accordance with Section 2702.

Exceptions:

1. Standby or emergency power for mechanical ventilation for storage of flammable and combustible liquids in single story occupancies.
~~1.~~ 2. Storage areas for Class 1 and 2 oxidizers.
~~2.~~ 3. Storage areas for Class II, III, IV and V organic peroxides.
~~3.~~ 4. Storage areas for asphyxiant, irritant and radioactive gases.
~~4.~~ 5. For storage, use and handling areas for highly toxic or toxic materials, see Sections 3704.2.2.8 and 3704.3.2.6 of the *International Fire Code*.
~~5.~~ 6. Standby power for mechanical ventilation, treatment systems and temperature control systems shall not be required where an approved fail-safe engineered system is installed.

Reason: This proposal will remove the requirement for standby power for flammable and combustible liquid storage ventilation. The requirement for standby power was originally not applicable to flammable and combustible liquids. NFPA 30 never required it for storage and still does not. When the Chapter 27 ventilation requirements were applied to flammable and combustible liquids storage the standby power requirement was inadvertently picked up. When enforced, it is a costly provision with very limited benefit. This proposal will coordinate the IFC and NFPA 30 requirements for standby power for flammable and combustible liquids storage ventilation. These materials are in sealed containers in storage so we do not see the need for the redundant requirement for standby power for ventilation for this condition.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F255–07/08
2704.9; 2701.2.2.3 (New), 2701.5.1, 2703.2.9.2, 2703.9, 2704.10, 2702.1, 404.3.1, 404.3.2, 509.1 (IBC [F] 911.1)

Proponent: Michael Jacoby Seven Valleys, PA, representing himself

1. Revise as follows:

2704.9 Emergency alarm. An approved manual or automatic emergency alarm system shall be provided in buildings, rooms or areas used for storage of hazardous materials. Emergency alarm-initiating devices shall be installed outside of each interior exit or exit access door of storage buildings, rooms or areas. Activation of an emergency alarm-

initiating device shall sound a local alarm to alert occupants and the employees outside on site property, including local residents residing within the (BZ) Buffer Zone, (VZ) Vulnerability Zone or (CSZ) Community Safety Zone via an outside adjunct alarm system of an emergency situation involving hazardous materials.

2. Add new text as follows:

2701.2.2.3 Health hazard record keeping. Maps based on Environmental Protection Agency (EPA), Emergency Management Agency (EMA) calculations and all available. MSDS information showing the (BZ) Buffer Zone (VZ) Vulnerabilities Zones Risk Management's worst case scenario calculations or superseded by a (CSZ) Community Safety Zone determined by municipalities or fire code officials will be shown on a topographical map by using circles representing each size of a zone as part of the HMMP requirement. Maps and other health and public safety related information shall be kept on-site in the fire command Center as well as at the municipality of jurisdiction and shall be available for public inspection or review during business hours or during times of crisis.

3. Revise as follows:

2701.5.1 Hazardous Materials Management Plan. Where required by the fire code official, each application for a permit shall include a Hazardous Materials Management Plan (HMMP). The HMMP shall include a facility site plan designating the following:

1. Storage and use areas.
2. Maximum amount of each material stored or used in each area.
3. Range of container sizes.
4. Locations of emergency isolation and mitigation valves and devices.
5. Product conveying piping containing liquids or gases, other than utility-owned fuel gas lines and low-pressure fuel gas lines.
6. On and off positions of valves for valves that are of the self-indicating type.
7. Storage plan showing the intended storage arrangement, including the location and dimensions of aisles.
8. The location and type of emergency equipment. The plans shall be legible and drawn approximately to scale. Separate distribution systems are allowed to be shown on separate pages.
9. All vital maps, records required in accordance with Section 2701.2.2.3 for sites containing hazardous materials reaching a federal or state classification status of SARA Title III, Tier II reports or other approved statements in accordance with Section 2701.5.2 or such level of other classification as being recognized as a health and public safety concern or classification, shall be part of the site basic HMMP ecision-making during an event.

2703.2.9.2 Testing frequency. The equipment, systems and devices listed in Section 2703.2.9.1 shall be tested at one of the frequencies listed below:

1. Not less than annually;
2. In accordance with the approved manufacturers' requirements;
3. In accordance with approved recognized industry standards; ~~or~~
4. In accordance with an approved schedule~~.~~ ; or
5. Outside adjunct alarm warning systems shall be tested, and inspected not less than every six months, with a full system test at least once a year to be done by the fire code official or a certified alarm inspection agency.

2703.9 General safety precautions. General precautions for the safe storage, handling or care of hazardous materials on or off site shall be in accordance with Sections 2703.9.1 through 2703.9.9.

2704.10 Supervision. Emergency alarm, outside adjunct alarm communication system, detection and automatic fire-extinguishing systems required by Section 2704 shall be supervised by an approved central, proprietary or remote station service or shall initiate an audible and visual signal at a constantly attended on-site location.

4. Add new definitions as follows:

2702.1 Definitions. The following words and terms shall, for the purposes of this chapter, Chapters 28 through 44 and as used elsewhere in this code, have the meanings shown herein.

ADJUNCT ALARMS. Communication devices joined or an added extension of a system parallel too but yet separate from an interior alarms system.

BUFFER ZONE. The (BZ) Buffer Zone is the same as (VZ) Vulnerability Zone

HAZMAT EVENT TONE. A digital model tone sequence to be unique to a hazardous material event, to could be used as a model tone if applicable during an unauthorized release/explosions etc. in times of crisis when or before a HMMP is activated. The unique event tone (alarm sound) that could identify the type of event as being HazMat, could then be followed by the NAME and ADDRESS of the site/facility containing the hazardous materials, and then a brief pre-recorded MESSAGE or a PA LIVE LOUD VOICE BROADCAST when applicable during time sensitive events.

HYPERSENSITIVITY LIST. Registries established by government agencies that contain a list of individuals with known acute sensitivity–hypersensitivity to chemicals, (such as allergic reactions etc.) verified by licensed medical personnel as having a hypersensitivity to exposure to chemicals.

OUTSIDE. Being away from, to be outside of a structure, site, facility or business.

OUTSIDE ADJUNCT ALARM SYSTEM. HazMat Alerting communication using Emergency Voice/Alarm Communication (mass notification) capable of audible PA live loud voice broadcasts with the annunciators (speaker array) to be located within the surrounding local community or on site property based on vulnerability zone calculations, acoustical studies etc. outside of a hazardous material site's, physical buildings or structures containing hazardous materials and away from any physical damage that may be caused by massive explosions, fires or chemical releases.

VULNERABILITY ZONE The **(VZ)** Vulnerability Zone also referred to as a Buffer Zone area is an end result of a calculation which will be made by using EPA methods and guidelines based on Hazardous Material MSDS information thus establishing the zone of vulnerability that will include the site's/facility's calculations of a worst-case scenario threat to the public.

COMMUNITY SAFETY ZONE. The (CSZ**)** Community Safety Zone is a safety zone that consolidates all concerns to ensure Public Safety and protect the Health of a community, that can be increased at any time by the fire code official, public safety official or municipal authorities etc. based on community safety concerns. This requirement can only be superseded by a greater requirement without appeal.

5. Revise as follows:

404.3.1 (Supp) Fire evacuation plans. Fire evacuation plans shall include the following:

1. Emergency egress or escape routes and whether evacuation of the building is to be complete or, where approved, by selected floors or areas only.
2. Procedures for employees who must remain to operate critical equipment before evacuating.
3. Procedures for assisted rescue for persons unable to use the general means of egress unassisted.
4. Procedures for accounting for employees and occupants after evacuation has been completed.
5. Identification and assignment of personnel responsible for rescue or emergency medical aid.
6. The preferred and any alternative means of notifying occupants of a fire or emergency.
7. The preferred and any alternative means of reporting fires and other emergencies to the fire department or designated emergency response organization.
8. Identification and assignment of personnel who can be contacted for further information or explanation of duties under the plan.
9. A description of the emergency voice/alarm communication system alert tone and preprogrammed voice messages, where provided or required at such hazardous material sites, facility or structure reaching a federal or state classification of SARA Title III, requiring an (HMIS) Hazardous Material Inventory Statement in accordance with Section 2701.5.2.

404.3.2 (Supp) Fire safety plans. Fire safety plans shall include the following:

1. The procedure for reporting a fire or other emergency.
2. The life safety strategy and procedures for notifying, relocating, or evacuating occupants, including occupants who need assistance.
3. Site plans indicating the following:
   3.1. The occupancy assembly point.
   3.2. The locations of fire hydrants.
   3.3. The normal routes of fire department vehicle access.
4. Floor plans identifying the locations of the following:
   4.1. Exits.
   4.2. Primary evacuation routes.

4.3. Secondary evacuation routes.
4.4. Accessible egress routes.
4.5. Areas of refuge.
4.6. Exterior areas for assisted rescue.
4.7. Manual fire alarm boxes.
4.8. Portable fire extinguishers.
4.9. Occupant-use hose stations.
4.10. Fire alarm annunciators and controls.
4.11 Manual pull box location for outside adjunct alarm alerting systems.

5. A list of major fire hazards associated with the normal use and occupancy of the premises, including maintenance and housekeeping procedures.
6. Identification and assignment of personnel responsible for maintenance of systems and equipment installed to prevent or control fires.
7. Identification and assignment of personnel responsible for maintenance, housekeeping and controlling fuel hazard sources.

509.1 (IBC [F] 911.1) (Supp) Features. Where required by other sections of this code and in all buildings classified as high-rise buildings by the *International Building Code*, a fire command center for fire department operations shall be provided. The location and accessibility of the fire command center shall be approved by the fire department. The fire command center shall be separated from the remainder of the building by not less than a 1-hour fire barrier constructed in accordance with Section 706 of the *International Building Code* or horizontal assembly constructed in accordance with Section 711 of the *International Building Code*, or both. The room shall be a minimum of 96 square feet (9 m^2) with a minimum dimension of 8 feet (2438 mm). A layout of the fire command center and all features required by this section to be contained therein shall be submitted for approval prior to installation. The fire command center shall comply with NFPA72 and shall contain the following features:

1. The emergency voice/alarm communication system unit.
2. The fire department communications system.
3. Fire-detection and alarm system annunciator system.
4. Annunciator visually indicating the location of the elevators and whether they are operational.
5. Status indicators and controls for air-handling systems.
6. The fire-fighter's control panel required by Section 909.16 for smoke control systems installed in the building.
7. Controls for unlocking stairway doors simultaneously.
8. Sprinkler valve and water-flow detector display panels.
9. Emergency and standby power status indicators.
10. A telephone for fire department use with controlled access to the public telephone system.
11. Fire pump status indicators.
12. Schematic building plans indicating the typical floor plan and detailing the building core, means of egress, fire protection systems, fire-fighting equipment and fire department access.
13. Work table.
14. Generator supervision devices, manual start and transfer features.
15. Public address system, where specifically required by other sections of this code.
16. Elevator fire recall switch in accordance with ASME A17.1.
17. Elevator emergency or standby power selector switch(es), where emergency or standby power is provided.
18. The control center for the hazmat alerting, outside adjunct alarm, mass notification system unit.

Reason: ***Background Information:***

Citizen:

As you will discover I am probably one of the **most involved** citizens / advocates of Building Codes and Standards from the State of Pennsylvania to ever address the ICC about this very serious issue that, as we continue to look into this problem quickly discover that it could already be effecting millions of citizens across our nation.

This very serious HazMat issue has been gaining support/ solidarity as citizens, some of our legislators and now many others are quickly discovering that we have a very serious fire code problem, as many have assumed that the alarms in question were already in place!

The **solidarity that is being shown** is by companies (international and privately owned) school district, churches and citizens who are concerned and have represented their **families employees etc.** in my area in my attempt **to bring awareness** to **others** about this very serious fire code emergency warning issue that continues to gain support.

This community and Hazardous Material site emergency communication notification problem is also being brought to the attention of many others and slowly the **true scope of the size** of this problem is being realized. Millions of citizens are at risk! Now people are starting to pay attention as they take another serious look into this audible emergency communication issue in their communities. Have they put too much emphasis on response and recovery, and nothing on whether they were prepared with the basic alarms that many assumed were already installed?

Those in authority who are very familiar with this classification of industry of now high national concern by DHS are starting to review their situations within their domain to see if they too may have fallen victim to this same fire code issue.

The response by others once this problem has been explained, has been overwhelming.

I am trying my best to bring these Fire code issues to the attention of legislators and others in high authority as quickly as possible to see **if they too have ASSUMED!**

Justification: Use of Emergency Communication

Throughout the last few years while looking into a very serious problem I have unfortunately discovered, that a classification of the deadliest chemical sites/facilities known to man, hazardous material sites of a certain federal / state classification/status did not have any type of **basic outside alarms that many have assumed** were still being installed **to warn their employees** who are **outside** of their buildings, structures or on their property. What is most **important** is without having **immediate** live loud voice communication warnings to warn alert and communicate with our First Responders and the general population that will be **adjacent to the property** such as local businesses, communities, schools churches etc. there is a problem. These sites know that without having these basic audible communication devices, outside adjunct alarms installed they will not have a way to immediately warn/notify, communicate with their employees, the local community or others outside of their structures. Yes just think about this for a second, even when an immanent threat of death **or possible exposure** to toxic chemicals in times of crisis when a **unauthorized release** of Hazardous chemicals, or possibly a **chemical reaction that could cause massive explosions** were in progress there will be no way to immediately warn through audible notification (HazMat alerting) the neighboring public immediately and directly from this site containing the hazardous materials. The fact that the **activation** of their emergency fire alarms systems is required as part of the (HMMP) also referred to by other agencies as the Hazardous Material Off-Site Response Plan is a real problem **if the site does not have any** audible **outside** alarm systems to use as immediate audible emergency communication in place **in their times of crisis.**

This major preparedness **building fire code problem** is the issue that we are trying to correct to **ensure that the public safety** of our nation is protected. Who forgot the basic outside alarms?

What is disturbing is that since the turn-of-the-century, these basic emergency fire alarms as such were being used to supply immediate local communication to the community as basic common sense public service practices by many businesses and were typically installed. Ironically many legislators (law makers) and now the general public are still **ASSUMING that these basic alarms** were in the fire codes **and** these alarms were already installed (in place) at our deadliest chemical sites to immediately warn communicate with the site employees outside of the structures, **neighboring businesses** and local communities before exposure to toxic chemicals during or before **a time sensitive event** when every **second counts.**

Obviously there is a major problem. These alarms are not installed! And now everybody is looking for the language in their Fire Codes.

Now Legislators and other officials, who have also assumed for many years, will have to explain what went wrong.

To complicate matters for our legislators and code officials in our post 9/11 world many citizens **have discovered** that without these **audible communication live loud voice alarms** in place our First Responders will be the first at risk because **there is no live audible loud voice alert communication system in place** during an emergency at these Hazardous Material sites.

These sites in question have been recognized by the federal / state government for many years by a classification that our governments refer to as **SARA Title lll etc. or higher** that requires **HMIS** reporting. Sites/facilities as such classification are now considered by our government (DHS) Department of Homeland Security and others as being potential (WMD) Weapons of Mass Destruction targets as legislators and government officials are realizing that we now have a major **public safety and health** fire code problem that could affect millions of citizens across our nation.

The public now realizes that without having any outside alarms in place, **we do not have any** Homeland Security at these facilities. They also are doing the math and have discovered who is expendable!

Many officials have become complacent!

What is more disturbing than ever, is that many legislators forgot about their existing State Registries that have been established since the 1980's that contain a list of citizens who have chemical hypersensitivity. Many also forgot to consider the sick, the elderly and the thousands of citizens with handicaps with special-needs. The right hand was not talking to the left.

As it is today for those sites without outside emergency alarms there is **no protection** or **immediate live loud voice emergency communication** of any type to warn the public who surround these sites who are **outside exposed to the atmosphere** or physical damage from potential explosions. This reality is starting to set in for many! These sites today have to fall under **ADA requirements** but the basic alarms are not in the codes.

To put things in perspective, this is like having a truckload of HazMat materials traveling through a major metropolitan area without having a basic HORN, audible warning device on the truck.

What is wrong with this picture?

Who forgot about our First Responders, **local businesses and community** surrounding these high threat chemical sites?

Now I want you to take all things into consideration and what do you think you … are in the eyes of those who knew?

This is the justification for the use of emergency alarm communication and these code proposals.

Technical Justification: Additional Information

As you will discover technical information and system communication alert mass notification specifications for immediate warning alert systems have been available for many years by multiple vendors as they continued to evolve throughout the digital age such as is being used in the nuclear industry at a much higher scale and area of acoustical coverage.

New government equipment specifications are evolving as old mechanical devices are being phased out.

Once the outside adjunct alarm code requirements are established in the Fire Code each local authority through their planning would then be able the determine **how to adapt** the new requirements **into their existing local public warning systems** to ensure the public safety of their community is met thus establishing a STANDARD.

Authorities would then have the ability to evaluate the existing alarm communication systems that may be in place, previously installed in the past as a hazardous material site's public service to their neighboring community to determine if the standard for the hazardous material site outside adjunct audible alarm system meets the audible communication requirements of the fire code and only minor requirements such as map record-keeping etc. may be all that is necessary.

To establish the **STANDARD** a minimal of a ½ mile audible live loud voice acoustical radius shall be required unless the vulnerability zone calculations or other requirements are greater.

Zones (examples)

Examples of vulnerability zones and how acoustical studies will be used.

Examples are based on an average of **15-mph Wind Speed**

The AUTHORITY to INCREASE the Vulnerability Zone size:

The municipality of jurisdiction, Fire Code Officials, Public Safety Officer will have the **ability to increase** the zone (audible acoustical) standard requirements for the outside adjunct alarms (Labor & Industry) fire code preparedness to ensure public safety, health and the protection of their community without appeal from the site containing hazardous materials unless superseded by a greater zone radius.

Increasing zone requirements:

The municipality will re-assess the hazardous material concerns of the site once a year at time of the full system inspection review based **on the threat quantity and hazard level** determined by **HMIS and MSDS information as per EPA Methods and guidelines risk management calculations** establishing the initial (vulnerability zone) of the site in relationship to their local community. The existing calculated vulnerability zone

supplied by the (EMA) Emergency Management Agency and recognized by federal and or state agencies should be considered and then the **new zone requirements that would** increase the original audible acoustical zone, shall then be called a **(CSZ) Community Safety Zone thus separating the two zones sizes to ensure the local community's preparedness and protection.**

Example of (CSZ) Community Safety Zone usage:

In this example it would be such as a very large hazardous material site already having a federal and or state recognized 2-mile vulnerability zone radius **and** or (New) additional hazardous materials were used, manufactured or stored at this site now having **a higher threat,** the vulnerability zone **will be** increased because the audible acoustical sound messages will not reach a retirement village, schools, shopping center and community park with multiple baseball fields boating etc. that has existed for many years located approx. 2.5 miles away. Therefore the outside adjunct alarm acoustical requirements for this facility's outside audible alarm system will be increased to ensure public safety, health and the protection of the local community because the acoustical coverage area for the outside adjunct alarm area is not deemed adequate will be increased to a 3-mile acoustical radius or greater whatever the municipality of jurisdiction, Fire Code Official or Public Safety Officer deems necessary.

Municipal officials are responsible for preparedness Labor & Industry code enforcement and the protection of their community as well as using the proper procedures as per NIMS training and guidelines in times of crisis,

An example of a HazMat event at a site having a minimal VULNERABILITY ZONE:

The public within the basic ½ mile acoustical **VULNERABILITY ZONE** radius of a hazardous materials facility on a day that there would be a 15-mph wind speed depending on the wind direction would only give the employees of the site or local citizens who are outside fully exposed to the atmosphere (outside in their backyards etc.) approximately 2 to 3 minutes to react before the possibility **of being exposed** to the toxic chemical during or before a an **unauthorized release or a possible explosion**. The length of the time before contact will be shortened depending on their proximity at the time of the **UNAUTHORIZED DISCHARGE** of Hazardous Materials or potential explosions etc. from the site. Every second will be required to gather loved ones with **HYPERSENSITIVITY and or existing health problems** to include those with special-needs to seek shelter **before being exposed** to the toxic (hazardous materials) chemicals just released**.**

The activation of the outside adjunct alarm system:

With an average of 15-mph wind speed with toxic chemicals would then give the local community who is **outside fully exposed** to the atmosphere at a 2-mile distance approx. 8-minutes of time to react assuming the outside adjunct alarm system at the facility was activated immediately by the On-site Coordinator (operator) upon the first unauthorized release of chemicals to the atmosphere via ventilation etc. If not your time before potential exposure to the hazardous chemicals could be much less. At 3-miles for those being outside **exposed to the atmosphere** you will have approx. 12-minutes before the first toxins reach your area depending on the wind direction at that time. Keep in mind that the toxins **will continue** until the source is expended or contained by First Responders etc. The average response time for emergency personnel, First Responders etc. to drive/arrive at the scene could be from 10 to 15 minutes from the activation of the HMMP. It could be much longer for those responders who have to travel a greater distance or have traffic problems etc. Based on conditions the toxins could have already spread up to 3-miles before the First Responders arrived on site.

Failure to activate the outside adjunct alarm system immediately or in the proper order could be handled via a local municipal resolution with a substantial fine or you could use Section 2701.6.2 Permanently out-of service if necessary.

The most important use of the outside adjunct alarms will be for the **local surrounding commercial businesses** who have a responsibility of protecting their employees, who's numbers depending on size or type of business could be into the hundreds. These businesses will **need every second** to close or shut down their ventilation systems and make sure their employees are inside, and not exposed to the concentrated toxins, massive explosions that may occur or any chemical reactions that may already be in progress.

Basic common sense will tell you, in hazardous material chemical situations, **every second counts!**

Example of a combined use of the outside adjunct alarms thus achieving a better acoustical design for a community.

If a municipality through planning already has an existing community warning system in place surrounding or within their industrial park area the municipality will have the discretion at any time or through their Fire Code Official, Public Safety Officer **to increase the vulnerability zone** by simply **adding the new requirements** for the chemical facility in question to upgrade the already established audible acoustical coverage area for their community.

After the upgrade of the **(CSV) Community Safety Zone** that will increased the zone audible acoustical coverage size /area this **site shall share** the maintenance and upgrades inspections testing etc. proportionally with the rest of the hazardous material sites, of this particular federal or state classification as specifically addressed by the municipality without appeal.

Section-by-section discussion:

(Section 2704.9) The purpose of the change is to add outside adjunct alarms (alert tone emergency voice/alarm communication systems) as a requirement to be installed, tested, 100% operational at hazardous materials sites to protect employees, First Responders and local citizens in the surrounding area of a site containing hazardous materials, as part of the fire codes before or in a time sensitive event, when every second counts.

Without having the immediate basic outside fire alarms commonly called HazMat Alerting systems as an extension of the interior alarm system installed at these high profile, chemical facilities everybody in the vicinity of the hazardous materials site that are outside exposed to the atmosphere unprotected, surrounding the site property is at risk.

As it is today there are no outside adjunct alarms in place other than systems that were voluntarily installed by the owner to immediately warn the employees and surrounding community by using mass warning - notification communication directly to those who are directly outside of these sites, buildings, rooms or areas with known hazardous materials during a time of potential explosions or unauthorized hazardous releases, to prevent toxic exposure or loss of life.

The way the fire code is written today it stops at only notifying the people inside the existing buildings, rooms, or areas. Therefore, anybody outside of these exterior walls working elsewhere on the property, will not get any type of alert tone emergency PA live loud voice/alarm communication warnings that maybe only a short distance away in times of crisis because there are no provisions in the fire codes clearly defined to have these alarms installed.

Many of these facilities with hazardous materials may already have blow-out walls in place in their hazardous material storage areas that are designed to immediately disperse the energy of the explosion / chemical release into the atmosphere, thus by their design will endanger the workers directly outside of the storage areas, as well as the local residents with their children, family members, hypersensitivity individuals, handicap citizens with special-needs, group homes, schools, churches as well as the adjacent businesses from exposure who reside within the hazardous material sites vulnerability zone.

Some additional justification for the use of the outside alarms communication came from truck drivers, who voiced their concerns about when they enter a property with a truckload of hazardous materials and or unknowingly discover that they may have a spill inside of their trailer, and there are no outside alarms installed to immediately warn their fellow truck drivers before they enter the site or even the site employees who are outside on the site property, building, structure, rooms etc. Everybody is at risk because there are no audible communication devices, outside alarms on the property in place.

These immediate warning audible communication systems that have remote access capability via (Mobile Communication Control Centers) will then be able to use a live loud voice PA broadcast to warn our First Responders and others who may be entering the property at the time of the event that would hear the pre-recorded distinctive HazMat Event tone messages or a PA live, loud voice broadcast warning and will then be able to protect the lives of many of our First Responders and possibly thousands of others citizens.

This local emergency immediate on-site communication HazMat Alert system that can be used for local live loud voice communication, **as the communities first line of defense** who are outside exposed to the atmosphere will be a vital tool that will be in place and operational when the (EMA) Emergency Management Agency, (PIO) Public Information Officer arrives at the site to disperse emergency information for recovery or evacuations after or maybe during the hazardous material event.

By simply turning the speaker arrays of the outside adjunct alarm system, which is the outside alert tone emergency PA live loud voice/alarm communication systems, **on or off,** in a given area it will then give the police and other authorities the ability to direct their communication to a specific area to forewarn First Responders or the public such as those who may be stopped on interstate highways to return to their cars and shelter in place or such as a major shift in wind direction or other constantly changing conditions.

Emergency Communication saves many lives! Every First Responder and Fire Code Official knows what would happen if you would not have your basic communications, radio etc. in times of crisis.

The problem is not the use of any alert tone emergency voice/alarm communication systems, but rather how many people assumed that these basic alarms were in place, and where do we go from here?

The same type of basic alarm equipment is being used in the Nuclear Industry at a much larger scale but is not as technically advanced to give PA live loud voice directional emergency communication or pre-recorded warning messages as is what is being used in the industry today.

(Section 2701.2.2.3) Establishing the location of the Vulnerability Zone Maps and vital Health Hazard records.

Maps having a visual zone (circles)(areas) shown are required for those individuals who are listed on State Registries etc. with known hypersensitivity to chemicals to include those individuals with special-needs and the general public, in order to determine evacuation procedures to prevent exposure to chemicals or loss of life.

(Section 2701.5.1) Establishing the location of emergency information (Vulnerability Zone maps, records etc.) as part of the basic requirements of the site **Hazardous Material Management Plan.**

Maps and Health Hazard information, records are required for all individuals who are listed on State Registries with known hypersensitivity to include those individuals with special-needs, the public, in-order to determine evacuation procedures to prevent exposure or loss of life. This information containing maps (blueprints), etc. is just as essential as knowing the basic locations that will be shown on other blueprints showing areas, equipment and shut-off valves etc. of a facility.

(**Section 2703.2.9.2)** Establishing a specific testing frequency for outside adjunct alarm HazMat Alerting systems.

All parties who are reviewing these code proposals should realize by now the level of Hazardous Material sites that are being addressed. It is imperative that a code section be assigned to establish a testing schedule for these communication (HazMat Alerting) live loud voice systems since they are our first line of defense communication, emergency warning during a Hazardous Material event.

Testing of the outside adjunct alarm audible alerting system should be tested /inspected a minimal of every six months such as in the middle of winter (cold temperature) and also in the middle of summer (hottest temperature) to ensure that the systems are 100% operational throughout all temperature ranges should be a requirement of this code. Silent testing of some system components is available in some designed systems today.

By having a defined testing frequency this would help ensure that the system would be operational when required in times of crisis.

The only way this testing frequency could be modified is if superseded by government specifications or system requirements.

(Section 2703.9) To establish a failsafe in the General Safety Precautions to avoid sites with Hazardous Material from shifting Hazardous Materials in-order to avoid code sections within the IFC.

Concerns that hazardous materials could be shifted / relocated into other structures on or off of a Hazardous Material site main storage area that may not be properly constructed based on MSDS information, ICC IFC etc. with the proper fire suppression, or inspected prior to the arrival of new materials (requiring different precautions) that may exceed conditions, or in-order to reduce inventory thus avoiding (HMIS) requirements for sites of the classification known by federal and or state government agencies as SARA Title III etc. that can be found/referenced in IFC Section 2701.5.2.

(Section 2704.10) The outside adjunct alarms, HazMat Alerting, mass notification, emergency alarm emergency voice/alarm communication system with prerecorded voice messages and PA live loud voice broadcast shall be supervised by an on-site coordinator constantly in attendance at the Fire Command Center.

The On-Site Coordinator must supervise all alarm and fire-extinguishing systems at all times, and if at such time during a time sensitive event that a facility is ready to explode or have an un-authorized release it is imperative that the appropriate alarms with pre-determined, pre-recorded messages be activated. Depending on the stage of the time sensitive HazMat event an immediate audible PA live loud voice broadcast may be appropriate when every second counts.

(Section 2702.1 Definitions) The purpose of the change is to supply definitions in such language that can be clearly understood by all parties. Definitions required explaining the use and or the application for which they will be used.

(Section 404.3.1 Supp) Hazardous Material sites reaching an established Federal or State recognized classification will be required to have emergency voice/alarm communication system alert tone with prerecorded voice messages included as part of their evacuation planning.

Hazardous Material sites of such recognized classification, do not have any type of basic alarms, warning devices, outside emergency voice/alarm communication system on the exterior of the structures etc., to forewarn, give direction to employees who are outside of exterior walls on the site property, First Responders, inspectors and most important the local community, businesses and residents surrounding the site, before or in times of crisis (time sensitive) or potential explosions or unauthorized chemical releases etc.

Emergency Planning and Preparedness, NRC sites etc, Multiple Vendors with installations throughout our nation for many years.

Much larger outside mass notification alert warning systems **have been used** as communication for their first line of defense at nuclear sites for years in the nuclear industry for emergency warning notification. These proposed **much smaller** outside adjunct alarm **HazMat Alerting** live loud voice communication systems shall be **used locally** to **immediately warn** the employees as their first line of defense as well as the surrounding residents, businesses etc. via these smaller mass audible warning notification systems that are more digitally advanced with alert tones, such as HazMat Event Tones along with audible prerecorded messages or PA live voice broadcasts that are commonly referred to as HazMat Alerting systems to be used by the site before or in times of crises during time sensitive HazMat events when every second counts etc.

Voice communication, live loud PA broadcast systems are common today and can also be found being used for local communication on many of our High Schools, College Campuses and local communities for Community Emergency Mass Notification in times of crisis. Sometimes the same system components are used for Homeland Security, Mining, Severe Whether Warnings, Oil and Gas Production, Tsunami Warning and of course HazMat Alerting Systems. The same communication system components can achieve multiple end results by using different speaker arrays alert tones and messages for different applications depending on the acoustical study and other requirements of the site.

(Section 404.3.2 Supp) As part of the Fire Safety Floor Plan identifying the locations in this case being the location of the manual fire alarm pull box, with **override capability (a failsafe)** required for the manual activation of the **outside adjunct alarm alerting systems** will be shown on the Fire Safety Floor Plan.

It is imperative that the location of the manual pull box for the outside adjunct alarm emergency voice/alarm communication alert tone mass notification systems (HazMat Alerting) be shown on **maps** and fire safety floor plans at Hazardous Material sites in case at such time/event that the On-Site Emergency Coordinator is unavailable to activate the outside adjunct alarms system or in the event of failure of the primary internal fire alarm communication system. This is required so that those in authority to include the Hazardous Material site's Safety Personnel, inspectors etc. must know the exact location of the manual pull box, with override capability in-order to activate the outside communication devices as primary line of defense, which will be an **extension of the emergency communication alert alarm** for the safety of the site employees continuing the communication as they evacuate the facility to extend up to a minimal of 2640 ft. radius or beyond based on zone calculations into the surrounding community to protect life, and potential exposure to toxic chemicals.

(Section 509.1 (IBC [F] 911.1) Supp) Establishing the location of the HazMat Alerting, outside adjunct alarm, mass notification system unit to be located within the Fire Command Center.

All fire emergency communication systems head-end equipment must be located at **one central location, clearly established available** to On-site Coordinators, Emergency First Responders and other authorized personnel.

Bibliography: Military Equipment Specification for mass notification, UFC4-021-01 Oct.,05 draft.

Cost Impact: The code change proposal will not increase the cost of construction.

(Section 2704.9) Minimal cost during new construction estimated. $15,000 to $20,000 or it could be less. Average estimate could be $35,000 to $50,000 depending on the existing conduits telephone poles etc.

The higher the Public Safety and Health concerns of these high profile sites with hazardous material have to local community, the more speaker arrays may be required for coverage. Each site will be unique, depending on the acoustical study and construction cost could be as high as $100,000 + (TBD) to be determined by the local municipality or Fire Code Official etc.

If a Remote – Mobile Communication Control Unit **is available** with the system of choice to remotely control the outside adjunct alarm systems messages PA live loud voice etc. by the local Fire Company the municipality of jurisdiction **shall make** the final determination on whether or not the site will pick up the cost of the remote center after all vulnerability zone calculations and community concerns are addressed.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F256–07/08

2705.1.5; IBC [F] 414.5.4

Proponent: Patrick A. McLaughlin, McLaughlin & Associates, representing The Sherwin Williams Company

Revise as follows:

2705.1.5 Standby or emergency power. Where mechanical ventilation, treatment systems, temperature control, manual alarm, detection or other electrically operated systems are required, such systems shall be provided with an emergency or standby power system in accordance with Section 604.

Exceptions:

1. Standby or emergency power for mechanical ventilation shall not be required for closed use of flammable and combustible liquids.
1. ~~1.~~ 2. Standby power for mechanical ventilation, treatment systems and temperature control systems shall not be required where an approved fail-safe engineered system is installed.
2. ~~2.~~ 3. Systems for highly toxic or toxic gases shall be provided with emergency power in accordance with Sections 3704.2.2.8 and 3704.3.2.6.

[F] 414.5.4 (Supp) Standby or emergency power. Where mechanical ventilation, treatment systems, temperature control, alarm, detection or other electrically operated systems are required, such systems shall be provided with an emergency or standby power system in accordance with Section 2702.

Exceptions:

1. Standby or emergency power for mechanical ventilation shall not be required for closed use of flammable and combustible liquids.
1. ~~1.~~ 2. Storage areas for Class 1 and 2 oxidizers.
2. ~~2.~~ 3. Storage areas for Class II, III, IV and V organic peroxides.
3. ~~3.~~ 4. Storage areas for asphyxiant, irritant and radioactive gases.
4. ~~4.~~ 5. For storage, use and handling areas for highly toxic or toxic materials, see Sections 3704.2.2.8 and 3704.3.2.6 of the *International Fire Code*.
5. ~~5.~~ 6. Standby power for mechanical ventilation, treatment systems and temperature control systems shall not be required where an approved fail-safe engineered system is installed.

Reason: Ventilation and thus standby power is only required for closed use of flammable and combustible liquids by Section 2705.2.2.2 when the closed system is designed to be opened as part of normal operations. There appears to be confusion created when ventilation is voluntarily provided for closed systems which this proposal resolves by clarifying that standby power is not required. Also, this proposal will coordinate the IFC and NFPA 30 requirements for standby power for ventilation of closed use of flammable and combustible liquids. These materials are in closed systems that stop operating when there is loss of power making the benefit of ventilation limited. Standby power is an unnecessary redundancy.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F257–07/08
2705.1.11

Proponent: Jeffrey M. Shapiro, PE, International Code Consultants, representing himself

Revise as follows:

2705.1.11 (Supp) Design. Systems shall be suitable for the use intended and shall be designed by persons competent in such design. Controls shall be designed to prevent materials from entering or leaving the process or reaction system at other than the intended time, rate, or path. Where failure of an automatic control could result in a dangerous condition or reaction, the automatic control shall be fail-safe. ~~Where automatic safety controls are used to prevent a dangerous condition or reaction, they shall be designed to be fail safe.~~

Reason: When Proposal F231-06/07 was processed last cycle, a commitment was made to further clarify the intended application of this section. To satisfy that commitment, this revision has been submitted to make it clear that ANY automatic control that could cause a dangerous condition or reaction upon failure must be fail-safe. The 2007 Supplement text limits applicability of the fail-safe requirement to SAFETY CONTROLS that could cause a dangerous condition or reaction upon failure.

Cost Impact: The code change proposal will increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F258–07/08
2705.1.11.1 (New), Chapter 45 (New)

Proponent: William Winslow, representing Washington State Association of Fire Marshals

1. Add new text as follows:

2705.1.11.1 Process safety management. Where the amount of hazardous material exceeds the threshold planning quantity for process safety management in DOL 29 CFR 1910.119, the process hazard analysis required by said regulation shall be provided for review where requested by the fire code official.

2. Add new standard to Chapter 45 as follows:

DOL

29 CFR 1910.119--2007 Process Safety Management of Highly Hazardous Chemicals

Reason: The process hazard analysis (PHA) required by the Process Safety Management regulation includes valuable information that will help the fire code official determine if a chemical system is suitable for the use intended. The PHA describes hazards that could occur, such as leaks, excess level, over pressure and over temperature, and what safety controls and other features are included to prevent dangerous incidents. Having the PHA can greatly simplify the fire code official's design review and system approval.

Cost Impact: The code change proposal will not increase the cost of construction. The code official can only ask for the PHA if it is already required by Federal Regulations.

Analysis: A review of the standard proposed for inclusion in the code, DOL 29 CFR 1910.119--2007, for compliance with ICC criteria for referenced standards given in Section 3.6 of Council Policy #CP 28 will be posted on the ICC website on or before January 15, 2008.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F259–07/08
2705.1.11.1 (New), Chapter 45 (New)

Proponent: Tom Lariviere, Fire Department, Madison, MS, representing Joint Fire Service Review Committee

1. Add new text as follows:

2705.1.11.1 Process safety management. Where the amount of hazardous material exceeds the threshold planning quantity for process safety management in DOL 29 CFR 1910.119, the process hazard analysis required by said regulation shall be available for on-site review by the fire code official.

2. Add standard to Chapter 45 as follows:

DOL

29 CFR 1910.119--2007 Process Safety Management of Highly Hazardous Chemicals

Reason: The process hazard analysis (PHA) required by the Process Safety Management regulation includes valuable information that will help the fire code official determine if a chemical system is suitable for the use intended. The PHA describes hazards that could occur, such as leaks, excess level, over pressure and over temperature, and what safety controls and other features are included to prevent dangerous incidents. Reviewing the PHA can greatly simplify the fire code official's design review and system approval.

Cost Impact: The code change proposal will not increase the cost of construction. The code official can only ask for the PHA if it is already required by Federal Regulations.

Analysis: A review of the standard proposed for inclusion in the code, DOL 29 CFR 1910.119--2007, for compliance with ICC criteria for referenced standards given in Section 3.6 of Council Policy #CP 28 will be posted on the ICC website on or before January 15, 2008.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F260–07/08
3003.7.11 (New), 3002.1 (New)

Proponent: Larry Fluer, Fluer, Inc., representing Compressed Gas Association

1. Add new text as follows:

3003.7.11 Tube trailers. Tube trailers including those containing compatible compressed gases shall be surrounded by a clear space of not less than 3 feet (914 mm) to allow for maintenance, access and inspection.

3003.7.11.1 Individual tube trailers containing incompatible materials. Increased separation distances between individual tube trailers containing incompatible gases shall be provided when required by 3003.7.1.

3003.7.11.2 Connections. Piping systems used to connect tube trailers to a user piping system shall not be viewed as an encroachment into the 3 foot (914 mm) clear space.

2. Add new definition as follows:

3002.1 Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

TUBE TRAILER. A semitrailer on which a number of tubular gas cylinders have been mounted. A manifold is typically provided that connects the cylinder valves enabling gas to be discharged from one or more tubes or cylinders through a piping and control system.

Reason: It is common to have more than one tube trailer on a site. A minimum separation should be provided between tube trailers to allow for access and passage of those involved in service and use activities. At filling plants operators must access the vehicles for maintenance and service related work, and at user locations access is needed to allow users unimpeded movement including access and egress. A distance of 36 inches has been selected as it accommodates a "man width" of 22 inches while addressing the fact that there could be service related connections or fittings that require them to be attended. Section 2206.2.6 requires a 3 foot clearance around flammable liquid tanks when installed inside of buildings in special enclosures to allow for access and maintenance. Although not directly related, Sections 1805.2.2.3 and 1805.2.3.4 requires a 3

foot horizontal service clearance at work stations where hazardous conditions including electrical connections, gas-cylinder connections and similar conditions may exist.

A similar definition for tube trailer is found in NFPA 55.

Provisions have been made to allow for piping systems to be connected to the tube trailer so that the piped connection is not viewed as an encroachment on the clearance otherwise required.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F261–07/08
3201.1, 3201.1.1 (New), 3201.1.2 (New)

Proponent: Larry Fluer, Fluer, Inc., representing Compressed Gas Association

Revise as follows:

3201.1 (Supp) Scope. Storage, use and handling of cryogenic fluids shall comply with this chapter. Cryogenic fluids classified as hazardous materials shall also comply with Chapter 27 for general requirements. Partially full containers containing residual cryogenic fluids shall be considered as full for the purposes of the controls required.

Exceptions:

1. Fluids used as refrigerants in refrigeration systems (see Section 606).
2. Liquefied natural gas (LNG), which shall comply with NFPA 59A.

~~Oxidizing cryogenic fluids, including oxygen, shall comply with NFPA 55 and Chapter 40 as applicable. Flammable cryogenic fluids, including hydrogen, methane and carbon monoxide, shall comply with NFPA 55 and Chapters 22 and 35 as applicable. Inert cryogenic fluids, including argon, helium and nitrogen, shall comply with CGA P-18.~~

3201.1.1 Material specific requirements. Bulk flammable cryogenic fluid systems including hydrogen, methane and carbon monoxide, and bulk oxidizing gas systems shall comply with NFPA 55 and Chapters 22 and 35 as applicable. Bulk inert cryogenic fluids, including argon, helium and nitrogen, shall comply with CGA P-18.

3201.1.2 Liquid oxygen in home health care. Liquid oxygen in home health care shall also be in accordance with Section 4006.

Reason: Chapter 32 provides the fundamental generic requirements for cryogenic fluids. Material specific provisions that have been developed for "bulk" systems are found in either NFPA 55 or CGA P-18. The term "bulk" was not included in the references to standards which creates a potential conflict between the IFC and NFPA 55 as well as a potential conflict between the requirements of Chapter 32 and Section 4006 (2007 Supplement). Bulk hydrogen and oxygen systems are further defined in chapters 35 and 40.

Reorganization of Section 3201.1 will bring further clarity to the application of this chapter and direct the user to NFPA 55 for detailed provisions relative to bulk systems.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F262–07/08
3204.3, 3205.3.1

Proponent: Larry Fluer, Fluer, Inc., representing Compressed Gas Association

Revise as follows:

3204.3 Outdoor storage. Outdoor storage of containers shall be in accordance with Sections 3204.3.1 through 3204.3.1.2.3 ~~3204.3.2.2~~.

~~**3204.3.1 Stationary containers.** The outdoor storage of stationary containers shall comply with Section 3203 and this section.~~

3204.3.1 ~~3203.6~~ Separation from hazardous conditions. Cryogenic containers and systems in outdoor storage ~~or use~~ shall be separated from materials and conditions which pose exposure hazards to or from each other in accordance with Sections ~~3203.6.1~~ 3204.3.1.1 through ~~3203.6.2.1~~. 3204.3.1.1.5

3204.3.1.1 ~~3203.6.1~~ Stationary containers. Stationary containers shall be separated from exposure hazards in accordance with the provisions applicable to the type of fluid contained and the minimum separation distances indicated in Table 3204.3.1.1 ~~3203.6.1~~.

TABLE ~~3203.6.1~~ 3204.3.1.1
SEPARATION OF STATIONARY CONTAINERS FROM EXPOSURE HAZARDS

EXPOSURE	MINIMUM DISTANCE (feet)
Buildings, regardless of construction type	1
Wall openings	1
Air intakes	10
Lot lines	5
Places of public assembly	50
Nonambulatory patient areas	50
Combustible materials such as paper, leaves, weeds, dry grass or debris	15
Other hazardous materials	In accordance with Chapter 27

3204.3.1.1.1 ~~3203.6.1.1~~ Point-of-fill connections. Remote transfer points and fill connection points shall not be positioned closer to exposures than the minimum distances required for stationary containers.

3204.3.1.1.2 ~~3203.6.1.2~~ Surfaces beneath containers. The surface of the area on which stationary containers are placed, including the surface of the area located below the point where connections are made for the purpose of filling such containers, shall be compatible with the fluid in the container.

3204.3.1.1.3 ~~3204.3.1.1 (Supp)~~ Location. ~~Stationary containers shall be located in accordance with Section 3203.6.~~Containers of cryogenic fluids shall not be located within diked areas containing other hazardous materials.

3204.3.1.1.4 ~~3204.3.1.2~~ Areas subject to flooding. Stationary containers located in areas subject to flooding shall be securely anchored or elevated to prevent the containers from separating from foundations or supports.

3204.3.1.1.5 ~~3204.3.1.3~~ Drainage. The area surrounding stationary containers shall be provided with a means to prevent accidental discharge of fluids from endangering personnel, containers, equipment and adjacent structures or to enter enclosed spaces. The stationary container shall not be placed where spilled or discharged fluids will be retained around the container.

Exception: These provisions shall not apply when it is determined by the fire code official that the container does not constitute a hazard, after consideration of special features such as crushed rock utilized as a heat sink, topographical conditions, nature of occupancy, proximity to structures on the same or adjacent property, and the capacity and construction of containers and character of fluids to be stored.

3204.3.1.2 ~~3204.3.2~~ Outdoor storage of p~~P~~ortable containers. Outdoor storage of portable containers shall comply with Section 3203 and Sections 3204.3.1.2.1 through 3204.3.1.2.3.

~~**3204.3.2.1 Location.** Portable containers shall be located in accordance with Section 3203.6.~~

3204.3.1.2.1 ~~3203.6.2~~ Exposure hazard separation ~~Portable containers~~. Portable containers in outdoor storage shall be separated from exposure hazards in accordance with Table ~~3203.6.2.~~ 3204.3.1.2.1.

TABLE ~~3203.6.2~~ 3204.3.1.2.1
SEPARATION OF PORTABLE CONTAINERS FROM EXPOSURE HAZARDS

EXPOSURE	MINIMUM DISTANCE (feet)
Building exits	10
Wall openings	1
Air intakes	10
Lot lines	5
~~Room or area exits~~	~~3~~
Combustible materials such as paper, leaves, weeds, dry grass or debris	15
Other hazardous materials	In accordance with Chapter 27

3204.3.1.2.2 ~~3203.6.2.1~~ Surfaces beneath containers. Containers shall be placed on surfaces that are compatible with the fluid in the container.

3204.3.1.2.3 ~~3204.3.2.2~~ Drainage. The area surrounding portable containers shall be provided with a means to prevent accidental discharge of fluids from endangering adjacent containers, buildings, equipment or adjoining property.

Exception: These provisions shall not apply when it is determined by the fire code official that the container does not constitute a hazard.

3205.3.1 Separation. Distances from property lines, buildings and exposure hazards shall comply with Section ~~3203.6~~ 3204.3 and the material specific provisions of Section 3201.1.

Reason: During the last code cycle a new section was added to Chapter 40 to address the use of liquid oxygen in home health care. Deliberations and dialog of interested parties revealed an organizational problem with Chapter 32 between requirements for indoor systems vs. outdoor systems. The organizational problems are intended to be resolved by the proposed code change. The primary purpose of the code change is reorganization.

Existing Section 3203.6 was included as a "general provision" applicable to cryogenic containers and systems. The provisions are intended to apply to outdoor containers and systems and not to circumstances where these materials are located indoors. Section 3203.6 has been relocated with minor changes to Section 3204.3 for outdoor storage, and Section 3204.3 has been reorganized to integrate the provisions. Specific changes other than those used for the purposes of cross reference were as follows:

3204.3.1 was deleted as it was redundant.

3203.6 now 3204.3.1 was modified to include the term "outdoor" for clarity and to delete the reference to use as use is addressed in Section 3205.

3204.3.1.1 was relocated to 3204.3.1.1.3.

3204.3.2 was relocated to 3204.3.1.2 and editorially revised to match code style guidelines.

3204.3.2.1 was deleted as it was redundant.

3203.6.2 now 3204.3.1.2.1 was revised to include the term "outdoor" for clarity and the title was revised to eliminate redundancy with 3204.3.1.2.

Table 3203.6.2 now Table 3204.3.1.2.2. The row for room or area exits has been deleted as the table does not apply to indoor applications. Questions arose during the debate and discussions on the use of liquid oxygen (LOX) in home health care where a code user was applying Table 3203.6.2 to indoor uses. As Section 3203.6 was included as a general provision the concern was understandable. Redirection of these provisions to outdoor storage resolves the problem. The means of egress from rooms, buildings and areas is regulated by Chapter 10. Section 1015.2 requires that exits or exit access doorways be unobstructed. Section 1028 requires that the means of egress be maintained.

A cross reference to Section 3203.6 in 3205.3.1 has been correlated with the proposed change.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F263–07/08
3301.1.3

Proponent: Rick Thornberry, PE, The Code Consortium, representing American Pyrotechnics Association (APA)

Revise as follows:

3301.1.3 (Supp) Fireworks. The possession, manufacture, storage, sale, handling and use of fireworks are prohibited.

Exceptions:

1. Storage and handling of fireworks as allowed in Section 3304.
2. Manufacture, assembly and testing of fireworks as allowed in Section 3305.
3. The use of fireworks for fireworks displays as allowed in Section 3308.
4. The possession, storage, sale, handling and use of specific types of Division 1.4G fireworks where allowed or otherwise not prohibited by applicable laws, ordinances and regulations, provided such fireworks comply with, CPSC 16 CFR, Parts 1500 and 1507, and DOTn 49 CFR, Parts 100-185, for consumer fireworks.

Reason: This code change proposal is a follow up to our code change proposal F177-06/07 which was approved as submitted by the International Fire Code Committee during the last code development cycle. There was floor action subsequent to the Committee's recommendation which was successfully voted for disapproval so the code change came up on the agenda at the ICC Final Action Hearings held last May in Rochester, NY. The code change was discussed during those hearings and was subsequently disapproved by the membership. The approval motion failed on a vote of 51 to 69. Due to the relatively close vote and due to the fact that there were a relatively low number of votes cast, the American Pyrotechnics Association (APA) felt that it should be resubmitted to the International Fire Code Committee for reconsideration in an effort to resolve our concerns with the way Exception 4 is currently worded.

Under the United States system of laws, the general rule is that anything is allowed unless it is specifically prohibited by a law, ordinance, or regulation. So, basically, consumer fireworks are allowed everywhere in the U.S. unless a state or local jurisdiction takes specific action to prohibit or otherwise limit their use. But the key point is that a jurisdiction doesn't need to take specific action to allow consumer fireworks as the current wording in the Exception 4 implies. Therefore, we believe it would be more appropriate to use the phrase "otherwise not prohibited" as an alternate to the word "allowed". We believe that this still meets the intent of the original code change proposal to assure that compliance is met with all applicable laws which include ordinances and regulations, both state and local.

Under the current wording recently approved by the Committee modified Code Change Proposal F219-04/05 there could be problems in jurisdictions where, for example, a state has prohibited the use of consumer fireworks but allows for a local exemption. Then a local jurisdiction within that state passes a law allowing consumer fireworks. In that case, the applicable state law does not allow consumer fireworks, per se, yet the state law is constructed so that a local jurisdiction can allow them if they pass an ordinance doing so. But if a state does not pass a law prohibiting consumer fireworks, then there would be no applicable law, ordinance, or regulation that would specifically allow them since they would not be prohibited. The other side of the coin is the case where the state does not prohibit the use of consumer fireworks since no law was passed attempting to do that, but a local jurisdiction passes an ordinance or implements a regulation that specifically prohibits consumer fireworks. In that case, the Exception 4 as currently written would apply as would the exception as further modified by this code change proposal. So that situation would be covered. However, the previous situation is not covered by the current text of Exception 4 but would be covered by the proposed modifications in this code change proposal to modify Exception 4. Therefore, we believe the appropriate approach for modifying Exception 4 would be to approve this code change proposal. This would avoid any potential conflict between local ordinances and regulations and state laws and regulations.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F264–07/08
3301.3

Proponent: Daniel Graham, Aerojet Fire Marshal and Building Official, representing Aerojet/Gencorp

Revise as follows:

3301.3 (Supp) Prohibited explosives. Permits shall not be issued or renewed for possession, manufacture, storage, handling, sale or use of the following materials and such materials currently in storage or use shall be disposed of in an approved manner.

1. Liquid nitroglycerin, undiluted and not desensitized.
2. Dynamite containing more than 60-percent liquid explosive ingredient.
3. Dynamite having an unsatisfactory absorbent or one that permits leakage of a liquid explosive ingredient under any conditions liable to exist during storage.
4. Nitrocellulose in a dry and uncompressed condition in a quantity greater than 10 pounds (4.54 kg) of net weight in one package.
5. Fulminate of mercury in a dry condition and fulminate of all other metals in any condition except as a component of manufactured articles not hereinafter forbidden.
6. Explosive compositions that ignite spontaneously or undergo marked decomposition, rendering the products of their use more hazardous, when subjected for 48 consecutive hours or less to a temperature of 167°F (75°C).
7. New explosive materials until approved by DOTn, except that permits are allowed to be issued to educational, governmental or industrial laboratories for instructional or research purposes.
8. Explosive materials condemned by DOTn.
9. ~~Explosive materials containing an ammonium salt and a chlorate.~~ An explosive mixture or device containing a chlorate and also containing either an ammonium salt, including a substituted ammonium or quarternary ammonium salt or an acidic substance, including a weak base and a strong acid.
10. Explosives not packed or marked as required by DOTn 49 CFR, Parts 100-185.

Exceptions:

1. Gelatin dynamite.
2. This prohibition does not apply where these materials are diluted, stabilized or incorporated into devices and classified in accordance with DOTn 49 CFR, Part 173.

Reason: The purpose of this proposal is to clarify the types of explosives that are prohibited and modify the language to be more consistent with DOTn 49 CFR Part 173 language on prohibited explosives. Where DOTn allows prohibited explosives to be diluted, desensitized or modified and classified to allow for materials to be transported, then the IFC should also allow the materials to manufactured, stored and used.

The current language in the IFC could be misused if the hazards of the materials are not clearly understood. Combining an ammonium salt and a chlorate could result in the production of ammonium chlorate, which is an unstable explosive material that is prohibited. However, there are compounds such as ammonium perchlorate that may sound like an ammonium salt and a chlorate. In addition, the prohibition for materials such as

nitroglycerin does not account for nitroglycerin in a stabilized, dilute solution, which can be transported per the DOTn regulations. It should be noted that the exception for nitrocellulose is described as a dry condition thereby limiting the prohibition, which would be similar to diluted nitroglycerin that is desensitized.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

F265–07/08
Table 3301.8.1(3)

Proponent: Rick Thornberry, PE, The Code Consortium, representing American Pyrotechnics Association (APA)

Revise table footnotes as follows:

TABLE 3301.8.1(3)
APPLICATION OF SEPARATION DISTANCE (Q-D) TABLES—DIVISION 1.4 EXPLOSIVES[a,b,c,d]

(Portions of table not shown remain unchanged)

For SI: 1 foot = 304.8 mm.
a. The minimum separation distance (Do) shall be a minimum of 50 feet.
b. Linear interpolation between tabular values in the referenced Q-D table shall not be allowed.
c. For definitions of Quantity-Distance abbreviations IBD, ILD, IMD, IPD and PTR, see Section 3302.1.
d. This table shall not apply to articles, including articles packaged for shipment, that are not regulated as an explosive under Bureau of Alcohol, Tobacco, and Firearms regulations or unpacked articles used in process operations that do not propagate a detonation or deflagration between articles, or to consumer fireworks, 1.4G.

Reason: This is an editorial clarification to indicate to the users of this table that these articles and consumer fireworks, 1.4G are not regulated by the table since they are not treated as explosives in this chapter.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

F266–07/08
Table 3304.3

Proponent: Rick Thornberry, PE, The Code Consortium, representing American Pyrotechnics Association (APA)

Revise table and footnotes as follows:

TABLE 3304.3
STORAGE AMOUNTS AND MAGAZINE REQUIREMENTS FOR EXPLOSIVES, EXPLOSIVE MATERIALS AND FIREWORKS, 1.3G MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA

NEW UN/ DOTn DIVISION	OLD DOTn CLASS	AFT /OSHA CLASS	INDOOR[A] (pounds				OUTDOOR (pounds)	MAGAZINE TYPE REQUIRED				
			Unprotected	Cabinet	Sprinklers	Sprinklers & Cabinet		1	2	3	4	5
1.1[b]	A	High	0	0	1	2	1	X	X	X	---	---
1.2	A	High	0	0	1	2	1	X	X	X	---	---
1.2	B	Low	0	0	1	1	1	X	X	X	X	---
1.3	B	Low	0	0	5	10	1	X	X	X	X	---
1.4[c]	`B	Low	0	0	50	100	1	X	X	X	X	---
1.5	C	Low	0	0	1	2	1	X	X	X	X	---
1.5	Blasting Agent	Blasting Agent	0	0	1	2	1	X	X	X	X	X
1.6	N/A	N/A	0	0	1	2	1	X	X	X	X	X

For SI: 1 pound = 0.454 kg, 1 pound per gallon = 0.12 kg per liter, 1 ounce = 28.35 g.

a. A factor of 10 pounds per gallon shall be used for converting pounds (solid) to gallons (liquid) in accordance with Section 2703.1.2.
b. Black powder shall be stored in a Type 1, 2, 3 or 4 magazine as provided for in Section 3304.3.1.
c. This table shall not apply to consumer fireworks, 1.4G.

Reason: This is an editorial clarification to address the confusion that sometimes arises regarding the application of this table. It is not intended to apply to consumer fireworks, 1.4G since they are not explosive materials by definition in this code.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F267–07/08
Table 3304.5.2(3)

Proponent: Rick Thornberry, PE, The Code Consortium, representing American Pyrotechnics Association (APA)

Revise table footnotes as follows:

TABLE 3304.5.2(3)
TABLE OF DISTANCES (Q-D) FOR BUILDINGS CONTAINING EXPLOSIVES —DIVISION 1.4 c

(Portions of table not shown remain unchanged)

For SI: 1 foot = 304.8 mm, 1 pound = 0.454 kg.

a. A separation distance of 100 feet is required for buildings of other than Type I or Type II construction as defined in the *International Building Code.*
b. For earth-covered magazines, no specified separation is required.
    1. Earth cover material used for magazines shall be relatively cohesive. Solid or wet clay and similar types of soil are too cohesive and shall not be used. Soil shall be free from unsanitary organic matter, trash, debris and stones heavier than 10 pounds or larger than 6 inches in diameter. Compaction and surface preparation shall be provided, as necessary, to maintain structural integrity and avoid erosion. Where cohesive material cannot be used, as in sandy soil, the earth cover over magazines shall be finished with a suitable material to ensure structural integrity.
    2. The earth fill or earth cover between earth-covered magazines shall be either solid or sloped, in accordance with the requirements of other construction features, but a minimum of 2 feet of earth cover shall be maintained over the top of each magazines. To reduce erosion and facilitate maintenance operations, the cover shall have a slope of 2 horizontal to 1 vertical.
c. Restricted to articles, including articles packaged for shipment, that are not regulated as an explosive under Bureau of Alcohol, Tobacco and Firearms regulations, or unpacked articles used in process operations that do not propagate a detonation or deflagration between articles. This table shall not apply to consumer fireworks, 1.4G.

Reason: This is an editorial clarification to clearly indicate that it was not the intent to apply this new table to consumer fireworks, 1.4G since they are not considered explosives by definition.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F268–07/08
3309 (New)

Proponent: Rick Thornberry, PE, The Code Consortium, representing American Pyrotechnics Association (APA)

Add new section as follows:

SECTION 3309
TEMPORARY STORAGE OF CONSUMER FIREWORKS

3309.1 General. Where the temporary storage of consumer fireworks, 1.4G is allowed by Section 3301.1.3, Exception 4, such storage shall comply with the applicable requirements in NFPA 1124.

Reason: Since the temporary storage of consumer fireworks, 1.4G occurs in almost every state in the US, it makes good sense to specify fire safety regulations for those situations. NFPA 2004-2007 contains fairly comprehensive requirements for such storage that have been developed through the NFPA consensus process.

Cost Impact: The code change proposal will increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F269–07/08
3402.1 (IBC [F] 415.2)

Proponent: Lynne M. Kilpatrick, Fire Department, Seattle, WA, representing Washington State Association of Fire Marshals

Revise definitions as follows:

3402.1 Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

(IBC [F] 415.2) LIQUID STORAGE ROOM. A room classified as a Group H-3 occupancy used for the storage of flammable or combustible liquids in containers or portable tanks in a closed condition.

LIQUID STORAGE WAREHOUSE. A building classified as a Group H-2 or H-3 occupancy used for the storage of flammable or combustible liquids in containers or portable tanks in a closed condition.

Reason: This code change is needed to clarify that liquid storage rooms and liquid storage warehouses are intended only for the storage of flammable and combustible liquids in containers and portable tanks. Rooms containing stationary tanks storing quantities of flammable or combustible liquids exceeding the MAQ are Group H occupancies but those occupancies are not also considered to be a liquid storage room. That concept can be deduced from IFC Section 3404.3.7 which establishes requirements for the construction of liquid storage rooms and from IFC Section 3404.3.6.3 which further establishes acceptable storage arrangements in liquid storage rooms and warehouses but only addresses storage arrangements of containers and portable tanks. As currently defined, code users can be misled to believe that liquid storage rooms and liquid storage warehouses are locations where flammable and combustible liquids are stored in tanks as well as containers and portable tanks.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F270–07/08
3403.6.2, 3403.6.2.1, Chapter 45 (New)

Proponent: William Winslow, representing Washington State Association of Fire Marshals

1. Revise as follows:

3403.6.2 Design ~~and~~, fabrication and installation of piping systems and components. Piping systems and components shall be designed ~~and~~, fabricated and installed in accordance with the applicable standard listed in Table 3403.6.2 and Chapter 5 of NFPA 30, except as modified by this section.

TABLE 3403.6.2
PIPING STANDARDS

PIPING USE	STANDARD
Power piping	ASME B31.1
Process Piping	ASME B31.3
Liquid Transportation Systems for Hydrocarbons, Liquid Petroleum Gas, Anhydrous Ammonia, and Alcohols	ASME B31.4
Building Services Piping	ASME B31.9

3403.6.2.1 Special Materials. Low-melting-point-materials (such as aluminum, copper, and brass), materials that soften on fire exposure (such as nonmetallic materials), and nonductile material (such as cast iron) shall be acceptable for use underground in accordance with the applicable standard listed in Table 3403.6.2. When such materials are used outdoors in above-ground piping systems or within buildings, they shall be in accordance with the applicable standard listed in Table 3403.6.2 and one of the following.

1. Suitably protected against fire exposure.
2. Located where leakage from failure would not unduly expose people or structures.
3. Located where leakage can be readily controlled by operation of accessible remotely located valves.

In all cases, nonmetallic piping shall be used in accordance with Section 5.3.6 of NFPA 30.

2. Add standards to Chapter 45 as follows:

ASME

B31.1-04 Power Piping
B31.4-06 Liquid Transportation Systems for Hydrocarbons, Liquid Petroleum Gas, Anhydrous Ammonia, and Alcohols

Reason: This code change proposal is a clarification and a technical correction. NFPA 30, Chapter 5 references ASME B31, Code for Pressure Piping, not ASME B31.9, which covers Building Services Piping. In many cases, ASME B31.9 is not the correct standard for flammable liquid piping. As shown in the table, there are 4 standards within ASME B31, Code for Pressure Piping that could cover flammable and combustible liquid piping.. The code user must select the correct standard based on the application.

From NFPA 30, Chapter 5: "The design, fabrication, assembly, test, and inspection of piping systems shall be suitable for the expected working pressures and structural stresses. Compliance with applicable sections of ASME B31, Code for Pressure Piping, and the provisions of this chapter shall be considered prima facie evidence of compliance with the foregoing provisions."

Cost Impact: The code change proposal will not increase the cost of construction.

Analysis: A review of the standard proposed for inclusion in the code, ASME B31.1-04 and B31.4-06, for compliance with ICC criteria for referenced standards given in Section 3.6 of Council Policy #CP 28 will be posted on the ICC website on or before January 15, 2008.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

F271–07/08
3404.2.3.2, 3404.2.7.3.3, 3404.2.7.5.2, 3404.2.7.5.8, 3404.2.9.4

Proponents: Lynne M. Kilpatrick, Seattle, WA Fire Department representing Washington State Association of Fire Marshals; Tom Lariviere, Fire Department, Madison, MS, representing Joint Fire Service Review Committee

Revise as follows:

3404.2.3.2 Label or placard. Tanks more than 100 gallons (379 L) in capacity, which are permanently installed or mounted and used for the storage of Class I, II or III ~~IIIA~~ liquids, shall bear a label and placard identifying the material therein. Placards shall be in accordance with NFPA 704.

Exceptions:

1. Tanks of 300-gallon (1136 L) capacity or less located on private property and used for heating and cooking fuels in single-family dwellings.
2. Tanks located underground.

3404.2.7.3.3 Vent pipe outlets. Vent pipe outlets for tanks storing Class I, II or IIIA liquids shall be located such that the vapors are released at a safe point outside of buildings and not less than 12 feet (3658 mm) above the adjacent ground level. Vapors shall be discharged upward or horizontally away from adjacent walls to assist in vapor dispersion. Vent outlets shall be located such that flammable vapors will not be trapped by eaves or other obstructions and shall be at least 5 feet (1524 mm) from building openings or lot lines of properties that can be built upon. Vent outlets on atmospheric tanks storing Class IIIB liquids are allowed to discharge inside a building if the vent is a normally closed vent.

Exception: Vent pipe outlets on tanks storing Class IIIB liquid inside buildings and connected to fuel-burning equipment shall be located such that the vapors are released to a safe location outside of buildings.

3404.2.7.5.2 Filling, emptying and vapor recovery connections. Filling, emptying and vapor recovery connections to tanks containing Class I, II or IIIA liquids shall be located outside of buildings at a location free from sources of ignition and not less than 5 feet (1524 mm) away from building openings or lot lines of property that can be built on. Such openings shall be provided with a liquid-tight cap which shall be closed when not in use and properly identified.

Filling and emptying connections to indoor tanks containing Class III B liquids and connected to fuel-burning equipment shall be located at a grade-level location outside of buildings. Such openings shall be provided with a liquid-tight cap which shall be closed when not in use. A sign in accordance with Section 2703.6 that displays the following warning shall be permanently attached at the filling location:

TRANSFERRING FUEL OTHER THAN CLASS III B COMBUSTIBLE LIQUID TO THIS LOCATION TANK CONNECTION IS A VIOLATION OF THE FIRE CODE AND IS STRICTLY PROHIBITED

3404.2.7.5.8 Overfill prevention. An approved means or method in accordance with Section 3404.2.9.6.6 shall be provided to prevent the overfill of all Class I, II and IIIA liquid storage tanks. Storage tanks in refineries, bulk plants or terminals regulated by Sections 3406.4 or 3406.7 shall have overfill protection in accordance with API 2350.

Exception: Outside above-ground tanks with a capacity of 1320 gallons (5000 L) or less.

An approved means or method in accordance with Section 3404.2.9.6.6 shall be provided to prevent the overfilling of Class IIIB liquid storage tanks inside buildings connected to fuel-burning equipment.

3404.2.9.4 Aboveground tanks inside of buildings. Tanks storing Class I, II and IIIA liquids inside buildings shall be equipped with a device or other means to prevent overflow into the building including, but not limited to: a float valve; a preset meter on the fill line; a valve actuated by the weight of the tanks contents; a low head pump which is incapable of producing overflow; or a liquid- tight overflow pipe at least one pipe size larger than the fill pipe and discharging by gravity back to the outside source of liquid or to an approved location.

Tanks containing Class III-B liquids and connected to fuel-burning equipment shall be provided with a means to prevent overflow into buildings in accordance with Section 3404.2.7.5.8.

Reason: An increasing number of facilities are installing generators inside buildings that utilize B100/B99 biodiesel, a Class IIIB liquid, as the generator fuel. Currently the code has very few requirements for the installation of tanks storing Class IIIB liquids inside buildings and does not adequately address the potential hazards associated with this increasing trend. Under the current code, up to 13,200 gallons of Class IIIB liquids can

be stored in an unsprinklered building in steel aboveground tanks that are unseparated from other areas. Furthermore, in sprinklered buildings an unlimited quantity of Class IIIB liquids can be stored in steel aboveground tanks that are unseparated from other areas of the building. Whether in a sprinklered or unsprinklered building,

1. The tanks are not required to be vented to the outside of the building,
2. They are not required to be filled from a remote fill location outside the building, and
3. They are not required to be equipped with any type of overfill prevention system.

The current lack of controls for Class IIIB liquid tanks inside buildings can lead to facilities loading an unprecedented amount of fuel inside structures.

One of the major concerns of a Class IIIB liquid tank installed under the current code is that if a facility discovers after installation that the fuel-burning equipment either isn't working as efficiently as desired with the Class IIIB fuel, or the fuel becomes unavailable or more costly than traditional diesel fuel, the facility may elect to switch to Class II diesel. This could easily occur unbeknownst to the jurisdiction. The result could be a significantly noncompliant tank system where the quantity of Class II fuel could far exceed the code allowance of 660 gallons. Quantities of Class II diesel fuel in excess of 660 gallons inside buildings in steel aboveground tanks would otherwise require providing a Group H occupancy or a protected aboveground tank.

This proposed code change adds prudent controls for Class IIIB liquid tanks inside buildings connected to fuel-burning equipment. The proposal intentionally only addresses tanks connected to fuel-burning equipment because it is not intended to subject all Class IIIB liquid tanks (i.e. waste oil tanks at motor vehicle repair facilities and indoor bulk motor oils in industrial buildings) to these new requirements. This proposed change would require that tanks connected to fuel-burning equipment intended for Class IIIB fuels be provided with:

1. Vents that terminate on the outside of the building,
2. A fill opening located on the outside of the building,
3. An approved overfill prevention system in accordance with Section 3404.2.9.6.6 that sounds a local alarm when the tank capacity hits 90% full and automatically stops the flow of fuel when the tank capacity reaches 95% full, and
4. A permanent label on the tank as well as permanent signage at the fill location prohibiting delivery of fuels other than Class IIIB fuels to that fill location.

Cost Impact: The code change proposal will increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F272–07/08

3404.2.7.3.2, 3404.2.9.6.3, Chapter 45 (New)

Proponents: Steve M. Crothers, Fire Department, Seattle, WA, representing Washington State Association of Fire Marshals;Tom Lariviere, Fire Department, Madison, MS, representing Joint Fire Services Review Committee

1. Revise as follows:

3404.2.7.3.2 ~~Vent line~~ Flame arresters and ~~venting devices~~ pressure-vacuum vents. Listed or approved flame arresters or pressure-vacuum (PV) vents shall be installed in normal vents of aboveground tanks containing Class IB and IC liquids, unless the use of such devices can result in damage to the tank. ~~Vent line~~ End-of-line flame arresters and ~~venting devices~~ pressure-vacuum vents shall be installed and maintained in accordance with their listing~~s~~ and API 2210. ~~Use of~~ In-line flame arresters ~~in piping systems~~ shall be installed and maintained in accordance with their listing and API 2028.

2. Delete without substitution:

~~**3404.2.9.6.3 Flame arresters.** Approved flame arresters or pressure vacuum breather valves shall be installed in normal vents.~~

(Renumber subsequent sections)

3. Add standard to Chapter 45 as follows:

API

RP 2210– (2000) Flame Arresters for Vents of Tanks Storing Petroleum Products

Reason: The code currently requires that a flame arrester or pressure-vacuum (PV) vent be installed in the normal vent of all protected aboveground tanks containing flammable or combustible liquids but it does not have a similar requirement for other aboveground tanks whose design and construction provides significantly less protection and control than a protected tank. This code change accomplishes several things, it:

1. Correlates the requirement for flame arresters and PV vents so that regardless of the tank type the requirement is the same.
2. Modifies the current provision requiring a flame arrester for all flammable and combustible liquids so that a flame arrester or PV vent is only required for tanks containing Class IB and IC liquids. Because the primary function of a flame arrester is to prevent the unrestricted propagation of flame through flammable gas or vapor mixtures, it is not necessary to install a flame arrester on tanks containing combustible liquids. Additionally, because flame arresters can not prevent detonation or control flame propagation speeds associated with a detonation (flame speeds greater than the speed of sound), flame arresters are not effective when installed on tanks containing Class IA liquids. This revision establishes a requirement for a tank vent flame arrester only when there is a sound technical reason to provide one.

3. Provides a much needed correlation between the IFC and NFPA 30, *Code for Flammable and Combustible Liquids*, for establishing when flame arresters are required on tank vents.
4. Adds a new exception that allows omitting the use of a tank vent flame arrester in situations where the properties of the liquid can cause the tank to be damaged by use of the device. Properties of some Class IB and IC liquids such as crystallization, polymerization and corrosivity can present obstructions in flame arresters that may justify omitting the device.
5. Adds a new reference to API Recommended Practice 2210 that addresses the installation and maintenance of end-of-line flame arresters and designates the existing API reference document (API 2028) to more appropriately address in-line flame arresters. An end-of-line flame arrester is a flame arrester that is mounted at the end of a pipe (flanged or threaded inlet connection) and vents directly to the atmosphere whereas an in-line flame arrester may be mounted upstream of a pressure/vacuum relief vent, or may be located upstream of a specified maximum length of vent piping to atmosphere.
6. Addresses maintenance of flame arresters and pressure vacuum vents. Not only is proper installation of these devices important but their maintenance is critical. A blocked or corroded flame arrester can render the device ineffective and lead to catastrophic results. This code change adds a new requirement to maintain flame arresters and PV devices in accordance with their listings and API standards.

Cost Impact: The code change proposal will increase the cost of construction.

Analysis: A review of the standard proposed for inclusion in the code, API RP 2210– (2000), for compliance with ICC criteria for referenced standards given in Section 3.6 of Council Policy #CP 28 will be posted on the ICC website on or before January 15, 2008.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F273–07/08
3404.2.7.5.2

Proponent: Steve M. Crothers, Fire Department, Seattle, WA, representing Washington State Association of Fire Marshals

Revise as follows:

3404.2.7.5.2 Filling, emptying and vapor recovery connections. Filling, emptying and vapor recovery connections to tanks containing Class I, II or IIIA liquids shall be located outside of buildings <u>not more than 5 feet (1524 mm) above the adjacent ground level</u> at a location free from sources of ignition and not less than 5 feet (1524 mm) away from building openings or lot lines of property that can be built on. Such openings shall be provided with a liquid-tight cap which shall be closed when not in use and properly identified.

Reason: This proposed change specifies that the tank fill location is required to be at ground level. It may seem obvious that the tank fill opening is required to be at ground level where the fuel truck driver has direct access. However, numerous designs have been submitted that propose to hoist fuel delivery truck hose lines up the exterior of the building to rooftops and other building levels above the finished ground level. The designs actually meet the letter of the code as it is currently written and so this code change in needed to clarify the intent.

Cost Impact: The code change proposal will increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F274–07/08
3404.2.13.1.4

Proponent: Tom Langseth, Langseth Environmental Services, Inc., representing himself

Revise as follows:

3404.2.13.1.4 Tanks abandoned in place. Tanks abandoned in place shall be as follows:

1. Flammable and combustible liquids shall be removed from the tank and connected piping.
2. The suction, inlet, gauge, vapor return and vapor lines shall be disconnected.
3. The tank shall be filled completely with an approved inert solid material.

~~Exception:~~ ~~Residential heating oil tanks of 1,100 gallons (4164 L) or less, provided the fill line is permanently removed to a point below grade to prevent refilling of the tank.~~

4. Remaining underground piping shall be capped or plugged.
5. A record of tank size, location and date of abandonment shall be retained.
6. All exterior above-grade fill piping shall be permanently removed when tanks are abandoned or removed.

Reason: The IFC code (as stated in the introduction) is to "safeguard public health and safety." By allowing the majority of underground storage tanks in the country (home heating oil tanks) to be capped below grade without structural fill material creates a HUGE safety issue. These are steel tanks that will wear out. The majority of these tanks were installed in the 1950's and 1960's. The useful life of an unprotected single wall steel underground fuel tank is 35-40 years. Who becomes responsible when someone drives in or falls into one of these tanks when the steel finally corrodes? These tanks will wear out. This might not happen in your lifetime, but it will happen. This is not, in my opinion, safeguarding the public's health and safety. All underground tanks, abandoned in place, should be filled with an approved, inert solid material.

Cost Impact: The code change will increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F275–07/08
3404.2.15 (New)

Proponent: Steve M. Crothers, Fire Department, Seattle, WA, representing Washington State Association of Fire Marshals

Add new text as follows:

3404.2.15 Maintenance. Aboveground tanks, connected piping and ancillary equipment shall be maintained in a safe operating condition. Tanks shall be maintained in accordance with their listings. Damage to aboveground tanks, connected piping or ancillary equipment shall be repaired using materials having equal or greater strength and fire resistance or the equipment shall be replaced or taken out of service.

Reason: This proposal adds a new section in Chapter 34 addressing the general maintenance of flammable and combustible liquid tanks and associated equipment. Similar text appears in Chapter 27 (see Sec 2703.2.6) for general maintenance of equipment associated with hazardous materials. However, it is useful and appropriate to also have specific text to address the maintenance of flammable and combustible liquid tank systems available in Chapter 34.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F276–07/08
Table 3404.3.6.3(1) through Table 3404.3.6.3(8)

Proponent: Jeffrey M. Shapiro, PE, International Code Consultants, representing himself

1. Revise table footnotes as follows:

TABLE 3404.3.6.3(1)
MAXIMUM STORAGE HEIGHT IN CONTROL AREA

TYPE OF LIQUID	NONSPRINKLERED AREA (feet)	SPRINKLERED AREA[a] (feet)	SPRINKLERED[a] WITH IN-RACK PROTECTION[a, b] (feet)

(Portions of table not shown remain unchanged)

For SI: 1 foot = 304.8 mm.

a. In buildings required to be protected by an automatic sprinkler system, the storage height for containers and portable tanks shall not exceed the maximum storage height permitted for the fire protection scheme set forth in NFPA 30 or the maximum storage height demonstrated in a full-scale fire test, whichever is greater. NFPA 30 criteria and fire test results for metallic containers and portable tanks shall not be applied to non-metallic containers and portable tanks.

~~a.~~ b. In-rack protection shall be in accordance with Table 3404.3.6.3(5), 3404.3.6.3(6) or 3404.3.6.3(7).

TABLE 3404.3.6.3(2)
STORAGE ARRANGEMENTS FOR PALLETIZED OR SOLID-PILE STORAGE IN LIQUID STORAGE ROOMS AND WAREHOUSES

CLASS	STORAGE LEVEL	MAXIMUM STORAGE HEIGHT			MAXIMUM QUANTITY PER PILE (gallons)		MAXIMUM QUANTITY PER ROOM[a] (gallons)	
		Drums	Containers[b] (feet)	Portable tanks[b] (feet)	Containers	Portable tanks	Containers	Portable tanks

(Portions of table not shown remain unchanged)

For SI: 1 foot = 304.8 mm, 1 gallon = 3.785 L.

a. See Section 3404.3.8.1 for unlimited quantities in liquid storage warehouses.
b. ~~Storage heights are allowed to be increased for Class IB, IC, II and III liquids in metal containers having a capacity of 5 gallons or less where an automatic AFFF-water protection system is provided in accordance with Table 3404.3.7.5.1.~~ In buildings required to be protected by an automatic sprinkler system, the storage height for containers and portable tanks shall not exceed the maximum storage height permitted for the fire protection scheme set forth in NFPA 30 or the maximum storage height demonstrated in a full-scale fire test, whichever is greater. NFPA 30 criteria and fire test results for metallic containers and portable tanks shall not be applied to non-metallic containers and portable tanks.
c. These height limitations are allowed to be increased to 10 feet for containers having a capacity of 5 gallons or less.
d. For palletized storage of unsaturated polyester resins (UPR) in relieving-style metal containers with 50 percent or less by weight Class IC or II liquid and no Class IA or IB liquid, height and pile quantity limits shall be permitted to be 10 feet and 15,000 gallons, respectively, provided that such storage is protected by sprinklers in accordance with NFPA 30 and that the UPR storage area is not located in the same containment area or drainage path for other Class I or II liquids

TABLE 3404.3.6.3(3)
STORAGE ARRANGEMENTS FOR RACK STORAGE IN LIQUID STORAGE ROOMS AND WAREHOUSES

CLASS	TYPE RACK	STORAGE LEVEL	MAXIMUM STORAGE HEIGHT (feet)[b]	MAXIMUM QUANTITY PER ROOM[a] (gallons)
			Containers	Containers

(Portions of table not shown remain unchanged)

For SI: 1 foot = 304.8 mm, 1 gallon = 3.785 L.

a. See Section 3404.3.8.1 for unlimited quantities in liquid storage warehouses.
b. In buildings required to be protected by an automatic sprinkler system, the storage height for containers and portable tanks shall not exceed the maximum storage height permitted for the fire protection scheme set forth in NFPA 30 or the maximum storage height demonstrated in a full-scale fire test, whichever is greater. NFPA 30 criteria and fire test results for metallic containers and portable tanks shall not be applied to non-metallic containers and portable tanks.

2. Revise table headings as follows:

TABLE 3404.3.6.3(4)
AUTOMATIC SPRINKLER PROTECTION FOR SOLID-PILE AND PALLETIZED STORAGE OF LIQUIDS IN METAL CONTAINERS AND PORTABLE TANKS[a]

TABLE 3404.3.6.3(5)
AUTOMATIC SPRINKLER PROTECTION REQUIREMENTS FOR RACK STORAGE OF LIQUIDS IN METAL CONTAINERS OF 5-GALLON CAPACITY OR LESS WITH OR WITHOUT CARTONS ON CONVENTIONAL WOOD PALLETS[a]

TABLE 3404.3.6.3(6)
AUTOMATIC SPRINKLER PROTECTION REQUIREMENTS FOR RACK STORAGE OF LIQUIDS IN METAL CONTAINERS GREATER THAN 5-GALLON CAPACITY[a]

TABLE 3404.3.6.3(7)
AUTOMATIC AFFF WATER PROTECTION REQUIREMENTS FOR RACK STORAGE OF LIQUIDS IN METAL CONTAINERS GREATER THAN 5-GALLON CAPACITY[a,b]

TABLE 3404.3.6.3(8)
AUTOMATIC SPRINKLER PROTECTION REQUIREMENTS FOR CLASS I LIQUID STORAGE IN METAL CONTAINERS OF 1-GALLON CAPACITY OR LESS WITH UNCARTONED OR CASE-CUT SHELF DISPLAY UP TO 6.5 FEET, AND PALLETIZED STORAGE ABOVE IN A DOUBLE-ROW RACK ARRAY[a]

Reason: Item 1: The new footnote helps to ensure that storage heights will not exceed the capabilities of the level of sprinkler protection provided. The new note also clarifies that protection schemes demonstrated with metallic containers and portable tanks are not suitable for non-metallic containers and portable tanks, which present a much more significant fire challenge.

Without this clarification, which correlates with NFPA 30, height limits established by the tables place sprinklered buildings at risk of having the sprinkler system fail to control a fire because the protection scheme might not be properly matched with stored commodities.

Item 2: The provisions in these tables are based on fire tests or historic protection schemes that were based on protection of metal containers and portable tanks. The schemes are inadequate for protection of liquids in containers and portable tanks constructed of other materials, such as plastic. NFPA 30 includes a limited number of protection schemes for non-metal containers, and those schemes, which require far more protection than the IFC prescribes in these tables, can still be recognized by IFC 3404.3.7.5.1 and 3404.3.8.4. Storage configurations that do not have demonstrated or code-recognized protection schemes, such as putting plastic containers into an area protected for metallic containers, should not be permitted.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F277–07/08
3405.2.4

Proponent: Marla Wilcox, Englewood Safety Services, representing Fire Marshal's Association of Colorado

Revise as follows:

3405.2.4 Class I, II and III liquids. Class I liquids ~~and~~ or Class II ~~liquids or~~ and Class III liquids that are heated up to or above their flash points, shall be transferred by one of the following methods:

Exception: Liquids in containers not exceeding a 5.3-gallon (20 L) capacity.

1. From safety cans complying with UL 30.
2. Through an approved closed piping system.
3. From containers or tanks by an approved pump taking suction through an opening in the top of the container or tank.
4. For Class IB, IC, II and III liquids, from containers or tanks by gravity through an approved self-closing or automatic-closing valve when the container or tank and dispensing operations are provided with spill control and secondary containment in accordance with Section 3403.4. Class IA liquids shall not be dispensed by gravity from tanks.
5. Approved engineered liquid transfer systems.

Reason: This revision request is for clarification of the text to eliminate interpretive difficulty and more clearly state that the liquid transfer requirements of this section are applicable to all Class I liquids, all Class II liquids and Class III liquids that are heated up to or above their flash points.

As this section currently reads, it is for Class I and Class II liquids, and Class III liquids if heated up to or above their flash points. If Sections 3405.2.2 and 3405.2.5 are for Class I liquids and II or III if heated up it makes sense that this section should be the same.

Cost Impact: The code change proposal will not increase the cost of construction; it will simply clarify the code.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F278–07/08
3405.2.5

Proponent: Marla Wilcox, Englewood Safety Services, representing Fire Marshal's Association of Colorado

Revise as follows:

3405.2.5 Manual container filling operations ~~for Class I liquids~~. Class I liquids ~~and~~ or Class II ~~or~~ and Class III liquids that are heated up to or above their flash points, shall not be transferred into containers unless the nozzle and containers are electrically interconnected. Acceptable methods of electrical interconnection include:

1. Metallic floor plates on which containers stand while filling, when such floor plates are electrically connected to the fill stem; or
2. Where the fill stem is bonded to the container during filling by means of a bond wire.

Reason: This revision request is an editorial clarification of the text to eliminate interpretive difficulty and more clearly state that the liquid filling operations in Section 3405.2.5 deal with more than Class I liquids, thus the reference to Class I liquids has been removed. The requirements of this section are applicable to all Class I liquids, those Class II and Class III liquids that are heated up to or above their flash points. A comma after "flash points" has also been added. Wording has been changed to correlate with Section 3405.2.4.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F279–07/08
3405.5.1

Proponent: Patrick A. McLaughlin, McLaughlin & Associates, representing The Consumer Specialty Products Association

Revise as follows:

3405.5.1 (Supp) Corridor installations. Where wall-mounted dispensers containing alcohol-based hand rubs are installed in corridors, they shall be in accordance with all of the following:

1. Level 2 and Level 3 aerosols containers shall not be allowed in corridors.
2. The maximum capacity of each Class I or II liquids dispenser shall be 41 ounces and the maximum capacity of each Level 1 aerosol dispenser shall be 18 ounces (.51 kg).
3. The maximum quantity allowed in a corridor within a control area shall be 10 gallons (37.85 L) of Class I or II liquids or 1135 ounces (32.2 kg) of Level 1 aerosols, or a combination of Class I or II liquids and Level 1 aerosols not to exceed, in total, the equivalent of 10 gallons (37.85 L) or 1135 oz (32.2 kg) such that the sum of the ratios of the liquid and aerosol quantities divided by the allowable quantity of liquids and aerosols, respectively, shall not exceed one.
4. The minimum corridor width shall be 72 inches (1829 mm).
5. Projections into a corridor shall be in accordance with Section 1003.3.3.

Reason: We are proposing to add a simple method of calculating the maximum allowable quantity of combined liquids and aerosols. The formula is taken from IBC Section 508.3.3.2. For example, if 4 gallons of liquids and 500 ounces of aerosols were present, 4/10 plus 500/1135 is less than one and therefore below the maximum allowable quantity.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F280–07/08
3406.5.4, 3406.5.4.1

Proponent: Jon Napier, Fire Department, City of Kent, WA, representing Washington State Building Code Council

Revise as follows:

3406.5.4 Dispensing from tank vehicles and tank cars. ~~Dispensing from tank vehicles and tank cars into the fuel tanks of motor vehicles shall be prohibited unless allowed by and conducted in accordance with~~ Class I, II or III liquids shall be transferred from a tank vehicle or tank car only into approved atmospheric or portable tanks, except as provided in Section 3406.2.8 and Sections 3406.5.4.1 through 3406.5.4.5.

3406.5.4.1 Marine craft and special equipment. Liquids intended for use as motor fuels are allowed to be transferred from tank vehicles into the fuel tanks of marine craft and special equipment when approved by the fire code official, and when:

1. The tank vehicle's specific function is that of supplying fuel to fuel tanks.
2. The operation is not performed where the public has access or where there is unusual exposure to life and property.
3. The dispensing line does not exceed 50 feet in length.
4. The dispensing nozzle is approved.
5. Each premises is issued a separate permit in accordance with Section 105.6.16

Reason: Section 3406.5.4 is changed to clarify where and how Class I, II and III liquids can be transferred. The change refers to specific liquids instead of just implying that they are flammable or combustible liquids. This change makes this section apply to the transferring of fuel into storage tanks as well as fuel tanks on vehicles. Section 3406.2.8 was added to include the requirements for dispensing fuel from tank vehicles. Section 3406.5.4.1(5) adds the reference to Section 105.6.16 which will require a site permit for fueling marine craft and special equipment if the proposed change to Section 105.6.16 is adopted.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F281–07/08
3406.5.4.5

Proponent: Jon Napier, Fire Department, City of Kent, WA, representing Washington State Building Code Council

Revise as follows:

3406.5.4.5 Commercial, industrial, governmental or manufacturing. Dispensing of Class II and III motor vehicle fuel from tank vehicles into the fuel tanks of motor vehicles located at commercial, industrial, governmental or manufacturing establishments is allowed where permitted, provided such dispensing operations are conducted in accordance with the following:

1. Dispensing shall occur only at sites that have been issued a permit to conduct mobile fueling.
2. The owner of a mobile fueling operation shall provide to the jurisdiction a written response plan which demonstrates readiness to respond to a fuel spill and carry out appropriate mitigation measures, and describes the process to dispose properly of contaminated materials.
3. A detailed site plan shall be submitted with each application for a permit. The site plan shall indicate: all buildings, structures and appurtenances on site and their use or function; all uses adjacent to the property lines of the site; the locations of all storm drain openings, adjacent waterways or wetlands; information regarding slope, natural drainage, curbing, impounding and how a spill will be retained upon the site property; and the scale of the site plan.

   Provisions shall be made to prevent liquids spilled during dispensing operations from flowing into buildings or off-site. Acceptable methods include, but shall not be limited to, grading driveways, raising doorsills or other approved means.
4. The fire code official is allowed to impose limits on the times and days during which mobile fueling operations may take place, and specific locations on a site where fueling is permitted.

5. Mobile fueling operations shall be conducted in areas not accessible to the public or shall be limited to times when the public is not present.
6. Mobile fueling shall not take place within 15 feet (4572 mm) of streets, alleys, public ways, buildings, property lines, ~~or~~ combustible storage or storm drains.

   Exceptions:

   1. The distance to storm drains shall not apply where an approved storm drain cover or an approved equivalent that will prevent any fuel from reaching the drain is in place prior to fueling or a fueling hose being placed within 15 feet of the drain. Where placement of a storm drain cover will cause the accumulation of excessive water or difficulty in conducting the fueling, such cover shall not be used and the fueling shall not take place within 15 feet of a drain.
   2. The distance to storm drains shall not apply for drains that direct influent to approved oil interceptors.

7. The tank vehicle shall comply with the requirements of NFPA 385 and local, state and federal requirements. The tank vehicle's specific functions shall include that of supplying fuel to motor vehicle fuel tanks. The vehicle and all its equipment shall be maintained in good repair.
8. Signs prohibiting smoking or open flames within 25 feet (7620 mm) of the tank vehicle or the point of fueling shall be prominently posted on three sides of the vehicle including the back and both sides.
9. A portable fire extinguisher with a minimum rating of 40:BC shall be provided on the vehicle with signage clearly indicating its location.
10. The dispensing nozzles and hoses shall be of an approved and listed type.
11. The dispensing hose shall not be extended from the reel more than 100 feet (30 480 mm) in length.
12. Absorbent materials, nonwater-absorbent pads, a 10-foot-long (3048 mm) containment boom, an approved container with lid and a nonmetallic shovel shall be provided to mitigate a minimum 5-gallon (19 L) fuel spill.
13. Tank vehicles shall be equipped with a "fuel limit" switch such as a count-back switch, to limit the amount of a single fueling operation to a maximum of 500 gallons (1893 L) before resetting the limit switch.

    Exception: Tank vehicles where the operator carries and can utilize a remote emergency shutoff device which, when activated, immediately causes flow of fuel from the tank vehicle to cease.

14. Persons responsible for dispensing operations shall be trained in the appropriate mitigating actions in the event of a fire, leak or spill. Training records shall be maintained by the dispensing company and shall be made available to the fire code official upon request.
15. Operators of tank vehicles used for mobile fueling operations shall have in their possession at all times an emergency communications device to notify the proper authorities in the event of an emergency.
16. The tank vehicle dispensing equipment shall be constantly attended and operated only by designated personnel who are trained to handle and dispense motor fuels.
17. ~~Prior to beginning dispensing operations, precautions shall be taken to ensure ignition sources are not present.~~ Fuel dispensing shall be prohibited within 25 feet of any source of ignition.
18. The engines of vehicles being fueled shall be shut off during dispensing operations.
19. Nighttime fueling operations shall only take place in adequately lighted areas.
20. The tank vehicle shall be positioned with respect to vehicles being fueled to prevent traffic from driving over the delivery hose.
21. During fueling operations, tank vehicle brakes shall be set, chock blocks shall be in place and warning lights shall be in operation.
22. Motor vehicle fuel tanks shall not be topped off.
23. The dispensing hose shall be properly placed on an approved reel or in an approved compartment prior to moving the tank vehicle.
24. The fire code official and other appropriate authorities shall be notified when a reportable spill or unauthorized discharge occurs.
25. Operators shall place a drip pan or an absorbent pillow, in good condition, under each fuel fill opening prior to and during dispensing operations. Drip pans shall be liquid-tight. The pan or absorbent pillow shall have a capacity of not less than 3 gallons. Spills retained in the drip pan or absorbent pillow need not be reported. Operators, when fueling, shall have on their person an absorbent pad capable of capturing diesel foam overfills. Except during fueling, the nozzle shall face upward and an absorbent pad shall be kept under the nozzle to catch drips. Contaminated absorbent pads or pillows shall be disposed of regularly in accordance with local, state and federal requirements.

26. All persons and parties with an interest in the property such as property owners, lessors, real estate companies, property managers and operators of the property shall give written consent to allow the mobile fueling to be conducted on the property. Managers, lessees, renters and other persons shall not solely give permission. Each person or party shall indicate that they understand the risk of spills.

Reason: The intent of these changes and additions is to provide better control of possible fuel spills at construction sites and other locations where mobile fueling is done. Keeping fueling operations away from streets, alleys, property lines, drains, etc will help protect the public and adjacent landowners. Taking the precautions of using drip pans and absorbent pads for minor spills will aid keeping pollutants out of water systems. Requiring that all persons and parties with an interest in the property give their consent in writing will ensure that everyone is aware that a fueling operation will be taking place.

Cost Impact: There will be an increase to the cost of construction. Absorbent pads or pillows cost approximately 3 to 5 dollars a piece.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F282–07/08
3501.1

Proponent: Robert J. Davidson, Davidson Code Concepts, LLC, representing himself

Revise as follows:

3501.1 (Supp) Scope. The storage and use of flammable gases shall be in accordance with this chapter. Compressed gases shall also comply with Chapter 30 and cryogenic fluids shall also comply with Chapter 32. Bulk hydrogen compressed gas systems and bulk liquefied hydrogen gas systems shall also comply with NFPA 55. Hydrogen motor fuel-dispensing stations and repair garages and their associated above ground hydrogen storage systems shall also be designed and constructed in accordance with Chapter 22.

Exceptions:

1. Gases used as refrigerants in refrigeration systems (see Section 606).
2. Liquefied petroleum gases and natural gases regulated by Chapter 38.
3. Fuel-gas systems and appliances regulated under the *International Fuel Gas Code* other than gaseous hydrogen systems and appliances.
4. ~~Hydrogen motor fuel-dispensing stations and repair garages and their associated above ground hydrogen storage systems designed and constructed in accordance with Chapter 22.~~
5. ~~5.~~ 4. Pyrophoric gases in accordance with Chapter 41.

Reason: The Hydrogen Motor Fuel-Dispensing and Generation requirements found in Chapter 22 of the International Fire Code (IFC) requires compliance with Chapter 35 of the IFC at Sections 2209.1, 2209.3.2.3.3, 2209.3.2.4, and 2209.3.2.6. However, when you go to Chapter 35, Section 3501.1 Exception 4 effectively prevents the application of Chapter 35 and loops you back to Chapter 22.

By deleting Exception 4 accompanied by the addition of "**Hydrogen motor fuel-dispensing stations and repair garages and their associated above ground hydrogen storage systems shall also be designed and constructed in accordance with Chapter 22."** To the end of Section 3501.1, the more specific requirements of Chapter 22 (Section 2209) will apply along with any Chapter 35 requirements not addressed in Chapter 22.

There are no conflicts created with this modification, it is similar to the approach taken with flammable or combustible liquid motor fuels, and any potential conflicts are eliminated by application of Section 102.9, with Chapter 22 being the more specific language and Chapter 35 being the general language for this application of the code.

> *"102.9 Conflicting provisions. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall be applicable."*

The *International Fuel Gas Code* (IFGC) requires compliance with *International Fire Code* (IFC) Chapter 35 in Sections 635.1, 701.1, 703.2, and 704.3. However, when the code official or the regulated community goes to IFC Chapter 35, Section 3501.1, Exception 3 effectively stops application of Chapter 35 and sends them back to the *International Fuel Gas Code*.

If you research the history of the addition of the gaseous hydrogen system requirements to the IFGC the proposal authors identified the exception in the IFC Chapter 35 and indicated they were not changing it because they did not want Chapter 35 to be applied to fuel gases other than gaseous hydrogen. This has caused confusion with code officials and the regulated community that have tried to apply the I-Codes in a comprehensive manner.

Adding the language, "**other than gaseous hydrogen systems and appliances**" to Exception 3 clarifies that Chapter 35 is to be applied to gaseous hydrogen systems that are regulated by the IFGC without extending application of Chapter 35 to other fuel gas systems and appliances regulated by the IFCG.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F283–07/08
3503.1.1, 4003.1.1.3

Proponent: Jeffrey M. Shapiro, PE, International Code Consultants, representing himself

Revise as follows:

3503.1.1 Special limitations for indoor storage and use. Flammable gases shall not be stored or used in Group A, ~~B~~, E, I or R occupancies or in offices in Group B occupancies.

Exceptions:

1. Cylinders not exceeding a capacity of 250 cubic feet (7.08 m3) each at normal temperature and pressure (NTP) used for maintenance purposes, patient care or operation of equipment.
2. Food service operations in accordance with Section 3803.2.1.7.

4003.1.1.3 Oxidizing gases. Except for cylinders not exceeding a capacity of 250 cubic feet (7 m^3) each used for maintenance purposes, patient care or operation of equipment, oxidizing gases shall not be stored or used in Group A, ~~B,~~ E, I, or R occupancies or in offices in Group B occupancies..

The aggregate quantities of gases used for maintenance purposes and operation of equipment shall not exceed the maximum allowable quantity per control area listed in Table 2703.1.1(1).

Medical gas systems and medical gas supply cylinders shall also be in accordance with Section 3006.

Reason: The revision corrects an error dating back to the UFC provisions that served as the source for the original IFC during the drafting process. Code Change F169-00, which was approved several years ago, fully documented the history of the UFC error and corrected the regulated occupancy classes to be consistent with the code's intent. However, text to limit application of this restriction to offices in Group B was overlooked in F169-00. Staff pointed out the oversight last year, and this proposal is submitted to correct the problem. The current text prevents small laboratories or other non-office uses classified as Group B from having MAQ amounts of flammable or oxidizing gases, which was never intended.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F284–07/08
3503.1.1, 4003.1.1.3

Proponent: Larry Fluer, Fluer, Inc., representing Compressed Gas Association

Revise as follows:

3503.1.1 Special limitations for indoor storage and use. Flammable gases shall not be stored or used in Group A, B, E, I or R occupancies.

Exceptions:

1. Cylinders of nonliquefied compressed gases not exceeding a capacity of 250 cubic feet (7.08 m^3) or liquefied gases not exceeding a capacity of 40 pounds (18 kg) each at normal temperature and pressure (NTP) used for maintenance purposes, patient care or operation of equipment.
2. Food service operations in accordance with Section 3803.2.1.7.

4003.1.1.3 Oxidizing gases. Except for cylinders of nonliquefied compressed gases not exceeding a capacity of 250 cubic feet (7 m^3) or liquefied compressed gases not exceeding a capacity of 46 pounds (21 kg) each used for maintenance purposes, patient care or operation of equipment, oxidizing gases shall not be stored or used in Group A, B, E, I or R occupancies.

The aggregate quantities of gases used for maintenance purposes and operation of equipment shall not exceed the maximum allowable quantity per control area listed in Table 2703.1.1(1).

Medical gas systems and medical gas supply cylinders shall also be in accordance with Section 3006.

Reason: To correlate the code change with F169-06/07 changes to Tables 2701.1.1(1) as shown in the 2007 Supplement. In the above referenced code change a unit of measure for liquefied oxidizing and flammable gases was used as the basis for Tables 2701.1.1(1) and (3). For flammable gases the density of butane and for oxidizing gases the density of chlorine was used as an index. These indexes allow the establishment of units of measure in weight units for gases that otherwise may have been shown in terms of gallons or cubic feet. The proposed modifications to Section 3503.1.1 and 4003.1.1.3 have been made to acknowledge the fact that liquefied gases are packaged in terms of weight. The exception for cylinders containing a nominal 250 cubic feet was based on a conventional 9 by 52 inch cylinder of unspecified gas. Using an index system that provides a weight basis for liquefied gases maintains the intent while providing the user with a means to evaluate containers that are typically encountered in the field. The index system is consistent with that used to establish the MAQ tables for these two hazard classes.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

F285–07/08
Table 3504.2.1

Proponent: John Anicello, Airgas, Inc.

Revise table as follows:

TABLE 3504.2.1
DISTANCE TO EXPOSURES FOR FLAMMABLE GASES

MAXIMUM AMOUNT PER STORAGE AREA (cubic feet)	MINIMUM DISTANCE BETWEEN STORAGE AREAS (feet) a	MINIMUM DISTANCE TO LOT LINES OF PROPERTY THAT CAN BE BUILT UPON (feet)~~a~~	MINIMUM DISTANCE TO PUBLIC STREETS, PUBLIC ALLEYS OR PUBLIC WAYS (feet)~~a~~	MINIMUM DISTANCE TO BUILDINGS ON THE SAME PROPERTY		
				Non-rated construction or openings within 25 feet	2-hour construction and no openings with 25 feet	4-hour construction and no openings with 25 feet
0 - 4225	5	5	5	5	0	0
4226 - 21125	10	10	10	10	5	0
21126 - 50700	10	15	15	20	5	0
50701 – 84500	10	20	20	20	5	0
84501 – ~~or greater~~ 200000	20	25	25	20	5	0

For SI: 1 foot = 304.8 mm, 1 cubic foot = 0.02832 M^3

a. The minimum required distances shall not apply when fire barriers without openings or penetrations having a minimum fire resistive rating of 2 hours interrupts the line of sight between the storage and the exposure. The configuration of the fire barriers shall be designed to allow natural ventilation to prevent the accumulation of hazardous gas concentrations.

Reason: A cap of 200,000 standard cubic feet of gas has been applied to flammable gas storage areas. This prohibits unlimited storage quantities in one contiguous storage area. In the last 5-years, 5 major flammable gas fires have occurred. Each time the damage was extensive. By applying a separation requirement to a maximum quantity of flammable gas storage in one area provides a control to protect against the propagation of fire. The separation can be achieved by a distance of 20 feet or a fire barrier with 2-hour fire resistance that breaks the line of sight between storage in each area. The application of footnote "a" to the second column allows the separation requirement to be met by use of a 2-hour fire barrier.

200,000 standard cubic feet translates into nominally 25 pallets of flammable gas cylinders approximately 1 tractor –trailer unit. The gas used as the calculation standard was propane in cylinders with water capacities of 239 pounds each capable of carrying 100 pounds of propane. One standard pallet, 4-feet by 4-feet, will accommodate 9 cylinders, and 25 pallets will accommodate 225 cylinders with an aggregate of 22,500 pounds of propane equaling just less than 200000 standard cubic feet. Contiguously stored, 25 pallets will cover approximately 400 square feet of surface area. Two of the largest suppliers of packaged flammable gases in the United States are currently enforcing this standard at their plants today.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

F286–07/08
3504.2.1, Table 3504.2.1

Proponent: Robert J. Davidson, Davidson Code Concepts, LLC, representing Plug Power, Inc.

Revise as follows:

3504.2.1 Distance limitation to exposures. Outdoor storage or use of flammable compressed gases shall be located from ~~a lot line, public street, public alley, public way, or building~~ exposures not associated with the manufacture or distribution of such gases in accordance with Table 3504.2.1.

TABLE 3504.2.1
FLAMMABLE GASES – DISTANCE FROM STORAGE TO EXPOSURES

MAXIMUM AMOUNT PER STORAGE AREA (cubic feet)	MINIMUM DISTANCE TO PUBLIC STREETS, PUBLIC ALLEYS OR PUBLIC WAYS (feet)a	PUBLIC SIDEWALKS OR PARKED VEHICLES (feet)	AIR INTAKE OPENINGS (feet)	ABOVE GROUND FLAMMABLE OR COMBUSTIBLE LIQUID STORAGE – NOT DIKED IN ACCORDANCE WITH SECTION 3404.2.9.6, DISTANCE TO TANK WALL (feet)	ABOVE GROUND FLAMMABLE OR COMBUSTIBLE LIQUID STORAGE – DIKED IN ACCORDANCE WITH SECTION 3404.2.9.6, DISTANCE TO DIKE WALL (feet)	UNDERGROUND FLAMMABLE OR COMBUSTIBLE LIQUID STORAGE, DISTANCE TO VENT OR FILL OPENING (feet)	DRY VEGETATION AND COMBUSTIBLE MATERIALS (feet)	VERTICAL PLANE OF OVERHEAD ELECTRIC WIRE OF AN ELECTRIC TROLLEY, TRAIN OR BUS LINE (feet)	VERTICAL PLANE OF THE NEAREST WIRE OF OVERHEAD ELECTRICAL POWER DISTRIBUTION LINES (feet)	TELECOM CABINETS, ENCLOSURES AND TELECOM EQUIPMENT (feet)
~~0 - 4,225~~ 0 to 4,225	5	5	5	5	5	5	15	50	5	5
~~4,226 - 21,125~~ 4,226 to 21,125	10	10	10	10	10	10	25	50	5	10
~~21,126 - 50,700~~ 21,126 to 50,700	15	15	20	10	10	10	25	50	5	10
~~50,701 - 84,500~~ 50,701 to 84,500	20	20	20	10	10	10	25	50	5	10
84,501 or greater	25	25	20	20	20	20	25	50	5	20

(Portions of table not shown remain unchanged)

For SI: 1 foot = 304.8 mm, 1 cubic foot = 0.02832m3.

a. The minimum required distances shall not apply when fire barriers without openings or penetrations having a minimum fire-resistance rating of 2 hours interrupt the line of sight between the storage and the exposure. The configuration of the fire barrier shall be designed to allownatural ventilation to prevent the accumulation of hazardous gas concentrations.

Reason: When applying exposure distance requirements for flammable gas storage there is a disparity in the exposures considered for protection between those identified in Table 2209.3.1 which is applied against hydrogen motor fuel-dispensing and generations facilities with a hydrogen capacity greater than 3,000 cubic feet or less at NTP, (*See Section 2209.3.1 and the exception*), and the smaller gaseous hydrogen motor-fuel systems that would default to Chapter 35, or as Table 3504.2.1 is applied to other flammable gases.

The change proposed is to identify that there are other exposure hazards that need to be provided with minimum separation distances. The table has been reformatted with no change in the existing technical requirements to provide for a format that permits the addition of additional exposures for protection. The dashes in the cubic feet ranges were changed to the word “to”. That is believed to be editorial, but was included in case staff believes otherwise.

Using Table 2209.3.1 as a guide, additional exposures have been added to Table 3504.2.1.

There is no intent to change the distances in Table 3504.2.1 from those currently in existence or to attempt to match the distances in Table 2209.3.1 with the exception of the distance for the overhead electric utilities. When Table 2209.3.1 was added to the IFC the proponents identified that there was no firm science behind the numbers in the proposed table and that further analysis would occur for future recommendations. That process is ongoing at this time and would be available for future consideration.

To determine the distances for the suggested additions to the table the existing distances found in Table 3504.2.1 or other IFC sections were utilized as explained below for each exposure added. The distance for the telecommunications equipment was determined using guidance from an industry provider of stationary fuel cell technology.

PUBLIC SIDEWALKS OR PARKED VEHICLES
For this distance the existing distance in Table 3402.1 for public streets, public alleys or public ways was utilized.

ABOVE GROUND FLAMMABLE OR COMBUSTIBLE LIQUID STORAGE – NOT DIKED IN ACCORDANCE WITH SECTION 3404.2.9.6, DISTANCE TO TANK WALL
For this distance the existing distance in Table 3402.1 for flammable gas storage areas was utilized.

ABOVE GROUND FLAMMABLE OR COMBUSTIBLE LIQUID STORAGE - DIKED IN ACCORDANCE WITH SECTION 3404.2.9.6, DISTANCE TO DIKE WALL
For this distance the existing distance in Table 3402.1 for flammable gas storage areas was utilized.

UNDERGROUND FLAMMABLE OR COMBUSTIBLE LIQUID STORAGE, DISTANCE TO VENT OR FILL OPENING
For this distance the existing distance in Table 3402.1 for flammable gas storage areas was utilized.

DRY VEGETATION AND COMBUSTIBLE MATERIALS
For this distance IFC Sections 2703.12.1 and 2704.11 were used for guidance.

VERTICAL PLANE OF OVERHEAD ELECTRIC WIRE OF AN ELECTRIC TROLLEY, TRAIN OR BUS LINE
VERTICAL PLANE OF THE NEAREST WIRE OF OVERHEAD ELECTRICAL POWER DISTRIBUTION LINES
These distances were obtained from Table 2209.3.1.

TELECOM CABINETS, ENCLOSURES, AND TELECOM EQUIPMENT
This distance was taken from recommended distances utilized by a provider of stationary fuel cells used to provide back up power at telecommunications sites.

Cost Impact: The code change proposal will increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F287–07/08
3504.2.1.1 (New)

Proponent: Larry Fluer, Fluer, Inc., representing Compressed Gas Association

Add new text as follows:

3504.2.1.1 Weather protection canopies. Where weather protection is provided for sheltering outdoor flammable gas storage or use areas, such areas shall be constructed in accordance with Section 2704.13 and the *International Building Code.* Outdoor storage or use of flammable compressed gases shall be located from a lot line, public street, public alley, public way in accordance with Table 3504.2.1 except that Footnote a of Table 3504.2.1 shall not apply to areas sheltered by weather protection.

Reason: Weather protection is employed as a means to protect small outdoor storage areas used for the storage of compressed gases from the elements including sun exposure in areas of extreme heat and snow in areas which are exposed to winter storms. The IBC establishes limitations on the construction of weather protection under the requirements of IBC Section 414.6.1. Such areas are limited to 1500 square feet. The IBC allows an increase in area by Section 506 including the use of sprinklers which are not otherwise required for flammable gas storage.

While the use of a fire barrier wall to shield storage in the open from exposures is recognized the use of a fire barrier in combination with an unprotected overhead structure may not be appropriate. Therefore, the tabular distances should be applied without modification.

A similar provision exists for flammable liquids in Section 3406.5.1.2 for bulk and transfer process operations where weather protection is specified along with minimum separation distances from buildings, lot lines, etc.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F288–07/08
3603.2, Chapter 45 (New)

Proponent: Cynthia A. Wilk, Department of Community Affairs-Division of Codes and Standards, State of NJ

1. Revise as follows:

3603.2 Quantities exceeding the maximum allowable quantity per control area. The storage and use of flammable solids exceeding the maximum allowable quantity per control area as indicated in Section 2703.1 shall be in accordance with Chapter 27 and this chapter.

Exception: Buildings storing mattresses containing polyurethane foam that have been tested and meet the criteria of 16 CFR Part 1633 are not required to comply with this chapter and Chapter 27.

2. Add standard to Chapter 45 as follows:

CPSC

16 CFR Part 1633-06 Standard for the Flammability of Mattress Sets

Reason: (IFC) Using the definitions set forth in the International Fire Code Section 3602.1 polyurethane foam has been identified to be a flammable solid. Tests have documented that polyurethane foam meets both the "burns so vigorously and persistently when ignited…" and the "self sustained flame rate of greater than 0.1 inch (2.5mm) per second…" benchmarks[i]. This creates a large impact applying the fire code to storage and mercantile facilities that contain both upholstered furniture and mattresses. The proper application of the code with this new information would require compliance with this chapter due to the presence of flammable solids. While this may not be widely known or understood by enforcers or the regulated community, it is nevertheless substantiated by current code language and laboratory analysis.

The proposed exception will provide a remedy for all Group S and M occupancies that store, display, and sell mattresses. The CPSC Standard 16 CFR Part 1633 tests the mattress assembly as it is produced which more accurately represents the hazard as a whole. As per section 1633.3(b) of the CPSC Standard, the mattress set is deemed to comply when the test specimen meets both of the following criteria: (1) The peak rate of heat release does not exceed 200 Kilowatts at any time within the 30 minute test and (2) The total heat release does not exceed 15 megajoules for the first ten minutes of the test. Without this exception, facilities that store, display or sell mattresses, like those facilities that store, display or sell upholstered furniture containing polyurethane foam, would be required to comply with Chapter 36 and Chapter 27.

[i] 16 CFR1500.44 Testing For National Association of State Fire Marshals on Poly Foam/ Vtec #100-2519-2/Tested: November 2, 2006. VTEC Laboratories Inc.

Cost Impact: The code change proposal will reduce the cost of construction.

Analysis: A review of the standard proposed for inclusion in the code, CPSC 16 CFR Part 1633-06, for compliance with ICC criteria for referenced standards given in Section 3.6 of Council Policy #CP 28 will be posted on the ICC website on or before January 15, 2008.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F289–07/08

3704.3.4, 3704.3.2.5, 3704.3.2.6, 3704.3.2.7

Proponent: John Anicello, Airgas, Inc.

Revise as follows:

3704.3.4 Outdoor use of cylinders, containers and portable tanks. Cylinders, containers and portable tanks in outdoor use shall be located in gas cabinets or exhausted enclosures and shall comply with Sections 3704.3.4.1 through 3704.3.4.3.

~~**3704.3.2.5**~~ **3704.3.4.1 Treatment systems.** The treatment system requirements set forth in Section 3704.2.2.7 shall apply to highly toxic or toxic gases located outdoors.

~~**3704.3.2.6**~~ **3704.3.4.2 Emergency power.** The requirements for emergency power set forth in Section 3704.2.2.8 shall apply to highly toxic or toxic gases located outdoors.

~~**3704.3.2.7**~~ **3704.3.4.3 Gas detection system.** The gas detection system requirements set forth in Section 3704.2.2.10 shall apply to highly toxic or toxic gases located outdoors.

Reason: The application of gas detection by the code in storage in outdoor environments for toxic and highly toxic gases is unintended and improper; as such gases in storage are not required to be located in gas cabinets or exhausted enclosures. Additionally, gas detection is ineffective in an outdoor environment. The way the code is currently published, it is believed to be a result of inadvertent placement of the cited provisions. By moving the cited provisions for treatment, gas detection and emergency power under 3704.3.4 Outdoor use of cylinders, containers and portable tanks puts the provisions in the proper location as they apply to use of toxic and highly toxic gases in gas cabinets or exhausted enclosures in an outdoor environment. This rational is supported by the 2003 International Fire Code commentary on page 37-17.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F290–07/08
4001.1, 4006

Proponent: Tom Lariviere, Fire Department, Madison, MS, representing Joint Fire Service Review Committee

Revise as follows:

4001.1 (Supp) Scope. The storage and use of oxidizing materials shall be in accordance with this chapter and Chapter 27. Oxidizing gases shall also comply with Chapter 30. Oxidizing cryogenic fluids shall also comply with Chapter 32.

Exceptions:

1. Display and storage in Group M and storage in Group S occupancies complying with Section 2703.11.
2. Bulk oxygen systems at industrial and institutional consumer sites shall be in accordance with NFPA 55.
3. Liquid oxygen stored or used in home health care in Groups I-1, I-4 and R occupancies in accordance with Section 4006.

SECTION 4006 (Supp)
LIQUID OXYGEN IN HOME HEALTH CARE

4006.1 General. The storage and use of liquid oxygen (LOX) in home health care in Groups I-1, I-4 and R occupancies shall comply with Sections 4006.2 through 4006.~~3.7~~6, ~~as applicable~~ or shall be stored and used in accordance with Chapter 27.

4006.2 Information and instructions to be provided. The ~~supplier~~ seller of liquid oxygen shall provide the user with ~~the following~~ information in written form that includes, but is not limited to, the following:

1. Manufacturer's instructions and labeling for safe storage and use ~~operation~~ of the containers ~~used and labeling~~.
2. Locating containers away from ignition sources, exits, electrical hazards and high temperature devices in accordance with Section 4006.3.3.
3. Restraint of containers to prevent falling in accordance with Section 4006.3.4.
4. Requirements for ~~transporting~~ handling containers in accordance with Section 4006.3.5.
5. Safeguards for refilling containers in accordance with Section 4006.3.6~~to be followed when containers are refilled~~.
6. Signage requirements in accordance with Section 4006.6.

4006.3 Liquid oxygen home care containers. ~~Liquid oxygen home care and ambulatory containers in Groups I-1, I-4, R-3 Residential Care/Assisted Living Facilities and R-4 occupancies shall be stored, used and filled in accordance with Sections 4006, 3203.1 and 3203.2.~~ Containers of liquid oxygen in home health care shall be in accordance with Sections 4006.3.1 through 4006.3.6.

4006.3.1 Maximum individual container capacity. Liquid oxygen home care containers shall not exceed an individual capacity of 15.8 gal (60 liters) in Groups I-1, I-4, and R occupancies. Liquid oxygen ambulatory containers are allowed in Groups I-1, I-4, and R occupancies. Containers of liquid oxygen in home health care shall also be stored, used and filled in accordance with Sections 4006, 3203.1 and 3203.2.

~~**4006.3.1**~~ **4006.3.2 Manufacturer's instructions.** Containers shall be stored, used and operated in accordance with the manufacturer's instructions and labeling.

~~**4006.3.2**~~ **4006.3.3 Locating containers.** Containers shall not be located in areas:

1. Where they can be overturned due to operation of a door,
2. Where they are in the direct path of egress,
3. Subject to falling objects,
4. Where they may become part of an electrical circuit, or
5. Where open flames and high temperature devices can cause a hazard.

~~**4006.3.3 No smoking.** Smoking shall be prohibited in rooms or areas where liquid oxygen is in use.~~

~~**4006.3.4 Signs**. A sign stating "OXYGEN NO SMOKING" shall be posted in the room or area where the liquid oxygen home care container(s) is stored or used and liquid oxygen ambulatory containers are filled.~~

~~**4006.3.5**~~ **4006.3.4 Restraining containers.** Liquid oxygen home care containers shall be restrained while in storage or use to prevent falling caused by contact, vibration or seismic activity. Containers shall be restrained by one of the following methods:

1. Restraining containers to a fixed object with one or more restraints.
2. Restraining containers within a framework, stand or assembly designed to secure the container.
3. Restraining containers by locating a container against two points of contact like the walls of a corner of a room or a wall and a secure furnishing or object like a desk.

~~**4006.3.6**~~ **4006.3.5 Container ~~movement~~ handling.** Containers shall be ~~transported~~ handled by use of a cart or hand truck designed for such use.

Exceptions:

1. Liquid oxygen home care containers equipped with a roller base.
2. Liquid oxygen ambulatory containers are allowed to be hand carried.

~~**4006.3.7**~~ **4006.3.6 Filling of containers.** The filling of containers shall be in accordance with Sections ~~4006.3.7.1~~ 4006.3.6.1 through ~~4006.3.7.3~~ 4006.3.6.3.

~~**4006.3.7.1**~~ **4006.3.6.1 Filling location ~~of home care containers.~~** Liquid oxygen home care containers and ambulatory containers shall be filled outdoors.

Exception: Liquid oxygen ambulatory containers are allowed to be filled indoors if the supply container is specifically designed for filling such containers and written instructions are provided by the container manufacturer.

~~**4006.3.7.1.1**~~ **4006.3.6.2 Incompatible surfaces.** A ~~liquid oxygen compatible~~ drip pan compatible with liquid oxygen shall be provided under home care container fill and vent connections during the filling process in order to protect against liquid oxygen spillage from coming into contact with combustible surfaces, including asphalt.

~~**4006.3.7.2 Filling of ambulatory care containers.** The filling of liquid oxygen ambulatory containers is allowed indoors where the supply container is designed to fill them and written instructions are provided by the container manufacturer.~~

~~**4006.3.7.3**~~ **4006.3.6.3 Open flames and high temperature devices.** The use of open flames and high temperature devices shall be in accordance with Section 2703.7.2.

4006.4 Maximum aggregate quantity. The maximum aggregate quantity of liquid oxygen allowed in storage and in use in each dwelling unit shall be 31.6 gal (120 L).

Exceptions:

1. The maximum aggregate quantity of liquid oxygen allowed in Group I-4 occupancies shall be limited by the maximum allowable quantity set forth in Table 2703.1.1(1).
2. Where individual sleeping rooms are separated from the remainder of the dwelling unit by fire barriers and horizontal assemblies having a minimum fire-resistance rating of 1 hour in accordance with the *International Building Code*, the maximum aggregate quantity per dwelling unit can be increased to allow a maximum of 31.6 gal (120 L) of liquid oxygen per sleeping room.

4006.5 Smoking prohibited. Smoking shall be prohibited in rooms or areas where liquid oxygen is in use.

4006.6 Signs. Warning signs for occupancies using home health care liquid oxygen shall be in accordance with Sections 4006.6.1 and 4006.6.2.

4006.6.1 No smoking sign. A sign stating "OXYGEN--NO SMOKING" shall be posted in each room or area where liquid oxygen containers are stored, used or filled.

4006.6.2 Premises signage. Where required by the fire code official, each dwelling unit or sleeping unit shall have an approved sign indicating that the unit contains liquid oxygen home care containers.

4006.7 Fire department notification. Where required by the fire code official, the liquid oxygen seller shall notify the fire department of the locations of liquid oxygen home care containers.

Reason: Code change proposal F205-06/07 was accepted during the last code change cycle and is included in the 2007 Supplement. In reviewing this section with stakeholders including key industry representatives, the fire service, the fire fighter union and others, there are some changes that are still necessary to complete this subject. Included in this proposal are the consensus proposals from the discussions these groups held since the final action hearings for the 06/07 cycle.

It is not realistic to apply the MAQ/control area concept set forth in Chapter 27 to the widespread use and distribution of liquid oxygen in home health care occupancies. This proposal adds a third exception to clarify that liquid oxygen that is stored and used in home health care occupancies in accordance with Section 4006 is not required to also comply with Chapter 27 or Chapter 32 provisions. The concept in Section 4006 is to limit the individual container size and also limit the total number of containers allowed in an individual dwelling unit. Trying to further regulate the quantity in a building is not considered by either industry or the fire service to be a reasonable or enforceable regulatory approach.

This proposal accomplishes several important things:

1. It establishes a maximum capacity for individual containers of liquid oxygen (LOX) that can be stored and used in home health care occupancies. It is necessary to establish such a limit because there has been a trend to increase the size of the containers delivered to the user in some cases simply in order to avoid more frequently deliveries. If it is necessary to have individual containers larger than the limits established here, then the MAQ and control area concept set forth in Chapter 27 will apply.
2. It eliminates the direct reference to R-3 Residential Care and R-4 occupancies and more appropriately applies to all R occupancies, including single-family residences, hotels and apartments used for home health care.
3. It clarifies that it is the responsibility of the seller rather than the supplier of liquid oxygen to provide the user with important safety information as the supplier may not be the entity that has the direct contact with the user.

This change allows the fire code official to require signage for each dwelling unit or sleeping unit when the fire department deems it necessary to alert the fire fighters of the presence of LOX in a home. Using the term "when required by the fire code official" allows the fire department to require signage if that signage is part of their operational plans.

This change allows the fire code official to require the seller of LOX to notify the fire department if that fire department wants to track the locations of LOX within their jurisdiction. Some fire departments want to know where the LOX locations are so they can pre-plan those locations. Other fire departments do not want this information due to the potentially large amount of information and do not have the resources to process that information. This proposal uses the term "when required by the fire code official" to give that option to both the fire departments that want to track the information and those who do not want to track it.

Cost Impact: The code change proposal will increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F291– 07/08
4002.1 (IBC 307.2)

Proponent: Patrick A. McLaughlin, McLaughlin & Associates, representing Arch Chemicals, Inc., and PPG Industries, Inc.

Revise definition as follows:

4002.1 (IBC 307.2) Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

OXIDIZER. A material that readily yields oxygen or other oxidizing gas, or that readily reacts to promote or initiate combustion of combustible materials and, if heated or contaminated, can result in vigorous self-sustained decomposition ~~Examples of other oxidizing gases include bromine, chlorine and fluorine.~~

Class 4. An oxidizer that can undergo an explosive reaction due to contamination or exposure to thermal or physical shock and that causes a severe increase in the burning rate of combustible materials with which it comes into contact. In addition, the oxidizer ~~will enhance~~ causes a severe increase in the burning rate and can cause spontaneous ignition of combustibles.

Class 3. An oxidizer that ~~will~~ cause~~s~~ a severe increase in the burning rate of combustible materials with which it comes in contact ~~or that will undergo vigorous self-sustained decomposition caused by contamination or exposure to heat~~.

Class 2. An oxidizer that will cause a moderate increase in the burning rate ~~or that causes spontaneous ignition~~ of combustible materials with which it comes in contact.

Class 1. An oxidizer that does not moderately increase the burning rate of ~~whose primary hazard is that it slightly increases the burning rate but which does not cause spontaneous ignition when it comes in contact with~~ combustible materials.

Reason: This proposal updates the IFC (IBC) definition of oxidizer to be consistent with the current definition of an oxidizer. The definition of an oxidizer in the IFC (IBC) is based on the definition in the Uniform Fire Code which came from NFPA 430.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F292–07/08
4503.7 (New), 4504

Proponent: Tom Lariviere, Fire Department, Madison, MS, representing Joint Fire Service Review Committee

1. Add new text as follows:

4503.7 Slip Identification. Slips and mooring spaces shall be individually identified by an approved numeric or alphabetic designator. Space designators shall be posted at the space. Signs indicating the space designators located on finger piers and floats shall be posted at the base of all piers, finger piers, floats, and finger floats.

2. Revise as follows:

4504.1 (Supp) General. Piers, marinas and wharves with facilities for mooring or servicing five or more vessels, and marine motor fuel dispensing facilities shall be equipped with fire-protection equipment in accordance with Sections 4504.2 through ~~4504.5~~ 4504.6.

4504.2 (Supp) Standpipes. Marinas and boatyards shall be equipped throughout with Class I manual, dry standpipe systems in accordance with NFPA 303. Systems shall be provided with outlets located such that no point on the marina pier or float system exceeds 150 feet from a standpipe outlet.

4504.2.1 Identification of standpipe outlets. Standpipe outlet locations shall be clearly identified by a flag or other approved means designed to be readily visible from the pier accessing the float system.

4504.3 (Supp) Access and water supply. (No change to current text)

4504.4 (Supp) Portable fire extinguishers. (No change to current text)

4504.5 (Supp) Communications. (No change to current text)

4504.6 Emergency operations staging areas. Space shall be provided on all float systems for the staging of emergency equipment. Emergency operation staging areas shall provide a minimum of 4 feet wide by 10 feet long clear area exclusive of walkways and shall be located at each standpipe outlet. Emergency operation staging areas shall be provided with a curb or barrier having a minimum height of 4" and maximum space between the bottom edge and surface of the staging area of 2" on the outboard sides of the staging area.

An approved sign reading "Fire Equipment Staging Area – Keep Clear" shall be provided at each staging area.

Reason: The proposed amendments to the new Chapter 45 on Marinas include:

4503.7 - Improved communications and addressing within the marina float system to speed response by emergency personnel for all emergencies in the marina, including medical responses. These requirements are relatively low cost improvements that offer great potential for improving emergency responses.

4504.2 - Revised standpipe requirements that will reduce the cost of installation and maintenance for the standpipe systems that have been required under the code for years, while providing improved functionality for firefighting purposes. As proposed, the requirement for a Class I dry manual standpipes will eliminate the cost to the marina owner of installation and annual testing and inspection of backflow valves and tenant hoses currently in use for typical marina systems;

4504.6 - Low cost requirements for equipment staging areas and standpipe outlet identification to speed fire response and protect valuable equipment.

Cost Impact: The code change proposal will increase the cost of construction.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

F293–07/08

4504.6 (New), 4502.1, 910.2.4 (New) [IBC [F] 910.2.4 (New], Table 910.3 (IBC [F] Table 910.3),

Proponent: Tom Lariviere, Fire Department, Madison, MS, representing Joint Fire Service Review Committee

1. Add new text as follows:

4504.6 Smoke and Heat Vents. Approved automatic smoke and heat vents shall be provided in covered boat moorage areas exceeding 2,500 square feet (232 m^2) in area. Where smoke and heat vents are required they shall be installed near the roof peak and shall be in accordance with Section 910.

Exceptions:

1. Smoke and heat vents are not required in areas protected by an approved automatic sprinkler system.
2. Roofs with a minimum slope of 1:12 and designed not to trap heat and smoke.

910.2.4 (IBC [F] 910.2.4) Covered boat moorage areas. Covered boat moorage areas where required by Section 4504.6.

4502.1 (IBC [F] 902.1) (Supp) Definitions. The following words and terms shall, for the purpose of this chapter and as used elsewhere in this code, have the meanings shown herein.

COVERED BOAT MOORAGE. A pier or system of floating or fixed accessways to which vessels on water are secured and any portion of which is covered by a roof.

2. Revise table as follows:

TABLE 910.3 (IBC [F] 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 TO VENTS FROM WALL OR DRAFT CURTAIN[b] (feet)
Covered boat moorage areas	NA	4	2,000[e]	1:15[f]	50	40

a. through d. (No change to current text)

e. Maximum area formed by draft curtains shall be 2,000 square feet or two boat slips, whichever is greater. The portion of the draft curtain along the edge of the roof is not required when there is a separation of at least 10 feet to other structures.

f. The vent-area ratio shall be ratio of venting to the area of the roof covering.

(Portions of table and footnotes not shown remain unchanged)

Reason: Recent covered marina fires have demonstrated that covered marinas are susceptible to rapid fire spread due to the collection of heat and products of combustion under roof structures in the event of a vessel fire. The rapidity of fire spread and the containment of smoke and hot gasses create an increased threat to the occupants of vessels moored under the cover, and increase the risk of accelerated structural collapse and hazards to emergency personnel. In addition, the fire spread related to roof structures increases the potential for fire spread to uninvolved vessels and its associated environmental damages.

The provision of venting and draft curtains will reduce the rapidity of fire spread and increase the time between ignition and structural collapse of the roof structure improving occupant and emergency responder safety and reducing the risk to lives, property and the environment.

Cost Impact: The code change proposal will increase the cost of construction.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

F294–07/08

Chapter 46 (New), 102.1, 202, 607.1, 701.1, 704.1, Table 704.1, 903.6.1, 905.11, 907.3 through 907.3.4.3, 1027, 2506.1

Proponent: Tom Lariviere, Fire Department, Madison, MS, representing Joint Fire Service Review Committee

1. Add new chapter as follows:

CHAPTER 46
CONSTRUCTION REQUIREMENTS FOR EXISTING BUILDINGS

SECTION 4601
GENERAL

4601.1Scope. The provisions of this chapter shall apply to existing buildings constructed prior to the adoption of this code.

4601.2 Intent. The intent of this chapter is to provide a reasonable degree of fire and life safety to persons occupying existing buildings by providing for alterations to such existing buildings which do not comply with the minimum requirements of the *International Building Code*.

4601.3 Permits. Permits shall be required as set forth in Section 105.7 and the *International Building Code*.

4601.4 Owner Notification. Where a building is found to be in non-compliance, the fire code official shall duly notify the owner of the building. Upon receipt of such notice, the owner shall, subject to the following time limits, take necessary actions to comply with the provisions of Chapter 46.

4601.4.1 Plans and specifications. Plans and specifications for the necessary alterations shall be completed within a time schedule approved by the fire code official.

4601.4.2 Completion of work. Work on the required alterations to the building shall be completed within a time schedule approved by the fire code official.

4601.4.3 Extension of time. The fire code official is authorized to grant necessary extensions of time when it can be shown that the specified time periods are not physically practical or pose an undue hardship. The granting of an extension of time for compliance shall be based on the showing of good cause and subject to the filing of an acceptable systematic plan of correction with the fire code official.

SECTION 4602
DEFINITIONS

4602.1 Definition. The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

EXISTING. Buildings, facilities or conditions which are already in existence, constructed or officially authorized prior to the adoption of this code.

SECTION 4603
FIRE SAFETY REQUIREMENTS FOR BUILDINGS

4603.1 Required modifications. Means of egress in existing buildings shall comply with the requirements of Section 1027 and the building code that applied at the time of construction. Where these provisions conflict, the most restrictive provision shall apply.

For existing buildings that were not required to comply with a building code at the time of construction, such buildings shall comply with the requirements of Section 1027 and, in addition, shall have a life safety evaluation prepared, consistent with the requirements of Section 104.7.2. The life safety evaluation shall identify any changes to the means of egress that are necessary to provide safe egress to occupants and shall be subject to review and approval by the fire code official. The building shall be modified to comply with the recommendations set forth in the approved evaluation.

Exception: Group U Occupancies do not need to comply.

4603.2 Elevator Operation. Existing elevators with a travel distance of 25 feet (7620 mm) or more above or below the main floor or other level of a building and intended to serve the needs of emergency personnel for fire-fighting or rescue purposes shall be provided with emergency operation in accordance with ASME A17.3.

4603.3 Vertical openings. Interior vertical shafts, including but not limited to stairways, elevator hoistways, service and utility shafts, that connect two or more stories of a building shall be enclosed or protected as specified in Sections 4603.3.1 through 4603.3.7.

4603.3.1 Group I occupancies. In Group I occupancies, interior vertical openings connecting two stories or more shall be protected with 1- hour fire-resistance-rated construction.

4603.3.2 Three to five stories. In other than Group I occupancies, interior vertical openings, other than escalators, connecting three to five stories shall be protected by either 1-hour fire-resistance-rated construction or an automatic sprinkler system shall be installed throughout the building in accordance with Sections 903.3.1.1 or 903.3.1.2.

Exceptions:

1. Vertical opening protection is not required for Group R-3 occupancies.
2. Vertical opening protection is not required for open parking garages and ramps.

4603.3.3 More than five stories. In other than Group I occupancies, interior vertical openings, other than escalators, connecting more than five stories shall be protected by 1- hour fire-resistance-rated construction.

Exceptions:

1. Vertical opening protection is not required for Group R-3 occupancies.
2. Vertical opening protection is not required for open parking garages and ramps.

4603.3.4 Atriums and covered malls. In other than Group I occupancies, interior vertical openings in a covered mall building or a building with an atrium shall be protected by either 1- hour fire-resistance-rated construction or an automatic sprinkler system shall be installed throughout the building in accordance with Sections 903.3.1.1 or 903.3.1.2.

Exceptions:

1. Vertical opening protection is not required for Group R-3 occupancies.
2. Vertical opening protection is not required for open parking garages and ramps.

4603.3.5 Escalators in Group B and M occupancies. Escalators creating vertical openings connecting any number of stories shall be protected by either 1- hour fire-resistance-rated construction or an automatic fire sprinkler system in accordance with Section 903.3.1.1 installed throughout the building, with a draft curtain and closely spaced sprinklers around the escalator opening.

4603.3.6 Escalators connecting less than four stories. In other than Group B and M occupancies, escalators creating vertical openings connecting less than four stories shall be protected by either 1- hour fire-resistance-rated construction or an automatic sprinkler system in accordance with Sections 903.3.1.1 or 903.3.1.2 shall be installed throughout the building, and a draft curtain with closely spaced sprinklers shall be installed around the escalator opening.

4603.3.7 Escalators connecting more than four stories. In other than Group B and M occupancies, escalators creating vertical openings connecting five or more stories shall be protected by 1- hour fire-resistance-rated construction.

4603.4 Sprinkler systems. An automatic sprinkler system shall be provided in all existing buildings where cellulose nitrate film or pyroxylin plastics are manufactured, stored or handled in quantities exceeding 100 pounds (45 kg). Vaults located within buildings for the storage of raw pyroxylin shall be protected with an approved automatic sprinkler system capable of discharging 1.66 gallons per minute per square foot (68 L/min/m^2) over the area of the vault.

4603.5 Standpipes. Existing structures with occupied floors located more than 50 feet (15 240 mm) above or below the lowest level of fire department access shall be equipped with standpipes installed in accordance with Section 905. The standpipes shall have an approved fire department connection with hose connections at each floor level above or below the lowest level of fire department access. The fire code official is authorized to approve the installation of manual standpipe systems to achieve compliance with this section where the responding fire department is capable of providing the required hose flow at the highest standpipe outlet.

4603.6 Fire alarm systems. An approved manual, automatic or manual and automatic fire alarm system shall be installed in existing buildings and structures in accordance with Sections 4603.6.1 through 4603.6.7 and provide occupant notification in accordance with Section 907.6 unless other requirements are provided by other sections of this code.

Exception: Occupancies with an existing, previously approved fire alarm system.

4603.6.1 Group E. A fire alarm system shall be installed in existing Group E occupancies in accordance with Section 907.2.3.

Exceptions:

1. A manual fire alarm system is not required in a building with a maximum area of 1,000 square feet (93 m^2) that contains a single classroom and is located no closer than 50 feet (15 240 mm) from another building.
2. A manual fire alarm system is not required in Group E with an occupant load less than 50.

4603.6.2 Group I-1. An automatic or manual fire alarm system shall be installed in existing Group I-1 residential care/assisted living facilities in accordance with Section 907.2.6.1.

Exceptions:

1. Manual fire alarm boxes in resident or patient sleeping areas shall not be required at exits if located at all nurses' control stations or other constantly attended staff locations, provided such stations are visible and continuously accessible and that travel distances required in Section 907.5.2 are not exceeded.
2. Where each sleeping room has a means of egress door opening directly to an exterior egress balcony that leads directly to the exits in accordance with Section 1014.5, and the building is not more than three stories in height.

4603.6.3 Group I-2. An automatic or manual fire alarm system shall be installed in existing Group I-2 occupancies in accordance with Section 907.2.6.2.

Exception: Manual fire alarm boxes in resident or patient sleeping areas shall not be required at exits if located at all nurses' control stations or other constantly attended staff locations, provided such stations are visible and continuously accessible and that travel distances required in Section 907.5.2 are not exceeded.

4603.6.4 Group I-3. An automatic or manual fire alarm system shall be installed in existing Group I-3 occupancies in accordance with Section 907.2.6.3.

4603.6.5 Group R-1. A fire alarm system and smoke alarms shall be installed in existing Group R-1 occupancies in accordance with Sections 4603.6.5.1 through 4603.6.5.2.

4603.6.5.1 Group R-1 hotels and motels. An automatic or manual fire alarm system that activates the occupant notification system in accordance with Section 907.6 shall be installed in existing Group R-1 hotels and motels more than three stories or with more than 20 sleeping units.

Exception: Buildings less than two stories in height where all sleeping units, attics and crawl spaces are separated by 1-hour fire-resistance-rated construction and each sleeping unit has direct access to a public way, exit court or yard.

4603.6.5.2 Group R-1 boarding and rooming houses. An automatic or manual fire alarm system that activates the occupant notification system in accordance with Section 907.6 shall be installed in existing Group R-1 boarding and rooming houses.

Exception: Buildings that have single-station smoke alarms meeting or exceeding the requirements of Section 907.2.10.1 and where the fire alarm system includes at least one manual fire alarm box per floor arranged to initiate the alarm.

4603.6.6 Group R-2. An automatic or manual fire alarm system that activates the occupant notification system in accordance with Section 907.6 shall be installed in existing Group R-2 occupancies more than three stories in height or with more than 16 dwelling units or sleeping units.

Exceptions:

1. Where each living unit is separated from other contiguous living units by fire barriers having a fire-resistance rating of not less than 0.75 hour, and where each living unit has either its own independent exit or its own independent stairway or ramp discharging at grade.
2. A separate fire alarm system is not required in buildings that are equipped throughout with an approved supervised automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 and having a local alarm to notify all occupants.
3. A fire alarm system is not required in buildings that do not have interior corridors serving dwelling units and are protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2, provided that dwelling units either have a means of egress door opening directly to an exterior exit access that leads directly to the exits or are served by open-ended corridors designed in accordance with Section 1023.6, Exception 4.

4603.6.7 Group R-4. An automatic or manual fire alarm system that activates the occupant notification system in accordance with Section 907.6 shall be installed in existing Group R-4 residential care/assisted living facilities.

Exceptions:

1. Where there are interconnected smoke alarms meeting the requirements of Section 907.2.10 and there is at least one manual fire alarm box per floor arranged to sound continuously the smoke alarms.
2. Other manually activated, continuously sounding alarms approved by the fire code official.

4603.7 Single- and multiple-station smoke alarms. Single- and multiple-station smoke alarms shall be installed in existing Group R occupancies in accordance with Sections 4603.7.1 through 4603.7.3.

4603.7.1 Where required. Existing Group R occupancies not already provided with single-station smoke alarms shall be provided with single-station smoke alarms. Installation shall be in accordance with Section 907.2.10, except as provided in Sections 4603.7.2 and 4603.7.3.

4603.7.2 Interconnection. Where more than one smoke alarm is required to be installed within an individual dwelling unit or sleeping unit in Group R-1, R-2, R-3 or R-4, the smoke alarms shall be interconnected in such a manner that the activation of one alarm will activate all of the alarms in the individual unit. The alarm shall be clearly audible in all bedrooms over background noise levels with all intervening doors closed.

Exceptions:

1. Interconnection is not required in buildings that are not undergoing alterations, repairs or construction of any kind.
2. Smoke alarms in existing areas are not required to be interconnected where alterations or repairs do not result in the removal of interior wall or ceiling finishes exposing the structure, unless there is an attic, crawl space or basement available which could provide access for interconnection without the removal of interior finishes.

4603.7.3 Power source. In Group R occupancies, single-station smoke alarms shall receive their primary power from the building wiring provided that such wiring is served from a commercial source and shall be equipped with a battery backup. Smoke alarms with integral strobes that are not equipped with battery back-up shall be connected to an emergency electrical system. Smoke alarms shall emit a signal when the batteries are low. Wiring shall be permanent and without a disconnecting switch other than as required for overcurrent protection.

Exception: Smoke alarms are permitted to be solely battery operated: in existing buildings where no construction is taking place; in buildings that are not served from a commercial power source; and in existing areas of buildings undergoing alterations or repairs that do not result in the removal of interior walls or ceiling finishes exposing the structure, unless there is an attic, crawl space or basement available which could provide access for building wiring without the removal of interior finishes.

SECTION 4604
MEANS OF EGRESS FOR EXISTING BUILDINGS

4604.1 General. Means of egress in existing buildings shall comply with the minimum egress requirements when specified in Table 4604.1 as further enumerated in Sections 4604.2 through 4604.21, and the building code that applied at the time of construction. Where the provisions conflict, the most restrictive provision shall apply. Existing buildings that were not required to comply with a building code at the time of construction shall comply with the minimum egress requirements when specified in Table 4603.1 as further enumerated in Sections 4604.2 through 4604.21, and, in addition, shall have a life safety evaluation prepared, consistent with the requirements of Section 104.7.2. The life safety evaluation shall identify any changes to the means of egress that are necessary to provide safe egress to occupants and shall be subject to review and approval by the fire code official. The building shall be modified to comply with the recommendations set forth in the approved evaluation.

4604.2 Elevators, escalators and moving walks. Elevators, escalators and moving walks shall not be used as a component of a required means of egress.

Exceptions:

1. Elevators used as an accessible means of egress where allowed by Section 1007.4.
2. Previously approved escalators and moving walks in existing buildings.

4604.3 Exit sign illumination. Exit signs shall be internally or externally illuminated. The face of an exit sign illuminated from an external source, shall have an intensity of not less than 5 foot-candles (54 lux). Internally illuminated signs shall provide equivalent luminance and be listed for the purpose.

Exception: Approved self-luminous signs that provide evenly illuminated letters shall have a minimum luminance of 0.06 foot-lamberts (0.21 cd/m^2).

4604.4 Power source. Where emergency illumination is required in Section 4604.5, exit signs shall be visible under emergency illumination conditions.

Exception: Approved signs that provide continuous illumination independent of external power sources are not required to be connected to an emergency electrical system.

4604.5 Illumination emergency power. The power supply for means of egress illumination shall normally be provided by the premises' electrical supply. In the event of power supply failure, illumination shall be automatically provided from an emergency system for the following occupancies where such occupancies require two or more means of egress:

1. Group A having 50 or more occupants.

   Exception: Assembly occupancies used exclusively as a place of worship and having an occupant load of less than 300.

2. Group B buildings three or more stories in height, buildings with 100 or more occupants above or below the level of exit discharge, or buildings with 1,000 or more total occupants.
3. Group E in interior stairs, corridors, windowless areas with student occupancy, shops and laboratories.
4. Group F having more than 100 occupants.

   Exception: Buildings used only during daylight hours which are provided with windows for natural light in accordance with the *International Building Code*.

5. Group I.
6. Group M.

Exception: Buildings less than 3,000 square feet (279 m^2) in gross sales area on one story only, excluding mezzanines.

7. Group R-1.

   Exception: Where each sleeping unit has direct access to the outside of the building at grade.

8. Group R-2.

   Exception: Where each dwelling unit or sleeping unit has direct access to the outside of the building at grade.

9. Group R-4.

Exception: Where each sleeping unit has direct access to the outside of the building at ground level. The emergency power system shall provide power for not less than 60 minutes and consist of storage batteries, unit equipment or an on-site generator. The installation of the emergency power system shall be in accordance with Section 604.

4604.6 Guards. Guards complying with this section shall be provided at the open sides of means of egress that are more than 30 inches (762 mm) above the floor or grade below.

4604.6.1 Height of guards. Guards shall form a protective barrier not less than 42 inches (1067 mm) high.

Exceptions:

1. Existing guards on the open side of stairs shall be not less than 30 inches (760 mm) high.
2. Existing guards within dwelling units shall be not less than 36 inches (910 mm) high.
3. Existing guards in assembly seating areas.

4604.6.2 Opening limitations. Open guards shall have balusters or ornamental patterns such that a 6-inch diameter (152 mm) sphere cannot pass through any opening up to a height of 34 inches (864 mm).

Exceptions:

1 At elevated walking surfaces for access to, and use of electrical, mechanical or plumbing systems or equipment, guards shall have balusters or be of solid materials such that a sphere with a diameter of 21 inches (533 mm) cannot pass through any opening.
2. In occupancies in Group I-3, F, H or S, the clear distance between intermediate rails measured at right angles to the rails shall not exceed 21 inches (533 mm).
3. Approved existing open guards.

4604.7 Size of doors. The minimum width of each door opening shall be sufficient for the occupant load thereof and shall provide a clear width of not less than 28 inches (711 mm). Where this section requires a minimum clear width of 28 inches (711 mm) and a door opening includes two door leaves without a mullion, one leaf shall provide a clear opening width of 28 inches (711 mm). The maximum width of a swinging door leaf shall be 48 inches (1219 mm) nominal. Means of egress doors in an occupancy in Group I-2 used for the movement of beds shall provide a clear width not less than 41.5 inches (1054 mm). The height of doors shall not be less than 80 inches (2032 mm).

Exceptions:

1. The minimum and maximum width shall not apply to door openings that are not part of the required means of egress in occupancies in Groups R-2 and R-3.
2. Door openings to storage closets less than 10 square feet (0.93 m^2) in area shall not be limited by the minimum width.
3. Width of door leafs in revolving doors that comply with Section 1008.1.3.1 shall not be limited.
4. Door openings within a dwelling unit shall not be less than 78 inches (1981 mm) in height.
5. Exterior door openings in dwelling units, other than the required exit door, shall not be less than 76 inches (1930 mm) in height.
6. Exit access doors serving a room not larger than 70 square feet (6.5 m^2) shall be not less than 24 inches (610 mm) in door width.

4604.8 Opening force for doors. The opening force for interior side-swinging doors without closers shall not exceed a 5-pound (22 N) force. For other side-swinging, sliding and folding doors, the door latch shall release when subjected to a force of not more than 15 pounds (66 N). The door shall be set in motion when subjected to a force not exceeding a 30-pound (133 N) force. The door shall swing to a full-open position when subjected to a force of not more than 50 pounds (222 N). Forces shall be applied to the latch side.

4604.9 Revolving doors. Revolving doors shall comply with the following:

1. A revolving door shall not be located within 10 feet (3048 mm) of the foot or top of stairs or escalators. A dispersal area shall be provided between the stairs or escalators and the revolving doors.
2. The revolutions per minute for a revolving door shall not exceed those shown in Table 4604.9.

3. Each revolving door shall have a conforming side-hinged swinging door in the same wall as the revolving door and within 10 feet (3048 mm).

Exceptions:

1. A revolving door is permitted to be used without an adjacent swinging door for street floor elevator lobbies provided a stairway, escalator or door from other parts of the building does not discharge through the lobby and the lobby does not have any occupancy or use other than as a means of travel between elevators and a street.
2. Existing revolving doors where the number of revolving doors does not exceed the number of swinging doors within 20 feet (6096 mm).

TABLE 4604.9
REVOLVING DOOR SPEEDS

INSIDE DIAMETER	POWER-DRIVEN-TYPE SPEED CONTROL (RPM)	MANUAL-TYPE SPEED CONTROL (RPM)
6' 6"	11	12
7' 0"	10	11
7' 6"	9	11
8' 0"	9	10
8' 6"	8	9
9' 0"	8	9
9' 6"	7	8
10' 0"	7	8

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

4604.9.1 Egress component. A revolving door used as a component of a means of egress shall comply with Section 4604.9 and all of the following conditions:

1. Revolving doors shall not be given credit for more than 50 percent of the required egress capacity.
2. Each revolving door shall be credited with not more than a 50-person capacity.
3. Revolving doors shall be capable of being collapsed when a force of not more than 130 pounds (578 N) is applied within 3 inches (76 mm) of the outer edge of a wing.

4604.10 Stair dimensions for existing stairs. Existing stairs in buildings shall be permitted to remain if the rise does not exceed 8.25 inches (210 mm) and the run is not less than 9 inches (229 mm). Existing stairs can be rebuilt.

Exception: Other stairs approved by the fire code official.

4604.10.1 Stair dimensions for replacement stairs. The replacement of an existing stairway in a structure shall not be required to comply with the new stairway requirements of Section 1009 where the existing space and construction will not allow a reduction in pitch or slope.

4604.11 Winders. Existing winders shall be allowed to remain in use if they have a minimum tread depth of 6 inches (152 mm) and a minimum tread depth of 9 inches (229 mm) at a point 12 inches (305 mm) from the narrowest edge.

4604.12 Circular stairways. Existing circular stairs shall be allowed to continue in use provided the minimum depth of tread is 10 inches (254 mm) and the smallest radius shall not be less than twice the width of the stairway.

4604.13 Stairway handrails. Stairways shall have handrails on at least one side. Handrails shall be located so that all portions of the stairway width required for egress capacity are within 44 inches (1118 mm) of a handrail.

Exception: Aisle stairs provided with a center handrail are not required to have additional handrails.

4604.13.1 Height. Handrail height, measured above stair tread nosings, shall be uniform, not less than 30 inches (762 mm) and not more than 42 inches (1067 mm).

4604.14 Slope of ramps. Ramp runs utilized as part of a means of egress shall have a running slope not steeper than one unit vertical in ten units horizontal (10-percent slope). The slope of other ramps shall not be steeper than one unit vertical in eight units horizontal (12.5-percent slope).

4604.15 Width of ramps. Existing ramps are permitted to have a minimum width of 30 inches (762 mm) but not less than the width required for the number of occupants served as determined by Section 1005.1.

4604.16 Fire escape stairs. Fire escape stairs shall comply with Sections 4604.16.1 through 4604.16.7.

4604.16.1 Existing means of egress. Fire escape stairs shall be permitted in existing buildings but shall not constitute more than 50 percent of the required exit capacity.

4604.16.2 Protection of openings. Openings within 10 feet (3048 mm) of fire escape stairs shall be protected by fire door assemblies having a minimum ¾-hour fire-resistance rating.

Exception: In buildings equipped throughout with an approved automatic sprinkler system, opening protection is not required.

4604.16.3 Dimensions. Fire escape stairs shall meet the minimum width, capacity, riser height and tread depth as specified in Section 4604.10.

4604.16.4 Access. Access to a fire escape from a corridor shall not be through an intervening room. Access to a fire escape stair shall be from a door or window meeting the criteria of Table 1005.1. Access to a fire escape stair shall be directly to a balcony, landing or platform. These shall be no higher than the floor or window sill level and no lower than 8 inches (203 mm) below the floor level or 18 inches (457 mm) below the window sill.

4604.16.5 Materials and strength. Components of fire escape stairs shall be constructed of noncombustible materials. Fire escape stairs and balconies shall support the dead load plus a live load of not less than 100 pounds per square foot (4.78 kN/m^2). Fire escape stairs and balconies shall be provided with a top and intermediate handrail on each side. The fire code official is authorized to require testing or other satisfactory evidence that an existing fire escape stair meets the requirements of this section.

4604.16.6 Termination. The lowest balcony shall not be more than 18 feet (5486 mm) from the ground. Fire escape stairs shall extend to the ground or be provided with counterbalanced stairs reaching the ground.

Exception: For fire escape stairs serving 10 or fewer occupants, an approved fire escape ladder is allowed to serve as the termination for a fire escape stairs.

4604.16.7 Maintenance. Fire escapes shall be kept clear and unobstructed at all times and shall be maintained in good working order.

4604.17 Corridors. Corridors serving an occupant load greater than 30 and the openings therein shall provide an effective barrier to resist the movement of smoke. Transoms, louvers, doors and other openings shall be closed or be self-closing.

Exceptions:

1. Corridors in occupancies other than in Group H, which are equipped throughout with an approved automatic sprinkler system.
2. Patient room doors in corridors in occupancies in Group I-2 where smoke barriers are provided in accordance with the International Building Code.
3. Corridors in occupancies in Group E where each room utilized for instruction or assembly has at least one-half of the required means of egress doors opening directly to the exterior of the building at ground level.
4. Corridors that are in accordance with the *International Building Code*.

4604.17.1 Corridor openings. Openings in corridor walls shall comply with the requirements of the *International Building Code*.

Exceptions:

1. Where 20-minute fire door assemblies are required, solid wood doors at least 1.75 inches (44 mm) thick or insulated steel doors are allowed.
2. Openings protected with fixed wire glass set in steel frames.
3. Openings covered with 0.5-inch (12.7 mm) gypsum wallboard or 0.75-inch (19.1 mm) plywood on the room side.
4. Opening protection is not required when the building is equipped throughout with an approved automatic sprinkler system.

4604.17.2 Dead ends. Where more than one exit or exit access doorway is required, the exit access shall be arranged such that dead ends do not exceed the limits specified in Table 4604.17.2.

Exception: A dead-end passageway or corridor shall not be limited in length where the length of the dead-end passageway or corridor is less than 2.5 times the least width of the dead-end passageway or corridor.

TABLE 4604.17.2
COMMON PATH, DEAD-END AND TRAVEL DISTANCE LIMITS (by occupancy)

Occupancy	Common Path Limit		Dead-End Limit		Travel Distance Limit	
	Unsprinklered (feet)	Sprinklered (feet)	Unsprinklered (feet)	Sprinklered (feet)	Unsprinklered (feet)	Sprinklered (feet)
Group A	20/75[a]	20/75[a]	20[b]	20[b]	200	250
Group B	75	100	50	50	200	250
Group E	75	75	20	20	200	250
Group F-1,S-1[d]	75	100	50	50	200	250
Group F-2,S-2[d]	75	100	50	50	300	400
Group H-1	25	25	0	0	75	75
Group H-2	50	100	0	0	75	100
Group H-3	50	100	20	20	100	150
Group H-4	75	75	20	20	150	175
Group H-5	75	75	20	20	150	200
Group I-1	75	75	20	20	200	250
Group I-2 (Health Care)	NR	NR	NR	NR	150	200[c]
Group I-3 (Detention and Correctional – Use Conditions II, III, IV, V)	100	100	NR	NR	150[c]	200[c]
Group I-4 (Day Care Centers)	NR	NR	20	20	200	250
Group M (Covered Mall)	75	100	50	50	200	400
Group M (Mercantile)	75	100	50	50	200	250
Group R-1 (Hotels)	75	75	50	50	200	250
Group R-2 (Apartments)	75	75	50	50	200	250
Group R-3 (One- and Two-Family)	NR	NR	NR	NR	NR	NR
Group R-4 (Residential Care/Assisted Living	NR	NR	NR	NR	NR	NR
Group U	75	75	20	20	200	250

For SI: 1 foot = 304.8 mm.

a. 20 feet for common path serving 50 or more persons; 75 feet for common path serving less than 50 persons.
b. See Section 1025.9.5 for dead-end aisles in Group A occupancies.
c. This dimension is for the total travel distance, assuming incremental portions have fully utilized their allowable maximums. For travel distance within the room, and from the room exit access door to the exit, see the appropriate occupancy chapter.
d. See the *International Building Code* for special requirements on spacing of doors in aircraft hangars.

NR = No requirements.

4604.17.3 Exit access travel distance. Exits shall be located so that the maximum length of exit access travel, measured from the most remote point to an approved exit along the natural and unobstructed path of egress travel, does not exceed the distances given in Table 4604.17.2.

4604.17.4 Common path of egress travel. The common path of egress travel shall not exceed the distances given Table 4604.17.2.

4604.18 Stairway discharge identification. A stairway in an exit enclosure which continues below the level of exit discharge shall be arranged and marked to make the direction of egress to a public way readily identifiable.

Exception: Stairs that continue one-half story beyond the level of exit discharge need not be provided with barriers where the exit discharge is obvious.

4604.19 Exterior stairway protection. Exterior exit stairs shall be separated from the interior of the building as required in Section 1023.6. Openings shall be limited to those necessary for egress from normally occupied spaces.

Exceptions:

1. Separation from the interior of the building is not required for buildings that are two stories or less above grade where the level of exit discharge is the first story above grade.
2. Separation from the interior of the building is not required where the exterior stairway is served by an exterior balcony that connects two remote exterior stairways or other approved exits, with a perimeter that is not less than 50 percent open.To be considered open, the opening shall be a minimum of 50 percent of the height of the enclosing wall, with the top of the opening not less than 7 feet (2134 mm) above the top of the balcony.
3. Separation from the interior of the building is not required for an exterior stairway located in a building or structure that is permitted to have unenclosed interior stairways in accordance with Section 1020.1.
4. Separation from the interior of the building is not required for exterior stairways connected to open-ended corridors, provided that:
   4.1. The building, including corridors and stairs, is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2.
   4.2. The open-ended corridors comply with Section 1017.
   4.3. The open-ended corridors are connected on each end to an exterior exit stairway complying with Section 1023.1.
   4.4. At any location in an open-ended corridor where a change of direction exceeding 45 degrees occurs, a clear opening of not less than 35 square feet (3 m^2) or an exterior stairway shall be provided. Where clear openings are provided, they shall be located so as to minimize the accumulation of smoke or toxic gases.

4604.20 Minimum aisles width. The minimum clear width of aisles shall be:

1. Forty-two inches (1067 mm) for aisle stairs having seating on each side.

   Exception: Thirty-six inches (914 mm) where the aisle serves less than 50 seats.

2. Thirty-six inches (914 mm) for stepped aisles having seating on only one side.

   Exception: Thirty inches (760 mm) for catchment areas serving not more than 60 seats.

3. Twenty inches (508 mm) between a stepped aisle handrail or guard and seating when the aisle is subdivided by the handrail.
4. Forty-two inches (1067 mm) for level or ramped aisles having seating on both sides.

Exception: Thirty-six inches (914 mm) where the aisle serves less than 50 seats.

5. Thirty-six inches (914 mm) for level or ramped aisles having seating on only one side.

   Exception: Thirty inches (760 mm) for catchment areas serving not more than 60 seats.

6. Twenty-three inches (584 mm) between a stepped stair handrail and seating where an aisle does not serve more than five rows on one side.

4604.21 Stairway floor number signs. Existing stairs shall be marked in accordance with Section 1020.1.6.

TABLE 4603.1
OCCUPANCY AND USE REQUIREMENTS

Section	Use			Occupancy Classification																	
	High Rise	Atrium and Covered Mall	Under ground Building	A	B	E	F	H-1	H-2	H-3	H-4	H-5	I-1	I-2	I-3	I-4	M	R-1	R-2	R-3	R-4	S
4603.2	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4603.3.1	X		X										X	X	X	X						
4603.3.2	X		X	X	X	X	X	X	X	X	X	X					X	X	X		X	X
4603.3.3	X		X	X	X	X	X	X	X	X	X	X					X	X	X		X	X
4603.3.4		X																				
4603.3.5					X												X					
4603.3.6				X		X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X
4603.3.7				X		X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X
4603.4				X			X		X	X							X					
4603.5	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X
4603.6.1						X																
4603.6.2													X									
4603.6.3														X								
4603.6.4															X							
4603.6.5																		X				
4603.6.6																			X			
4603.6.7																					X	
4603.7																		X	X	X	X	
4604	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

SECTION 4605
REQUIREMENTS FOR OUTDOOR OPERATIONS

4605.1 Tire storage yards. Existing tire storage yards shall be provided with fire apparatus access roads in accordance with Sections 4605.1.1 and 4605.1.2.

4605.1.1 Access to piles. Access roadways shall be within 150 feet (45 720 mm) of any point in the storage yard where storage piles are located, at least 20 feet (6096 mm) from any storage pile.

4605.1.2 Location within piles. Fire apparatus access roads shall be located within all pile clearances identified in Sections 2505.4 and within all fire breaks required in Section 2505.5.

2. Revise as follows:

102.1 Construction and design provisions. The construction and design provisions of this code shall apply to:

1. Structures, facilities and conditions arising after the adoption of this code.
2. Existing structures, facilities and conditions not legally in existence at the time of adoption of this code.
3. Existing structures, facilities and conditions when ~~identified in specific sections of this code~~ required in Chapter 46.
4. Existing structures, facilities and conditions which, in the opinion of the fire code official, constitute a distinct hazard to life or property.

SECTION 202
GENERAL DEFINITIONS

EXISTING. ~~Buildings, facilities or conditions which are already in existence, constructed or officially authorized prior to the adoption of this code.~~ See Section 4602.1.

607.1 Required. Existing elevators with a travel distance of 25 feet (7620 mm) or more ~~above or below the main floor or other level of a building and intended to serve the needs of emergency personnel for fire-fighting or rescue purposes shall be provided with emergency operation in accordance with ASME A17.3~~ shall comply with the requirements in Chapter 46. New elevators shall be provided with Phase I emergency recall operation and Phase II emergency in-car operation in accordance with ASME A17.1.

701.1 Scope. The provisions of this chapter shall specify the requirements for and the maintenance of fire-resistance-rated construction ~~and requirements for enclosing floor openings and shafts in existing buildings. New construction shall comply with the *International Building Code*~~.

704.1 Enclosure. Interior vertical shafts, including but not limited to stairways, elevator hoistways, service and utility shafts, that connect two or more stories of a building shall be enclosed or protected as ~~specified in Table 704.1~~ required in Chapter 46.

3. Delete Table 704.1 in its entirety without substitution as follows:

~~**TABLE 704.1**~~
~~**VERTICAL OPENING PROTECTION REQUIRED**~~

4. Revise as follows:

903.6.1 Pyroxylin plastics. All structures occupied for the manufacture or storage of articles of cellulose nitrate (pyroxylin) plastic shall be equipped with an approved automatic fire-extinguishing system when required in Chapter 46. ~~Vaults located within buildings for the storage of raw pyroxylin shall be protected with an approved automatic sprinkler system capable of discharging 1.66 gallons per minute per square foot (68 L/min/m^2) over the area of the vault.~~

905.11 Existing buildings. Existing structures ~~with occupied floors located more than 50 feet (15 240 mm) above or below the lowest level of fire department access~~ shall be equipped with standpipes installed in accordance with Section 905 when required in Chapter 46. ~~The standpipes shall have an approved fire department connection with hose connections at each floor level above or below the lowest level of fire department access. The fire code official is authorized to approve the installation of manual standpipe systems to achieve compliance with this section where the responding fire department is capable of providing the required hose flow at the highest standpipe outlet.~~

907.3 (Supp) Where required ~~– retroactive~~ in existing buildings and structures. An approved manual, automatic or manual and automatic fire alarm system shall be installed in existing buildings and structures ~~in accordance with Sections 907.3.1 through 907.3.1.8 and provide occupant notification in accordance with Section 907.6 unless other requirements are provided by other sections of this code~~ where required in Chapter 46.

~~**Exception:** Occupancies with an existing, previously approved fire alarm system.~~

~~**907.3.1 (Supp) Group E.** A fire alarm system shall be installed in existing Group E occupancies in accordance with Section 907.2.3.~~

~~**Exceptions:**~~

~~1. A manual fire alarm system is not required in a building with a maximum area of 1,000 square feet (93 m^2) that contains a single classroom and is located no closer than 50 feet (15 240 mm) from another building.~~
~~2. A manual fire alarm system is not required in Group E with an occupant load less than 50.~~

~~**907.3.2 (Supp) Group I.** A fire alarm system shall be installed in existing Group I occupancies in accordance with Sections 907.3.2.1 through 907.3.2.3.~~

~~**Exception:** Manual fire alarm boxes in resident or patient sleeping areas of Group I-1 and I-2 occupancies shall not be required at exits if located at all nurses= control stations or other constantly attended staff locations, provided such stations are visible and continuously accessible and that travel distances required in Section 907.5.2 are not exceeded.~~

~~**907.3.2.1(Supp) Group I-1.** An automatic or manual fire alarm system shall be installed in existing Group I-1 residential care/assisted living facilities in accordance with Section 907.2.6.1.~~

~~**Exception:** Where each sleeping room has a means of egress door opening directly to an exterior egress balcony that leads directly to the exits in accordance with Section 1014.5, and the building is not more than three stories in height.~~

~~**907.3.2.2 (Supp) Group I-2.** An automatic or manual fire alarm system shall be installed in existing Group I-2 occupancies in accordance with Section 907.2.6.2.~~

~~**907.3.2.3 (Supp) Group I-3.** An automatic or manual fire alarm system shall be installed in existing Group I-3 occupancies in accordance with Section 907.2.6.3.~~

~~**907.3.3 (Supp) Group R.** A fire alarm system and smoke alarms shall be installed in existing Group R occupancies in accordance with Sections 907.3.3.1 through 907.3.3.4.~~

~~**907.3.3.1 (Supp) Group R-1 hotels and motels.** An automatic or manual fire alarm system that activates the occupant notification system in accordance with Section 907.6 shall be installed in existing Group R-1 hotels and motels more than three stories or with more than 20 sleeping units.~~

~~**Exception:** Buildings less than two stories in height where all sleeping units, attics and crawl spaces are separated by 1-hour fire-resistance-rated construction and each sleeping unit has direct access to a public way, exit court or yard.~~

~~**907.3.3.2 (Supp) Group R-1 boarding and rooming houses.** An automatic or manual fire alarm system that activates the occupant notification system in accordance with Section 907.6 shall be installed in existing Group R-1 boarding and rooming houses.~~

~~**Exception:** Buildings that have single-station smoke alarms meeting or exceeding the requirements of Section 907.2.10.1 and where the fire alarm system includes at least one manual fire alarm box per floor arranged to initiate the alarm.~~

~~**907.3.3.3 (Supp) Group R-2.** An automatic or manual fire alarm system that activates the occupant notification system in accordance with Section 907.6 shall be installed in existing Group R-2 occupancies more than three stories in height or with more than 16 dwelling units or sleeping units.~~

~~**Exceptions:**~~

1. ~~Where each living unit is separated from other contiguous living units by fire barriers having a fire-resistance rating of not less than 0.75 hour, and where each living unit has either its own independent exit or its own independent stairway or ramp discharging at grade.~~
2. ~~A separate fire alarm system is not required in buildings that are equipped throughout with an approved supervised automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 and having a local alarm to notify all occupants.~~
3. A fire alarm system is not required in buildings that do not have interior corridors serving dwelling units and are protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2, provided that dwelling units either have a means of egress door opening directly to an exterior exit access that leads directly to the exits or are served by open-ended corridors designed in accordance with Section 1023.6, Exception 4.

~~**907.3.3.4 (Supp) Group R-4.** An automatic or manual fire alarm system that activates the occupant notification system in accordance with Section 907.6 shall be installed in existing Group R-4 residential care/assisted living facilities.~~

~~**Exceptions:**~~

1. ~~Where there are interconnected smoke alarms meeting the requirements of Section 907.2.10 and there is at least one manual fire alarm box per floor arranged to sound continuously the smoke alarms.~~
2. ~~Other manually activated, continuously sounding alarms approved by the fire code official.~~

~~**907.3.4 (Supp) Single- and multiple-station smoke alarms.** Single- and multiple-station smoke alarms shall be installed in existing Group R occupancies in accordance with Sections 907.3.4.1 through 907.3.4.3.~~

~~**907.3.4.1 (Supp) Where required.** Existing Group R occupancies not already provided with single-station smoke alarms shall be provided with single-station smoke alarms. Installation shall be in accordance with Section 907.2.10, except as provided in Sections 907.3.4.2 and 907.3.4.3.~~

~~**907.3.4.2 (Supp) Interconnection.** Where more than one smoke alarm is required to be installed within an individual dwelling unit or sleeping unit in Group R-1, R-2, R-3 or R-4, the smoke alarms shall be interconnected in such a manner that the activation of one alarm will activate all of the alarms in the individual unit. The alarm shall be clearly audible in all bedrooms over background noise levels with all intervening doors closed.~~

~~**Exceptions:**~~

1. ~~Interconnection is not required in buildings that are not undergoing alterations, repairs or construction of any kind.~~
2. ~~Smoke alarms in existing areas are not required to be interconnected where alterations or repairs do not result in the removal of interior wall or ceiling finishes exposing the structure, unless there is an attic, crawl space or basement available which could provide access for interconnection without the removal of interior finishes.~~

~~**907.3.4.3 (Supp) Power source.** In Group R occupancies, single-station smoke alarms shall receive their primary power from the building wiring provided that such wiring is served from a commercial source and shall be equipped with a battery backup. Smoke alarms with integral strobes that are not equipped with battery back-up shall be connected to an emergency electrical system. Smoke alarms shall emit a signal when the batteries are low. Wiring shall be permanent and without a disconnecting switch other than as required for overcurrent protection.~~

~~**Exception:** Smoke alarms are permitted to be solely battery operated: in existing buildings where no construction is taking place; in buildings that are not served from a commercial power source; and in existing areas of buildings undergoing alterations or repairs that do not result in the removal of interior walls or ceiling finishes exposing the structure, unless there is an attic, crawl space or basement available which could provide access for building wiring without the removal of interior finishes.~~

5. Delete entire section without substitution:

~~**SECTION 1027**~~
~~**MEANS OF EGRESS FOR EXISTING BUILDINGS**~~

6. Revise as follows:

2506.1 Required access. New ~~and existing~~ tire storage yards shall be provided with fire apparatus access roads in accordance with Section 503 and this section. Existing tire storage yards shall be provided with fire apparatus access roads where required in Chapter 46.

Reason: This proposal relocates current requirements in the IFC to a new Chapter 46. The requirements being relocated all apply to construction requirements that specifically apply to existing buildings to one chapter. This relocation will facilitate in application and enforcement. The intent is to clarify the requirements and provide a single location for retroactive provisions and provide a quick reference table (Table 4603.1) to determine if there may be any requirements that would be applicable as the inspector is conducting the inspection.

Each of the provisions within the current code that refer to retroactive requirements will now have a reference to Chapter 46. Chapter 46 will contain all of the construction requirements which are retroactive and applicable to existing facilities or operations.

Currently, there is confusion as to when a construction requirement can be applied to an existing building. It has been said that in every case you must declare a "distinct hazard", however this is not correct. There are specific requirements that are already determined to be retroactive construction requirements because the voting membership has made the determination that they create a distinct hazard and placed the specific provisions in the code. Since the determination of a hazard is already accomplished it is not necessary for the code official to repeat the process. Therefore, all of the requirements in Chapter 46 will apply to existing buildings.

Section 102.1 #3 is revised to indicate that the retroactive construction provisions referred to by this section are located in Chapter 46. Thus clarifying which provisions in the are actually construction provisions that should be applied to an existing building. Only those provisions listed in Chapter 46 would apply to an existing facility. Therefore, all of the other construction items in the code apply to new construction. However, as is provided now in the IFC, the code official can still exercise judgement and declare a distinct hazard under Item #4 of Section 102.1 for other items or operations not addressed in Chapter 46.

All of the requirements relocated into Chapter 46 remain the same; the requirements have not been changed, except for Section 4604.1 for means of egress. The scope section has been clarified to indicate that existing buildings must still comply with the code under which the building was built and also the minimum egress requirements in Section 4604, whichever is more restrictive. In this fashion, a building will not be allowed to reduce the egress system protection or design from the original approval. Section 4604 is not as restrictive as new construction and allows for the continued use of existing buildings when the egress is at an acceptable standard, but yet not in complete compliance with the IBC.

A roadmap of the relocated sections is provided to assist in following the proposal:

Current Section	Proposed Section	Comment
102.1	102.1	Only revised for clarification to include reference to Chapter 46
202	4602.1	Relocated definition of EXISTING to Chapter 46
607.1	4603.2	No change in requirements
701.1	701.1	Only revision for clarification
704.1	4603.3 – 4603.3.7	Table is not used, but all of the requirements are contained in text in the subsections.
903.6.1	4603.4	No change in requirements
905.11	4603.5	No change in requirements
907.3 – 907.3.3.4	4603.6 – 4603.6.7	No change in requirements
907.3.4	4603.7.3	No change in requirements
1027	4604	All of the current requirements are relocated with a revision to Section 4604.1 for clarification on application.
2506.1	4605	No change in requirements

Cost Impact: The code change proposal will not increase the cost of construction.

Analysis: The final chapter number will be determined prior to the publication of the 2009 edition.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

F295–07/08
Chapter 35

Proponent: Standards writing organizations as listed below.

Revise standards as follows:

ASME

American Society of Mechanical Engineers
International Three Park Avenue
New York, NY 10016-5990

Standard reference number	Title
A17.3—2005 ~~2002~~	Safety Code for Existing Elevators and Escalators~~—with A17.3a-2000 Addenda~~
B16.18—2001 (Reaffirmed 2005)	Cast Copper Alloy Solder Joint Pressure Fittings
B16.22— 2001 (Reaffirmed 2005)	Wrought Copper and Copper Alloy Solder-joint Pressure Fittings—with B16.22a-1998 Addenda
B31.3— 2004 ~~2002~~	Process Piping
B31.9—2004 ~~96~~	Building Services Piping Code~~ for Pressure Piping~~
BPVC- 2004 ~~2001~~	ASME Boiler and Pressure Vessel Code, 2001 Edition of (Sections I, II, IV, V & VI, VIII)

ASTM

ASTM International
100 Barr Harbor Drive
West Conshohocken, PA 19428-2959

Standard reference number	Title
B 43—98 ~~93~~(2004)	Specification for Seamless Red Brass Pipe, Standard Sizes
D 86- 07a ~~05~~	Test Method for Distillation of Petroleum Products at Atmospheric Pressure
D 92— 05a ~~02b~~	Test Method for Flash and Fire Points by Cleveland Open Cup
D 93-07 ~~05a~~	Test Method for Flash Point by Pensky-Martens Closed Cup Tester
D 323— 06 ~~99a~~	Test Method for Vapor Pressure of Petroleum Products (Reid Method)
E 1529— 06 ~~00~~	Test Method for Determining Effects of Large Hydrocarbon Pool Fires on Structural Members and Assemblies
E 1537—07 ~~02a~~	Test Method for Fire Testing of Upholstered Furniture
E 1590— 07 ~~02~~	Test Method for Fire Testing of Mattresses

CGA

Compressed Gas Association
4221 Walney Road
Chantilly, VA 20151-2923

Standard reference number	Title
ANSI/G-13 (2006)	Storage and Handling of Silane and Silane Mixtures (an American National Standard)
ANSI/P-18 (2006)	Standard for Bulk Inert Gas Systems (an American National Standard)
V-1-(2005)	Standard for Compressed Gas Cylinder Valve Outlet and Inlet Connections

NFPA

National Fire Protection Association
1 Batterymarch Park
Quincy, MA 02269-9101

Standard reference number	Title
10—07 ~~02~~	Portable Fire Extinguishers
13— 07 ~~02~~	Installation of Sprinkler Systems
13D— 07 ~~02~~	Installation of Sprinkler Systems in One- and Two-family Dwellings and Manufactured Homes
13R— 07 ~~02~~	Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height
14— 07 ~~03~~	Installation of Standpipe and Hose Systems
15— 07 ~~01~~	Water Spray Fixed Systems for Fire Protection
16—07 ~~03~~	Installation of Foam-water Sprinkler and Foam-water Spray Systems
20— 07 ~~03~~	Installation of Stationary Pumps for Fire Protection
~~24~~— 07 ~~02~~	Installation of Private Fire Service Mains and their Appurtenances
~~25~~—08 ~~02~~	Inspection, Testing and Maintenance of Water-based Fire Protection Systems
30—08 ~~03~~	Flammable and Combustible Liquids Code
30A—08 ~~03~~	Code for Motor Fuel-dispensing Facilities and Repair Garages
30B—07 ~~02~~	Manufacture and Storage of Aerosol Products
32— 07 ~~00~~	Dry Cleaning Plants
33—07 ~~03~~	Spray Application Using Flammable or Combustible Materials
34—07 ~~03~~	Dipping and Coating Processes Using Flammable or Combustible Liquids
40—07 ~~01~~	Storage and Handling of Cellulose Nitrate Film
51—07 ~~02~~	Design and Installation of Oxygen-fuel Gas Systems for Welding, Cutting and Allied Processes
~~58~~— 08 ~~04~~	Liquefied Petroleum Gas Code
~~59A~~—06 ~~01~~	Production, Storage and Handling of Liquefied Natural Gas (LNG)
61— 08 ~~02~~	Prevention of Fires and Dust Explosions in Agricultural and Food Products Facilities
~~69~~— 08 ~~02~~	Explosion Prevention Systems
72— 07 ~~02~~	National Fire Alarm Code
~~86~~— 07 ~~03~~	Ovens and Furnaces
~~99~~—05 ~~02~~	Health Care Facilities
160—06 ~~01~~	Flame Effects Before an Audience
~~385~~— 07 ~~00~~	Tank Vehicles for Flammable and Combustible Liquids
~~407~~—07 ~~01~~	Aircraft Fuel Servicing
~~655~~— 07 ~~01~~	Prevention of Sulfur Fires and Explosions
~~664~~—07 ~~02~~	Prevention of Fires and Explosions in Wood Processing and Woodworking Facilities
704— 07 ~~01~~	Identification of the Hazards of Materials for Emergency Response

1122—08 ~~02~~	Model Rocketry
1125—07 ~~01~~	Manufacture of Model Rocket and High Power Rocket Motors
1127—08 ~~02~~	High Power Rocketry
2001—08 ~~04~~	Clean Agent Fire Extinguishing Systems

UL	Underwriters Laboratories 333 Pfingsten Road Northbrook, IL 60062

Standard reference number	Title
30— ~~04~~ 95	Metal Safety Cans with Revisions through December 2004
197—2003	Commercial Electric Cooking Appliances – with Revisions through March 2006
217-~~97~~ 2006	Single and Multiple Station Smoke Alarms-with Revisions through ~~August 2005~~ May 2007
268-~~1996~~ 2006	Smoke Detectors for Fire ~~Protective~~ Alarm Signaling Systems~~— with Revision through January 1999 October 2003~~
300-05	Fire Testing of Fire Extinguishing Systems for Protection of Restaurant Cooking Equipment ~~Areas— with Revisions through December 199~~
710B—04	Recirculating Systems with Revisions through April 2006
793—03	~~Standard for~~ Automatically Operated Roof Vents for Smoke and Heat with Revisions through April 2004
864—03	~~Standard for~~ Control Units and Accessories for Fire Alarm Systems — with Revisions through March 2006 ~~July 2005~~
1275—2005	Flammable Liquid Storage Cabinets—with Revisions through May 2006
1313—93 ~~98~~	Standard for Nonmetallic Safety Cans for Petroleum Products – with Revisions through May 2003
1316— 94	Glass Fiber Reinforced Plastic Underground Storage Tanks for Petroleum Products, Alcohols, and Alcohol-gasoline Mixtures—with Revisio ~~1996~~ May 2006
1363-2007 ~~96~~	~~Standard for~~ Relocatable Power Taps~~— with Revisions through February 2006~~
2200— 98 ~~04~~	~~Standard for~~ Stationary Engine Generator Assemblies—with Revisions through July 2004
2208-2005 ~~96~~	Solvent Distillation Units-with Revisions through December 2006
2245—2006 ~~99~~	Below-Grade Vaults for Flammable Liquid Storage Tanks

Reason: The *CP 28 Code Development Policy*, Section 4.5* requires the updating of referenced standards to be accomplished administratively, and be processed as a Code Change Proposal. In May 2007, a letter was sent to each developer of standards that are referenced in the International Codes, asking them to provide the ICC with a list of their standards in order to update to the current edition. Above is the received list of the referenced standards that are under the maintenance responsibility of the International Fire Code Committee.

***4.5 Updating Standards:** The updating of standards referenced by the Codes shall be accomplished administratively by the appropriate code development committee in accordance with these full procedures except that multiple standards to be updated may be included in a single proposal.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

F296–07/08
Appendix B103.1, B103.22

Proponent: Anthony C. Apfelbeck, City of Altamonte Springs, FL

Revise as follows:

B103.1 Decreases. The fire ~~chief~~ code official is authorized to reduce the fire-flow requirements for isolated buildings or a group of buildings in rural areas or small communities where the development of full fire-flow requirements is impractical.

B103.2 Increases. The fire ~~chief~~ code official is authorized to increase the fire-flow requirements where conditions indicate an unusual susceptibility to group fires or conflagrations. An increase shall not be more than twice that required for the building under consideration.

Reason: This proposal removes the term “fire chief” and replaces it with the term “fire code official” in Sections B103.1 and B103.2. This is consistent with utilization of the term “fire code official” in B103.3. The term “fire code official” already includes the “The fire chief or other designated authority charged with the administration and enforcement of the code, or a duly authorized representative” as specified in Chapter 2 Definitions.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F297–07/08
Appendix B105.2

Proponent: Anthony C. Apfelbeck, City of Altamonte Springs, FL

Revise as follows:

B105.2 Buildings other than one- and two-family dwellings. The minimum fire-flow and flow duration for buildings other than one- and two-family dwellings shall be as specified in Table B105.1.

Exceptions:

1. A reduction in required fire-flow of up to 75 percent, as approved, is allowed when the building is provided with an approved automatic sprinkler system installed in accordance with Section 903.3.1.1 ~~or 903.3.1.2~~. The resulting fire-flow shall not be less than ~~1,500~~ 750 gallons per minute (~~5678~~ 2838 L/min) for the prescribed duration as specified in Table B105.1.
2. A reduction in required fire-flow of up to 75 percent, as approved, is allowed when the building is provided with an approved automatic sprinkler system installed in accordance with Section 903.3.1.2. The resulting fire-flow shall not be less than 1,500 gallons per minute (5678 L/min) for the prescribed duration as specified in Table B105.1.

Reason: This code change proposal accomplishes two main objectives:

1. The differences in protection level between NFPA 13 systems and NFPA 13R systems are recognized in the proposed change by creating different fire flow credits for the differing system types. An NFPA 13 system installed in accordance with Section 903.3.1.1 is specifically intended to control the fire and provides coverage for all combustible concealed spaces. An NFPA 13R system installed in accordance with 903.3.1.2 provides “a high level, but not absolute, level of life safety and lesser level of property protection.” (NFPA 13R Annex A.1.2.) Based on the differing property protection levels specified for NFPA 13 and NFPA 13R systems, it is appropriate that the fire flow calculations in Annex B take into consideration the differences in protection levels.
2. The minimum required fire flow for buildings sprinklered in accordance with Section 903.3.1.1 are reduced to 750 GPM from 1,500 GPM. This increased reduction is appropriate for the increased protection provided by complete automatic fire sprinkler protection. The ability to provide a sustained fire flow in small communities is highly questionable at the 1,500 GPM rate. Providing fire sprinkler protection along with the reduced fire flow will provide a reasonable cost effective approach to fire suppression water supply in smaller jurisdictions. This code change will also encourage the voluntary installation of fie sprinklers in some buildings where the fire flow may not be readily available. It is important to recognize that this reduced fire flow would still exceed the ISO’s minimum requirements. “ISO does not determine a needed fire flow for buildings rated and coded by ISO as protected by an automatic sprinkler system meeting applicable National Fire Protection Association standards.” (ISO Guide for Determining Needed Fire Flow Page 1, 2006 ed.)

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F298–07/08
Appendix B105.3 (New)

Proponents: Dave Collins, AIA, The Preview Group, representing AIA Codes Committee; Kate Dargan, State of California, representing California State Fire Marshal

Add new text as follows:

B105.3 Fire and Life Safety Inspection Program: In jurisdictions where there is an effective fire and life safety inspection program, the 1750 gpm (5678 L/min) fire flow values shall be allowed to be used to determine fire compartment area. For the purposes of applying the fire flow values, an effective fire and life safety inspection program shall be determined by either:

1. As documented and approved by the local governing body, or

2. As accredited by a nationally recognized fire or insurance standards setting organization

Reason: Any system, such as a code, that hopes to achieve better life safety conditions for building occupants or safety personnel that may become involved in an event depends heavily on the ability of the system to work effectively. Many standards included within the ICC Codes expect that maintenance and testing will be performed and that general inspections on a periodic basis will ascertain whether fundamental aspects of the life safety system are functioning as expected.

This code change will affect the application of the limits in Appendix B where the current limits of fire flow dictate the type of construction that is permitted in a building. The base numbers for a typical fire department response is 1,500, which will limit a building of Type VB construction to a maximum area of 3,600 sf. If there is an effective program for inspection as determined by the jurisdiction, then the number for the fire flow is increased to 1,750 cfm and will allow the same building to be increased to a maximum of 4,800 sf. The affect is across the board with all types of construction.

Communities rarely focus on the ongoing inspection and maintenance of the fire safety systems that they dictate. Why this is true is most often based of financial priorities requiring moneys to be funneled off to other efforts that are seen as essential. This code change would establish a reason for a community to reconsider such a move and perhaps concentrate on providing better services to help encourage development and ongoing higher levels of safety.

Although not directly tied to the code change submitted by this Study Group on the height and areas of buildings, this concept could also be applicable to the development of the allowable compartment areas in the future.

We are all familiar with the fact that many buildings are allowed to deteriorate and loose much of the fundamental qualities that we assume exist when they are initially built. If the code does not forcefully recognize a means to bolster the maintenance and inspection of these buildings, who will take those aspects of building design and construction seriously in the field and in our communities?

Cost Impact: The code change proposal will increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F299–07/08
Appendix D103.5

Proponent: Anthony C. Apfelbeck, City of Altamonte Springs, FL

Revise as follows:

D103.5 Fire apparatus access road gates. Gates securing the fire apparatus access roads shall comply with all of the following criteria:

1. The minimum gate width shall be ~~20 feet (6096 mm)~~ the minimum required width of the fire apparatus access road.
2. Gates shall be of the swinging or sliding type.
3. Construction of gates shall be of ~~materials~~ a design that allows manual operation by one person.
4. Gate components shall be maintained in an operative condition at all times and replaced or repaired when defective.
5. Electric gates shall be equipped with a means of opening the gate by fire department personnel for emergency access. Emergency opening devices shall be approved by the fire code official.
6. Manual opening gates shall not be locked with a padlock or chain and padlock unless they are capable of being opened by means of forcible entry tools or when a key box containing the key(s) to the lock is installed at the gate location.
7. Gate design and locking device specifications shall be submitted for approval by the fire code official prior to installation.

Reason: In part 1, the minimum 20 ft width is changed to the minimum required width of the fire apparatus access road. As an example, D103.1 requires a 26' fire apparatus width. Decreasing width at a gate can create a hazardous design as the roadway and lane width suddenly decreases.

In part 3, the term "materials" is deleted and replaced with "a design" since the ability to manually open a gate is not solely dependant on the "materials" of the gate. It is dependant on the total design of the gate.

In part 7, the term "Gate design" specification is added as a construction document that shall be submitted to the fire code official prior to the gate installation. The total gate design, not just the locking device specifications, is an important component of access. In addition, the terms "prior to installation" are added as a clarification that the intent is for the fire code official to review and approve pre-installation, not post-installation.

Cost Impact: The code change will increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F300–07/08
Appendix D106.3 (New)

Proponent: Anthony C. Apfelbeck, City of Altamonte Springs, FL

Add new text as follows:

D106.3 Remoteness. Where two access roads are required, they shall be placed a distance apart equal to not less than one half of the length of the maximum overall diagonal dimension of the property or area to be served, measured in a straight line between accesses.

Reason: Currently, Section D106, Multiple-Family Residential Developments, does not require fire apparatus access roads to be remote when more than one access road is required. D104, Commercial and Industrial Developments, and D107, One- or Two-Family Residential Developments already contain or reference a "remoteness" standard.

This code change proposal duplicates the language from D104.3 into a new 106.3 placing new "Remoteness" language within the Section D106 that is directly relevant to Multiple-Family Residential Developments.

Cost Impact: The code change will increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F301–07/08
Appendix D107.1

Proponent: Anthony C. Apfelbeck, City of Altamonte Springs, FL

Revise as follows:

SECTION D107
ONE- OR TWO-FAMILY RESIDENTIAL DEVELOPMENTS

D107.1 One- or two-family dwelling residential developments. Developments of one- or two-family dwellings where the number of dwelling units exceeds 30 shall be provided with separate and approved fire apparatus access roads and shall meet the requirements of Section D104.3.

Exceptions:

1. Where there are more than 30 dwelling units on a single public or private fire apparatus access road and all dwelling units are equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1, 903.3.1.2 or 903.3.1.3, access from two directions shall not be required.
2. The number of dwelling units on a single fire apparatus access road shall ~~not be increased unless~~ be allowed to exceed 30 where approved fire apparatus access roads will connect with future development~~, as determined by the fire code official~~.

Reason: The current language in exception #2 is unclear. It appears to be intended as an exception to the 30 dwelling unit limit when future development will provide separate and approved fire apparatus roads. However, the current exception #2 does not reference the 30 dwelling unit requirement and it is written in restrictive language (shall not be increased) rather than the permissive language of a typical exception. Therefore, the current exception #2 is written in language that appears to not allow any increase in the number of dwelling units on a single fire apparatus road. This is obviously not the intent of the current language but, it is how it is written.

The proposal clarifies the text by:

1. Changing the exception to permissive text rather than restrictive language.
2. Inserting the 30 dwelling unit number to tie the exception back to the core number in D107.1
3. Deletes the "as determined by the fire official" and inserts the term "approved" for better readability and specific application approval authority as the current language does not clarify what aspect is intended to be "determined by the fire code official."

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F302–07/08
Appendix D107.1, D107.2 (New)

Proponent: Anthony C. Apfelbeck, City of Altamonte Springs, FL

Revise as follows:

SECTION D107
ONE- OR TWO-FAMILY RESIDENTIAL DEVELOPMENTS

D107.1 One- or two-family dwelling residential developments. Developments of one- or two-family dwellings where the number of dwelling units exceeds 30 shall be provided with separate and approved fire apparatus access roads ~~and shall meet the requirements of Section D104.3~~.

Exceptions:

1. Where there are more than 30 dwelling units on a single public or private fire apparatus access road and all dwelling units are equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1, 903.3.1.2 or 903.3.1.3, access from two directions shall not be required.
2. The number of dwelling units on a single fire apparatus access road shall not be increased unless fire apparatus access roads will connect with future development, as determined by the fire code official.

D107.2 Remoteness. Where two access roads are required, they shall be placed a distance apart equal to not less than one half of the length of the maximum overall diagonal dimension of the property or area to be served, measured in a straight line between accesses.

Reason: The current Section D107.1 refers the user to Section D104.3 which is titled "Commercial and Industrial Developments." Referring to Section D104.3 places the user in a section that is not germane to one-and two family dwelling and has to potential to create confusion to the fire code official and the code user.

This code change proposal duplicates the language from D104.3 into a new 107.2 placing new "Remoteness" language within the Section D107 that is directly relevant to one-and two-family dwellings. This code change does not modify any technical aspect of the current code remoteness requirement for one-and two-family dwellings.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F303–07/08
Appendix E102.1.2, E103.1.3.1, E104 (New)

Proponent: Patrick A. McLaughlin, McLaughlin & Associates, representing The Semiconductor Industry Association

1. Revise appendix as follows:

E102.1.2 Compressed gases. Examples include:

1. Flammable: acetylene, carbon monoxide, ethane, ethylene, hydrogen, methane. Ammonia will ignite and burn although its flammable range is too narrow for it to fit the definition of flammable gas.

   For binary mixtures where the hazardous component is diluted with a non flammable gas, the mixture shall be categorized in accordance with CGA P-23.

2. Oxidizing: oxygen, ozone, oxides of nitrogen, chlorine and fluorine. Chlorine and fluorine do not contain oxygen but reaction with flammables is similar to that of oxygen.
3. Corrosive: ammonia, hydrogen chloride, fluorine.
4. Highly toxic: arsine, cyanogen, fluorine, germane, hydrogen cyanide, nitric oxide, phosphine, hydrogen selenide, stibine.
5. Toxic: chlorine, hydrogen fluoride, hydrogen sulfide, phosgene, silicon tetrafluoride.

6. Inert (chemically unreactive): argon, helium, krypton, neon, nitrogen, xenon.
7. Pyrophoric: diborane, dichloroborane, phosphine, silane.
8. Unstable (reactive): butadiene (unstabilized), ethylene oxide, vinyl chloride.

E103.1.3.1 Mixtures. Gases—toxic and highly toxic gases include those gases which have an LC_{50} of 2,000 parts per million (ppm) or less when rats are exposed for a period of 1 hour or less. To maintain consistency with the definitions for these materials, exposure data for periods other than 1 hour must be normalized to 1 hour. To classify mixtures of compressed gases that contain one or more toxic or highly toxic components, the LC_{50} of the mixture must be determined. Mixtures that contain only two components are binary mixtures. Those that contain more than two components are multi-component mixtures. When two or more hazardous substances (components) having an LC_{50} below 2,000 ppm are present in a mixture, their combined effect, rather than that of the individual substances components), must be considered. In the absence of information to the contrary, the effects of the hazards present must be considered as additive. Exceptions to the above rule may be made when there is a good reason to believe that the principal effects of the different harmful substances (components) are not additive.

For binary mixtures where the hazardous component is diluted with a non toxic gas such as an inert gas, the LC 50 of the mixture is estimated by use of the ~~following formula:~~ methodology contained in CGA P-20. The hazard zones specified in CGA P-20 are applicable for DOTn purposes and shall not be used for hazard classification.

(Delete equation in its entirety) ~~(Equation E-1)~~

~~For multi-component mixtures where more than one component has a listed LC_{50}, the LC_{50} of the mixture is estimated by use of the following formula:~~

(Delete equation in its entirety) ~~(Equation E-2)~~

~~where:~~

~~LC_{50m} = LC_{50} of the mixture in parts per million (ppm).~~
~~C_i = concentration of component (i) in decimal percent. The concentration of the individual components in a mixture of gases is to be expressed in terms of percent by volume.~~
~~LC_{50i} = LC_{50} of component (i). The LC_{50} of the component is based on a 1-hour exposure. LC_{50} data which are for other than 1-hour exposures shall be normalized to 1-hour by multiplying the LC_{50} for the time determined by the factor indicated in Table E103.1.3.1. The preferred mammalian species for LC_{50} data is the rat, as specified in the definitions of toxic and highly toxic in Chapter 2 of the *International Fire Code*. If data for rats are unavailable, and in the absence of information to the contrary, data for other species may be utilized. The data shall be taken in the following order of preference: rat, mouse, rabbit, guinea pig, cat, dog, monkey.~~
~~i_n = component 1, component 2 and so on to the nth component.~~

~~Examples:~~

~~a. What is the LC_{50} of a mixture of 15 percent chlorine, 85 percent nitrogen?~~

~~The 1-hour (rat) LC_{50} of pure chlorine is 293 ppm.~~

~~LC_{50m} = 1 / (0.15 / 293) or 1,953 ppm. Therefore, the mixture is toxic.~~

~~b. What is the LC_{50} of a mixture of 15 percent chlorine, 15 percent fluorine and 70 percent nitrogen? The 1-hour (rat) LC_{50} of chlorine is 293 ppm. The 1-hour (rat) LC_{50} of fluorine is 185 ppm.~~

~~LC_{50m} = 1 / (0.15 / 293) + (0.15 / 85) or 755 ppm. Therefore the mixture is toxic.~~

~~c. Is the mixture of 1 percent phosphine in argon toxic or highly toxic? The 1-hour (rat) LC_{50} is 11 ppm.~~

~~LC_{50m} = 1 / [0.01 / (11 2)] or 2,200 ppm. Therefore the mixture is neither toxic nor highly toxic. Note that the 4-hour LC_{50} of 11 ppm was normalized to 1-hour by use of Section E103.1.3.1.~~

~~TABLE E103.1.3.1~~
~~NORMALIZATION FACTOR~~ (Delete table in its entirety)

2. Add new section as follows:

SECTION E104
REFERENCED STANDARDS

Compressed Gas Association (CGA)

CGA P-20 (2003) – Standard for Classification of Toxic Mixtures
CGA P-23 (2003) – Standard for Categorizing Gas Mixtures Containing Flammable and Nonflammable Components.

Reason: This proposal updates the code and standardizes the methodologies for the determination of hazard classification of materials. There are two areas that have been standardized:

1. Method to define hazard class for binary mixtures of inerts with toxic gases
2. Method to define hazard class for binary mixtures of inerts with flammable gases

CGA Standards provide these common methodologies which are defined in Appendix E.

1. CGA P-20. This standard will bring consistency to the definition of toxic gas mixtures. The calculations for toxic gas mixtures which are proposed for deletion are included in CGA P-20 which is referenced. It is much easier to determine the proper hazard classification of toxic gas mixtures by using CGA P-20 then the extractions currently printed in this appendix.
2. CGA P-23. This standard will bring consistency to the definition of flammable gases in mixtures with inert gases which is common in industry.

The proposed change is also consistent with Chapter 5, NFPA 55, Storage, Use, and Handling of Compressed Gases and Cryogenic Fluids in Potable and Stationary Containers, Cylinders, and Tanks.

Cost Impact: The code change proposal will not increase the cost of construction.

Analysis: A review of the standard proposed for inclusion in the code, CGA P-20 (2003) and CGA P-23 (2003), for compliance with ICC criteria for referenced standards given in Section 3.6 of Council Policy #CP 28 will be posted on the ICC website on or before January 15, 2008.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F304–07/08
Appendix I (New)

Proponent: Wayne R. Jewell, Chair, Hazard Abatement in Existing Buildings Committee

Add new appendix as follows:

APPENDIX I
FIRE PROTECTION SYSTEMS – UNSAFE CONDITIONS

The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.

I101 UNSAFE CONDITIONS

I101.1 General. This appendix is intended to identify conditions that can occur when fire protection systems are not properly maintained or components have been damaged. This appendix is not intended to provide comprehensive inspection, testing and maintenance requirements, which are found in NFPA 10, 25 and 72. Rather, its intent is to identify problems that are readily observable during fire inspections.

I101.2 Unsafe conditions requiring component replacement. The following conditions shall be deemed unsafe and shall cause the related component(s) to be replaced to comply with the provisions of this code:

1. Sprinkler heads having any of the following conditions:
   - 1.1. Signs of leakage;
   - 1.2. Paint or other ornamentation that is not factory applied;
   - 1.3. Evidence of corrosion including, but not limited to, discoloration or rust;
   - 1.4. Deformation or damage of any part;
   - 1.5. Improper orientation of sprinkler head;
   - 1.6. Empty glass bulb;

1.7. Sprinkler heads manufactured prior to 1920;
1.8. Replacement sprinkler heads that do not match existing sprinkler heads in orifice size, K-factor temperature rating, coating or deflector type; or
1.9. Sprinkler heads for the protection of cooking equipment that have not been replaced within one year.

2. Water pressure and air pressure gauges that have been installed for more than five years and have not been tested to within 3 percent accuracy.

I101.2 Unsafe conditions requiring component repair or replacement. The following conditions shall be deemed unsafe and shall cause the related component(s) to be repaired or replaced to comply with the provisions of this code:

1. Sprinkler and standpipe system piping and fittings having any of the following conditions:
   1.1. Signs of leakage;
   1.2. Evidence of corrosion;
   1.3. Misalignment; or
   1.4. Mechanical damage.

2. Sprinkler piping support having any of the following conditions:
   2.1. Materials resting on or hung from sprinkler piping;
   2.2. Damaged or loose hangers or braces;

3. Class II and Class III standpipe systems having any of the following conditions:
   3.1. No hose or nozzle, where required;
   3.2. Hose threads incompatible with fire department hose threads;
   3.3. Hose connection cap missing;
   3.4. Mildew, cuts, abrasions, and deterioration evident;
   3.5. Coupling damaged;
   3.6. Gaskets missing or deteriorated; or
   3.7. Nozzle missing or obstructed.

4. Hose racks and cabinets having any of the following conditions:
   4.1. Difficult to operate or damaged;
   4.2. Hose improperly racked or rolled;
   4.3. Inability of rack to swing 90 degrees out of the cabinet;
   4.4. Cabinet locked, except as permitted by this code;
   4.5. Cabinet door will not fully open; or
   4.6. Door glazing cracked or broken;

5. Portable fire extinguishers having any of the following conditions:
   5.1. Broken seal or tamper indicator;
   5.2. Expired maintenance tag;
   5.3. Pressure gauge indicator in “red”;
   5.4. Signs of leakage or corrosion;
   5.5. Mechanical damage, denting or abrasion of tank;
   5.6. Presence of repairs such as welding, soldering or brazing;
   5.7. Damaged threads; or
   5.8. Damaged hose assembly, couplings or swivel joints.

6. Fire alarm and detection control equipment, initiating devices and notification appliances having any of the following conditions:
   6.1. Corroded or leaking batteries or terminals;
   6.2. Smoke detectors having paint or other ornamentation that is not factory-applied;
   6.3. Mechanical damage to heat or smoke detectors; or
   6.4. Tripped fuses.

7. Fire department connections having any of the following conditions:
   7.1. Fire department connections are not visible or accessible from the fire apparatus access road;
   7.2. Couplings or swivels are damaged;
   7.3. Plugs and caps are missing or damaged;
   7.4. Gaskets are deteriorated;
   7.5. Check valve is leaking; or
   7.6. Identification signs are missing.

8. Fire pumps having any of the following conditions:
   8.1. Pump room temperature is less than 40 degrees F;

Exception: Pump room housing a diesel pump equipped with an engine heater.

   8.2. Ventilating louvers are not freely operable;
   8.3. Corroded or leaking system piping;
   8.4. Diesel fuel tank is less than two-thirds full; or
   8.5. Battery readings, lubrication oil or cooling water levels are abnormal.

Reason: The ICC Board approved the development of new code requirements in the I-Codes which address hazards, such as those from fire, as well as, the development of requirements relative to issues such as hazardous conditions due to structural issues. This would provide code requirements for all disciplines to be used by building owners to bring their existing building stock up to minimum standards and enforcing agencies when performing inspections of existing buildings. The Hazard Abatement of Existing Buildings Committee (HAEB) was formed to develop these requirements.

During this 07/08 cycle, the HAEB committee is proposing several unsafe conditions requirements for inclusion within the text of the existing International Codes, predominately the *International Property Maintenance Code* and the *International Fire Code*.

The purpose of this proposal is to afford the code official a list of conditions that are readily identifiable by the fire code official during the course of an inspection utilizing the *International Fire Code*. The specific conditions identified in this proposal are primarily derived from applicable NFPA standards, and represent conditions that are readily identifiable by the fire code official during the course of an inspection. All of the identified conditions pose a hazard to the proper operation of the respective systems While these do not represent all of the conditions that pose a hazard or otherwise may impair the proper operation of fire protection systems and are currently enforceable by reference to the applicable standards, identification of conditions directly in the IFC will provide a more direct path for enforcement by the fire code official.

Conditions affecting sprinkler heads, and sprinkler and standpipe system piping and fittings are from Chapter 5 of NFPA 25. Conditions affecting Class II and Class III standpipe systems, hose racks and cabinets are from Chapter 6 of NFPA 25. Identified impairments of portable fire extinguishers are from Chapter 6 and 7 of NFPA 10. Conditions affecting fire alarm systems is primarily from Chapter 10 of NFPA 72. Impairments to fire department connections are from Chapter 12 of NFPA 25, and those related to fire pumps are from Chapter 8 of NFPA 25.

In the 06/07 cycle, the Code Committee noted that the information resembles a handbook or manual more than code text. The Code Committee further commented that the subject matter is important and may be better served in an appendix. In response, the HAEB committee is proposing to delete this proposal from code text and to insert it into a new appendix to the IFC.

During the 06/07 final action hearings, at which the committee's public comment to make the proposal an appendix was heard, there were two comments in opposition.

One commenter noted that the relevant NFPA standards were essential to the inspection; thus, providing a list of items does not provide adequate information for the inspector. The committee has noted that NFPA 10 and NFPA 25 are necessary documents; however, the purpose of this proposal is to make both the building owner and the fire inspector aware of the scope of deficiencies that have the strong potential to cause a fire protection system or component to become inoperative.

The second commenter stated that some of the items listed, such as signs of leakage and evidence of corrosion, do not constitute unsafe conditions. The unsafe condition is that the fire protection system or component may not operate as intended if damage or deterioration is not addressed by repair or replacement. Evidence of leakage in one location may not in itself cause the system to become inoperable, but it may indicate installation or maintenance deficiencies that will do so over time.

While the lists are derived from the applicable NFPA standards, they were not intended to be comprehensive. The true purpose is to serve as a visual reference guide for fire inspectors during their routine visits to buildings. As a checklist, it will serve an important function in assuring that visible indications of system deficiencies are noted.

Cost Impact: The code change proposal will not increase the cost of construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F305–07/08
Appendix I (New)

Proponent: Marla Wilcox, Safety Services, Englewood, CO, representing Fire Marshal's Association of Colorado

Add new appendix as follows (underlining of tables omitted for clarity):

APPENDIX I
REFERENCE TABLES FROM THE *INTERNATIONAL BUILDING CODE*
This appendix is for information purposes and is not intended for adoption.

TABLE 503
ALLOWABLE HEIGHT AND BUILDING AREAS[a]
Height limitations shown as stories and feet above grade plane.
Area limitations as determined by the definition of "Area, building," per story

		TYPE OF CONSTRUCTION								
		TYPE I		TYPE II		TYPE III		TYPE IV	TYPE V	
		A	B	A	B	A	B	HT	A	B
GROUP	HGT(feet) HGT(S)	UL	160	65	55	65	55	65	50	40
A-1	S A	UL UL	5 UL	3 15,500	2 8,500	3 14,000	2 8,500	3 15,000	2 11,500	1 5,500
A-2	S A	UL UL	11 UL	3 15,500	2 9,500	3 14,000	2 9,500	3 15,000	2 11,500	1 6,000
A-3	S A	UL UL	11 UL	3 15,500	2 9,500	3 14,000	2 9,500	3 15,000	2 11,500	1 6,000
A-4	S A	UL UL	11 UL	3 15,500	2 9,500	3 14,000	2 9,500	3 15,000	2 11,500	1 6,000
A-5	S A	UL UL	UL UL	UL UL	UL UL	UL UL	UL UL	UL UL	UL UL	UL UL
B	S A	UL UL	11 UL	5 37,500	4 23,000	5 28,500	4 19,000	5 36,000	3 18,000	2 9,000
E	S A	UL UL	5 UL	3 26,500	2 14,500	3 23,500	2 14,500	3 25,500	1 18,500	1 9,500
F-1	S A	UL UL	11 UL	4 25,000	2 15,500	3 19,000	2 12,000	4 33,500	2 14,000	1 8,500
F-2	S A	UL UL	11 UL	5 37,500	3 23,000	4 28,500	3 18,000	5 50,500	3 21,000	2 13,000
H-1	S A	1 21,000	1 16,500	1 11,000	1 7,000	1 9,500	1 7,000	1 10,500	1 7,500	NP NP
H-2[d]	S A	UL 21,000	3 16,500	2 11,000	1 7,000	2 9,500	1 7,000	2 10,500	1 7,500	1 3,000
H-3[d]	S A	UL UL	6 60,000	4 26,500	2 14,000	4 17,500	2 13,000	4 25,500	2 10,000	1 5,000
H-4	S A	UL UL	7 UL	5 37,500	3 17,500	5 28,500	3 17,500	5 36,000	3 18,000	2 6,500
H-5	S A	4 UL	4 UL	3 37,500	3 23,000	3 28,500	3 19,000	3 36,000	3 18,000	2 9,000
I-1	S A	UL UL	9 55,000	4 10,000	3 10,000	4 16,500	3 10,000	4 18,000	3 10,500	2 4,500
I-2	S A	UL UL	4 UL	2 15,000	1 11,000	1 12,000	NP NP	1 12,000	1 9,500	NP NP
I-3	S A	UL UL	4 UL	2 15,000	1 10,000	2 10,500	1 7,500	2 12,000	2 9,500	1 5,000
I-4	S A	UL UL	5 60,500	3 26,500	2 13,000	3 23,500	2 13,000	3 25,500	1 18,500	1 9,000
M	S A	UL UL	11 UL	4 21,500	4 12,500	4 18,500	4 12,500	4 20,500	3 14,000	1 9,000
R-1	S A	UL UL	11 UL	4 24,000	4 16,000	4 24,000	4 16,000	4 20,500	3 12,000	2 7,000
R-2	S A	UL UL	11 UL	4 24,000	4 16,000	4 24,000	4 16,000	4 20,500	3 12,000	2 7,000
R-3	S A	UL UL	11 UL	4 UL	4 UL	4 UL	4 UL	4 UL	3 UL	3 UL
R-4	S A	UL UL	11 UL	4 24,000	4 16,000	4 24,000	4 16,000	4 20,500	3 12,000	2 7,000
S-1	S A	UL UL	11 48,000	4 26,000	3 17,500	3 26,000	3 17,500	4 25,500	3 14,000	1 9,000
S-2[b,c]	S A	UL UL	11 79,000	5 39,000	4 26,000	4 39,000	4 26,000	5 38,500	4 21,000	2 13,500
U[c]	S A	UL UL	5 35,500	4 19,000	2 8,500	3 14,000	2 8,500	4 18,000	2 9,000	1 5,500

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

UL = Unlimited, NP = Not permitted.

a. See the following sections for general exceptions to Table 503:

1. Section 504.2, Allowable height increase due to automatic sprinkler system installation.
2. Section 506.2, Allowable area increase due to street frontage.
3. Section 506.3, Allowable area increase due to automatic sprinkler system installation.
4. Section 507, Unlimited area buildings.

b. For open parking structures, see Section 406.3.

c. For private garages, see Section 406.1.

d. See Section 415.5 for limitations.

TABLE 508.2.5 (Supp)
INCIDENTAL ACCESSORY OCCUPANCIES

ROOM OR AREA	SEPARATION AND/OR PROTECTION
Furnace room where any piece of equipment is over 400,000 Btu per hour input	1 hour or provide automatic fire-extinguishing system
Rooms with boilers where the largest piece of equipment is over 15 psi and 10 horsepower	1 hour or provide automatic fire-extinguishing system
Refrigerant machinery room	1 hour or provide automatic sprinkler system
Hydrogen cut-off rooms, not classified as Group H	1-hour in Group B, F, M, S and U occupancies. 2-hour in Group A, E, I and R occupancies.
Incinerator rooms	2 hours and automatic sprinkler system
Paint shops, not classified as Group H, located in occupancies other than Group F	2 hours; or 1 hour and provide automatic fire-extinguishing system
Laboratories and vocational shops, not classified as Group H, located in Group E or I-2 occupancies	1 hour or provide automatic fire-extinguishing system
Laundry rooms over 100 square feet	1 hour or provide automatic fire-extinguishing system
Group I-3 cells equipped with padded surfaces	1 hour
Group I-2 waste and linen collection rooms	1 hour
Waste and linen collection rooms over 100 square feet	1 hour or provide automatic fire-extinguishing system
Stationary storage battery systems having a liquid capacity of more than 100 gallons used for facility standby power, emergency power or uninterrupted power supplies	1-hour in Group B, F, M, S and U occupancies. 2-hour in Group A, E, I and R occupancies

For SI: 1 square foot = 0.0929 m2, 1 pound per square inch = 6.9 kPa, 1 British thermal unit per hour = 0.293 watts, 1 horsepower = 746 watts, 1 gallon = 3.785 L.

TABLE 508.4 (Supp)
REQUIRED SEPARATION OF OCCUPANCIES (HOURS)

	A[d], E		I		R[c]		F-2, S-2[b,c], U[c]		B, F-1, M, S-1		H-1		H-2		H-3, H-4, H-5	
OCCUPANCY	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS
A[d], E[d]	N	N	1	2	1	2	N	1	1	2	NP	NP	3	4	2	3[a]
I	--	--	N	N	1	NP	1	2	1	2	NP	NP	3	NP	2	NP
R[c]	--	--	--	--	N	N	1	2	1	2	NP	NP	3	NP	2	NP
F-2, S-2[b,c], U[d]	--	--	--	--	--	--	N	N	1	2	NP	NP	3	4	2	3[a]
B, F-1, M, S-1	--	--	--	--	--	--	--	--	N	N	NP	NP	2	3	1	2[a]
H-1	--	--	--	--	--	--	--	--	--	--	N	NP	NP	NP	NP	NP
H-2	--	--	--	--	--	--	--	--	--	--	--	--	N	NP	1	NP
H-3, H-4, H-5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	N	NP

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

S = Buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1.
NS = Buildings not equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1.
N = No separation requirement.
NP = Not permitted.

a. For Group H-5 occupancies, see Section 903.2.4.2.
b. Areas used only for private or pleasure vehicles shall be allowed to reduce separation by 1 hour.
c. See Section 406.1.4.
d. Commercial kitchens need not be separated from the restaurant seating areas that they serve.

Reason: This would allow field inspectors a reference for allowable height and building areas, area separations for buildings, occupant load and incidental use areas. This is valuable information when doing fire inspections.

It is recommended purely for the quick reference of an inspector trying to establish “ball park” compliance. Once it is found that there is a possibility of a violation, a more detailed analysis would have to be conducted using the proper edition of the building code.

Cost Impact: The code change proposal will not increase the cost of construction.

Analysis: The maintenance of the technical content of the IBC tables in this proposed Appendix would rest with the IBC-General Code Development Committee. The need for and suitability of having them duplicated in an IFC Appendix is a matter to be determined by the IFC Code Development Committee.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF